Internal Ex-Post Project Evaluation 2020

Evaluation Report

May 2023

Japan International Cooperation Agency

（JICA）

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List of Internal Ex-post Evaluation

Type of Assistance	Project Start Year*	Type of Evaluation	Evaluation Year	Country	Sector/Theme	Project Name	Project Number
T	2008	Ex-post Evaluation	2020	Cambodia	Primary Education	Science Teacher Education Project (STEPSAM2)	200601297
T	2008	Ex-post Evaluation	2020	Cuba	Agriculture / General	Project for reinforcement of certified seed production and extension system for popular rice	200602964
T	2004	Ex-post Evaluation	2020	Afghanistan	Health / Health Care	Reproductive Health Project	200603841
T	2005	Ex-post Evaluation	2020	Tunisia	Fisheries	Project for Sustainable Management of Coastal Fisheries Resources	200604465
T	2007	Ex-post Evaluation	2020	Tanzania	Agriculture / General	Technical Cooperation in Supporting Service Delivery Systems of Irrigated Agriculture (TANRICE)	200605057
T	2007	Ex-post Evaluation	2020	Laos	Primary Education	Supporting Community Initiatives for Primary Education Development in the Southern Provinces (CIED)	200608978
T	2008	Ex-post Evaluation	2020	Malawi	Secondary Education	The Project on Strengthening of Mathematics and Science in Secondary Education (SMASSE) INSET Malawi Phase2	200700970
T	2007	Ex-post Evaluation	2020	Afghanistan	Roads	Project for Capacity Development and Establishment of Road Maintenance Management System	200701824
T	2008	Ex-post Evaluation	2020	Sudan	Water Supply	Project for Human Resource Development for Water Supply in Sudan	200702452
T	2008	Ex-post Evaluation	2020	Cuba	Fisheries	Project for Fish Culture in the Republic of Cuba	200703950
T	2011	Ex-post Evaluation	2020	Thailand	Environment Issue	Project for the Development of Basic Schemes for PRTR System	200800122
T	2010	Ex-post Evaluation	2020	Philippines	Health / Health Care	Strengthening Maternal and Child Health Services in Eastern Visayas	200900127
T	2010	Ex-post Evaluation	2020	Laos	Health / Health Care	Project for Strengthening Integrated Maternal, Neonatal and Child Health Services in Lao PDR	200900187
T	2009	Ex-post Evaluation	2020	Indonesia	Trade	Capacity Development for Trade-Related Administration	200900219
T	2010	Ex-post Evaluation	2020	Thailand	New / Renewable Energy	Innovation on Production and Automotive Utilization of Biofuels from Non-Food Biomass	200900348
T	2010	Ex-post Evaluation	2020	India	Weather / Earthquakes	Information Network for Natural Disaster Mitigation and Recovery	200900545
T	2010	Ex-post Evaluation	2020	Afghanistan	Health / Health Care	Reproductive Health Project Phase 2	200900816
T	2010	Ex-post Evaluation	2020	Ghana	Banking / Finance	Financial Management Improvement Project of the Ministry of Food and Agriculture	200900937
T	2010	Ex-post Evaluation	2020	South Africa	Weather / Earthquakes	The Project for Studies of Seismic Hazard Mitigation in Deep Level South African Mine	200900997
T	2009	Ex-post Evaluation	2020	Burkina Faso	Water Resources Development	Improving Sustainable Water and Sanitation Systems in Sahel Region in Africa: Case of Burkina Faso	200901083
T	2011	Ex-post Evaluation	2020	Niger	Agriculture / General	Project on Effective Utilization of Reservoirs and Auto-Promotion of Local Communities in the Sahel	200901158
T	2010	Ex-post Evaluation	2020	Iran	Forestry / Forest Preservation	Participatory Forest and Rangeland Management Project in Chaharmahal-va-Bakhtiari Province	200901259
T	2011	Ex-post Evaluation	2020	Morocco	Agriculture / General	The Project for Improvement of Irrigation System at the Abda Doukkala Irrigated Area	200905755
T	2011	Ex-post Evaluation	2020	Philippines	Health / Health Care	Comprehensive Etiological and Epidemiological Study on Acute Respiratory Infections in Children	201000180
T	2012	Ex-post Evaluation	2020	Philippines	Agricultural Processing	Enhancing the Competitiveness of Fresh and Semi Processed Agricultural Product Through the Application on Appropriate and Sustainable Packaging Technology	201000181
T	2011	Ex-post Evaluation	2020	India	Sewerage	UASB-DHS Integrated System - A Sustainable Sewerage Treatment Technology	201000331
T	2011	Ex-post Evaluation	2020	Sri Lanka	Urban Sanitation	The project for development of pollution control and environmental restoration technologies of waste landfill sites taking into account geographical characteristics in Sri Lanka	201000350
T	2013	Ex-post Evaluation	2020	Dominican Republic	Health / Health Care	Project for Strengthening Primary Health Care for Pregnant Women and Newborns in Health Region III	201000402
T	2011	Ex-post Evaluation	2020	Paraguay	Health / Health Care	Project for Strengthening Primary Health Care System	201000460
T	2011	Ex-post Evaluation	2020	Paraguay	Agriculture / General	Rural Development Project for Strengthening of Territorial Management System in Itapúa and Caazapá	201000476
T	2011	Ex-post Evaluation	2020	Afghanistan	Development Planning / General	Project for Socio-economic Activation of Rural Afghanistan	201000515
T	2010	Ex-post Evaluation	2020	Algeria	New / Renewable Energy	Sahara Solar Energy Research Center Project	201000526
T	2011	Ex-post Evaluation	2020	Ethiopia	Agriculture / General	Project for Strengthening of Agricultural Pesticide Residue Analysis System	201000590
T	2012	Ex-post Evaluation	2020	Uganda	Environment Issue	National Wetlands Management Project	201000620
T	2011	Ex-post Evaluation	2020	Zambia	Water Resources Development	The Project for Support in National Roll-out of Sustainable Operation and maintenance Programme (SOMAP3)	201000639
T	2011	Ex-post Evaluation	2020	Senegal	Forestry / Forest Preservation	Capacity-building Project for the control of land degradation and the promotion of land recovery in degraded soil areas	201000735
T	2012	Ex-post Evaluation	2020	Indonesia	Business Management	Project on Small and Medium Industry Development based on Improved Service Delivery in Indonesia	201001021
T	2012	Ex-post Evaluation	2020	Viet Nam	Health / Health Care	Project for Strengthening Medical Services in Northwest Provinces	201001034
T	2011	Ex-post Evaluation	2020	Kosovo	Environment Issue	The Project for Enhancement of the Capacity for Waste Management toward Sound Material-cycle Society	201002906
T	2011	Ex-post Evaluation	2020	Sudan	Water Resources Development	Project for Human Resource Development for Water Supply in Sudan Phase 2	201003087
G	2010	Ex-post Evaluation	2020	Burkina Faso	Forestry / Forest Preservation	Project for Improvement of Teaching and Training Capacities of l' École Nationale des Eaux et Forêts (ENEF)	1060680
T	2012	Ex-post Evaluation	2020	Laos	Primary Education	Project for Supporting Community Initiative for Education Development (Phase 2)	201100183
T	2012	Ex-post Evaluation	2020	Solomon Islands	Water Supply	The Project for Improvement of Non Revenue Water Reduction Capacity for Solomon Islands Water Authority (SIWA)	201100314
T	2011	Ex-post Evaluation	2020	Cuba	Agriculture / General	Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba	201100319
T	2012	Ex-post Evaluation	2020	Bolivia	Agriculture / General	Project of Capacity Development for Agriculture with Irrigation	201100338
T	2012	Ex-post Evaluation	2020	Palestine	Sewerage	Technical Assistance and Capacity Building Project for the Jericho Sanitation Project	201100421
T	2012	Ex-post Evaluation	2020	Tunisia	Fisheries	The Project for Co-Management of Coastal Fisheries in the Gulf of Gabes	201100481
T	2012	Ex-post Evaluation	2020	Ethiopia	Water Supply	Project for Rural Water Supply, Sanitation and Livelihood Improvement through Dissemination of Rope Pumps (RPs) for Drinking Water	201100485

Type of Assistance	Project Start Year*	Type of Evaluation	Evaluation Year	Country	Sector/Theme	Project Name	Project Number
T	2012	Ex-post Evaluation	2020	Zambia	Agriculture / General	The Food Crop Diversification Support Project Focusing on Rice Production	201100563
T	2014	Ex-post Evaluation	2020	Mali	Measurement / Map	Digital Topographic Mapping Project for the Bamako Metropolitan Area	201100596
T	2012	Ex-post Evaluation	2020	Rwanda	Secondary Education	Project of Strengthening School-based Collaborative Teacher Training （SBCT）	201100625
T	2013	Ex-post Evaluation	2020	Serbia	Energy / General	The Project for Assistance of Enhancement of Energy Management System in Energy Consumption Sectors in the Republic of Serbia	201100639
T	2011	Ex-post Evaluation	2020	Burundi	Government / General	Project for Community Development for Improvement of Livelihood in the Conflict-Affected Areas in the Gitega Province	201100914
T	2012	Ex-post Evaluation	2020	Niger	Primary Education	School for All: The project on support to educational development through community participation	201102856
G	2012	Ex-post Evaluation	2020	Myanmar	Forestry / Forest Preservation	The Project for Mangrove Rehabilitation Plan for Enhancement of Disaster Prevention in Ayeyawady Delta	1161160
T	2012	Ex-post Evaluation	2020	Turkey	Social Infrastructure / General	Capacity Development toward Effective Disaster Risk Management	201200026
T	2012	Ex-post Evaluation	2020	Mozambique	Water Resources Development	Project on Promoting Sustainability in Rural Water supply, Hygiene and Sanitation in Niassa Province	201200049
T	2012	Ex-post Evaluation	2020	Malawi	Banking / Finance	Project for Capacity Enhancement in Public Sector Investment Programming Phase2	201200059
T	2013	Ex-post Evaluation	2020	Malawi	Secondary Education	Project for Strengthening of Mathematics and Science in Secondary Education in Malawi	201200066
T	2014	Ex-post Evaluation	2020	Albania	Environment Issue	Project for the Support of Waste Minimization and 3R Promotion	201200072
T	2013	Ex-post Evaluation	2020	Colombia	Communications / Broadcasting / General	Project on Capacity Development on Information Security Management of Land Information System for Land Restitution Policy Promotion	201200110
T	2013	Ex-post Evaluation	2020	Costa Rica	Environment Issue	Project for Promoting Participatory Biodiversity Conservation	201200130
T	2013	Ex-post Evaluation	2020	Bhutan	Rivers / Erosion Control	Project for Capacity Development of GLOF and Rainstorm Flood Forecasting and Early Warning	201200143
T	2013	Ex-post Evaluation	2020	Paraguay	Forestry / Forest Preservation	Project for Strengthening Integrated Management of Yguazú Lake Watershed	201200148
T	2013	Ex-post Evaluation	2020	Cambodia	Secondary Education	Project for Educational Resource Development in Science and Mathematics at the Lower Secondary Level （STEPSAM3）	201200172
T	2014	Ex-post Evaluation	2020	Pakistan	Vocational Training	Capacity Development of Technical and Vocational Centers in Khyber Pakhtunkhwa	201200533
T	2014	Ex-post Evaluation	2020	China	Environment Issue	The Project for Development of the Capacity in rural waste water treatment	201200560
T	2014	Ex-post Evaluation	2020	Fiji	Rivers / Erosion Control	The Project for the Planning of the Nadi River Flood Control Structures	201202250
T	2014	Ex-post Evaluation	2020	Papua New Guinea	Water Transport / Ships	The Project for Capacity Development of Department of Transport in Port Policy and Administration	201202637
T	2013	Ex-post Evaluation	2020	Indonesia	Machine Tool Industry	Project on Enhancement of Metalworking Capacity for Supporting Industries of Construction Machinery	201202851
G	2012	Ex-post Evaluation	2020	Malawi	Water Resources Development	The Project for Selected Market Centres and Rural Water Supply in Mchinji and Kasungu District	1260280
G	2012	Ex-post Evaluation	2020	Laos	Health / Health Care	Project for Strengthening Health Service Network in Southern Provinces	1260890
T	2014	Ex-post Evaluation	2020	Bangladesh	Industry / General	Project for Development of Economic Zones and Capacity Enhancement of Economic Zones Authority	201300170
T	2014	Ex-post Evaluation	2020	Tanzania	Electrical Power	Project for Formulation of Power System Master Plan in Dar es Salaam and Review of the Power System Master Plan 2012	201300198
T	2014	Ex-post Evaluation	2020	Papua New Guinea	Electrical Power	The Project for Formulation of Ramu System Power Development Master Plan and Lae Area Distribution Network Improvement Plan	201300214
T	2014	Ex-post Evaluation	2020	Pakistan	Agriculture / General	The Project for Capacity Development of Agriculture Extension Services in Khyber Pakhtunkhwa Province	201300542
T	2013	Ex-post Evaluation	2020	Kenya	Roads	The Project for the Strengthening of Capacity on Roads Maintenance Management through Contracting （Phase 2）	201300647
T	2013	Ex-post Evaluation	2020	Viet Nam	Banking / Finance	Enhancing Corporate Finance Management Capacity to Implement SOE Restructuring	201300648
T	2014	Ex-post Evaluation	2020	Maldives	Fisheries	Project for the Formulation of Master Plan for Sustainable Fisheries （MASPLAN）	201300662
T	2014	Ex-post Evaluation	2020	Armenia	Rivers / Erosion Control	Landslide Disaster Management Project	201300669
T	2014	Ex-post Evaluation	2020	Ghana	Primary Education	Project for Supporting Institutionalization of the Pre-Tertiary Teacher Professional Development and Management Policy	201302121
T	2014	Ex-post Evaluation	2020	Bangladesh	Urban Transport	Project on Revision and Updating of Strategic Transportation Plan for Dhaka	201302197
T	2014	Ex-post Evaluation	2020	Cote d'Ivoire	Business Management	The Project for Supporting Formulation of Industrial Sector Policy Focused on Technology Innovation and Dissemination	201302817
T	2014	Ex-post Evaluation	2020	Mongolia	Banking / Finance	Capacity Development Project for Internal Audit Phase 2	201400597
T	2014	Ex-post Evaluation	2020	Sri Lanka	Roads	The Project for Capacity Development on Bridge Management	201400676
T	2014	Ex-post Evaluation	2020	Sri Lanka	Environment Issue	The Project for Monitoring of the Water Quality of Major Water Bodies	201400693
T	2015	Ex-post Evaluation	2020	Ukraine	Measurement / Map	Project for Creation of a National Geospatial Data Infrastructure of Ukraine	201400698
G	2014	Ex-post Evaluation	2020	Saint Lucia	Fisheries	The Project for Improvement of Fishery Equipment and Machinery	1460380
G	2014	Ex-post Evaluation	2020	Pakistan	Sewerage	The Project for Upgrading of Mechanical System for Sewerage and Drainage Services in Gujranwala	1460490
T	2015	Ex-post Evaluation	2020	Nicaragua	Urban Planning / Land Development	Project for Urban Development Master Plan for Managua City	201500322
G	2015	Ex-post Evaluation	2020	Uzbekistan	Health / Health Care	The Project for Improvement of Equipment of Navoi Regional Multidisciplinary Medical Center	1560340
G	2015	Ex-post Evaluation	2020	Bhutan	Agricultural Engineering	The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road	1560710

conducted by Cambodia Office: October 2021

Country Name	**Science Teacher Education Project (STEPSAM2) (2008-2012 Project)** **The Project for Educational Resource Development in Science and Mathematics at the Lower Secondary Level (2013-2016 Project)**
Kingdom of Cambodia	

I. Project Outline

Background	In Cambodia, the education sector reform had been promoted under the Sector-wide Approach since 2000, and the net enrolment rate in primary education dramatically improved to 92%, which was the highest level among the Association of Southeast Asian Nations (ASEAN) countries. However, the retention rate in primary education was only 59.7%, which was the lowest level among the ASEAN countries. In addition, lack of logical and critical thinking and application ability and the low quality of science and mathematics lessons, which would have hampered industrial and economic development as well as other opportunities in the long run, were identified through the program formulate study conducted by JICA. In response, it was necessary to improve the quality of science and mathematics lessons in primary and lower secondary education in the country.
Objectives of the Project	[2008-2012 Project] Through trainings on Lesson Study (LS) and Inquiry-Based Lesson (IBL) for national trainers, trainer's trainings on science by national trainers at all Provincial Teacher Training Centers (PTTCs) and Regional Teacher Training Centers (RTTCs), implementation of LS and experiment by RTTC and PTTC trainers, formulation of In-service Training (INSET) Implementation Plan, and development of handbooks about LS and IBL, the project aimed at improving the quality of teacher training on science in target areas, thereby contributing to enhancement of the quality of teaching capacity of science teachers in the areas. 1. Overall Goal: The quality of teaching capacity of science teachers is enhanced in target areas. 2. Project Purpose: The quality of Teacher Training (Pre-service Training (PRESET) and INSET) on science is improved in target areas. [2013-2016 Project] Through development of Teacher's Guide, trainings for the introduction of the Guide for teachers, revision of the Guide based on its practice at a field level, and formulation and implementation of INSET programmes, the project aimed at strengthening the foundation for Ministry of Education Youth and Sports (MoEYS) to support teachers for science and mathematics lesson improvement at the lower secondary school level, thereby contributing to dissemination of the educational resources developed by the project to other areas through training programmes conducted by MoEYS. 1. Overall Goal: The educational resources developed by the project are disseminated to other areas through training programmes conducted by MoEYS. 2. Project Purpose: The Foundation for MoEYS to support teachers for science and mathematics lesson improvement at the lower secondary level is strengthened.
Activities of the Project	1. Project Site: [2008-2012 Project] • 18 PTTCs (Phnom Penh Special Economic Zone, provinces of Kampong Cham, Kandal, Prey Veng, Takeo, Siem Reap, Banteay Meanchey, Kompong Chhang, Pursat, Svay Rieng, Kampot, Preah Sihanouk, Kampong Speu, Kratie, Kampong Thom, Preah Vihear, Stung Treng, Battambang) • 6 RTTCs (Phnom Penh Special Economic Zone, provinces of Kampong Cham, Battambang, Kandal, Prey Veng, Takeo) [2013-2016 Project] • 6 RTTCs (Phnom Penh Special Economic Zone, provinces of Kampong Cham, Battambang, Kandal, Prey Veng, Takeo) 2. Main activities: [2008-2012 Project] 1) Trainings on LS and IBL for national trainers, 2) Trainer's trainings on science by national trainers at all RTTCs and PTTCs, 3) Implementation of LS and experiment by RTTC and PTTC trainers, 4) Formulation of INSET Implementation Plan, 5) Development of handbooks about LS and IBL, etc. [2013-2016 Project] 1) Development of Teacher's Guide, 2) Trainings for the introduction of the Guide for teachers, 3) Revision of the Guide based on its practice at a field level, 4) Formulation and implementation of INSET programmes, etc. 3. Inputs (to carry out above activities) Japanese Side [2008-2012 Project] 1) Experts: 18 persons 2) Trainees received: 12 persons 3) Training in the third country: 5 persons (Indonesia) 4) Equipment: PCs, projector, laser printer, etc. 5) Local expenses: cost for project activities Cambodian Side [2008-2012 Project] 1) Staff allocated: 24 persons 2) Land and facilities: an office space in MoEYS and meeting/ class rooms for training, seminars, and workshops in National Institute of Education, RTTCs, and PTTCs 3) Local expenses: utility cost

	[2013-2016 Project] 1) Experts: 12 persons 2) Equipment: PCs, copy machine, etc. 3) Local expense: cost for project activities		[2013-2016 Project] 1) Staff allocated: 115 persons 2) Land and facilities: a project office in MoEYS and facilities for training sessions/seminars in Regional Teacher Training Centers 3) Local expenses: utility cost
Project Period	[2008-2012 Project] September 2008 – August 2012 [2013-2016 Project] June 2013 – May 2016(Extended period- May 2016)	Project Cost	[2008-2012 Project] (ex-ante) 385 million yen, (actual) 438 million yen [2013-2016 Project] (ex-ante) 551 million yen, (actual) 519 million yen
Implementing Agency	[2008-2012 Project] Ministry of Education Youth and Sports (MoEYS), National Institute of Education (NIE), Regional Teacher Training Center (RTTC), Provincial Teacher Training Center (PTTC) [2013-2016 Project] MoEYS, RTTC, NIE		
Cooperation Agency in Japan	[2008-2012 Project] PADECO Co., Ltd., Hiroshima University [2013-2016 Project] PADECO Co., Ltd.		

II. Result of the Evaluation

[Special Perspectives to be considered]

(Verification of Continuation Status of the Project Effects for the 2013-2016 Project)

The status of the verifiable indicators for the Project Purpose of the 2013-2016 Project at the ex-post evaluation were verified as the verifiable indicators for the Overall Goal since the project aimed at approval of the Teacher's Guide and the contents of in-service training for teachers by MoEYS as the Project Purpose at the time of project completion and the utilization of the Guide and the performance of training programs using the contents at the time of ex-post evaluation.

1 Relevance

<Consistency with the Development Policy of Cambodia at the Time of Ex-Ante Evaluation >

The projects were consistent with Cambodia's development policies such as the "Rectangular Strategy–Phase II" (2008) positioning human resource development as one of its strategies and emphasizing education sector as a priority, the "Education Strategic Plan (2006-2010) and the "Education Sector Support Project" (2006-2010) clarifying the importance of teacher trainings to improve the quality and efficiency of education, and the "Education Strategic Plan" (2009-2013) putting capacity development of education staff at all levels as the key component and highlighting "Development of Pre and In-service Teacher Training" as one of five prioritized programs.

<Consistency with the Development Needs of Cambodia at the Time of Ex-Ante Evaluation >

The projects were consistent with Cambodia's development needs of improving the quality of science and mathematics lessons in primary and lower secondary education.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The projects were consistent with the "Country Assistance Program for the Kingdom of Cambodia" (2002) setting "support to socially vulnerable people" including education, as one of the priority areas, and also with the "Country Assistance Program for the Kingdom of Cambodia" (2012) listing "promotion of social development" as one of the priority areas.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

[2008-12 Project]

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Through the project, lesson plans and handbooks about IBL and LS on science were developed, and national trainers were fostered enough to provide lessons about IBL and LS on science following the plans and the handbooks. As a result, the quality of science lessons by RTTC and PTTC trainers was improved (Indicator 1), and the quality of science lesson plans of schools in INSET target schools was also considered to be enhanced (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued since project completion. Upon interviewing project stakeholders about science lessons at Teacher Education Colleges (TECs), NIE, RTTCs, and PTTCs, all reported that the quality of the lessons has been significantly enhanced. For instance, before the project, Cambodia faced a difficulty in defining the notion of science education, and national trainers provided science lessons without enough knowledge in the subject. The project addressed such problems by introducing IBL and LS with their lesson plans and handbooks. Furthermore, it was also reported that teachers at INSET-introduced schools have continuously conducted INSET and that the quality of their science lessons and plans has been notably improved.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The achievement status of the Overall Goal could not be verified at the time of ex-post evaluation. Although being recorded for teaching and learning purposes such as online lessons, videotaped lessons have not rigorously used to assess the lessons. However, it was presumed that the Overall Goal has been achieved to a certain extent, as the interviewees for the ex-post evaluation reported that the quality of teaching capacity of science trainers and teachers at primary and lower secondary levels has been enhanced. The reason for this was because the project effects have still continued, which produced the following positive impacts: 1) development of innovative habit for teachers to utilize all available materials in their classes, 2) heightening of basic teaching capacity of teachers, 3) positive feedbacks or reactions from primary and lower secondary students, 4) more opportunities to discuss and exchange teaching experiences among teachers of LS and IBL in regular working group meetings, and 5) integration of LS and IBL into New Generation Schools (NGSs)[1] and education

[1] NGSs were established in 2014 as autonomous public schools with a mandate to innovate education system and improve educational quality. With financial

curriculum.

<Other Impacts at the time of Ex-post Evaluation>

Some other positive impacts were observed at the time of ex-post evaluation. To illustrate, TEC in Phnom Penh has been developing a co-teaching method based on the project outputs, spending one year already. Moreover, the project successfully created a positive culture in Cambodia's science education. As the result of the project, national trainers and teachers came to understand the importance of delivering science lessons with preparation, implementing experiments in science classes, and applying a student-centered method. With such enthusiasm, teachers have continuously conducted research about science and expanded its knowledge individually or in a group (MoEYS has allowed each school to have a group of teachers to discuss and exchange teaching experiences). It should be further noted that there are even some teachers who have replicated LS and IBL to other subjects such as geography and history, according to TEC in Phnom Penh.

[2013-16 Project]

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Through the project, Teachers' Guide and INSET contents (a training implementation manual and a set of handouts) were developed, and MoEYS officially approved the use of them (Indicator 1 and 2). Then, the Guide and INSET contents were distributed to all schools in the target provinces.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued since project completion. The Teacher's Guide and INSET developed by the project and approved by MoEYS have been continuously used at all schools in the target provinces.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of ex-post evaluation. After project completion, 5,000 copies of Teacher's Guide were produced and distributed to non-target schools by MoEYS with a support of the World Bank. INSET contents were also distributed to all RTTCs and TECs and further to teachers who attended trainings there. As a result, the Guide and INSET contents have been used at lower secondary institutions (Indicator 1). However, it should be noted that there are some teachers, particularly in rural schools, who need to spend their own money on photocopying these documents. Training programmes based on the Teacher's Guide and INSET contents have been also performed at all lower secondary institutions (Indicator 2). Furthermore, through observations at the field survey, it was confirmed that LS, IBL, their handbooks, and the Guide have positively influenced teachers' performance and motivation in classrooms at primary and secondary education. On the other hand, it should be noted that the quality of science class at schools in rural areas has been relatively low, regardless of teachers' quality, due to the shortage of labs and experiment materials brought by the lack of the budget.

<Other Impacts at the time of Ex-post Evaluation>

No other positive or negative impact was observed at the time of ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the two projects is high.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td colspan="3">[2008-12 Project]</td></tr>
<tr><td rowspan="2">(Project Purpose)
The quality of Teacher Training (Pre-service Training (PRESET) and INSET) on science is improved in target areas.</td><td>1. The quality of science lesson of RTTC and PTTC trainers marks more than 3 points on a 1-4 scale.</td><td>Status of the Achievement: Achieved (Continued)
(Project Completion)
• As shown in the table below, the quality of science lessons of RTTC and PTTC trainers marked more than 3 points.
<table>
<tr><th></th><th>RTTC</th><th>PTTC</th></tr>
<tr><td>2008 (baseline)</td><td>3.0</td><td>2.4</td></tr>
<tr><td>2012 February</td><td>3.2</td><td>3.2</td></tr>
</table>
(Ex-post Evaluation)
• Upon interviewing project stakeholders about science lessons at TECs, NIE, RTTCs, and PTTCs, all reported that the quality of the lessons has been significantly enhanced.</td></tr>
<tr><td>2. The quality of science lesson plan of schools in target schools for INSET</td><td>Status of the Achievement: Achieved (Continued)
(Project Completion)
• The quality of science lesson plan of schools in INSET target schools was considered to be enhanced.
[Quality of science lesson plan of schools in INSET target schools]
<table>
<tr><th></th><th>Objective</th><th>Organization</th><th>Activity</th></tr>
<tr><td colspan="4">Results of lesson observation by the project</td></tr>
<tr><td>2008 (baseline)</td><td>2.3</td><td>1.5</td><td>1.8</td></tr>
<tr><td>2011 May</td><td>2.1</td><td>1.4</td><td>1.6</td></tr>
<tr><td colspan="4">Results of lesson plan assessment by national trainers</td></tr>
<tr><td>2012 January</td><td>2.7</td><td>2.5</td><td>2.5</td></tr>
</table>
Note: As lesson plan assessment by national trainers was conducted in 2012 for the first time, the results were compared to that of lesson observation by the project.

(Ex-post Evaluation)</td></tr>
</table>

supports from the Government of Cambodia, NGSs operates their labs better and conducts more experiments than other public schools.

		• According to the interviewees for the ex-post evaluation, teachers at INSET-introduced schools have continuously conducted INSET and the quality of their science lessons and plans has been notably improved
(Overall Goal) The quality of teaching capacity of science teachers is enhanced in target areas.	1. The scores of the assessment of videotaped lessons (of trainers and teachers at primary and lower secondary level) are improved based on the scores of Feb. 2010.	Status of the Achievement: Not verified (Ex-post Evaluation) • As videotaped lessons have not rigorously used to assess the lessons, the indicator could not be verified. However, according to the interviewees for the ex-post evaluation, the quality of teaching capacity of science trainers and teachers at primary and lower secondary levels has been enhanced.
[2013-16 Project]		
(Project Purpose) The Foundation for MoEYS to support teachers for science and mathematics lesson improvement at the lower secondary level is strengthened.	1. Teacher's Guide for science and mathematics lesson improvement at the lower secondary level is approved by MoEYS.	Status of the Achievement: Achieved (Continued) (Project Completion) • MoEYS officially approved the use of Teacher's Guide in PRESET, INSET, and lower secondary schools. (Ex-post Evaluation) • Refer to the Indicator 1 for the Overall Goal
	2. In-service training contents to introduce Teacher's Guide to lower secondary science and mathematics teachers is approved by MoEYS.	Status of the Achievement: Achieved (Continued) (Project Completion) • MoEYS officially approved INSET contents (a training implementation manual and a set of handouts). (Ex-post Evaluation) • Refer to the Indicator 2 for the Overall Goal
(Overall Goal) The educational resources developed by the project are disseminated to other areas through training programmes conducted by MoEYS.	1. Status of the use of developed Teacher's Guide	(Ex-post Evaluation) Achieved • 5,000 copies of Teacher's Guide were produced and distributed to non-target schools by MoEYS with a support of the World Bank, and they have been used at all lower secondary institution by teachers who participated in orientation trainings.
	2. Performance of training programmes implemented by RTTC trainers	(Ex-post Evaluation) Achieved • Training programmes based on the Teacher's Guide and INSET contents have been performed at all lower secondary institutions in both the target provinces and non-target provinces.

Source：Terminal Evaluation Report, Project Completion Report, Consultation Report, Questionnaire and interview to TTD, TEC, and RTTCs.

3 Efficiency

For the 2008-12 Project, although the project period was within the plan (ratio against plan: 100%), the project cost slightly exceeded the plan (ratio against plan: 114%). For the 2013-16 Project, even though the project cost was within the plan (ratio against plan: 94%), the project period slightly exceeded the plan (ratio against plan: 103%). The outputs were produced as planned.

Therefore, the efficiency of the overall projects is fair.

4 Sustainability

<Policy Aspect>

The "Education Strategic Plan" (2019-2023) assures that the improvement of the quality of science and mathematics education, especially at primary and lower secondary education, is the sectoral development and reform priority of the government of Cambodia and MoEYS. Additionally, the higher policy framework, such as the "Education Road Map 2030" (2019-2030), supports the "Education Strategic Plan" in the long run. As the project aimed to enhance the quality of science and mathematics lessons, it has been endorsed by such national policies.

<Institutional/Organizational Aspect>

Since project completion, there have been some changes in the organizational structure/setting to improve the quality of teaching at primary and lower secondary education. For example, Phnom Penh and Battambang RTTCs were upgraded into TECs in the period of the "Education Strategic Plan" (2014-2018) to accommodate developed basic teacher trainings from 12+2 (primary school to college) to 12+4 (primary school to university). Moreover, the government of Cambodia expanded NGS system to existing 9 model schools in provinces of Kandal, Kampong Cham, Kampong Speu, and Svay Rieng. NGSs adopt LS and IBL methods. To keep solving its pedagogy issue, the government of Cambodia invested on New Generation Pedagogical Research Center (NGPRC) in 2019 to keep research and provide on-time innovation of teaching methods and trainer networks. Social Communication Networks (SNS) usage among teachers, especially Telegrams, one of SNS application, and improved salary since 2013 are also the key setting institutional environment to promote the sustainability of the project outputs. As can be seen from the continuous status of the project effects and the achievement status of the Overall Goal, Cambodia's primary and lower secondary education have been functional without any major problems in terms of the Institutional/Organizational Aspect, and according to education stakeholders interviewed for the ex-post evaluation, the number of staff in the education has been sufficient overall even though there are some gaps in the number between urban areas and rural areas.

<Technical Aspect>

Nearly 90% of the education stakeholders interviewed for the ex-post evaluation confirmed that the necessary skills and knowledge to improve the quality of teaching at primary and lower secondary education have been sustained. In the background, there are some reasons, such as observations of teacher trainees' classes by RTTC and PTTC trainers after teacher training programs, establishment of a group of teachers in schools to discuss and exchange teaching experiences, holding of regular working group meetings among teachers from schools in the network schools of RTTCs or PTTCs, and introduction of a co-teaching method at TEC in Phnom Penh that allows teachers to teach in team and complement each other for the better quality of education.

<Financial Aspect>

According to the education stakeholders interviewed for the ex-post evaluation, the sufficient amount of budget for teacher training programs has been allocated by MoEYS every year. On the other hand, the budget for experiment in science classes has been relatively low at 2 million Riels per year, and only two experiments per school and per year can be done. Additionally, the budget to follow up the teachers who joined teacher training programs has been provided only in the initial year after the programs so that monitoring and

evaluation of their actual performance in classes beyond the initial year have not been conducted. Also, because of scarce budget, schools in remote areas do not have enough labs and experiment materials. Therefore, it can be concluded that there is room for improvement from the financial perspective.

<Evaluation Result>

In light of the above, problems have been observed in terms of the financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The 2008-2012 project achieved the Project Purpose aiming to improve the quality of teacher training on science in target areas. The Overall Goal aiming to enhance the quality of teaching capacity of science teachers in the areas was not exactly verified with the indicator, but it was judged as partially achieved in the interview. The 2013-2016 project achieved the Project Purpose aiming to strengthen the foundation for MoEYS to support teachers for science and mathematics lesson improvement at the lower secondary level and the Overall Goal aiming to disseminate the educational resources developed by the project to other areas through training programmes conducted by MoEYS. As for sustainability, the lack of budget was confirmed in terms of labs, experiments, experiment materials, and teachers' follow-up. As for efficiency, in the 2008-2012 project, the project cost slightly exceeded the plan, and in the 2013-2016 project, the project period slightly exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- The annual budget for experiment at each school is a welcoming public expenditure under program-based budgeting of the education sector executed by MoEYS. Such allocation links to the strategic purpose of the "Education Strategic Plan" (2019-2023) and results in science education promoted by all RTTCs, PTTCs, TECs, teachers, and schools. At present, MoEYS should rationally address the low level of the budget and should produce a clear incremental commitment/plan.
- MoEYS should consider allocating more budget for post-monitoring and inspection of the teacher training programs in the third or fifth year after the program to ensure that the implementation of LS, IBL, Teacher's Guide, and others such as INSET IP are useful and produce correctly actions on time.
- Teachers have been benefited from the published Teacher's Guide and other manuals developed by the projects. These materials have been regarded as very useful for their capacity development and service delivery. The limited number of the published materials can pose a small motivational problem in the long run, especially when teachers face such an issue and solve it either by photocopying it from other teachers at their expense or by telegram sharing. Thus, MoEYS should consider the support to the publication in the near time to fill the immediate needs. To make the distribution plan appropriately, MoEYS should know deficiencies of the materials beforehand by setting a mechanism to regularly check available resources at the school level. In the medium to long run, MoEYS can consider the digitalization of these materials for the convenient access of RTTCs, PTTCs, TECs, schools, teachers, and other related parties like NGSs.
- Beyond 2023, School-Based Management (SBM) will be intensified to reach its nation-wide target by 2030. At the same time, NGSs will reach 50 schools and the activities of NGPRC will become mature in the pedagogical research and teacher trainer network. In this regard, it is necessary for MoEYS to address a good integration of the project outputs in that changing environment.

Lessons Learned for JICA:

- MoEYS has recently committed to strengthening the teaching method by adopting the student-centered approach. The elements/approaches introduced/developed by JICA project such as IBL, LS, Teacher's Guide have been used and integrated into their official documents. For example, LS has been integrated into the School-Based Mentoring Approach in the Cambodia's Education System. Therefore, in order to secure the sustainability of project effects even after the end of projects, it should be carefully considered at the time of project planning if there is a high likelihood that the effects are actually incorporated into government's policies, not only endorsed by the policies. Also, merits of the project elements/approaches should be explained to the authorities of the implementing agency during the project period.

Biology class at Kandal RTTC

Science class at Dangko Primary School

conducted by Cuba office (March 2021)

Name of country	**Project for reinforcement of certified seed production and extension system for popular rice (2008-2010 Project)** **Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba (2012-2016 Project)**
Republic of Cuba	

I +Project summary

Background of the projects	In Cuba, as the amount of production of rice, a staple food, was less than the demand, to increase the self-sufficiency of rice was one of the important policies of the government. In order to improve the sustainable production of popular rice in the central 5 provinces, which occupied 40% of rice field in the country, JICA implemented a technical cooperation for development planning project "The Study on sustainable technical development for rice cultivation in the central area in the republic of Cuba" (2003-2005). As the usage rate of certified seeds was only 27% (2003) in the production of popular rice, which made lower the quality and productivity of rice production, the study suggested that in order to expand its production the introduction of excellent varieties suited to the characteristics of the area was urgently needed and the improvement of system of certification of seeds for popular rice was needed. On receiving the suggestions of the study, a technical cooperation project, "Project for reinforcement of certified seed[1] production and extension system for popular rice" (2008-2010) was implemented. After the project, toward the use of registered seeds, one of the categories of seeds[2], by more rice farmers, there were challenges of the expansion of production of certified seeds, improvement of technical capacity for seed production of seed production farmers, and improvement of a flow of certified seeds to be distributed to rice farmers. Thus, a technical cooperation project, "Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba" (2012-2016) was undertaken.
Objectives of the project	[2008-10 Project] Though developing a plan of seed production and distribution in order to produce certified seeds, training stakeholders of seed production farms, extension workers, seed inspectors, and leader farmers, conducting training and providing information on the varieties promoted by Grain Research Institute (IIGranos), the project aimed at distributing certified seeds with a plan, thereby contributing to the seed production of excellent varieties by popular rice producers (small scale farmers). 1. Overall goal: The producers of popular rice (small scale farmers) use high quality seeds. 2. Project purpose: Use of the certified seeds II is promoted.
	[2012-16 Project] Through the production of original seeds, basic seeds, and registered seeds based on the registered seed production plan, implementing training to extension workers, conducting technical training of seed production to seed producers and conducting training to Seeds Inspection and Certification System (SICS) inspectors, in the central 5 provinces, the project aimed at increasing the production of registered seeds by trained leader seeds producers, thereby contributing to increase in the rice production and productivity. 1. Overall goal: The rice production is increased by improving productivity in the central zone of Cuba. 2. Project purpose: The amount of certified seeds produced by leader seed producers, who are trained through the Project, is increased in the central zone of Cuba.
Activities of the Project	1. Project sites: 5 central provinces (Cienfuegos, Villa clara, Sancti Spiritus, Ciego de Avila, and Camaguey) (Same project sites for 2008-10 Project and 2012-2016 Project) 2. Main activities: [2008-10 Project] (i) Producing original, basic, and registered seeds, (ii) Elaborating a seed production and distribution plan for producing certified seeds, (iii) Delivering training to extension workers, seed inspectors and leading farmers, (iv) Providing training and information about varieties recommended by Rice Research Institute (IIArroz) (Current IIGranos). [2012-16 Project] (i) Elaborating a rural extension guideline for rice seeds production and extension of rice cultivation techniques (ii) Producing registered seeds based on the production plan of registered seeds, (iii) Delivering training to extension workers, (iv) Delivering training on production techniques of seeds to seed farmers, (v) Delivering training to SICS inspectors. 3. Inputs Japanese side [2008-10 Project] (1) Experts: 5 persons (2) Third country training: 6 persons (Bolivia) (3) Equipment: Computer, projector, portable generator, printer, tractor, harvester, transplanting Cuban side [2008-10 Project] (1) Staff allocated: 9 persons (2) Facility and Land: Office space for experts in IIArroz (3) Local operation cost: Personnel cost, utility cost,

[1] To be certify from the levels of Original seed→Basic seed→Registered seed→Certified seed.

[2] Main seed categories include original seed (produced by the original breeder/institute as original seed stock), basic seed (produced from original seed), registered seed (produced from basic seed), certified seed I (produced from registered seed) and certified seed II (produced from certified seed I).

	machine, rice seed adjusting machine, etc. (4) Local operation cost: Field activity costs [2012-16 Project] (1) Experts: 5 persons (2) Trainees received: 5 persons (3) Equipment: Computer, projector, portable generator, printer, seeder, transplanting machine, etc. (4) Local operation cost: Field activity costs		etc. [2012-16 Project] (1) Staff allocated: 16 persons (2) Facility and Land: Project office, rice seed cultivation field (Total 16 ha), storage for project equipment, construction site for post- harvest treatment facility (3) Local operation cost: Fuel cost for harvesting, import tax of project equipment, preparation cost for constructing facilities, utility cost, etc.
Project Period	[2008-10 Project] Mar. 2008 - Nov. 2010 [2012-16 Project] Apr. 2012 - Apr. 2016	Project Cost	[2008-10 Project] (ex-ante) 190 million yen, (actual) 262 million yen [2012-16 Project] (ex-ante) 310 million yen, (actual) 436 million yen
Implementing Agency	Grain Research Institute (IIGranos) (Renamed from Rice Research Institute (IIArroz) since 2010)		
Cooperation Agency in Japan	None		

II. Result of the Evaluation

1 Relevance

<Consistency with Development plan of Cuban government at the time of preparatory study>

The projects were consistent with development policies of Cuba, including the "Strategic Plan 2005" of Cuban Agricultural Ministry aiming to 63% of rice self-sufficiency rate and "Strategic Projection of Various Crops until year 2015" aiming at doubling the rice yield from 2008 to 2015.

<Consistency with Development needs in Cuba at the time of preparatory study>

The projects were consistent with development needs of Cuba for production of popular rice, that is, an establishment and strengthening of seed production and distribution system for diffusion of certified seeds necessary to the introduction of excellent varieties, and improvement of quality and quantity of the registered seeds production.

<Consistency with Japanese aid policies at the time of preparatory study>

The projects were consistent with the Japan's ODA policies for Cuba at the time of 2008 and 2012[3] emphasizing support for increasing food production as one of its priority areas.

<Evaluation Result>

In the light of above, the relevance of these projects is high.

2 Effectiveness/ Impact

[2008-2010 Project]

<Achievement status of Project Purpose at the time of completion of the project>

The Project Purpose was achieved by the time of project completion. 7 tons of registered seeds were produced by the 2008-2010 project.

<Continuation status of project effects at the time of Ex-post evaluation>

The project effects have been continued by the time of ex-post evaluation. The production and distribution amount of registered seeds increased from 7 tons in 2010 to 1,960 tons in 2019. The institutions producing registered seeds are not only IIGranos, but also Territorial Station of Grain Research (ETIG), "El Corojal" business base unit of Artemisa Agro-Industrial Company of Grains (EAIG), and selected seed producers. The institutions distributing registered seeds are IIGranos, ETIG, "Los Palacios" Experimental Station of National Institute of Agricultural Science (INCA), El Corojal, various Credits and Services Cooperative (CCS), which distribute them to more than 30 cooperatives. The reason for continuing project effects is good quality of registered seeds produced by seed producers.

<Status of achievement of Overall Goal at the time of Ex-post evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. In the targeted 5 provinces 100% of rice producers used certified seeds from 2015 to 2019. Certified seeds were used in 90%, 95% and 97% of producing area in the country in 2017, 2018, and 2019 respectively. According to IIGranos, the reasons for the widespread use of certified seeds are good quality of certified seeds, improvement of productivity by using them, and that IIGranos and Agricultural Enterprise Group (GAG) promoted use of certified seeds and diversification of varieties to rice producers in the country.

<Other impacts confirmed at Ex-post evaluation>

At the time of Ex-post evaluation other impact was not confirmed.

[2012-16 Project]

<Achievement status of the Project Purpose at the time of completion of the Project>

The Project Purpose was achieved by the time of project completion. In the targeted 5 provinces the amount of certified seeds produced by the trained leading seed producers was increased, and the total production of certified seeds (Certified seed-I and II) reached to 7,956 tons in 2013, and 9,824 tons in 2014. Although the data for 2015 was not available, it increased to 11,319 tons in 2016.

<Continuation status of the project effects at the time of Ex-post evaluation>

The project effects have been continued at the time of ex-post evaluation. The certified seeds are produced mainly by EAIGs[4], and the

[3] ODA Data books 2008 and 2012, Ministry of Foreign Affairs, Japan.

[4] While a part of EAIG itself produces seeds, the farmers belong to local producers' organizations such as Basic Units of Cooperative Production (UBPC),

production in the target 5 provinces was 9,229 tons in 2017, 13,502 tons in 2018, and 9,199 tons in 2019, while the project aimed at 2,000 tons annually by 2015. The reason is that the productivity has been improved in many areas due to the improved quality, quantity and variety of provided certified seeds.

<Achievement status of Overall Goal at the time of Ex-post evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. In the 5 central provinces it is assumed that the average productivity of the certified seeds increased by 15% from 2016 to 2019, after the completion of the project. It is due to that seed producers were able to access to good quality seeds of popular varieties, and in recent years they had access to trainings, technical support, extension system and technology, supported by the government.

<Other impact confirmed at the Ex-post evaluation>

No other impacts were observed at the time of ex-post evaluation.

<Evaluation Result>

From above, the effectiveness and impact of the projects is high.

Achievement of Project purpose and Overall goal

Target	Indicators	Achievement
[2008-10 Project]		
Project Purpose Registered seeds are distributed as planned.	7 tons of registered seeds are distributed to UBPC, CCS, CPA and seed producing farmers in the target 5 provinces.	Status of achievement: Achieved (Continued) (At the time of completion of the project) • In August 2010, 7 tons of registered seeds were produced and distributed, in accordance with the Project purpose. (At the time of Ex-post evaluation) • Amount of production and distribution of registered seeds increased from 7 tons in 2010, to 150 tons, 800 tons and 1,960 tons in 2019. The registered seeds are produced by ETIG of IIGranos, "El Corojal" business base unit of Artemisa EAIG, and selected seed producers. Registered seeds are distributed from ETIG of IIGranos, "Los Palacios" Experimental Station, El Corojal, and CCS to more than 30 cooperatives.
Overall Goal The producers of popular rice (small scale farmers) use high quality seeds.	In the targeted 5 provinces by 2015 80% of small-scale farmers producing popular rice use good quality seeds originated from Certified seed II.	Status of achievement: Achieved (Ex-post evaluation) • In the target 5 provinces 100% of producers used certified seeds from 2015 to 2019. The certified seeds were used in 90%, 95%, and 97% of rice acreage of the country in 2017, 2018, and 2019, respectively. • Following a policy to increase rice production, Ministry of Agriculture aims at the use of certified seeds by all rice producers and securing sufficient production of certified seeds for it. Based on the above policy, IIGranos and GAG have been promoting the use of certified seeds and the diversification of varieties to all rice producers in the country. As a result, the stakeholders (research institutes, EAIGs, seed producers, etc.) relating to seed production and diffusion recognized the effectiveness of production and diffusion of certified seeds (the use of good quality certified seeds and subsequent improvement of productivity).
[2012-16 Project]		
Project Purpose The amount of certified seeds produced by leading seed producers, who are trained through the Project, is increased in the Central zone of Cuba.	2.000 tons of certified seeds are produced in the 5 central provinces of Cuba in 2015.	Status of achievement: Achieved (Continued) (At the time of completion of the project) • The amount of production of certified seeds (Certified Seed-I and II) in the 5 central provinces increased to 7,957 tons in 2013, 9,824 tons in 2014, and 11,319 tons in 2016 (the data for 2015 was not available). (At the time of Ex-post evaluation) • The amount of certified seeds produced in the target 5 provinces by EAIGs, producers organizations and farmers was 9,229 tons in 2017, 13,502 tons in 2018, and 9,199 tons in 2019. The usage rate of certified seeds in the country increased to 95% and 97% in 2018 and 2019, respectively. By improving the quality of seeds and training the personnel of SICS, the rate of disqualified seeds is about 10% a year.
Overall Goal The rice production is increased by improving productivity in the central zone of Cuba.	The average yield of certified seeds is increased 15% by 2018 compared with the one at the end of the project in the 5 central provinces of Cuba.	Status of achievement: Achieved (At the time of Ex-post evaluation) • Considering that the average productivity (around 5 t/ha) of the certified seeds from 2016 to 2019 and the one (around 4.04-4.65 t/ha) in the target 5 provinces during the implementation of the Project, an increase of about 15% is assumed to have been achieved. • Recently, with the support from the government, producers gained access to trainings, technical support, diffusion system and technology, and the knowledge

Agricultural Production Cooperative (CPA) and Credit and Service Cooperative (CCS) produce certified seeds. EAIG provides technical extension services, collaborating with ETIG, and agricultural input necessary for the producers' organizations and farmers to produce seeds. Also, EAIG collects the produced seeds and distributes to local rice producers as certified seeds, after drying and processed accordingly.

		and technology of seed producers and institutions have been improved. By the diffusion of seed production technology, the selection and adoption of adequate varieties suited to land conditions have been proceeded, which has promoted the development and seed production of adequate varieties. As a result, seed producers have gained access to good quality seeds of popular varieties.

Source: Report of Terminal evaluation, Answers to the questionnaire to IIGranos, Information provided by GAG, IIGranos, and Japanese experts in charge of current technical cooperation.

3 Efficiency

For the 2008-10 Project, although the project period was within the plan (ratio against plan: 88%), the project cost exceeded the plan (ratio against plan: 138%) due to the increase of project cost because of additional dispatch of Japanese experts, etc. For the 2012-16 Project, although the project period was as planned (ratio against plan: 100%), the project cost exceeded the plan (ratio against plan: 135%) due to a delay in the construction of a post-harvest treatment facility and an increase in the construction cost. Outputs of both projects were achieved as planned.

From the above, the efficiency of the overall projects is fair.

4 Sustainability

<Policy Aspect>

"Rice Seed Production Program" plans annually the planting area, yield and production of certified rice seeds with the objective of assuring the adequate quality and necessary amount of certified rice seeds for the rice production of the country, and "Seeds Policy (2020-2030)" aims for 100% use of certified seeds in all domestic agricultural production by 2030. Increasing rice production for food security and the use and production of certified seeds to achieve it are described as the priorities for Cuba. The undertakings of these Projects are assumed to continuously contribute to realization of the current national policies even after the termination of the Projects.

<Institutional/Organizational Aspects>

Based on the achievement of the project in the strengthening of rice seeds production technique, a technical cooperation project "The Project on Improvement of Agricultural Extension System for Grain Production in Cuba" (2017~2022) has been under implementation, with the objective of strengthening the technical extension system for rice, frijol, and corns producers. This project targets grain-producers in 8 provinces including 5 provinces targeted by the 2012-16 Project and Island of Youth special municipality, and its implementing agency is IIGranos as well. In this project, training of trainers (TOT) is provided to extension workers of the ETIG of IIGranos, and then the trained extension workers are expected to develop their activities in alliance with agricultural companies' technical officers (potential extension workers), technicians of producers' organizations and cooperating farmers, providing necessary training for them.

The system of production, inspection, distribution and use of registered and certified seeds which was established by the Projects has been disseminated nationwide through extension workers at the time of the ex-post evaluation. In IIGranos, while it had 7 extension officers assigned at the time of the terminal evaluation of the 2012-2016 Project, currently 42 persons in total (25 extension officers and 17 researchers/technicians) are taking roles of research and extension related to rice production, and the number of personnel engaged in the promotion and extension system developed by the projects is considered sufficient. 23 agricultural state-owned companies have 5 extension officers each assigned to implement the extension activity in model farms on a trial basis, and it is planned to extend it to other areas in the future. These companies are considered as participants and beneficiaries of this project. In this project, 250 farmers are selected as cooperating extension farmers, and they are also participants and beneficiaries. The information exchange and sharing are promoted and strengthened among extension workers, between extension workers and producers and among producers.

<Technical Aspect>

The specialists and researchers of IIGranos have maintained knowledge and skills related to the rice cultivation through training, self-learning and studying in post-graduate schools. In the above-mentioned on-going technical cooperation project, IIGranos is taking a leading role to deliver trainings to leading seed farmers, and their knowledge and skills are maintained and updated. The manuals and guides prepared by the projects, such as "Manual of agricultural extension for production and diffusion of certified seeds of rice in Central zone of Cuba", "Field guide for rice cultivation", "Manual of production of rice seeds", and "Technical instructions for rice cultivation", have been used as training materials by IIGranos, other institutions under Ministry of Agriculture and Ministry of Higher education, agricultural companies and producers. The manuals for rice cultivation techniques have also been revised, including the addition of varieties (the current project is also supporting the revision). In addition, restrictions on import of spare parts and financial problems have occurred due to economic sanctions by the US. Although it is difficult to purchase spare parts for equipment provided by this Project, when the provided equipment breaks down, it has been dealt with creatively by using spare parts domestically available.

<Financial Aspect>

The financial source of IIGranos includes the budget allocated by the national budget of Financial Fund of Science and Innovation (FONCI), the budget of the agricultural companies allocated by GAG (occupying 60% of the overall budget), and the revenue from the provision of services and the sale of seeds, among others. The budget of IIGranos has increased compared to the one at the time of the project completion. Construction of the training building of IIGranos, which had been suspended, has resumed this year, and measures to reduce necessary budget for activities have been taken, including the cost sharing in kind such as food and venue, with participating agricultural companies and cooperatives.

<Evaluation Result>

In the light of above, the sustainability of the effects though the projects is high.

5 Overall evaluation

The 2008-10 Project achieved project purpose which aimed at planned distribution of registered seeds and achieved overall goal which aimed at utilization of high-quality seeds by popular rice producers. The 2012-16 Project achieved project purpose which aimed to increase the production of certified seeds by trained leader seed producers in the central 5 provinces and achieved overall goal which aimed to increase the yield of certified seeds and rice production. With reference to sustainability, restrictions on the import of spare parts and financial problems have occurred due to the economic sanctions by the US, which made difficult for them to purchase spare parts, but they deal with it using domestic spare parts. IIGranos has sufficient personnel and technical officers and researchers of related institutions have

maintained knowledge and skills of rice cultivation through training and self-learning. Supported by the on-going project, the knowledge and skills of stakeholders are maintained and updated. With reference to efficiency, the duration of the project for the 2012-16 Project was as planned, but its project cost was significantly exceeded.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III Suggestion / learning

Recommendations for Implementing Agency:

- It is expected to deliver necessary technical training sustainably by completing the construction of training building of IIGranos to utilize it for future training, and continuing and extending the measures such as partial cost-sharing in alliance with participating companies etc.

Lessons Learned for JICA:

- Strengthening of the linkage between the research institutions for seed development and producers is one of the achievements and the lessons of this Project. The ongoing project which follows this Project took up the undertaking of this Project as a model of agricultural extension system. Research institutions on agricultural products other than rice are interested in this Project so that IIGranos have actively exchanged opinions with other research institutions. Also in the policy of agricultural extension being drafted by the government the undertaking of this Project is being referred. (Ex-Director of IIGranos presented the system of agricultural extension based on the experience of this Project in the meeting attended by the President.).
- These projects were highly consistent with the strategy of Cuban government aiming to increase seed production and dissemination for the improvement of self-sufficiency of rice. With the result of implementation of the projects in two phases, 100% dissemination rate of certified seeds in the target 5 provinces (since 2015) and 97% at national level (in 2019) was achieved for rice production. Since it was the first full-scale technical cooperation for Cuba, the cooperation was planned as phase projects in divided period, and set the achievable goal within the each projects. In order to correspond to the policy and needs of the partner country, conducting the analysis of the overall challenges in seeds production, realistic goals that are achievable in a timeframe of single project were set in each phase (phase 1: the planned distribution of registered seeds, and phase2: the increase of certified seed production), which derived self-help efforts of the counterpart institution. The subsequent phase was started after taking a certain period between a phase to another and confirming the independent efforts of the counterpart institution, As a result, the sustainability of the projects was enhanced. The achievement of concrete goals in each phase and sustainable efforts of Cuban side triggered the subsequent phase of cooperation, which led further sustainable and independent efforts of counterpart institution. It is important to have medium- to long-term vision in project formulation and management, conduct adequate project monitoring and target management at each stage, and shift carefully toward a next phase depending on the degree of capacity development of implementing institutions.
- With the extension of production techniques, the selection and adoption of various adequate varieties suited to different land conditions were progressed, and the seed production of adequate varieties was promoted. These made rice producers possible to access to good quality seeds of popular varieties suited to their needs, which promoted the dissemination of certified seeds. In order to extend the seed production from registered seed to certified seed, it was important to have collaboration and communication between research institutions and leader farmers (local exemplary farmers who engage in the certified seeds production) in relation to the development of adequate seeds suited to each area and the extension of seed production techniques. Such communication was promoted through the preparation of learning materials in cultivation practices, training sessions, and the farm demonstration in these projects. By seeking close communication between research institutions for seed development and producers, a positive cycle described above is considered to have arisen. Therefore, it is considered important to strengthen the linkage between the research and the agriculture extension.

Training materials prepared by the project.

Experimental field by leader seed producer
(Sancti Spiritus Province)

conducted by Afghanistan Office, September, 2021

Country Name	[Phase 1] Reproductive Health Project [Phase 2] Reproductive Health Project in Afghanistan Phase 2
Islamic Republic of Afghanistan	

I. Project Outline

Background	In Afghanistan, access to reproductive health (RH) services was difficult, being associated with the social, cultural, and physical issues unique to Islamic society, lack of skills of health and medical personnel, and weak health systems. Under these circumstances, it was urgent to improve RH policies and guidelines and strengthen policy implementation structures. The Ministry of Public Health (MoPH) established the Reproductive Health Directorate (RHD) in January 2004 to address such issues, and Phase 1 of this project (2004–2009) was implemented to improve the capacity of RH officers (mainly RHD staff) and service providers in the capital Kabul. However, further improvement of the management capacity of the RHD and RH officers in provinces was found necessary, and Phase 2 (2010–2015) was implemented.
Objectives of the Project	The project aimed to enhance the effectiveness and efficiency of RH program management by RHD through establishing the National RH Program, establishing the in-service training mechanism, enhancing the RH system in Urban Kabul, and strengthening the capacities of RHD and Provincial Reproductive Health Officers (PRHOs), thereby enhancing the quality of RH services. [Phase 1] 1. Overall Goal: The coverage of quality maternal and newborn health services is expanded. 2. Project Purpose: The capacity of RHOs and RH service providers to provide necessary services based on the Basic Package of Health Services (BPHS) and Essential Package of Hospital Services (EPHS) is improved. [Phase 2] 1. Overall Goal: The quality of RH service is enhanced. 2. Project Purpose: RHD and PRHOs manage the RH program more effectively and efficiently.[1]
Activities of the Project	1. Project Site: Afghanistan 2. Main Activities: [Phase 1] (1) National RH program: develop job descriptions of central RH officers (RHOs) and PRHOs; conduct training for central RHOs and PRHOs; develop a mechanism of- and implement supportive supervision; implement a quality assurance program of Kabul BPHS facilities; develop technical protocols for EPHS; etc. (2) In-service Training (IST) mechanism: establish the Training Department in Malalai Hospital and the Training Center in Dasht-e Barchi District Hospital; develop the Continuum of Care (COC) Learning Resource Package (training materials); develop the Guideline for Quality Management for IST; etc. (3) RH system in Urban Kabul: develop the Urban Health Plan in Kabul City; conduct monitoring and supervision (M&S); etc. [Phase 2] (1) Policy formulation capacity: revise the National RH Policy, the National RH Strategy, and RH-related guidelines/protocols with development partners; monitor and supervise the implementation of them; etc. (2) Coordination capacity: strengthen the coordination mechanism within MoPH and with development partners; etc. (3) Monitoring and evaluation (M&E) capacity: develop the M&E Guideline and tools with development partners; conduct M&E (not implemented); etc. (4) IST capacity: review the Guideline for Quality Management for IST and develop the National IST Guide; develop the National Reproductive Health Training Management Strategy; develop the training needs assessment (TNA) mechanism; plan and implement annual IST plans (not implemented); etc. 3. Inputs (to carry out above activities) Japanese Side [Phase 1] * As of Terminal Evaluation 1) Experts: (Long-term) 8 persons; (Short-term) 13 persons 2) Trainees received: (Japan) 21 persons; (Cambodia, Indonesia, Pakistan) 18 persons 3) Equipment: Vehicles; photocopier; training materials; drug supplies; etc. 4) Operation cost [Phase 2] * As of Terminal Evaluation 1) Experts: (Long-term) 2 persons; (Short-term) 1 person; (Local consultants) 4 persons 2) Trainees received: 11 persons Afghanistan Side [Phase 1] 1) Staff allocated: 38 persons 2) Land and facilities: Office for Japanese experts 3) Operation cost: Cost for materials and consumables [Phase 2] 1) Staff allocated: 49 persons 2) Land and facilities: Office space for Japanese experts and local consultants; Meeting

[1] As for the Project Purpose, the agreement with the Afghan side (in English) on Phase 2 states that "RHD manages the RH program more effectively and efficiently," without mentioning PRHOs. However, the Japanese translation of the same purpose in the Japanese reports mentions "RHD and PRHOs," and both the English and Japanese versions of the project plan include an indicator to measure the administrative management capacity of PRHOs. Therefore, in this report, the Project Purpose is as in the JICA reports in Japanese.

	3) Equipment: Equipment for emergency obstetrics at 5 hospitals and technical training and training management at regional training centers 4) Operation cost		Rooms 3) Operation cost: personnel costs, electricity and heating expenses
Project Period	[Phase 1] September 2004 – September 2009 [Phase 2] May 2010 – May 2015	Project Cost	[Phase 1] (ex-ante) 500 million yen, (actual) 622 million yen [Phase 2] (ex-ante) 350 million yen, (actual) 260 million yen
Implementing Agency	Reproductive Health Directorate (RHD)* of Ministry of Public Health (MoPH); Kabul Provincial Health Directorate (KPHD) (Phase 1 only) * RHD was reorganized to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Directorate after project completion.		
Cooperation Agency in Japan	International Medical Center of Japan (Phase 1 only)		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, we were unable to conduct a field survey. Therefore, this evaluation is based on the information provided by the implementing agency and secondary data. For the same reason, detailed information was not available. Therefore, indicators for which sufficient data for verification were not available were determined to be "not verifiable."

<Special Perspectives Considered in the Ex-Post Evaluation>

- Since Phase 1 and Phase 2 have more or less similar Overall Goals (RH service enhancement) and Project Purposes (RH capacity building), respectively, we evaluated the two phases together by regarding them as an integrated project. We used the Overall Goal and Project Purpose of Phase 2 as those of the integrated project. To assess the achievement of these objectives, we used the indicators for Phase 2 with the use of the indicator for Phase 1 as the supplementary information.

1 Relevance

<Consistency with the Development Policy of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1, this project was consistent with the MoPH's basic policy (2002), namely, "providing basic health services broadly and equally," and the following six priority areas: 1) Reduce under-five infant mortality; 2) Reduce maternal mortality; 3) Control malnutrition; 4) Control infectious diseases; 5) Health care services; 6) Capacity building of human resources necessary to provide effective and efficient health care services. At the time of ex-ante evaluation of Phase 2, this project was consistent with the Afghanistan National Development Strategy (2008–2013), in which the reproductive and child health program was given high priority.

<Consistency with the Development Needs of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1 and Phase 2, this project was consistent with the developing needs for improving the capacity of central and provincial RH officers as described in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1, assistance in the health sector was a sub-area of "reconstruction and restoration," one of the three priority areas of Japanese assistance for Afghanistan as of 2004. At the time of ex-ante evaluation of Phase 2, based on the economic cooperation policy dialogue in July 2009, the Japanese Government announced the four priority areas of assistance, one of which was "basic living such as education and health."[2]

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the time of project completion. During the Phase 1 period, the capacity of RHD was improved as manifested by the outputs such as the development of the National RH Program (for the implementation of the National RH Strategy (2006–2009)) including monitoring and supportive supervision, and a proposal on IST mechanism. Indicators for RH services provision and management became better collected and reported, while the data analysis by RHD was not thoroughly conducted reportedly due to lack of personnel (Supplementary Information). By the end of Phase 2, RHD, with the support of this project and other development partners, revised the National RH Policy and Strategy (2010–2015) to the National RH Policy and Strategy (2012–2016) and reviewed and revised national RH guidelines subsequently (Indicators 1 and 2). At the provincial level, however, no information is found on whether PRHOs started M&E according to the M&E Guideline developed by the project (Indicator 3). Also, IST based on the new guideline developed by the project was not commenced during the project period since the National IST Guide, the new guideline, was still in editing, and annual training plans based on the Guide were not prepared by the time of project completion (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project's effects partially continued to the time of ex-post evaluation. After project completion, RMNCAH Directorate (previously RHD) was involved in monitoring activities and reviewing RH-related policies and related activities. At the provincial level, PRHOs conducted monitoring using checklists of MoPH/RMNCAH Directorate, which was possibly part of the project's M&E Guideline. Regarding training, RMNCAH Directorate established an active training department and continuously conducted IST based on the National IST Guide with development partners' financial support. Malalai Hospital, where Phase 1 of the project had established a training center, also continued to provide the IST.[3] At the same time, it is not clear to what extent this training enabled the deployment of skilled birth attendants at public primary health care facilities in Afghanistan.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was achieved by the time of ex-post evaluation. The Health Management Information System (HMIS) data show improvement in all the designated indicators (related to RH services quality), mostly achieving the targets. According to RMNCAH

[2] Source: Ministry of Foreign Affairs, ODA Country Data Book 2004, 2009.

[3] However, Dasht-e Barchi District Hospital (the other hospital where Phase 1 of this project established a training center) did not continue the IST as it was handed over to Médecins Sans Frontières (MSF).

Directorate, the improved RMNCAH capacity in M&E paved the way for improving services. Among the indicators, the percentage of women receiving antenatal care (ANC) four times (Indicator 4) increased sharply from 2018 to 2019 (although the degree of improvement before and after the project could not be verified due to different data sources). One of the reasons for this increase could be that the MCH Handbook, which JICA disseminated in cooperation with other development partners, was launched in 2018, ensuring that multiple ANC is recorded. The project contributed to improving this indicator by developing a coordination mechanism among partners for the dissemination of the MCH Handbook, as shown in the next section.

<Other Impacts at the time of Ex-post Evaluation>

No adverse impacts have been observed. As a positive impact, RMNCAH Directorate pointed out that some of the outputs of this project, i.e., RH Task Force and Technical Advisory Group (TAG), paved a way to engage all partners in the RH sub-sector to be engaged, contribute, and learn, which led to the enhanced efficiency of maternal and child health (MCH) projects. As a notable example, the TAG meeting of the MCH Handbook not only attracted partners but also worked as a platform to link different departments of MoPH to work together. At the same time, RMNCAH Directorate is taking a more proactive role in the management and monitoring of projects with the capacity to plan and execute radical projects. As a result, the MCH Handbook implementation took place in a short time, and RMNCAH Directorate was able to expand it to most parts of Afghanistan, which is unique among the countries that implemented the same initiative at a relatively slow pace.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) RHD and PRHOs manage the RH program more effectively and efficiently.	Indicator 1: Based on the results of M&E, the RH strategy and planning document are reviewed periodically and revised by RHD when necessary.	Status of the Achievement: achieved (continued) (Project Completion) - RHD revised the National RH Policy and Strategy (2010–2015) to the National RH Policy and Strategy (2012–2016) based on Afghanistan Mortality Survey (AMS) 2010 with the support of this project and other development partners. (Ex-post Evaluation) - RMNCAH Directorate reviewed the RH Strategy, policies on MNH, and the RMNCAH communication strategy based on the results of M&E.
	Indicator 2: RHD is involved in policy planning and research protocol making related to RH.	Status of the Achievement: achieved (continued) (Project Completion) - RHD reviewed and revised RH national guidelines in individual fields (maternal and newborn health (MNH), national maternal and neonatal death review (M&NDR), pregnancy, childbirth, postpartum and newborn care (PCPNC), clinical gynecology protocols, and M&E), which were approved by MoPH/RHD, with the support of this project and other development partners. (Ex-post Evaluation) - RMNCAH Directorate was involved in developing tools such as Balanced Scorecard, Demographic and Health Survey, Afghanistan Health Survey, BPHS/EPHS revision, and Quality of Care Assessment.
	Indicator 3: M&E (including Monitoring and Supervision) is conducted by PRHOs according to the M&E guideline in 80% of 34 provinces.	Status of the Achievement: not verifiable (not verifiable) (Project Completion) - The Dari version of the new M&E Guideline was completed, while the Pashto version was in process. RHD introduced the Guideline to PRHOs at a workshop in December 2014 mainly supported by UNICEF and this project. - PRHOs were assigned in 30 out of 34 provinces (88.2%), but there is no information on how many of them used the new M&E Guideline. (Ex-post Evaluation) - The Pashto version of the new M&E Guideline was not completed reportedly due to lack of resources (i.e., financial resources to outsources for the translation and human resources to do the final editing and proof reading). - Although the exact numbers were not be able to be confirmed, PRHOs conducted monitoring at the provincial levels, and RMNCAH Directorate received their reports accordingly. It was reported that they used an available checklist prepared by MoPH/RMNCAH Directorate that was finalized in 2014. Therefore, although it is most likely that it was part of the M&E Guideline developed under this project, there is no solid proof.
	Indicator 4: 90% of public primary health care facilities have skilled attendants who have been trained according to the RHD's in-service training guidelines.	Status of the Achievement: not achieved (not verifiable) (Project Completion) - The project supported the intensive training courses on emergency obstetric care three times with 80 participants for capacity building of skilled birth attendants in 2014. - However, as National IST Guide was still in editing, annual IST plans were not prepared. Accordingly, IST based on the Guide was not commenced. The work was delayed due to the time taken for the policy formulation support activities. (Ex-post Evaluation) - RMNCAH Directorate established a training department and continuously conducted 26 modules of the IST based on the National IST Guide with development partners' financial support. From 2015 to date, the IST was provided to participants from 34 provinces of Afghanistan. - From 2015 to date, a cumulative total of 7,124 midwives received RMNCAH-related training,

		but it is not clear how much they contributed to the achievement of this indicator due to lack of data. - The National Reproductive Health Training Management Strategy developed under the project was not used. After the project completion, MoPH made a general training guide, and RMNCAH was asked to use that instead.
(Overall Goal) The quality of RH service is enhanced.	Indicator 1: The percentage of institutional deliveries increase from 32.4% (AMS 2010) to 45% (2016).	(Ex-post Evaluation) achieved 2015: 55% / 2016: 58% / 2017: 61% / 2018: 71% / 2019: 76% Source: HMIS
	Indicator 2: The percentage of deliveries attended by skilled birth attendants increase from 34% (AMS 2010) to 50% (2016).	(Ex-post Evaluation) achieved 2015: 57% / 2016: 60% / 2017: 62% / 2018: 63% / 2019: 78% Source: HMIS
	Indicator 3: The percentage of health facilities with SBA (HMIS 2010). Baseline 2012: 68%, Target 2016: 80%	(Ex-post Evaluation) achieved 2015: 90% / 2016: 94% / 2017: 93% / 2018: 99% / 2019: 92% Source: HMIS
	Indicator 4: The percentage of women receiving antenatal care (ANC) four-time increases from 16.1% (AMS 2010) to 30% (2016).	(Ex-post Evaluation) not verifiable 2015: 2.30% / 2016: 2.59% / 2017: 2.05% / 2018: 1.89% / 2019: 9.94% Source: HMIS Note: According to Afghanistan Demographic and Health Survey 2015, 18% of women had at least four ANC visits national average from which in urban settings it is 32%. The data presented in the above table is from HMIS. There is a general problem of data quality. Many women who come for ANC visit lose their visiting cards and the health providers do not bother to find the past record. So even it is the second or third time of ANC, it is considered the first visit. Because of this the number of first ANC is always high but the 4+ is always low. From this and the trend of other indicators (such as Indicator 1), it can be inferred that there has been improvement for this indicator as well, but this cannot be verified from the data.
	Supplementary Information: No. of people who have benefited from the RH services at Comprehensive Health Centers (CHCs), CHCs+, District Hospitals (DHs) and hospitals	(Ex-post Evaluation) achieved 2015: 2,939,195 / 2016: 3,150,248 / 2017: 3,134,314 / 2018: 3,301,790 / 2019: 4,157,152 Source: HMIS

Source: Terminal evaluation reports, questionnaire and interviews with RMNCAH Directorate, HMIS data

3 Efficiency

While the project period was as planned, the project cost slightly exceeded the plan (ratio against the plan: 100% and 104%, respectively). The Outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Current policies such as the Afghanistan National Peace and Development Framework 2017–2021, the National Health Strategy 2016–2020, and the RMNCAH Strategy 2017–2021 support the activities of RMNCAH.

<Institutional/Organizational Aspect>

Under MoPH, RHD was changed to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Directorate by a merger of RHD and Child Health Department. According to RMNCAH Directorate, this new structure is working, but the staff is not sufficient. At the central level, due to the low level of salary of civil servants, qualified staff cannot be hired. At the provincial level, the number of staff is not sufficient; for example, there are around 200 health facilities for one RH officer, which is difficult to be adequately monitored.

<Technical Aspect>

According to RMNCAH Directorate, the technical level of relevant personnel to sustain the project effects are partially secured. There is some high-quality staff with a good set of skills and knowledge that is mainly supported by development partners. However, there is some other staff that is civil servants in the regular budget payroll. They are either with no experience or with low motivation.

<Financial Aspect>

According to RMNCAH Directorate, the financial condition to sustain the project effects is partly secured with MoPH's regular budget, which is not sufficient, and the contribution of development partners such as UNICEF, WHO, JICA, USAID, UNFPA, and AFGA.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

This project, consisting of Phase 1 and Phase 2, partially achieved the Project Purpose of enhancing the effectiveness and efficiency of RH

program management by RHD (currently RMNCAH Directorate) by the time of Phase 2 completion. The project's effects have partially continued after project completion, especially in terms of program management and training capacity of RMNCAH Directorate. The achievement of the Overall Goal of enhancing the quality of RH services was then achieved. Regarding the sustainability, problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency, such as insufficient personnel and budget. As for the efficiency, the project cost slightly exceeded the plan. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Using of monitoring data to show progress, celebrate achievements and taking action based on the finding is a good incentive for people involved in monitoring (monitors and clinical staff). It encourages provincial RMNCAH staff to engage in more systematic monitoring and data collection processes and use of guidelines to developed by the project.

Lessons Learned for JICA:

The RMNCAH task forces and Technical Advisor Groups not only engages development partners to be part of it but also facilitate communication between different directorates of MoPH. On the other hand, the task forces and TAGs helps the management capacity of RMNCAH as a result of extracting the experience of partners as well as taking facilitating role by RMNCAH in such meetings. Although the predecessors of these coordination mechanism between MoPH and development partners existed before the project, the project set as one of its outputs the strengthening of the coordination capacity of the implementing agency, which was not sufficient in the existing mechanism. The project supported the implementing agency to take initiatives (planning and convening meetings, preparing reports, etc.) as their daily work in the reorganized mechanism. At the same time, the project also supported the review of proposals by the implementing agency by ensuring that proposals for new RH activities in Afghanistan are examined and discussed in task force meetings before approval for implementation by MoPH. In this way, designing the support for coordination by the agency in charge by building on existing coordination mechanisms, making it a routine task for the agency, and thereby facilitating that the agency's coordination capacity would increase as it carried out the task, were effective in areas where the cooperation of many development partners was essential (such as MCH/MCH Handbook).

- One of the Project Purpose indicators could not be verified because there was not enough information in the existing reports prepared before the completion of the project. On the other hand, although the quality of some of the data should be questioned, data for the Overall Goal indicators were available from established health statistics. In order to correctly grasp the project effects and fulfill accountability, project implementers should try to obtain and report data exactly as specified in the indicators during the M&E work, and also establish indicators and a monitoring system that enables easy monitoring of the data after the completion of the project.

A woman received her MCH HANDBOOK in a Heath Facility in Badghis Province

Name of country	**Project for Sustainable Management of Coastal Fisheries Resources (Project 2005-2010)**
Republic of Tunisia	**Project for Co-Management of Coastal Fisheries in the Gulf of Gabes (Project 2012-2016)**

I +Project summary

Background of the projects	Coastal water of southern Tunisia, especially the Gulf of Gabes, is known not only as good fishing grounds but also as important nursery grounds of fish juveniles in the Mediterranean Sea where seagrass bed develops well. However, recently overfishing and destruction of seagrass bed have been caused by illegal fishing, and consequently catch of demersal fish has dramatically decreased in the area. On the other hand, a cooperation system among fisher's organization, local people and the governmental organizations was insufficient and actions for conservation of environment of fishing grounds were ineffective. In addition, the restrictive regulations were not compiled due to lack of measures to supplement the fishers' income against the fishing control.
Objectives of the project	[Project 2005-2010] Through conservation and rehabilitation of seagrass bed being demonstrated with participation of fishers in the selected project sites, experimental activities of stock enhancement being promoted, the plan to diversify income source of fishers being elaborated on the basis of project activities, technical exchanges with neighboring countries being promoted to practice the coastal fisheries resource management, the project aimed at development of models of coastal fisheries resources management for sustainable use of demersal fish in the selected project sites, with participation of fishing communities, thereby contributing to adaption of the models of coastal fisheries resource management for sustainable use of demersal fish around the southern coastal zone of Tunisia, with participation of fishing communities. 1. Overall goal: Models of coastal fisheries resource management for sustainable use of demersal fish are adapted around the southern coastal zone of Tunisia with participation fishing communities. 2. Project Purpose: Models of coastal fisheries resource management for sustainable use of demersal fish are developed in the selected project sites, with participation of fishing communities.
	[Project 2012-2016] Through enhancement of capacity of stakeholders to implement fisheries co-management, formulation of coastal fishery resource management plan (CFRMP) based on the information on fishery resources/eco-system, fishing operation and socio-economic aspects of the coastal communities, and verification of viability of CFRMP in the target areas, the project aimed at practice of co-management of coastal fishery resources in the target areas of the Gulf of Gabes, thereby contributing to extension of the practice of the co-management of coastal fishery resources throughout the Gulf of Gabes. 1. Overall Goal: The practice of co-management of coastal fishery resources is extended throughout the Gulf of Gabes. 2. Project Purpose: Co-management of coastal fishery resources is practiced in the target areas of the Gulf of Gabes.
Activities of the Project	1. Project sites: [Project 2005-2010] Mahares, Zarat, Ajim, Kraten and Ataya (Kerkenah Island) [Project 2012-2016] Zabboussa, Skhira (Sfax governorate), Ghannouch, Metouia, Zarat (Gabes governorate), and Hassi Jerbi, Zarzis (Medenine governorate) in the Gulf of Gabes 2. Main activities: [Project2005-2010] i) Demonstration of conservation and rehabilitation of seagrass bed in the selected project site, ii) Promotion of experimental activities of stock enhancement, iii) Elaboration of a plan to diversify income source of fishes based on project activities. [Project 2012-2016] i) Establishment of Local CFRMP Committees and implementation of guidelines for coastal fisheries co-management, ii) Elaboration of draft of CFRMP in each pilot site, iii) Implementation of drafted CFRMP and extensions of CFRMPs in the target areas. 3. Inputs Japanese side [Project 2005-2010] 1) Experts:12 persons 2) Trainees received: 10 persons 3) Equipment: pH meter, electric current meter, depth meter, water quality checker, portable GPS, microscope, digital camera, video camera, etc. 4) Operation cost: Cost for consumable, installation of facilities and equipment of INSTM [Project 2012-2016] 1) Experts: 12 persons Tunisian side [Project 2005-2010] 1) Staff allocated: 22 persons 2) Land and facilities: office space and others 3) Operation cost: Cost for transportation, driver, operation cost of vehicle, cost for seminars, utility costs, etc. [Project 2012-2016] 1) Staff allocated: 50 persons

	2) Trainees received: 24 persons 3) Training in the third country: 15 persons 4) Equipment: Vehicles, underwater camera, GIS software, Survey devices (e.g, data logger, etc.), etc. 5) Operation cost: Seminar cost, transportation cost, vehicle operation cost, etc.		2) Land and facilities: office space and 150 artificial reeves 3) Operation cost: Cost for transportation, utility costs, etc.
Project Period	[Project 2005-2010] June 2005 – June 2010 [Project 2012-2016] October. 2012 – October. 2016	Project Cost	[Project 2005-2010] (ex-ante) 350 million yen; (actual) 516 million yen [Project 2012-2016] (ex-ante) 400 million yen; (actual) 440 million yen
Implementing Agency	[Project 2005-2010] Direction General of Fishery and Aquaculture (DGPA), Ministry of Agriculture, Hydraulic Resources and Fishery, Agricultural Extension and Training Agency (AVFA), National Institute of Marine Sciences and Technologies (INSTM), Regional Branch for Agricultural Development (CRDA), Ports Fishing and Facilities Agency (APIP), Inter-professional Organization of the Fishing Products (GIPP), Tunisian Agriculture and Fisheries Union (UTAP) [Project 2012-2016] DGPA		
Cooperation Agency in Japan	[Project 2005-2010] and [Project 2012-2016] Overseas Agro-Fisheries Consultants Co., Ltd. (OAFIC)		

II. Result of the Evaluation

1 Relevance

<Consistency with development plan of Tunisian government at the time of ex-ante evaluation and project completion>

The project was consistent with the national development policies of Tunisia such as "The 10th Five-Year National Economic Development Plan (2002-2006)" and "The Socio-Economic Development Strategy (2012-2016)" aiming to equilibrium and sustainable development of fishery resources.

<Consistency with development needs in Tunisia at the time of ex-ante evaluation and project completion>

The project was consistent with development needs of Tunisia such as to establish a co-management system of coastal fishery resources in the Gulf of Gabes with the collaboration of fisher's organization, local people and the governmental organizations for sustainable fishery resources development in Tunisia.

<Consistency with Japanese aid policies at the time of ex-ante evaluation>

The project was consistent with the Japan's ODA policy for the Republic of Tunisia at the time of ex-ante evaluation of Project 2005-2010[1] focusing on the development and promotion of agriculture and fishery as one of the five priority areas, as well as the Japan's ODA policy for the Republic of Tunisia at the time of ex-ante evaluation of Project 2012-2016[2] focusing on the employment promotion and industry development as one of priority areas in which support for agriculture and fishery sectors was addressed.

<Evaluation Result>

In the light of above, the relevance of this project is high.

2 Effectiveness/ Impact

[Project 2005-2010]

<Achievement status of Project Purpose at the time of completion of the project>

The Project Purpose was achieved by the time of project completion. Fifty-seven workshops and seminar for co-management between fisher's organizations, local communities and governmental bodies to jointly plan, implement and evaluate the coastal fisheries resource management were organized by the project completion (Indicator 1). Also, some improvement of fishers' activities in self-disciplined manner for rehabilitation of seagrass bed and reservation of coastal fisheries resource were identified in 4 out of 5 project sites (Indicator 2).

<Continuation status of project effects at the time of ex-post evaluation>

The project effects have been continued at the time of ex-post evaluation. More than 10 regular co-management meetings have been held with the participation of fishing organizations, local communities and governmental bodies to jointly plan, implement and evaluate the management of coastal fisheries resources. 4 out of 5 project sites, which are Mahares, Ataya, Zarrat, Ajim, adopted the national program for the management of the Gulf of Gabes by artificial reefs. In this regard, however, the installation of artificial reefs sometimes met with resistance from certain fisheries' groups because the levels of understanding of co-management among stakeholders were different. On the other hand, planting seaweed operation for the rehabilitation of seagrass bed and reservation of coastal fisheries resource did not give significant results.

<Status of achievement of Overall Goal at the time of ex-post evaluation>

The Overall Goal was partially achieved at the time of Ex-post evaluation. The number of fish landing sites where the coastal fishery resource management is practiced has considerably increased from 5 project sites to 8 sites (Indicator 1). On the other hand, there is a concern on reduction in the number of fishers in Ghannouch and Ajim due to increasing migration of young people. Catch per Unit Effort (CPUE) has increased in some sites but production has remained stationery in other sites (Indicator 2). This could be linked to the artificial reef impacts as the regeneration of the marine ecosystem and the return of marine species were observed on artificial reef areas. After the project completion, Tunisia continuously held seminars for technical exchanges with neighboring countries particularly Algeria, within the

[1] ODA Databook 2005, Ministry of Foreign Affairs, Japan.

[2] ODA Databook 2012, Ministry of Foreign Affairs, Japan.

context of regional projects such as Blue Hope Technical Cooperation Project by the Food and Agriculture Organization (FAO) and other technical meetings with the General Fisheries Commission for the Mediterranean (GFCM) (Indicator 3).
<Other impacts confirmed at ex-post evaluation>
There have been some positive impacts observed at the time of ex-post evaluation. This project contributed on identifying a large quantity of a new invasive species the scientific name blue crab Portunus segnis by providing expertise in fishing techniques, organizing cooking shows for the preparation of blue crab dishes and identifying tools for the valorization of this new species. No negative impact on natural environment was confirmed.

[Project 2012-2016]
<Achievement status of the Project Purpose at the time of completion of the project>
The project purpose was achieved by the time of project completion. Through dozens of meetings/workshops by participatory approach philosophy, the project almost satisfactorily elaborated CFRMP at 6 out of 7 project sites and it was confirmed that the ratio of CFRMP participating boats/boat owners exceeded 50% at each site (Indicator 1). Also, the project completed one turn of its management cycle of CFRMP according to the implementation guideline at all 7 project sites (Indicator 2).
<Continuation status of the project effects at the time of ex-post evaluation>
The project effects have been continued at the time of ex-post evaluation. The boat owners, captains and fishers of the registered fishing units participated in the CFRMP for all target areas, especially in Ghannouch, and Ajim, (the percentage differs from one region to another but there was a strong mobilization for Ghannouch and Ajim regions, up to 100% of fishers). Also, all regional government agencies have supported the management cycle of CFRMP according to the implementation guidelines.
<Achievement status of Overall Goal at the time of ex-post evaluation>
The Overall Goal was partially achieved at the time of ex-post evaluation. Particularly due to lack of extension workers, difficulties in identifying leading people, absence of professional organizations (groups, associations), and lack of human resources and logistics especially that some isolated sites are difficult to access, the CFRMP was only implemented at 11 of the 21 fishing ports/landing sites in the Gulf of Gabes with reference to implementation guidelines by the end of 2020, therefore, the target value was not fully met (Indicator 1). The 60 to 100% of the owners/captains of registered coastal fishing boats participated in CFMP at least 10 ports/landing sites in the Gulf of Gabes by the end of 2020. This result can be explained by the continuous self-help efforts made by all the actors involved in the co-management of coastal fisheries (Administration, Research units Extension services and NGOs). Technical cooperation projects with various donors such as the United Nations Development Program (UNDP), FAO, the European Union (EU), and the World Wild Foundation for Nature (WWF) have provided a strong participatory approach that strengthened the percepts of coastal fisheries co-management. For example, the environmental conservation project was implemented in the governorate of Gabes based on the outcome of the project, and its target area includes the one of the project sites of this project. From this point, it is considered that the project played a role of primming water for other donors' assistance to some extent (Indicator 2).
<Other impact confirmed at the Ex-post evaluation>
There have been some positive impacts observed at the time of ex-post evaluation. At the time of ex-post evaluation, an exchange of know-how between the beneficiaries in Tunisia and Senegal was confirmed through a collaboration with JICA's technical cooperation project in Senegal "Project on Reinforcement of Capacity in Organization and Training of the Professional Leaders in the Field of Artisanal Fishery: Co-management of Artisanal Fisheries in Senegal (COGEPAS)". No negative impact on natural environment was confirmed.
<Evaluation Result>
From above, the effectiveness and impact of the two project is high.

Achievement of Project purpose and Overall goal

Target	Indicators	Achievement
[Project 2005-2010]		
(Project Purpose) Models of coastal fisheries resource management for sustainable use of demersal fish are developed in the selected project sites, with participation of fishing communities.	(Indicator 1) Meetings are regularly held for co-management between fisher's organizations, local communities and governmental bodies to jointly plan, implement and evaluate the coastal fisheries resource management.	Status of achievement: Achieved (Continued) (At the time of project completion) • Fifty-seven workshops and seminars were held with participation of fishers organizations, local communities and governmental bodies. (At the time of ex-post evaluation) • More than ten (10) regular co-management meetings have been held with the participation of fishing organizations, local communities and governmental bodies to jointly plan, implement and evaluate the management of coastal fisheries resources.
	(Indicator 2) Fishers act in self-disciplined manner for rehabilitation of seagrass bed and reservation of coastal fisheries resource. Note: To be measured by whether fishing activities (including the manner of use of fishery grounds) are self-controlled around the artificial reefs functioning as nursery areas, whether small	Status of achievement: Achieved (Continued) (At the time of project completion) • Some changes of fishers' activities were identified in 4 out of 5 project sites. Some fishers in Ajim changed their fishing method from trammel net to hook and line fishing in the areas around the installed artificial reefs (Ars). Some women started to release caught small size clam. (At the time of ex-post evaluation) • 4 out of 5 project sites, which are Mahares, Ataya, Zarrat, Ajim, adopted the national program for the management of the Gulf of Gabes by artificial reefs. • However, planting seaweed operation for the rehabilitation of seagrass bed and reservation of coastal fisheries resource did not give significant results.

	juveniles are released when they are caught, etc. Achievement level is to be evaluated by the number of waters with changes of fishers' behaviors.	
(Overall Goal) Models of coastal fisheries resource management for sustainable use of demersal fish are adapted around the southern coastal zone of Tunisia, with participation of fishing communities.	(Indicator 1) The number of fish landing sites "fishing ports" where fishers practice coastal fisheries resource management has doubled in the southern coastal zone of Tunisia (from 5 to 10 sites).	Status of achievement: Partially Achieved (At the time of ex-post evaluation) • The number of fish landing sites where the coastal fishery resource management is practiced has increased from 5 project sites to 8 sites supported by several development projects financed by donors. • This is partially due to the reduction in the number of fishers in the project area influenced by increasing migration of young people.
	(Indicator 2) Catch per Unit Effort (CPUE) is increased at the fish landing sites where the comprehensive coastal fisheries resource management is practiced.	Status of achievement: Partially Achieved (At the time of ex-post evaluation) • CPUE increased in some areas and production has remained stationary in other areas.
	(Indicator 3) Tunisia prepares plans to continuously hold seminars for technical exchanges with neighbouring countries.	Status of achievement: Achieved (At the time of ex-post evaluation) • Tunisia continuously held seminars with neighboring countries, particularly with Algeria.
[Project 2012-2016]		
(Project Purpose) Co-management of coastal fishery resources is practiced in the target areas of the Gulf of Gabes.	(Indicator 1) At the end of the Project, 50% of the owners/captains of the registered coastal fishing boats participate in the CFRMP for each Target Area.	Status of achievement: Achieved (Continued) (At the time of project completion) • Through dozens of meetings/workshops by participatory approach philosophy, the project almost satisfactorily elaborated CFRMP at 6 out of 7 project sites and it was confirmed that the ratio of CFRMP participating boats/boat owners exceeded 50% at each site. (At the time of ex-post evaluation) • Boat owners, captains and fishers of the registered fishing units participated in the CFRMP in all target areas. The percentage differs from one region to another but there was a strong mobilization for Ghannouch and Ajim regions, up to 100% of fishers.
	(Indicator 2) Regional government agencies are able to support management cycle (plan/implement/evaluate/ revise) of CFRMP according to the implementation guidelines.	Status of achievement: Achieved (Continued) (At the time of project completion) • The project completed one turn of its management cycle of CFRMP according to the implementation guideline at all 7 project sites. (At the time of ex-post evaluation) • All regional government agencies have supported the management cycle of CFRMP according to the implementation guidelines.
(Overall Goal) The practice of co-management of coastal fishery resources is extended throughout the Gulf of Gabes.	(Indicator 1) CFRMP is newly implemented with reference to the implantation guidelines at least in 15 out of 21, coastal fishing ports/landing sites throughout the Gulf of Gabes by the end of 2020.	Status of achievement: Partially achieved (At the time of ex-post evaluation) • Although, the CFRMP was implemented at 11 of the 21 fishing ports/landing sites in the Gulf of Gabes with reference to implementation guidelines by the end of 2020, the target was not fully achieved. The ports/landing sites where the introduction of CFRMP is delayed observed the issues such as lack of extension workers, difficulties in identifying leading people, absence of professional organizations (groups, associations), and lack of human resources and logistics especially that some isolated sites are difficult to access.
	(Indicator 2) At least 70% of the owners/ captains of the registered coastal fishing boats participate in the CFRMP at least 10 coastal fishing ports/landing sites throughout the Gulf of Gabes by the end or 2020.	Status of achievement: Achieved (At the time of ex-post evaluation) • A percentage ranged from 60 to 100% of the owners/captains of registered coastal fishing boats participated in the CFRMP at least 10 ports/landing sites in the Gulf of Gabes by the end of 2020. • This result can be explained by the efforts made by all the actors involved in the co-management of coastal fisheries (Administration, Research units Extension services and NGOs). Technical cooperation projects with various donors (UNDP/FAO/EU/WWF etc.) have provided a strong participatory approach that strengthened the percepts of coastal fisheries resource co-management. • For example, the environmental conservation project was implemented in the

		governorate of Gabes based on the outcome of the project, and its target area includes the one of the project sites of this project.

Source: Terminal evaluation report, the project related documents, the response of questionnaire and interview with the implementing agencies.

3 Efficiency

For Project 2005-2010, although the project cost exceeded the plan (ratio against the plan: 148%) due to the increase in numbers of experts to respond the needs identified by the Mid-term review which are the rehabilitation of seagrass bed as well as the institutional capacity for the management of finishing ground, the project period was as planned (ratio against the plan: 100%). For Project 2012-2016, although the project cost exceeded the plan (ratio against plan: 110%) due to additional activities such as (i) collection of fishers' opinions to design new co-management activities, and (ii) activities for preventing fishers' damages caused by abnormal increase of blue crabs in the Gulf of Gabes as well as effective utilization of this marine resource, the project period was as planned (ratio against plan: 100%). Outputs of both projects were achieved as planned.

From the above, the efficiency of the overall projects is fair.

4 Sustainability

<Policy Aspect>

The National Program of Protection of the Sensitive Areas of the Gulf of Gabes by the Artificial Reef has been launched in 2016 following the implementation of Project 2005-2010 and Project 2012-2016. This national program aims to expand the areas of artificial reefs wider than the project target area

<Institutional/Organizational Aspect>

Three local co-management committees (Ajim, Ghannouch and Skhira) continue to work and hold technical and consultation meetings (particularly in Ajim and Ghannouch). In the 3 CRDAs (Sfax, Gabes and Medenine) nearly 60 individuals are involved in the technical administrations in charge of the fishing sector. DGPA has recently reinforced the staff with the recruitment of more than 50 fishing guards. At the time of ex-post evaluation, the fishing guards do not have the necessary means such as their patrol boats to ensure surveillance operations. However, their capacity of surveillance operations is expected to be strengthened soon by introducing the patrol boats provided by the Japanese grant aid.

<Technical Aspect>

The staff of DGPA have sustained necessary skills and knowledge to disseminate the model developed by the project. However, there is a need to further strengthen the capacities of personnel in charge of the fishing sector continuously. DGPA is encouraging the CRDAs to implement OJT trainings. The guidelines developed by the project, which are considered as a manual of procedures, are considered as an essential tool for co-managing the coastal fisheries for dissemination to new pilot sites, have been used by all the members of the steering committee. While there is a lack of extension workers in ports and fishing sites who support fishers to apply co-management, at local ports and fishing sites, stakeholders of co-management including fishers's associations, fishers and local residents voluntarily gathered and they have mutually shared and disseminated what they have learned from the project in the local level, which supplement the shortage of regular extension workers. In addition, the other donors plan to implement the project which support to disseminate and capitalize the co-management of fisheries resources like this project. It is expected that the dissemination the co-management system will be strengthened in the future through support for local fishery training centers in terms of hardware and software aspects. From the above, it is judged that there is no major issues on the sustainability of technical aspect.

<Financial Aspect>

The ministry of Agriculture has allocated 10 million Tunisian dinar for the national program of artificial reefs in the Gulf of Gabes over 5 years. As part of the agreement on the conversion of Tunisia's debt to Belgium into a development project, a new project of the DGPA based on the same model developed by Project 2012-2016 has been selected for a sum of 1.8 million euros. The necessary budget has been secured to continue the project outcomes.

<Evaluation Result>

In the light of above, the sustainability of the effects though the project is high.

5 Overall evaluation

Both Project 2005-2010 and Project 2012-2016 achieved project purpose which aimed to develop models of coastal fisheries resource management for sustainable use of demersal fish as well as to practice co-management of coastal fishery resources in the target areas of the Gulf of Gabes as planned. The overall goal which aimed to extend the practice of co-management of coastal fishery resources throughout the Gulf of Gabes has been partially achieved although the number of fish landing sites which adopted the coastal fisheries resource management model for sustainable use of demersal fish with participation of fishing communities has considerably increased in the area. With reference to efficiency, the project periods of both projects were as planned, but their project costs exceeded the plan.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Efforts have been made to sensitize local actors by the projects but some gaps were identified on the ground. These include poor understanding of fishers organizations duties and responsibilities in good governance at the local level. Policies and regulatory provisions are sometimes unknown or interpreted wrongly by most stakeholders. Therefore, it is essential to establish a mechanism to enhance the integration of extension methods of fisheries programs. For this aim, provision of training program for officials and selected leaders among fishers either in specialized facilities or through hands-on training is necessary in order to raise their awareness of their responsibilities properly as well as to promote a common understanding of the good co-management practices.

Lessons Learned for JICA:

- In this ex-post evaluation, there were difficulties to collect the statistical data for analyzing the effectiveness and impacts of the project as the location of project site were scattered and the project related organizations were varied. In order to realize the effective evaluation of the project as well as to understand the status of the fisheries sector in the project targe areas, the project should have established a

relevant statistics and data collection system needed for the evaluation of indicators related to the effectiveness/impacts of the project as defined in the project documents in coordination with JICA, the implementing agency and other stakeholders.

- The project for co-management of coastal fisheries was the first experience in Tunisia and the participatory approach applied in the project was new for the implementing agency. There was no formal inter-agency coordination in the Tunisia's fisheries sector at the biggening of the project. However, through the implementation of the projects, a coordination and exchange mechanism between the national Committee for Coastal Fisheries Resources Co-management, the administrative, associative and scientific bodies at the governorate level and the field actors (fishermen) was created to promote the exchange of experiences and know-how between localities and governorates but also at national level. The promotion of this mechanism was possible thanks to concerted actions between all the key actors, awareness-raising and dissemination actions, field work and a detailed diagnosis (exhaustive analysis) of the project target areas. A common understanding of the co-management among the stakeholders involved in this project was thus promoted. This project contributed to introduce a formal inter-agency coordination system/practice in the Tunisia's fisheries sector thanks to the following factors: (i) existence of a number of professional organizations, and has in part built upon the success of previous development projects, and the (ii) leadership of the fishing communities themselves .It will be a good reference for other projects.

Improved type of artificial reef prepared by the project.

Fishers installing artificial reef

conducted by Tanzania Office: February, 2022

Country Name	**Technical Cooperation in Supporting Service Delivery Systems of Irrigated Agriculture (TANRICE)**
United Republic of Tanzania	

I. Project Outline

Background	The Government of Japan implemented coordinated ODA projects in the Lower Moshi irrigation scheme of Kilimanjaro Region. As a result, high yields of rice were achieved in the Lower Moshi irrigation scheme, and the rice cultivation technology spread to the surrounding areas. Based on the results of those projects, the agricultural development center in the Lower Moshi irrigation scheme was upgraded to the "Kilimanjaro Agricultural Technician Training Center" (KATC) to train agricultural technicians from all over the country in order to disseminate irrigated rice cultivation technology nationwide. In addition, a technical cooperation project was implemented to improve the capacity of KATC and to train irrigated rice cultivation technicians. In the subsequent project, irrigated rice cultivation training by using farmer-to-farmer extension methods was conducted, and the average yield at the model sites increased by 1.4 times, thus establishing a training model that directly benefits farmers. In order to disseminate irrigated rice cultivation technology throughout Tanzania in the midst of the trend toward decentralization, it was necessary to transfer the knowledge and technology accumulated at KATC to the agricultural training centers in charge of each region (Ministry of Agriculture Training Institute：MATI), and the Government of Tanzania requested the Government of Japan a project aimed at strengthening the support system for disseminating irrigated agriculture technology and improving rice productivity.		
Objectives of the Project	Through (1) conducting training to farmers on rice cultivation practices, (2) strengthening capacity of research, training and extension institutions on seed multiplication of rice varieties and rice cultivation technologies, the project aimed at increasing productivity of rice cultivation, and thereby contributing to the rolling out of the training developed under the project to other irrigation schemes as well as to increasing the income from rice production in the priority/target irrigation schemes.		
	1. Overall Goal: (1) The training[*1] developed by the TC is implemented in other irrigation schemes. (2) The income from rice production among smallholder rice farmers in priority/target irrigation schemes[*2] is increased. 2. Project Purpose: Productivity of rice cultivation in priority/target[*2] irrigation schemes is increased through strengthening service delivery systems of irrigated agriculture. [*1] The Standard Training consists of a baseline survey, residential training at MATI (12 days for key farmers and extension officers), field training in each irrigation scheme (3 days x 3 times for key farmers and intermediate farmers), and monitoring (3 days). A field day will be held in the third session of the field training, and the results of the training will be widely shared with other farmers. [*2] Priority for Mainland Tanzania and target for Zanzibar.		
Activities of the project	1. Project site: (1) 40 priority irrigation schemes in Mainland Tanzania, and (2) 4 schemes in Zanzibar 2. Main activities: (1) conducting training to farmers on rice cultivation practices, (2) strengthening capacity of research, training and extension institutions on seed multiplication of rice varieties and rice cultivation technologies 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 19persons 2) Trainees received: 35 persons 3) Equipment: Vehicles, etc. 4) Local cost: project administration, training cost, cost for local adaptation test, etc. Tanzanian Side 1) Staff allocated: 140 persons 2) Land and facilities: Office space for experts, training facilities, equipment 3) Local cost: Training costs		
Project Period	(ex-ante) 5 years from June 2007 (actual) June 2007-June 2012	Project Cost	(ex-ante) 568 million yen, (actual) 645 million yen
Implementing Agency	- Ministry of Agriculture Food Security and Cooperatives (MAFC, currently Ministry of Agriculture, MoA) - Mainland Tanzania: Kilimanjaro Agriculture Training Centre (KATC) and Ministry of Agriculture Training Institute (MATI-Igurusi, Ilonga, and Ukiriguru), Agricultural Research Institute (ARI, currently Taznania Agriculture Research Institute,TARI) - Zanzibar: Kizimbani Agricultural Training Institute (KATI, currently School of Agriculture(SoA) - , State University of Zanzibar) and Kizimbani Agriculture Research Institute (KARI, currently Zanzibar Agricultural Research Institute, ZARI)		
Cooperation Agency in Japan	Ministry of Agriculture, Forestry and Fisheries		
Related Project	Technical cooperation: - The Kilimanjaro Agricultural Training Centre Project (Technical cooperation, 1994-2001), - The Kilimanjaro Agricultural Training Centre Phase II Project (Technical cooperation, 2001-2006), - Technical Cooperation for Capacity Development for the Promotion of Irrigation Scheme Development Under the District Agricultural Development Plans (DADPs) (2010-2014), - Project for Supporting Rice Industry Development in Tanzania (2012-2019) (the "Phase 2 project")		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- Continuation status of the project effects are analyzed as factors to achieve the Overall Goal.
- The effects of the Phase 2 project is included for the analysis of the Overall Goal.

1 Relevance

<Consistency with the Development Policy of Tanzania at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Tanzania. In the "National Strategy for Growth and Poverty Reduction (NSGRP)" (2005), Tanzania's medium to long-term development strategy, the Government identified agricultural sector development as an important issue for poverty reduction and economic growth. In the "Agricultural Sector Development Strategy (ASDS)", the Government formulated a strategy to revitalize the country's agriculture. In addition, in order to realize the goal of the ASDS, which was to "increase farmers' income through the creation of an environment that improves agricultural productivity and profitability," the "Agricultural Sector Development Program" (ASDP) was formulated and the ASDP basket fund, which was jointly established by the Government of Tanzanian and the Development Partners including Japan, was utilized. It was also decided to allocate the development budget for the agricultural sector to the District Agricultural Development Programme (DADP).

<Consistency with the Development Needs of Tanzania at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Tanzania for improving irrigated rice cultivation. In the midst of the trend toward decentralization, transferring the knowledge and technology of irrigated rice cultivation from KATC to MATI was needed.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was also consistent with the Japan's ODA policy to Tanzania. Agriculture was one of the priority areas under the "Country Assistance Program to Tanzania" (2000)

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the time of project completion. Rice yield per unit increased from the status before the project (Indicator 1). 53% and 50% of irrigation schemes increased the paddy yields more than 1 t/ha in the main season and the second season, respectively. As for the annual monitoring and planning on rice farming (Indicator 2), though the monitoring and planning had been conducted utilizing project funds, but not verified on the practice by the Local Government Authority (LGA) officers and farmers.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued at the time of ex-post evaluation. As mentioned above, it is analyzed as a part of factors that influenced on the achievements of the Overall Goal indicators. (The training conducted in the irrigation schemes by 2015 and the income increase from rice production by 30%, etc.)

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved. As for the training for other than the priority/target schemes (Indicator 1), the training under the succeeding project (Phase 2 project) was conducted in more than 12 other irrigation schemes,. and some irrigation schemes have been covered by LGA funds. The project worked with MoA through MATI tutors and LGA through extension officers; however, after the end of the Phase 2 project, MATI did not have direct role of training farmers unless there was a request form LGA. It was originally expected that project would utilize MATI resource person to conduct training for farmers, through training MATI will provide knowledge and experience to LGA extension staff and in future LGA can request MATI tutors for training whenever there is need. However, due to limited fund disbursement to LGA and also by considering MATI structure where they do not have direct component of farmers training, it was difficult to continue farmers training and monitoring by MATIs.

The income from rice production among smallholder rice farmer has increased (Indicator 2). The income increased by 121% in 2015/16, 176% in 2019/2020 and 199% in 2020/2021 on average comparing 2013/14. The evaluation team for this ex-post evaluation visited 4 schemes in 3 districts and interviewed farmers associations, farmers and extension officers. Farmers mentioned that the yield increased after taking part in training and applying techniques. They have adopted the various technology introduced by the project such as bund making, leveling, transplanting, transplanting in straight row, proper seedling at transplanting stage, and planting in a recommended width. The approach of farmer to farmer extension under the project also has been well adopted. In addition to that, the extension officers backstop the farmers in the area where the rice growth and performance are not well. Farmers' income has also increased because of the yield of rice increased. Most of the farmers could manage to build improved houses and purchase agriculture inputs with the profits. Also, in other schemes, farmers became able to send their children to school, some bought power tillers and farming tools, according to district staff.

The interviews with farmers mentioned above reveals that their application of techniques contributed to the increase in the yield and income; however, there are many factors for increase/decrease. With regards to the overall trends at the target schemes, there has been a big increase in income at Mvumi and Ilonga. According to an irrigation engineer and District Agricultural Irrigation and Cooperative Officer (DAICO) of Kilosa DC, there are many factors contributed to the production increase and income at Mvumi and Ilonga as they are the target projects of a project supported by the World Bank which implemented some infrastructure development, provided subsidy for fertilizer, seeds and chemicals. They were also provided training as they were target areas of the Government policy "Big Result Now" (2013-2016). In case of Magozi the yield drop was significantly affected by floods. In case of Irienyi, although the yield has increased, the income has decreased, because farmers lost markets as the cross borders trade was closed and were forced to sell the paddy locally where the price was very cheap.

There is system of monitoring and planning of rice farming managed by district through ARDS (Agricultural Routine Data System format)[1]. Through the site visit, this practice has been seen at 2 districts. At the same time MATI also obtains the reports upon request basis from LGA.

<Other Impacts at the time of Ex-post Evaluation>

[1] The system introduced under JICA technical cooperation project, and later approved and formalized by MoA as a special mechanism to collect data and monitor farming activities

There is positive impact related to gender. After the training especially on gender subject matter training, many families in the project areas are now doing collective decision making especially after they received income out of their production. In the past, most men were the one to decide on income and women were the one who were mostly doing farming activities. This point has been shared by most of the farmers visited by the evaluation team. Additionally, because of gender awareness, some women have lands either they own or rent it. There is less conflict between men and women, , changes in way of decision making, plan and utilize collected income jointly by men and women.

As expected, the total area of irrigation schemes where the training developed by the project is conducted is deemed to exceed 15,000 ha., according to LGAs.

No negative impact on the natural environment has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td rowspan="2">(Project Purpose)
Productivity of rice cultivation in priority/target irrigation schemes is increased through strengthening service delivery systems of irrigated agriculture.</td><td>Indicator 1: Rice yield per unit area is increased at least by 1 ton/ha in each priority/target irrigation scheme.</td><td>Status of the Achievement: Partially achieved/
(Project Completion)
It was partly fulfilled. Out of 30 irrigation schemes (including Zanzibar), where data of paddy yields both before and after the standard training were available from the first cropping season in a year, the paddy yields increased in 23 irrigation schemes. In the second season, out of 4 irrigation schemes, where sets of paddy yields data were available, the paddy yields increased in all of them. In addition, there were 3 irrigation schemes which started rice doubled cropping in a year after conducting the standard training. 53% and 50% of irrigation schemes increased the paddy yields more than 1 t/ha in the main season and the second season, respectively. As mean of paddy yields, there was an increase of 1.1 t/ha in the first season (from 2.6 t/ha before to 3.7 t/ha after the training). It was 0.8 t/ha in the second season (2.6 t/ha before to 3.4 t/ha after the training).

(Ex-post Evaluation)
Refer to the Overall Goal below.</td></tr>
<tr><td>Indicator 2: Annual monitoring and planning on rice farming is continuously conducted by the relevant district officers and farmers in priority /target irrigation schemes.</td><td>Status of the Achievement: Partially achieved
(Project Completion)
Not known. At the time of project completion, continuous monitoring and planning on rice farming had been conducted using JICA’s local business fund. It was necessary to develop a simpler method of monitoring which is implementable within limited resources of the districts or irrigation schemes.
(Ex-post Evaluation)
The project is continuously being monitored by extension officer in each respective areas annually through ARDS.</td></tr>
<tr><td>(Overall Goal)
1. The training developed by the TC is implemented in other irrigation schemes.

2. The income from rice production among smallholder rice farmers in priority irrigation schemes is increased.</td><td>Indicator 1: 1. The training are conducted in at least 12 other irrigation schemes by 2015. (Mainland)
2. The training are conducted in at least XX other irrigation schemes by 2015. (Zanzibar)
*No numerical target was set for Zanzibar, but the terminal evaluation interpreted it as 12.</td><td>(Ex-post Evaluation) Achieved
Training was conducted in 18 irrigation schemes.
<table>
<tr><th></th><th>Scheme</th><th>Training year</th></tr>
<tr><td>1</td><td>Mtambo</td><td rowspan="7">2013/14</td></tr>
<tr><td>2</td><td>Kwamngumi</td></tr>
<tr><td>3</td><td>Maendeleo</td></tr>
<tr><td>4</td><td>Majengo</td></tr>
<tr><td>5</td><td>Kigugu</td></tr>
<tr><td>6</td><td>Komtonga</td></tr>
<tr><td>7</td><td>Nyatwali</td></tr>
<tr><td>8</td><td>Mangola barazani</td><td rowspan="11">2014/15</td></tr>
<tr><td>9</td><td>Mbuga nyekundu</td></tr>
<tr><td>10</td><td>Gonja</td></tr>
<tr><td>11</td><td>Mafuruto</td></tr>
<tr><td>12</td><td>Jikomboe</td></tr>
<tr><td>13</td><td>Gwiri</td></tr>
<tr><td>14</td><td>Maki</td></tr>
<tr><td>15</td><td>Mangula youth</td></tr>
<tr><td>16</td><td>Mgongola</td></tr>
<tr><td>17</td><td>Lukenge</td></tr>
<tr><td>18</td><td>Bugorola</td></tr>
</table>
Number of training courses
<table>
<tr><th>Institutions</th><th>2013/14</th><th>2014/15</th><th>2015/16</th><th>2016/17</th><th>2017/18</th><th>2018/19</th></tr>
<tr><td>KATC</td><td>2</td><td>3</td><td>3</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>MATI-Igurusi</td><td>2</td><td>3</td><td>3</td><td>3</td><td>3</td><td>2</td></tr>
<tr><td>MATI-Ilonga</td><td>2</td><td>4</td><td>3</td><td>3</td><td>2</td><td>2</td></tr>
<tr><td>MATI-Ukiriguru</td><td>1</td><td>1</td><td>1</td><td>2</td><td>3</td><td>1</td></tr>
<tr><td>SoA</td><td>0</td><td>0</td><td>3</td><td>3</td><td>3</td><td>1</td></tr>
<tr><td>Total</td><td>7</td><td>11</td><td>13</td><td>14</td><td>13</td><td>7</td></tr>
</table>
The training after 2013 were mostly conducted by the Phase 2 project.</td></tr>
</table>

Indicator 2: The income from rice production among smallholder rice farmers (in the priority/target schemes) is increased by 30% in each scheme by 2015.

(Ex-post Evaluation) Achieved

Paddy income trend

(Unit: shilling)

	Scheme	Paddy income trend				Comparison with 13/14		
		2013/14	2015/16	2019/20	2020/21	15/16	19/20	20/21
1	Mvumi	343,200	437,580	1,570,205	1,961,960	128%	458%	572%
2	Ilonga	414,180	554,125	945,945	1,321,320	134%	228%	319%
3	Musa mwijanga	50,000	70,000	75,000	NIL	140%	150%	-
4	Mahiga	216,000,000	258,000,000	356,285,714	NIL	119%	165%	-
5	Sakalilo	NIL	NIL	NIL	NIL	-	-	-
6	Minepa	913,500,000	1,629,720,000	2,259,360,000	NIL	178%	247%	-
7	Njage	6,750,000	7,050,000	8,250,000	9,000,000	104%	122%	133%
8	Irienyi	7,500,000	7,000,000	5,000,000	5,250,000	93%	67%	70%
9	Tungamalenga	325,000	438,000	462,850	325,000	135%	142%	100%
10	Magozi	1,855,000	990,000	30,000	52,500	53%	2%	3%
11	Sawenge	NIL	4,365,000,000	NIL	NIL	-	-	-
					Average	121%	176%	199%

Note: Income is calculated based on average yield, total cultivated area and price per bag

Yield

	Scheme	Paddy yield ton / ha			
		2013/14	2015/16	2019/20	2020/21
1	Mvumi	2	3.4	5	5.3
2	Ilonga	3	3.1	4.9	5.6
3	Musa mwijanga	1	2	2.5	NIL
4	Mahiga	1.8	2.1	2.9	NIL
5	Sakalilo	NIL	3.8	4.8	NIL
6	Minepa	4	4.4	3.6	5
7	Njage	4.5	4.7	5.5	6
8	Irienyi	5	5.6	5	7
8	Tungamalenga	3 .5	4.35	4.2	3.9
9	Magozi	5.3	4.4	1.2	1.5
11	Sawenge	NIL	5	NIL	NIL
	Average	3.3	3.7	3.9	4.9

Source：Questionnaires and interviews with MoA, MATIs/SoA, and LGAs

3 Efficiency

Although the project period was as planned, the project cost exceeded the plan (the ratio against the plan: 100%, 114%). The outputs were produced as plan. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

There has been policy support for improving irrigated rice cultivation. The main objective of "Agricultural Sector Development Plan Phase II" (ASDP II) (2017/18 -2027/28) is to transform the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization level and increase smallholder farmer income for improved livelihood and guarantee food and nutrition security. Strategic objectives of the "National Rice Development Strategy Phase II" (2019-2030) includes "Expand rice cultivable area under irrigated, rain-fed lowland and upland ecosystems through new establishments and rehabilitation of existing irrigation infrastructures and management capacities".

<Institutional/Organizational Aspect>

MATIs (and SoA in case of Zanzibar) have been responsible for agricultural training in each region. The reporting structure concerning has been from Principal of MATIs, to Director of Training, Extension Services and Research, and to Permanent Secretary of MoA. While MATIs is under MoA, the extension officers who directly disseminate and backstop the activities is under Presidents Office Regional Administrative Local Government (PO-LARG). The reporting and communication system between both Ministries has not been established well that is why MATIs have a limitation to follow-up and obtain the actual information on the ground after completion of the project. However, during the training, DAICO representatives were involved baseline survey, residential and infield training. SoA is under the Ministry of Education and Vocational Training (MoEVT).

Most of training centers have had the sufficient number of staff. However, LGAs have limited number of staff especial extension officer as the area they cover has been too big.

<Technical Aspect>

Staff members at MATIs have had the opportunity to sustain necessary skills and knowledge through training and by visiting farmers, and taking part in seminars and workshops. Newly assigned staff members have learned through field work, use of manuals and guidelines.

However, some of DAICO and extension officers who are newly assigned in the area do not know the contents of the training and approach under the project.

Manuals developed under the project such as (i) operation manuals for Standard Training and Modified Standard Training, (ii) Subject matter training materials for gender, marketing, irrigation scheme management, agriculture mechanization and extension have been utilized. Extension officers have used the training manuals/guideline as reference materials to train farmers, and key farmers have been using the manuals/guideline to train their fellow intermediary and other farmers.

<Financial Aspect>

There has been no budget allocated to MATIs, and SoA for the training developed under the project by MoA after 2019. However, upon request basis MATI-Ilonga has received farmers who requests training on good agronomic practices on rice and sunflower. These farmers were supported by a World Vision project. Some farmers from Morogoro visited KATC for study tour to learn how farmers at Lower Moshi managed to be successful as a result of training conducted by the project. According to tutors and counterparts at SoA, they did not manage to conduct any training because no funds allocated for training farmers and by considering that at present the institute belongs under MoEVT and not MoA.

Some LGAs has secured own source for promotion/dissemination of training and rice cultivation technology under the project. However, most LGA have been unable to secure the funds. The challenge has been the disbursement depends mainly on what the priority/focus of the Government is, and if the sector is not given much priority then funds will not be disbursed, or it will be disbursed but very little or not on time. Thus, there has been less fund for capacity building and technical extension; however, during the field visit the evaluation team observed that at each village/scheme, there have been extension officers who work closely with farmers by proving them with technical support.

<Evaluation Result>

In light of the above, Slight problems have been observed in terms of the institutional/organizational, technical and financial aspects of the implementing agencies. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose. Rice yield per unit increased from the status before the project. As for the annual monitoring and planning on rice farming, though the monitoring and planning had been conducted utilizing project funds till the end of the project, but not verified on the practice by the Local Government Authority (LGA) officers and farmers. The Overall Goal has been achieved. Training was conducted in different schemes under the succeeding project. Farmer's income has increased after the project was implemented. As for the sustainability, slight problems have been observed in terms of institutional/organizational, technical and financial aspects. As for the efficiency, the project cost slightly exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

1. MoA and PO-RALG need to secure funds for agriculture activities such as ~~for~~ capacity building, monitoring and follow-up training to sustain the activities. PO-RALG should ensure that each LGA is securing the 20% of the crop cess for agriculture activities as it is stipulated in the guideline.
2. MoA should coordinate better with PO-RALG with respect to extension services and support for farmers. MoA provides support through project formulation but LGA who works with farmers falls under PO-RALG, after the projects phases out, all projects need to be sustained by PO-RALG support especially funds, as a results, LGA has its own priority and MoA as well, the situation will only become better only if the two Ministries harmonize their implementation structure.
3. The project prepared various training manuals for farmers and extension officers. Over time these guidelines will need to be revised, improved and be updated. At that time, we suggest that one of the key persons to be involved in the review process to be MATI trainers and extension staff in order to gain their experience and challenges.

Lessons Learned for JICA:

- When formulate a new project, the structure and role of each organization need to be well analyzed. Considering the project approaches and modality, it could have been better to work with LGAs by formulating a Task Group that will involve not only MATI tutors but also representatives of PO-RALG –Sector Coordination Unit so that they sustain and upscale the necessary project output nationwide. It will orient LGA through District Executive Director (DED) to put more emphasis on importance of securing budget collected from crop cess for capacity building and establishing follow-up mechanism.

Paddy plot at Musa Mwijanga irrigation scheme at lower Moshi

Meeting with Key and Intermediary farmers of TANRICE 1 at Euga village

conducted by Laos Office: March, 2021

Country Name	**Supporting Community Initiatives for Primary Education Development in the Southern Provinces** **Project for Supporting Community Initiative for Education Development (Phase 2)**
Lao People's Democratic Republic	

I. Project Outline

Background	In rural Laos, many primary schools were managed with the financial support of the local communities due to insufficient educational administration capacity and budget. In response, the Ministry of Education and Sports (MOES) established a Village Education and Development Committee (VEDC) in each village to promote school improvement with community involvement. Against this background, JICA implemented a technical cooperation project, aiming to improve primary education through community participation in school management (the Phase 1 project). The project provided technical support for introduction and implementation of a series of processes related to formulation and implementation of the School Development Plan (SDP) led by VEDC, and achieved a dramatic improvement in learning environment and educational indicators at the target schools. Furthermore, in cooperation with other Development Partners (DPs), JICA also assisted in formulating the Education Quality Standards (EQS) stipulated by the government of Laos. Under this circumstance, the second phase project (the Phase 2 project) was implemented to support and strengthen the management system and capacity of related organizations and stakeholders in order to roll-out the results of the Phase 1 project.
Objectives of the Project	Through developing modules for EQS training as well as SDP planning and implementation, enhancing capacities of the Provincial Education and Sports Service (PESS) and the District Education and Sports Bureau (DESB) to support SDP planning and implementation and others, the project aimed at improving access and quality of primary education in the target districts and thereby provinces. <Phase 1> 1. Project Purpose: Access and quality of primary education in the target schools are improved. <Phase 2> 1. Project Purpose: Access and quality of primary education in the target districts are improved. 2. Overall Goal: Access and quality of primary education in the target provinces are improved.
Activities of the Project	1. Project site: ＜Phase 1> 6 districts in 3 provinces: Salavan, Laongam (Salavan Province), Lamam, Thateng (Sekong Province)) and Samakhixay, Sanamxay (Attapeu Province) <Phase 2> 10 districts in 4 provinces: Champasack, Soukhouma, Mounlapamok, Khong (Champasack Province), Artsaphangthong, Songkhone, Xaybouly (Savannakhet Province), Lakhonpheng, Khongxedon (Salavan Province) and Lamam (Sekong Province)) 2. Main activities: <Phase 1> (1) MOES conducts Training of Trainers (TOT) on SDP planning to PESS/DESB and PESS/DESB organizes workshops to VEDC. (2) Strengthening capacity of principals and teachers on school management. (3) Development of teaching learning materials. (4) MOES develops training modules for SDP planning and review. <Phase 2> (1) MOES reviews and revises modules for EQS training and its TOT, develops modules for School Block Grant (SBG) training and its TOT, and MOES conducts TOT. (2) MOES prepares a guideline/handbook for situation analysis and conducts on-the-job training (OJT) to PESS/DESB, and PESS/DESB conduct situation analysis and implement measures. (3) PESS/DESB support schools and VEDC for SDP planning and implementation. 3. Inputs (to carry out above activities) Japanese Side <Phase 1> 1) Experts: 1 person 2) Trainees received: 6 persons 3) Equipment: printer, computers, motorbikes, vehicle 4) Operation cost: workshop expenses, contract with Non-Governmental Organization (NGO) <Phase 2> 1) Experts: 7 persons 2) Trainees received: 14 persons 3) Equipment: vehicles, utility charges Lao Side <Phase 1> 1) Staff allocated: 73persons 2) Land and facilities: Office space <Phase 2> 1) Staff allocated: 57 persons (cumulative total at organizations at MoES) 43 persons (cumulative total at PESS/DESB) 2) Land and facilities: office space for the project 3) Operation cost: cost for training, monitoring, materials and equipment
Project Period	<Phase 1> December 2007-December 2011	Project Cost: <Phase 1> (ex-ante)276 million yen (actual) 213 million yen

	<Phase 2> September 2012– August 2016		<Phase 2> (ex-ante) 392 million yen (actual) 358 million yen
Implementing Agency	- Ministry of Education and Sports (MOES) - Provincial Education and Sports Service (PESS) and District Education and Sports Bureau (DESB) of the target provinces and districts		
Cooperation Agency in Japan	n.a.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- As the Phase 1 and Phase 2 projects share the common goal, the indicators for the Phase 2 project are verified to check the level of achievement of the Project Purpose and the Overall Goal.
- Continuation of the project effects was analyzed as factors to achieve the Overall Goal.

1 Relevance

<Consistency with the Development Policy of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Laos. At the time of the Phase 1 project, the "National Growth and Poverty Eradication Strategy" and the "Sixth National Socio-Economic Development Plan (NSEDP) (2006-2010)" aimed to promote human resource development in all areas to fundamentally solve poverty and support national development. The priority was to disseminate and improve basic education. In the "Education For All (EFA) National Plan of Action", the main challenges for achieving EFA were improving access in remote rural areas. At the time of the Phase 2 project, the "Education Sub-sector Development Plan (ESDP) 2011-2015" prioritized three pillars of (1) expansion of equal access, (2) improvement of quality and relevance and (3) strengthening of planning and management.

<Consistency with the Development Needs of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs for primary education of Laos. At the time of the Phase 1 project, the primary school Net Enrollment Rate (NER) in the target three provinces were 74.23% in Sekong Province, 67.79% in Attapeu Province and 81.9% in Salavan Province in 2006, lower than the national average of Laos 84.2% (2005). After the Phase 1 project was completed, the challenge was to ensure the sustainability of the results of the Phase 1 project and to expand its areas, however, for that purpose, it was necessary to strengthen the capacity of the local education administration. MOES also started a school subsidy grant (SBG) program in 2011, and it was essential that SBG and SDP operate together at the school level in order for SBG to contribute to school improvement. And support this capacity building was an urgent issue.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy to Laos. One of the three goals under the "Country Assistance Program for Lao PDR" (September 2006) was promoting the reduction of poverty from the standpoint of "human security," It said Japan would support Laos in its steady steps towards the achievement of the Millennium Development Goals (MDGs). "Improving basic education" was one of the priority areas under this goal. In addition, the "Country Assistance Policy for the Lao People's Democratic Republic" (April 2012) listed the development of the educational environment and human resource development as one of the priority areas.

<Evaluation Result>

In light of the above, the relevance of the project is high

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the project completion. Although the target level of indicator 1 was not specifically set in the plan documents, NER, Net Intake Rate (NIR), promotion rate, drop out rate and survival rate improved in the target districts. The capability of MOES, provincial and district level officers, principals were raised by the project trainings, including more involvement from VEDCs to enhance the project effects to achieve project purpose.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The effects of the project have partially continued. As mentioned above, the status of continuation of the project effects at the time of ex-post evaluation was verified as the part of the verifiable indicators of the Overall Goal and the factors affecting the achievement levels of the verifiable indicators of the Overall Goal.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was partially achieved. The education indicators (Indicator 1) of NER and NIR mostly achieved the targets in the target provinces showing that most children have had access to primary education in those areas. However, due to economic and environmental factors, it is still difficult to improve the indicators related to the quality such as promotion rate, dropout rate, survival rate in some specific areas. All education indicators in Sekong and Attapeu did not achieve the targets in 2018/2019. One factor is that the provinces were affected by flooding in 2018 causing deterioration in education indicators and economic situation. Other factors are that many children live far from schools and some of them are from different ethnic tribes which use specific languages making it difficult to understand lessons taught in main language, according to MOES, PESSs and DESBs. The SDP submission rate (Indicator 2) has been partially achieved, as the rate varies depending on provinces.

The improvement in NER and NIR mentioned above resulted from capacity improvement of provincial and district level including school and village level raised through the project activities and with the assistance of many other DPs. Further to the capacity development under the project, MOES developed the training modules on School Based Management (SBM) after project completion. PESSs and DESBs have continued utilizing materials and lessons learnt from the project to provide support to VEDCs and school principals on SDP planning and school assessment.

Some schools in the target districts that were trained through SBM training are able to submit their SDP based on school self-assessment to DESB; however, there are still numbers of those that still have difficulty to submit SDP every year due to personnel turnover in school or VEDC which the new members do not understand the basic methodology of making SDP. DESBs also have insufficient understanding

on the methodology.

<Other Impacts at the time of Ex-post Evaluation>

According to MOES, there have been no negative impacts on the natural environment caused by the project.

In 2014, 9th Poverty Reduction Support Operation ODA assistance, general budget) included targets to support the project activities of the Phase 2 project on the implementation of EQS and SBM in the target provinces. This has positively contributed to the effort of the government to improve and develop the school management in primary level in local areas via activities under the Phase 2 project. Some primary schools constructed under "The Project for the Improvement of School Environment in Champasack and Savannakhet Provinces", a JICA grant aid project, were also included in target schools of the Phase 1 and Phase 2 project. This contributed to the schools to continue the school maintenance and improve the teaching-learning environment for the children through SDP.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td>(Project Purpose)
Access and quality of primary education in the target districts are improved.</td><td>Indicator 1. Average figures of the following education indicators of the target districts are improved from the baseline
- Net enrollment rate
- Net intake rate
- Survival rate
- Dropout rate
- Promotion rate</td><td>Status of the Achievement: achieved
(Project Completion)
Average of 10 districts (%)
<table>
<tr><th></th><th>2012/13</th><th>2014/15</th></tr>
<tr><td>NER</td><td>97.84</td><td>98.21</td></tr>
<tr><td>NIR</td><td>97.13</td><td>99.03</td></tr>
<tr><td>Survival Rate</td><td>72.02</td><td>78.62</td></tr>
<tr><td>Dropout Rate</td><td>7.18</td><td>4.73</td></tr>
<tr><td>Promotion Rate</td><td>85.03</td><td>90.8</td></tr>
</table>
(Ex-post evaluation)
Refer to the Overall Goal.</td></tr>
<tr><td rowspan="2">(Overall Goal)
Access and quality of primary education in the target provinces are improved.</td><td>Indicator 1. Education indicators in the target provinces reach ESDP (Education Sector Development Plan) targets consistent with MoES projections
- Net enrollment rate: 98%
- Net intake rate: 98%
- Survival rate: 80%
- Dropout rate: less than 5%
- Promotion rate: 90%</td><td>(Ex-post Evaluation) partially achieved
Figures for 2018/2019 (Target year) (%)
<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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</table>
<table>
<tr><th>Province</th><th>NER</th><th>NIR</th><th>Survival rate</th><th>Dropout rate</th><th>Promotion rate</th></tr>
<tr><td>Salavan (Phase 1&2)</td><td>98.9</td><td>98.8</td><td>72</td><td>6.6</td><td>87.8</td></tr>
<tr><td>Sekong (Phase 1&2)</td><td>95.8</td><td>91.8</td><td>69</td><td>7.1</td><td>82.4</td></tr>
<tr><td>Attapeu (Phase 1)</td><td>97.6</td><td>97</td><td>71</td><td>6.6</td><td>85.4</td></tr>
<tr><td>Champasack (Phase 2)</td><td>98.4</td><td>99</td><td>80</td><td>4.7</td><td>92</td></tr>
<tr><td>Savannakhet (Phase 2)</td><td>98.9</td><td>98.6</td><td>72</td><td>7.1</td><td>87.6</td></tr>
<tr><td>Average</td><td>97.9</td><td>97</td><td>72.8</td><td>6.4</td><td>87</td></tr>
</table></td></tr>
<tr><td>Indicator 2 (Supplementary indicator)
Submission rate of School Development Plan (SDP) from schools in target provinces becomes more than 85%?</td><td>(Ex-post Evaluation) Partially achieved
<table>
<tr><th>Province</th><th>Submission rate (Year: 2019)</th></tr>
<tr><td>Champasack</td><td>Approximately 50%</td></tr>
<tr><td>Savannakhet</td><td>56%</td></tr>
<tr><td>Salavan</td><td>Almost 100%</td></tr>
<tr><td>Sekong</td><td>57%</td></tr>
</table></td></tr>
</table>

Source：MOES, PESSs and DESBs

3 Efficiency

Both the project cost and project period were within the plan (the ratio against the plan: 85%, 100%). The outputs were produced as

planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

There has been policy support for continuation of the project effects. In its "Education Vision to 2030 and Strategy to 2025" and the "ESDP 2016-2020", MOES has stated clearly the intention to continuously provide support and effort in the improvement on access and quality of primary education.

<Institutional/Organizational Aspect>

MOES improved its organizational structure to improve the efficiency of its internal works and coordination. Along with the restructuring, staff turnover and retirement also cause staff insufficiency which affects to the continuation of project effect's promotion and dissemination.

At the provincial and district level, the support and monitoring of the implementation of SDP development and school assessment provided to school principals and VEDCs have been mainly done by DESBs, and PESSs have been mainly responsible for providing training and receiving report on the implementation results from DESBs. With limited number of persons in charge in district level comparing to the number of schools, it is still difficult to achieve the target submission rate of SDP in the province.

<Technical Aspect>

Some of MOES staff at all levels have been able to carry out the training based on lessons leant from the project from the new training modules developed by MOES and DPs following the project. However, in some target districts, it has been still difficult to sustain the project effects, since the new staff members do not understand well the project systems and some of them did not receive training as well as work transfer has not been effectively done in local level.

<Financial Aspect>

Although MOES has financial support by DPs as part to continue promoting the project effects, it has been still insufficient because of the large number of schools and amount of budget needed to implement school activities in order to achieve EQS.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose at the project completion as the education indicators improved at the target districts. The Overall Goal was partially achieved, as the access improved in the target provinces, though the quality partially improved. As for the sustainability, slight problems have been observed in terms of the institutional/organizational, technical, and financial aspects; however, no problem has been observed in the policy aspect.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

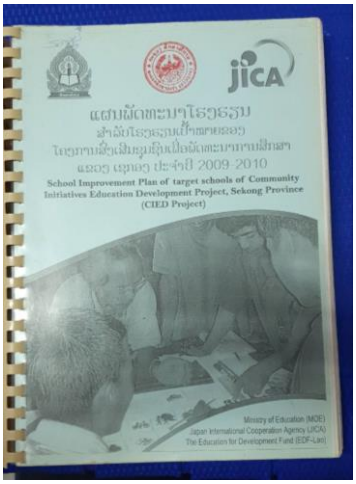
Recommendations for Implementing Agency:

To ensure that the improvement in access and quality of primary education in district and provincial level is sustainably continuing, it is recommended that, the Department of General Education of the Ministry of Education and Sports should support PESS and DESB to fully utilize knowledge and skills in their education planning and monitoring for improving learning at school level as well as to manage and carry out project work and knowledge transfer at the time of personal turnover and retirement, especially in the area of supporting and monitoring works both in central and local level in order to continuously enhance the project purpose and impact nationwide towards achieving the project overall goal.

Lessons Learned for JICA:

Some contents in training materials such as EQS was considered difficult in terms of implementation at school level. The contents of training materials contained large volume of activities to follow when compare to the limited staffing capacity and insufficient budget condition at local level. Because of this, it has been difficult to sustain the project effects, since the new staff members do not understand well the project systems and some of them did not receive training as well as work transfer has not been effectively done along with the restructuring, staff turnover and retirement. For the future projects, JICA should develop the training materials in appropriate volume considering the actual capacity of school principals along with local education committees such as VEDCs and also take into account the geological locations and characteristics of each target local areas which target schools are located (level of education indicators, school distance, economic situation, language use, communication style, culture, etc.) when creating project activities and training models/materials for easy understanding and continuous use as part of the continuation and promotion of the project effects.

Interview meeting with officials from Champasack PESS and DESBs (Champasack, Khong, Soukhouma, Mounlapamok) at Champasack PESS



School Improvement Plan of the Phase 1 project being used continuously as a basis to develop SDP in Maihuameuang Primary School in Lamam District, Sekong Province

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Malawi Office: January, 2022

Country Name	[Phase 2] The Project on Strengthening of Mathematics And Science in Secondary Education (SMASSE) INSET Malawi Phase 2 [Phase 3] Project for Strengthening of Mathematics And Science in Secondary Education in Malawi
Republic of Malawi	

I. Project Outline

Background	In Malawi, the quality of education suffered numerous challenges including lack of qualified secondary school teachers resulting in low Malawi School Certificate of Education (MSCE) pass rates. To address such issues, the Government of Malawi and JICA implemented a series of technical cooperation projects, SMASSE Phase 1 piloted 2004–2007 and scaled up as SMASSE Phase 2 (2008–2012). Both phases aimed to assist in developing Malawi's In-service Education and Training (INSET) system based on the concept of ASEI-PDSI (Activity, Student, Experiment and Improvisation-Plan, Do, See, and Improvement), which were developed under SMASSE projects in Kenya and then extended to other African countries. The Terminal Evaluation of SMASSE Phase 2 in 2012 documented successes. However, there remained significant challenges in improving the teaching capacity of most underqualified teachers and increasing the number of qualified teachers who know how to use practical teaching methodologies. Thus, SMASSE Phase 3 (2013–2017) was implemented to disseminate and sustain the outcomes of the preceding phases. While continuing to implement high-quality INSETs based on teachers' needs, SMASSE Phase 3 added a new components of Action Research and implementing practical methodology training for undergraduate students (trainees undergoing teaching practices) in pre-service teacher training (PRESET) institutions. This ex-post evaluation is for SMASSE Phase 2 and Phase 3.
Objectives of the Project	The project (Phase 2 and 3 combined) aimed to enable teachers in secondary mathematics and science education in Malawi to apply skills and knowledge acquired from INSET and PRESET through (1) strengthening Divisional Trainers' capacity, (2) strengthening National and Divisional INSET Centres, (3) implementing National and Divisional INSET as well as monitoring and evaluation (M&E), (4) strengthening the INSET management system, (5) incorporating the SMASSE approach in PRESET, and (6) conducting Action Research on INSET and PRESET at pilot schools, thereby improving the quality of teaching mathematics and science in secondary schools in Malawi. [Phase 2] 1. Overall Goal: The quality of teaching mathematics and science is improved in secondary schools in Malawi. 2. Project Purpose: Quality INSETs for secondary mathematics and science teachers at Divisional level are provided. [Phase 3] 1. Overall Goal: The quality of teaching mathematics and science is improved in secondary schools in Malawi. 2. Project Purpose: The teachers in secondary mathematics and science education in Malawi apply skills and knowledge acquired through INSET and PRESET.
Activities of the Project	1. Project site: Malawi 2. Main activities: [Phase 2] 1) Recruit and train National and Divisional Trainers 2) Designate and launch National and Divisional INSET Centres 3) Develop curriculum for-, implement and monitor & evaluate National and Divisional INSETs 4) Establish INSET Committees; sensitize stakeholders; publicize INSET activities [Phase 3] 1) Train National Trainers; review curriculum and training materials; and implement and monitor & evaluate National and Divisional INSETs 2) Train or sensitize stakeholders from national to school levels; equip with National and Divisional INSET Centres with necessary materials; develop manuals/guidelines 3) Sensitize PRESET institutions; incorporate the redefined ASEI/PDSI into course outlines of math and science education methodology 4) Develop tests; conduct an assessment on students' perception in teaching and learning at pilot schools; prepare research documents and share them in Malawi and internationally 3. Inputs (to carry out above activities) Japanese Side [Phase 2] * As of Terminal Evaluation 1) Experts:(Long-term) 2 persons; (Short-term) 2 persons 2) Trainees received: (Japan) 4 persons; (Malaysia, Kenya) 39 persons 3) Equipment: Science equipment and chemicals, stationery, reference books, etc. 4) Local cost [Phase 3] * As of Terminal Evaluation 1) Experts: (Long-term) 4 persons; (Short-term) 4 persons 2) Trainees received: (Japan) 55 persons; (Kenya, Malawian Side [Phase 2] 1) Staff allocated: 40 persons 2) Land and facilities: Project office for the SMASSE Secretariat in Department of Teacher Education and Development (DTED), national INSET centre in Domasi College of Education, and divisional INSET centres (19 secondary schools nation-wide) 3) Local cost: Cost for M&E and allowance and transportation for participants [Phase 3] 1) Staff allocated: 23 persons 2) Land and facilities: Project office (DTED), National INSET Centre (DCE), Divisional INSET Centres (19

	Zambia, and Malaysia) 43 persons 3) Equipment: Laptop computers, projectors, printers, photocopiers, video cameras, lab apparatus, etc. 4) Local cost	Secondary Schools) 3) Local cost	
Project Period	[Phase 2] (ex-ante) August 2008 – August 2012 (actual) August 2008 – August 2012 [Phase 3] (ex-ante) April 2013 – March 2017 (actual) August 2013 – August 2017	Project Cost	[Phase 2] (ex-ante) 321 million yen (actual) 346 million yen [Phase 3] (ex-ante) 424 million yen (actual) 263 million yen
Implementing Agency	Ministry of Education, Science and Technology (MoEST)		
Cooperation Agency in Japan	–		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, we were unable to conduct a field survey. Therefore, this evaluation is based on the information provided by the implementing agency and secondary data. For the same reason, detailed information was not available. Therefore, indicators for which sufficient data for verification were not available were determined to be "not verifiable."

<Special Perspectives Considered in the Ex-Post Evaluation>

- Based on the logical relationship between the two phases and following the JICA's framework of phase-integrated evaluation, this evaluation handled Phase 2 and Phase 3 as an integrated intervention (one project) and used the Overall Goal and Project Purpose of Phase 3 as those of the integrated intervention. To assess the achievement level of these objectives, used the indicators of Phase 3.
- The continuation status of project effects was assessed based on the status of the Project Purpose Indicator (including qualitative assessment) and key outputs, i.e., INSET, PRESET, and Action Research.

1 Relevance

<Consistency with the Development Policy of Malawi at the Time of Ex-Ante Evaluation >

At the time of Phase 2 ex-ante evaluation, this project was consistent with the Policy and Investment Framework 2000–2015, which aimed to improve education quality as one of the five objectives. The institutionalization of INSET and the continuous development of teachers for secondary education are included in the scope of the National Education Sector Plan (NESP) 2008–2017, the Education Sector Implementation Plan (ESIP) 2009–2013, and the National Strategy for Teacher Education and Development 2007–2017.

At the time of Phase 3 ex-ante evaluation, the project was consistent with the Malawi Growth and Development Strategy (MGDS) II 2011–2016. Also, SMASSE is stated as one of the national policies in ESIP II 2013–2018 (Policy 3.3 Teacher Training) and in the NESP (2008–2017).

<Consistency with the Development Needs of Malawi at the Time of Ex-Ante Evaluation >

At the time of ex-ante evaluation of both Phases, this project was consistent with the needs for teacher training as mentioned in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

At the time of Phase 2 ex-ante evaluation, the Japanese aid policy towards Malawi included "human resource development" as one of the three priority areas of assistance. This priority area included a subcomponent of "the dissemination and quality improvement of education.[1]

At the time of Phase 3 ex-ante evaluation, the Country Assistance Policy for the Republic of Malawi (2012) included "improvement of basic social services" as one of the two priority areas of assistance. The central components of this priority area were education and water. In the education sector, the Policy stated that "While most donor support is concentrated on primary education, the enrollment rate and quality of education in secondary education is overwhelmingly low. Therefore, Japan will focus on supporting the development and expansion of secondary education, in which Japan has a comparative advantage, and contribute to the creation of leaders for national development."

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the Time of Project Completion>

The Project Purpose was partially achieved by the time of the Phase 3 completion. First introduced to Southeast Education Division under Phase 1, INSET was in place nationwide by the end of Phase 2. Under Phase 3, PRESET and Action Research were introduced as planned. As a result, the ASEI/PDSI Index, a measure introduced by the project to assess the degree of teachers' application of the ASEI/PDSI approach in lessons, showed steady improvement from 1.10 in 2009 to 2.15 in 2016 against the target of 2.50. However, it should be noted that this result does not reflect the effect of PRESET, which was newly introduced in Phase 3. Students in the teacher training institutions who studied under the new curriculum with the ASEI/PDSI principles had yet to become teachers since the related project activities had been delayed.

<Continuation Status of Project Effects at the Time of Ex-Post Evaluation>

The project effects partially continued to the time of ex-post evaluation. Regarding INSET, the Ministry of Education, Science and Technology (MoEST) conducted National and Divisional INSETs every year. The number of participants in National INSETs was higher than during project implementation. Both National and Divisional INSET continued to have certain number of participants, it, however, was in decreasing trend in recent years. It may be suggested that such trend could lead to decrease in the number of teachers applying or getting new knowledge to continue the ASEI/PDSI principles. The 2020 INSETs failed and were postponed to 2021 due to the COVID-19 pandemic.

Regarding PRESET, with the continued incorporation of the ASEI/PDSI principles in their curriculum, the three teacher training institutions, namely, Chancellor College, Nalikule College of Education, and Domasi College of Education, assure that teachers who go

[1] ODA country data collection (2008)

through the PRESET programs have an opportunity to acquire and apply this practice in their teaching.

Action Research, which was envisaged to feed into and inform the designing of INSET and PRESET program, did not continue at the school or cluster level after the project, although there is a revival effort in the Research, Monitoring and Evaluation Department of DTED to bring it back. This would entail limited improvement in the designing of the INSET and PRESET programs because the basis for doing that was missing.

The continuation status of the Project Purpose Indicator could not be verified quantitatively as measurements for the ASEI/PDSI Index were not performed after project completion. However, it was somehow inferred qualitatively that teachers continued to use the ASEI/PDSI approach in lessons. Through the monitoring visits by DTED, most teachers were using ASEI/PDSI approach with confidence and applied knowledge gained from INSET and PRESET.

Implementation status of INSET and PRESET (Unit: persons)

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Number of teachers who participated in National INSET	192	177	244	-	254	-	216	194	287	275	271	-
Number of teachers who participated in Divisional INSET	-	2,931	2,756	-	2,744		2,962	3,107	2,912	2,484	2,637	-
Number of teachers who learned methodologies with the syllabus including ASEI/PDSI in PRESET at Chancellor College	-	-	-	-	-	-	-	-	63	62	73	112

Source: Phase 2 Terminal Evaluation Report, Phase 3 Terminal Evaluation Report, DTED, and Chancellor College
Note: INSET or PRESET were not conducted in some years due to lack of budget. The Divisional INSET in 2013/14 and 2014/15 constitute one batch.

<Status of Achievement of the Overall Goal at the Time of Ex-Post Evaluation>

The Overall Goal was partially achieved. The fact that teachers and head teachers ensure they do not miss INSET is an indication that they have seen and appreciated the benefits of the skills and knowledge they get from the INSETs. The teachers' longing for more trainings is an indication that they are willing to see more improvement in the way they teach and address any difficult areas and approaches in their teaching practices (Indicator 1). The results of the nationwide inspection conducted by Directorate of Quality Assurance Services (DQAS) in 2019 showed that the science and mathematics lessons are at least partially meeting the target achievement levels of the National Education Standards set by the project (Indicator 2).

<Other Impacts at the Time of Ex-Post Evaluation>

No negative impacts have been observed. Regarding positive impacts, we collected data of Malawi School Certificate Examination (MSCE) pass rates, which is the indicator for the Super Goal of this project of improving students' achievement in secondary mathematics and science in Malawi.[2] A growing improvement in the MSCE results is seen for both boys and girls. Although it is difficult to examine correlation, this can be partly attributed to the quality teaching that teachers practice in the schools, as advocated by the project. The fact that majority of secondary school learners are in community day secondary schools which have the least qualified teachers, it is important to note that the improvement in the results of the MSCE could be an indication that more teachers in those schools have acquired confidence and improved their skills in the teaching of science subjects as a result of the project's initiatives.

MSCE pass rates

Year	MSCE (%)		
	Boys	Girls	All
2016	62	50	57
2017	59	50	56
2018	66	53	60
2019	69	57	63
2020	47.32	34.64	41.42

Source: NESP, 2000
Note: Data on performance in mathematics and science by gender is not available.

<Evaluation Result>

Therefore, the combined effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) The teachers in secondary school mathematics and science education in Malawi apply skills and knowledge acquired through INSET and PRESET teaching.	Indicator Secondary mathematics and science lessons sampled nationally obtain a mean score of over 2.5 on a scale of 0 to 4 in the ASEI/PDSI Index, administered by the Project Monitoring and Evaluation (M&E) Team.	Status of the Achievement (Status of the Continuation): Partially achieved (Not verifiable) (Project Completion) ASEI/PDSI Index: 2009: 1.1; 2010: 1.7; 2011: 1.8; 2015: 1.92; 2016: 2.15 (Ex-post Evaluation) There are no measurement results.	source: Phase 3 Terminal Evaluation Report, DTED
(Overall Goal) The quality of teaching mathematics and science is improved in secondary schools in Malawi.	Indicator 1 The degree of attitude change (in teaching) of secondary mathematics and science teachers assessed by; (i) secondary mathematics and science teachers (ii) secondary school head teachers.	(Ex-Post Evaluation) Partially achieved i) The attitude of teachers changed. Teachers are no longer skipping difficult topics. They are also demanding more training both at the national and divisional levels. Teachers have seen that the trainings improve their teaching skills, giving them the confidence to handle any topic. ii) The measurement of head teachers' assessment of mathematics and science teachers was not done during the monitoring visits. HOWEVER, the DTED team believes that head teachers' support	source: DTED Monitoring Visits

[2] The Phase 2 Super Goal: "The abilities of secondary school students in mathematics and science are improved in Malawi." The Phase 3 Super Goal: "Students' achievement in secondary mathematics and science is improved in Malawi."

		towards the teaching of mathematics and science through the provision of necessary equipment and lab materials is an indication that they appreciate and promote the skills the teachers get from the training.	
	Indicator 2 Secondary mathematics and science lessons sampled nationally obtain the mean of 2.5 or better on the scale of 1 to 4 according to the National Education Standard.	(Ex-Post Evaluation) Partially achieved In 2019, the DQAS embarked on National Wide inspection for science and mathematics lessons. Over 30% of the lessons observed were rated above minimum standard. Results from Education Division Inspection is not different to the above findings. National Education Standards' scale has 4 levels with the Level 1 being below minimum standards; Level 2 being Meets minimum standards, Level 3 being Exceeds Minimum Standards and Level 4 being Effective Practice. The average value of the levels rated in the above-mentioned inspection, assuming equal level intervals, is calculated to fall between the lower limit of Level 3 x 30% + Level 1 x 70% = 1.6 and the upper limit of Level 4 x 30% + Level 2 x 70% = 2.6.	source: DTED

3 Efficiency

The project cost and the project period were both within the plan (ratio against the plan: 82% and 100%, respectively).[3] The Outputs were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

The MoEST continues to regard mathematics and science as core fields for knowledge acquisition by both teachers and learners, as evidenced in featuring them in the National Education Sector Investment Plan (NESIP) 2020–2030, Malawi Vision 2063 and the Continuing Professional Development (CPD) Framework for Teachers and Teacher Education 2019.

<Institutional/Organizational Aspect>

The DTED has a full-fledged structure to ensure efficient leadership and delivery of the SMASSE program at both the national and school levels. The MoEST has made an effort to fill all the important positions, such as Director and Deputy Directors for INSET and Deputy Director for PRESET. However, this does not rule out the possibility of some of them falling vacant again since turnover is high in the Ministry. The number of National Trainers for SMASSE has decreased from eight to five due to promotions to other institutions. For PRESET activities, the required number of eight is in place.

<Technical Aspect>

For INSET, Lecturers, National and Divisional Trainers still facilitate in National and Divisional INSET every year. For PRESET, Lecturers use the skills in their day-to-day work since the SMASSE principles have been incorporated in their curriculum. Manuals and materials have been developed and used in various contexts. For example, INSET manuals have been used during INSET sessions and teaching in schools as references. Monitoring tools have been adapted and used by officers in the DQAS during monitoring sessions.

<Financial Aspect>

The INSET program was completely adopted by the MoEST, and it receives a budget for the implementation of its activities. Although the PRESET institutions incorporated the project principles, it is not clear whether there is a budget at these institutions specifically for implementing principles introduced by the project. All educational institutions receive funding from the government through the MoEST, and it is up to them to fund activities deemed necessary including Action Research. However, Action Research was not institutionalized and decentralized to schools yet by the time the project ended making it difficult for schools to recognize it into their budget.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

This project (Phase 2 and 3 combined) partially achieved the Project Purpose by the end of Phase 3. The measurement results of the indicator showed that secondary mathematics and science teachers had improved the application of skills/knowledge acquired from INSET, but the measurement did not reflect the effects of PRESET due to delays of related activities. Both National and Divisional INSETs and PRESET incorporating the ASEI/PDSI approach continued to the time of ex-post evaluation, while Action Research did not continue. The Overall Goal of providing quality lessons was partially achieved at the time of ex-post evaluation as the attitude change in teaching was qualitatively verified to some extent and a recent measurement of the National Education Standard shows a certain degree of achievement of the target. Regarding sustainability, there are some concerns, such as potential understaffing of SMASSE-related personnel and lack of budgeting for Action Research. However, policies and the organizational structure to support SMASSE activities are in place, and the technical aspect has no problem.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

Continuation of reporting on classroom and school practices would be effective if schools or clusters are given this responsibility. Action Research has to be mainstreamed and budgeted as an integral part of SMASSE activities that receive government funding. For these purposes, the SMASSE Secretariat and schools are recommended to include monitoring of SMASSE practices, including Action Research, before the next budgeting session, by introducing a calendar of SMASSE and Action Research to ensure that there is continuity of these activities.

[3] Total for Phase 2 and 3.

Lessons Learned for JICA:

SMASSE was effectively mainstreamed as the MoEST took ownership of the project because of the positive impact it has shown over the years on improving the quality of teaching science and mathematics. Phase 3 of the project enabled the MoEST to introduce critical complementary support components to teacher development, such as the PRESET curriculum and Action Research, which were not conceived in the previous phases. It, however, became difficult for stakeholders to continue with Action Research possibly because of their limited knowledge on linkages among project components. The ministry did not fully integrate Action Research activities into SMASSE, although they knew its role in informing the INSET/PRESET programs. This problem led to their failure to introduce Action Research on the SMASSE budget effectively.

Because Action Research came as an after-thought to strengthen the model of teacher development established through Phase 2, it might be more difficult for all the stakeholders to understand a comprehensive map of the various actors and their role for the sustainability of the different project activities.

From these experiences, it is learned when new activities are to be incorporated in the later phases of long-term cooperation, such as SMASSE, care should be taken to ensure that they are fully integrated into the already established system.

(2016) A SMASSE Expert and a Biology Teacher Discussing Progress of a Lab Session

SMASSE Divisional Trainers Discussing Challenges in Teaching and Ways of Tackling Them

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Afghanistan Office: August, 2021

Country Name	**Project for Capacity Development and Establishment of Road Maintenance Management System**
Islamic Republic of Afghanistan	

I. Project Outline

Background	Long and devastating conflicts in Afghanistan left the country with damaged roads and bridges. After the agreement exchanged with the international communities in December 2001 at Bonn, Germany, Afghanistan started to rebuild the road infrastructures and road networks with the support of international donors. While the rehabilitation of road infrastructure was progressed, the road maintenance and management as well as the capacity development of human resources engaged in the field was left behind.		
Objectives of the Project	Through the establishment of operational setup and organizational structure, capacity development of staff on planning, engineering and machinery works in Kabul region (1), the project aimed to establish the prototype of road maintenance and management system (RMMS), thereby enabling the RMMS to work in the target area. 1. Overall Goal: Road maintenance and management system works in Kabul region. 2. Project Purpose: Prototype of road maintenance and management system in Kabul region is completed. Note: (1) Kabul region indicates the areas supervised by the Kabul Regional Office (KRO).		
Activities of the Project	1. Project site: Kabul region (Loghar, Wardak, Ghazni, Bamyan and Kabul Provinces) *Since the organizational reform in 2014, KRO covers Loghar, Wardak and Ghazni and Kabul Provinces. 2. Main activities: (1) Implementation of pilot projects of road construction/rehabilitation and establishment of the RMMS, (2) Capacity development on planning, implementation of engineering works and machinery works, (3) Information collection and sharing. 3. Inputs (to carry out above activities) Japanese Side: 1) Experts: 9 persons (Short-term) 2) Trainees received: 3 persons in Japan The third country:13 persons in Malaysia 3) Local expenses to implement three pilot projects of road construction/rehabilitation Afghanistan Side: 1) Staff allocated: 11 persons 2) Facilities: Project Office 3) Local expenses		
Project Period	March 2008 – January 2012 (Extended period: February 2011 to January 2012)	Project Cost	(ex-ante) 300 million yen, (actual) 541 million yen
Implementing Agency	Ministry of Public Works (MPW) General Directorate of Road Operation and Maintenance (GDRM)*, Kabul Regional Office (KRO), Kabul Construction Machinery Centre (KCMC) * Department of Road Maintenance (DRM) was renamed as GDRM in 2015 at the organizational reform.		
Cooperation Agency in Japan	Ministry of Land, Infrastructure, Transport and TourismKatahira & Engineers International		

II. Result of the Evaluation

<Constraints on Evaluation>

・Due to the state of emergency caused by COVID-19, all information was obtained through questionnaires and follow up phone calls/emails to GDRM, KRO and KCMC. No site visits were conducted.

< Special Perspectives Considered in the Ex-Post Evaluation >

Target Year for Overall Goal:

・The target year for Overall Goal is stated as three years after the project completion, which is January 2015. However, the actual evaluation study was conducted in 2020. Therefore, effects over the year from 2015 to 2020, are analyzed and are considered for judgment.

1 Relevance

<Consistency with the Development Policy of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, this project was consistent with the development policy of Afghanistan proclaimed in 2006, namely, the Interim Afghanistan National Development Strategy (I-ANDS) as a Five-Year National Development Strategy, which sets the goal in the field of road infrastructure that by the end of 2008, GOA constructs and maintains the major loop roads as well as connecting roads with the neighboring countries and establishes the financially sustainable Road Maintenance and Management System (RMMS) by March 2008.

<Consistency with the Development Needs of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, this project was consistent with Afghanistan's development needs to establish the prototype of RMMS in Kabul region as described in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The government of Japan set its assistant policy toward Afghanistan with special focus on the three pillars, peace building, security and rehabilitation. The reconstruction of major roads and secondary roads were included in the rehabilitation assistance as part of priority areas[1].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

[1] Source: Ministry of Foreign Affairs, "ODA Country Data Book in 2008"

<Status of Achievement of the Project Purpose at the time of Project Completion>

By the end of the project completion, the project achieved its purpose: "Prototype of road maintenance and management system in Kabul region is completed." MPW prepared a maintenance plan for 2010 based on the actual performance in 2009 as planned (Indicator 1). It was retroactively estimated from budgetary record that road management maintenance (RMM) works was completed for 57.2% of the total road length under KRO, achieving the target as 39.3% (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

After the completion of the project, the effects of project have continued. MPW continued implementing the RMM works for four provinces under KRO, that are Loghar, Wardak, Ghazni and Kabul Provinces. In some roads in the Provinces of Loghar, Wardak and Ghazni, KRO could only implement the RMM works for routine and emergency maintenance (but not periodic maintenance)[2] due to security and budgetary reasons. KRO could not and will not implement any RMM works for remaining 8.5% of the roads, all due to security and budgetary reasons. In compliance with the recommendations at the Terminal Evaluation Study, the inventory survey has been completed for the road approximately 1,900 km under KRO in Kabul region according to the interview with MPW staff. Another issue was the electric supply. According to the Director of Plan and Engineering of GDRM, KCMC is able to secure the sufficient supply of electricity by the city power sources in order to provide services of road maintenance.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

It is observed that the Overall Goal, i.e. "Road maintenance and management system works in Kabul region." has been partially achieved. No data is available for Indicator 1, "By 2015, RMM will be implemented at the 80% (2,022km) of road under the KRO." However, considering the fact that RMM works have continued since project completion and that RMM works have been completed for 91.5% of total length by the time of ex-post evaluation in 2020, it is retroactively estimated that RMM works might have been completed for the road length of 1,608 km by 2015 (calculation based on a simple annual average), achieving the 87.6% of the target (80%) in 2015.

<Other Impacts at the time of Ex-post Evaluation>

It was identified through the study that the project has influenced MPW to efficiently promote the private sector for construction and maintenance, of which MPW had never experienced. MPW has contracts with private companies to implement the road periodic maintenance works in different provinces which promote the private sector as well. MPW has a plan to further contract-out the periodic maintenance in the unsafe areas due to security reasons. According to the Plan and Engineering Department of GDRM, the repairing cost of the road infrastructure has been reduced as a result of the decreased level of damages with the RMM works.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Prototype of road maintenance and management system in Kabul region is completed.	Indicator 1: By the end of second year of the Project, RMM plan including a budgeting plan for the next year for the road under KRO will be made.	Status of the Achievement: achieved (continued) (Project Completion) ・By the end of second year of the Project (2009), MPW prepared a RMM plan for 2010 based on the actual performance in 2009. (Ex-post Evaluation) ・According to the Plan and Engineering Department of GDRM, the RMM plan including a budgeting plan has been continuously prepared based on the actual performance of previous year for the road under KRO.
	Indicator 2: By the end of the Project, at the 39.3% (994km) of road under KRO, RMM works will be implemented by Force-account and Contracted-out schemes.	Status of the Achievement: achieved (continued) (Project Completion) ・Based on the maintenance plan in 2010, actual expense/plan ratio and the budget for 2011, the terminal evaluation team and the project team had assumed that at 57.2% of the road under KRO, the RMM works were implemented by the end of the project (January 2012). (Ex-post Evaluation) ・According to the Plan and the Engineering Department of GDRM, after completion of the project, MPW continued implementing the RMM works up to 91.5% of total length for the roads under KRO which is consisted of four provinces (Loghar, Wardak, Ghazni and Kabul). In some roads in three of these provinces except Kabul, KRO, in recent years, has not been able to implement the RMM works except for an emergency maintenance due to security reasons and budgetary constraints. Thus, the remaining part of roads (8.5%) were not maintained and will not be done in the future, either if the security of roads remains unstable.

[2] RMM works includes routine maintenance, an emergency maintenance and periodic maintenance. Routine maintenance is conducted on a regular basis, such as cleaning of road verges and shoulders and cutting useless plants(hay) from road sides, cleaning of side ditches and culverts from silt and mud, road patching works, and repairing of holes of road in order to provide safety and functionality of daily vehicle traffic and avoid premature destruction of roads. Emergency maintenance activates whose needs cannot be estimated with any certainty in advance. These activities include emergency works to repair landslides due to natural disasters and washouts that result in the road being cut or made impassable. It also includes temporary restoration of badly failed pavement sections of road and construction of causeways at river crossing. Periodic maintenance (including maintenance of road routing activities) is conducted in relatively long intervals for the purpose of maintaining the structural integrity of the road and requires special equipment and skilled personnel. The major activities are classified into the works types of preventive, resurfacing, overlay works. Re-sealing and pavement reconstruction are mainly done in response to significant damage on the road.

(Overall Goal) Road maintenance and management system works in Kabul region.	Indicator 1: By 2015, RMM will be implemented at the 80% (2,022km) of road under the KRO.	(Ex-post Evaluation) partially achieved ・Actual data as of the target year (2015) as well as the data up to the year 2019 are not available. However, it is confirmed through interviews with KRO, RMM works were completed by the time of ex-post evaluation for the road length of 2,100km, which represents 91.5% of total length of road under KRO. ・Considering that MPW continued implementing RMM works under KRO since the project completion, it can be estimated that RMM works might have been implemented for the length of 98.4km per year if the progress of RMM works was made evenly in each year. Under this assumption, it is possible to estimate that by 2015, RMM works might have completed for the road length of 1,608.2km (70.1%), achieving the 87.6% of the target (80%) for 2015.

Progress of implementation of RMM works by KRO.

	Planned	Actual	Planned	Actual		
	Project Completion January 2012	Project Completion January 2012	Target Year 2015	Target Year 2015	2016 - 2019	Ex-post Evaluation 2020
Road length with RMM works	994km	1,313km (1)	2,022km	na	na	2,100km
Completion ratio of RMM works (%) (1)	39.3%	57.2%	80%	na	na	91.5%
Retroactively computed based on the actual road length with RMM works by 2020		Road length with RMM works		(1,608km)	-	
		Completion ratio of RMM works (%) vs target (2015)		(87.6%)	-	

Note: (1) Total length of road under KRO is approx. 2,528km for the target values (as stated in the Project Completion Report) and approx. 2,295km for the actual values in January 2012 (1,313km/57.2%=2,295km). The same 2,295km was used as the denominator to calculate the percentage as of the ex-post evaluation.

Source: Terminal Evaluation Report, Project Completion Report, Questionnaire surveys and Interviews with GDRM and KRO

3 Efficiency

The project period exceeded the plan and the project cost significantly exceeded the plan (ratio against plan: 128% and 180%, respectively). There was an interruption of project activities during presidential election in 2009 for about 8 months and in March 2010. A set of equipment brought to Afghanistan by Japanese experts to conduct training at KCMC did not clear the customs in due time. As a result, training schedule had to be changed. In order to cover the extended period, the project cost exceeded the plan. The Outputs of the project were produced as planned.

Therefore, efficiency of the project is low.

4 Sustainability

<Policy Aspect>

The "Afghanistan National Peace and Development Framework (ANPDF) (2017-2020)" outlines the core strategies of the development policy of the country. "National Infrastructure Program (NIP) (2017-2021)" which assists in achieving the ANPDF's vision, focuses on the efficient planning, delivery and operation of infrastructure at the national and sector level, which will improve performance and deliver improved efficiency, productivity and competitiveness. Theses priority infrastructure investments combined with human capital development and enhanced regional connectivity, provide the essential building blocks for Afghanistan's future economic growth, employment and social development. In terms of road sector regarding road maintenance and operation, "Transport Strategy of MPW (2019-2023)" is the main and concrete policy which is in-line with ANPDF and NIP. This strategy pursues an overall road asset management establishing an appropriate management structure, and one of the sub-strategies is to establish a sustainable and effective road development system, which will withstand all the challenges of road sector, with high working standards; and to create viable and an efficient road maintenance system to keep the roads open year-round and allow people and goods to move safely and efficiently within Afghanistan.

<Institutional/Organizational Aspect>

GDRM assumes the overall responsibilities for the road operation and maintenance of all national and regional roads in Afghanistan as well as for supervising the provincial offices of MPW. It contains four departments, that are the Planning and Engineering Department, Reconstruction Department, Administrative Affairs Coordination Department and Provincial Department. RMM works are mainly supervised by the Planning and Engineering Department. According to the Planning and Engineering Department, the organizational reform is under consideration in MPW and it is expected that there will be 133 more technical and administrative staff allocated to GDRM. KRO is the main body to implement the RMM works for Kabul region.[3] According to the interviews with GDRM, the current manpower at KRO is not sufficient to provide the proper RMM works, that is to complete the road routing for remaining length of roads as well as to carry out the routine maintenance works. On the other hand, KCMC, in charge of maintenance of construction machineries for road operation and maintenance, has sufficient number of staff to provide the proper maintenance works for machineries. It is anticipated that the organizational reform which would establish the ideal organizational structure and specify the required skills necessary for each department of the organization will resolve the current issues, such as the staff shortage in order to manage and undertake basic roles and responsibilities of RMM works.

<Technical Aspect>

The staff of GDRM, KRO and KCMC have the skills to fulfill their works for RMM in their offices. Knowledge and capacity of technical staff of GDRM was enhanced through trainings on pavement surface evaluation and rating. However, there is one concern that in recent years, no further trainings and capacity development in RMM have been done. Manuals developed by the project were well prepared and

[3] Since the latest organizational reform in 2014, KRO covers Kabul, Logar, Wardak and Ghazni province.

standardized, but have not been utilized well since there is no proper equipment available in order to implement the RMM on regular basis. Thus, it may not serve well for staff of MPW to refer to the manual in routine works. The capacity development in RMM works is further needed, especially in terms of GIS-based RMM because it will help MPW to make a reliable and accurate decision regarding the prioritization of road maintenance and management as the factors like traffic counts, pavement conditions, maintenance costs and alternative roadways are taken into account in the GIS-based RMM system. In addition, the GIS-based RMM is expected to support the road maintenance in optimum conditions with limited budget, thus it is also expected to help MPW in proper maintenance planning.

<Financial Aspect>

The budget for operation and maintenance of road infrastructure is provided by Ministry of Finance (MOF) based on the previous year's plan and performance. Though the budget amount is slightly increasing, MPW is still not able to secure the sufficient budget to properly implement the road maintenance and to complete the road routing for the remaining length of roads. MPW currently has a plan to create a Road Funding Unit (RFU) under MOF to secure all revenues from road taxes and fees in RFU as well as from such donors who want to invest in road sector to provide funds though RFU.

MPW's Budget for operation and maintenance of road infrastructure — Currency Unit: Million Afghani

Source	Project Completion 2012	2017	2018	2019	At the time of ex-post evaluation 2020
Government Budget	750	1,000	1,000	1,350	1,200
Inclusive: Government Budget to KRO	95	98	97	100	200

Source: MPW

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical and financial aspects. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

By the project completion, the project achieved the Project Purpose, "Prototype of road maintenance and management system in Kabul region is completed." The effects of the project have continued after the project completion, and the Overall Goal, "Road maintenance and management system works in Kabul region." has been partially achieved. As for the sustainability, some problems have been observed in terms of the institutional/organizational, technical and financial aspects. As for the efficiency, both of the project cost and the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations to the implementing agency:

1) To enhance the efficiency and effectiveness of operation and maintenance of road, MPW should consider strengthening of organizational capacity of central and provincial offices of GDRM and KRO in terms of staff allocation and training system. It was identified by the study that manpower of those offices is not sufficient and no training opportunities are available for newly recruited technical staff.

2) MPW should secure enough maintenance budget through establishment of RFU with support of MOF in order to continue RMM works periodically.

Lessons Learned for JICA:

1) The project successfully enhanced the technical capacity of each staff engaged in RMM works. However, it was identified by the study that there is no effective mechanism to sustain and to further enhance such individual capacity within the organization of MPW. JICA should take into accounts of this experience for future JICA's technical cooperation projects. In order to effectively conduct capacity development in the project, it is essential not only to enhance the technical capacity of each staff who has basic knowledge and experience of the field in charge, but also to strengthen the organizational capacity of the related counterpart agencies as a whole. In practical terms, it is necessary to identify the issues and challenges of the organization as a whole through the organizational analysis by starting with the data collection survey and provide the necessary assistance, such as by developing the ideal organizational structure and specifying the required skills and update/related job description necessary for each department in the organization accordingly.

2) Despite the fact that this project was relevant and achieved high effectiveness and impact, the uncontrollable incidents, such as political events and restricted administrative procedures, had made the project period to be extended, forcing the efficiency of the project to be assessed as "low". The Planning Team should take into account of possible effects caused by the various issues derived from the country's specific situation, especially in case of the country where the political situation is unstable, since the extension of the Project during implementation affects the evaluation result of Efficiency at the time of Project completion and Ex-post evaluation.

Photos

	
Asphalt improving works as part of Periodic maintenance at the Road site	Routine maintenance work is ongoing at road site

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Sudan Office: May 2021

Country Name	Project for Human Resource Development for Water Supply in Sudan (Phase 1) (Phase 2)
Sudan	

I. Project Outline

Background	In Sudan, the access rate to improved water sources was 67.5% in 1990. However, because of the civil wars, the situation was stagnant at around 65% (2010). The Government of Sudan made efforts for improving water supply facilities for the universal coverage of safe water supply by 2031.The Public Water Corporation (PWC) (renamed as the Drinking Water and Sanitation Unit (DWSU) in 2012) had overseen water supply throughout the country. After approval of the Law of Decentralization in 1994, the responsibility for operation and maintenance of water supply facilities was transferred from PWC to the State Water Corporations (SWCs). The role of PWC became limited to policy formulation, construction of large-scale water supply facilities, coordination of the international cooperation projects, monitoring of SWCs and human resources development. However, the water sector in Sudan faced serious problems associated with lack of budget, human resources, and equipment in most SWCs. In response, JICA implemented the "Project for Human Resources Development for Water Supply in Sudan" (Phase 1) was implemented (2008-2011). As a result, PWC Training Center (renamed as the Drinking Water and Sanitation Unit Training Center) developed its capacity for training implementation, while issues of human resources development at the state level remained to be improved further. Therefore, the Government of Sudan requested the Government of Japan for the succeeding project (Phase 2).		
Objectives of the Project	Through establishment of training and monitoring units at the Drinking Water and Sanitation Unit Training Center (DWST) and SWCs, the projects aimed attraining human resources in the water sector in Sudan, thereby contributing to enhancement of institutional capacity and appropriate management for water supply facilities. <Phase 1> Overall Goal: Institutional capacity for stabilizing water supply in the northern Sudan is enhanced. Project Purpose: PWC Training Center establishes the system the implementation of Training. <Phase 2> Overall Goal: Water supply system is properly managed in Sudan. Project Purpose: Human resources in water supply sector are properly trained in Sudan.		
Activities of the project	1. Project site: All states in Sudan 2. Main activities: <Phase 1>Development of training curriculum and materials, development of training management manuals, construction of the training center, training of trainers and coordinators, etc. <Phase 2> Development of the long-term and mid-term training plan, establishment of the training units at SWCs and monitoring units at DWST and pilot SWCs, etc. 3. Inputs (to carry out above activities) Japanese Side <Phase 1> 1) Experts from Japan:9 persons 2) Training in Japan: 11 persons 3) Equipment: Office equip, training facility and equipment, etc. <Phase 2> 1) Experts from Japan:10 persons 2) Experts from the third country (Morocco): 11 persons 3) Training in the third country (Morocco): 48 persons 4) Equipment: Vehicle, office equipment, etc. Sudan Side <Phase 1> 1) Staff allocated: 18 persons 2) Land and facilities: Office space, training facility and equipment, etc. <Phase 2> 1) Staff allocated: 68 persons 2) Land and facilities: Office space, training facility and equipment, etc.		
Project Period	<Phase 1> June 2008 to March 2011 <Phase 2> November 2011 to September 2015	Project Cost	<Phase 1> (ex-ante) 260 million yen, (actual) 374 million yen <Phase 2> (ex-ante) 550 million yen, (actual) 675 million yen
Implementing Agency	<Phase 1> Public Water Corporation (PWC) Training Center <Phase 2>Drinking Water and Sanitation Unit (DWSU), State Water Corporations		
Cooperation Agency in Japan	<Phase 1> Earth System Science Co., Ltd., Nihon Techno Co., Ltd. <Phase 2> Earth System Science Co., Ltd.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation>

- The Phase 2 was implemented with the aim of training human resources for proper management of the water supply system, based on the results of the Phase 1 (established the training system at DWST). Therefore, in the ex-post evaluation, the two projects were interpreted as one intervention, and for the evaluation of effectiveness/impact, and the Project Purpose and Overall Goal of the Phase 2 were referred to.
- Indicator 2 of the Project Purpose of the Phase 2 was set as the number of maintained water yards. Since it was a result of the trained human resources, it was utilized as an indicator for verifying the Overall Goal in the ex-post evaluation.

<Constraint on the Ex-post Evaluation>

- Because of the outbreak of COVID-19, information was collected through a questionnaire survey from DWSU and three SWCs and phone interviews

to make evaluation judgement in the ex-post evaluation. Site visits were not conducted.

1 Relevance

<Consistency with the Development Policy of Sudan at the time of Ex-ante Evaluation>

The "Quarter Century National Plan for Domestic Water Supply" (2003-2027) aimed at improvement of the equitable access safe water supply, and the "25-year Water Supply Plan" (2003-2027) aimed at increasing the water coverage ratio to 100% by 2027. Thus, both the Phase 1 and Phase 2 projects were consistent with the development policy of Sudan at the time of ex-ante evaluation of each project.

<Consistency with the Development Needs ofSudan at the time of Ex-ante Evaluation>

Due to the more than 20-year internal conflicts which ended in 2005, infrastructures including water supply facilities were fragile and there were not sufficient personnel for operation and management of water supply facilities. The Training Center was established at PWC by the Phase 1, but it still had needs for developing mid-term and long-term plans for human resources development for water supply. Thus, both the Phase 1 and Phase 2 projects were consistent with the development needs of Sudan at the time of ex-ante evaluation of each project.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

One of the priority issues mentioned in the ODA Charter (2003) was peace-building, and one of the priority areas was the support for basic human needs which included support in the water and hygiene sector[1]. In Sudan, after the Comprehensive Peace Agreement in 2005, the Government of Japan expanded its bilateral assistance to Sudan. Then one of the priority areas was the support for improvement of the basic livelihood which included strengthening water and hygiene facilities and maintenance capacity[2]. Thus, the two projects which aimed to develop human resources for proper management of the water supply system were consistent with Japan's ODA policy at the time of ex-ante evaluation of each project.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose of the Phase 2 at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. The system for training implementation was established and strengthened at DWST in the Phase 1 and the Phase 2. Training courses were implemented based on the mid-term/long-term human resources development plan. Also, support was provided for development of the training implementation structure in each SWC. In the Phase 2, a total of 5,851 personnel of DWST and SWCs were trained by DWST in the Phase 2 (Indicator 1).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued. DWST has continuously provided training courses. The number of the implemented courses and trainees decreased in 2018 and 2019 due to political, economic and social unrest which actually preceded the political turmoil that started on December 2018. Training topics were data management/GIS (Geographic Information System), M&E (Monitoring and Evaluation), pipe network management, rural water development and water analysis. Both of the two pilot SWCs investigated in the ex-post evaluation (Sennar and White Nile) have continued their training implementation. The number of the implemented courses decreased in 2018 and 2019 in Sennar, because the new training center was being constructed. State level training topics have included the government finance, electrical management and well management, data management, community development management, water quality management, etc. Regarding the non-pilot SWCs, the information was available only from SWC of River Nile. It has annually conducted training for water supply staff. The number of implemented training courses.

<Status of Achievement for Overall Goal of the Phase 2 at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of project completion. It was confirmed that the trained staff have utilized their learnings to maintain and operate water supply facilities at all of the surveyed two pilot SWCs and one non-pilot SWC (Indicator 1). Learnings from the training have been utilized at SWCs as listed in the table below. And, they have utilized their learning for maintaining water yards (borehole, elevator tank, generator house and public fountains) at each SWC (Indicator 2). The number of the operated and maintained water yards has increased in the three answered states, particularly in River Nile where the population has increased and so have the industrial and commercial activities.

<Other Impacts at the time of Ex-post Evaluation>

First, synergy effects have been confirmed with other JICA projects such as the "Project for Improvement of Public Services in Three Darfur States" (2015-2021), "Project for Strengthening Institutional Capacity for Operation and Maintenance of Water Supply Systems" (2016-2020) and "Project for Improvement of Water Treatment Plant in Kosti City" (2016-). Those trained by the project have become key persons in the mentioned projects because of their experience, and it helped the smooth project implementation because they have understood the technical cooperation projects of JICA.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Human resources in water supply sector are properly trained in Sudan.	1. The number of trainees that are trained in Sudan exceeds 2000.	Status of achievement: Achieved (Partially Continued). (Project Completion) - A total of 5,851 trainees were trained in whole country in the Phase 2: 1,469 of DWST, 1,147 of pilot states and 3,235 of other states. Training topics provided by DWST included water treatment plant, water supply facility, data management/GIS, well management, and so on. (Ex-post Evaluation) - In two pilot states surveyed in the ex-post evaluation, although the number of

[1]Ministry of Foreign Affairs "ODA Databook 2008."

[2]Ministry of Foreign Affairs "ODA Databook 2011."

trainees could not be confirmed, training itself has been continued. At SWCs of Sennar and White Nile, a total of 44 training courses were implemented for four years from 2016 to 2019. Training topics in Sennar SWC in 2017 and 2018 were the government finance, electrical management and well management. Training topics in White Nile SWC in the same years were project management, data management, community development management, water quality management, GIS, sanitation management, and organizational management.- In River Nile SWC (non-pilot), a total of 220 trainees were trained for four years from 2016 to 2019

	2016	2017	2018	2019	Total
Implemented courses in Sennar	10	3	2	2	17
Implemented courses in White Nile	9	8	5	5	27
Trainees in River Nile	40	60	80	40	220

- Also DWST has continuously provided training courses. A total of 858 trainees were trained for four years from 2016 to 2019. Training topics included data management/GIS, M&E, Pipe network management, rural water development, water analysis, and so on.

	2016	2017	2018	2019	Total
Implemented courses in DWST	17	21	13	6	57
Trainees in DWST	214	337	210	97	858

(Overall goal)
Water supply system is properly managed in Sudan.

1. SWC staff utilized their knowledge and technical skills to maintain and operate water supply facilities.

Status of achievement: Achieved.
(Ex-post Evaluation)
- Staff of Sennar SWC who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding water quality and safety, water network management, well management, mechanics, electricity management, data & information management, government accounts and computer basics.
- Staff of White Nile SWC who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding government financial systems, data management, security & safety management, generators & pumps water maintenance, organization management, community development management, water quality management, project management and GIS.
- Staff of River Nile SWC (non-pilot SWC) who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding sanitation management, electric management, electronic water meter, computer skills, methods of tender & contracting, GIS, management of water supply facilities, well management, and how to use computer applications.

2. The number of annually maintained water yards* is increased to more than 20 in each SWC.
*Water yard: borehole, elevator tank, generator house and public fountains.

Status of achievement: Achieved.
(Ex-post Evaluation)
- The number of annually maintained water yards mostly reached more than 20 increased to more than 20 in each of the surveyed SWCs.

	2016	2017	2018
Sennar	60	75	90
White Nile	36	19	27
River Nile (Non-Pilot)	204	257	204

Source: Project Completion Report and information provided by DWST and SWCs of Sennar, White Nile and River Nile.

3 Efficiency

Although the total project period of the Phase 1 and Phase 2 was within the plan, the total project cost of the two projects exceeded the plan (ratio against the plan: 96% and 130%, respectively). The Outputs were produced as planned. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

Promotion of the operation and maintenance of water facilities has been prioritized in the "Quarter Century National Plan for Domestic Water Supply" (2003-2027). Also, the "25-year Water Supply Plan" (2003-2027) has aimed at increasing the water coverage ratio to 100% by 2027.

<Institutional/Organizational Aspect>

DWST has sustained the basic organizational structure to plan, implement and evaluate training courses. It has revised the mid-term training plan for human resource development developed by the project, and has implemented courses throughout the year according to the annual plan, which has included the budget allocation, number of target trainees and training courses. DWSU has assessed the training needs through the field visits and coordination with SWC training centers and also from interviews with the trainees at DWSU. The training database developed by the project has been updated and utilized. At the time of ex-post evaluation, DWST had five coordinators and 90 trainers. The trainers were mostly contracted by DWSU and have been assigned according to courses. However, the number of the coordinators and trainers has not been sufficient, because many of them have immigrated to work in other countries. DWST has planned to appoint additional staff and make internal transfers to avail more staff for trainings. Three staff has been assigned at the DWST Monitoring Unit, but the number has not been sufficient. DWSU has planned to appoint new staff based on the newly created organizational chart.

Regarding the state level, there have been three, eight and five staff in the monitoring unit of SWC of Sennar, White Nile and River Nile, respectively. The number has been sufficient at SWC of Sennar and White Nile, where they have periodically monitored various

activities with the standardized forms. In River Nile, the number of staff has not been sufficient, but they have planned to hire a new engineer and assign transportation and communication means for monitoring. For operation of water yard systems, SWC of Sennar has assigned three to five technicians for each well in the big cities and one technician for each well in the rural areas. According to them, the number has not been sufficient. SWC or River Nile has assigned five to 10 operators depending the well size, and the number of operators has been as planned. The number of operators of SWC of White Nile was not available, but they answered that the number has not been sufficient.

<Technical Aspect>

Training coordinators of DWST has sustained sufficient skills for management of training courses, based on evaluations of themselves, trainers and DWST. As well, trainers have sustained sufficient skills, as training of the trainers (TOT) has been performed as part of the annual training plan. The training materials and management manuals developed by the project have been utilized.

Regarding the state level, SWC of Sennar and White Nile answered that their trainers has sustained the skills acquired from the project, judging through practical trainings which they have conducted since the time of project completion. They also answered that their operators have sustained sufficient skills, too, although some of White Nile still needed more training. In the case of Sennar, they also have sufficient skills as a result of continuous training and acquired experience. In case of River Nile, SWC has considered that their operators needed additional trainings as most of them did not have a sufficient educational background.

<Financial Aspect>

DWST has received the budget from the Ministry of Finance and had project-based budgets from private sector entities or government institutions departments as per the agreements with them. Its budget request has been on a slight increasing trend, but the allocation ratio has not been high. According to DWSU, the budget, as shown in the table, has been sufficient for training implementation but not for covering monitoring costs, due to the high expenses caused by the high inflation rate.

Training budget of DWST (SDG)

	2016	2017	2018	2019
Budget requests	3,498,600	3,585,600	3,635,300	3,793,900
Budget allocated	596,907	497,824	1,546,565	1,055,025

Training budget of Sennar SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	450,000	450,000	400,000	547,000	1,000,000
Budget allocated	243,343	222,981	243,257	157,909	N/A

Training budget of While Nile SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	799,792	700,000	540,000	700,000	1,300,000
Budget allocated	501,599	133,592	306,155	574,160	N/A

Training budget of SWC of River Nile SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	50,500	65,000	75,000	1,300,000	1,200,000
Budget allocated	32,400	40,000	45,000	531,240	N/A

Regarding the state level, SWC of White Nile and River Nile answered that the budget has been sufficient for training implementation and monitoring. On the other hand, SWC of Sennar has not secured a sufficient budget. Due to the low water tariff which is used for operation and maintenance of water facilities and training needs assessment, the training center in Sennar has not received sufficient funds. Because of various factors related to economic and political pressure such as necessary approval by the State Governor as well as instability of clean water supply, it was difficult for Sennar SWC to increase the water tariff in consistency with the cost of operation and maintenance.

<Evaluation Result>

In the light above, there have been issues in the institutional/organizational and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The projects achieved the Project Purpose and the Overall Goal. The human resource development mechanism was established, and training has been continuously conducted at DWSU and SWC training centers. Water yard systems have been continuously operated and maintained. Regarding sustainability, there have been staff and budgets shortages at DWST and some SWCs, but they have sustained sufficient skills for training implementation. As for efficiency, the total project cost of the two projects exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- Some SWCs' training was affected by construction or rehabilitation work such as the case of Sennar State. When SWCs include any similar planned work which may affect the training implementation in the annual training plan, it is recommended to them to prepare for continuation of training in other available facilities.
- Some SWCs such as River Nile and Sennar stated that their technicians did not have enough educational backgrounds. It is recommended to them to tailor some courses for such trainees by dividing the course contents by levels (primary and advanced). This can help them to graduate those with limited educational background from lower to higher-level courses, and thus ensure maximum benefits for all trainees.
- It is recommended to DWSU to provide the technicians trained by the project and training program even after the project completion with opportunities for disseminating their knowledge and experiences to other states. In states where staff or additional budgets cannot be deployed, DWSU could mobilize available resources through cooperation and linkages among SWCs. For example, some SWCs can exchange resources or apply lessons learned from other SWCs with strengths.

Lessons Learned:

- Despite the difficult circumstances that Sudan has gone through due to the unrest after the political turmoil and then the pandemic of Covid-19, training courses have continued, which has been attributed to the commitment and ownership of SWCs. The following efforts were made in the projects tried to enhance the counterpart personnel's ownership. First, they learned much from Morocco's experience in the water supply sector. Morocco is also an Arabic-speaking country in the North African region, and the natural environment is similar. Learning from developed Morocco was a great stimulus for them, most of whom did not have a learning experience overseas. For planning and implementing a project for capacity development, it is necessary to confirm if any neighboring country has the similar project experience. If there is any, it is effective to invite trainers from the country. Second, trainees who performed well in the training were given

awards. Third, opportunities for technical exchanges were provided to SWCs through the trainers' mutual visits. These efforts are effective for not only improving but also sustaining the counterpart personnel's skill and ownership. For a project where trainers are trained over the country, it is desirable to include such an award system and technical exchanges for producing and sustaining the effects.

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Cuba Office: November 2021

Country Name	Project for Fish Culture in the Republic of Cuba
Republic of Cuba	

I. Project Outline

Background	Aquaculture was playing an increasingly important role in the Cuban fisheries industry due to a sharp drop in fish catches. Approximately 30,000 tons of fish were farmed each year, accounting for about a half of all fisheries production in the country. The Ministry of the Fishing Industry (MIP) was working on the development of aquaculture technology for native marine fish at the Fisheries Research Center (CIP) through the technical cooperation of "Japan-Chile Partnership Programme[1] (JCPP)", "Marine Fish Culture". While having made it possible to rear broodstock independently, it had yet to reach the stages of spawning and hatching on its own. For this reason, the government of Cuba requested the government of Japan technical cooperation to promote marine fish culture by introducing further new technologies.		
Objectives of the Project	Through the rehabilitation of the facilities, seed production activities of Robalo and Pargo, development of the manual, training of the staff, the project aimed at strengthening the capacity of Robalo and Pargo culture in the Research Affiliate of Santa Cruz del Sur (SCS), thereby contributing to the government's operation of the fish culture of Pargo. 1. Overall Goal: Government of Cuba runs the fish culture of Pargo. 2. Project Purpose: Capacity of Robalo and Pargo culture in the SCS is strengthened.		
Activities of the project	1. Project site: Santa Cruz del Sur. 2. Main activities: Review of the past aquaculture activities at SCS, rehabilitation of the facilities, aquaculture activities for seed production of Pargo and Robalo, development of the manual, training of SCS staff, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts from Japan: 5 persons 2) Training in Japan: 1 person 3) Training in the third country (Mexico): 2 persons 4) Equipment: PVC pipes, sand filters, pumps, blowers, autoclaves, microscopes, vehicles, etc. 5) Local cost: Construction of the new research facility, etc. Cuban Side 1) Staff allocated: 36 persons 2) Land and facilities: Office space, CIP facility, etc. 3) Local cost: Electricity, communication, freshwater transportation, food for the broodstock, etc.		
Project Period	(ex-ante) May 2008 to May 2013 (actual) May 2008 to November 2014 (Extension period: May 2013 to November 2014)	Project Cost	(ex-ante) 175 million yen, (actual) 259 million yen
Implementing Agency	Ministry of the Food Industry (MINAL) (restructured from the Ministry of the Fishing Industry in 2009), Fisheries Research Center (CIP)		
Cooperation Agency in Japan	None.		
Related Project	Technical cooperation: "Marine Fish Culture" (part of the Japan-Chile Partnership Programme) (2000-2001) Other donors' cooperation: "Development of sustainable marine aquaculture in Cuba" (2011-2016) by Norwegian Agency for Development Cooperation (The objective of the project was to increase the indigenous production of marine fish in Cuba.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Continuation Status of the Project Effects]

- Indicator 2 of the Project Purpose (preparation and presentation of the report and proposal) was not used for verification of the continuity of the project effects at the time of the ex-post evaluation, but it was confirmed whether the technology proposed has been utilized.

1 Relevance

<Consistency with the Development Policy of Cuba at the time of Ex-ante Evaluation>

The MIP had been involved in a development plan to increase national aquaculture production in fresh and salt water though the detail of the plan, such as the name of the plan was not specified. As to marine aquaculture, the development of acquaculture rechnology was one of the main targets. Thus, the project was consistent with the development policy of Cuba at the time of ex-ante evaluation.

<Consistency with the Development Needs of Cuba at the time of Ex-ante Evaluation>

Aquaculture was playing an increasingly important role in the Cuban fisheries industry due to a sharp drop in fish catches. Although CIP was able to rear broodstocks as the results of the support through the JCPP, it did not have technologies to proceed to the spawning and hatching on its own. Thus, the project was consistent with the development needs of Cuba at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

Based on the policy consultation with the Government of Cuba, priority areas for Japan's assistance were decided including the

[1] The agreement between Japan and Chile for working together on cooperation with other developing countries (so-called trilateral cooperation) concluded in June 1999. Thus far, third-country training and specialist dispatches to third countries have been implemented in fields such as disaster prevention and the environment, fisheries and medical care.

increase in food production[2]. Thus, the project was consistent with Japan's ODA policy at the time of ex-ante evaluation.
<Appropriateness of the project design/approach>
The project aimed at strengthening SCS's capacity of Robalo and Pargo culture. By acquiring techniques for seed production, induced maturation and spawning, SCS's researchers succeeded in the fry production, as targeted as the Project Purpose. However, the project effects lasted only a few years after the project completion. One of the factors for non-continuity of the project effect and non-achievement of the Overall Goal is that, technically, the scope of the project covered up to the fingerling production of Pargo and Robalo, but not to grow them to the commercial size fish, which made it difficult to develop the production cycle satisfying the producers' expectation for engaging in the cultivation of these species. Financially, there was no detailed study on the cost and benefit contemplated in the project activities to promote the establishment of seed production center. Also, it was necessary to keep on examining the project design during the project. Thus, it is judged that the project design and approach were partially appropriate.
<Evaluation Result>
In light of the above, the relevance of the project is fair.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>
The Project Purpose was achieved by the time of project completion. The technical staff of SCS acquired a high level of skills in the cultivation of Robalo and Pargo, in particular, fry production (Indicator 1), and the production increased more than planned (Indicator 3). The Project experiences were summarized as the "Guidebook of Artificial Seed Production of Pargo and Robalo", and distributed to the related organizations including MINAL, Enterprise Group of the Food Industry, Provincial Government of Camaguey, JICA Mexico office, and so on. (Indicator 2).
<Continuation Status of Project Effects at the time of Ex-post Evaluation>
The project effects were not continued at the time of ex-post evaluation. SCS continued the fry production of Robalo and Pargo until 2016. It also sustained the feed production and the maintenance of microalegae strains until 2016, as well as fattening experiments and replacement banks (juvenile fish as future breeders) of both species. However, these activities were gradually ceased due to the following reasons. First, the live feed production became difficult due to the water contamination which was caused by the lack of periodical maintenance, disinfection of the equipment, and the lack of necessary reagents, despite the support from CIP in terms of some materials such as chlorine and alcohols. Second, SCS had difficulty in maintaining broodstock of both species, as the number of abnormal eggs per spawning increased and also the spawning frequency decreased over time. The replacement of broodstock was also difficult because it was not able to capture the matured fish from the natural environment because the fishing in some protected area was not allowed to use. Third, SCS could not obtain essential inputs sufficiently, such as hormones to induce spawning and vitamins for the live feed production. Fourth, regarding Robalo, it had technical difficulties in raising the broodstock due to its hermaphroditic nature.
Facilities and equipment rehabilitated by the project have been utilized for different purposes from the project intention, as follows. At the time of ex-post evaluation, the broodstock tank was in an acceptable condition and being used for rearing a broodstock of Red Tilapia, though the roof needed to be repaired. The seawater intake system was used until the beginning of 2021 for supplying seawater to the adjoining White Shrimp nursery area. The larvae rearing room and laboratory equipment were in a good condition and used for cultivating Red Tilapia and adapting it to the seawater. On the other hand, the building for feed production and water storage has not been used, because the water supply pipe was never disinfected due to the budget shortage to obtain necessary supplies for the disinfection.
<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>
The Overall Goal has not been achieved by the time of ex-post evaluation. As described above, SCS has not continued the production of Pargo, and any other aquaculture center of Pargo has not been established, either. The following factors are considered as the reasons. First, although the establishment of an aquaculture center was recommended in the "Proposal of Implementing the Technology to the Productive Sector," it did not explain the economic feasibility of the center. In a situation where the budget was not abundant, no investment was made to establish and operate such a center. Second, the sale of fingerlings produced by SCS to the surrounding producers was not succeeded, because they belonged to the state-owned companies which did not conduct fish farming for a corporate purpose at that time. Although they were interested in raising the fingerlings using floating cages, SCS had not developed enough production techniques to demonstrate the production of Pargo and Robalo up to the commercial size by using the cages in the ocean.
<Other Impacts at the time of Ex-post Evaluation>
Several positive impacts have been confirmed. First, SCS succeeded in maturing the Pargo and Robalo broodstock raised from artificially fertilized eggs based on the project experience, though it has been stopped since 2017. Second, fingerlings of Pargo and Robalo were released in marine waters, which resulted in an activity for recovering the resources of these species, although the number was not significant. It aroused curiosity and interest to some extent among the fishing companies of the surrounding territories, according to SCS.
<Evaluation Result>
Therefore, the effectiveness/impact of the project is low.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results	
(Project Purpose) Capacity of Robalo and Pargo culture in SCS is strengthened.	1. The technical staff of the Santa Cruz del Sur affiliate executes the protocol for the cultivation of Robalo and Pargo, described in the manual prepared by the project.	Status of achievement: Achieved (Not continued). (Project Completion) - The technical staff of SCS acquired a high level of skills in the cultivation of Robalo and Pargo based on the manual prepared by the project, according to the JICA expert's observation.	Source: Project Completion Report.
		(Ex-post Evaluation) - SCS has stopped the cultivation of Robalo and Pargo since 2017, due to the contamination of water for live feed production, the lack of broodstock, and the lack of essential inputs such as hormones and vitamins.	Source: SCS.

[2] Ministry of Foreign Affairs ODA Databook (2009)

<table>
<tr><td></td><td>2. The final technical report of the project results and the proposal for the implementation of the technology in the productive sector are prepared by CIP and presented to MINAL.</td><td>Status of achievement: Achieved (Not continued).
(Project Completion)
- The results of the project were summarized as a manual and presented to MINAL and other stakeholders.
- The proposal for the implementation of the technology was prepared.</td><td>Source: Project Completion Report.</td></tr>
<tr><td></td><td></td><td>(Ex-post Evaluation)
- The fingerling production using the technology developed by the project has been discontinued.
- The proposal for the implementation of the technology in the productive sector has not been adopted.</td><td>Source: SCS.</td></tr>
<tr><td></td><td>3. From the hatched larvae, more than 15,000 Pargo fries are obtained with an average length of 3 cm per year.</td><td>Status of achievement: Achieved (Not continued).
(Project Completion)
- 20,000 Pargo fry were produced in 2013.</td><td>Source: Project Completion Report.</td></tr>
<tr><td></td><td></td><td>(Ex-post Evaluation)
- 1,500,000 and 3,500,000 Pargo fries were produced respectively in 2015 and 2016, but since 2017 there has been no production.
Table: Pargo production at SCS (Unit)
<table>
<tr><td></td><td>2015</td><td>2016</td><td>After 2017</td></tr>
<tr><td>Brood stock rearing</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Fertilized eggs</td><td>24,000,000</td><td>9,000,000</td><td>0</td></tr>
<tr><td>Fry production</td><td>1,500,000</td><td>3,500,000</td><td>0</td></tr>
</table></td><td>Source: SCS.</td></tr>
<tr><td>(Overall goal)
Government of Cuba runs the fish culture of Pargo.</td><td>1. An aquaculture center (for seed production) of Pargo is established.</td><td>Status of achievement: Not achieved.
(Ex-post Evaluation)
- Any aquaculture center for seed production has not been established.</td><td>Source: SCS</td></tr>
</table>

3 Efficiency

Both the project cost and the period exceeded the plan (ratio against the plan: 148% and 132%, respectively). The reasons of the excess were that some activities were suspended by the damages caused by hurricanes in 2008, and it was required to repeat two more cycles (spawning seasons) to achieve the expected objectives. As a result, the planned Outputs were produced. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

The sustainable development of technically and environmentally viable marine crops has been aimed by the MINAL's strategy, "National Mariculture Strategy of the Republic of Cuba". Also, the aquaculture development has been considered as one of the important measures of the food industry sector which need to be monitored based on the "Economic management system of the Plan 2021". On the other hand, although the development of Pargo and Robalo production has been still considered as one of the prioritized aquaculture activities, there are other activities which have been considered higher in priority, such as shrimp, tilapia, oyster and cobia.

<Institutional/Organizational Aspect>

According to SCS, although it has stopped seed production of Pargo and Robalo, it has sustained technical staff, including two experts in biology and other five technicians. Three of the five technicians who had worked in the production of microalgae and rotifers were transferred to other centers. At the moment of ex-post evaluation, SCS has been playing a implementing role of a nationally prioritized project on the red tilapia production adopted to marine water. The red tilapia is accepted widely in terms of domestic consumption, and the project aims to improve the production technologies and extend the production in the other areas of the country.

According to SCS, the state-owned companies in surrounding territories have new organizational measures to allow their producers to engage in fish farming, and some private producers in the municipality of Santa Cruz del Sur have shown interest in marine fish farming, as well as some local companies from other provinces. These producers expect SCS to produce fingerlings of Pargo and Robalo and to transfer the technology of floating cages culture to them.

<Technical Aspect>

According to SCS, the technical staff has sustained skills and knowledge for seed production of Pargo and Robalo, as the counterpart staff members who worked at the project continued some cultivation practices until 2018 and maintained the broodstock banks of both species. Staff members who newly joined SCS have been rotated in different sections of fish farming to learn the work. Meetings and training on relevant topics have been conducted frequently. All of the manuals on biological feed production and artificial seed production developed by the project have been utilized at SCS and also distributed among fishing companies that have been awaiting a decision to develop floating cage culture up to the commercial scale.

<Financial Aspect>

Financial data was not available at the ex-post evaluation survey. According to SCS, for the 2015-2018 period, the entire budget of SCS was dedicated to maintaining and extending the results related to the aquaculture of Pargo and Robalo. However, due to the economic situation in Cuba, it has been difficult to secure a sufficient budget as described above. CIP has sought alternative financial sources from international organizations such as FAO, but it has not received any. At the moment of ex-post evaluation SCS was dedicated to the activities of red tilapia.

<Evaluation Result>

In the light above, the implementing agency has had higher institutional priority in other activities, and it has had major financial issues in the cultivation of Pargo and Robalo. Therefore, the sustainability of the effects is low.

5 Summary of the Evaluation

The Project Purpose which was to strengthen SCS's capacity of Robalo and Pargo culture (up to the fry production) was achieved. However, SCS stopped seed and fry production of Robalo and Pargo in 2017, and thus the Overall Goal which was to establish a seed production center has not been achieved. Regarding sustainability, the organizational structure and budgets for the production of Pargo

and Robalo have not been sufficient. With regard to the project efficiency, both the project period and cost exceeded the plan.
Considering all of the above points, this project is evaluated to be unsatisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to SCS and CIP to fully utilize the developed technologies, experiences and acquired facilities/equipment through the project in the development of other aquaculture activities, which are currently prioritized by the government, such as the production of red tilapia in SCS.
- When CIP/MINAL considers to reengage in the production of Pargo and/or Robalo in the future, it is recommendable to conduct a study on the market, production chain as well as the feasibility, to plan their production getting the involvement of surrounding producers. Also the appropriate technologies to grow fingerlings to commercial size using floating cages should be determined, using the experiences gained through the project, as well as the other experiences accumulated in the CIP, such as the production of other species like cobia.

Lessons Learned for JICA:

- Although it was considered that the project achieved the Project Purpose at the end of extended project period, some factors necessary for the achievement of the Overall Goal had not been sufficiently studied during the project period, such as the economic feasibility, the involvement of local producers and the development of appropriate technologies to promote locally the cultivation of Pargo and Robalo, including the floating cage farming, the development of feasible feed, and technical extension to the local producers, which were only mentioned as issues to be solved after the Project in the project completion report. The establishment of production chain with local producers was not also considered sufficiently. In order to achieve the social implementation of developed technologies as the Overall Goal of the project, it was necessary to contemplate such issues including their solutions, from the technical, financial and social aspects in the project design more clearly and continue to examine the issues during the project .

Site visit at SCS by JICA Cuba Office in August 2020. Red tilapia was cultivated in the tank. The building was constructed by the Project.

Site visit at SCS by JICA Cuba Office in August 2020. 10 matured robalos were still kept in one of the tanks.

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Thai Office: June 2021

Country Name	**Project for the Development of Basic Schemes for PRTR System[1]**
Kingdom of Thailand	

I. Project Outline

Background	In Thailand, there was a concern about serious air pollution arisen from progressive industrialization and urbanization. To respond to this, the Pollution Control Department (PCD) under the Ministry of Natural Resources and Environment (MONRE) set a series of environmental standards for air pollutants such as sulfur oxide and suspended particulate matter. With the standards, it became capable of controlling volatile organic compounds (VOCs), the causative substances of photochemical oxidants to a certain level through systematic, nationwide monitoring mainly in the Bangkok metropolitan area. Based on the interventions, PCD was to move on to the next stage of engaging in comprehensive risk management of chemical substances, environmental information services, and dissemination. On the other hand, in the area around the Map Ta Phut Industrial Complex, dozens of pupils and teachers at a local elementary school came to urgent medical attention due to air pollution of undetermined origin. Also, residents in the neighboring community frequently petitioned that they were suffering from offensive odors. It was under stronger social pressure to tighten environmental control, which was manifested in an increasing number of lawsuits by local residents against the government and businesses in industrial parks. However, as there was a bottleneck to assess the amount of chemical release and transfer accurately in PCD, it was difficult to take effective measures against chemical substances.		
Objectives of the Project	Through the development of the basic design of the PRTR system, emission reporting scheme together with the strengthening of the capacity of aggregate calculation and estimation of pollutant emission, and the establishment of a system for risk communication with local communities, the project aimed at strengthening the capacity of staff of PCD, the Department of Industrial Works (DIW), and the Industrial Estate Authority of Thailand (IEAT) for implementation of the PRTR pilot project, thereby contributing to the establishment of a Thai model of the PRTR system. 1. Overall Goal: Model of the PRTR System for Thailand is established. 2. Project Purpose: Capacity of PCD, DIW, and IEAT's staff for implementation of the PRTR pilot project is strengthened.		
Activities of the Project	1. Project Site: Rayong Province (target area) 2. Main Activities: 1) establishment of the basic design of the PRTR system, 2) development of emission reporting scheme for industry, 3) strengthening of the capacity of estimation of emission and transfer for point source, 4) strengthening of the capacity of emission estimation for non-point source, 5) awareness building on the importance of the use of PRTR data including the initial assessment, 6) development of a risk communication implementation structure in the pilot area. 3. Inputs (to carry out the above activities) Japanese Side 1) Experts: 6 persons 2) Trainees Received in Japan: 49 persons 3) Outsourcing expenses (local surveys, database construction, support services for PRTR system promotion secretariat) Thai Side 1) Staff Allocated: 43 persons 2) Land and facilities: office including a meeting room 3) Local cost: local consultant commission fee for operation, various surveys, manual preparation, factory notification database construction, etc.		
Project Period	March 2011 – March 2016 (Extension period: February 2015 – March 2016)	Project Cost	(ex-ante) 316 million yen, (actual) 316 million yen
Implementing Agency	Pollution Control Department (PCD) under the Ministry of Natural Resources and Environment (MONRE), Department of Industrial Works (DIW), and Industrial Estate Authority of Thailand (IEAT) under the Ministry of Industry (MOI)		
Cooperation Agency in Japan	Sowa Consultants Inc. / EX Research Institute Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, the government-imposed restrictions on inter-city travel made the planned interview survey with local residents impossible.

< Special Perspectives Considered in the Ex-Post Evaluation >

Overall goal:

- The overall goal was differently documented in the Japanese and the English version. In this ex-post evaluation, the evaluation judgment was made based on the overall goal and its indicator in the English version as being agreed by both parties of Thailand and Japan.

1 Relevance
<Consistency with the Development Policy of Thailand at the Time of Ex-Ante Evaluation >

[1] An abbreviation of "Pollutant Release and Transfer Register." The PRTR system is a system that requires businesses handling chemical substances potentially hazardous to the ecosystem and/or human health to estimate the amounts of chemical substances released and transferred in waste or to the outside (air, water, soil) of the facilities, and to report the data to the government, and that the government then compiles data submitted and makes the results public.
Source: https://www.meti.go.jp/policy/chemical_management/law/prtr/index.html (accessed October 2020)

The project was consistent with the development policies of Thailand. At the time of the ex-ante evaluation, the strategy for the development of biodiversity and conservation of the environment and natural resources was listed as one of the five pillars in the "10th National Economic and Social Development Plan" (2007-2011). Furthermore, the "20-year Policy and Perspective Plan for Enhancement and Conservation of National Environmental Quality" (1997-2016) provided a framework for encompassing control measures against water and air pollution, noise, vibration, waste treatment, etc. including hazardous air pollutants.

<Consistency with the Development Needs of Thailand at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Thailand. Due to serious air pollution arisen from progressive industrialization, there were widespread health hazards as well as offensive odors appealed from neighboring communities of industrial parks. Also, stronger social pressure to tighten environmental control was discernable through increasing lawsuits by local residents against the government and businesses in industrial parks. Nonetheless, there was a limited system for the government to access the amount of emission and transfer of chemical substances in private business activities. It was not possible to implement effective measures against chemical substances. Therefore, it was needed to establish a system to control environmentally hazardous substances.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy at the time of the ex-ante evaluation; "Country Assistance Program to Thailand" (May 2006) based on policy discussion with the Thai government as assistance for the environmental management system was included as a priority area. As it was agreed that more proactive environmental management was needed to move to an upper-middle-income country, it was intended to provide cooperation for the improvement of the urban environment and environmental disaster prevention.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the project completion. The basic design of the PRTR system applied in the pilot project area was drafted and the model was approved by the PRTR sub-committee in 2013. Subsequently, the contents incorporated with the outline and results of the pilot project were reported to the PRTR sub-committee and acknowledged (Indicator 1). According to the Terminal Evaluation Report, the estimation manuals for point sources and non-point sources were approved by the respective taskforces in 2013. Furthermore, the manuals were revised and duly approved by the taskforces during the extended period of the project. For non-point sources, all non-point source emissions were estimated in 2014 (Indicator 2)

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued since project completion. Regarding the basic design of the PRTR system to be ensured for de facto enforcement, the implementing agencies have been implementing various measures to encourage target industries to report PRTR data on a voluntary basis. PRTR pilot implementation has been extended to Samutprakarn (since 2016) and Chonburi (since 2017). Also, dialogues with several local governments, businesses, civil society have been held continuously with the aim of disseminating the PRTR system per se. The estimation manual for PRTR non-point source release estimation has been used for ongoing pilot projects in Rayong, Samut Prakan, and Chonburi provinces. Furthermore, the manuals for emission estimation have been used by business establishments located in the three pilot provinces. Furthermore, there have been continued efforts to improve the PRTR system including revisions of target substances and target industry groups to report PRTR data. In addition, supported by the JICA project (phase 2), the implementing agencies have been implementing various measures to enhance the utilization of PRTR data such as public audit activities.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal had been achieved at the time of ex-post evaluation. Regarding legal documents on the PRTR system in Thailand, the Ministerial Regulation issued by the MOI under the "Factory Act" in 2020 stipulates the reporting obligation for the PRTR system (Indicator 1). The number of PRTR data reports from the target industries has been increasing gradually from the expanded areas of pilot projects and the implementing agencies' efforts to request the private sector to report PRTR data. Also, the operation record was confirmed that data/information on the domestic emission status of chemical substances has been open to the public through the official website.

<Other Impacts at the time of Ex-post Evaluation>

No other negative or positive impact was confirmed at the time of ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Capacity of PCD, DIW, and IEAT's staff for the implementation of the PRTR pilot project is strengthened.	(Indicator 1) The draft PRTR system in Thailand is approved by the PRTR sub-committee by the end of the project.	Status of the Achievement: achieved (continued) (Project Completion) The basic design of the PRTR system in the pilot project area (drafted on paper) was approved by the PRTR subcommittee in 2013. Subsequently, given the indicator to capture the capacity building more comprehensively, the contents incorporated with the outline and results of the pilot project were reported to the PRTR sub-committee and acknowledged. (Ex-post Evaluation) The model of the PRTR system was approved by the PRTR sub-committee, and the implementing agencies made efforts for the implementation of the pilot PRTR system as follows: - PRTR pilot implementation has been extended to Samutprakarn (since 2016) and Chonburi (since 2017). - Eco-industrial town development: Participation in the PRTR system is stipulated as one of the chemical substance management indicators to be used to assess the level to be eligible to be an eco-industrial town

		where companies are planned to move in are encouraged to report PRTR-related data. - Private Company: In the Map Ta Phut Industrial Complex and other pilot project sites, dialogue opportunities were provided through holding workshops on emission estimation and reporting, such as discussions with private companies to promote the PRTR system. - Local government: Meetings related to the PRTR system were held, with the target local governments in attendance. - Civil Society: Planning and implementing risk communication seminars/meetings for citizens regarding how to utilize public information on chemical substance data. In addition, in the Map Ta Phut Industrial Complex in Rayong province, a community monitoring system was designed by the local citizens themselves based on environmental data analysis, and the pilot run was implemented effectively in 2020.
	(Indicator 2) Estimation manuals are approved by the respective task force.	Status of the Achievement: achieved (continued) (Project Completion) - In 2013, the emission estimation manuals for point sources were prepared for the major sources of emissions: petroleum refineries, chemical/ petrochemical industries, automobiles, and related industries, and approved by the respective task force. - In 2013, regarding non-point sources, estimation methodologies were prepared, by clarifying coverage and estimation approaches for various non-point sources. - In 2014, emissions of all the known non- sources were estimated. (Ex-post Evaluation) - The methodologies for release estimations from non-point sources including households, agriculture, construction (painting), gas station, and vehicle have been improved and used in the ongoing pilot areas in Rayong, Samut Prakan, and Chonburi provinces. - In the above-mentioned three pilot provinces, the estimation manuals for point sources have been used by target industries designated by DIW, and the data reporting results were confirmed (see the table below).
(Overall Goal) Model of the PRTR system in Thailand is established.	(Indicator 1) The PRTR system is described in the legal documents of the Thai government.	(Ex-post Evaluation) Achieved Regarding the Thai legal document on the PRTR system, by the amended "Factory Act" in 2020, Article 8(7) stipulates the reporting obligation for the PRTR system. Although the PRTR system was included in the proposed revision of the "Enhancement and Conservation of the National Environmental Quality Act", it is under review by the Office of Council of State and not yet enacted in the Thai Parliament at the time of the ex-post evaluation. It is noted, however, that regarding the status of chemical substance emissions, it was confirmed that the PRTR system was in operation as data related to chemical substance emissions has been available in a searchable format on the PCD website shown below. (http://prtr.pcd.go.th/)

Table 1: The Actual Number of PRTR Report submitted by Factories and the Total Number of Factories covered by PRTR System in Thailand

Industry		2015	2016	2017	2018
Chemical/ Petrochemicals	Actual	69	N.A.	96	115
	Total	225	687	733	751
Automobile/ Auto parts	Actual	43	N.A.	87	124
	Total	290	805	1,173	1,205
Natural gas separation/ Petro product	Actual	6	N.A.	10	13
	Total	23	57	75	111
Primary metal industry/ Metal products	Actual	43	N.A.	131	206
	Total	382	1,958	2,633	2,700
Electrical appliances manufacturing	Actual	16	N.A.	37	67
	Total	86	434	663	692
Plastic product manufacturing	Actual	25	N.A.	60	103
	Total	223	952	1,283	1,373
Rubber / Rubber product manufacturing	Actual	13	N.A.	17	24
	Total	109	241	275	284
Power plant	Actual	2	N.A.	11	10
	Total	35	62	79	81
Waste management	Actual	8	N.A.	48	71

	Total	149	330	614	646
Total	Actual*1	225	403*2	497	733
	Total	1,522	5,526	7,528	7,843

Note1: The data in 2015 is only from Rayong province, the sole pilot province at that time. In 2016, Samut Prakan joined the pilot program together with Rayong. And in 2017 and then after, the data was reflected by the addition of reporting records from Chonburi.
Note2: A total number only, and no breakdown data by industry available.

Source：Questionnaire responses from PCD, DIW, and IEAT.

3 Efficiency

Although the project cost was as planned (ratio against the plan: 100%), the project period exceeded the plan (ratio against the plan: 127%) in order to ensure the involvement of a wide range of stakeholders. The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The overall policy for environmental conservation has remained to enhance cooperation with local governments and communities including all the environmental data management, analysis, monitoring systems towards promoting the implementation of the PRTR system. In the context of industrial pollution prevention and reduction at source to control particulate matters as outlined in the Action Plan for Implementation of the National Agenda on "Solving Pollution from Particulate Matters" approved by the National Environmental Board Meeting No. 5/2562 dated 15 August 2019, the development of the PRTR system is incorporated among the short-term measures scheduled to be implemented from 2019 to 2021. Particularly, in the context of streamlining emission control, treatment and disposal methods at point sources in the agricultural and industrial sectors, the PRTR system is stated in: "Strategy on 20-Year Pollution Management and Pollution Management Plan" (2017-2021). Similarly, PCD's "PRTR Development Plan" (2016-2021) specified legislation, public dissemination, data system management, risk communication through the PRTR data, training, estimation as well as the development and revision of the manuals, the implementation of the second phase of JICA's PRTR project, and pilot project implementation in the three provinces, and so on.

< Institutional/Organizational Aspect>

The jurisdiction of each implementing agency concerning the PRTR system has remained unchanged. At the time of the ex-post evaluation, PCD under MONRE is an environmental policy formulating agency. DIW, under MOI, is a regulatory agency overseeing factories. IEAT, a state enterprise under MOI, is responsible for developing domestic industrial estates. PCD and DIW co-chair and share the secretariat role of the PRTR sub-committee which is in charge of designing the PRTR system. From the perspective of staffing in terms of the implementation for the development and dissemination of the PRTR system, PCD assigned five staff members, and they perceived sufficient to fulfill the duties. As for DIW, five full-time staff were assigned, and the other 20 staff members engaged indirectly in the related work. It was reported that there were no particular problems in terms of manpower. In IEAT, it was reported that five staff members were assigned, and it was sufficient to carry out the related tasks. In addition, the PRTR sub-committee under the Pollution Control Committee is still actively working.

<Technical Aspect>

According to the survey results, the number of counterparts still engaged in the promotion of the PRTR system was 3 in PCD, 1 in DIW, 5 in IEAT at the time of the ex-post evaluation. All counterparts in IEAT continue to work. As such, DIW conducted training for technology transfer to the successors. Both PCD and DIW responded that the needed skills of the staff in charge were maintained through the utilization of the manuals and training. As for IEAT, the staff in charge also utilize the manuals and training to maintain the necessary skills, although there is no chemical expert in the organization.

<Financial Aspect>

According to the survey results, the budget for the development and dissemination of the PRTR system has been annually allocated to PCD. DIW has operated on a budget of 2.8 million THB in 2017, the year after project completion, and most recently 0.8 million THB in 2019. In order to maintain and disseminate the PRTR system to additional areas in the future, it is important for each relevant agency to continuously and sufficiently adopt budgetary measures for the enforcement of the PRTR system.

<Evaluation Result>

In light of the above, slight uncertainties have been observed in terms of the technical and financial aspects. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project has achieved the Project Purpose and the Overall Goal as the capacity of PCD, DIW, and IEAT to implement the PRTR system were notably strengthened and the Thai PRTR system model was established. Furthermore, it was confirmed a track record of PRTR data reports from private business establishments of target industries in the three pilot provinces. As for sustainability, whereas it was confirmed that it addressed the PRTR system in terms of policy and institutional/organizational aspects, there remain some challenges in terms of technical and financial aspects for the future extension of the PRTR system. As for efficiency, the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

In order to further enhance the sustainability of the project effect, it is indispensable to further strengthen the internal and external cooperation of implementing agencies of MONRE and MOI. For the future, to gain public understanding through holding workshops and to promote the maintenance and management of open data portals (information disclosure web system), it is recommended especially for DIW and IEAT, (1) to secure sufficient manpower to disseminate and develop the PRTR system, (2) to strengthen the knowledge and capacities to be systematically shared throughout each organization, e.g. institutionalized hand-over training in the event of personnel transfer, etc.

Lessons Learned for JICA:

Throughout the project, it was extremely important to hold dialogue with interested parties (information disclosure, etc.), collaboration, and trust-building of stakeholders (related government agencies private companies, NGOs). It was deemed to be indispensable to have a common understanding and trust among the three parties: government agencies (regulatory agencies), regulated organizations (private companies), and third parties (citizens, NGOs, etc.) that could be built through dialogue and information disclosure. Regarding the extent of efforts for the PRTR system, in particular, it was required to spend a year and a half to set the stage for trust and collaboration among major stakeholders at the very outset of the project. They were specifically, the MONRE, which is a policy-making agency, the MOI, which is responsible for industrial policy, and private companies (including IEAT), which are the sources of pollutant emissions. It should be noted that enhancing transparency while ensuring fairness, dialogue interactions with citizens and NGOs, and information disclosure by progress reports with data have contributed to building trust among stakeholders. Furthermore, in terms of the PRTR system that is fundamentally based on reports and notifications from the private business establishment as a source of emission, it would be ultimately appreciated as an effective environmental regulatory measure only if the registered and disclosed data are widely utilized by the government, businesses, and civil society. Therefore, it is imperative in promoting the development of the system (1) to set forth the collaborative relationships among stakeholders at the early stage, (2) to ensure transparency through fair and impartial information disclosure practice, and (3) to take due care of trust-building among all parties concerned. When it aims at the development and implementation of a regulatory system to be practical as well as effective, it is essential to adequately incorporate necessary activities into the project such as promoting a common understanding among stakeholders and building a collaborative framework to be engaged from the project formulation stage.

Participants from the PCD, the DIW, IEAT, and the private sector who co-announced the PRTR pilot project at the International Environmental Chemistry Society in 2014

Participants from PCD, DIW, and IEAT attended the PRTR Refresh Workshop in November 2020 in order to update the PRTR implementation in Thailand

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Philippine Office: May, 2021

Country Name	**Strengthening Maternal and Child Health Services in Eastern Visayas**
Republic of Philippines	

I. Project Outline

Background	In the Philippines, the government made efforts to reduce the maternal mortality ratio and the infant mortality ratio to attain the Millennium Development Goal 4 (MDG 4) of "Reduce child mortality" and the MDG 5 of "Improve maternal health" by 2015. Among the regions in the country, the Eastern Visayas region, which is located on the southeast part of the country, had the high level of the maternal mortality and the infant mortality ratios, and more than half of infant mortality happened within seven days after birth. While there were many high-risk deliveries, the deliveries with skilled health professionals (SHPs) and/or at health facilities were quite limited. Under the situation, it was necessary to set up facilities to provide birth assistance, prenatal and postnatal care and Basic Emergency Obstetric and Neonatal Care (BEmONC) services.		
Objectives of the Project	Through provision of medical equipment to rural health units (RHUs)/district health centers (DHCs) and community hospital/municipal hospital for BEmONC and maternity care package accreditation, trainings on BEmONC for the SHPs from the target facilities, implementation of regular maternal death review and neonatal death review, monitoring and supervisions of BEmONC/Maternal, Newborn, Child Health and Nutrition (MNCHN) services for the target facilities, and establishment of community health teams (CHTs) and promotion of its activities, the project aimed at increasing the number of pregnant women and newborns receiving safe pregnancy, safe delivery and postpartum care services, thereby contributing to reductions in maternal mortality and neonatal mortality in the target areas. 1. Overall Goal: Maternal mortality and neonatal mortality in the target areas are reduced. 2. Project Purpose: Pregnant women and newborns receiving safe pregnancy, safe delivery and postpartum care services in the target area are increased.		
Activities of the Project	1. Project Site: Leyte Province and Ormoc City 2. Main Activities: 1) Provision of medical equipment to RHUs/DHCs and community hospital/municipal hospital for BEmONC and maternity care package accreditation, 2) Trainings on BEmONC for the SHPs from the target facilities, 3) Implementation of regular maternal death review and neonatal death review, 4) Monitoring and supervisions of BEmONC/MNCHN services for the target facilities, 5) Establishment of the CHTs and promotion of their activities, and so on. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 6 persons 2) Trainees Received: 12 persons 3) Equipment: printer, photocopier, multi-purpose delivery table, obstetric model with fetal doll, etc. 4) Local expenses: cost for project activities Philippine Side 1. Staff Allocated: 141 persons 2. Land and facility: project offices in Leyte province and Ormoc city 3. Local expenses: utility costs, communication costs, travel costs for participants in trainings and workshops, costs for project activities, etc.		
Project Period	July 2010 – July 2016 (Extended period: July 2014 – July 2016)	Project Cost	(ex-ante) 420 million yen, (actual) 505 million yen
Implementing Agency	The Department of Health (DOH), The Department of Health Regional Office VIII (Eastern Visaya), Provincial Health Office (PHO) (Leyte Province), The City Health Office (CHO) (Ormoc City)		
Cooperation Agency in Japan	-		

II. Result of the Evaluation

<Constraints on Evaluation>

・ Due to COVID-19 pandemic, the implementing agencies have been very busy; thus, the collection of information and data for this ex-post evaluation became challenging. Field visits and actual observation on the facilities were also not conducted due to domestic travel restrictions. Therefore, the evaluation team attempted to obtain the necessary information and data through questionnaires and online interviews. However, online interviews also had limitations in terms of availability of key respondents and duration of the interviews, which affected the quantity and quality of collected information and data.

<Special Perspectives Considered in the Ex-Post Evaluation >

・ The project sets "45% of pregnant women received prenatal care at least 4 times during pregnancy (including once in 1st trimester)" as the indicator 2 of the Project Purpose and "80% of women who gave birth have postpartum visits at least twice" as the indicator 3. At the time of project completion, the indicators were verified with their concerned data adopting estimated pregnant or delivered women as denominator. However, according to the Project Completion Report, estimated pregnant or delivered women tends to be overestimated in comparison with actual deliveries; as a result, their concerned data are underestimated. Therefore, in this ex-post evaluation, the data adopting actual deliveries as denominator are used to verify the indicator 2 and the indicator 3.

1 Relevance

<Consistency with the Development Policy of the Philippines at the Time of Ex-Ante Evaluation >

The project was consistent with the Philippines' development policy of Administrative Order No.2008-0029 "Implementing Health Reforms for Rapid Reduction of Maternal and Neonatal Mortality" (2008) promoting the improvement of the quality of delivery care

service.

<Consistency with the Development Needs of the Philippines at the Time of Ex-Ante Evaluation >

The project was consistent with the Philippines' development needs of setting up facilities to provide birth delivery assistance, prenatal and postnatal care and BEmONC services as mentioned in the background.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with "The Country Assistance Program for the Republic of the Philippines" (2008) positioning "Rectification of disparities (alleviating poverty and redressing regional disparity)" as one of the three priority areas, including expansion of basic social services.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Through the project, maternal and child health (MCH) services (birth deliveries at health facilities, prenatal care and postpartum visit) were promoted in the target areas. As a result, overall, the percentages of women who receive such services soared in the target areas. The proportion of deliveries at health facilities (Indicator 1) improved from the 2010 baseline of 56% in Leyte Province and 65% in Ormoc City to 93% and 97% respectively in 2015 just before the project completion. The proportion of prenatal care (Indicator 2) also improved from the 2010 baseline of 22% in Leyte Province and 29% in Ormoc City to 47% and 63% respectively in 2015. As for postpartum visit (Indicator 3), its percentage in Leyte Province reached 72% in 2015 from 53% at the 2010 baseline, and the one in Ormoc City went up to 75% from 61% during the same time period.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued since the project completion. Even after the project completion, the proportion of birth deliveries at health facilities have remained at a quite high level of more than 95% in both Leyte Province and Ormoc City. The main reason is that the circumstances where women have easier access to such facilities have been set up. For example, both in Leyte Province and Ormoc City, almost all Local Government Units (LGUs) or the city government passed ordinances aiming to promote birth deliveries at health facilities. Furthermore, in Leyte Province, the number of birthing facilities significantly increased from 20 in 2015 to 41 in 2019 with the addition of BEmONC-capable private birthing homes while, in Ormoc City, although the facility number dropped from 5 in 2015 to 1 in 2016 due to the strong earthquake in 2017 which rendered the four facilities unsafe to use or inability to provide BEmONC services, Barangay Health Workers (BHWs), a successor team of the CHTs trained by the project, have spread information about delivery at health facility and closely monitored pregnant women. The proportion of pregnant women who receive prenatal care at least four times during pregnancy improved in both Leyte Province and Ormoc City, comparing the one in 2016 to in 2019, even though dropping in 2017. With regard to women who give birth and have postpartum visit at least twice, its percentage dropped from 97.3% in 2016 to 73.7% in 2019 in Leyte Province because there are some mothers who do not come back to their facilities one week after giving birth due to lack of transportation for those who are living in far-flung areas and lack of skilled health personnel to remind mothers on the importance of going back to the RHUs one week after delivery for post-partum care services. In Ormoc City, although decreasing from 82.3% in 2016 to 59.5% in 2017, the percentage of women who give birth and have postpartum visit at least twice improved thereafter. The CHO reported that the improvement resulted from the close monitoring and follow-up to postpartum mother by the BHWs. For instance, in a case where the mothers who are supposed to revisit RHUs for checkup one week after giving birth do not come back to RHUs within the expected period for some reason, the BHWs visit their home and provide postpartum care services.

Maternal death cases have been reviewed at 100% in Leyte Province since 2017 and in Ormoc City from 2016 to 2018 because the capacity of Inter Local Health Zones (ILHZ) has been enhanced to conduct the reviews and these activities have been highly prioritized by the PHO or the CHO. However, in Ormoc City, the number of maternal death cases reviewed in 2019 was 0. With regard to neonatal death review, the proportion of reviewed neonatal death cases to the number of actual neonatal death cases had been around or less than 20% in both Leyte Province and Ormoc City. According to the PHO and the CHO, the reason why the maternal or neonatal death cases had 0 or had remained at a low level is that maternal or neonatal death come from similar causes and reviewing repeated cases is not necessary. Furthermore, as for minutes taking and distribution rates, such activities have been given a high priority in Leyte Province so that the rates have been in an increasing trend. With the same reason, in Ormoc City, the rates have remained at 100% since 2015.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of ex-post evaluation. The maternal mortality ratio in 2019 was 29 in Leyte Province and 26 in Ormoc City, which was under the 2010 baseline data (Leyte Province: 74.5, Ormoc City: 64.2) (Indicator 1). The neonatal mortality rate in 2019 was 2.9 in Leyte Province and 2.6 in Ormoc City (Indicator 2). In Leyte Province, any improvement in the rate had not been confirmed since 2015. On the other hand, Ormoc City has experienced a decrease in the rate from 6.2 at the 2010 baseline. The infant mortality ratio improved from 6.0 at the 2010 baseline to 3.5 in 2019 in Leyte Province and from 10.3 to 7.2 during the same time period in Ormoc City (Indicator 2). Also, the number of maternal death cases was reduced from 23 at the 2010 baseline to 9 in 2019 in Leyte Province and from 3 to 1 during the same time period in Ormoc City (Indicator 3). The newborn death cases in Leyte Province did not change, comparing 61 cases in 2015 and 61 cases in 2019, while the ones in Ormoc City notably went down from 102 in 2015 to 1 in 2019 (Indicator 4). Also, the infant death cases had decreased from 146 in 2015 to 75 in 2019 in Leyte Province and from 126 in 2015 to 52 in 2019 in Ormoc City (Indicator 4). In terms of birth deliveries at health facilities, as described in Continuation Status of Project Effects at the time of Ex-post Evaluation, the percentages of birth deliveries at health facilities have remained at a quite high level of more than 95% in both Leyte Province and Ormoc City (Indicator 5). Taking into account the continuous status of the project effects, it can be concluded that such project effects have contributed to achieving the Overall Goal.

<Other Impacts at the time of Ex-post Evaluation>

A positive impact was confirmed at the time of ex-post evaluation. Through the project, LGUs recognized the importance of ensuring the health and safety of women and newborns. As a result, new ordinances on promoting birth deliveries at health facilities were passed in both of the target areas. No other positive or negative impacts were confirmed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td rowspan="3">(Project Purpose)
Pregnant women and newborns receiving safe pregnancy, safe delivery and postpartum care services in the target area are increased.</td><td>1. 80% of birth deliveries are handled at health facilities (Baseline cleaned 2010 data: Leyte 56%, Ormoc City 65%).</td><td>Status of the Achievement: Achieved (Continued)
(Project Completion)
• The percentages of birth deliveries at health facilities in Leyte Province and Ormoc City increased and exceeded the target value.
[Percentage of birth deliveries at health facilities (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th><th>2015</th></tr>
<tr><td>Leyte Province</td><td>56</td><td>73</td><td>81</td><td>86</td><td>91</td><td>93</td></tr>
<tr><td>Ormoc City</td><td>65</td><td>75</td><td>86</td><td>89</td><td>91</td><td>97</td></tr>
</table>
(Ex-post Evaluation)
• Even after the project completion, the percentages of birth deliveries at health facilities have remained at a quite high level of more than 95% in both Leyte Province and Ormoc City.
[Percentage of birth deliveries at health facilities (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th></tr>
<tr><td>Leyte Province</td><td>95.4</td><td>97.9</td><td>97.7</td><td>99.7</td></tr>
<tr><td>Ormoc City</td><td>97.8</td><td>98.0</td><td>98.4</td><td>98.0</td></tr>
</table></td></tr>
<tr><td>2. 45% of pregnant women received prenatal care at least 4 times during pregnancy (including once in 1st trimester) (Baseline cleaned 2010 data: Leyte 22%, Ormoc City 29%).</td><td>Status of the Achievement: Achieved (Continued)
(Project Completion)
• The percentages of pregnant women who receive prenatal care at least four times during pregnancy in Leyte Province and Ormoc City increased and exceeded the target value.
[Percentage of pregnant women who receive prenatal care at least four times during pregnancy (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th><th>2015</th></tr>
<tr><td>Leyte Province</td><td>22</td><td>28</td><td>31</td><td>32</td><td>40</td><td>47</td></tr>
<tr><td>Ormoc City</td><td>29</td><td>89</td><td>42</td><td>40</td><td>57</td><td>63</td></tr>
</table>
(Ex-post Evaluation)
• The percentage of pregnant women who receive prenatal care at least four times during pregnancy had been in a downward trend from 2016 to 2018 but went beyond the original level of 2016 in 2019.
[Percentage of pregnant women who receive prenatal care at least four times during pregnancy (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th></tr>
<tr><td>Leyte Province</td><td>70.0</td><td>67.6</td><td>68.5</td><td>79.4</td></tr>
<tr><td>Ormoc City</td><td>63.5</td><td>49.0</td><td>58.5</td><td>85.9</td></tr>
</table>
Note: actual delivery is used as denominator.

[Reference: Percentage of pregnant women who receive prenatal care at least four times during pregnancy (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th></tr>
<tr><td>Leyte Province</td><td>49.0</td><td>41.3</td><td>39.7</td><td>51.3</td></tr>
<tr><td>Ormoc City</td><td>56.3</td><td>54.9</td><td>51.9</td><td>66.0</td></tr>
</table>
Note: estimated pregnant women is used as denominator.</td></tr>
<tr><td>3. 80% of women who gave birth have postpartum visits at least twice (Baseline cleaned 2010 data: Leyte 53%, Ormoc City 61%)</td><td>Status of the Achievement: Achieved (Partially Continued)
(Project Completion)
• The percentages of women who give birth and have postpartum visit at least twice in Leyte Province and Ormoc City increased and exceeded the target value.
[Percentage of women who give birth and have postpartum visit at least twice (Unit: %)]
<table>
<tr><th>Place/Year</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th><th>2015</th></tr>
<tr><td>Leyte Province</td><td>53</td><td>61</td><td>61</td><td>64</td><td>66</td><td>72</td></tr>
<tr><td>Ormoc City</td><td>61</td><td>64</td><td>75</td><td>70</td><td>79</td><td>75</td></tr>
</table>
(Ex-post Evaluation)
• Although the percentage of women who give birth and have postpartum visit at least twice in Leyte Province had remained at more than 95% from 2016 to 2018, it largely dropped to 73.7% in 2019. While, even though being almost halved between 2016 and 2017, the percentage of women who give birth and have postpartum visit at least twice in Ormoc</td></tr>
</table>

City rebounded in 2018 and improved in 2019.

[Percentage of women who give birth and have postpartum visit at least twice (Unit: %)]

Place/Year	2016	2017	2018	2019
Leyte Province	97.3	95.2	97.8	73.7
Ormoc City	82.3	59.5	72.2	94.3

Note: actual delivery is used as denominator.

[Reference: Percentage of women who give birth and have postpartum visit at least twice (Unit: %)]

Place/Year	2016	2017	2018	2019
Leyte Province	68.0	57.5	55.5	42.7
Ormoc City	72.9	66.7	65.1	78.5

Note: estimated delivered women is used as denominator.

(Overall Goal)
Maternal mortality and neonatal mortality in the target areas are reduced.

1. Maternal mortality ratio in the target areas is reduced (2010 baseline: Leyte 74.5, Ormoc City 64.2).

*Maternal mortality ratio is defined as the number of maternal deaths, excluding accidental and incidental ones, during a given time period per 100,000 livebirths.

(Ex-post Evaluation) Achieved

- The maternal mortality ratio in 2019 was 29 in Leyte Province and 26 in Ormoc City, which was under the 2010 baseline data.

[Maternal mortality ratio]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	41.9	57.3	36.3	53.4	29.0
Ormoc City	185.2*	134.0*	88.6	25.0	26.0

* A key factor for maternal mortality ratio exceeding 100 is that pregnant women who reside outside Ormoc City but die within the City are counted in the number of maternal deaths.

2. Neonatal mortality rate/infant mortality rate in the target areas is reduced (2010 baseline: <NMR> Leyte N.A., Ormoc 6.2, <IMR> Leyte 6.0, Ormoc City 10.3).

*Neonatal mortality rate is defined as the number of deaths during the first 28 days of life per 1,000 livebirths.

**Infant mortality ratio is defined as the number of infant deaths during a given time per 1,000 livebirths.

(Ex-post Evaluation) Achieved

- In Leyte Province, any improvement had not been confirmed since the project completion. On the other hand, Ormoc City had experienced a decrease from 6.2 at the 2010 baseline or even after 2016.
- The big drop in the neonatal mortality ratio was due to several factors including: increase in the percentage of birth deliveries at health facilities; presence of skilled and BEmONC-trained health personnel in the health facilities; better access to antenatal care and postpartum care services by women, newborns and infants, and regular conduct of maternal and neonatal death reviews. Also, Ormoc City had a much higher the neonatal mortality ratio in 2015 and 2016 compared to Leyte Province, so there was a big room for improvement.

[Neonatal mortality ratio]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	2.1	4.7	3.3	3.9	2.9
Ormoc City	14.5	6.3	1.0	4.3	2.6

- The infant mortality ratio improved to 3.5 in 2019 in Leyte Province and 7.2 in Ormoc City.

[Infant mortality ratio]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	5.6	4.7	3.2	4.7	3.5
Ormoc City	18.0	10.5	6.8	8.3	7.2

3. Trend of reduction in annual number of maternal deaths in the target areas (2010 baseline: Leyte 23, Ormoc City 3).

(Ex-post Evaluation) Achieved

- The maternal deaths cases in both Leyte Province and Ormoc City reduced in comparison to the baseline.

[Maternal death cases]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	12	7	3	1	9
Ormoc City	13	7	6	1	1

4. Trend of reduction in annual number of neonatal deaths in the target areas (2010 baseline: Leyte N.A., Ormoc City 29).

(Ex-post Evaluation) Partially Achieved

- The newborn deaths cases in Leyte Province did not change so much, comparing the ones in 2015 and 2019, while the ones in Ormoc City significantly went down from 102 in 2015 to 1 in 2019.

[Newborn deaths cases]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	61	94	90	55	61
Ormoc City	102	33	7	17	1

- The infant deaths cases in both Leyte Province and Ormoc City had decreased since the project completion.

[Reference: Infant deaths cases]

Place/Year	2015	2016	2017	2018	2019
Leyte Province	146	101	107	62	75
Ormoc City	126	55	46	51	52

5. 90% of birth deliveries are handled at

(Ex-post Evaluation) Achieved

- The percentage of birth deliveries at health facilities in Leyte Province

	health facilities in the target area (Baseline cleaned 2010 data: Leyte 56%, Ormoc City 65%).	and Ormoc City had stayed at a quite high level of more than 95%. [Percentage of birth deliveries at health facilities (Unit: %)]

Place/Year	2016	2017	2018	2019
Leyte Province	95.4	97.9	97.7	99.7
Ormoc City	97.8	98.0	98.4	98.0

Source：Terminal Evaluation Report, Interview and questionnaire to the DOH, the Department of Health Regional Office VIII, the PHO and the CHO

3 Efficiency

Both of the project cost and period exceeded the plan (ratio against the plan: 120% and 152%, respectively). However, as for the project period, due to Typhoon Yolanda, the project activities were suspended for four months from November 2013 to February 2014; therefore, the period was taken into account, and the ratio against the plan was admitted to be 144%. The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

"National Objectives for Health" (2017-2022) sets reduction of maternal and neonatal mortality as a key objective and part of indicators under the goal of "better health outcomes". As the project aimed at reducing maternal and neonatal mortality, it has been endorsed by the national policy.

<Institutional/Organizational Aspect>

[National level]

There have not been any changes in the institutional/organizational structure to promote the MCH services. Two divisions, Women/Men Health Division and Child Health Division of the Disease Prevention and Control Bureau under the DOH, have been responsible to perform the function of promoting the MCH services. According to the DOH, the divisions have 30 staff in total, and as most of their activities involve coordination of field operations, they consider the number as sufficient.

[Leyte Province]

The PHO has taken responsibilities to perform the function of promoting the MCH services. According to the office, they have 13 personnel including 5 program cluster coordinators in charge of coordinating MCH activities in 40 municipalities and 1 city. Because the number of skilled health personnel has not been sufficient due to lack of budget, staff augmentation is being practiced through the Human Resource for Health Program of the DOH where nurses and midwives are deployed by the DOH to the province to address the lack of the SHPs, especially at the community/barangay level.

[Ormoc City]

The CHO has taken responsibilities to perform the function of promoting the MCH services. According to the office, they have 3 doctors, 10 nurses and 24 midwives but still have unfilled positions including 3 nurses and 10 midwives due to lack of budget. Thus, they consider the number of the staff insufficient. Similarly with Leyte Province, the staff augmentation has been practiced.

[ILHZ]

The ILHZ (the City Health Office in the case of Ormoc City) have been in charge of reviewing maternal and neonatal death cases and giving their feedbacks to health service providers in the MCH services in order to identify their problems and improve the services.

[CHTs]

As mentioned in the Continuation Status of Project Effects at the time of Ex-post Evaluation, the CHTs were succeeded to the BHWs. They deliver the MCH services and other health-related services at the community level in Leyte Province and Ormoc City. As mentioned above, the number of the staff has been insufficient since staff augmentation is being practiced.

[Referral system]

The referral system introduced by the project has been functional in both Leyte and Ormoc City even after the project although some difficulties were observed in a few cases when health workers are unable to fill up the referral return slips or retrieve the referral return slips from the referred level to the referring facility. Retrieval of the referral slips is important in order to keep the referral system functional.

<Technical Aspect>

[National level]

The staff of Women/Men Health and Child Health Divisions have sustained and even enhanced the knowledge and skills necessary to promote the MCH services. According to them, they sometimes receive training programs provided by the Department of Health and such international donors as the United States Agency for International Development and the World Health Organization.

[Leyte Province]

The staff of the PHO have sustained and even enhanced the knowledge and skills necessary to promote the MCH services through the quarterly Supportive Supervision (SSV) when BEmONC experts within the SSV team provide on-the-job mentoring to health workers in RHUs. The regular trainings by the DOH Center for Health Development in Region VIII have also been contributing to the knowledge and skill enhancement of health workers involving in the promotion of the MCH services.

[Ormoc City]

The staff of the CHO have sustained and even improved the knowledge and skills necessary to promote the MCH services through the SSV and regular training activities of the DOH Center for Health Development in Region VIII.

[Tools/Book/Manual]

The SSV tools have continued to be used for monitoring RHUs and private birthing facilities by the SSV team. These tools have been updated and expanded to include additional checklist about family planning.

The Mother and Child Book has continued to be used in both Leyte Province and Ormoc City. In Leyte Province, as the DOH published an enhanced version of the Book, it is widely used by health workers involving in the MCH services. On the other hand, it is still common for health workers in Ormoc City to use the original version of the Book.

As the CHTs were succeeded to the BHWs, the BHW manual prepared by the DOH started to be used. However, according to the PHO and the CHO, some of the former CHTs, who now belong to the BHWs, still continue to use the CHT manual prepared by the project as reference.

<Financial Aspect>
[National level]

The budget of the DOH was not confirmed at the time of ex-post evaluation. However, for the costs for BEmONC trainings and maternal and neonatal death review as some of MCH service activities, a certain amount of budget has been allocated depending on requests from LGUs. For example, in 2020, the budget of Philippine peso (Php) 2,500,000 was appropriated for BEmONC trainings even though the budget was re-aligned to the countermeasure fund for COVID-19. Considering that the project effects have been sustained, the Overall Goal has been achieved and the sufficient number of staff has been secured, the budget of the DOH is considered to have been sufficiently secured.

[Leyte Province]

For Common Health Trust Fund to support 10 ILHZ, an annual budget of Php 2,050,000 has been allocated. The budget has been spent not only for project implementation review, maternal and neonatal death review, SSV and operation of ILHZ but also for the overall service of MNCHN activities implemented by the ILHZs. The annual budget for each of the ILHZs ranges from Php 30,000 to Php 100,000. Also, 40 municipalities and 1 city have continuously allocated a budget for the monthly incentives of BHWs. However, as mentioned in the institutional/organizational aspect, as the number of staff has been inadequate, even though a certain budget has been secured, it cannot be sufficient.

[Ormoc City]

The government in Ormoc City has earmarked a certain amount of budget for the promotion of the MCH service and for the honoraria of BHWs as shown in the table below. However, similarly with Leyte Province, although the budget has been secured to some extent, it cannot be sufficient.

Budget for the MCH service and BHWs in Ormoc City

(Unit: Php)

Purpose / Year	2016	2017	2018	2019	2020
Budget for the MCH service	2,025,000	2,169,948	2,408,662	2,212,980	2,800,000
Budget for the honoraria of BHWs	7,470,000	8,130,000	8,490,000	8,790,000	9,090,000

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational and financial aspects. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose aiming at increasing the number of the pregnant women and newborns receiving safe pregnancy, safe delivery and postpartum care services in the target areas and the Overall Goal aiming at reducing the maternal mortality and neonatal mortality in the target areas. As for the sustainability, the number of the staff and the budget have been lacked at regional and city levels. As for the efficiency, the project cost and period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- For Leyte PHO and Ormoc CHO, it is better to improve the referral system by having regular discussions on referral issues at ILHZ meetings aimed at promoting closer coordination between the referring facility and the referred facility and devising effective methods for tracking of referral slips.
- For LGUs, it is better to prioritize the filling up of vacant positions at the PHO, CHO and RHUs in order to beef up the skilled health manpower at the provincial/city and municipal level.

Lessons Learned for JICA:

- The maternal and neonatal death review mechanism promoted by the project is viewed as one of the contributing factors for the reduction of maternal and neonatal deaths. The importance of determining the causes of maternal deaths and learning how to avoid similar cases in the future through the conduct of maternal and neonatal death reviews has been fully appreciated by project stakeholders such that maternal and neonatal death reviews are being conducted for all new maternal death cases in Leyte province and Ormoc City. Therefore, for a project aiming to enhance the ability of health or medical workers to deliver MCH services in target areas, incorporating a component to instill reviews on death cases and distribute the results is effective.

SSV conducted by Abuyog District Hospital on November 25, 2020

Maternal and Neonatal Death Review
conducted by Ormoc City Health Office on July 15, 2019

Internal Ex-Post Evaluation for Technical Cooperation Project and Grant-Aid Project combined

conducted by Laos Office: April, 2021

Country Name	Technical Cooperation Project (TC): **Project for Strengthening Integrated Maternal, Neonatal, and Child Health Services in Lao PDR** Grant-Aid Project (GA): **Project for Strengthening Health Service Network in Southern Provinces**
Lao People's Democratic Republic	

I. Project Outline

Background	In Laos, although the Maternal Mortality Rate (MMR) and the Under-5 Mortality Rate (U5MR) were improved, the indicators remained at the highest level in the Southeast Asian countries. According to the Population and Housing Census 2005, MMR was 405 per 100,000 live births and U5MR was 98 per 1,000 live births. In particular, MMR and U5MR of the four southern provinces, Champasak, Salavan, Sekong and Attapeu, were higher than the national average. The main causes were the limited access to the basic health services due to the underdeveloped transport infrastructure and cultural barriers and the low quality health service distrusted by the people. Under those situations, the extension of the health services to cover remote areas was the urgent issues for the four provinces. On the other hand, for better provision of Maternal and Child Health (MCH) services, the Ministry of Health prepared "the Health Strategy 2020" and promoted integration of services under the MCH Program and the Expanded Program on Immunization (EPI) as well as integration of coordination mechanism for service promotion. Many donors, including JICA, supported packaging of the Maternal, Neonatal and Child Health service (the Integrated MNCH Package).

[TC Project]

Objectives of the Project	Through capacity development of district health offices (DHOs) and health centers (HCs) for delivery of the integrated MNCH service package and enhancement of technical supervisions for DHOs and HCs, the project aimed at improvement of the coverage of MNCH services in the target southern provinces, and thereby contributing to reduction of maternal, neonatal and child mortality in the target southern provinces. 1. Overall Goal: Maternal, neonatal and child mortality is reduced in the four southern provinces, i.e. Champasak, Salavan, Sekong and Attapeu. 2. Project Purpose: Coverage of the maternal neonatal and child health (MNCH) services is improved in the four southern provinces		
Activities of the Project	1. Project site: Four southern provinces of Champasak, Salavan, Sekong, and Attapeu. 2. Main activities: i) Preparation of Provincial and District MNCH Annual Plans and provision of technical supervisions to DHOs by Provincial Health Office (PHOs) and to HCs by DHOs, ii) Delivery of trainings of Skilled Birth Attendant (SBA) for staff of district hospitals (DHs) and HCs and trainings of the outreach activities under the integrated MNCH service package for staff of DHOs and HCs, iii) Delivery of trainings of IEC (Information, Education and Communication) activities for staff of DHO and HCs and implementation of the IEC activities, etc.. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: persons: 15 persons 2) Trainees received: 24 persons 3) Equipment: Vehicles, PCs, Delivery beds, maternal health care tools, etc. Lao Side 1) Staff allocated:81 persons 2) Land and facilities: Office spaces in PHOs in Champasak, Salavan, Sekong and Attapeu 3) Operation cost: cost for water supply, electricity, gas, office furniture, other running expenses		
Project Period	May, 2010 – May, 2015	Project Cost	(ex-ante) 410 million yen, (actual) 359 million yen
Implementing Agency	Ministry of Health, Provincial Health Offices (PHOs) and District Health Offices (DHOs) in provinces of Champasak, Salavan, Sekong and Attapeu		
Cooperation Agency in Japan	National Center for Global Medicine		

[GA Project]

Objectives of the Project	To improve access of primary health care, including the integrated maternal and child health services and health facilities and environment in the target provinces by provision of equipment for the district hospitals, new construction and renovation of health centers and staff houses, thereby contributing to enhancement and quality improvement of health service.
Contents of the Project	1. Project Site: Provinces of Champasak, Salavan, Sekong, and Attapeu 2. Japanese side: i) Construction of wells (21 sites) ii) Construction and renovation of health centers and staff houses (47 sites) iii) Procurement of equipment for health centers and district hospitals (delivery beds, delivery tools, auto craves, motorbikes etc.) (73 sites) 3. Lao side: i) Securing the necessary land,

	ii) Securing UXO (Unexplored Ordinance)-free certificate iii) Site clearance iv) Connection of electric power, v) Provision of furniture and household equipment for staff houses, etc.			
Project Period	E/N Date	March 26, 2013	Completion Date	January 7, 2016 (Handover of equipment of the lot 4 for the 3rd batch)
	G/A Date	March 26, 2013		
Project Cost	E/N Grant Limit / G/A Grant Limit: 741 million yen		Actual Grant Amount: 736 million yen	
Executing Agency	Department of Health Care, Ministry of Health			
Contracted Agencies	Main Contractor(s): (Construction of wells) Lot 1 and Lot 2: Phounethavy Construction Co., Ltd., (Construction of health centers) Lot 1: Sokxaisana Construction Co., Ltd., Lot 2 and Lot 3: Vannavong Constuction Ltd., Lot 4: ST Construction Co., Ltd., Lot 5: Samakhixay Construction Co., Ltd., Lot.6 Khamphouang Construction Co., ltd. Lot 7 Sokxaisana Construction Co., Ltd., Lot 8 Samakhixay Construction Co., Ltd., Lot 9 Khamphouang Construction Co., Ltd., Additional batch: Khamphouang Construction Co., Ltd., (Procurement of equipment) a) Medical equipment: (Batch 2) Lao Medical Services Co., Ltd., (Batch 3) CBF Pharma Co., Ltd., b) Motorbikes: (Batch 2 and 3) Santiphap Suzuki Lao Factory, c) Nameplate: (Batch 2 and 3) Central Sign-Trading Co., Ltd. Main Consultant(s): Oriental Consultants Global Co., Ltd, Fujita Planning Co., Ltd. (Joint Venture)			

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Evaluation Framework]

This study evaluated the TC and GA projects together in the following way: for Relevance, evidence is confirmed for each project, based on which the two projects are evaluated as combined; for Effectiveness/Impact, the status of achievement of the project objectives was judged for each project using each whole set indicators mentioned in the terminal evaluation report (TC) and the Ex-ante Evaluation Sheet (GA), based on which the two projects are evaluated as combined; for Efficiency, plan vs actual comparison is made for each project, based on which the two projects are evaluated as combined; for Sustainability, the two projects are evaluated as combined.

[Continuation status of the Project Effects (Indicators for the Project Purpose of TC) and the Quantitative Effects and the Expected Impact by the GA Project]

Two indicators for the quantitative effects of the GA project, (Ante Natal Care (ANC) and Measles vaccination coverage) overlap with the indicator for the Project Purpose of the TC project. Those indicators were verified as the continuation of the Project Effects of the TC project because the coverage of HCs by the TC project was larger than the GA project but it was necessary to carefully analyze effects of the newly constructed HCs by the GA project on the changes in ANC and measles vaccination coverage. In addition, the expected impact by the GA project is "enhancement and improvement of health services" which is not clearly defined by any quantitative indicators but it can be interpreted as "enabling provision of the integrated MNCH services". Therefore, the expected impact by the GA project was verified as a part of the continuation of the project effects by the TC project.

[Verification of achievement level of the Overall Goal]

The Overall Goal of the TC project is reduction of maternal and child mortality in the four target provinces. It was assumed that the GA project would have contributed to improvement of the MNCH services which was expected to improve the maternal and child health and to reduce the maternal and child mortality indirectly. Therefore, the Overall Goal of the TC project can be considered as a part of the indirect impacts by the GA project.

*Although the target value for U5MR is 55% by project design, U5MR should be expressed as "per 1,000 live birth" instead of percentage, the ex-post evaluation use "per 1,000 live birth".

1 Relevance

<Consistency with the Development Policy of Lao PDR at the Time of Ex-Ante Evaluation (TC project) (GA project)>

The TC project was consistent with the Lao PDR's development policies, including the "Strategy and Planning Framework for the Integrated Package of Maternal, Neonatal and Child Health Service" (2009-2015) and the "Skilled Birth Attendance Development Plan" (2008-2012) prioritizing improvement of the integrated package of MNCH services in particular in rural areas at the time of ex-ante evaluation.

The GA project was also consistent with the Lao PDR's development policies prioritizing MCH, such as the "Strategy and Planning Framework for the Integrated Package of Maternal, Neonatal and Child Health Service" (2009-2015) and "The 7th National Health Sector Development Plan" (2011-2015) at the time of ex-ante evaluation.

<Consistency with the Development Needs of Lao PDR at the Time of Ex-Ante Evaluation (TC project) (GA project)>

The TC project and the GA project were consistent with the needs of improvement of maternal and child health in the target provinces through improvement of quality and access to MNCH service as mentioned in the background.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation (TC Project) (GA Project)>

The TC project was consistent with the "Country Assistance Program for Laos" (2006) prioritizing six areas such as support for improvement of health services including maternal and child health services in order to attain the Millennium Development Goals (MDGs) of 4 and 5.

The GA project was consistent with the "Country Assistance Policy for Laos" (2012) to support improvement of health services including MCH service in order to attain MDGs as one of the priority areas.

<Evaluation Result>

In light of the above, the relevance of the projects as combined is high.

2 Effectiveness/Impact

[TC Project]

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved at the time of project completion. In Champasak, Salavan and Attapeu, 9 out of 16 service coverage indicators achieved 80% of the MDG target. 8 indicators in Sekong achieved the 80% of the target.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued since the project completion. The service coverage indicators in the four target provinces have been partially improved. Although the limited number of those indicators achieved the target of 2015 in the year of 2015, manyindicators have improved and reached and/or exceeded the target of 2015 in the four target provinces in the year of 2018. In particular, , the proportion of the pregnant women with ANC and the proportion of facility delivery and the birth assisted by health professionals have been improved to the target of 2015. The contraceptive prevalence rate in the four target provinces and Vitamin A distribution have been sustained at around the target of 2015 or further improved from the target of 2015. The immunization coverage for Measles rubella and Hep B improved in 2018 from the level in 2015. On the other hand, the proportion of women with PNC has limitedly improved and the coverage rate of Tetanus toxoid vaccine for pregnant women decreased in the four target regions. Also, the improvement level of those indicators has been slower in Sekong. Those improvements can be attributed to continuous implementation of the integrated outreach activities conducted by HCs and the education events by the health facilities which had been introduced by the TC project.

<Status of Achievement of the Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of the ex-post evaluation. U5MR in the target four provinces greatly improved from the baseline data in 2005 to the data for the period from 2015 to 2018 and attained the target of 2015 (Indicator 1). The number of maternal deaths in the target four provinces shows the downward trend though it had fluctuated year by year (Indicator 2). According to the interviews with PHOs, DHOs, DHs and HCs, the project contributed to the improvements of child and maternal mortality through capacity development of health staff by the TC project as well as the construction of the health facilities by the GA project.

Table 1: Achievement of Project Purpose and Overall Goal of the TC Project

Aim	Indicators	Results
(Project Purpose) Coverage of the maternal neonatal and child health (MNCH) services is improved in the four southern provinces	Selected service coverage indicators for monitoring the integrated MNCH Strategy reach the target value of 2015: 1. Contraceptive Prevalence Rate 2. Antenatal Care (ANC) 1/ANC 4 3. TT for pregnant women 4. Iron tablet for pregnant women 5. Facility delivery 6. Birth assisted by health professionals 7. Postnatal Care (PNC) 1 week, 6 weeks 8. PNC Vitamin A* 9. Immunization coverage for Children, 10. Vitamin A deworming for children *PNC Vitamin A was excluded because WHO changed their recommendations on the maternal health.	Status of the Achievement: partially achieved (partially continued) (Project Completion)

	Target 2015	2014			
		Champasak	Salavan	Sekong	Attapeu
1.Contraceptive Prevalence Rate	55	71	55	63	68
2.ANC 1/	60 *For 2018: 86.2 (ANC 1)	75	80	75	64
ANC 4	40	37	26	65	30
3.Tetanus toxoid vaccine (TT 2+) for pregnant women	80	38	25	19	56
4.Iron tablet for pregnant women	75	N.A.	80	108	63
5. Facility delivery	30	43	34	26	21
6. Birth assisted by health professionals	50	53	41	28	27
7. PNC 1 week	50	N.A.	N.A.	23	7
PNC 6 weeks	60	55	55	53	18
8.Immunization coverage for children Measles rubella	95 *For 2018: 85.1%	80	80	59	80
DTP1 (Penta 1)	95	74	74	71	86
Polio 1	95	74	74	71	86
BCG	95	72	72	60	79
Hep B	65	30	30	32	25
9.Vitamin A distribution children <5 years (Round 1)	95	82	82	97	95
10. % Children 12-59 months received Deworming (Round 1)	95	82	82	97	98

(Ex-post Evaluation)

	Target 2015	2018			
		Champasak	Salavan	Sekong	Attapeu
1.Contraceptive Prevalence Rate	55	54.4	71	60.9	84.6
2.ANC 1/	60 *For 2018: 86.2 (ANC 1)	90	92.4	72.7	70.6
ANC 4	40	62.9	58.3	44.8	35.8
3.Tetanus toxoid vaccine (TT 2+) for pregnant women	80	36.8	11.9	14.5	35.3
4.Iron tablet for pregnant women 90	75	102.2	84.2	53.8	71.2

		5. Facility delivery	30	48.3	50.7	41.3	31.9
		6. Birth assisted by health professionals	50	57.6	52.2	43.9	34.5
		7. PNC 2 days	50	31	48.3	39.1	35.7
		PNC 3-42 days	60	37.7	39.7	37.2	35
		8.Immunization coverage for children Measles rubella	95 *For 2018: 85.1%	84.9	90.1	66.2	74.9
		DTP1 (Penta 1)	95	88.8	89.8	70.1	81
		DTP3 (Penta 3)		93.8	92.5	72	81.7
		Polio 1	95	88.7	89.8	69.5	85.7
		Polio 3		93.2	92.8	71.5	84.5
		BCG	95	76.7	85.4	70.9	70
		Hep B	65	49.5	63.8	46.1	34.6
		9. Vitamin A distribution children <5 years (Round 1)	95	81.3	104.3	83.3	74
		Vitamin A distribution children <5 years (Round 2)	95	66.9	120.1	44.1	63.8
		10. % Children 12-59 months received Deworming (Round 1)	95	82.5	169.5	88.6	102.8

(Overall Goal)
Maternal, neonatal and child mortality is reduced in the four southern provinces, i.e. Champasak, Slavan, Sekong and Attapeu.

Indicator 1.
Under five mortality rates are reduced to 55 per 1,000 live birth by 2015 and maintained at the same level in 2020 in the target four provinces.
(Baseline: LRHS 2005)

Status of the Achievement: Achieved.
(Ex-post Evaluation)
[U5MR]

	Baseline 2005	Target 2015	2015	2016	2017	2018
Champasak	88	55	6	19	34	30
Salavan	56	55	18	29	30	31
Sekong	59	55	4	10	10	14
Attpeu	91	55	5	25	24	19

Indicator 2.
Number of maternal deaths in the target four provinces turns to decreasing trend.

Status of the Achievement: Achieved.
(Ex-post Evaluation)
[Number of maternal deaths]

	2015	2016	2017	2018
Champasak	8	12	8	6
Salavan	13	2	3	3
Sekong	10	5	14	8
Attpeu	7	3	4	6
Total	38	22	29	23

Source: Preparatory Survey Report of the GA project; Terminal Evaluation Report of the TC project; Data provided by PHOs, DHOs, DHs, HCs in Champasak, Salavan, Sekong and Attapeu.

[GA Project]
<Effectiveness>

The project objectives have been partially achieved at the time of ex-post evaluation. The proportion of the population covered by the newly constructed HCs in the four target provinces has not reached as a whole of the four target provinces nor each target province (Indicator 1). That might be due to the overestimated total population for year from 2016 to 2018 and problems of accessibility of the population in the target remote areas to HCs either by car or motorbikes. In addition, the lower proportion than the target value may be caused by the limited outreach and educational activities in the remote areas with difficult access, the insufficient budget allocation for those activities, and their customarily believes and traditionally behavior. On the other hand, the number of outpatients in the four target provinces dramatically increased and reached to the target value in 2018 (Indicator 2). The HCs constructed by the GA project and facilities and equipment installed by the GA project have been in good conditions to provide the MCH services. The improvement of health facilities and the health staff, in particular the increase in the number of skilled birth attendants, contributed to the increase in the number of outpatients.

The qualitative effects, which were expected improvements of the MCH services, have been achieved. The solar power systems which were installed in the HCs in Sekong and Attapeu only, have not been utilized anymore because the most of HCs have been connected to the national electricity grid. However, before that, the solar power system functioned for the medical treatment and services in the night time as well as for the storage of vaccines. Those solar power systems have been officially transferred to other HC or utilized for other purposes such as lighting. The water supply system constructed by the GA project have been utilized and improving hygiene environment of the target HCs.

<Impact>

As mentioned above, the health services at the four southern provinces as well as for mother and neonatal health services have been greatly improved at the time of ex-post evaluation study. Those circumstances can be attributed to improvement of the quality and availability of health facilities provided through the GA project in addition to the capacity development of the health staff by the TC

projects.

Table 2: Quantitative Effects of the GA project

	Baseline before the Project (2009/2010)	Target Value (2018)	Actual 2016	Actual 2017	Actual 2018
(Indicator 1) % of the population covered by the newly constructed HCs	74.0%*	79.4%*	40.94%	41.61%	39.73%
(Indicator 2) No. of outpatients in the four target provinces	376,978	536,535	734,761	866,000	978,348

Source: National health Statistics Report FY2009-2018

Note: The figures are different from the ex-ante evaluation sheet because of the decrease in the number of HCs newly constructed by the GA project.

[TC and GA Projects]

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts by the TC and GA projects have been observed at the time of ex-post evaluation. For example, the "planning tools for outreach activities" developed by the TC project have been utilized by most of HCs as routine outreach planning process. There was no negative impact by the projects on natural and social environment at the time of ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the projects as combined is high.

3 Efficiency

The efficiency of the TC project is high. The both of the project cost and the project period were within the plan (ratios against the plan: 100% and88%, respectively). The Outputs of the project was produced as planned.

The efficiency of the GA project is fair. While the project cost was within the plan (ratio against the plan: 99%), the project period exceeded the plan (ratio against the plan: 135%). The number of sites for construction and renovation of the health centers and staff houses as well as the number of wells constructed decreased due to the changes in the exchange rate.

Combining these results, the efficiency of the two projects as combined is fair.

4 Sustainability

<Policy Aspect>

The MNCH care and services have been aligned to the "Health Sector Reform Phase II" (2016-2020) and "the 8th Five-year Health Sector Development Plan" (2016-2020). The main focus of these health sector policies is improvement of maternal and child health including maternal and child mortality.

<Institutional Aspect>

(Administrative Level)

PHOs in the four target provinces have conducted the managerial supervisions to all the DHOs and the technical supervisions on all the HCs. All the PHOs in the four target provinces have the sufficient number of staff for the managerial supervisions to DHOs (3 health staff in Attapeu and 4 each in Champasak, Salavan and Sekong) and PHOs of Sekong and Attapeu have the sufficient number of staff for the technical supervision to HCs (4 in Sekong and 7 in Attapeu). Although PHOs of Champasak and Salavan have 8 each of staff, the number of staff has not been sufficient against the volume of their activities for the MCH services to cover the larger population compared to the other two target provinces. . DHOs in the four target provinces have also conducted the technical supervisions to HCs on a quarterly basis with sufficient number of staff (8 each in Champasak and Salavan and 4 each in Sekong and Attapeu).

(Service Provider Level)

For the delivery of the integrated MNCH services, DHs in the four target provinces have deployed the staff (4 each in Champasak and Salavan, 3 each in Sekong and Attapeu). Also, HCs have deployed 3 for the integrated MNCH services in the four target provinces. DHs and HCs have the sufficient number of staff for the integrated MNCH services except DHs in Salavan.

(O&M of DHs and HCs)

All the DHs equipped by the GA project have sufficient number of staff for operation and maintenance (O&M) of the facilities and equipment. Also, all the HCs equipped by the GA project have sufficient number of staff for O&M of the facilities and equipment.

<Technical Aspect>

The PHO staffs in Champasak, Sekong and Attapeu have sustained the skills and knowledge for the managerial supervisions to DHOs and technical supervisions to HCs but not in Salavan. Also, while all the DHO staffs in Champasak, Seong and Attepeu have sustained the necessary knowledge and skills for the technical supervisions to HCs, 4 DHOs do not in Sekong because of the lack of specialist in the MNCH services. On the other hand, the technical level of the DH staff and HC staff for the integrated MNCH services differs by province. While some DHs in Sekong and Attapeu have the sufficient technical level but one each DH in Sekong and Attapeu has inadequate SBA, respectively, most of the DHs in Champasak and Salavan do not. At the HC level, only the HC staff in Champasak has the sufficient technical skill but the HC staff in other three provinces do not because of the lack of SBAs. For O&M of the DHs and HCs equipped by the GA project, they have no problem on their technical level.

<Financial Aspect>

All PHOs and DHOs in the four target provinces have continuously had sufficient budget allocation by MOH for both management and technical supervisions at the provincial and district level. Also, all the DHs and HCs have sufficient budget for O&M of the facilities and equipment installed by the GA project. However, while DHs and HCs in Salavan and Sekong have had sufficient budget for the integrated MNCH services including the outreach activities and educational events, DHs and HCs in Champasak and Attapeu have not.

The Sector-wide Coordination Mechanism has functioned effectively for budget allocation to the activities aiming to promote and improve the integrated MNCH services in the four target southern provinces of Laos. For example, in Salavan province, contributors included the Global Fund, the United Nations Children Fund (UNICEF), the World Bank (WB), the Asian Development Bank (ADB),

WHO, JICA, Plan, RAI and other donors with total budget allocated of 11,5 billion kips in 2017, slightly down in year 2018 with about 9,9 billion kips.

Table. Budget of PHOs for the management of the integrated MNCH services

(Unit million kip)

	2015	2016	2017	2018	2019
Champasak	N/A	N/A	N/A	2,213	1,987
Salavan	N/A	N/A	59.56	55.92	N/A
Sekong	272	345	533	473	303
Attapeu	200	1,017	1,133	389	365

<Current Status of Operation and Maintenance>

As mentioned above, the facilities and equipment installed in DHs and HCs by the GA project have been in good conditions and well maintained.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the organizational, technical and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

The TC project partially achieved the Project Purpose for improving the coverage of MNCH services in the four target provinces and achieved the Overall Goal for reducing maternal, neonatal and child mortality in the four target provinces. The GA project partially achieved the project objectives for improving accessibility of the population to the health services in the four target provinces. The both projects have contributed to improvement of maternal, neonatal and child health. As for sustainability, the promotion of MNCH services has been endorsed by the national policy and the sufficient number of staffs have been deployed at each level of PHO, DHO, DH and HC but technical level and budget allocation have not been sufficient for delivery of the MNCH services. As for the efficiency, the project period of the GA project exceeded the plan. Considering all of the above points, these projects as combined is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Budget allocation for outreach and health educational activities by DHOs, DHs and HCs should be made to enable MNCH services to cover the targeted populations more effectively. In addition, the budget allocation for all health facilities (DHs and HCs) needs to cover the annual cost in order to allow the health staff for the MNCH services covering all the target population.
- Capacity building for health staffs at DHOs, DHs and HCs are necessary to improve their skills and knowledge on the integrated MNCH services. In addition, they should exchange experiences and learn learnt from good-practiced provinces to come up with more effective integrated outreach activities especially for customarily believes and traditionally behavior in local areas.

Lessons Learned for JICA:

- It is found that MOH as well as the central government of Laos take the TC and GA project as the important role for the health sector, especially MCH services in Lao PDR i.e. they have been adapted the results of the TC and GA Project to the development policies and strategy. Well-coordinated programmatic cooperation by technical cooperation for capacity development of service providers and grant aid for construction of health facilities is very effective and sustainable to improve integrated health services for better health status of the population.
- Good maintenance and well-functioning of medical equipment and facilities that provided by the GA project led to good sustainability. TC project also contributed to them through the capacity building of health staff. On the other hand, in this project, overestimation of the total population for the target setting made the project could not reach the target value of the indicator for the Overall Goal. Owing to this fact, at the project formation/planning stage, designing the expected project target in some indicators require to consider the weak reporting system of the country. In addition, it is preferable to carefully consider and review the related data affecting the performance of the indicators, including projected population at the time of project planning and the time to set the target values for the indicators. Also, it is essential to carefully monitor the performance of the indicators as well as such related data.
- Lao government as well as MOH have had allocated the budget effectively to the integrated MCH services using the Sector-wide Coordination Mechanism in some targeted provinces after project completion. JICA should continue to support the functioned Sector-wide Coordination Mechanism for MOH in order to sustain the integrated MNCH services including the outreach activities under the budget constraints.

Delivery Table at Donchan Health Center, Lamam District, Sekong Province

Examination lamps at Phonthong Health Center, Phonthong District, Champasak Province

Staff of PHO at Attpeu province

Staff at the outpatient department at the Vang Peui Health Center, Laongam District, Salavan Province

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Indonesia Office: March, 2022

Country Name	Capacity Development for Trade-related Administration in Indonesia
Republic of Indonesia	

I. Project Outline

Background	Indonesian economy continued to grow steadily after the Asian financial and economic crisis of 1997. However, the annual growth rate did not reach 7%, the level deemed necessary to create more employment opportunities and to reduce poverty. Foreign direct investment had not yet recovered to 29% of the pre-Asian crisis level. It was deemed to be a pivotal factor in the stagnated growth rate. In order to promote further economic growth, and to benefit from globalization through fully building competitiveness in the trade, it was considered essential to engage in regulatory reform of trade-related regulations, legal systems, and procedures for the improvement of the business environment. The reform was to expedite the movement of trading goods as well as its trade processing, through enhancing transparency and clarity for the business community as well as officials of the related institutions.		
Objectives of the Project	Through the reformation of trade-related systems, procedures, and public and private dialogue for interactive trade promotion, the project aims at improving the trade-related administration, thereby contributing to trade promotion in Indonesia. 1. Overall Goal: Trade is facilitated in Indonesia. 2. Project Purpose: Trade-related administration becomes more efficient and improved.		
Activities of the Project	1. Project site: the whole country of Indonesia 2. Main activities: (1) Making recommendations for streamlining trade-related laws and regulations and establishment of the monitoring structure. (2) Review of the database and its maintenance system. (3) Improvement of trade-related procedures. (4) Improvement of the legal system for trade promotion. (5) Promotion of dialogue between the Government of Indonesia and the private trade-related sectors. 3. Inputs (to carry out the above activities) Japanese Side 1) Experts: 8 persons 2) Trainees received in Japan: 20 persons 3) Third-country training: 10 persons (Belgium and the Netherlands [European Commission, World Customs Organization and Rotterdam port]) 4) Equipment: PCs, color printer, copy machine, etc 5) Local Cost: Payroll for local project staff, training, other management activities Indonesian Side 1) Staff allocated: 8 persons 2) Facilities: Office space and workroom 3) Local cost: Administrative and operational expenses		
Project Period	(ex-ante) July 2009 – July 2012 (actual) July 2010 – June 2013	Project Cost	(ex-ante) 337 million yen, (actual) 338 million yen
Implementing Agency	Coordinating Ministry for Economic Affairs (CMEA)		
Cooperation Agency in Japan	Customs and Tariff Bureau, Ministry of Finance, International Development Associates, Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to travel restrictions and lockdown measures raised during the COVID-19 Pandemic, data gathered during the ex-post evaluation was lower both in quantity and quality as on-site data collection and direct observation were not as feasible as planned. Nonetheless, mitigation measures were taken as follows; 1) rely more on existing monitoring data collected prior to COVID-19, 2) increase scope of desk-based review of administrative data, 3) use of remote data collection and analysis methods where available.

< Special Perspectives Considered in the Ex-Post Evaluation >

Issues in the predetermined indicators in the project design

- The Project Purpose was set to be measured by the number of filing documents and the time to complete the given procedure. However, at the time of the terminal evaluation, it was not measured by the indicators, stating that the target might be eventually achieved if the recommended items were duly addressed. As such, no alternative indicators were proposed to provide any clear directions for the achievement at the time. It was obvious that, given the inherent complexity of trade administrative structure and issues and the aim of achieving efficiency compatible with substantial improvement of the preexisting procedure, the indicators did not amply cover the ground in the first place. Thus, the continuation of the post-project status was to be also verified through the achievement levels of listed tasks for streamlining trade-related laws and regulations and the monitoring structure as the Output 1 by the project.
- The Overall Goal was set to be measured by the satisfaction level of exporters and importers. Nonetheless, such a satisfaction survey was not structurally conducted to obtain a basic reference point up until 2020, and therefore a statistically significant, robust comparison between the ex-ante and the ex-post status at the ex-post evaluation was not possible.

1 Relevance

<Consistency with the Development Policy of Indonesia at the Time of Ex-Ante Evaluation>

The project was consistent with the development policies of Indonesia at the time of ex-ante evaluation. In the National Medium-Term Development Plan (2004-2009) of Indonesia, the "realization of economic and social prosperity and welfare of people" was listed as one of the three pillars. As such, the improvement of the economy was positioned as one of the important policy themes to achieve the goal. In addition, the Government of Indonesia announced the “Policy Package for Improving the Investment Environment” in February 2006

and the "Economic Policy Package" in June 2007. It was determined to work on expeditions and simplification of customs declaration procedures in public customs services.

<Consistency with the Development Needs of Indonesia at the Time of Ex-Ante Evaluation>

The project was consistent with the needs of Indonesia at the time of ex-ante evaluation. A total of 692 regulations, including laws, government ordinances, and presidential ordinances, were uploaded on the website, although it lacked oversight assessment and its structure in terms of procedural efficiency to serve trade promotion. In supporting the construction of the National Single Window system, a survey was conducted on the time required for all import declarations. However, the updating of the trade rule book on the official database had been stagnant, and the survey had revealed that import processing time was longer compared to neighboring countries such as Thailand and Malaysia. There was still room for improving the administration.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy towards Indonesia. The "Country Assistance Program for Indonesia" (2004) positioned dynamic economic growth led by the private sector as a priority area. Specifically, to improve the investment environment, it was to assist to upgrade the economic-related regulatory system, including customs, etc.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by project completion. The project could identify issues in the trade-related procedure that was ill-defined and redundant to impede proper implementation, as there had not been ample explanation to avoid procedural confusion for the trade sector. Thus, it compiled "Traders' Guide for Import-Export License Procedures" to ensure transparency in the trade procedures (Indicator 1). The above-mentioned result suggested that preexisting license applications might have been unnecessarily time-consuming and costly for the traders in the process. However, regarding the status of the time required to complete the procedures, it was not put forth whether it was effectively reduced through the project, in light of the basic reference data before project implementation (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued since project completion. Although the website update was discontinued in 2015, the Indonesian National Single Window (INSW) has been mandated to develop a similar trade-related database system called the Indonesia National Trade Repository (INTR)[1]. Building on the efforts in the project to improve clarity and transparency in the trade administration, all 10 recommended items made at the time of the terminal evaluation in import control have been engaged or planned to be engaged. By the same token, out of 4 recommended items in export control, 3 items have been engaged. As a result of the preceding process of streamlining, it was reported that the time required to complete the procedure has been reduced to 5 days from 7 days on average since 2017.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal had been partially achieved at the time of the ex-post evaluation. As stated above in the "Special Perspectives Considered in the Ex-Post Evaluation," there was no basic reference point to tie the result to the project. Yet, according to the first satisfaction survey for INSW conducted in 2020, the overall score was 4.10 on a scale of 1 to 5 (Indicator 1).

<Other Impacts at the time of Ex-post Evaluation>

No outstanding issues or ramifications were confirmed at the time of the ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Sources
(Project Purpose) Trade-related administration becomes more efficient and improved.	Indicator 1: The number and volume of documents and information to be submitted for trade procedures.	Status of the Achievement: partially achieved (continued) (Project Completion) The project could identify 16 stipulations and 9 requirements in the trade-related procedure that was ill-defined and redundant to cause possible confusion in the process of the procedures. It compiled "Traders' Guide for Import-Export License Procedures" as well as the "Trade Rule Book" database for the public on the website. It was difficult to verify whether the volume of documents was reduced or not, but the project contributed to it by providing structure to the previous procedure and making it more transparent. Therefore the indicator was judged to be partially achieved. (Ex-post Evaluation) The Trade Rule Book Database on the website was last updated in 2015 and is no longer available since June 2021. The discontinuation of the website update was due to the limitation of resources in CMEA. However, the INSW has been developing a similar trade-related database system called INTR that contains a comprehensive set of data and can be viewed on a website. Not only does collecting rules and regulations in one database, but it also provides the following data and information: ・ Exchange rate	Terminal Evaluation Report • Law No. 11 the Year 2020 on Job Creation • Presidential Decree No. 44 the Year 2018 on Indonesia National Single Window

[1] In line with Indonesia commitment on ASEAN Trade Repository (ATR) initiative as announced at the meeting of ASEAN Economic Ministers in 2009, Ministers recognized the need of ASEAN Trade Repository (ATR) that shall be a single reference point to provide the up-to-date, accurate information on all tariff and non-tariff measures within the region. Prior to that, the Government of Indonesia spearheaded to create the trade repository as technical team of INSW package feature into one system called "eService INSW" in 2008. It changed the name of the online system to "Indonesia National Trade Repository (INTR)."
Source: https://insw.go.id/intr/

		・ Simulation of export and import ・ Indonesian Regulation ・ ASEAN Trade Repository ・ References on port or airport, bank, and user The status of the recommended measures to improve clarity and transparency: <Import Control > All recommended items have been already engaged or planned to be engaged. Some notable points are described as follows: ・ The National Single Window Agency (Lembaga National Single Window/LNSW) as a non-echelon unit in charge of the INSW under the Ministry of Finance was established through Presidential Decree No. 44/2018. The INSW shall admit single data submission, examine, process, and decision making on the data for custom control as a dedicated system. ・ SPS (sanitary and phytosanitary) and TBT [2] (technical barriers to trade) measures have been taken as abided by Article 3 PP 29/2021 on "implementation of the trade sector." ・ As per the improvement of surveyor's verification on import goods, MoT Regulation No. 16 on "verification or technical tracing in foreign trade" issued in 2021 has ensured the progress. ・ The Single Submission System is supposed to process applications for import/export licenses through INSW. Data sharing in and simplification of administrative documents have been ongoing. <Export Control> Out of 4 recommended items, 3 items have been already engaged. Some of the notable points are described as follows: ・ Export restrictions such as export quotas and duties still are applied to ensure the availability of domestic supply. Nonetheless, the Government has generally committed to complying with WTO provisions in trade policy ・ As described in section <import control> above, the INSW has been developed to be the "single umbrella" for trade administration. Furthermore, the issuance of the Omnibus Law on Job Creation to merge and simplify regulations has strengthened the function of INSW as a single umbrella with the implementation of commodity balance[3] and other relevant features.	• Regulation of Ministry of Trade No. 16 the Year 2021 on Verification or Technical Tracing in Foreign Trade • Government Regulation No.5/2021 on Implementation of Risk-Based Business Licensing • Government Regulation 29/2021on Implementation of the Trade Sector ・ Interview with CMEA
	Indicator 2: The time required to complete trade procedures	Status of the Achievement: partially achieved (continued) (Project Completion) As it did not refer to the quantitative data regarding the time required to complete the process before the project, whether it effectively reduced the time by project completion was not clear. However, comparing the year around project completion and the time of the ex-post evaluation through the survey, it was verified that time required to complete the procedures was reduced as described below. Therefore, the indicator was judged to be partially achieved. (Ex-post Evaluation) To complete the official trade procedures, it was reported requiring 7 days until 2016. However, it has been reduced to 5 days since 2017. In the background of the reduction, it is deemed that the provision regarding NPIK[4] (Special Importer Identity Number) was removed through MoT Regulation No. 50 in 2015. Import licensing was presumed to be simplified as mandated in PP 5/2021.	Terminal Evaluation Report Government Regulation No. 29 the Year 2021 Interview with CMEA
(Overall Goal) Trade is facilitated in Indonesia.	Indicator Satisfaction level of exporters and importers.	(Ex-post Evaluation) partially achieved The LNSW has been committed to conducting an annual satisfaction survey for the INSW service and website. The first survey was conducted in 2020 and the survey in 2021 is in progress. According to the survey in 2020 described below, INSW achieved a score of 4.10 (on a scale of 1 to 5). Specifically, regarding the INTR feature, it notably achieved 4.13 (classified as very good/satisfactory). The Outline of the Satisfaction Survey in 2020: Objective: To assess the satisfaction and expectation of users	*Survey Kepuasan Pengguna Layanan Kementerian Keuangan RI: Lembaga National Single Window* (2020) / User Satisfactory Survey of the Service of Ministry of Finance

[2] The WTO Agreement on Technical Barriers to Trade (the "TBT Agreement") entered into force on 1 January 1995 as one of the WTO agreements under Annex 1A of the Agreement Establishing the WTO. The Agreement aims to ensure that technical regulations, standards, and conformity assessment procedures are non-discriminatory and do not create unnecessary obstacles to trade.
Source: https://www.wto.org/english/res_e/publications_e/tbttotrade_e.pdf

[3] Referred by MoT in the issuance of import and export permits as a replacement for the Letter of Recommendation which is currently issued by sectoral ministries. At the time of the ex-post evaluation, it was being planned to be open for the public through the INSW portal, pertaining to the information of supply and demand of commodities for public consumption and industry needs. Therefore, it was being expected to improve simplification, transparency, and consistency of trade goods control regulation.

[4] NPIK was utilized to monitor certain traded commodities such as crystallized sugar, raw sugar, electronics, rice for industry use and, textile. Without NPIK, the trade administrative control is handled through approval from MoT.

				regarding service performance of three services provided by INSW: permit tracking, document tracking, and INTR.	Indonesia: National Single Window Agency (2020)
			Data Collection Method	• Conducted the interview survey from July 2019 to July 2020 in 3 selected provinces: Jakarta, Surabaya, and Medan. • The sampling method used is a non-probability sampling from a long list of users by INSW (purposive sampling)	
			Type/Number/ Proportion of Respondents (A total of 125 respondents)	Central government: 4 (3.20%) National private companies: 51 (40.80%) International private companies: 69 (55.20%) State-Owned Enterprises: 1 (0.80%)	

3 Efficiency

The project cost was as planned (ratio against the plan: 100%). And the project period was within the plan (ratio against the plan: 97 %). The outputs were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

The Government of Indonesia has committed to the development of INSW to improve and expand features for the efficiency of trade-related administration. It is designed to ensure one-time electric submission for export/import applications. That means that applicants would only need to access the INSW portal at their disposal at any given time. It is expected to eliminate redundant and cumbersome information and to streamline the trade procedures as much as possible. In this context, the recent Omnibus Law on Job Creation in 2020 was notable in the sense that the governmental commitment to comprehensive regulatory reform: "Ease of Doing Business" to serve the business sector. As such, in the line with trade administration, Government Regulation No. 29/2021 on Implementation of Trade Affairs was issued. Furthermore, to implement the regulation, the MoT issued the Regulation of Ministry of Trade No. 19 and No. 20, specifically for the international trade policy and the regulations to meet the legal connotation stated above.

<Institutional/Organizational Aspect>

By the time of the ex-post evaluation, CMEA underwent substantial organizational reforms in 2015 and 2020. Also, the LNSW was established as a non-echelon unit under the Ministry of Finance (MoF) in 2018. The changes however have no substantial effect on the role of CMEA in the trade sector. The responsibilities have been retained in terms of inter-ministerial coordination and oversight on policies and programs in the all-encompassing economic sector. Although the management authority of the INSW has been transferred to MoF, CMEA's role as a member of the Board of Directors to supervise the INSW remains the same.

<Technical Aspect>

According to the survey result, workshops and/or training related to the promotion of trade have been conducted every year. In 2019, CMEA and MoT co-hosted 2 workshops for concerned officials titled: "Training Program on WTO Law and Dispute Settlement for Indonesian Government Official" and "Post Border and Product Market Surveillance Regime." On the other hand, however, materials and documented guidelines provided by the project have not been amply utilized by CMEA after the project completion, as a hardcopy of those documents went astray during relocations of the office. Thus, CMEA has not been fully aware of the recommendations and the implications directed by the project.

<Financial Aspect>

According to the survey result, a budget has been allocated to the CMEA since 2015 for inter-ministerial coordination in trade affairs, also for the formulation of policy recommendations for trade promotion: 5 billion Indonesian Rupiah (IDR) (2015), 2.5 billion IDR (2016), 3.5 billion IDR (2017), 2.5 billion IDR (2018), 2.35 billion IDR (2019), 818 million IDR (2020). Up until 2020, the budget for trade facilitation has been fully disbursed from the state budget without any other financial support. Although the budget for 2020 was significantly lowered due to focusing on the emergency measures to respond to the COVID-19 pandemic, the budget allocation is expected to bounce back to 2 billion IDR.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the technical aspect. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose and the Overall Goal. It was deemed that the capacities being enhanced have positively affected streamlining the trade procedure. As for sustainability, although there is room for improvement to further respond to the ever-changing economic climate in the business sector, the executing agencies remain proactive in streamlining the trade administration as a national priority.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

In order to further enhance the sustainability of the project as well as the impact in light of new regulations and the plan of system development in the prospect of improving trade administration and trade promotion, it is recommended that concerned agencies such as CMEA and MoT should hold regular public-private dialogue with the concerned business sector to appreciate their feedback, specifically on INSW portal so that they can get a clearer direction as to how to upgrade the user-friendliness and further efficiency for improvement.

Lessons Learned for JICA:

The survey result shows that the counterpart did not use the essential deliverables of the project in which a set of recommendations and guidelines for licensing traders were included. It was mainly because the materials were not easy for, especially newly posted staff to use as a reference since they were not made aware of such materials and the contents. And it was difficult for them to look into the archive

materials when it is necessary for the concerned agencies after project completion. Thus, as it was deemed that the interests of multiple ministries are at stake and inter-ministerial coordination is inevitably required going forward, JICA should instruct that the essential points of the materials should be edited concisely and cataloged in a user-friendly manner so that the key contents can be more effectively disseminated. Also, the project should have deliberately put forward the main points of the materials to be the subject of discussion of all parties concerned during project implementation so that the Indonesian side could have internalized them on how best to realistically utilize as the circumstances demand.

Assistant Deputy of Trade Facilitation and the team from CMEA in discussion with the LNSW to improve the governance of import and export through database system in strategic food and health sectors.

Source: Official Website INSW
(https://insw.go.id/foto/detail-foto)

Socialization of International Trade Policy of Export (Regulation of Ministry of Trade No. 18 the Year 2021 on Prohibited Export Goods and Prohibited Import Goods) on 8 October 2021

Source: Official Website of Directorate General of Foreign Trade, Ministry of Trade
(http://ditjendaglu.kemendag.go.id/index.php/home/detail_news/495)

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

Conducted by Thai Office: August, 2021

Country Name	**Innovation on Production and Automotive Utilization of Biofuels from Non-Food Biomass in Thailand**
Kingdom of Thailand	

I. Project Outline

Background	In Thailand, development of bioethanol and biodiesel derived from food biomass including palms have been conducted since 1970's. However, the needs for clarification of biofuel development mechanisms from non-food biomass and standardization of the test for them were increasing as it was desirable to avoid food shortage problem caused by conversion of food to fuel. Although Jatropha was selected as one of promising alternatives for raw materials to produce non-food biomass, Jatropha contained toxic substance. Therefore, it was necessary to eliminate the toxic substance in order to utilize it for biofuel. Also, it was essential to establish basic technologies for quality improvement in order to practically apply the biofuel derived from Jatropha.		
Project Objectives	Through 1) establishment of production technologies for safe and high quality biodiesel fuel (BDF) derived from Jatropha oil, 2) establishment of refining technologies for bio oil from Jatropha residues and production technologies for high quality BDF, 3) human resource development of researchers, 4) practical application of the BDF production technologies, the project aimed at development of basic technologies for production of automotive fuel using Jatropha of non-food biomass, thereby contributing to dissemination of the improved production technologies for BDF from non-food biomass in Thailand. 1. Expected Overall Goal: Fundamental technologies to produce biofuels from non-food biomass for automotive utilization are developed. 2. Project Purpose: Fundamental technologies to produce biofuels from non-food biomass for automotive utilization are developed.		
Project Activities	1. Project Site: Bangkok 2. Main Activities: 1) Activities for production of high quality BDF from distilled Jatropha oil, 2) Activities for production of biooil from Jatropha residues, 3) Activities for upgrading of biooil and lifecycle assessment, 4) Activities for compatibility assessment of biofuel from Jatropha residues, 5) Activities for human resource development, technical transfer and practical application of BDF production technologies. 3. Inputs (to carry out above activities): Japanese Side 1) Experts: 28 persons 2) Trainees received: 36 persons 3) Equipment: Test device for high quality BDF production, Realtime PM analyzer, High performance liquid chromatography, the prototype extraction and separation apparatus, and so on. 4) Local operation costs: cost for procurement of materials (Jatropha oil and residues, materials and equipment for research activities and others), transportation and travel expenses, communication and transport costs, cost for seminars, trainings and meetings, cost for dissemination activities (costs for printing and events), cost for project assistants and translators, and so on. Thai Side 1) Staff allocated: 95 persons 2) Facilities and land: Project office in each implementing agency, materials and equipment for laboratories, expansion of laboratory, securing the installation site for the pilot plant, and so on. 3) Local operation costs: cost for vehicle running test (1st test), cost for modification of the pilot plant, cost for consumables of the laboratories, utility cost for the project office, and so on.		
Project Period	May 2010 – March 2016 (Extension Period: March 2015 – March 2016)	Project Cost	Ex-ante: 387 million yen, Actual: 346 million yen
Implementing Agencies	National Science and Technology Development Agency(NSTDA），Thailand Institute of Scientific and Technological Research (TISTR），King Mongkut's University of Technology North Bangkok (KMUTNB）		
Cooperation Agency in Japan	National Institute of Advanced Industrial Science and Technology (AIST), Waseda University		

II. Result of the Evaluation

1 Relevance
<Consistency with the Development Policy of Thailand at the Time of Ex-Ante Evaluation > The Project was consistent with Thailand's policies such as the "National Strategy for Climate Change" (2008-2012) and the "15-Year Alternative Energy Development Plan" (2008-2022) aiming at promotion of alternative energies. <Consistency with the Development Needs of Thailand at the Time of Ex-Ante Evaluation>

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

The Project was consistent with Thailand's development needs for avoiding food problem caused by conversion of food to energy, clarification of mechanism of non-food biofuel development and standardization of the tests in the county aspiring promotion of biodiesel utilization.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The Project was consistent with "Economic Cooperation Plan for Thailand" (May 2006) focusing "support for environment management system" as a part of "countermeasures against issues associated with maturing society" which was one of the priority areas

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The technology to produce 1 ton of Hydrogenated Fatty Acid Methyl (H-FAME) per day was established and the quality of the "EAS-ERIA Standards" was ensured by oxidation stability of the H-FAME with 15.1 hours (Indicator 1). Also, upgrading biooil through hydrorefining process enabled to produce upgraded fuel which met the petroleum product quality (surfer <6.3ppm and oxygen <0.1wt%).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued since project completion. The H-FAME related technologies, the key research outputs by the SATREPS project, have been succeed by the national project and the various kinds of verification test for utilization of the research outcomes. Based on the results of the tests, the specification standard for Biodiesel 10% blended fuel (B10) was determined and the commercial use was decided. Related to the national project, in October 2017, Idemitsu Kosan Co., Ltd., a Japanese company, concluded an agreement on technical cooperation for a project of Biodiesel high blended fuel with the National Metal and Materials Technology Center (MTEC) under NSTDA and Global Green Chemical Plc., a Thai major biodiesel fuel production company, and has provided technical supports for the project.

Also, the research activities related to H-FAME has been continued. For the period from 2016 to 2019, the national project for commercial scale technology development and actual vehicle running test was implemented by the implementing agencies of NSTDA and TISTR using 6.8 million Thai baht (THB) funded by the Energy Conservation Promotion Fund under the Ministry of Energy. In addition, MTEC took an initiative for implementation of the Asia Pacific Economic Cooperation (APEC) project (EWG 20 2016A), "Guidelines toward High Biodiesel Blended Diesel (e.g. B20) Specification in the APEC Region". As a part of consideration of BDF standard for biodiesel 20% blended fuel (B20), assessment of H-FAME was conducted and its dissemination was considered.

The research facilities and equipment constructed or installed by the SATREPS project have been continuously used for the related research. The pilot plant for production of H-FAME in TISTR has been used by the national project and the many visitors from the country and the overseas have visited the site. On the other hand, the prototype extraction and separation apparatus installed in NSTDA was not utilized at the time of ex-post evaluation because large scale biooil production by the biomass thermal decomposition method was not promoted by the government of Thailand.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

The Expected Overall Goal was achieved at the time of ex-post evaluation. The SATREPS project aimed at "dissemination of production technologies for upgraded BDF using non-food biomass to Thai researchers and engineering companies" (Indicator 1) and had promoted development of BDF using non-food biomass including Jatropha which did not adversely affect food security when the project started. However, the government of Thailand had greater interest to expand utilization of biofuel derived from palm because of the viewpoints such as to support palm farms confronting the recent stagnant demand for palms. As a result, the Thai government policy guided to promote utilization of the H-FAME technologies for BDF production mainly using surplus of food biomass (palm) from edible consumption. As mentioned above, the H-FAME technologies developed by the SATREPS project has been further promoted by the national project for the upgrading technology of BDF from palm of food material which had been considered during the implementation of the SATREPS project. In December 2018, MTEC/NSTDA announced that the national project carried out technical transfer of the H-FAME technologies as commercial scale production technology development to the two major fuel production companies, Global Green Chemical Plc., and Bangchak Biofuel Co., Ltd. They succeeded continuous operation of H-FAME production for several tons per day under the technical support by Idemitsu Kosan Co. ltd. Also, as for actual vehicle running test, B10 was used for the test and running performance assessment was done.

<Other Impacts at the time of Ex-Post Evaluation>

There are some positive impacts of the Project confirmed at the time of the ex-post evaluation. For commercialization of the H-FAME technologies, a Japanese company was interested in the technologies and planned commercialization of the production in Indonesia. However, the commercialization plan was suspended since the overseas business of the company was downsizing due to the worldwide pandemic of COVID-19. Besides that, for the period from 2016 to 2018, the Third Country Training Program for the ASEAN countries, aiming at dissemination of the H-FAME technologies, was delivered by NSTDA, TISTIR and KMTNB under the assistance by JICA. Also, the Third Country Training Program for the ASEAN countries aiming at dissemination of renewable energies is planned in 2021, in which H-FAME technologies will be covered. Currently, the H-FAME technologies has internationally recognized as upgrading technologies for BDF, and universities and research institutes have been conducting wide variety of researches related to the H-FAME technologies. Although a Lao researchers' group attempted to obtain a fund for research on BDF production using another non-food material, Pongamia, which was considered in the SATREPS project, they have not successfully obtained the fund so far.

As for other impact, many female researchers participated in the SATREPS project and they had great achievements related to the H-FAME technologies in Thailand. It should be notable that the SATREPS project contributed to their excellent works.

No negative impact by the SATREPS project was confirmed at the time of ex-post evaluation.

<Evaluation Result>

Therefore, both the effectiveness and impact of the project is high.

Achievement of Project Purpose

Aim	Indicators	Results

(Project Purpose) Fundamental technologies to produce biofuels from non-food biomass for automotive utilization are developed.	Indicator 1: It is possible to produce Biodiesel Fuel (BDF) which meets the 'EAS-ERIA' Biodiesel Fuel Standards (10.0 hours oxidization stability which is higher than the UE standard EN 14214 of 6.0 hours) on a one (1) ton per day basis.	Achievement Status: Achieved (Continued) (Project Completion) ● The SATREPS project established technologies to produce H-FAME, high quality BDF, with 1 ton per day. (Ex-Post Evaluation) ● The research activities related to the H-FAME technologies have been continued.
	Indicator 2: The quality of biofuels from Jatropha residues produced and upgraded by the Project satisfies the quality standards of petroleum gasoline and diesel oil (sulfur contents < 10ppm, oxygen < 0.1wt%) at laboratory level.	Achievement Status: Achieved (Achieved) (Project Completion) ● Upgraded biooil processed by hydrorefining enabled to produce upgraded fuel which meets the quality of petroleum product (sulfur < 6.3 ppm, Oxygen <0.1wt%) (Ex-Post Evaluation) ● Refer to the Indicator 1.
(Overall Goal) Fundamental technologies to produce biofuels from non-food biomass for automotive utilization are developed.	Indicator By 2019, the improved technologies for biofuels from non-food biomass by the project are disseminated to researchers and engineering firms in Thailand through the Thai research institutions engaged in the project, including seminars, training courses, technical services and so on.	Achievement Status: Achieved. ● Research activities on the H-FAME technologies have been conducted since 2017 by the national project for upgrading biofuel from palm and efforts on commercialization has been promoted. In addition, the technical transfer to the major fuel production companies in Thailand was done for development of commercial scale production technologies. As a result, they succeeded a continuous operation for production with several tons per day in 2018. ● Although the H-FAME technologies were developed for production of biofuel from non-food biomass including Jatropha, the ones have been utilized for production of biofuel from palm (food biomass).

Source : Terminal Evaluation Report, JST Terminal Report, Questionnaire and Interview Surveys with MTEC, TISTIR and KMUTNB. Interview with the research group leader of the Japanese side.

3 Efficiency

Both the project cost and the project period exceeded the plan (ratio against the plan:114 %, 108%, respectively). The project cost exceeded due to an increase in cost for repairing the equipment damaged by the flood. The project outputs were produced as planned, except for the evaluation of automobile fuel compatibilities of biofuels from Jatropha residues which could not be implemented due to lack of bio-oil. The project period was extended for one year because the research facilities and equipment including the H-FAME production plant were damaged by the large scale flood in Bangkok and the vicinity areas in 2011 and their reconstructions took long time. In addition, the Japanese researchers were forced to evacuate for seven months by the evacuation order by the Ministry of Foreign Affairs of Japan

Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspects>

The Department of Alternative Energy and Efficiency of the Ministry of Energy clearly mentioned the further development of the H-FAME developed by the SATREPS project for commercialization as an action for attaining the goal to increase the blended portion of BDF (more than 7% BDF blended) in the "Alternative Energy Development Plan (AEDP 2015)". It was announced that B10 is designated as the standard BDF since October 2020. Therefore, it is expected that utilization of the H-FAME will be promoted as one of technical option to increase the BDF blended proportion. "AEDP" was revised to "AEDP 2018" and was approved by the Cabinet in October 2020. In the revised AEDP, while the target level of the goal was brought down to the realistic level, the expansion of BDF utilization has been continuously focused as one of goal and "test of H-FAME utilization by general diesel automobile" as an action to be promoted in order to attain the goal.

<Institutional/Organizational Aspects>

NSTDA and TISTR have sustained the organizational setting for the research activities related to H-FAME and other research institutions including universities have been continuously conducting the research activities. By the "Feasibility Study on Social Implementation of Bioenergy in East Asia" under the "e-ASIA Joint Research Program" (e-ASIA JRP), Japan and the ASEAN countries (Thailand, Vietnam, Indonesia, Myanmar and Lao PDR) aligned at the regional level and conducted economic assessment and lifecycle assessment (LCA) and so on as well as considered technical strategies for utilization of the H-FAME technologies in the society[2]. Also, the public-private network by the national project was established and has been sustained afterwards.

For the facilities and equipment installed by the SATREPS project, as mentioned above, the organizational setting for proper management was established by each research institution participated in the SATREPS project, and those research institutions have carried out regular maintenance and operation management.

<Technical Aspects>

The researchers involved in the SATREPS project have continued the research activities related to the H-FAME technologies through participations in the national project, the APEC project and so on, and they have continuously made efforts to keep or improve their research capacity. The research outputs by the SATREPS project were compiled in the project report. Moreover, they have been presented at many international conferences and published as academic papers. Also, MTEC invited Dr. Yoshimura, the team leader of the Japanese researchers, as a "Visiting Senior Researcher", by their own budget and had his guidance for their research activities. That enabled to

[2] https://www.jst.go.jp/pr/info/info1245/index_e.html

establish a system for enhancing their research capacity.

As for the government actions for utilization of the H-FAME technologies in the society, the implementation of the national project brought about the government authorities' deeper understanding on the H-FAME technologies in the background with the increasing interests in expansion of utilization of biofuel from palm from the viewpoints such as to support for the palm farms. Those facts indicate that the scientific literacy of the government authorities have been sustained or even improved. Furthermore, the relevant research institutions have contributed to dissemination and awareness raising on the research outputs of the SATREPS project since the H-FAME technologies were addressed in the workshops and symposiums organized or co-organized by them.

In terms of maintenance of the research facilities and equipment installed by the SATREPS project, the pilot plant for H-FAME production at TISTR has been continuously used after the project completion and the relevant researchers have sustained their skills and knowledge for operation and maintenance of the plant. The prototype extraction and separation apparatus at NSTDA was not in use at the time of ex-post evaluation as mentioned above. The relevant documents including manuals have been properly kept.

<Financial Aspects>

As mentioned above, the research budget has been secured by the national project for practical use of the H-FAME technologies. In addition, the budget for the utilization of the research outcomes has been ensured by the e-ASIA Joint Research Program of JST.

<Evaluation Result>

In the light of the above, there has been no problem from any aspects. Therefore, the sustainability of the effects through the Project is high.

5 Summary of the Evaluation

The project has achieved the Project Purpose and the Overall Goal through the development of the H-FAME technologies for upgrading BDF and the actions for commercialization of the technologies. The research activities related to the H-FAME technologies have been continued and disseminated to the ASEAN countries other than Thailand. As for efficiency, the project cost and the project period exceeded the plan. Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learnt

Recommendations for Implementing Agencies

[For the Ministry of Energy]

- Clarification of bioenergy as liquid transport fuel, formulation of the roadmap for establishment of the decarbonized society in mid and long run and continuation of efforts to ensure sustainable support

  While the energy transformation has been accelerated for the establishment of the decarbonized society, the reports by the international authorities, including the International Energy Agency (IEA) highlighted that biomass energy had extremely important role as a measure for realization of the decarbonized society, in particular, in Southeast Asian region. On the other hand, the stagnant oil price leads limited economic viability of BDF and large price volatility of palm which is one of raw materials for biofuel can be a risk for commercialization of BDF. Furthermore, progress of the competitive technologies, such as electric vehicles, affects economic viability of BDF. Therefore, it is recommended to formulate roadmap for higher blended proportion of BDF than B20 for the establishment of the decarbonized society and clarification of the bioenergy as liquid transport fuel as well as promotion of steady technological development in mid and long-run in order to sustain actions which are not affected by the prices of oil and biomass in short and mid-term. At the same time, it is desirable to continue efforts to obtain assistance from the countries and others for short-term.

[For NSTDA and TISTR]

- Establishment of production and utilization technologies of H-FAME at the commercial level

  For the establishment of the production technologies of H-FAME at the commercial level, it is necessary to smoothly and efficiently obtain technical data which becomes basic data for design, and to conduct technological development for scaleup and cost down of production as well as optimization of production process. Also, it is desirable to consider demonstration plants by the business group which is expected to lead the utilization of the H-FAME technologies for the society and to carry out capacity building for establishment of production technologies. Moreover, in terms of utilization of the technologies, it is essential to establish technologies for distribution and storage of BDF in addition to assessments of compatibility with exhaust gas process after EURO 5, oxidation stability, impacts of characteristics other than impurities (High Solubility, Low calories, High Boiling Point, High capability in water absorption) on vehicle.
- Establishment of business model and implementation arrangement for commercialization of BDF

  One issue to be considered is that an implementation entity in a business model for BDF supply has not established yet. It is desirable to propose feasible business models, such as establishment of joint business entity with the existing FAME suppliers after reviewing their business strategies and to take necessary actions for implementation of government supports.
- Implementation of continuous activities for dissemination of non-food biofuels

  It might be difficult to materialize utilization of biofuel from non-food biomass in the society in short-term, which is the original goal for the SATREPS project. However, it is recommended to continue the research activities on it from the mid- and long-term view.

Lessons Learnt for JICA:

- H-FAME, upgraded BDF developed by the SATREPS project, is clearly mentioned as an effort for attaining the goal of alternative energy in the "Alternative Energy Development Plan" of the government of Thailand. In addition, after the completion of the SATREPS project, the national project started and the technological development for commercial scale production and the actual vehicle running test were implemented. It is essential for the promotion of actions to utilize the research outcomes to reflect the research outputs in the policies at the national level. In order to do that, the research targets are needed to be consistent with the policy goal and socioeconomic needs of the country. Therefore, it is preferable to identify situations of the target country at the time of project formulation and preparation and to promote the relevant technologies to the responsible ministries at the stage when the research outputs are in prospect.
- In the background of the SATREPS project, the Japanese research institutions and the Thai research institutions had been jointly engaged in the international research project and they established a good relationship of trust with vigorous communication before

starting the SATREPS project, which facilitated the smooth implementation of the research activities and brought about the research outputs as expected. Also, the cooperation of the SATREPS project with the Ministry of Energy of Thailand and the private companies (oil and automotive) of the both countries of Thailand and Japan at the early stage of its implementation and demonstration of the technologies under the cooperation were effective for the promotion of the technologies to the relevant ministries. In addition, the follow-up activities at the post project period have contributed to ensuring sustainability of the project effects and promoting the utilization of the research outcomes in the society. JICA continuously supported to establish an environment for the utilization of the research outcomes through a dispatch of the ex-leader of the Japanese researchers as a "Senior Volunteer", delivery of the third country training programs to disseminate the research outputs to the neighboring countries, and implementation of the follow-up project for effectiveness assessment of H-FAME as countermeasures to cope with PM 2.5. As clarification of the path to the utilization of the research outcomes in the society requires long term, it is effective to establish the joint research system before implementation of the SATREPS project. Also, it is essential to consider a strategy for the post project period and to build cooperation among the stakeholders based on scientific evidence during the implementation of the SATREPS project.

- In order to actively conduct public relation activities on H-FAME, the PR group organized by the SATREPS project implemented PR activities with various channels, including PR at the workshops on bioenergy in Thailand, leaflets on the SATREPS project including H-FAME, active information sharing of the H-FAME technologies to the ASEAN countries through the third county training programs supported by JICA, introduction of the H-FAME technologies to the management of oil companies, biodiesel companies and automotive companies in Thailand. Those PR activities are effective to build a social leaven to utilize the research outcomes. Therefore, it can be an effective idea to incorporate PR activities in the SATREPS project at the time of project design.
- In the SATREPS project, development of the H-FAME technologies was expected to be use for upgrading the low graded Jatropha FAME. However, the project design was revised to consider diversification of raw materials for biofuel based on the request of the Ministry of Energy of Thailand which had planned to use high concentrated FAME. It is considered as a good practice because of the wider scope of application of the basic technologies and the flexible and timely revision of the project plan.

Partial hydrogenation apparatus (TISTR)

FAME production plan (TISTR)

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

conducted by India Office: March 2021

Country Name	Information Network for Natural Disaster Mitigation and Recovery
India	

I. Project Outline

Background	Many parts of India are susceptible to natural disasters due to their geographical location. However, government measures had tended to be limited to emergency measures such as rescue and assistance for victims. In the fields such as disaster forecasting, disaster mitigation, and reconstruction, the accumulation of knowledge, technology, and capacities to respond was not sufficient. Given this situation, there was a need for assistance in the latest disaster prediction and response technology, especially by countries with similar disaster environments and countermeasures such as Japan.
Objectives of the Project	The project aimed 1) to establish infrastructure for the continuous data collection on earthquake and weather with a global information network and to develop technical bases for rescue and support for restoration and for disaster recovery support, and 2) to develop a rapidly deployable, robust communications system for during/after a natural disaster, through (i) conducting Seismic Hazard Assessment, (ii) developing the Weather Sensors and Analysis Platform, (iii) developing the Emergency and Post-disaster Communications System with data processing, and (iv) developing the Information Sharing Platform and Resources and the Advanced Disaster Management System, thereby contributing to the strengthening of research collaboration between India and Japan in the field of natural disaster prevention and information communication technology (ICT) and to the advancement of scientific knowledge and technology to resolve global issues. 1. Expected Overall Goal: To strengthen research collaboration between India and Japan in the field of natural disaster prevention and information communication technology and to advance scientific knowledge and technology for resolving global issues such as natural disasters. 2. Project Purpose: 1) To establish infrastructure for continuous data collection on earthquake and weather with global information network by applying it to India and Japan as example cases and to develop technical bases for rescue and support for restoration and for disaster recovery support. 2) To develop rapidly deployable robust communications system that can be deployed during/after a natural disaster to provide voice, data, and video connectivity for emergency communications and relief work.
Activities of the Project	1. Project Site: Medak District, State of Telangana (State of Andhra Pradesh at the time of ex-ante evaluation) 2. Main activities: Designing each system, deploying the equipment, collecting and analyzing data using the installed equipment, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 21 persons (1 long-term and 20 short-term) 2) Trainees received: 65 persons 3) Equipment: Strong motion seismometers, global positioning system (GPS) receivers, automatic weather stations (AWSs), satellite communications equipment, servers, personal computers, etc. 4) Operation cost Indian Side 1) Staff allocated: 51 persons 2) Offices, meeting rooms, and others 3) Operation cost
Project Period	July 2010 – June 2015 / Project Cost: (ex-ante) 488 million yen, (actual) 486 million yen
Implementing Agency	Indian Institute of Technology, Hyderabad (IITH); Indian Institute of Technology, Madras (IITM); Indian Institute of Technology, Kanpur (IITK); Indian Institute of Technology, Bombay (IITB); International Institute of Information Technology, Hyderabad (IIITH); Indian Meteorological Department (IMD); National Geophysical Research Institute, Hyderabad (NGRI)
Cooperation Agency in Japan	KEIO University; The University of Tokyo; Hiroshima University; Osaka University

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

This project did not have indicators for the Project Purposes and the Overall Goal. To verify the achievement of the Project Purposes, we used the terminal evaluation's qualitative assessment of the elements that make up the Project Purpose, namely, (1-a) Infrastructure for continuous data collection on earthquake and weather with global information network by applying it to India and Japan as example cases, (1-b) Technical bases for rescue and support for restoration and for disaster recovery support, and (2) A rapidly deployable, robust communications systems that can be deployed during/after a natural disaster to provide voice, data, and video connectivity for emergency communications and relief work. To verify the achievement of the Overall Goal, similarly, we examined qualitatively whether the elements that make up the Overall Goal, namely, (a) Research collaboration between India and Japan in the field of natural disaster prevention and information communication technology and (b) Advancement of scientific knowledge and technology for resolving global issues such as natural disasters, have manifested.

1 Relevance

<Consistency with the Development Policy of India at the Time of Ex-Ante Evaluation>

This project was consistent with India's development policies such as the Eleventh Five Year Plan (2007-2012) that stated, "the development process needs to be sensitive towards disaster prevention, preparedness and mitigation," the National Disaster Management Guidelines–Management of Earthquakes (2007), and the National Disaster Management Guidelines–Management of Cyclones (2008).

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

<Consistency with the Development Needs of India at the Time of Ex-Ante Evaluation>

As mentioned in "Background" above, this project was consistent with the need for the latest disaster prediction and response technology.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

This project was consistent with Japan's Country Assistance Program for India (2006) that included "efforts with a view of disaster prevention" in "the improvement of poverty and environmental issues," one of the priority areas of assistance.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The project achieved the Project Purposes at the time of its completion. Regarding Project Purpose 1, the expected infrastructure for continuous data collection was established. For earthquakes, subsurface structure models in the central part of Indo-Gangetic Plain, together with the study on the vulnerability of buildings at the target area, were constructed based on the data collected from the GPS receivers, strong motion seismometers, and building sensors installed by the project. For weather, the online weather monitoring system in city-wide using Vaisala-type AWSs (simplified AWSs with a lower cost than AWSs meeting the World Meteorological Organization's standard) were installed and enabled observation of the behavior of local heavy rain. These studies constituted the technical bases for rescue and support by enabling the assessment of hazards.

Regarding Project Purpose 2, the project developed a prototype of an emergency communications system that met the communications infrastructure in India and a portal service (information-sharing platform) for centralized management of disaster information and cloud computing for secure and flexible data management during disasters.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued to the time of ex-post evaluation. Concerning Project Purpose 1, the research outputs in the field of earthquakes, such as the seismic hazard assessment and building vulnerability assessment through sensor networks, have been used in research on an ongoing basis. The seismological data generated from the sensor networks developed by the SATREPS project has contributed to several publications and one Ph.D. award, and the data acquired from building vibration sensors have contributed to Masters and Ph.D. theses. In the weather field, the AWSs and the information-sharing platform are no longer being used due to some equipment's failures. Meanwhile, the High Power Excimer Laser, which was provided under this project and used for new material to detect air pollution as part of AWSs, has produced four Masters and five PhDs.[2]

Concerning Project Purpose 2, the emergency communications system prototype was utilized in local events in 2016, but the equipment has since broken down and has not been used. The information-sharing platform has also stopped functioning as the data server has gone down, and funding has been insufficient to maintain and utilize the platform.[3] However, based on this project's achievement, a research project is ongoing on the application of the concept of emergency communications system.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

The Expected Overall Goal has been partially achieved by the time of ex-post evaluation. Although there were many research collaborations between India and Japan during the project period, and such relationships among researchers have been maintained after project completion, outstanding collaborated research or projects have not been confirmed at the time of ex-post evaluation mainly due to budget constraints. Even so, the above-mentioned ongoing research in the field of earthquakes can be said as a case of the advancement of scientific knowledge and technology in the field of natural disasters by this SATREPS project.

<Other Impacts at the time of Ex-post Evaluation>

No negative impact on the natural environment has been observed. As a positive impact, the researchers' research capacity involved in the project activities has improved in the continued research mentioned above.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose 1) To establish infrastructure for continuous data collection on earthquake and weather with global information network by applying it to India and Japan as example cases and to develop technical bases for rescue and support for restoration and for disaster recovery support.	(1-a) Infrastructure for continuous data collection on earthquake and weather with global information network by applying it to India and Japan as example cases (1-b) Technical bases for rescue and support for restoration and for disaster recovery support	Status of the Achievement: achieved (partially continued) (Project Completion) <u>Earthquake</u> - The Broadband Velocity Type Strong Motion Seismometers were installed in all of the planned 26 sites in the target areas of Indo-Gangetic Plain and interconnected online. Based on seismometer records of near and distant earthquakes, three-dimensional subsurface models on the central part of the Indo-Gangetic Plain were completed. - The building sensors were installed at various positions of six selected public buildings or housing complexes at Chandigarh. Based on observation results from the sensors, the fragility of the building structures was analyzed using a three-dimensional frame model. <u>Weather</u> - Vaisala-type AWSs and a data network were installed, and they demonstrated the usefulness of a weather monitoring system with the dense deployment of AWSs.

[2] Among the major equipment this project provided for Project Purpose 1, the strong motion seismometers with the data loggers the building sensors and the High Power Excimer Laser and the Vacuum Chamber with related equipment are functioning and used for research, but equipment related to the AWSs have not been functioning since 2016 due to failures of the data loggers and the data transmission system.

[3] Among the major equipment this project provided for Project Purpose 2, the infrastructure for the emergency communications system such as the GSM Optical Distribution Unit (ODU) and servers have not been used since the connected computer's motherboard was broken and software update is required. The equipment for the information-sharing platform, such as personal computers and smartphones, are used for other research purposes since the original platform has stopped functioning.

		- The Sensor Material Development Laboratory was established at IITH, and sensor materials such as for PM2.5 observation sensor, CO2 sensor, vibration sensor, and humidity sensor were developed. (Ex-post Evaluation) <u>Earthquake</u> - NGRI and IIITH has continued seismic hazard assessment through sensor networks and building vulnerability assessment based on the data acquired from installed sensors. <u>Weather</u> - IMD has not operated the weather monitoring with the AWSs since 2016 as data from the AWSs cannot be retrieved due to failures of the equipment provided by this project (see Footnote 2). - Department of Materials Science and Metallurgical Engineering of IITH, where the Sensor Material Development Laboratory was absorbed into, has used the High Power Excimer Laser and produced four Masters, five PhDs, and five students currently pursuing Ph.D. including one in Japan under the JICA-Friendship program.
(Project Purpose 2) To develop rapidly deployable robust communications system that can be deployed during/after a natural disaster to provide voice, data, and video connectivity for emergency communications and relief work.	(2) A rapidly deployable, robust communications system that can be deployed during/after a natural disaster to provide voice, data, and video connectivity for emergency communications and relief work.	Status of the Achievement: achieved (partially continued) (Project Completion) - By referring to the disaster communications systems used at the time of the Great East Japan Earthquake, and taking into account the status of India's communications infrastructure, a prototype of an emergency communications system that combined satellite communications with Wi-Fi/GSM/LTE was developed. FM-RDS was adopted for transmitting text data at lower bit rates for mobile phones that were generally attached to FM broadcast receiver units.[4] - A portal site for integrating information processed by each research group and managing the emergency communications system was launched. The cloud computing system was developed as well so that these data and system can be safely and smoothly managed during emergencies. The portal site included a registration system for the safety information of people. (Ex-post Evaluation) - IITM is conducting research on the application of the concept of the emergency communications system developed under this project to accident relief and train and crowd control by the Tamil Nadu Police. - According to IITH, the information-sharing platform no longer exists due to server breakdown/being no longer functional and lack of maintenance budget.
(Expected Overall Goal) To strengthen research collaboration between India and Japan in the field of natural disaster prevention and information communication technology and to advance scientific knowledge and technology for resolving global issues such as natural disasters.	(a) Research collaboration between India and Japan in the field of natural disaster prevention and information communication technology (b) Advancement of scientific knowledge and technology for resolving global issues such as natural disasters	(Ex-post Evaluation) partially achieved - Outstanding collaborated research or projects were not confirmed at the time of ex-post evaluation mainly due to budget constraints. - The ongoing research on seismic hazard assessment through sensor networks can be said as a case of the advancement of scientific knowledge and technology in the field of natural disasters by this SATREPS project.

Source: Terminal Evaluation Report; JST Final Report; questionnaire and interview with the implementing agencies

3 Efficiency

Both the project cost and the project period were as planned (ratio against the plan: 100% for both items). The Outputs of the project were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

The National Disaster Management Guidelines–Management of Earthquakes (2007), the National Disaster Management Guidelines–Management of Cyclones (2008), and the National Disaster Management Guidelines–National Disaster Management Information and Communication System (2012) are effective at the time of ex-post evaluation. Also, the National Disaster Management Plan (2019) has the Prime Minister's Ten-Point Agenda for Disaster Risk Reduction, in which two items mention the importance of technology for disaster risk reduction.

<Institutional/Organizational Aspect>

Although detailed information on organizational arrangements was not available, the research institutes responsible for research based on this SATREPS project's results are identified. They are IITH (Department of Computer Science and Engineering for the ICT platform

[4] Wi-Fi: Wireless computer network; GSM: Global System for Mobile Communications or 2G digital cellular networks; LTE: Long-Term Evolution (a standard for wireless broadband communications); FM-RDS: FM Radio Data System.

and Department of Materials Science and Metallurgical Engineering for the laser equipment for AWSs), IITK (Department of Civil Engineering), IITM (Department of Electrical Engineering), IIITH (Earthquake Engineering Research Centre), NGRI (Seismological Observatory), and IMD (IMD Hyderabad; as a governmental department that is responsible for weather monitoring and issuance of warnings as well as researches). Each of these agencies is also responsible for the maintenance of the project equipment provided to them. However, there is no clear recognition of responsibility for the maintenance of the AWS equipment installed in other institutions' premises than IMD. Organizational arrangements for implementing policy or programs based on/using this project's research outputs were not confirmed as such policies or programs have not been able to be identified.

<Technical Aspect>

According to IITH, IITM, IIITH, and NGRI, their researchers/professors have sustained their research capacity through continued research in the related fields. According to these institutes and IMD, they have sufficient skills and knowledge to operate and maintain the equipment provided by the project even though some equipment is no longer functioning due to lack of budget.

<Financial Aspect>

IITH and IIITH have secured some funds for research and maintenance of the equipment related to this project from such sources as the respective institutions and the Department of Science and Technology (DST), India.[5] Although financial information was not available from other implementing agencies, it appears from what has been described so far that a certain amount of funding for research activities related to this project has been obtained. The budget for the repair and replacement of some equipment has not been ensured, partly because of the nature of the field where equipment is quickly outdated in a few years, which reduces the motivation to maintain and/or update old less-functioning equipment. For the AWSs, IMD could not secure a budget to maintain the system that does not match their specified standard. Other institutions where the AWSs were installed have not allocated the maintenance budget as the responsibility for maintenance was not clearly recognized.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational and financial aspects of the implementing agency. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purposes of establishing infrastructure for the continuous data collection on earthquake and weather with a global information network and developing a rapidly deployable, robust communications system for during/after a natural disaster. The project's effects have partially continued: the research related to earthquakes has been continuously conducted based on this project's outputs, but those related to weather have not continued. The Overall Goal has been partially achieved: outstanding collaborative activities between India and Japan have not been confirmed after project completion; however, there has been some advancement of scientific knowledge and technology brought by the above-mentioned continued research activities. Regarding sustainability, no major problem has been found in the policy and technical aspects, but enough information was not available in the institutional/organizational and financial aspects. Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- IITH and other involved institutions and department are recommended to promote periodical meetings among concerned institutions and department to share research outputs and progress and to discuss the possibility of collaboration and application of an integrated platform in emergency incidents.

Lessons Learned for JICA:

- The equipment for the AWSs have not been properly maintained and thus not utilized after project completion. The purpose of installing simplified and more economical AWSs (Vaisala-type) was to establish a prototype network with dense granularity for micro-scale weather observation and to utilize the data for disaster forecast. In addition, the institute or department who is responsible for equipment maintenance, especially those installed in other institution's premises than IMD, was not clearly recognized, and it resulted in lack of necessary budget for maintenance and proper repairs. To avoid such situation, the following actions could have been taken:
  - To ensure that the project clearly identify who is responsible for equipment ownership and maintenance and confirm the strategy/plan to secure the necessary maintenance budget for at least a few years at the time of project completion.
  - To promote installation of equipment to be done under the most relevant organization/institute to ensure ownership of the equipment as much as possible.
- Regarding the ICT equipment, the installed equipment became outdated in a few years after project completion, and they are not utilized anymore. To avoid such situation, the following action could have been taken:
  - To recommend the project to carefully select specifications and technologies from the point of view of sustainability and easiness of upgrading when necessary.

[5] For example, IITH received 6,700,000 Indian Rupee (INR) from DST for a research on strain induced structure and microstructural studies on lead free piezoelectrics (2019-2021) and INR1,000,000 from IITH-Interdisciplinary Research Projects Fund (IDP) for a research on flexible hybrid ferroelectrics (2020-2021). IITH allocated the following budget for the major equipment provided by this project: (i) for the High Power Excimer Laser and auxiliary devices, INR150,000 (from IITH maintenance support) in 2017 and INR1,300,000 (INR800,000 from DST and INR500,000 from IITH-IDP) in 2019; (ii) for the Vaccum Chamber and auxiliary devices, INR1,300,000 (INR800,000 from DST and INR500,000 from IITH-IDP) in 2019.

IIITH received INR300,000 each from IIITH for ambient vibration studies (2016-2019) and path study (2018-2020). For the maintenance of the building sensors and all related and auxiliary devices provided by this project, IIITH spends INR100,000 every year.

Strong motion sensor (ITK sensor)
installed in the IIITH building to conduct constant monitoring

Portable microtremors observation system being used for research at IIITH

conducted by Afghanistan Office, September, 2021

Country Name	[Phase 1] Reproductive Health Project [Phase 2] Reproductive Health Project in Afghanistan Phase 2
Islamic Republic of Afghanistan	

I. Project Outline

Background	In Afghanistan, access to reproductive health (RH) services was difficult, being associated with the social, cultural, and physical issues unique to Islamic society, lack of skills of health and medical personnel, and weak health systems. Under these circumstances, it was urgent to improve RH policies and guidelines and strengthen policy implementation structures. The Ministry of Public Health (MoPH) established the Reproductive Health Directorate (RHD) in January 2004 to address such issues, and Phase 1 of this project (2004–2009) was implemented to improve the capacity of RH officers (mainly RHD staff) and service providers in the capital Kabul. However, further improvement of the management capacity of the RHD and RH officers in provinces was found necessary, and Phase 2 (2010–2015) was implemented.
Objectives of the Project	The project aimed to enhance the effectiveness and efficiency of RH program management by RHD through establishing the National RH Program, establishing the in-service training mechanism, enhancing the RH system in Urban Kabul, and strengthening the capacities of RHD and Provincial Reproductive Health Officers (PRHOs), thereby enhancing the quality of RH services. [Phase 1] 1. Overall Goal: The coverage of quality maternal and newborn health services is expanded. 2. Project Purpose: The capacity of RHOs and RH service providers to provide necessary services based on the Basic Package of Health Services (BPHS) and Essential Package of Hospital Services (EPHS) is improved. [Phase 2] 1. Overall Goal: The quality of RH service is enhanced. 2. Project Purpose: RHD and PRHOs manage the RH program more effectively and efficiently.[1]
Activities of the Project	1. Project Site: Afghanistan 2. Main Activities: [Phase 1] (1) National RH program: develop job descriptions of central RH officers (RHOs) and PRHOs; conduct training for central RHOs and PRHOs; develop a mechanism of- and implement supportive supervision; implement a quality assurance program of Kabul BPHS facilities; develop technical protocols for EPHS; etc. (2) In-service Training (IST) mechanism: establish the Training Department in Malalai Hospital and the Training Center in Dasht-e Barchi District Hospital; develop the Continuum of Care (COC) Learning Resource Package (training materials); develop the Guideline for Quality Management for IST; etc. (3) RH system in Urban Kabul: develop the Urban Health Plan in Kabul City; conduct monitoring and supervision (M&S); etc. [Phase 2] (1) Policy formulation capacity: revise the National RH Policy, the National RH Strategy, and RH-related guidelines/protocols with development partners; monitor and supervise the implementation of them; etc. (2) Coordination capacity: strengthen the coordination mechanism within MoPH and with development partners; etc. (3) Monitoring and evaluation (M&E) capacity: develop the M&E Guideline and tools with development partners; conduct M&E (not implemented); etc. (4) IST capacity: review the Guideline for Quality Management for IST and develop the National IST Guide; develop the National Reproductive Health Training Management Strategy; develop the training needs assessment (TNA) mechanism; plan and implement annual IST plans (not implemented); etc. 3. Inputs (to carry out above activities) Japanese Side [Phase 1] * As of Terminal Evaluation 1) Experts: (Long-term) 8 persons; (Short-term) 13 persons 2) Trainees received: (Japan) 21 persons; (Cambodia, Indonesia, Pakistan) 18 persons 3) Equipment: Vehicles; photocopier; training materials; drug supplies; etc. 4) Operation cost [Phase 2] * As of Terminal Evaluation 1) Experts: (Long-term) 2 persons; (Short-term) 1 person; (Local consultants) 4 persons 2) Trainees received: 11 persons Afghanistan Side [Phase 1] 1) Staff allocated: 38 persons 2) Land and facilities: Office for Japanese experts 3) Operation cost: Cost for materials and consumables [Phase 2] 1) Staff allocated: 49 persons 2) Land and facilities: Office space for Japanese experts and local consultants; Meeting

[1] As for the Project Purpose, the agreement with the Afghan side (in English) on Phase 2 states that "RHD manages the RH program more effectively and efficiently," without mentioning PRHOs. However, the Japanese translation of the same purpose in the Japanese reports mentions "RHD and PRHOs," and both the English and Japanese versions of the project plan include an indicator to measure the administrative management capacity of PRHOs. Therefore, in this report, the Project Purpose is as in the JICA reports in Japanese.

	3) Equipment: Equipment for emergency obstetrics at 5 hospitals and technical training and training management at regional training centers 4) Operation cost		Rooms 3) Operation cost: personnel costs, electricity and heating expenses
Project Period	[Phase 1] September 2004 – September 2009 [Phase 2] May 2010 – May 2015	Project Cost	[Phase 1] (ex-ante) 500 million yen, (actual) 622 million yen [Phase 2] (ex-ante) 350 million yen, (actual) 260 million yen
Implementing Agency	Reproductive Health Directorate (RHD)* of Ministry of Public Health (MoPH); Kabul Provincial Health Directorate (KPHD) (Phase 1 only) * RHD was reorganized to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Directorate after project completion.		
Cooperation Agency in Japan	International Medical Center of Japan (Phase 1 only)		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, we were unable to conduct a field survey. Therefore, this evaluation is based on the information provided by the implementing agency and secondary data. For the same reason, detailed information was not available. Therefore, indicators for which sufficient data for verification were not available were determined to be "not verifiable."

<Special Perspectives Considered in the Ex-Post Evaluation>

- Since Phase 1 and Phase 2 have more or less similar Overall Goals (RH service enhancement) and Project Purposes (RH capacity building), respectively, we evaluated the two phases together by regarding them as an integrated project. We used the Overall Goal and Project Purpose of Phase 2 as those of the integrated project. To assess the achievement of these objectives, we used the indicators for Phase 2 with the use of the indicator for Phase 1 as the supplementary information.

1 Relevance

<Consistency with the Development Policy of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1, this project was consistent with the MoPH's basic policy (2002), namely, "providing basic health services broadly and equally," and the following six priority areas: 1) Reduce under-five infant mortality; 2) Reduce maternal mortality; 3) Control malnutrition; 4) Control infectious diseases; 5) Health care services; 6) Capacity building of human resources necessary to provide effective and efficient health care services. At the time of ex-ante evaluation of Phase 2, this project was consistent with the Afghanistan National Development Strategy (2008–2013), in which the reproductive and child health program was given high priority.

<Consistency with the Development Needs of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1 and Phase 2, this project was consistent with the developing needs for improving the capacity of central and provincial RH officers as described in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation of Phase 1, assistance in the health sector was a sub-area of "reconstruction and restoration," one of the three priority areas of Japanese assistance for Afghanistan as of 2004. At the time of ex-ante evaluation of Phase 2, based on the economic cooperation policy dialogue in July 2009, the Japanese Government announced the four priority areas of assistance, one of which was "basic living such as education and health."[2]

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the time of project completion. During the Phase 1 period, the capacity of RHD was improved as manifested by the outputs such as the development of the National RH Program (for the implementation of the National RH Strategy (2006–2009)) including monitoring and supportive supervision, and a proposal on IST mechanism. Indicators for RH services provision and management became better collected and reported, while the data analysis by RHD was not thoroughly conducted reportedly due to lack of personnel (Supplementary Information). By the end of Phase 2, RHD, with the support of this project and other development partners, revised the National RH Policy and Strategy (2010–2015) to the National RH Policy and Strategy (2012–2016) and reviewed and revised national RH guidelines subsequently (Indicators 1 and 2). At the provincial level, however, no information is found on whether PRHOs started M&E according to the M&E Guideline developed by the project (Indicator 3). Also, IST based on the new guideline developed by the project was not commenced during the project period since the National IST Guide, the new guideline, was still in editing, and annual training plans based on the Guide were not prepared by the time of project completion (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project's effects partially continued to the time of ex-post evaluation. After project completion, RMNCAH Directorate (previously RHD) was involved in monitoring activities and reviewing RH-related policies and related activities. At the provincial level, PRHOs conducted monitoring using checklists of MoPH/RMNCAH Directorate, which was possibly part of the project's M&E Guideline. Regarding training, RMNCAH Directorate established an active training department and continuously conducted IST based on the National IST Guide with development partners' financial support. Malalai Hospital, where Phase 1 of the project had established a training center, also continued to provide the IST.[3] At the same time, it is not clear to what extent this training enabled the deployment of skilled birth attendants at public primary health care facilities in Afghanistan.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was achieved by the time of ex-post evaluation. The Health Management Information System (HMIS) data show improvement in all the designated indicators (related to RH services quality), mostly achieving the targets. According to RMNCAH

[2] Source: Ministry of Foreign Affairs, ODA Country Data Book 2004, 2009.

[3] However, Dasht-e Barchi District Hospital (the other hospital where Phase 1 of this project established a training center) did not continue the IST as it was handed over to Médecins Sans Frontières (MSF).

Directorate, the improved RMNCAH capacity in M&E paved the way for improving services. Among the indicators, the percentage of women receiving antenatal care (ANC) four times (Indicator 4) increased sharply from 2018 to 2019 (although the degree of improvement before and after the project could not be verified due to different data sources). One of the reasons for this increase could be that the MCH Handbook, which JICA disseminated in cooperation with other development partners, was launched in 2018, ensuring that multiple ANC is recorded. The project contributed to improving this indicator by developing a coordination mechanism among partners for the dissemination of the MCH Handbook, as shown in the next section.

<Other Impacts at the time of Ex-post Evaluation>

No adverse impacts have been observed. As a positive impact, RMNCAH Directorate pointed out that some of the outputs of this project, i.e., RH Task Force and Technical Advisory Group (TAG), paved a way to engage all partners in the RH sub-sector to be engaged, contribute, and learn, which led to the enhanced efficiency of maternal and child health (MCH) projects. As a notable example, the TAG meeting of the MCH Handbook not only attracted partners but also worked as a platform to link different departments of MoPH to work together. At the same time, RMNCAH Directorate is taking a more proactive role in the management and monitoring of projects with the capacity to plan and execute radical projects. As a result, the MCH Handbook implementation took place in a short time, and RMNCAH Directorate was able to expand it to most parts of Afghanistan, which is unique among the countries that implemented the same initiative at a relatively slow pace.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) RHD and PRHOs manage the RH program more effectively and efficiently.	Indicator 1: Based on the results of M&E, the RH strategy and planning document are reviewed periodically and revised by RHD when necessary.	Status of the Achievement: achieved (continued) (Project Completion) - RHD revised the National RH Policy and Strategy (2010–2015) to the National RH Policy and Strategy (2012–2016) based on Afghanistan Mortality Survey (AMS) 2010 with the support of this project and other development partners. (Ex-post Evaluation) - RMNCAH Directorate reviewed the RH Strategy, policies on MNH, and the RMNCAH communication strategy based on the results of M&E.
	Indicator 2: RHD is involved in policy planning and research protocol making related to RH.	Status of the Achievement: achieved (continued) (Project Completion) - RHD reviewed and revised RH national guidelines in individual fields (maternal and newborn health (MNH), national maternal and neonatal death review (M&NDR), pregnancy, childbirth, postpartum and newborn care (PCPNC), clinical gynecology protocols, and M&E), which were approved by MoPH/RHD, with the support of this project and other development partners. (Ex-post Evaluation) - RMNCAH Directorate was involved in developing tools such as Balanced Scorecard, Demographic and Health Survey, Afghanistan Health Survey, BPHS/EPHS revision, and Quality of Care Assessment.
	Indicator 3: M&E (including Monitoring and Supervision) is conducted by PRHOs according to the M&E guideline in 80% of 34 provinces.	Status of the Achievement: not verifiable (not verifiable) (Project Completion) - The Dari version of the new M&E Guideline was completed, while the Pashto version was in process. RHD introduced the Guideline to PRHOs at a workshop in December 2014 mainly supported by UNICEF and this project. - PRHOs were assigned in 30 out of 34 provinces (88.2%), but there is no information on how many of them used the new M&E Guideline. (Ex-post Evaluation) - The Pashto version of the new M&E Guideline was not completed reportedly due to lack of resources (i.e., financial resources to outsources for the translation and human resources to do the final editing and proof reading). - Although the exact numbers were not be able to be confirmed, PRHOs conducted monitoring at the provincial levels, and RMNCAH Directorate received their reports accordingly. It was reported that they used an available checklist prepared by MoPH/RMNCAH Directorate that was finalized in 2014. Therefore, although it is most likely that it was part of the M&E Guideline developed under this project, there is no solid proof.
	Indicator 4: 90% of public primary health care facilities have skilled attendants who have been trained according to the RHD's in-service training guidelines.	Status of the Achievement: not achieved (not verifiable) (Project Completion) - The project supported the intensive training courses on emergency obstetric care three times with 80 participants for capacity building of skilled birth attendants in 2014. - However, as National IST Guide was still in editing, annual IST plans were not prepared. Accordingly, IST based on the Guide was not commenced. The work was delayed due to the time taken for the policy formulation support activities. (Ex-post Evaluation) - RMNCAH Directorate established a training department and continuously conducted 26 modules of the IST based on the National IST Guide with development partners' financial support. From 2015 to date, the IST was provided to participants from 34 provinces of Afghanistan. - From 2015 to date, a cumulative total of 7,124 midwives received RMNCAH-related training,

		but it is not clear how much they contributed to the achievement of this indicator due to lack of data. - The National Reproductive Health Training Management Strategy developed under the project was not used. After the project completion, MoPH made a general training guide, and RMNCAH was asked to use that instead.
(Overall Goal) The quality of RH service is enhanced.	Indicator 1: The percentage of institutional deliveries increase from 32.4% (AMS 2010) to 45% (2016).	(Ex-post Evaluation) achieved 2015: 55% / 2016: 58% / 2017: 61% / 2018: 71% / 2019: 76% Source: HMIS
	Indicator 2: The percentage of deliveries attended by skilled birth attendants increase from 34% (AMS 2010) to 50% (2016).	(Ex-post Evaluation) achieved 2015: 57% / 2016: 60% / 2017: 62% / 2018: 63% / 2019: 78% Source: HMIS
	Indicator 3: The percentage of health facilities with SBA (HMIS 2010). Baseline 2012: 68%, Target 2016: 80%	(Ex-post Evaluation) achieved 2015: 90% / 2016: 94% / 2017: 93% / 2018: 99% / 2019: 92% Source: HMIS
	Indicator 4: The percentage of women receiving antenatal care (ANC) four-time increases from 16.1% (AMS 2010) to 30% (2016).	(Ex-post Evaluation) not verifiable 2015: 2.30% / 2016: 2.59% / 2017: 2.05% / 2018: 1.89% / 2019: 9.94% Source: HMIS Note: According to Afghanistan Demographic and Health Survey 2015, 18% of women had at least four ANC visits national average from which in urban settings it is 32%. The data presented in the above table is from HMIS. There is a general problem of data quality. Many women who come for ANC visit lose their visiting cards and the health providers do not bother to find the past record. So even it is the second or third time of ANC, it is considered the first visit. Because of this the number of first ANC is always high but the 4+ is always low. From this and the trend of other indicators (such as Indicator 1), it can be inferred that there has been improvement for this indicator as well, but this cannot be verified from the data.
	Supplementary Information: No. of people who have benefited from the RH services at Comprehensive Health Centers (CHCs), CHCs+, District Hospitals (DHs) and hospitals	(Ex-post Evaluation) achieved 2015: 2,939,195 / 2016: 3,150,248 / 2017: 3,134,314 / 2018: 3,301,790 / 2019: 4,157,152 Source: HMIS

Source: Terminal evaluation reports, questionnaire and interviews with RMNCAH Directorate, HMIS data

3 Efficiency

While the project period was as planned, the project cost slightly exceeded the plan (ratio against the plan: 100% and 104%, respectively). The Outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Current policies such as the Afghanistan National Peace and Development Framework 2017–2021, the National Health Strategy 2016–2020, and the RMNCAH Strategy 2017–2021 support the activities of RMNCAH.

<Institutional/Organizational Aspect>

Under MoPH, RHD was changed to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Directorate by a merger of RHD and Child Health Department. According to RMNCAH Directorate, this new structure is working, but the staff is not sufficient. At the central level, due to the low level of salary of civil servants, qualified staff cannot be hired. At the provincial level, the number of staff is not sufficient; for example, there are around 200 health facilities for one RH officer, which is difficult to be adequately monitored.

<Technical Aspect>

According to RMNCAH Directorate, the technical level of relevant personnel to sustain the project effects are partially secured. There is some high-quality staff with a good set of skills and knowledge that is mainly supported by development partners. However, there is some other staff that is civil servants in the regular budget payroll. They are either with no experience or with low motivation.

<Financial Aspect>

According to RMNCAH Directorate, the financial condition to sustain the project effects is partly secured with MoPH's regular budget, which is not sufficient, and the contribution of development partners such as UNICEF, WHO, JICA, USAID, UNFPA, and AFGA.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

This project, consisting of Phase 1 and Phase 2, partially achieved the Project Purpose of enhancing the effectiveness and efficiency of RH

program management by RHD (currently RMNCAH Directorate) by the time of Phase 2 completion. The project's effects have partially continued after project completion, especially in terms of program management and training capacity of RMNCAH Directorate. The achievement of the Overall Goal of enhancing the quality of RH services was then achieved. Regarding the sustainability, problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency, such as insufficient personnel and budget. As for the efficiency, the project cost slightly exceeded the plan. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Using of monitoring data to show progress, celebrate achievements and taking action based on the finding is a good incentive for people involved in monitoring (monitors and clinical staff). It encourages provincial RMNCAH staff to engage in more systematic monitoring and data collection processes and use of guidelines to developed by the project.

Lessons Learned for JICA:

The RMNCAH task forces and Technical Advisor Groups not only engages development partners to be part of it but also facilitate communication between different directorates of MoPH. On the other hand, the task forces and TAGs helps the management capacity of RMNCAH as a result of extracting the experience of partners as well as taking facilitating role by RMNCAH in such meetings. Although the predecessors of these coordination mechanism between MoPH and development partners existed before the project, the project set as one of its outputs the strengthening of the coordination capacity of the implementing agency, which was not sufficient in the existing mechanism. The project supported the implementing agency to take initiatives (planning and convening meetings, preparing reports, etc.) as their daily work in the reorganized mechanism. At the same time, the project also supported the review of proposals by the implementing agency by ensuring that proposals for new RH activities in Afghanistan are examined and discussed in task force meetings before approval for implementation by MoPH. In this way, designing the support for coordination by the agency in charge by building on existing coordination mechanisms, making it a routine task for the agency, and thereby facilitating that the agency's coordination capacity would increase as it carried out the task, were effective in areas where the cooperation of many development partners was essential (such as MCH/MCH Handbook).

- One of the Project Purpose indicators could not be verified because there was not enough information in the existing reports prepared before the completion of the project. On the other hand, although the quality of some of the data should be questioned, data for the Overall Goal indicators were available from established health statistics. In order to correctly grasp the project effects and fulfill accountability, project implementers should try to obtain and report data exactly as specified in the indicators during the M&E work, and also establish indicators and a monitoring system that enables easy monitoring of the data after the completion of the project.

A woman received her MCH HANDBOOK in a Heath Facility in Badghis Province

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Ghana Office: July, 2021

Country Name	**Financial Management Improvement Project of the Ministry of Food and Agriculture**
Republic of Ghana	

I. Project Outline

Background	The Government of Ghana had made efforts to reform the Public Financial Management (PFM) System of central government (MDAs), and each ministry and its local implementing agency needed to make similar efforts to complement that of Government. The Ministry of Food and Agriculture (MOFA) had implemented a number of projects with the support of many development partners, but had a problem with the weak centralized management of various resources of its local implementing agency. Although the Finance Directorate was founded in 2006, it needed to strengthen the implementation capabilities of MOFA as a whole. Specifically, the issues were; reviewing organizational operations to improve financial information management, introducing and establishing a financial management system and improving staff capabilities.		
Objectives of the Project	These were expected to be achieved through (i) developing an accounting guideline including income and expenditure management, commitment management and asset management, nurturing trainers and conducting training on the topics accordingly, and (ii) developing an internal audit checklist, the project aimed at improving MOFA's PFM, thereby contributing to decrease in the bottlenecks in financial management services of MOFA.		
	1. Overall Goal: Decrease the bottlenecks in financial management services of MOFA which affect its agricultural service provision. 2. Project Purpose: PFM of MOFA is improved.		
Activities of the project	**1.** Project site: entire country 2. Main activities: (i) developing an accounting guideline including income and expenditure management, commitment management and asset management, nurturing trainers and conducting training on the topics accordingly, and (ii) developing an internal audit checklist, and others 3. Inputs (to carry out above activities) Japanese Side 1) Experts: persons: 20 persons 2) Equipment: Computers, air conditioners, etc. 3) Operation cost: training expenses, travel expenses, local staff, etc. Ghanaian Side 1) Staff allocated: 8 persons (management of the project), 54 persons (working group members, etc.) 2) Land and Facilities: project offices		
Project Period	October 2010-October 2016 (Extended Period: January 2016-October 2016)	Project Cost	(ex-ante) 546 million yen, (actual) 921 million yen
Implementing Agency	Ministry of Food and Agriculture		
Cooperation Agency in Japan	KRI International Corp. Ernst & Young Sustainability Co., Ltd.		

> E

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, information was collected through telephone/online interviews.
- At the time of ex-post evaluation, continuation status of the Project Purpose was limited to be verified, as the attainment of indicators for the Project Purpose are no longer collected or compiled since 2015.

1 Relevance

<Consistency with the Development Policy of Ghana at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Ghana. "Growth and Poverty Reduction Strategy II" (GPRS II) prioritized expenditure management and accounting management, which were the main issues under PFM.

<Consistency with the Development Needs of Ghana at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Ghana. As mentioned above, MOFA had the problem of weak centralized management of resources and the newly founded Finance Directorate needed to strengthen its implementation capabilities.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project consistent with Japan's ODA policy to Ghana. One of priority areas of ODA to Ghana was "administrative capacity building and institutional improvement." In this context, the Government of Japan would support the capacity building and institutional development of central and local government agencies.[1]

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved. Most of indicators can be said to have been achieved; however, on-going initiatives such as the Ghana Integrated Financial Management Information System (GIFMIS) played a key role and the achievement of the indicators was not necessarily and entirely due to the project inputs/activities. Nonetheless, the project contributed towards the achievements of these

[1] Source: ODA databook 2010

indicators to some extent, as the project enhanced the directorate's capacity positively, improving their efficiencies to work and contributing to good accounting practices of MOFA staff as a result of the developed manuals according to MOFA.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

As mentioned above, other factors affected the Project Purpose and the continuation status of the project effects cannot be verified accordingly.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The bottlenecks in the financial management services of MOFA has not entirely reduced. However, the contribution of the project to the Overall Goal cannot be verified as mentioned above.

As for the continuation of the project outputs, both of the Accounting Guide Book (on Revenue and Expenditure Management, Commitment management and on Asset Management) (AGB) which was revised under the project, and the Internal Audit Checklist, which was developed under the project in accordance with the revised AGB have been continually utilized, though not updated.

<Other Impacts at the time of Ex-post Evaluation>

No negative impact on the natural environment were observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td rowspan="6">(Project Purpose)
PFM of MOFA is improved.</td><td>Indicator 1: The number of adverse findings in financial management cited by External Audit is decreased.</td><td>Status of the Achievement: Not achieved* (not verified)
(Project Completion)
The number of findings for MOFA from the Auditor General's reports of 2009 to 2014
<table>
<tr><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr>
<tr><td>45 findings</td><td>43 findings</td><td>40 findings</td><td>46 findings</td><td>67 findings</td><td>65 findings</td></tr>
</table></td></tr>
<tr><td>Indicator 2: The number of days Cost Centre (CC)s spend to submit monthly Financial Reports to Head Office is reduced.</td><td>Status of the Achievement: not verified (not verified)(Project Completion)
MOFA's CCs' expenditures figures were able to be obtained from GIFMIS system at any time instead of waiting for the reports to be delivered to Finance Directorate.</td></tr>
<tr><td>Indicator 3: MOFA's Annual Consolidated Financial Reports required by CAGD* are submitted to statutory bodies more timely.

*Controller and Accountant General's Department</td><td>Status of the achievement: Achieved (not verified)
(Project completion)
2015: Financial Directorate compiled 2015 Financial Report in the first week of April in their own effort sustaining the outputs of the project activities that concluded in October 2015.
2014: Submitted on 13 May 2015 (Completed 13 April 2015 for printing)
2013: Submitted on 7 August 2014</td></tr>
<tr><td>Indicator 4: MOFA's financial reports are reviewed and utilized by the MOFA management.</td><td>Status of the achievement: Not verified (not verified)
(Project completion)
MOFA management recognized improvement of MOFA's Annual Financial Report of 2014.
Sustaining financial reporting improvement were expected with MOFA management's use of the reports and interaction with the Finance Directorate and others involved in the report preparation.</td></tr>
<tr><td>Indicator 5: MOFA staff members are selected for on-going dissemination and continued improvement of MOFA's accounting procedure guidance, and budget allocation for such activities is maintained.</td><td>Status of the achievement: Partially achieved (not verified)
(Project completion)
MOFA management was expected to take actions for post-project institutional arrangements, in particular:
(i) Select and assign a group of staff for continued improvement and dissemination, and
(ii) Ensure budget allocation to support such activities to sustain.
MOFA management established Fixed Asset Management Unit (FAMU) under Office of Chief Director at MOFA Headquarters (HQs). FAMU members were appointed by the Chief Director, and the liaison officers from Directorates were also appointed. FAMU is currently in operation, but is in the process of organizing itself to effectively function. Funding for FAMU operation remains a challenge although FAMU budget allocation was prepared and requested, actual allocation to cover FAMU's essential activities must be provided.</td></tr>
<tr><td>Indicator 6: Asset management practice model that incorporates annual stocktaking update is established using GIFMIS.</td><td>Status of the achievement: Achieved (not verified)
(Project completion)
The practice model incorporating annual stocktaking/update was expected to be disseminated in the sustained activity of FAMU.
FAMU Operational Handbook was prepared as the framework to sustain and improve fixed asset register and asset management practice, based on regular / semi-annual update with stocktaking.</td></tr>
</table>

	Indicator 7: Asset management reporting requirement of MOFA Head Office are compiled with by Directorates/Cost Centers	Status of the achievement: Achieved (not verified) (Project completion) MOFA compiled the Start-up Fixed Asset Register for all the Directorates of MOFA. MOFA had embraced the GIFMIS requirements as MOFA's fixed asset management requirements. Asset data were able to be collected from the Directorates / Cost Centres and processes on the GIFMIS system by FAMU. FAMU was capable of centrally producing management and operational reports / worksheets of Fixed Asset Register information from GIFMIS for Directorates.
(Overall Goal) Decrease the bottlenecks in financial management services of MOFA which affect its agricultural service provision.	Indicator 1: Weaknesses concerning financial management issues affecting MOFA's agriculture service delivery are decreased as observed in performance reports on MOFA's agriculture policy implementation.	(Ex-post Evaluation) Not achieved According to the Auditor General's Report for 2019 on MOFA, about 60 negative findings were recorded compared to 51 negative findings for 2018.

Source：MOFA

3 Efficiency

The project cost significantly exceeded the plan (the plan against the plan: 169%) and the project period exceeded the plan (the ratio against the plan: 122%). The project cost exceeded the plan because: Firstly, according to the result and recommendation by the mid-term review, the project increased man-month of Japanese experts, input of equipment and local constancy cost in order to achieve the project objective. Secondly, the project was extended one year with new activities. The outputs were produced as planned.

Therefore, the efficiency of the project is low.

4 Sustainability

<Policy Aspect>

GIFMIS project has been fully up and running to improve PFM in all Ministries, Agencies and Departments (MDA) including MOFA.

< Institutional/Organizational Aspect>

The organizational structure was enhanced for the Fixed Assets Management Unit (FAMU) that has promoted fixed assets management in MOFA. Additional staff members were posted to enhance their work (Six members have been allocated, while there was only one initially). The organizational structure and setting of the Finance Directorate, that has supervised FAMU has, however, not seen any changes except additional staff numbers has been added (11 members from the original six members).

<Technical Aspect>

The staff members have sustained the necessary skills and knowledge to promote PFM. They have done this by undergoing regular induction and orientation especially for new staff who join the directorate. They regularly also refer to the AGB whenever they go on assignments or have activities to undertake.

<Financial Aspect>

Appropriate funds are released from the Government of Ghana to support goods and services of MOFA, which includes activities of PFM. However, there is no dedicated funding for PFM activities and allocation to EFM depends on depends on competing needs under goods and services. The approved budget expenditure for goods and services for MOFA extracted from the national budget is as follows:

Approved budget expenditure for MOFA

(Unit: GHS)

	2017	2018	2019	2020
Budget	201,686,749	157,147,870	304,909,900	264,627,149

<Evaluation Result>

In light of the above, no problem has been observed in terms of the policy, institutional/organizational, technical and financial aspects. Therefore, the sustainability of the effectiveness through the project is high.

5 Summary of the Evaluation

The achievement status of the Project Purpose was not verified. Many indicators were attained; however, they were not entirely attributed to the project. The Overall Goal has not been achieved, as the bottlenecks in the financial management services of MOFA has not reduced. As for the efficiency, both project cost and project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

For the Finance Directorate of MOFA, there is the need to improve supervision of finance officers and accounting practices at all levels of agricultural services provision through regular monitoring and reporting. This can help in identifying and correcting accounting malpractices and promote proper accounting practices. This in the end can potentially reduce negative findings in Auditor General's Annual Reports on MOFA.

To the Finance Directorate of MOFA, there is the need to take steps to revise the Accounting Guide Book. This can further help improve accounting practices and reduces the incidence of negative findings in the annual financial reports of MoFA.

Lessons Learned for JICA:

・It was not possible to verify the indicators during ex-post evaluation because some indicators became irrelevant and were not easy to gather. It was better to make PDM modification during the project period. It was also better to discuss with other development partners to

set the goal of the project because to improve PFM by one particular intervention is usually difficult and other intervention by other donors might impact to JICA's intervention.

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

Conducted by South Africa Office: July, 2021

Country Name	The Project for Studies of Seismic Hazard Mitigation in Deep Level South African Mine
Republic of South Africa	

I. Project Outline

Background	The Republic of South Africa has abundant mineral resources and many mines including gold, platinum and coal. The mining sector absorbed 0.5 million of the labor force. Among them, 0.3 million workers were engaged in work in underground mines with risk of mine disasters. The average number of victims per annum decreased from 1.00-1.20 persons per 1,000 workers (the total number of victims: 677-855 persons per year) in the 1980's to 0.56-0.75 persons (the total number of victims: 246-290 persons per year) in the 1990's due to administrative guidance and safety improvement efforts by mining companies. However, about 40% of the victims were killed by fall-of-ground accidents, many of which were caused by "mine tremor" or "rock burst", a quake resulting from the abrupt failure of the rock mass induced by mining activities. The mine tremor not only triggersfall-of-ground accidents in the mining stopes and underground developments but also damages including building collapse on the earth's surface Therefore, it was very important to assess the risks posed by mine tremors and to predict strong motion more precisely as well as to adjust mining plans or design appropriate mining activities based on risk assessments in order to further decrease the victims of mine disasters.		
Project Objectives	Through elucidation of rock properties at seismic sources, enhancement of understanding of preparation and forerunners of earthquakes in gold mines, improvement of reliability of seismic hazard assessment and strong ground motion prediction in gold mines improvement of accuracy of estimation of locations of seismic events and damage assessment of seismic disasters, the project aimed at enhancement of understanding of preparation for and occurrence of earthquakes and improvement of risk management mechanism of mining-induced earthquakes, thereby contributing to application of the seismic hazard assessment and control schemes developed by the project in the Republic of South Africa and worldwide. 1. Expected Overall Goal: Apply the seismic hazard assessment and control schemes developed in this project in deep South Africa mines and worldwide. 2. Project Purpose: Understanding of the preparation for and occurrence of earthquakes is enhanced, and the risk management mechanism of mining-induced earthquakes is improved.		
Project Activities	1. Project Site: Cooke 4 and Driefontein mines in the Far West Rand mining district, Moab Khotsong mine in the Klerksdorp mining district 2. Main Activities: 1) Observation and collection of rock samples at seismic sources and surroundings as well as investigation of rock properties in the laboratory, 2) Monitoring of micro-fracturing and rock deformation as well as analysis of the monitoring data to clarify the forerunning phenomena and its characteristics, 3) Evaluation of spatiotemporal changes in stress and rock mass stability and upgrade of the scheme of seismic hazard assessment, 4) Clarification of characteristics of site amplification of strong motion and scaling relationship in dynamic rupture process based on the monitoring data, 5) Development and validation of a parametric model for prediction of strong ground motion. 3. Inputs (to carry out above activities): Japanese Side 1) Experts: 50 persons 2) Trainees received: 3 persons 3) Equipment: Equipment for monitoring of microfracturing, rock deformation, seismic ground motion, and seismic monitoring system 4) Local operation costs South African Side 1) Staff allocated: 54_persons 2) Facilities and land: Office space, office furniture, communication facilities for the Japanese project coordinators in the Council for Geoscience (CGS) and the Council for Scientific and Industrial Research (CSIR) 3) Local operation costs		
Project Period	August 2010 – August 2015	Project Cost	Ex-ante: 387 million yen, Actual: 346 million yen
Implementing Agencies	Department of Science and Innovation (DSI), Council for Geoscience (CGS), Council for Scientific and Industrial Research (CSIR), The University of the Witwatersrand (Wits)		
Cooperation Agency in Japan	Ritsumeikan University, Tohoku University, The University of Tokyo, Kyoto University, Nagoya University, Kochi University, National Institute of Industrial Science and Technology (AIST)		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Verification of Expected Overall Goal]

Although no verifiable indicator was set for the Expected Overall Goal in the project design, the achievement level of the Expected Overall Goal was

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

verified by the status of application of the seismic hazard assessment and control schemes developed by the SATREPS project.

1 Relevance

<Consistency with the Development Policy of South Africa at the Time of Ex-Ante Evaluation >

The Project was consistent with South Africa's policies aimed at reducing mine casualties to zero as their final goal and improving the safety level at underground gold mines to international safety standards by 2013 under "The 1996 Mining Health and Safety Act" (1996) and the agreement between the government and mining companies as well as workers.

<Consistency with the Development Needs of South Africa at the Time of Ex-Ante Evaluation>

The Project was consistent with South Africa's development needs for risk assessment of mine tremors and more precise prediction of strong motion as well as adjustment of mining plans or design of appropriate support based on the risk assessments in order to further decrease the victims of mine disaster.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The Project was consistent with Japan's ODA Policy for South Africa prioritizing the areas of Science and Technology Promotion and Climate Change covering support for earthquake observation in mining areas through the technical cooperation scheme for science and technology under the 10th South Africa and Japan Partnership Forum in April, 2010[2]. Also, support for human resource development for technologies of disaster observation, prediction and warning was prioritized under the Sendai Cooperation Initiative for Disaster Risk Reduction in January 2005.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The research results were internationally and broadly presented at international and professional meetings 65 times in the United States, Canada, Austria, Switzerland, Sweden, Australia, Chile and China (Indicator 1). A recommendation on the improvement of mine safety in South Africa was under preparation and had not been submitted by the time of project completion (Indicator 2). Rock deformation and stress measurement were applied by the mining companies and mine consulting firms at the three target mines (Indicator 3). Three South African Bachelor of Science (BS) holders obtained Master of Science (MSc) degrees with project related researches at Pretoria University and University of the Witwatersrand. Five Japanese BS holders also obtained MSc degrees (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued since project completion. The key research outputs by the SATREPS project have been utilized by various stakeholders and the three target mines have continued to use the transferred technologies. Mining companies have gained knowledge with regard to seismic and geotechnical monitoring and analysis, stress measurement, and numerical modelling. A mine seismology and geotechnical service provider (Groundworks Consulting) has utilized stress measurement technology and data collection introduced by the SATREPS project. University of the Witwatersrand staff members and postgraduate students provided field support, installed instruments and collected data. They also participated in data analysis and interpretation and attended workshops and seminars. Several staff members and students attended conferences and undertook research in Japanese laboratories; meanwhile Japanese staff members and postgraduate students visited South African gold mines, and undertook research work in the Rock Engineering Laboratory and the Seismic Reflection Research Centre at the University of the Witwatersrand. Rock engineering practitioners employed by the Mine Health & Safety Inspectorate attended workshops and seminars where the most important outcomes were presented, e.g. at the Mine Safe Conference.

The CGS continues to maintain and operate the equipment installed under the SATREPS project for daily analysis and recording of seismicity within the mining region. This information is incorporated into the seismological reports and is used for research within the CGS. Also, the network of strong ground motion sensors installed on surface in the Far West Rand mining region continues to be operated by the CGS, along with the Antelope Seismic Processing System. However, the sensitive in-mine instruments have not been used since the experiments conducted by the SATREPS project and were never intended to be. The sensors were installed in 2010/11 in parts of the Cooke #4, Hlanganani and Moab Khotsong mines where mining was planned in the vicinity of structures that were believed to be potentially seismically active. Mining in the vicinity of the experimental sites has been completed. The sensors were retrieved where possible, but those that had been grouted in boreholes were abandoned. Data logging equipment was retrieved.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

The Expected Overall Goal has been partially achieved. Efforts to transfer knowledge and technology, for example through the Ministry of Mineral Resources and Energy's Rockfall and Rockburst Task Team, on which Prof. Durrheim serves; and the 9-person Sibanye-Stillwater 'expert panel', on which both Prof Ogasawara and Prof. Durrheim serve, continue to this day. A draft report entitled "Investigation into seismic management at the deep gold mines of Sibanye-Stillwater" was submitted to the client on August 7th, 2020. The findings of the SATREPS project complement and extend research works that has been conducted in deep South African mines for over 50 years. While the SATREPS project certainly extended knowledge in the field of mine seismology, and is probably the most ambitious mine seismology research project ever attempted in terms of scope and effort, it has not succeeded in 'solving' the rockburst problem, for example by developing a technology to prevent seismic events or to precisely predict their size, time and place at the time of ex-post evaluation.

On the other hand, the key research outputs have been continuously utilized. The novel stress measurements have been transferred to personnel at Anglogold Ashanti, Groundwork Consulting and University of the Witwatersrand. The algorithm to automatically pick P- and S-wave arrival times has been successfully tested and implemented at CGS. Although CGS would like to continue to work on the software developed by Dr. Horiuchi, they have lost the human capacity within the organization to be able to continue it. In addition, new research projects using the research outputs of the SATREPS project have been started. The project entitled "Drilling into the source zones of M2.0-M5.5 earthquakes in deep South African mines", or "DSeis" (October 2015-June 2018) is a prominent case. The Magnitude 5.5 Orkney earthquake on August 5th, 2014 was well recorded by the mine, the Council for Geoscience and the sensors of the SATREPS

[2] Ministry of Foreign Affairs, "ODA Country Data book" 2010

project installed both in the mine and on surface. The proposal was submitted to the International Continental Scientific Drilling Program (ICDP) to investigate earthquake physics and deep life. The multi-national team comprises seismologists, rock engineers and geo-microbiologists from Japan, South Africa, Australia, Germany, Israel, Switzerland and the USA.

<Other Impacts at the time of Ex-Post Evaluation>

There are some positive impacts of the Project confirmed at the time of the ex-post evaluation. The members of academic staff and post graduate students who were involved in the SATREPS project have been continuing to improve their research capacity of data collection, writing papers and attending conferences. Prof. Durrheim, the project manager of this SATREPS project is currently supervising or co-supervising 3 MSc and 4 Ph.D. candidates that are conducting research directly related to the SATREPS project as mentioned above. In addition, the previous CGS staff members involved in the SATREPS project benefitted from the research, especially in the automatic prediction of P- and S- waves of earthquakes. Furthermore, Prof. Durrheim has been appointed by the Minister of Mineral Resources and Energy to serve on a Rockfall and Rockburst Task Team. In this role, he has drawn on the knowledge that he gained during the SATREPS project.

In terms of scientific literacy of government organizations, seismologists and rock engineers at CGS and the CSIR provided field support, installed instruments and collected data. They also participated in data analysis and interpretation and attended workshops and seminars. CGS is responsible for country-wide seismic monitoring, and took responsibility for the strong motion network established in the Far West Rand gold field, the Antelope software and Horiuchi method for automatic location of seismic events. These systems continue to operate.

No negative impact by the SATREPS project was confirmed at the time of ex-post evaluation.

<Evaluation Result>

Therefore, both the effectiveness and impact of the project is high.

Achievement of Project Purpose

Aim	Indicators	Results
(Project Purpose) Understanding of the preparation and occurrence of earthquakes is enhanced, and the risk management mechanism of mining-induced earthquakes is improved.	Indicator 1: Results of the Project is reported at least 5 international, professional meetings.	Achievement Status: Achieved (Continued) (Project Completion) ● Sixty-five papers describing the research results were presented at international and professional meetings in the United States, Canada, Russia, Austria, Switzerland, Sweden, Australia, Chile and China. (Ex-Post Evaluation) ● Verified as the achievement level of the Overall Goal.
	Indicator 2: Formal recommendation on leading Code of Practice is submitted to MOSH* team, rock mechanics practitioner, organized labour, and the Mine Health and Safety Inspectorate. *Mining Industry Occupational Safety and Health	Achievement Status: Not achieved (Partially achieved) (Project Completion) ● A recommendation on the improvement of mine safety in South Africa was prepared but not submitted to MOSH team or other stakeholders. (Ex-Post Evaluation) ● Prof. Durrheim, presented a recommendation concerning the practical and implementable achievements of the SATREPS project at the "Mining Industry Rockburst Workshop" in October 2017 and the MINESAFE2017 "Striving for Zero Harm Driving Excellence through Compliance" Conference in August 2017. However, the recommendation on the improvement of mine safety has not been submitted yet.
	Indicator 3: At least two transferred technologies are adopted in South African mines	Achievement Status: Achieved (Continued) (Project Completion) ● Rock deformation and stress measurement technologies were applied by the mining companies and mine consulting firms at the three target mines, Cooke 4, Moab Khotsong, and Driefontein mines. (Ex-Post Evaluation) ● The three target mines have continued to utilize the transferred technologies.
	Indicator 4: At least four young researchers obtain advanced degree on project related research	Achievement Status: Achieved (Continued) (Project Completion) ● Three South African BS holders obtained MSc degrees with project related research at Pretoria University and University of the Witwatersrand. Five Japanese BS holders also obtained MSc degrees with project related research. (Ex-Post Evaluation) ● Verified as "Sustainable".
(Overall Goal) Apply the seismic hazard assessment and control schemes developed in this project in deep South Africa mines and worldwide.	N.A.	Achievement Status: Partially achieved Efforts to transfer knowledge and technology, for example, through the Mineral Resources and Energy's Rockfall and Rockburst Task Team, on which Prof. Durrheim serves; and the 9-person Sibanye-Stillwater 'expert panel', on which both Prof Ogasawara and Prof. Durrheim serves, continue to this day.. ● The novel stress measurement techniques (CCBO, DCDA and DRA) have been transferred to personnel at AngloGold Ashanti, Groundwork

		Consulting and University of the Witwatersrand. However, this is an ongoing challenge as practitioners change jobs, and mines change hands or close. ● The algorithm to automatically pick P- and S-wave arrival times (and hence locate seismic events) has been successfully tested and implemented at the CGS. Although they would like to continue to work on the software developed by Dr. Horiuchi, they have lost the human capacity within the organization to be able to continue with it. ● The research outcomes have most certainly been used, most notably by the ICDP-DSeis project as mentioned above.

Source：Terminal Evaluation Report, JST Terminal Report, Questionnaires survey with Prof. Durrheim and the CGS staff members

3 Efficiency

Both the project cost and the project period were within the plan (ratio against the plan:89%, 100%, respectively). The project outputs were produced as planned.

Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspects>

In accordance with the Mine Health and Safety Act, No. 29 of 1996, as amended, the Mine Health and Safety Council (MHSC) is established as a national public entity (Schedule 3A). The main task of the Council is to advise the Minister of Mineral Resources on occupational health and safety legislation and research outcomes focused on improving and promoting occupational health and safety in South African mines. The Council also oversees the activities of its committees; promotes a culture of health and safety in the mining industry; arranges a summit every two years to review the state of occupational health and safety at mines; and liaises with the Mining Qualifications Authority and any other statutory bodies about mining health and safety. The MHSC's Guideline for the Compilation of a Code of Practice to Combat Rockfall and Rockburst Accidents in Tabular-Metalliferous Mines has been controlled by the Mine Health and Safety Act. The Mine Health and Safety Act, amended in 1996, also established the Mine Health & Safety Inspectorate aiming to execute the constitutional mandate of the Department of Mineral Resources to protect and safeguard the health and safety of mine employees and communities affected by mining operation. Mining companies are required to compile a 'Code of Practice' (CoP) in accord with the above guideline that takes local mining conditions into account. These CoPs are updated regularly to take any new knowledge or technology into account.

<Institutional/Organizational Aspects>

CGS is responsible for countrywide seismic monitoring and is tasked to operate and maintain the network to monitor seismic strong ground motion in the mining districts (the surface installed seismograph stations), and to use the Antelope and Horiuchi processing packages. CGS took responsibility for the strong motion network established in the Far West Rand gold field, the Antelope software and Horiuchi method for automatic location of events. Although the CGS would like to continue to work on the software developed by Dr. Horiuchi, CGS staff members who were working on the software have resigned from the CGS and there are no replacement of those staff members due to budget constraints. The sensitive sensors installed underground in boreholes were never intended to be a permanent installation. They were focused arrays deployed to monitor local seismicity induced by mining (i.e. within tens of meters). Mining in these parts of the mine was completed during the experiment.

In terms of utilization and implementation of research outcomes, the MHSC Committees most directly involved in the dissemination and implementation of any new knowledge are: Mining Regulation Advisory Committee (MRAC), which advises the Council on proposed regulatory changes, guidelines for codes of practice; and on national standards to be approved by the South African Bureau of Standards; Mining Occupational Safety Advisory Committee (MOSAC), a newly constituted committee tasked to advise the Council on safety policies, standards, systems and procedures related to occupational safety risks, safety regulations, safety research and safety data; Safety in Mines Research Advisory Committee (SIMRAC), which reviews OHS risks and establishes the need for OHS research projects; establishes criteria for determining the funding of health and safety research; evaluates research proposals; and oversees the research programme and the technology transfer of research outcomes.

<Technical Aspects>

The researchers who were involved in the SATREPS project have been using skills and knowledge gained during the SATREPS project with regard to the acquisition and analysis of seismic data, stress measurement techniques (CCBO, DRA and DCDA), integration of seismicity and numerical modelling, laboratory measurements of fault rupture on a range of new projects, including the ICDP-DSeis project that involves many Japanese experts and postgraduate students. Also, the SATREPS project contributed to the capacity of CGS to provide a weekly report on mining related seismicity which have been instructed by the Minister of Mineral Resources.

There are several vehicles that have enabled researchers to continue work in the field of mine seismology and mine safety, such as ICDP-DSeis project, projects sponsored by the Safety in Mines Research Advisory Committee (SIMRAC), which reports to the Mine Health and Safety Council, and projects sponsored by the South African Mineral Extraction Research, Development and Innovation (SAMERDI)[3] program.

For the research capacity development of the young researchers, the Project Manager Prof. Durrheim together with colleagues and postgraduate students at the University of the Witwatersrand, have been actively involved in projects related to the "Advanced Orebody Knowledge", using techniques such as seismic and radio wave tomography and machine learning, and "Non-explosive rockbreaking", using techniques such as thermal spalling and cutting with diamond wires and saws. Prof. Durrheim also of the University of the Witwatersrand is currently supervising or co-supervising 3 MSc and 4 PhD candidates that are conducting research directly related to the SATREPS project as mentioned above.

The only research facilities/equipment installed by SATREPS is the Far West Rand seismic strong ground motion network and the associated Antelope and Horiuchi software packages for efficient processing of large amounts of seismic data. These are maintained and

[3] The SAMERDI strategy defines a pathway to 2030, in terms of the modernization of mining.

used at a high uptime by the CGS.

<Financial Aspects>

The budget of MHSC has been allocated from public revenue and is accountable to Parliament. CGS has utilized funds from its parent department to work on research projects utilizing the data from the stations and to continue operation and maintenance of the seismic strong motion stations installed in the Far West Rand mining district and the associated software packages. There are a number of government institutions responsible for ensuring that research outcomes related to mine safety and geohazard mitigation are implemented.

Although the researchers have a continual struggle to secure funds for research, grants have been obtained from a number of sources to continue research in the field of mining-induced seismicity. For example, the International Continental Scientific Drilling Program (ICDP) awarded the DSeis consortium 1 million USD to drill holes into the source zone of the M5.5 Orkney earthquake. The grant was used to leverage in-kind support from mining companies in South Africa, as well as research grants from funding agencies in Japan, Germany, Switzerland and the USA. The quantum of these grants probably amounts to another 1 million USD. Prof. Durrheim holds the South African Research Chair (SARChI) in Exploration, Earthquake & Mining Seismology, and has allocated part of his grant to support postgraduate students and running costs associated with projects in this field. Projects are conducted in both the School of Geoscience and the School of Mining Engineering, with the support of Professor Bryan Watson. The annual amount is of the order of 0.5 million South African Rand (ZAR). Prof. Manzi, Director of the Reflection Seismics Research Centre of Witwatersrand University has allocated part of his grant to support postgraduate students and running costs associated with projects in this field. The annual amount is of the order of 0.5 million ZAR. The SAMERDI program has supported research aimed at making deep mining for gold and platinum more efficient and safer. Prof. Durrheim, Prof. Manzi and and Dr. Nwaila are currently involved in a range of projects with a combined budget exceeding 1 million ZAR in the year 2020/21. Sibanye-Stillwater, a mining company, allocated 1 million ZAR of the 2020/21 grant to the DigiMine project, hosted by the School of Mining Engineering and directed by Professor Cawood, for research related mine seismology and rockbursting. Prof. Durrheim is responsible for these grants.

<Evaluation Result>

In the light above, there has been no problem from any aspects. Therefore, the sustainability of the effects through the Project is high.

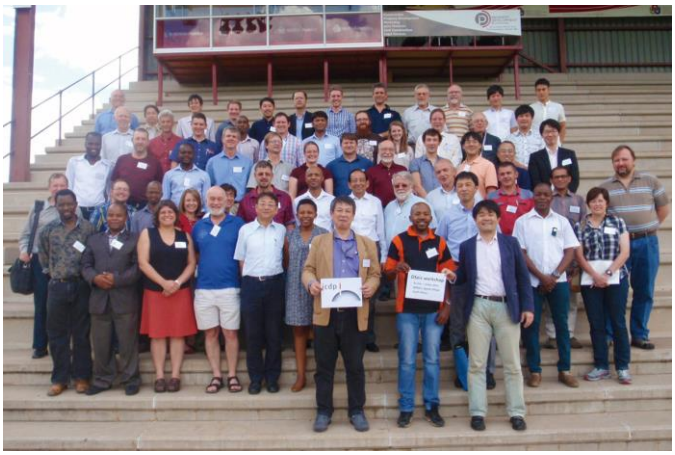
5 Summary of the Evaluation

The project has achieved the Project Purpose of enhancing understanding of the preparation and occurrence of earthquakes and improving the risk management mechanism of mining-induced earthquakes, and has been partially achieved its overall goal of applying seismic hazard assessment and control schemes in deep South Africa mines. Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learnt

Lessons Learnt for JICA:

- Both countries' project members suggested that it might be a good idea if JST/JICA could secure a meeting/workshop budget for a counterpart country after project completion. This could help the project members to keep aligned and boost their motivation to achieve the project's overall goal that could lead to have an opportunity for commercialization/social implementation. Presenting project's further research outcomes to private companies could lead to commercialization. At the same time, it could be a good opportunity for the project members to remind them that ex-post evaluation will be conducted three to five years after project completion.



The core members of the SATREPS project at the DSeis pre-drilling workshop in Potchefstroom during October 31st – November 3rd, 2015 sponsored by ICDP and Ritsumeikan University.
(https://www.sciencemag.org/news/2017/05/deep-south-african-gold-mine-scientists-drill-heart-earthquake)

写真3 高知大学／JAMSTECの高知コアセンターで試料を整理する様子。

Researchers organizing samples at the Kochi Core Center of Kochi University and JAMSTEC

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

Conducted by Burkina Faso Office: April, 2021

Country Name	**Improving Sustainable Water and Sanitation Systems in Sahel Region in Africa: Case of Burkina Faso**
Burkina Faso	

I. Project Outline

Background	Burkina Faso is located in Sahel Region in Africa with severe climate conditions causing less rain falls with larger volatility by area and by year and longer draughts. In the country, the population with access to safe water limited to only 58%. For the rural population, less than 1% of them utilized proper hygienic sanitation facility (toilets). Utilization of unsafe drinking water and lack of proper sanitation facilities caused water-borne diseases, such as diarrhea. In addition to the limited water resources, rural poverty and insufficient public services and management for water supply and sanitation were attributed to those problems. Under those situations, development of appropriate water supply and drainage system responding to the climate conditions and social conditions was an urgent issue for the country in order to attain the Millennium Development Goals (MDGs).		
Project Objectives	Through development of element technologies for the rural sanitation model, development of the urban sanitation model, delivery of trainings on the proposed sanitation models and preparation of the business model for introduction of the proposed models, the project aimed at development and experiment of the systems of drinking water supply and sanitation (l'Approvisionnement en Eau Potable et de l'Assainissment: AEPA) based on the concept of No mixing" and "No collecting" as well as promotion of preparation for implementation of the systems. 1. Expected Overall Goal: N/A 2. Project Purpose: The systems for supply of drinking water and sanitation, which are adopted to the Sahel Region, are developed and experimented based on the concept of "No mixing" and "No collecting", and preparation for implementation of the systems is promoted.		
Project Activities	1. Project Site: Urban area (the capitol city of Ouagadougou) and the pilot villages in the vicinity of Ouagadougou (Kolonguessé , Barkoundouba, and Kamboinse) 2. Main Activities: i) developing element technologies for the rural sanitation model (composting toilet), ii) developing the urban sanitation model (grey water treatment), iii) trainings on the proposed sanitation models, including making, repair and improvement of the system, for local technicians, iv) proposing business model for introduction of the proposed sanitation models 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 26 persons 2) Trainees received: 12 persons 3) Equipment: sample analysis equipment, demonstration plant and equipment, 4) Operational Cost Burkina Faso Side 1) Staff allocated: 9 persons 2) Land and Facilities: Office space in the Ministry of Water, Hydraulic Facilities and Sanitation 3) Operational Cost: a part of personnel cost		
Project Period	March 2010 – February 2015	Project Cost	Actual: 450million yen Ex-ante: 475 million yen
Implementing Agencies	Ministry of Agriculture, Water Resources, Sanitation and Food Security (MARHASA) (In October 2014, the Ministry of Water, Hydraulic Facilities and Sanitation (MEAHA) was merged with the Ministry of Agriculture), The International Institute for Water and Environmental Engineering (2iE)		
Cooperation Agency in Japan	Hokkaido University, the University of Tokyo, National Institute for Land and Infrastructure Management, Tama University, Fuji Women's University, Kochi University of Technology, Sapporo City University, Center for Environmental Science in Saitama		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Expected Overall Goal and Utilization of Research Outcomes]

Since there is no Overall Goal set by the project design or the Master Plan agreed by the both sides of Japan and Burkina Faso, it is not possible to verify achievement level of the expected Overall Goal. Thus, only the envisaged efforts for utilization of research outcomes (introduction of the rural and urban models of AEPA systems developed by the project) was verified as expected positive impacts.

1 Relevance

<Consistency with the Development Policy of Burkina Faso at the Time of Ex-Ante Evaluation >

The Project was consistent with Burkina Faso's policies to prioritize improvement of safe water supply set in "Poverty Reduction Strategy Paper" (2004) and the "National Programme of Supply of Drinking Water and Sanitation (Programme National de l'Approvisionnement en Eau Potable et de l'Assainissment: PN-AEPA), and to focus on sustainable use of agricultural resources set in the "Sustainable Agricultural Development Strategy towards 2030".

<Consistency with the Development Needs of Burkina Faso at the Time of Ex-Ante Evaluation >

The Project was consistent with Burkina Faso's development needs for improvement of access to safe water and sanitation as well as sustainable agricultural production with efficient water management.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The Project was consistent with Japan's ODA Policy for Burkina Faso, prioritizing support for the area of basic human needs including water and sanitation[2].

<Evaluation Result>

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

[2] Ministry of Foreign Affairs, "ODA Country Databook 2009"

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The comparative table of performance of the system developed with the conventional water supply and sanitation system and the manual for the application were drafted (Indicator 1). The rural model for sanitation and agricultural technology and the urban model for reuse of greywater were proposed and the manuals and the reports were submitted to the government of Burkina Faso (Indicator 2). 4 articles by the researchers of 2iE as a principal author were published in the scientific journals with the impact factor (Indicator 3). In the three pilot sites, 1 toilet and 2 greywater treatment units were utilized in Kolongondjesse and 1 toilet and 1 greywater treatment were utilized in Barkoundouba but no toilet and greywater treatment unit were utilized in Kamobinsin (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued since project completion. Among the research outputs, the low cost household greywater treatment unit for rural areas and ceramic filtration were utilized. However, despite the importance of the proposed model, no local company has appropriated the proposed model due to the fear of the risk of investment and especially the problem of social acceptance of the reuse of human excrement..The composting toilets and greywater treatment units installed in the pilot villages have been continuously utilized by the beneficiary families until 2018, but they have been no longer functional. Also, the high efficiency algal channel wastewater treatment plant has been utilized by 2iE for treatment of waste in campus of Kamboinsé until 2019 but no longer functional. The composting toilets developed by the SATREPS project cannot be popularized among the people especially at the current stage because of their high cost and the difficulty of finding spare parts.

The composting toilets have been rehabilitated through 2 extensions research projects implemented by 2iE with funding from the National Fund for Research and Innovation in Burkina Faso: The experimental project on an autonomous family sanitation system by vermifiltration and the development project of an ecological toilet linked to a compost pit to value human excreta. The modification of household-level graywater treatment systems for performance improvement was conducted by the project by Joseph KY ZERBO University of Ouagadougou with funding from the US National Academy of Sciences. The extension of the use of ceramic filters for home water treatment has been implemented by the Barka Association through the Social Responsibility and Environmental Program (CSR) in the YEPI project (Youth Economic Participation on Initiative) on finance of MasterCards Foundation via Tufts University in Boston, USA.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

In terms of utilization of the research outcomes of the SATREPS project, there has been no program or project based on the research recommendation by the project, “Integrated water resource management for food security in Burkina Faso”. The introduction of the rural and urban models of the AEPA system proposed by the SATREPS project has been limited so far. The composting toilets and the greywater treatment system have not been utilized by the population due to the expensive cost for the population and the complexity of the system. On the other hand, 2iE has continued the experimentation project of an autonomous family sanitation system by vermifiltration, the project of development of an ecological toilet linked to a compost pit for the valorization of human excreta, the project of development of a greywater treatment system by vermifiltration, the project of development of ceramic filters from local clays of Burkina Faso. In addition, Joseph KY ZERBO University has conducted the project on the modification of graywater treatment systems at the household as mentioned above.

<Other Impacts at the time of Ex-Post Evaluation>

There are some positive impacts of the Project confirmed at the time of the ex-post evaluation. The use of treated graywater by the unit installed by the project brought about income from family market gardening and improvement of women's living conditions. Also, the use of ceramic filters has reduction of water-borne diseases of children through the provision of drinking water of good quality at the point of consumption. In addition, the toilet installed by the project has reduced the risk of fecal danger.

The SATREPS project contributed to improvement of analytical skills of the researchers through collaborative research conducted as part of the project. All the researchers engaged in the SATREPS project have benefited residence mobility in laboratories in Japan. These mobility trips have enabled the training of all researchers involved in learning analytical techniques on different matrices of water, sludge and crops. In the same way, the acquisition of laboratory equipment has made it possible to strengthen the technical analysis platform of the 2iE Laboratory. Many students in master and doctor courses have benefited from the SATREPS project through internships and completion of Ph.D dissertation

In addition, the SATREPS project has strengthened scientific production. Thanks to the diversity of research themes tackled in the SATREPS project, the researchers involved in the SATREPS project made many scientific publications in terms of scientific articles. This allowed them to progress in academic degrees. Furthermore, 2iE has benefited greatly from the SATREPS project by strengthening the teaching and research capacities of the teacher-researchers involved in this project. Course contents also improved and enriched by concrete case studies of the SATREPS project. Joseph KY ZERBO University benefited from the SATREPS project through the recruitment of trainee students and doctor students participating in the project. Students who participated in the project will bring their experiences to Joseph KY ZERBO University students. No negative impact has been observed.

<Evaluation Result>

Therefore, both the effectiveness and impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The systems for supply of drinking water and sanitation, which are adopted to the Sahel Region, are developed and	Indicator 1: Comparative table of performance of the system developed by the report with the conventional AEPA (water supply and sanitation) system, and manual for their application (detail information of	Achievement Status: Achieved (Partially continued) (Project Completion) ● The comparative table and the manual were drafted. (Ex-Post Evaluation) Among the research outputs, the following system have not been functioning anymore but the technologies for the system have been modified and

experimented based on the concept of “No mixing” and “No collecting”, and preparation for implementation of the systems is promoted.	characteristics, environmental conditions, maintenance methods, cost required, and so on)	rehabilitated by other institutions for utilization. : ● Low cost household greywater treatment unit for rural areas ● Ceramic filtration
	Indicator 2: Proposal document addressing the government of Burkina Faso for introduction of the system developed.	Achievement Status: Achieved (Not continued) (Project Completion) ● The rural model (use of excreta, urine and greywater and agricultural technique) and the urban model (collection and reuse of greywater) were proposed. ● The manual and the final report were prepared and submitted to the government of Burkina Faso. (Ex-Post Evaluation) ● The models proposed have not been introduced yet.
	Indicator 3: Status of publication of articles by the researchers of 2iE in the scientific journals with the impact factor.	Achievement Status: Achieved (Continued) (Project Completion) ● 4 articles by the researchers of 2iE as a principal author were published in the scientific journals with the impact factor. (Ex-Post Evaluation) ● The researchers involved in the SATREPS project made many scientific publications in terms of scientific articles.
	Indicator 4: Status of operation of the pilot systems at the village level.	Achievement Status: Partially achieved (Continued) (Project Completion) ● Kolongondjesse: 1 out of 3 installed toilets was utilized, 2 out of 4 greywater treatment units were utilized ● Barkoundouba: 1 out of 3 toilets was utilized, 1 out of 2 greywater treatment units was utilized. ● Kamobinsin: 0 out of 2 toilets was utilized, 0 out of 2 greywater treatment units was utilized. (Ex-Post Evaluation) • In the pilot villages, the compost toilets and the greywater treatment units have been modified and the rehabilitated systems have been utilized.

Source：Terminal Evaluation Report, JST Terminal Report, Questionnaires and interviews with 2iE

3 Efficiency

Although the project period was as planned (the ratio against the planned: 100%), the project cost slightly exceeded the plan (the ratios against the plan: 105%). The project outputs were produced as planned.

Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspects>

For the management of water and sanitation sector, the government has developed 5 programs: the Governance Program for the Water and Sanitation Sector in Burkina Faso by 2030 (Programme Gouvernance du sous-secteur Eau et Assainissement à l’horizon 2030, PGEA 2016-2030), PN-AEP （2016 - 2030), the National Program for Integrated Management of Water Resources by 2030 (Programme National pour la Gestion Intégrée des Ressources en Eau: PNGIRE 2016 - 2030), the National Program for Hydraulic Improvements (Programme National Aménagements Hydrauliques: PNAH) for 2030. All of these programs are part of the implementation of the Sustainable Development Goals.

Regarding water and sanitation, the challenges are: (i) mobilization, management, preservation and sustainable development of water resources, (ii) improving access to water services and sanitation, (iii) protecting existing ecosystems and preserving the living environment, (iv) strengthening international cooperation in the area of water and (v) improving knowledge of water resources.

<Institutional/Organizational Aspects>

The research outputs by the SATREPS project were shared with the Ministry of Water and Sanitation, which has appropriately used in sanitation policies, recovery of wastewater and improving access to water. However, there is not a tacit organization / institutional arrangement for utilization of the research outcomes of the SATREPS project.

The operation and maintenance of the research facilities/equipment is solely the responsibility of the beneficiary households with regard to composting toilets, gray water treatment units and ceramic filters. The operation and maintenance of the high-yield algal channel wastewater treatment plant has been devolved to 2iE. As mentioned above, the pilot toilets and the high-yield agal channel wastewater treatment plant have been no longer functional for many reasons

<Technical Aspects>

Through editing of new projects based on the research results of the SATREPS project, the researchers of 2iE have sustained their research capacity to continue the related research activities by using the laboratory equipment acquired in the SATREPS project and also by using the results of the research to improve the course content. This is the case, for example, of the ecological remediation course that has been enriched by research results on the composting toilets and the water treatment technologies.

2iE has continuously used “Design Manual for high rate settleable algae pond (HRSAP)” for trainings. Manuals for composting toilet, greywater treatment units, ceramic filtration unit, urine use have been utilized by the beneficiary households and guide for agricultural reuse of compost, urine and greywater have been used by vegetable producers.

On the other hand, since difficult maintenance of the composting toilets and the high-speed algal channel wastewater treatment plant has required external experts to repair them and constrained the continuous operations as mentioned above.

<Financial Aspects>

The National Fund for Research and Innovation in Burkina Faso has been allocated for the experimental project of an autonomous family vermifiltration wastewater treatment system and the development project of an ecological toilet linked to a compost pit for the valuation of human excreta. Also, the Fund has been allocated to the project on the modification of household-level graywater treatment systems for performance improvement by Joseph KY ZERBO University of Ouagadougou with funding from the US National Academy of Sciences. MasterCard's Foundation via Tufts University has financed for the extension of the use of ceramic filters for home water treatment by the Barka Association through the Corporate Social and Environmental Responsibility (CSR) program within the framework of the YEPI project. On the other hand, the scientific research in the field of water and sanitation has faced with insufficient funding. This is a reason why the government of Burkina Faso puts more emphasis on the construction of infrastructure based on the idea that more hydraulic facilities are needed in order to increase the rate of access to drinking water, and eventually achieve the Sustainable Development Goals (SDGs).

In addition, high costs of the maintenance of composting toilets and the high-speed algal channel wastewater treatment plant and difficulty to procure spare parts for the facilities and equipment have constrained the proper maintenance and the continuous operations of the facilities and equipment.

<Evaluation Result>

In the light above, there have been some problems from the institutional aspect. Therefore, the sustainability of the effects through the Project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose through the development of the composting toilets and the greywater treatment technologies and ceramic filtration for safe water. As for sustainability, the lack of local technical capacity and the high maintenance cost of the units developed and installed by the SATREPS project have constrained the proper maintenance and continuous operation as well as dissemination of the key research outputs of composting toilets and the high-speed algal channel wastewater treatment plant. As for efficiency, the project cost slightly exceeded the plan. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learnt

Recommendations for Implementing Agency:

- Continue research on the devices and facilities developed by the SATREPS project in order to make it operational among population in Burkina Faso.
- Promote the devices and facilities developed by the SATREPS project under the initiative of the Ministry in charge of water and sanitation.

Lessons Learnt for JICA:

- In the context of SATREPS projects, JICA also needs to focus on the aspect of dissemination of research results. The composting toilets developed by the SATREPS project cannot be popularized among the people especially at the current stage because of their high cost and the difficulty of finding spare parts. Although the main purpose of the SATREPS project is research and development of technologies to solve global issues including energy, environment and infectious diseases, it is essential to realize utilization of the research outcomes through consideration of affordability of the target beneficiaries who utilize the technologies developed and/or applied by the SATREPS project. If JICA finds effectiveness of the technologies developed and/or applied by the SATREPS project as a solution of the global issues above mentioned, it is desirable for JICA to consider applicability and affordability of technologies to be researched and developed under SATREPS projects, including availability of spare parts at local market, for the target groups in order to promote utilization of the research outcomes/outputs at the time of project design and the follow-up stage.

The pilot high-speed aglal channel wastewater treatment plant in the campus of Kamboinsé, 2iE

The pilot composting toilet in Barkoundouba village

conducted by Niger Office: March 2021

Country Name	**Project on Effective Utilization of Reservoirs and Auto-Promotion of Local Communities in the Sahel**
Republic of Niger	

I. Project Outline

Background	In Niger, about 80% of the total population has lived in rural areas and farmers have mostly engaged in rain-fed agriculture. Thus, the yield has been greatly affected by the weather conditions of the time. In 2011/12, approximately 519,000 tons of food shortage was predicted from low rainfall. Irrigated agriculture with reservoirs was an effective measure to mitigate the consequences of unseasonable weather and to contribute to stable agricultural production in the Sahel. Efforts were consistently made to combat desertification and make effective use of water resources. Nonetheless, regarding the rural development around the small reservoirs, farmers had only limited knowledge and technical level of maintenance and management of the reservoir, furthermore, agricultural equipment was not sufficiently available due to precarious livelihoods, and low agricultural productivity restricted access to market information. Furthermore, the administrative dissemination and management system was still feeble, and the reservoirs had not been effectively used.		
Objectives of the Project	Through the establishment of the system for utilization of the reservoir, and broad capacity development of implementation and extension of the Farmer Field School (FFS) approach, as well as the improvement of agricultural productivity of farmers who participated in FFS, the project aims at promoting sustainable rural development through effective utilization of reservoirs in two target regions of Tahoua and Maradi regions, thereby contributing to sustainable utilization of reservoirs in the target regions and the application of the project results and lessons learned to Dosso, Niamey and Tillabéry regions. 1. Overall Goal: 1) The reservoirs in Tahoua and Maradi are utilized sustainably. 2) Results and lessons learned from the project are applied to the utilization of reservoirs in Dosso, Niamey, and Tillabéry. 2. Project Purpose: Sustainable rural development is promoted by the effective utilization of reservoirs in Tahoua and Maradi.		
Activities of the Project	1. Project Site: Regions of Tahoua and Maradi 2. Main Activities: 1) Identification of adequate farming and activities based on the local situation of water utilization, 2) Establishment of the system for utilization of reservoir, 3) Improvement of FFS implementation capacities of target extension workers, 4) Improvement of the agricultural situation of farmers participated in FFS, 4) Improvement of implementation capacities in the Regional Directorate of Agriculture (Direction Régionale de l'Agriculture: DRA) and the Ministry of Agriculture (Ministère de l'Agriculture: MAG). 3. Inputs (to carry out the above activities) Japanese Side 1) Experts: 13 persons 2) Trainees received in Japan: 6 persons 3) Third country training: 8 persons (in Kenya) 4) Equipment: Generator, projectors, air-conditioner, digital cameras, digital videos, copy machines, PCs, printers, motorbikes, etc. Niger Side 1) Staff allocated: 25 persons 2) Facilities: Office for the experts in MAG 3) Local cost: Administrative and operational expenses for Niger Side		
Project Period	March 2012-March 2016 (Extension period: March 2015-March 2016)	Project Cost	(ex-ante) 336 million yen, (actual) 542million yen
Implementing Agency	Ministry of Agriculture (MAG), the Directorate of Extension and Technology Transfer (Direction de la Vulgarisation et du Transfert des Technologies: DVTT)		
Cooperation Agency in Japan	NTC International Co., Ltd. Japan International Research Center for Agricultural Sciences		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to travel restrictions and lockdown measures raised during the COVID-19 Pandemic, data gathered in the rural areas during the ex-post evaluation was lower both in quantity and quality as on-site data collection and direct observation were not as feasible as planned. Nonetheless, mitigation measures were taken as follows; 1) rely more on existing monitoring data collected prior to COVID-19, 2) increase scope of desk-based review of administrative data, 3) use of remote data collection and analysis methods where available.

< Special Perspectives Considered in the Ex-Post Evaluation >

- As the result of the terminal evaluation of the project, the Project Design Matrix (PDM) was revised, and in order to achieve the project purpose, it was required to make an additional injection.

1 Relevance

<Consistency with the Development Policy of Niger at the Time of Ex-Ante Evaluation >

The project was consistent with the development policies of Niger at the time of ex-ante evaluation. The Niger government formulated the Poverty Reduction Strategy (PRSP) in 2002, which was valid up to 2015. Rural development is one of the eight priority areas of the PRSP. In 2003, the government formulated the Rural Development Strategy (SDR) focusing on rural areas addressed in the PRSP. The 14 programs, emphasized promoting sustainable natural resource management, food security, and socio-economic development. The goal was to reduce poverty in rural areas from 66% to 52% by 2015. Furthermore, national efforts to prevent desertification were started in the

Presidential Special Program in 2000, and 66 reservoirs were planned to be created by 2004, and irrigation development by reservoirs was a pivotal measure in the development of Niger.

<Consistency with the Development Needs of Niger at the Time of Ex-Ante Evaluation >

The project was consistent with the needs of Niger at the time of ex-ante evaluation. In Niger, about 80% of the total population has lived in rural areas and farmers have mostly practiced rain-fed agriculture. Thus, the yield has been directly affected by the weather conditions of the time. In 2011/12, approximately 519,000 tons of food shortage was predicted due to the low rainfall. Irrigated agriculture utilizing reservoirs was considered an effective measure to mitigate the adverse effect of unseasonable weather. Under the circumstances, it was assumed to contribute to stable agricultural production in the Sahel.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy towards Niger. Japan's ODA was implemented from the perspectives of poverty reduction and human security in Niger. For that, based on the development policy of the Niger government, Japan intended to provide its support that contributes to poverty reduction and sustainable growth[1].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved. The 17 out of 18 target reservoirs functioned well at the time of project completion and that enabled local farmers to continue their activities with the use of the reservoirs or water wells to crop even during the dry season (Indicator 1). It was reported that some of the farmers who graduated from FFS continued voluntary activities through interactive exchanges among themselves (Indicator 2). In Tahoua, in particular, the members of the management committees of the six water user cooperatives were trained through the participation of the FFS by the project. Based on the training, they formed the Union of Cooperatives as learned in the FFS. They became capable of maintaining exchanges between them and pursue their voluntary activities from managerial perspectives. However, this kind of cooperative action putting farmers at their disposal was not confirmed in Maradi.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued after the project completion. According to the survey result, 10 target reservoirs remained functional, but some of them were partially functional (4 sites) or not functional (4 sites). Some of the reservoirs were reported to be dried rather quickly due to water leakage when most needed during the dry season. Secondly, regarding the voluntary activities by graduates of FFS, most farmers in Tahoua became dormant as facilitators mainly due to lack of public funding after project completion. On the contrary, FFS graduates in Maradi have become active in almost all districts. Concurrently, they have engaged in cooperation with multiple multinational partner organizations in the region.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

Overall Goal 1 has been partially achieved and Overall Goal 2 has been achieved at the time of ex-post evaluation. As for the status of utilization of the reservoirs in Tahoua and Maradi, it was partially achieved the target value of the Overall Goal 1). Farmers continue to carry out their activities by making efficient use of 14 reservoirs in Tahoua and Maradi (Indicator 1). On the contrary, it mostly failed to continue the project activities at the time of the ex-post evaluation (Indicator 2). Regarding the Overall Goal 2): Although results and lessons learned from the project are applied to the utilization of reservoirs in Dosso, Niamey, and Tillabéry, according to the survey, they were highlighted at a reservoir in Dosso, Tillabéry, and Zinder, the same number of the target areas, but not in Niamey as originally planned (Indicator 3).

<Other Impacts at the time of Ex-post Evaluation>

According to the survey, socio-economic impacts of the project were confirmed as follows: 1) Creation of a weekly market; 2) invigoration of market gardening and fishing; 3) strengthening social cohesion at the village level; 4) improvement in agricultural practices; increase in agricultural production by applying technologies learned in FFS; 5) the development of a spirit of mutual aid among members and it has been felt even at the village level. Furthermore, cross-cutting issues like gender and young people were duly taken into consideration in providing a fair opportunity in all project sites. From the outset and the introduction of FFS through the implementation of the project, it was observed that more women become proactive in taking part in community activities. It was notable that they took initiatives such as promoting income-generating activities. For that, they even became visible in the decision-making process for the public interests in their community. On the other points of concern, there was no resettlement and land acquisition caused by the project, and thus there were no ramifications to do with them. Also, there were no unintended negative impacts observed at the time of the ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Sustainable rural development is promoted by the effective utilization of reservoirs in Tahoua and Maradi.	(Indicator 1) The target reservoirs that function well allow farmers to continue their activities with the use of the reservoirs such as cropping during the dry season.	Status of the Achievement: achieved (partially continued) (Project Completion) Out of 18 target reservoirs in Tahoua and Maradi, 5 reservoirs (Maggagi Rogo, Milli, Bokologi, Roura, Tshidafawa) were not properly functioning for the activities during the dry season. However, except for the one in Bokologi, the remaining 4 reservoirs were repaired, in addition to the fact that they also built water wells by the project in order to secure irrigation water in each area. Thus, the irrigation project could be continued by using the water source from water wells. (Ex-post Evaluation) 10 out of 18 reservoirs were functional (Tahoua: 5, Maradi: 5), but some of them are partially functional (Tahoua: 1, Maradi: 3) or not functional (Maradi: 4). A reason for the malfunction was that those reservoirs could not hold enough water for the dry season, due to a plausible structural defect to cause water

[1] Ministry of Foreign Affairs, "ODA Country Databook" (2011)

		leakage.
	(Indicator 2) Farmers who graduated from FFS continue to do voluntary activities by maintaining interactive exchanges among themselves.	Status of the Achievement: partially achieved (partially continued) (Project Completion) In Tahoua, the members of the management committees of the six water user cooperatives, who were trained by the project and participated in the FFS, formed the Union of Cooperatives. These FFS graduates could maintain exchanges among them and facilitate their voluntary activities. In Niamey, FFSs on the model sites of Tchingal Bangou and Yantala Corniche pursued information exchanges between farmer facilitators. Farmer facilitators from Tchingal Bangou learn the procedure of poultry farming activities from facilitators in Yantala Corniche. Also, they discussed cultivation techniques and methods of selling lettuce, a specialty product in the area of Yantala Corniche. Whereas, in Maradi, some farmers graduating from 8 to 12 sites continued to carry out FFS activities after the project, bringing with them several hundred farmers, even if they did not make an activity plan. These activities continue because of the dynamism of these farmers who manage to mobilize funds with interested partners such as the Family Farming Development Programme (Programme de Développement de l'Agriculture Familiale: PRODAF), Food and Agriculture Organization (FAO), World Vision, etc. In the 4 sites of Maradi, those farmers could not be as active as expected due to the dysfunction of water reservoirs. (Ex-post Evaluation) In Tahoua, Zongon Roukaouzoum, has retained an FFS facilitator and a youth center trainer in the Project for the Sensitive Agriculture to Climate Risk Support (PASEC). However, no FFS graduates continued to be facilitators or actively engage in any communal activities to promote local farming in Tarwada, Changnassou, Bourdi II, Gourgoutoulow, Edir Wantaje. In Maladi, activities have been continued in almost all sites, and cooperation with external organizations has been active. Notably, PRODAF by International Fund for Agricultural Development (IFAD) has supported FFS in Rafin Vada, Bakassomouba, and Tkassaba. Agro-pastoral Farmers Field School (AFFS) in Dania has been supported by the FAO.
(Overall Goal) 1) The reservoirs in Tahoua and Maradi are utilized sustainably.	(Indicator 1) Farmers continue to carry out their activities by making efficient use of at least 12 reservoirs in the regions of Tahoua and Maradi.	(Ex-post Evaluation) Achieved Out of 18 target sites in Tahoua and Maradi, a total of 14 reservoirs have been used for sustainable agricultural production through its function of water-saving, distribution for farming, etc. Although no data available in some sites, the number of farmers who benefit from the reservoir was confirmed as shown in Table 1. Table 1: The Status of Utilization of the Reservoir

	Effective Use of the Reservoir	The Number of Farmers (Beneficiaries)
Tahoua		
Tarwada	○	10 market gardeners
Changnassou	×	No activities
Zongon Roukaouzoum	○	Appox.100 farmers
Bourdi II	○	Appox.100 farmers
Gourgoutoulow	○	Approx. 50 farmers
Edir Wantaje	○	Approx. 50 farmers
Maradi		
Rafin Vada	○	N/A
Bakassomouba	○	N/A
Koumchi	○	N/A
Tchidafawa	○	126 farmers
Roura	○	120 farmers
Magagi Rogo	○	135 farmers
Danja	○	235 farmers
Milli	×	Appox.100 farmers
Beri Beri	○	220 farmers
Takassaba	○	204 farmers
Kanembakache	×	N/A
Bokologi	×	N/A

Source: Regional Chief of extension service of Maradi, Regional Directorate of Rural Engineering of Maradi, Regional Chief of extension service of Tahoua.

	(Indicator 2) More than 50% of the activities implemented at the time of the completion of the project continue to be	(Ex-post Evaluation) Not achieved The activities introduced by the project and reflected in the Activity Plan (e.g. FFS, rehabilitation, and O&M of the reservoir, cooperative promotion) were

	carried out.	expected to continue in at least half of the target sites. However, it turned out that they have been continued in only 2 sites (Zongon Roukaouzoum, Bourdi II) in Tahoua. In Maradi, all sites either stopped following their "Activity Plan" or no data available regarding the status. :
2) Results and lessons learned from the project are applied to the utilization of reservoirs in Dosso, Niamey, and Tillabéry.	(Indicator 3) The results and lessons learned from the project are highlighted at a reservoir at least in Dosso, Niamey, and Tillabéry, respectively	(Ex-post Evaluation) Achieved In addition to Tahoua and Maradi, the FFS approach extension program has been implemented in the regions of Dosso, Tillabéry, and Zinder with an improvement of the approach to be more inclusive as AFFS. Although the project was not rolled out in Niamey, this was implemented in those regions above such as more rural Zander where the majority of poor reside, with the support of the Project for the Sensitive Agriculture to Climate risk support (PASEC). The activities are ranged from the training of master trainers and facilitators, to promote agriculture and animal production with due consideration of climate change. The results and lessons learned from the project are highlighted in the regions of Dosso, Tillabéry, and Zinder.

Source：Questionnaire responses from DVTT

3 Efficiency

Although the outputs were produced as planned, both the project cost and project period exceeded the plan (ratio against the plan: 161% and 136%, respectively). The actual project cost significantly exceeded the plan. In response to a terrorist attack by Islamic extremists in Northern Mali in January 2013, an official ban was imposed in the region. To comply with a safety control measure of JICA, Japanese experts were obliged to evacuate from Tahoua and Maradi and the planned activities were to be carried out under the stewardship of those experts performing remote control. Furthermore, as the result of the terminal evaluation, the Project Design Matrix (PDM) was reviewed and revised decidedly, since, under given circumstances, the causal relationship of project outputs and the project purpose was not clear. As such, in order to achieve the project purpose, it was required to make an additional injection. Therefore, the efficiency of the project is low.

4 Sustainability

<Policy Aspect>

Synergistic promotion of sustainable natural resource management, food security, and socio-economic development has retained its importance in the national policy of the Government of Niger. The Action Plan of the "3N Initiative (Nigerians Feed Nigerians)" (2016-2020) has precisely targeted; 1) promotion of irrigated agriculture through water supply; 2) increase and diversification of agro-sylvo-pastoral and fishery productions; 3) a regular supply of rural and urban markets with agricultural and agri-food products; 4) improvement of the resilience of populations to cope with climate risks; 5) improvement of the nutritional status of Nigeriens.

< Institutional/Organizational Aspect>

As far as the Ministerial level is concerned, there has been no change in the organizational structure for the promotion of the FFS system and related activities introduced by the project. At the national level, on the other hand, the Government newly created the Agricultural Advice Promotion Agency ("L'Agence de Promotion du Conseil Agricole: APCA) specialized in coordination of all aspects of the extension worker both in the public and the private. Moreover, the Government established the Food Security and Nutrition Investment Fund ("Fonds d'Investissement pour la Sécurité Alimentaire et Nutritionnelle: FISAN), whose mandate is to prudently appraise, and finance needed activities in the agriculture sector. Although the Government has not intervened directly to promote the FFS approach, it has provided indirect support through the agencies. As such, it was considered that the creation of these organizations would not detract from the ongoing promotion of the FFS system as the FFS system has remained unchanged. DVTT of the Ministry of Agriculture in charge of the promotion of the FFS system has not had sufficient manpower considering the magnitude of national oversight. On the contrary, DVTT needed to retain around 300 extension workers. Due to the organizational reinforcement at the national level, it has been capable of deploying staff for extension of the FFS approach at the local sites.

<Technical Aspect>

According to the survey results, the staff, in general, have retained the skills and knowledge necessary to promote the FFS system introduced by the project. Also, the acquired skills have been strengthened through continuous training opportunities with other projects. It was reported that master trainers are trained during 5 sessions of 10 days each and, local facilitators are trained in 3 sessions of 7 days each. Furthermore, those documents such as guidelines and manuals for the FFS approach developed by the project have been amply utilized for training materials and references.

<Financial Aspect>

DVTT of the Ministry of Agriculture proposed a program to newly establish 500 FFS nation-wide, it has, however, not disbursed public funding at all to materialize it, either due to the security issues and, most recently, COVID-19 as its priority shift. On the project sites where the FFS system was already set up, the FFS activities were carried out more or less, but not as regularly as before mainly due to the lack of funding. Where activities are visible, they have been supported mostly by funding of the other donors through their projects. These projects are to mitigate the impact of climate change in agriculture (e.g. PASEC); the FAO through the Global Environmental Fund (GEF) as well as PRODAF funded by IFAD.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose and the Overall Goal. As for sustainability, although the coordination mechanism at the national level could provide support to the agriculture sector and skilled extension workers at the local level, the national budget has not been sufficiently secured for further extension of the FFS system. As for efficiency, the project cost and period exceeded the plan.
Considering all of the above points, this project is evaluated to be unsatisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

To MAG, DVTT

Although local farmers continued to carry out their activities by making efficient use of the reservoirs in Tahoua and Maradi, most of them do not check and monitor the working status of the "Activity Plan" as planned. They faced operational problems mainly because extension workers d

id not follow up on a regular basis so they stopped holding regular meetings and could not retain the skills to continue activities as it was during project implementation. It has caused dysfunctions that could not be solved at the level of some of these farmers' cooperatives/associations such as occurred in some water reservoirs. The effectiveness and impact of the project may have been sustained if they were to exert stronger leadership in collective management in practice. As such, DVTT should clarify the reason why they were not able to follow up to nurture local farmers' groups, and if necessary, request due support from other organizations such as the Agricultural Advice Promotion Agency (APCA).

Lessons Learned for JICA:

There are two points of concern derived from the ex-post evaluation of the project as follows.

Maintenance of the structure constructed by the project (e.g. reservoirs)

- Some reservoirs were not fully functional mostly due to structural water leakage. It is possible that although these reservoirs were duly constructed to be functional at the time of project completion, they must have been progressively leaking over years. During project implementation, local construction companies performed construction work, and local farmers provided labor to complete the construction of reservoirs. Thereafter, those farmers created a maintenance committee to oversee the maintenance and repairing of the reservoir. Although the degree of water leakage at each site is unknown and could have been varied in terms of needed repairing materials, if seriously required considerable rebuilding, the maintenance committee was supposed to contract out the repair work to a construction company. However, it turned out that many of the maintenance committees could not provide sufficient funding to manage necessary maintenance and repair. Thus, it was deemed essential to encourage and propose not only the maintenance committee but also the state's agricultural and civil engineering offices to continue financial and technical support for the procurement of domestic and/or external funding as the reservoir is respectfully public property in the regions. In that sense, it is recommended that a prospective project of similar nature should provide not only knowledge of prevention of water leakage, but also inventory formation of practical countermeasures at any level for hands-on training. In this case, participating farmers need to be trained in water leakage prevention measures, and/or the project must encourage them to locally devise countermeasures in their self-sustaining way, as maximizing the use of limited water resources is directly linked to the promotion of agricultural productivity, especially in the dry season.

Perception toward "Action Plan"

- It was observed that local farmers tended to implement their Action Plan only during the project period. If they had to continue implementing after project completion, they must have deliberately arranged ways and means to do so through project implementation. To have the plan remained feasible and well localized, it may require how best to find the middle ground to assimilate the traditional management methods they have normally used. It was revealed that for most farmers in the project, the Action Plan was perceived as just a tool for fundraising although it was originally intended to promote collective productivity in a longer time frame. Therefore, it is necessary not only to introduce the Action Plan as a concept but also to follow up on whether the purpose and significance of planning are sufficiently conveyed and understood. It is also important to detect and correct any potential misunderstandings in terms of the ownership issue during the project period.

Practical Cultivation of watermelon by the producers of Tchidafaoua, Maradi region

A reservoir in good condition in Bourdi 2, Tahoua region

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Iran Office: June, 2021

Country Name	**Participatory Forest and Rangeland Management Project in Chaharmahal-va-Bakhtiari Province**
Islamic Republic of Iran	

I. Project Outline

Background	In Iran, natural disasters, such as soil erosion, debris-avalanches and landslides, frequently occurred, following a decline in ground cover due to illegal logging and overgrazing in the upstream area, which reduced the capacity of the land to conserve water. JICA conducted a development study entitled "The Study on the Watershed Management Plan for Karoon River" from 2000 to 2002. After formulating the Master Plan, the Iranian government took the initiative to conduct disaster prevention works. However, activities to improve the living standards of local people and to manage natural resources were not sufficiently implemented with full understanding by the local people involved; hence there was no satisfactory outcome.		
Objectives of the Project	Through preparation of participatory forest and rangeland management system of NRWGO*, preparation and strengthening of implementation system for sustainable participatory forest and rangeland management in the target villages, promotion of participatory forest and rangeland management activities in the target villages, and structuring of collaborative relation among concerned organization, the project aimed at enhancement of capacity of NRWGO for participatory forest and rangeland management, thereby introducing "participatory forest and rangeland management"** in Chaharmahal-va-Bakhtiari Province, Iran. *NRWGO: Natural Resources and Watershed Management General Office of Chaharmahal-va-Bakhtiari Province **"Participatory Forest and Rangeland Management (PFRM)" is protection, utilization and regeneration of forest and rangeland through participation and support of the people living near forest and rangeland with livelihood activities for promoting participation of local people. 1. Overall Goal: Participatory forest and rangeland management is introduced in Chaharmahal-va-Bakhtiari Province. 2. Project Purpose: The capacity of NRWGO for participatory forest and rangeland management is enhanced.		
Activities of the Project	1. Project Site: 1) Charmahal- va- Bakhtiari Province, 2) Target Villages in Bazoft Area 2. Main Activities: (1) Preparation of the project baseline report, Elaboration and revision of capacity development (CD) strategy for NRWGO, Elaboration, implementation and feedback of CD training plan among NRWGO staff, Preparation of materials for dissemination of the project, etc. (2) Identifying and organizing resident organization to work with government organization in target villages, Preparation, implementation, and monitoring &evaluation of training for Community Facilitator (CF), etc. (3) Preparation of Village Action Plan (VAP) for participatory forest and rangeland management activities, Implementation of activities based on the agreed VAP, Monitoring, evaluation and feedback on activities by VAP participants, Revision of participatory forest and rangeland management guideline based on the activities (4) Analysis for structuring collaborative relations with other organizations concerned, Conducting sessions and collaboration strengthening meetings for concerned organizations, Preparation of proposal regarding collaboration strengthening among concerned organizations 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 7 persons 2) Trainees Received: 22 persons 3) Equipment: Computers and printers, GPS, measuring instruments, office equipment 4) Local expenses Iranian Side 1) Staff Allocated: 20 persons 2) Office space, transportation of counterpart (C/P), expenses for meetings and workshops, and other miscellaneous cost		
Project Period	July 2010 – December 2016 (Extension period: July 2015 –December 2016)	Project Cost	(ex-ante) 361 million yen, (actual) 660 million yen
Implementing Agency	Natural Resources and Watershed Management General Office of Chaharmahal-va-Bakhtiari Province (NRWGO) Forest, Rangeland and Watershed Management Organization (FRWO) as supervising agency		
Cooperation Agency in Japan	Japan Overseas Forestry Consultants Association, Japan Forest Technology Association, Sanyu Consultants Inc.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

・ In this Ex-Post Evaluation, an evaluation judgment was made primarily by analyzing information acquired by sending and collecting questionnaires, and through telephone and e-mail interviews with persons concerned due to the impact of COVID-19. Field survey was conducted on a limited scale, with face-to-face interviews with FRWO and NRWGO as well as survey conducted by FRWO.

1 Relevance

<Consistency with the Development Policy of Iran at the Time of Ex-Ante Evaluation>

In the Fourth Five-Year Economic, Social, and Cultural Plan of Iran (2005-2010), one of the priority areas was environment conservation and 14 environmental issues were specified. One of them was to demonstrate norms toward ecological and sustainable development as well as incorporation of the norms in specific plans and programs. In addition, 10 priorities were designated, including implementation of conservation projects for watershed as well as thorough implementation of forest conservation.

<Consistency with the Development Needs of Iran at the Time of Ex-Ante Evaluation>

It was urgently needed to promote planning and implementation of forest and rangeland management through participation as well as appropriate utilization of natural resources through improvement of livelihood.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with three of the five priority areas in the Japanese cooperation policy toward Iran in 2010, namely, environmental conservation, comprehensive water resources management, and correction of inequality between urban and rural areas[1].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the project completion. It was confirmed by the project that the capacity of promoting the participatory forest/rangeland management was developed among the NRWGO staff, C/P as well and field staff, which means that the utilization of knowledge/experience gained from the project was enhanced. Although quantitative data on the number of participants in NRWGO utilizing knowledge/experience was not clear, actual utilization of knowledge/experience was confirmed and it was considered that the effects of the project activities were observed to some extent (indicator 1). It was reported in the terminal evaluation that all (100%) villagers interviewed (42 persons) evaluated that the capacity of NRWGO had been improved, as well as attitude such as communication and confidence building. It was considered that the Project Cycle Management (PCM)/Participatory Rural Appraisal (PRA) training for NRWGO staff, preparation/implementation of VAP using the knowledge from the training, and the NRWGO's efforts through the project activities contributed to such trust-building (indicator 2). According to the interviews at the terminal evaluation, 41 out of 42 (97.6%) felt that they had either benefitted or would be likely benefited from the knowledge gained from the project (indicator 3). The benefits they mentioned included an increased income from the sales of fruits or dressmaking. The CFs in five target villages provided the same responses. It was reported that institutional coherence was formed and strengthened among relevant organizations, for example, the Planning and Budget Organization (PBO) and FRWO for the budget aspect, as well as the Integrated Natural Resources Management in the Middle East and North Africa (MENARID), Jihad-e-Agriculture Organization (JAO), Cultural Heritage and Handicrafts and Tourism Organization (CHHTO), etc. for the operational organization aspect (indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued to the time of ex-post evaluation. According to the FRWO's survey[2], almost all NRWGO's staff who participated in the project (170 staff members) utilize their knowledge well for participatory forest and rangeland management (indicator 1). For example, the ex-project participants of NRWGO implement participatory conservation and remediation of forests and pastures in target villages of the project, as well as in newly introduced areas. In addition, planting medicinal plants at the level of 2,500 hectares was initiated in newly introduced areas and target villages of the project by the ex-project participants of NRWGO. According to the FRWO's survey, it was found out through the comments of the representatives of each village that the project participants in target villages evaluated that the capacity and attitude of NRWGO has been improved although there was no quantitative data (indicator 2). Local people are satisfied with NRWGO's performance, as NRWGO has been assisting them with capacity development among local communities on forest and rangeland management through training programs and workshops, among others. Those interviewed by FRWO's survey also confirmed that their benefits by the project have been continued in terms of income generation, forest management, women's empowerment, rural development (indicator 3). For example, the activities of rural women's micro-credit box (livelihood improvement) have been continued in various cities and villages and benefiting local women. Since project completion, a total of 67 micro-credit boxes have been introduced in Chaharmahal-va-Bakhtiari Province in addition to 36 micro-credit boxes established during the project period. As to the implementation system for participatory forest and rangeland management (indicator 4), collaboration with concerned organizations has not been well implemented due to lack of coherent plan among relevant government organizations such as the Ministry of Agriculture Jahad (MOJA) and Department of Environment (DOE).

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved. Participatory forest and rangeland management activities have been maintained, including livelihood activities such as beekeeping activities, activities of rural women micro-credit box, and horticulture activities, (indicator 1). Since project completion, in addition to the target areas of the project, participatory forest and rangeland management have been newly introduced to more than five sites[3], including Hosein Abad, Dehnash, Kharaji, Vanan, Vardanjan (indicator 2). In the newly introduced sites, activities are not always being smoothly implemented as there is lack of social structure as well as lack of follow-up and support by NRWGO, and thus local people still tend to solve problems in a traditional way. However, benefits from the activities have been observed to some extent in terms of motivation and participation of local farmers.

<Other Impacts at the time of Ex-post Evaluation>

Women were benefited through capacity development activities introduced by the project, such as rural women micro-credit fund and sewing. No negative impact has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

[1] Source: Ministry of Foreign Affairs, "ODA Country Data Book in 2010"

[2] Because of the national emergency order of gathering and travel restriction due to COVID-19, FRWO could not conduct the survey covering all the 170 ex-participants of the project. Instead, they conducted the interviews with 12 key C/Ps of NRWGO and had a meeting with the key representatives of each village.

[3] At the time of project completion, as the Participatory Protection Project (PPP) was implemented by the land affairs department and MENARID was being expanded in the Province, it was considered that the indicator 2 was already virtually achieved in collaboration with these initiatives. At the ex-post evaluation, the connection with PPP and MENARID was not clearly confirmed. However, participatory forest and rangeland management activities have been newly introduced in more than five sites, therefore, it is considered that the indicator has been achieved.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The capacity of NRWGO for participatory forest and rangeland management is enhanced.	(Indicator 1) More than 70% of project participants in NRWGO will utilize knowledge/experience gained from the Project.	Status of the Achievement: Partially Achieved (continued) (Project Completion) ・It was confirmed by the project that the capacity of NRWGO staff, C/P as well and field staff was developed, which means that the utilization of knowledge/experience gained from the project was enhanced, although no quantitative data was available. (Ex-post Evaluation) ・According to the FRWO's survey, almost all NRWGO's staff who participated in the project (170 staff members) utilize their knowledge well for participatory forest and rangeland management.
	(Indicator 2) More than 70% of project participants in target villages will value that NRWGO's capacity of forest & rangeland management was enhanced and NRWGO attitudes was improved.	Status of the Achievement: achieved (continued) (Project Completion) ・At terminal evaluation, all villagers interviewed (100%/42 persons) evaluated that the capacity of NRWGO had been improved, as well as attitude such as communication and confidence building. (Ex-post Evaluation) ・According to the FRWO's survey, the project participants in target villages evaluated that the capacity and attitude of NRWGO has been improved (interview from the representatives from each villages).
	(Indicator 3) 70% of project participants in target villages will be benefited by the Project by December, 2014.	Status of the Achievement: achieved (continued) (Project Completion) ・At terminal evaluation, according to the project's interviews with 42 villagers, 41 out of 42 (97.6%) felt they had either benefitted or would be likely benefited from the knowledge gained from the project. The CFs in 5 target villages provided the same responses. (Ex-post Evaluation) ・According to the FRWO's survey, the benefits by the project in target villages have been continued in terms of income generation, forest management, women's empowerment, rural development. A total of 67 micro-credit boxes have been introduced in Chaharmahal-va-Bakhtiari Province in addition to 36 micro-credit boxes established during the project period.
	(Indicator 4) Implementation system for participatory forest and rangeland management collaborated with concerned organizations is formulated by NRWGO.	Status of the Achievement: achieved (not continued) (Project Completion) ・Institutional coherence was formed and strengthened. (Ex-post Evaluation) ・Collaboration with concerned organizations has not been well implemented due to lack of coherent plan among relevant government organizations.
(Overall Goal) Participatory forest and rangeland management is introduced in Chaharmahal-va-Bakhtiari Province.	(Indicator 1) Participatory forest and rangeland management activities in the target area are maintained, by using knowledge and experience gained from the project.	(Ex-post Evaluation) achieved ・Participatory forest and rangeland management activities have been maintained including livelihood activities such as beekeeping activities, activities of rural women micro-credit box, horticulture activities.
	(Indicator 2) Participatory forest and rangeland management activities are newly introduced at least in 5 sites in district level.	(Ex-post Evaluation) achieved ・In addition to the target areas of the project, more than 5 sites have been newly introduced with participatory forest and rangeland activities since project completion, including Hosein Abad, Dehnash, Kharaji, Vanan, Vardanjan.

Source: Terminal Evaluation Report, Project Completion Report, Questionnaire and interview to FRWO and NRWGO, Survey conducted by FRWO

3 Efficiency

Both the project cost and the project period exceeded the plan (ratio against the plan: 183% and 130%, respectively). The project cost exceeded the plan due to the increase in the price of services and materials caused by inflation during the project period and some activities were additionally implemented including additional training activities during the extended period, while the project period was extended because it took time to obtain legal permits from relevant organizations. The outputs of the project were produced as planned. Therefore, the efficiency of the project is low.

4 Sustainability

<Policy Aspect>

In the Sixth Five-Year Economic, Cultural and Social Development Plan (2016-2021), the priorities in agriculture and environment & natural resources include achieving comprehensive watershed management and organizational cohesion, planting economic forest species,

and the transfer and use of national lands.

<Institutional/Organizational Aspect>

The organizational structure for promoting participatory forest and watershed management is quite well established at FRWO and NRWGO as well as at MOJA as they are implementing their daily duties without major problems. However, there are some organizational difficulties due to lack of the staff of each organization as well as lack of the structure and mechanism for the efficient collaboration with concerned organizations, including DOE and the Ministry of Energy. Consequently, the organizational performance is not fully effective. As countermeasure, FRWO is currently drawing target organization's attention and promote their collaboration through the "Integrated Watershed Management Model"[4].

<Technical Aspect>

All those involved in the project are still assigned to their organization and have been utilizing the experiences gained through the project. They have technical capacity necessary for their duties such as planning, facilitation, and marketing although some skills need to be further improved, for example, map reading, which is essential for recognizing suitable land. After the completion of the project, technical trainings have not been implemented to the extent of the quality provided during the project period due to lack of budget and planning. At community level, technical assistance has been offered by specialized departments of implementing agencies inside MOJA, FRWO and NRWGO.

<Financial Aspect>

The implementing agencies have sufficient funds to implement their daily duties although there is not sufficient budget for training. At FRWO and NRWGO as well as the Natural Resources and Watershed Office at district level, financial source has been secured by the National Development Fund and it is planned to be maintained according to the agreement between NRWGO and the Provincial Planning and Budget Organization. At community level, the government agencies allocate funds to local communities according to the annual policies and needs. In addition, funds are secured through labor and activities by local people.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose of enhancement of NRWGO's capacity for participatory forest and rangeland management, as NRWGO staff, C/P and field staff were utilizing knowledge/experience gained from the project and local people were satisfied with NRWGO's performance. At the time of the ex-post evaluation, the NRWGO's staff involved in the project implement participatory conservation and remediation of forests and pastures in target villages, assisting the local people. Therefore, the project effects have been continued. The Overall Goal of introduction of participatory forest and rangeland management in Chaharmahal-va-Bakhtiari Province has been achieved, as participatory forest and rangeland activities have been expanded to more than five sites. Sustainability is high in the policy and financial aspects but some problems have been observed in the institutional/organizational and technical aspects, because collaboration among relevant organizations has not been smoothy implemented and the quality training programs are not sufficiently provided. In the efficiency, both the project cost and the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- According to the comments of the questionnaire from FRWO, it was observed that contribution (collaboration) between concerned organizations has not been effectively implemented. It seemed due to lack of legal obligation, coherent plan, proper organizational structures and efficient collaboration among concerned organizations such as NRWGO, MOJA, DoE, MoE, some activities of the project, particularly at local level as community development activities as well as the training programs faced some obstacle to be promoted. It was also pointed out as a bottleneck in terms of the sustainability. FRWO should strengthen collaboration between stakeholder organizations, so that participatory forest and rangeland management could be disseminated to wider areas.
- It is recommended that follow-up by NRWGO to disseminate project activities to wider areas should be strengthened, by utilizing the experiences gained from the project and promoting its organizational capacity. Periodical human resource development should also be implemented for the technical staff of NRWGO by MOJA or FRWO to make those activities in a more sustainable and effective way.

Lessons learned for JICA:

- In Iran, it is difficult to maintain the coordination among different organizations unless stipulated legally through their systems and regulations, therefore, collaboration at higher level among concerned organizations is essential. Regarding that, necessary approach should be taken by a project to ensure the sustainable self-reliance livelihood improvement. Organizational commitments of all stakeholders can be promoted at the beginning steps of a project through determination of comprehensive implementation management as well as consideration of the legislation structure and strategic policies and regulation related to the management of upstream organizations and ministries which project activities may be addressed to in future.

[4] The Integrated Watershed Management as national project (approach) was inspired by MENARID, consisting of Land and Water Recourses Sustainable Management Project (Hablehroud), Carbon Sequestration Project (CSP), Multiple-Use Forest Management to Conserve Biodiversity in the Caspian Forest, Rehabilitation of Forest Landscapes and Degraded Land Project (RFLDL), and was initiated in January 2015 in collaboration with concerned Iranian governmental organizations of all over the country. Additional info.: http://www.frw.ir/02/En/StaticPages/Page.aspx?tid=15086

	
Planting economic forest species in 2,200 ha of Chaharmahal-va-Bakhtiari Province (Dec. 2020). About 700 locals will benefit. A small part of this activity will be financially supported by government's fund and the rest of the required budget will be allocated by locals themselves.	Training workshop for planting seeds and seedlings in Shahrekord, Chaharmahal-va-Bakhtiari Province (Aug. 2020). Workshops are held in various sectors of forest, rangeland and watershed management for the staff in the field of missions, instructions, circulars and laws and regulations related to the technical sector.

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Morocco Office: August, 2021

Country Name	**The Project for Improvement of Irrigation System at the Abda Doukkala Irrigated Area**
Kingdom of Morocco	

I. Project Outline

Background	In Morocco, the agriculture sector was accounted for 15% of GDP, and around 40 % of the national labor force engaged in the sector in 2008. Traditional agriculture in arid or semi-arid lands was long dependent on such uncertain rainfall patterns, farmers were suffering from increased droughts in Morocco. Moreover, water demand for drinking water and industrial use was projected to increase onward, it was thus crucial to invest in irrigation systems in order to promote efficient, water-saving techniques in the sector. To use water resources effectively as well as to ameliorate farmer's income in the Abda Doukkala irrigated area, irrigation facilities were developed by the Japanese ODA loan project: "the Abda Doukkala Irrigation Project" (1996-2002). However, it did not amply secure the necessary water amount in the area, particularly during the dry season. Consequently, it was difficult to engage in profitable agricultural production, and thus irrigation water charges had remained relatively expensive for farmers considering the given profit level.		
Objectives of the Project	Through the introduction of water-saving irrigation, profitable farming management as well as the improvement of water management and extension systems, the project aimed at establishing models for efficient irrigation and improving the irrigation management system in the target irrigated area in Abda Doukkala, thereby contributing to greater efficiency in irrigation and higher profitability in agricultural production in the Abda Doukkala irrigated area. 1. Overall Goal: Efficient irrigation models are adopted in the Abda Doukkala irrigated Area. 2. Project Purpose: (1) The models for efficient irrigation are established in the pilot project site. (2) The irrigation management system is improved in the Abda Doukkala irrigated Area.		
Activities of the Project	1. Project site: Abda Doukkala region 2. Main activities: (1) improvement of Agricultural Water Users Association (AWUA) and techniques of water-saving irrigation in the pilot sites, (2) introduction of high profitable agricultural products to local farmers in the project sites, (3) improvement of capacities on maintenance and operation of irrigation facilities, (4) strengthening of extension systems on water-saving irrigation and agriculture. 3. Inputs (to carry out the above activities) Japanese Side 1) Experts: 19 persons 2) Trainees received: 17 persons 3) Third country training: 2 persons (Turkey), 4 persons (Egypt) 4) Equipment: Vehicles, Water, and Soil measurement devices, GPS, PCs, Copiers, etc. 5) Local cost: Construction of Pilot WUA office and visitor centers, Farm ponds, 2 units of the piping network and pump station, Installation of flowmeter, etc. Moroccan Side 1) Staff allocated: 18 persons 2) Facilities: Pilot site, office space, and its utilities for the experts in ORMVAD 3) Local cost: Administrative and operational expenses		
Project Period	July 2011 – July 2016 (Extension period: June 2016 – July 2016)	Project Cost	(ex-ante) 590 million yen, (actual) 645 million yen
Implementing Agency	Ministry of Agriculture, Marine Fisheries, Rural Development and Water and Forests (MAPMDREF) Department of Irrigation and Agricultural Land Management (administrative reform in 2017 changed the designation formerly known as the Ministry of Agriculture and Marine Fisheries) Office Régional de Mise en Valeur Agricole des Doukkala (ORMVAD)		
Cooperation Agency in Japan	Ministry of Agriculture, Forestry, and Fisheries (MAFF), Rural Development Bureau		

II. Result of the Evaluation

<Constraints on Evaluation>

Due to travel restrictions and lockdown measures raised during the COVID-19 Pandemic, data gathered in the rural areas during the ex-post evaluation was lower both in quantity and quality as on-site data collection and direct observation were not as feasible as planned. Nonetheless, mitigation measures were taken as follows; 1) rely more on existing monitoring data collected prior to COVID-19, 2) increase scope of desk-based review of administrative data, 3) use of remote data collection and analysis methods where available.

1 Relevance

<Consistency with the Development Policy of Morocco at the Time of Ex-Ante Evaluation >

The project was consistent with the development policies of Morocco at the time of ex-ante evaluation. The "Green Morocco Plan" (2008-2020) was formulated to set the direction of the development of the agricultural sector. It eminently emphasized promoting high-valued/ high productive agriculture to be attained through water-saving irrigation. Furthermore, in order to mitigate adverse effects of water scarcity in the sector, the "National Programme of Water Saving Irrigation Phase I (PNEEI)" (2007-2020) was addressed to aim at a conversion of surface irrigation and sprinkler to drip irrigation for an area of 550,000 ha by the year 2020. In the Abda-Doukkala region, it aligned the regional policy with the PNEEI to aim at a conversion of a total of irrigated 96,000ha to drip irrigation for an area of 50,000 ha

by the year 2020.

<Consistency with the Development Needs of Morocco at the Time of Ex-Ante Evaluation >

The project was consistent with the needs of Morocco at the time of ex-ante evaluation. Due to looming climate change in recent years, it has become increasingly besieged by drought. Moreover, it was deemed that water demand in total would continue to increase as entailed economic development at large. Thus, to make the agriculture sector compatible as well as productive to make the development sustainable, it required a considerable level of anticipatory investment for the promotion of an irrigation system to the extent to adopt the use of efficient, water-saving techniques as broadly as possible.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy towards Morocco. As per strengthening economic competitiveness and sustainable economic growth, Japan intended to support sustainable development through environmental measures and appropriate resource management that utilize Japan's technologies. Also, concerning the reduction of economic and social disparities, Japan was to assist economic and social development, specifically focusing on infrastructure development for rural livelihood, including the water and health-related fields[1].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the project completion. The cropping intensity ratio in the dry season was improved to 57.9% in the pilot project surpassed the target value of 50% (Indicator 1). The water productivity was increased by 83% (dry season), 55% (rainy season) in the pilot project site, both surpassed the target value of 30% (Indicator 2). The sales of agricultural products were almost doubled after the introduction of the drip irrigation system in the pilot site (Indicator 3). The water management system at the distribution level by ORMVAD was improved for increasing the efficiency ratio of irrigation and effective water operation through the analytical capacity improvement (Indicator 4). The extension plan on water-saving irrigation and agriculture was established, after being substantiated based on the empirical study and observation of the pilot site. (Indicator 5).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued since project completion. According to the survey results of the ex-post evaluation, the cropping intensity ratio dropped to 34~35% in recent years although it used to remain around 50% several years after project completion. As for the water productivity, it palpably went through both an upsurge and plunge. At first, it rather drastically increased right after project completion in 2017. However, it was reversely directed in 2019 because water scarcity was too severe even for drip irrigation. On the other hand, despite the appeared recession in agriculture suggested above, the sales of the products did not experience that much decline. It remained larger in the sales in nominal terms compared to the figure before the introduction of drip irrigation. However, concerning the water management system once improved for upgraded irrigation system by the project, ORMVAD has been faced with the daunting task to deal with exceedingly scarce water distribution in recent years, rather than responding to expected irrigation demand for a water supply. In the meantime, the irrigation extension and water-saving agriculture plan have been mostly implemented as planned.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved at the time of ex-post evaluation. According to the survey results of the ex-post evaluation, although the target level was not attained, 19.2 % of the area is equipped with drip irrigation (Indicator 1) The area of high profitable agricultural products is increased by 21.3 % (Indicator 2)

<Other Impacts at the time of Ex-post Evaluation>

There was no resettlement and land acquisition by the project so that no ramifications in this regard. However, it was reported that there was a concern that the electric expense for water pumping may have pushed down the profit margins of farmers who started using the irrigation system. Without preferential electricity fare structure, it would negatively affect the sustainable operation of the irrigation system in a long run. As such, the government has planned to set up a solar energy subsidy system for agriculture as part of the new "Generation Green" national strategy which is scheduled to be established in 2021-2030. ORMVAD has launched feasibility studies in order to ensure water-saving by optimization of the cost and benefit in operation. In addition, Moroccan Agency for Sustainable Energy (MASEN) has been in close contact with AWUA to study the possibility of financing solar pumping in the region.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose 1) The models for efficient irrigation are established in the pilot project site.	Indicator 1 The cropping intensity ratio in the dry season is improved to 50% in the pilot project site.	Status of the Achievement: achieved (partially continued) (Project Completion) ・ Compared to the baseline data of the indicator1 (1.3%, 3-year average data of 2008/09-2010/11), the cropping intensity ratio in the dry season in the pilot project site was improved by more than 50% (57.9%) in the 2014/15 dry season. (Ex-post Evaluation) ・ Although the total cropping area in the dry season was once markedly expanded from 30 ha in 2012/13 to 104 ha in 2014/15, But it was gradually shrunk to 53ha in 2018/19. As a result, the cropping intensity ratios dropped to 34% proportionally in 2018/19.
	Indicator 2 The water productivity is increased by 30% in the pilot project site.	Status of the Achievement: achieved (not continued) (Project Completion) ・ Compared with the data obtained after the introduction of drip irrigation, the water productivity in the dry season is improved by about 83%

[1] Ministry of Foreign Affairs, "ODA Country Databook" (2011)

		・ and that in the rainy season is increased by about 55% from 2013 to 2015. (Ex-post Evaluation) ・ Compared with the baseline data in the dry season in 2013, water productivity was drastically improved by 465% in the same season in 2017, one year after project completion. In 2019, however, it was sharply declined by -11% compared to a figure of the baseline year 2013, largely because of severe water scarcity.
	Indicator 3 The sales of agricultural products are improved in the pilot project site.	Status of the Achievement: achieved (continued) (Project Completion) ・ The sales of agricultural products were increased from 4,081,747DH (2012/13) to 7,665,900DH (2013/2014) after the introduction of the drip irrigation system in the pilot site in June 2014. (Ex-post Evaluation) ・ After project completion, if ruled out the price fluctuation, the sales of agricultural products have remained within the range since 2014 as follows; 7,433,000DH (2014/15), 6,285,000DH (2015/16), 5,777,000DH (2016/17), 6,421,000DH (2017/18), 6,126,000DH (2018/19). It notably dropped in 2016/17, but it went back up in 2017/18. On the whole, it should be noted that it did not drop to the sales level of 2012/13 (4,081,747DH) before the introduction of the drip irrigation system.
(Project Purpose 2) The irrigation management system is improved in the Abda Doukkala irrigated Area.	Indicator 4 The water management system at the distribution level by ORMVAD is improved for increasing the efficiency ratio of irrigation and effective water operation.	Status of the Achievement: achieved (not continued) (Project Completion) ・ The project established a basis for a better water management system by installing 4 water flow meters in Prise 21 (P21) and neighboring three canals and another 4 water flow meters in a part of the Haut Service Principal Canal (HSPC) between P21 and haut service station (pump station). ・ The project developed and shared digital maps and they developed thematic maps for hydraulic blocks. Furthermore, the Project established a support system operated by ORMVAD staff for facilities (water flow meters) procured by the Project by promoting the ORMVAD staff to keep operation records and developing the emergency communication system. (Ex-post Evaluation) ・ The water management system at the distribution level managed by ORMVAD has not been improved to increase irrigation efficiency rate and the efficient use of water. Due to the chronic droughts in recent years, the quantity of irrigation water allocated to ORMVAD action zone has been lower than the quantity of water required for the realization of the planned irrigation campaign. The total volume of annual water consumption has been constantly dwindled to about 30 % of the level of 2013/14 by the year 2018/19. Under the circumstances, ORMVAD has been requested to be dedicated to the conventional method of periodic water release, rather than to respond to irrigation demand.
	Indicator 5 The extension plan on water-saving irrigation and agriculture is established.	Status of the Achievement: achieved (continued) (Project Completion) ・ Based on the results of the introduction of drip irrigation in the dry season of 2014, the project substantiated an extension plan for necessary procedures, the period of implementation, and agreed roles and responsibilities assigned for ORMVAD and AWUAs to convert irrigation farming areas into drip irrigation farming area. As identified above, the extension plan on water-saving irrigation and agriculture was duly established. ・ In 2 selected sites (Al Laghzawna al Fayd (CGR 310) and Assidq (CGR 311)), the construction work was started in 2016 with the due diligence process of local consensus on the drip irrigation system. Furthermore, Arrahma (CGR 351) was selected as a potential candidate by ORMVAD. (Ex-post Evaluation) ・ The irrigation extension and water-saving agriculture plan have been implemented in a three-phased approach. So far, for the target of the 1st phase (12,000 ha), 80% of the target was completed. The 2nd phase (22, 000ha) was in progress at the time of the ex-post evaluation. The 3rd phase (10,000 ha) would be launched in 2021.

<table>
<tr><td>(Overall Goal)
Efficient irrigation models are adopted in the Abda Doukkala irrigated Area.</td><td>Indicator 1
25% of the area is equipped with drip irrigation.</td><td>(Ex-post Evaluation) partially achieved
the percentage of irrigated area converted into drip irrigation was 10.4 % (= 10,043ha/ 96,000 ha) in the baseline year, whereas it was 19.2% (18,467ha/96,000ha) in 2019.

<table><tr><td></td><td>Baseline</td><td>Target</td><td colspan="3">Actual</td></tr><tr><td></td><td>2016</td><td>2019</td><td>2017</td><td>2018</td><td>2019</td></tr><tr><td>Collective Irrigation (ha)</td><td>2,592</td><td>9,000</td><td>3,526</td><td>5,526</td><td>8,716</td></tr><tr><td>Individual Irrigation (ha)</td><td>7,451</td><td>12,000</td><td>8,161</td><td>8,941</td><td>9,751</td></tr><tr><td>Total</td><td>10,043</td><td>21,000</td><td>11,687</td><td>14,467</td><td>18,467</td></tr><tr><td>Change ratio from baseline (%)</td><td>--</td><td>109.1%</td><td>16.3%</td><td>44.0%</td><td>83.8%</td></tr></table></td></tr>
<tr><td></td><td>Indicator 2
The area of high profitable agricultural products is increased by 40%.</td><td>(Ex-post Evaluation) partially achieved

<table><tr><td></td><td>Baseline</td><td>Target</td><td colspan="3">Actual</td></tr><tr><td></td><td>2015/16</td><td>2018/19</td><td>2016/17</td><td>2017/18</td><td>2018/19</td></tr><tr><td>The area of high profitable agricultural products (ha)</td><td>16,4518</td><td>23,117.3</td><td>16,647.5</td><td>19,021.5</td><td>19,964.6</td></tr><tr><td>Change ratio from baseline</td><td>--</td><td>40%</td><td>1.1%</td><td>15.6%</td><td>21.3%</td></tr></table></td></tr>
</table>

Source：Questionnaire responses from ORMVAD

3 Efficiency

Both the project cost and project period slightly exceeded the plan (ratio against the plan: 109% and 102%, respectively). The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The promotion of an efficient irrigation system has retained its importance in the national policy of the Government of Morocco. The "Green Morocco Plan" (2008-2020) remained valid for the promotion of the high-valued, productive agricultural sector. In line with national efforts to support the transition to green growth, the "National Programme of Water Saving Irrigation: Phase II (PNEEI 2)" (2020-2027) has been a policy instrument to ensure water resources protection and improve the living conditions of rural population through irrigation system through water-saving irrigation.

< Institutional/Organizational Aspect>

The major role of MAPMDREF has continued to ensure and supervise the promotion of the irrigation system. It has remained engaged in monitoring the progress. In addition to the follow-ups of the project, ORMVAD has continuously held itself responsible for the management and supervision of the newly introduced drip irrigation system in the Abda Doukkala region. Also, Office National du Conseil Agricole (ONCA) was established at the national and regional level in 2013 to reinforce agricultural development. In terms of the promotion of the project, ONCA agents and private supervisors have been involved through close liaison with farmers at the field level. According to the survey results, ORMVAD staff members have been assigned and they are all ex-counterpart staff who had on-site training and instruction on the drip irrigation system during the project. However, they perceive that manpower has been insufficient for the ever-increasing required workload and lack of human resources so that ONCA extension staff and advisors are expected to share the role. The capacities of AWUA have been reinforced by the project to ensure the sustainable management of the irrigation system including water distribution, maintenance of the canal network, and management of cropping patterns; however, farmers were affected by climate change, particularly water scarcity in the last 3 years, which had a negative influence on their production as well as income level. Given that no budget has been publicly allocated to AWUA and the principal financial resources of AWUA should be funded by payment of the membership fee of which became harder than ever for most farmers to afford, they are not able to fully involve in the project activities, regardless of the will.

<Technical Aspect>

According to the survey results, ORMVAD members acquired competencies and know-how through hands-on experience and on-the-job training in order to promote the system and activities introduced by the project. All the skills acquired during the project period have been maintained and shared with ONCA staff members. Also, the manuals produced by the project and other partners such as FAO have been amply utilized in the operation whenever needed.

<Financial Aspect>

Although there is no public budget allocation earmarked specifically to the dissemination of the drip irrigation system, the basic expenses for the mandatory operation of ORMVAD have been subsided as a public corporation, also locally entitled to the revenue from water charge collection. Whereas AWUA, a farmers' association, despite being an essential user/beneficiary organization in terms of the distribution of irrigation water, is not yet legally entitled to be publicly funded for the promotion of the drip irrigation system. Thus, related activities have remained stalled in the AWUA.

<Evaluation Result>

In light of the above, Slight problems have been observed in terms of institutional, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project has partially achieved the Project Purpose and the Overall Goal. As for sustainability, the necessary budget has not been provided to the farmers' association for achieving the intended effect of bottom-up promotion. As for efficiency, the project cost and period slightly exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

Due to unexpectedly severe water scarcity and entailed tight restrictions on water use, farmers have been facing a vicious circle of multiple difficulties. In using the water pump for drip irrigation, they are particularly burdened with the payment for higher electricity charges. Hence, many of them are no longer able to afford association membership fees or equipment maintenance costs to collectively promote drip irrigation. Farmers have no choice but to put off disseminating the new agricultural techniques and drip irrigation that they acquired in the project. Nonetheless, food security through the promotion of water-saving agriculture is a national priority to serve its basic needs, ORMVAD may need to negotiate with the National Office of Water and Electricity (ONEE) to solve the issue of disproportionate cost in electricity in drip irrigation as a common interest by proposing to install a solar-powered system which is expected to help farmers cope with water scarcity and decrease water demand (as soon as completion of the ongoing feasibility study by ORMVAD). Furthermore, in a larger picture of sustainable development in the region, ORMVAD should strategically coordinate with high officials of the central government and partners to mutually synergize the other projects. To initiate to establish an allied network with like-minded non-governmental institutions and international organizations is also recommended to support farmers dedicated to water-saving agriculture with technical assistance and extension activities in a timely manner.

Lessons Learned for JICA:

1) Necessity to support the end-user association in a long-term perspective

Considering water availability as one of the decisive factors in the formulation of irrigation projects, it is proposed that the project should support AWUA through detailed planning focusing on their readiness for drought and establish an irrigation system to maintain a certain level of water productivity even during periods of drought. Besides, as one of the solutions to secure sustainability in anticipation of the system utilization after project completion, prior to project implementation, it is recommended that JICA should hold in-depth discussions regarding the financial aspect of the planned system, then seek a possibility of financial support of the state government to fund users of the system (e.g. AWUA) in order to facilitate effective management of drip irrigation in a self-sustaining way.

2) In-depth study on climate variability and predictability for vulnerable partner countries

It is recommended to conduct an in-depth study on climate change and long-term projection which could help identify potential risks involved in the geographical and environmental situation in the target region. It would also serve to adopt appropriate technology to secure the resilience against natural conditions such as drought, weighing the pros and cons of them thoroughly given the changing circumstances within the foreseeable timeframe. It would have contributed to the readiness for the ramifications of climate change if experts had studied in this regard concerning the Doukkala region and provided them an assessment of water resources availability/vulnerability including options for adaptation and mitigation for sustainable management of water resources.

Transfer of Japanese know-how to Moroccan counterpart on drip irrigation techniques

Introduction of new crops by JICA drip irrigation project

Irrigation water storage basin during the project (20011-2016)

Irrigation water storage basin of today (2021)

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

conducted by Philippine Office: September, 2021

Country Name	**Comprehensive Etiological and Epidemiological Study on Acute Respiratory Infections in Children**
Republic of the Philippines	

I. Project Outline

Background	In the Philippines, recent economic growth showed improved health indicators such as under-5 child mortality rate, maternal mortality rate and number of low-birth-weight infants. Under-5 child mortality rate had been in a downward trend for some time but remained high at 34 per 1,000 live births when compared to neighboring Southeast Asian countries like Malaysia and Thailand. The main cause of infant mortality was pneumonia, recording an annual average of 20,000 deaths for every 82,000 infants in 2008 (based on Essential Newborn Care: Department of Health/World Health Organization (WHO) Protocol 2010). International organizations such as the United Nations Children's Fund (UNICEF) and the WHO supported measures to reduce the child mortality, but such measures were mostly focused on administering medicine to critically-ill patients soon after identifying their severity based on symptoms. Measures against infants' respiratory infections were based on data from 20 years ago, and no measure was taken yet against viral infectious diseases which were found to be a cause for a disease to advance in severity. Also, it was reported that the Philippines did not respond to drug-resistant bacterium that was rapidly increasing in developing countries. Therefore, it was necessary to review evidence-based strategies against infants' respiratory infections and conduct research to obtain updated data.		
Objectives of the Project	Through collection and analysis of bacteriological and viral pathogens from children with pneumonia and other respiratory infections, measuring the incidence of pneumonia and pneumonia-associated deaths, identifying risk factors for children with severe pneumonia, developing and evaluating intervention packages, and by sharing research findings, the project aimed at defining etiology, disease burden and risk factors of childhood pneumonia and at validating effective interventions to reduce mortality, thereby contributing to a reduction in mortality due to childhood pneumonia. 1. Expected Overall Goal: Mortality due to childhood pneumonia is reduced. 2. Project Purpose: Etiology, disease burden and risk factors of childhood pneumonia are defined and effective interventions to reduce mortality due to pneumonia in children are validated.		
Activities of the Project	1. Project Site: Metro Manila, Leyte Island (Eastern Visayas Regional Medical Center), Biliran Island (Biliran Provincial Hospital: BPH), Palawan Island (Ospital ng Palawan: ONP) 2. Main Activities: 1) Collection and analysis of bacteriological and viral pathogens from children with pneumonia and other respiratory infections, 2) Measuring the incidence of pneumonia and pneumonia-associated deaths, 3) Identification of risk factors for children with severe pneumonia, 4) Development and evaluation of intervention packages, 5) Sharing of research findings, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 13 persons 2) Trainees Received: 6 persons 3) Equipment: autoclave, centrifuge, bio safety cabinet, CO^2 incubator, otoscope, upright microscope, etc. 4) Local expense: cost for project activities Philippine Side 1. Staff Allocated: 17 persons 2. Land and facility: office space, research space, laboratory space, and warehouse in Research Institute for Tropical Medicine 3. Local expenses: utility cost, cost for traveling, etc.		
Project Period	April 2011 – March 2017 (Extension: March 2016 – March 2017)	Project Cost	(ex-ante) 410 million yen, (actual) 550 million yen
Implementing Agency	Research Institute for Tropical Medicine (RITM)		
Cooperation Agency in Japan	Tohoku University Graduate School of Medicine		

II. Result of the Evaluation

1 Relevance
<Consistency with the Development Policy of the Philippines at the Time of Ex-Ante Evaluation > The project was consistent with Philippines' development policies as expressed by the "National Objectives of Health" (2011-2016), promoting prevention and control of infectious diseases including pneumonia and other respiratory infectious diseases. <Consistency with the Development Needs of the Philippines at the Time of Ex-Ante Evaluation > The project was consistent with Philippines' development needs of reviewing evidence-based strategies against infants' respiratory infections and conducting research to obtain the latest data. <Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation> The project was consistent with "The Country Assistance Program for the Republic of the Philippines" (2008) positioning "rectification of disparities (alleviating poverty and redressing regional disparity)" as one of the three priority areas, including expansion of basic social services.

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Through the SATREPS project, the study targeting childhood pneumonia was conducted, and new scientific findings drawn from the study, such as incidence and risk factors of childhood pneumonia, were published in 14 peer-reviewed, internationally-recognized scientific journals (Indicator 1). Additionally, intervention packages for reducing child mortality due to pneumonia were developed by the SATREPS project, and discussion about the utilization of the intervention packages was started by health-related agencies such as the DOH, the National Economic and Development Authority (NEDA) and the WHO (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued after project completion. Key research outputs of the project (etiology of childhood pneumonia and respiratory infections, disease burden due to childhood pneumonia, and risk factors for severe pneumonia in children) and the above-mentioned new scientific findings have been continuously used by BPH, ONP, the Biliran Provincial Government, and RITM. To illustrate, BPH and ONP have utilized the etiology of childhood pneumonia and respiratory infections for studies to identify bacteria causing pneumonia. RITM has made use of the risk factors for severe pneumonia in children to develop a database for etiological study. Furthermore, RITM has been implementing a new study about the transmission of respiratory syncytial virus infection in Biliran Island from 2017 in collaboration with Tohoku University. On the other hand, the discussion for utilization of the intervention packages have not been held after project completion, for the following reasons: 1) DOH program managers have been changed several times since project completion[2], , 2) Some of the main researchers have already retired from RITM, and 3) Further study of the existing intervention packages as requested by DOH is still ongoing by RITM. For the post project period from 2018 to 2020, 13 articles related to the scientific findings by the SATREPS project were published in academic journals, including the international ones.

RITM has been using the key research equipment supplied by the SATREPS project (bio safety cabinet, CO^2 incubator, etc.) for the new research project mentioned above. Moreover, the equipment introduced at P3 (Biosafety Level 3)laboratories of RITM has been used for COVID-19 response activities such as testing of laboratory samples, among others.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has not been achieved at the time of ex-post evaluation. While RITM has been using the key research outputs for new research activities, new scientific findings have yet to be reflected in policies, programs or guidelines at both national and international levels. It is because the research outputs of the SATREPS project have not been reported to DOH yet. As mentioned above, the Program Managers of DOH have been frequently changed since 2018 and 2019, and the COVID 19 control has been the focus of DOH since the pandemic broke out in 2020. At the time of ex-post evaluation, the scientific findings obtained by the SATREPS project has not been reflected to policies or programs and the intervention packages recommended by the SATREPS project have not been in effect yet. However, as of year of 2021, RITM plans to make a presentation to the newly assigned Program Managers of DOH once they complete their technical reports.

The reduction in the mortality rate due to children pneumonia from a national average of 26.6% in 2011 to 14.5% in 2018 was attributed mainly to the government's free immunization program. RITM confirmed that the project has not had any impact on the mortality rate as the project only evaluated the implementation of the Integrated Management of Childhood Illness.

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts were observed at the time of ex-post evaluation. During the SATREPS project, researchers of RITM were observed to have improved their writing and presentation skills which can be attributed to the project activities such as workshops for technical writing, peer reviews of manuscripts, and mentoring by researchers of Tohoku University. In addition, the project's attempt to share its research outputs and scientific findings with stakeholders improved to some extent the scientific knowledge and literacy of the DOH and local government units in the project areas. As a result, some benefits were brought in, such as the allocation of more funding to related studies and the emergence of more opportunities to share the latest studies.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Etiology, disease burden and risk factors of childhood pneumonia are defined and effective interventions to reduce mortality due to pneumonia in children are validated.	1. New scientific findings related to prevention and control of childhood pneumonia are published in more than 10 peer-reviewed internationally recognized scientific journals by the end of the project period.	Status of the Achievement: Achieved (Continued) (Project Completion) • The study targeting childhood pneumonia was conducted, and new scientific findings drawn from the study were published in 14 peer-reviewed internationally recognized scientific journals. (Ex-post Evaluation) • Key research outputs (etiology of childhood pneumonia and respiratory infections, disease burden due to childhood pneumonia, and risk factors for severe pneumonia in children) of the project and the above-mentioned new scientific findings have continuously been used by BPH, ONP, Biliran Provincial Government, and the RITM.

[2] Dengue vaccine immunization cases were filed against many DOH senior officials and DOE was required to take actions for more than 3,200 vaccinees who had been hospitalized presumably for the period from 2016 to 2018 though the government dengue vaccine immunization program had been promoted. (Source: Philippine DOH website, https://doh.gov.ph/node/13749, as of July, 2021)

		• 13 articles related to the scientific findings by the SATREPS project were published in academic journals, including the international ones, for the post project period from 2018 to 2020.
	2. Discussions with regard to the utilization of intervention package and/or recommended strategy for reducing child mortality due to pneumonia are started with relevant local and national health authorities including DOH and LGU by the time of the Terminal Evaluation.	Status of the Achievement: Achieved (Not Continued) (Project Completion) • Intervention packages for reducing child mortality due to pneumonia were developed by the project, and the utilization of the intervention packages started to be discussed among the following domestic and overseas agencies: ➢ The central office of the DOH ➢ The Bureau of International Health Cooperation of the DOH ➢ The Bureau of Health Policy Development Planning of the DOH ➢ The Bureau of Disease Prevention and Control of the DOH ➢ The Philippine Council for Health Research and Development ➢ The National Economic and Development Authority ➢ The WHO ➢ The UNICEF ➢ JICA Philippine Office ➢ Tohoku University ➢ The RITM (Ex-post Evaluation) • No follow-up discussions on the intervention packages were held.
(Expected Overall Goal) Mortality due to childhood pneumonia is reduced.	1. Mortality due to childhood pneumonia is reduced.	(Ex-post Evaluation) Not Achieved • Since the new scientific findings have not been reflected yet in any policy, program or guideline at the national or international levels, the intervention packages recommended by the project have yet to be in effect and therefore to be carried out. As such, the project has not had any impact on the mortality rate. • It is presumably indicated that the reduction in the mortality rate due to children pneumonia from 26.6% in 2011 to only 14.5% in 2018 has been attributed mainly to the government's free immunization program.

Source：Terminal Evaluation Report, Questionnaire and interview to the RITM

3 Efficiency

The project cost and period exceeded the plan (ratio against the plan: 134% and 120%, respectively). The project activities were one year behind the schedule at the time of mid-term review due to the delayed hiring of project staff, the delayed wiring works for the backup generators at the local sites and the delayed approval process on the researches by the Philippine side. In addition, the super typhoon Yolanda hit the project sites in November 2013, and the damages caused by the typhoon hampered the project activities. The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

One of the Strategic Goal 1 (Better health outcomes) of "the National Objectives of Health 2017-2022" aims at maternal, newborn and child health including eliminating communicable disease. As the SATREPS project aimed to reduce the mortality due to childhood pneumonia, it has been endorsed by the national goal.

<Institutional/Organizational Aspect>

There has not been any change in the institutional/organizational structure to conduct studies on childhood pneumonia. Most of the 17researchers involved in the SATREPS project (among the 174 researchers of RITM's total personnel of 1,343) are still working with RITM, and can continue to conduct studies without any problem. In addition, research on the intervention packages developed by the SATREPS project have been continued by RITM under the request of DOH. Thus, it is expected to utilize the research outputs in the future.

The maintenance of the equipment provided by the project has been carried out by biomedical engineers of RITM. The engineers perform preventive maintenance on a regular basis. Therefore, no significant problems have occurred so far.

The scientific literacy for utilization of the research outcomes of the SATREPS project of the central government officers, including DOH and local health officers in the project sites of this SATREPS project have improved though their participations in the research forums jointly organized by RITM and Tohoku University from 2018 to 2020. As mentioned above, RITM plans to make presentations to the newly assigned Program Managers of DOH in 2021 after completion of their technical reports in order to reflect the research outputs by the SATREPS project into policies and guidelines.

<Technical Aspect>

Most of the researchers of RITM, which were involved in the project, have still been working and sustained their knowledge and skills for studies on childhood pneumonia by attending research workshops and forums and conducting related studies. Additionally, they conducted feedback meetings and research forums in collaboration with Tohoku University in 2018 and 2019, which partially contributed to the enhancement of their knowledge and skills.

The researchers also have sustained the knowledge and skills for proper operation and preventive maintenance of the equipment provided by the project by attending related technical training conducted by equipment suppliers and through peer-to-peer consultations. Biomedical engineers of RITM have sustained the knowledge and skills necessary for the maintenance of the equipment by conducting in-house and on-the-job trainings.

<Financial Aspect>

As shown on the table, the budget of RITM is increasing every year. According to RITM, a sufficient budget has been allocated from the central government for studies using the research outputs and scientific findings of the project and for the operation and maintenance of the equipment provided by the project. In addition, RITM reported to have acquired external grants for collaborative studies with other research agencies. This healthy financial situation of RITM is expected to continue in the future.

Budget for the RITM
(Unit: in millions, Philippine peso)

2017	2018	2019	2020
488.5	554.2	683.4	742.9

<Evaluation Result>

In light of the above, no problem has been observed in any aspects of the implementing agency. Therefore, the sustainability of the effectiveness is high.

5 Summary of the Evaluation

The project achieved the Project Purpose aiming to define etiology, disease burden and risk factors of childhood pneumonia and validate effective interventions to reduce mortality due to pneumonia in children but Overall Goal aiming to reduce mortality due to childhood pneumonia has not been achieved yet. Although consultations on utilization of the intervention packages recommended by the project have yet started, the key research outputs have been continuously utilized for other researches by various institutions and it is expected that RITM will contact DOH to promote utilization of the intervention packages. . As for efficiency, the project cost and period exceeded the plan.

Considering all the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Discussion with government's health authorities for the utilization of the project's research outputs to be incorporated into national policy or program or guidelines have not been conducted since the end of the project. As such, the new evidence drawn by the project's researchers have not been used or reflected yet in any national or international policies, programs or guidelines. Therefore, it is recommended that RITM continues research on the intervention packages and conduct consultative meetings, health forums and similar activities with DOH, the WHO and other related health organizations to discuss the inclusion of project's findings and recommended intervention strategies and packages in existing policies, guidelines or programs, especially in light of the COVID-19 pandemic.

Lessons Learned for JICA:

- To ensure utilization of research findings and products in policy formulation, it is important that related indicators leading towards such utilization be defined at the Output and Project Purpose levels. For example, draft policies or draft amendments to existing policies can be an indicator for the Project Purpose level at least in order to clearly indicate actions to be taken for utilization of research outcomes. If these indicators are defined at the results level, then activities towards producing such outputs and outcome are defined.

Laboratory staff performing cell maintenance inside a Biological Safety Cabinet (BSC) in P3 Laboratory

Observation of inoculated cells in 96-well plates looking for cytophatic effects using inverted microscope by laboratory staff.

conducted by Philippine Office: January, 2022

Country Name	**Enhancing the Competitiveness of Fresh and Semi Processed Agricultural Product Through the Application on Appropriate and Sustainable Packaging Technology**
Republic of the Philippines	

I. Project Outline

Background	In the Philippines, agriculture was one of the predominant industries. Although having lower productivity than other sectors, agriculture accommodated 35% of the total workforce in 2009, and its production comprised 13% of gross domestic product (GDP) in 2011. One of the challenges faced by agriculture was post-harvest losses which resulted in damaging 5 to 48% for fruits and 16 to 40% for vegetables. The main reasons for post-harvest losses were the insufficient environment to maintain freshness in the process of selling and transporting as well as damages from shocks, shaking and pressure during transportation. To improve the situation, JICA implemented a technical cooperation project entitled "Improvement of Packaging Technology for Philippine Food Products in the Regions" (2005-2009) with the Packaging Technology Division (PTD) of the Department of Science and Technology (DOST) which aimed at providing technical guidance about the improvement of consumer packaging for small and medium enterprises in the field of food processing. However, some problems remained unresolved for the reduction of post-harvest losses. Therefore, it was necessary to develop appropriate transport packaging technologies and enhance the capacity of PTD of DOST to introduce and disseminate such technologies.		
Objectives of the Project	Through the development of transport packaging technologies and corresponding training module/manuals and through the implementation of technology transfer and dissemination activities, the project aimed at decreasing the post-harvest losses of eight (8) target commodities, thereby contributing to the development and introduction of appropriate transport packaging technologies for other fresh and semi-processed agricultural products. 1. Overall Goal: Based on the know-how to develop the technology through the project, the appropriate transport packaging technologies are developed and introduced for other fresh and semi-processed agricultural products. 2. Project Purpose: The post-harvest losses of eight (8) target commodities will be decreased through the introduction of appropriate transport packaging technology.		
Activities of the Project	1. Project Site: Benguet province in Cordillera Administrative Region, Tarlac province and Bataan province in Central Luzon Region and Davao city in Davao Region 2. Main Activities: 1) Development of transport packaging technologies and corresponding training module/manuals, 2) Implementation of technology transfer and dissemination activities on the technology, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 8 persons 2) Trainees Received in Japan: 11 persons 3) Equipment: vacuum packaging machine, quick freezing machine, temperature-controlled chamber, etc. 4) Local expenses: cost for project activities Philippine Side 1. Staff Allocated: 38 persons 2. Land and facilities: a project office in PTD of the DOST and facilities for installation of equipment 3. Local expenses: Operation and maintenance cost of the facilities and the equipment, etc.		
Project Period	(ex-ante) March 2013 – March 2017 (actual) March 2013 – March 2017	Project Cost	(ex-ante) 263 million yen, (actual) 264 million yen
Implementing Agency	The Packaging Technology Division (PTD) of the Department of Science and Technology (DOST)		
Cooperation Agency in Japan	UNICO INTERNATIONAL CORPORATION		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, face-to-face meetings with former project counterparts and onsite-interviews with project beneficiaries could not be carried out. For this reason, it took longer time than usual to collect information and data necessary for this ex-post evaluation. Also, some of the collected information and data may have inferior quality.

1 Relevance

<Consistency with the Development Policy of the Philippines at the Time of Ex-Ante Evaluation >

The project was consistent with the Philippines' development policies expressed through the "Philippine Development Plan" (2011-2016) which aimed at developing competitive and sustainable agriculture and fishery sectors. It was also consistent with the "PTD's 3rd Roadmap" (2010-2015) that aimed at enhancing global competitiveness of products made in the country through the development of sustainable packaging technologies.

<Consistency with the Development Needs of the Philippines at the Time of Ex-Ante Evaluation >

The project was consistent with the Philippines' development needs of developing appropriate transport packaging technologies and of enhancing the capacity of PTD of DOST to introduce and disseminate such technologies for the reduction of post-harvest losses.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with the "Country Assistance Policy for the Republic of the Philippines" (2012) with "sustainable economic growth through the promotion of investment" set as one of its priority areas.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The project purpose was partially achieved at the time of project completion. The project developed transport packaging technologies for 7 of the 8 target commodities, namely: durian, smoked fish, sweet potato, cut chrysanthemums, rose, broccoli, and cauliflower. Development of transport packaging technologies for mangosteen was not completed. In total, 21 transport packaging technologies were developed for 7 commodities, 18 of which were experimentally tested for the purpose of investigating their contributions to reductions in post-harvest losses. The result of the experiments showed that transport packaging technologies developed for -all the 7 commodities had reduced post-harvest losses. It should be noted that the project had developed and positively tested other non-transport packaging technologies, which focused on the extension of shelf life of the commodities including enhancement of marketability of products that may result in the reduction of post-harvest losses.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

At the time of ex-post evaluation, 2 durian farmers were reported to have continuously used the transport packaging technologies developed at the least by the project, one of whom confirmed to have reduced post-harvest losses by 15 to 20%. Because of lack of post-harvest facilities, other transport packaging technologies were not used by intended beneficiaries. To address this issue, PTD-DOST developed and started implementing a project entitled “Upgrading the Capability of Existing Distribution Centers /Trading Posts in the Delivery of Fresh and Semi-Processed Vegetables in the Supply Chain: Focusing on Packaging Technology and Logistics” (2021-2023). PTD reported that they have been trying to promote and introduce the transport packaging technologies developed by the project through seminars and similar events, but due to lack of monitoring data, they could not ascertain if the participants practice the technologies after joining the seminars. Therefore, it can be inferred that at least two farmers are reported to adopt the developed transport packaging technologies and that there may be other technology users which were not taken into account in this report due to lack of monitoring data. In the implementation of PTD’s new project, monitoring for technology adoption and reduction of post-harvest losses are made regular activities for this project only.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. After project completion, one transport packaging technology was developed respectively for four commodities (solo papaya, banana, okra, and leafy vegetable) by former project counterparts based on the knowledge and skills learned from the project. These technologies were introduced to farmers, local governments, and cooperatives. Moreover, 2 of the 4 technologies have seen reductions in post-harvest losses. For example, the transport packaging technology developed for solo papaya recorded a reduction of 23%. The knowledge and skills acquired from the project are continuously used by PTD staff in the conduct of packaging research, testing, and technology dissemination.

<Other Impacts at the time of Ex-post Evaluation>

Two positive impacts were confirmed at the time of ex-post evaluation. The above-mentioned at least 2 durian farmers started exporting frozen durian products to Japan, China, and the United States in 2019 with their markets created through the product display exhibitions conducted by the project. Additionally, through the project, former project counterparts of PTD realized that there is a need for a testing laboratory for packaging technologies. This prompted PTD to prepare and submit a project proposal to DOST with the aim of establishing two laboratories for packaging technologies and expanding the pilot packaging plant owned by PTD. The proposal was approved in November 2016, and the implementation of the project, named “Upgrading and Enhancing the Capacity of PTD in Packaging Research and Innovation” (2016-2021), is ongoing at the time of ex-post evaluation.

<Evaluation Result>

With the Project Purpose partially achieved at project completion, but with the Overall Goal achieved and other positive impacts observed, the effectiveness/impact of the project is evaluated fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th><th>Source</th></tr>
<tr>
<td>(Project Purpose)
The post-harvest losses of eight (8) target commodities will be decreased through the introduction of appropriate transport packaging technology.</td>
<td>Indicator: Reduction rate of post-harvest losses to be verified experimentally for the eight (8) target commodities.</td>
<td>Status of the Achievement: Partially Achieved (Not verified)
(Project Completion)
• 21 transport packaging technologies in total were developed by the project for 7 of 8 target commodities as shown in the table below.
• 18 out of the above 21 technologies were tested to investigate if they could contribute to the reduction in post-harvest losses. As a result, all 7 target commodities saw reductions in their post-harvest losses.
[Transport packaging technologies developed by the project]
<table>
<tr><th>Target commodity</th><th>No. of transport packaging technologies developed by the project</th><th>Reduction rate of post-harvest losses (Unit: %)</th></tr>
<tr><td>1. Durian</td><td>4</td><td>20</td></tr>
<tr><td>2. Smoked fish</td><td>3</td><td>8</td></tr>
<tr><td>3. Sweet potato</td><td>4</td><td>100</td></tr>
<tr><td>4. Cut chrysanthemums</td><td>3</td><td>21</td></tr>
<tr><td>5. Rose</td><td>3</td><td>100</td></tr>
<tr><td>6. Broccoli</td><td>2</td><td>20</td></tr>
<tr><td>7. Cauliflower</td><td>2</td><td>20</td></tr>
<tr><td>8. Mangosteen</td><td>0</td><td>-</td></tr>
</table>
</td>
<td>Project Completion Report, Survey Questionnaire</td>
</tr>
</table>

		Total | **21** | **-**	

(Ex-post Evaluation)

- At least 2 durian farmers were confirmed to have been using the transport packaging technologies developed by the project at the time of ex-post evaluation. One of the durian farmers reported that the technologies reduced post-harvest losses by 15% to 20%.

According to PTD, seminars and similar events are regularly held to promote and introduce the transport packaging technologies developed by the project. There may be other technology users from the participants of these seminars but PTD could not ascertain this because of lack of monitoring data. [No. of farmers/companies/"others" which received" introductions about the transport packaging technologies after project completion]

Target commodity	No. of farmers/companies/others* which received introductions about the transport packaging technologies developed by the project during seminars and similar events conducted after project completion
Durian	145 (farmers: 100, companies: 20, others: 25)
Smoked fish	100 (companies: 70, others: 30)
Sweet potato	200 (farmers: 72, companies: 4, others: 124)
Cut chrysanthemums	40 (farmers: 30, others: 10)
Rose	40 (farmers: 30, others: 10)
Broccoli	60 (farmers: 60)
Cauliflower	100 (farmers: 60, companies: 20, others: 20)

Note: "others" means local government units, non-governmental organizations, and universities.

- According to the Project Completion Report, the project produced three different materials for target commodities, PTD however confirmed that the project had produced only one material titled "Technical Guideline for Packaging Development and Post-Harvest Practice Improvement of Fresh and Semi-Processed Agricultural Products". PTD reported that they have been using the material as guideline and reference in conducting seminars, trainings, and workshops and in conducting packaging research and studies.

(Overall Goal) Based on the know-how to develop the technology through the project, the appropriate transport packaging technologies are developed and introduced for other fresh and semi-processed agricultural products.	Indicator: Transport packaging developed at least for three (3) commodities aside from eight (8) target commodities covered by the project.	(Ex-post Evaluation) Achieved • After project completion, one transport packaging technology was developed respectively for four commodities (solo papaya, banana, okra and leafy vegetable) by former project counterparts based on the knowledge and skills learned from the project and introduced to farmers, local governments, and cooperatives.	Survey Questionnaire, Follow-Up Questionnaire

Source：Project Completion Report, interviews and questionnaires to PTD-DOST and beneficiaries including farmers

3 Efficiency

The project cost and period were within the plan (ratio against the plan: 100%, respectively). All the outputs were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

Although the "PTD's 5th Road Map" (2020-2024) promotes packaging research, technology development, and application to fresh and semi-processed agricultural products, there is no specific policy that mandates the promotion and dissemination of the transport packaging technologies developed by the project, which is also the case for other technologies developed by PTD through other projects. On the other hand, the "DOST Intellectual Property" policy (2015) requires all developed and verified technologies supported by DOST to be patented for the purpose of intellectual property rights management and technology transfer. .

<Institutional/Organizational Aspect>

There has been no change in the institutional/organizational set up for the promotion and dissemination of the transport packaging technologies developed by the project. PTD, which operates under the Industrial Technology Development Institute (ITDI) of DOST, is the primary organization tasked responsible for conducting, testing, designing, training and disseminating of packaging research. PTD has 24 technical staff, 8 of whom were engaged in the project. According to PTD, the number of staff assigned for the continued promotion and dissemination of the transport packaging technologies developed by the project is sufficient. However, as described in the section of "Continuation Status of Project Effects at the time of Ex-post Evaluation", monitoring for technology adoption and reduction of post-harvest losses are made regular activities in the implementation of PTD's new project.

<Technical Aspect>

PTD staff have sustained the knowledge and skills necessary for the promotion and dissemination of the transport packaging technologies developed by the project. To keep the knowledge and skills updated, PTD sends their staff as participants or lecturers to packaging technology-related seminars or conferences conducted nationally or internationally. Additionally, PTD staff conducts presentations and lectures to staff of DOST regional offices to disseminate knowledge and skills on packaging technology development. Moreover, PTD staff joins national and international food exhibitions from time to time and conducts consultations to their clients (micro, small and medium enterprises).

<Financial Aspect>

PTD is a regular office under the ITDI of the DOST, so the budget for its activities, including the promotion and dissemination of the transport packaging technologies developed by the project, is regularly allocated from the budget of ITDI of DOST. Although the budget of ITDI for 2021 decreased by 22% compared to 2020, according to PTD, enough budget has been secured every year. This can be confirmed by the fact that PTD has sufficient number of staff and provides enough training opportunities to its staff as mentioned in the <Institutional/Organizational Aspect> and <Technical Aspect>. In addition, since 2017, PTD has received grants for 2 on-going projects, which amounts to 267 million Philippine pesos, from DOST. The healthy financial condition of PTD is expected to continue in the future.

Budget for ITDI of DOST

(Unit: 1,000 Philippine peso)

2017	2018	2019	2020	2021 (Plan)
763,245	552,969	529,981	540,332	421,074

<Evaluation Result>

There is no specific policy or guideline to promote and disseminate the transport packaging technologies developed by the project, but the institutional/organizational and technical aspects of the project are firmly established while the financial aspect is firmly secured. Therefore, the sustainability of the project is evaluated fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose which was aimed at decreasing the post-harvest losses of eight (8) target commodities through the introduction of appropriate transport packaging technologies, but fully achieved the Overall Goal that aimed to develop and introduce appropriate transport packaging technologies for at least three other fresh and semi-processed agricultural products by the enhancement of PTD's capacity on packaging technology. As for sustainability, it was confirmed that there is no specific policy to back up the dissemination of the transport packaging technologies developed by the project; however, it can be considered that there are no problems in the institutional/organizational, technical, and financial aspects.

Considering all the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Research and development of appropriate transport packaging technologies for mangosteen have been continued by PTD even after project completion, but, because of COVID-19 pandemic, this has not been completed yet. It is, therefore, recommended that PTD continue those activities for mangosteen as well as other new commodities.
- After project completion, the transport packaging technologies developed by the project were tried to be introduced to various micro, small and medium enterprises through several seminars, forums, exhibitions, and other similar events. However, there was no monitoring data collected and analyzed for technology users and actual reduction of post-harvest losses. Thus, it is recommended that PTD regularly monitor the technology adoption rate as well as the reduction rates of post-harvest losses resulting from the continuous use of transport packaging technologies developed by the project.
- Among the transport packaging technologies developed by the project, it was found out that only those developed for durian commodity have been continuously used even at the time of ex-post evaluation. Therefore, it is recommended that PTD conduct further research on utilization of other technologies, and upon necessity, conduct development activities to modify the unused technologies according to the current situation and available facilities.
- It is recommended that PTD coordinate with Technical Working Groups of the project which include DOST regional offices, Department of Agriculture, and local government units to encourage more farmers to adopt the transport packaging technologies developed by the project using several approaches, such as information posting on DOST's official website and development of related materials and manuals.

Lessons Learned for JICA:

- The project developed and introduced packaging technologies other than transport packaging technologies. However, this activity was not part of the original project scope, and such deviation and modification were not reflected in the project design, activities and indicators for Outputs and Project Purpose. Further, such changes were not subjected to discussions and concurrence among members of the project's Joint Coordination Committee (JCC), which was the decision-making body for the technical cooperation project supported by JICA. Because modifications in the project design resulting from the project's actual activities is vital for conducting ex-post evaluation, such modifications should be discussed at the JCC and reflected on the project's documents as official modifications. Such project's documents also serve as reference and guide of the implementing agency in implementing activities that sustain project's

effects after project completion.

- To achieve the set Overall Goal and Project Purpose, the implementing agency is not obligated to establish a monitoring activity after project completion which is important to verify the project effects such as the adoption rates of transport packaging technologies and the reduction rates of post-harvest losses. Post-project monitoring activity is important for grasping and improving the continuous status of project effects. Therefore, for similar projects in the future, it is important to consider the inclusion of a monitoring activity to understand the continuous status of project effects resulting from the project activities, by correspondingly setting more specific indicators for overall goal and project purpose.

Plastic crates: Transport packaging for durian commodity recommended by the project

Corrugated carton box: Transport packaging for fresh durian developed by the project

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

conducted by India Office: February2022

Country Name	UASB-DHS Integrated System - A Sustainable Sewerage Treatment Technology
India	

I. Project Outline

Background	In India, the rapid urban growth resulted the polluting rivers. Under the National River Conservation Plan (NRCP), many sewage treatment plants (STPs) adopted the Up-flow Anaerobic Sludge Blanket (UASB) process and waste stabilization ponds as an energy-saving and low-cost sewage treatment technology. An UASB plant requires a post-treatment step to comply with the prescribed effluent discharge standards. Thus, most UASB plants were provided with a polishing pond, specifically a final polishing unit (FPU), with a one- or two-day detention period. However, the FPU requires a considerably large area of land. Furthermore, an issue developed in which a UASB-FPU system was unable to meet the effluent standards. The Down-flow Hanging Sponge (DHS) system is a technology developed at the Nagaoka University of Technology, Japan, especially for post-treatment of the effluent from UASB reactors. The key of the DHS system is use of the polyurethane sponge as a support material to retain sludge. The UASB effluent is supplied to the top of each sponge module, and it trickles down to the bottom of the module. The performance of a 1 MLD* pilot DHS plant at Karnal in Haryana, had been monitored for more than five years, and it was reported that the effluent quality was fairly good and that the plant also reduced the amount of sludge production. As the DHS system requires simple operation and maintenance (O&M) and less land, the National River Conservation Directorate (NRCD) requested Japanese Technical Cooperation to up-scale the DHS system through collaborative research and a practical scale experiment of the UASB-DHS integrated system. * MLD: Million Liters per Day
Objectives of the Project	The project aimed to develop a novel sewage treatment technology, which is appropriate from the viewpoint of less energy consumption, ease of O&M, less land requirement, and the less total cost , through (i) verification of the applicability of the UASB-DHS system in India and (ii) preparation of Design and O&M Guidelines for the UASB-DHS system and a dissemination plan for the Guidelines and Manual (Draft), thereby contributing to the dissemination of a suitable UASB-DHS system for adoption as a suitable sewage treatment technology in India. 1. Expected Overall Goal: NA 2. Project Purpose: A novel sewage treatment technology, which is appropriate from the viewpoint of energy consumption, O&M, land requirement, and total cost, is developed.
Activities of the Project	1. Project site: Agra, Uttar Pradesh State 2. Main activities: (i) Procurement of media for DHS reactor, Design and construction of a UASB-DHS system, Continuous operation of the UASB-DHS system and evaluation of the applicability for sewage treatment in India; (ii) Preparation for Design Guidelines and the O&M Guidelines for the UASB-DHS system, Provide training courses with prepared Design Guidelines and the O&M Guidelines.[2] 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 19 persons (1 long-term and 18 short-term) 2) Trainees trained: 12 persons 3) Design and Construction of the 5 MLD DHS pilot plant 4) Equipment: Equipment for water analysis, measuring micro-organisms, etc. 5) Operation cost Indian Side 1) Staff allocated: 9 persons 2) Facilities: Land for the pilot plant construction, buildings for laboratory, long-term expert office accommodation including lights, electric, facility, desk and chairs, etc. 3) Operation cost
Project Period	May 2011 - May 2016	Project Cost	(ex-ante) 398 million yen, (actual) 440 million yen
Implementing Agency	National River Conservation Directorate (NRCD), Ministry of Environment, Forests and Climate Change (MoEFCC); Central Pollution Control Board (CPCB); Uttar Pradesh Jal Nigam (UPJN); Central Public Health and Environmental Engineering Organization (CPHEEO), Ministry of Urban Development (MOUD); Aligarh Muslim University (AMU); Indian Institute of Technology, Roorkee (IIT Roorkee) * NRCD was reorganized to NRCD, Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti after project completion. * MOUD was reorganized to Ministry of Housing and Urban Affairs (MoH&UA), after project completion.		
Cooperation Agency in Japan	Tohoku University; Nagaoka University of Technology; Kisarazu Institute of National College of Technology; Kagawa Institute of National College of Technology; Niigata University of Pharmacy and Applied Life Sciences		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to the COVID-19 pandemic, it was difficult to collect information from the implementing agencies. Therefore, this evaluation is based on the limited information provided by UPJN, which managed to cooperate with the study under difficult circumstances.

<Special Perspectives Considered in the Ex-Post Evaluation>

- This SATREPS project did not have indicators for the Project Purpose, "A novel sewage treatment technology, which is appropriate from the viewpoint of energy consumption, O&M, land requirement and total cost, is developed." This ex-post evaluation did not set new indicators but followed the way the terminal evaluation took to assess the achievement level of the Project Purpose based on the result of economic evaluation of the developed sewage treatment system.

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

[2] The project plan was to prepare an O&M manual (draft), but since the manual needs to be approved by the Indian government, it was later changed to a guideline after discussions with the Indian side.

- For this SATREPS project, the Overall Goal was not set. Considering that the terminal evaluation recommended measures to disseminate the developed technology for adoption/replication in India, this ex-post evaluation regarded "A suitable UASB-DHS system is disseminated for adoption as a suitable sewage treatment technology in India" as the Expected Overall Goal (In the case of a SATREPS project without the Overall Goal, the Expected Overall Goal (set at the ex-post evaluation) should not be considered for the sub-rating of the effectiveness/impact and the overall rating).

1 Relevance

<Consistency with the Development Policy of India at the Time of Ex-Ante Evaluation>

This project was consistent with India's development policies, such as the Eleventh Five Year Plan (2007-2012) that set a policy goal of supplying water to the entire urban population and providing sewerage and sanitation facilities by 2012. The Plan also argued that water pollution of rivers was caused by the inflow of untreated wastewater in excess of natural purification and aimed to establish a National River Conservation Plan (NRCP) and improve the water quality of major rivers to the designated use water quality.

<Consistency with the Development Needs of India at the Time of Ex-Ante Evaluation>

As mentioned in "Background" above, this project was consistent with the need to develop a sustainable sewage treatment technology such as the UASB-DHS system.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

This project was consistent with Japan's Country Assistance Program for India (2006) that addressed support for sewage treatment for river purification under "Improvement of the Poverty and Environment Issues," one of its three priority areas.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The project achieved the Project Purpose at the time of its completion as the objective of bringing down the pollution norms of treated water with low cost was successfully achieved by the technology developed under this project. A 5 MLD DHS pilot plant got constructed adjacent to the 78 MLD UASB STP at Dhandhupura, Agra, and started operation and continuous monitoring in July 2014. This plant was to test a UASB-DHS system, where effluent from the existing UASB plant reactor was treated at the project's DHS pilot plant. The project's economic evaluation showed that the UASB-DHS system had the lowest life cycle cost, including initial investment cost (capital cost) compared to other treatment processes that met the prescribed wastewater treatment standards at that time.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued to the time of ex-post evaluation. According to UPJN, the 5 MLD DHS pilot plant is operating, and monitoring is being done.[3] Although India's discharge standards were raised from BOD<30 mg/L to BOD<10 mg/L, effluent from the pilot plant is still better than the normal UASB plants without DHS.

The Design Guidelines for the UASB-DHS system and the O&M Guidelines for the UASB-DHS System were prepared by the project and officially approved after project completion, and the brochures were developed. However, they were not shared as no follow-up was made for dissemination.[4] No information was collected on continuation of the related research by the universities involved in this project due to difficulties in contacting them under the pandemic.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

The Expected Overall Goal has not been achieved by the time of ex-post evaluation. In addition to above information, in the present scenario, STPs are usually being constructed on the sequencing batch reactor (SBR) technology keeping in view the latest criteria of BOD<10 mg/L. In that case, according to UPJN, this project's DHS will not be of any use, but for earlier constructed and functional UASB STPs where effluent BOD standard was BOD<30 mg/L, DHS with improved efficiency as tertiary treatment to bring down the BOD could be promoted to achieve the latest standards. UPJN also shared that where land availability is not a big issue, techno-economic studies for UASB-DHS combination and SBR could be performed to arrive at the conclusion for adopting the DHS technology. Therefore, the effectiveness of the researched technology is confirmed, but the UASB-DHS system has not been disseminated.

<Other Impacts at the time of Ex-post Evaluation>

No negative impact on the natural environment has been observed. As a positive impact, UPJN officials engaged in the project have gained knowledge about the DHS system.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) A novel sewage treatment technology, which is appropriate from the viewpoint of energy consumption, O&M, land requirement, and total cost, is developed.	Result of economic evaluation of the developed sewage treatment system	Status of the Achievement: achieved (continued) (Project Completion) - During a flowrate of 3 MLD in hydraulic retention time (HRT) of 2.4 hours, the UASB-DHS system was able to satisfy the BOD<30mg/L discharge standard for 416-491 days of continuous operation. - The economic evaluation revealed that the UASB-DHS system has lower costs such as installation space, power consumption, and sludge generation compared to existing treatment processes. (Ex-post Evaluation) - The 5 MLD DHS pilot plant is operating, and monitoring is being done.

[3] In addition to the DHS pilot plant, various experimental equipment for this project's research was provided to the 78 MLD STP in Agra, but we were not able to fully grasp the status of their utilization during the ex-post evaluation. According to the information available, some are still in use (voltage stabilizers, vortex shaker, UPS battery cabinet, furniture, etc.) and some are no longer in use (computers, BOD incubator, sludge sampler, etc.).

[4] It was reported that the "preparation of a dissemination plan," which was supposed to be carried out by the project, corresponded to the holding of workshops for concerned parties.

(Expected Overall Goal) A suitable UASB-DHS system is disseminated for adoption as a suitable sewage treatment technology in India.	Whether the UASB-DHS system developed under this project was spread to other STPs in India	(Ex-post Evaluation) not achieved - The effectiveness of the researched technology is established, but the UASB-DHS system has not been disseminated (the project's DHS system does not match the STP scenario and the effluent standards at the time of the ex-post evaluation. Therefore, there is no prospect of widespread use of this system as it is.).

Source: Terminal Evaluation Report; JST Final Report; questionnaire and interview with the implementing agencies

3 Efficiency

Although the project period was almost as planned (ratio against the plan: 100%), the project cost exceeded the plan (ratio against the plan: 111%). The Outputs of the project were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The NRCP has been changed to Namami Gange, an integrated conservation programme since 2014, which does not restrict the dissemination of DHS plants.

<Institutional/Organizational Aspect>

The relevant organizations exist, but detailed information was not available. UPJN is still responsible for the 5 MLD DHS pilot plant including 78 MLD UASB STP, O&M of seven STPs in Agra is outsourced to an Indian multinational company. However, no institutional set-up for the dissemination of the DHS system has been established as, according to UPJN, they are not responsible for the dissemination of sewerage systems design and O&M guidelines, i.e., in India, such guidelines are published by CPHEEO.

<Technical Aspect>

The fact that the DHS pilot plant is operating shows that the staff involved has a certain level of skills. However, no other information was available.

<Financial Aspect>

The fact that the DHS pilot plant is operating, shows that a certain level of budget is allocated to the plant. However, no other information was available.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agencies, including the unavailability of enough information to judge them as in a sufficient condition. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose as the objective of bringing down the pollution norms of treated water with low cost was successfully achieved by the UASB-DHS system developed under this project. The project's effects have continued: the pilot DHS plant is operating with continuous monitoring, and the guidelines for the dissemination of the developed technology are ready. However, the project's system does not match the STP scenario and the effluent standards at the time of the ex-post evaluation, which makes it difficult for the developed technology to be used in other STPs, especially newly constructed ones. The dissemination has not taken place, and thus the Overall Goal has not been achieved. No major problem has been found in the policy aspect regarding sustainability, but enough information was not available in the institutional/organizational, technical, and financial aspects. As for the efficiency, the project cost exceeded the plan. Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- CPHEEO, National Mission for Clean Ganga (NMCG), and other competent authorities including UPJN are recommended to intensify efforts to disseminate the UASB-DHS technology by involving relevant stakeholders.

Lessons Learned for JICA:

- For a project to develop a novel technology, it should include (i) sufficient time and action for its dissemination with clear responsibility of actors and (ii) measures to avoid frequent staff transfer/to correspond to transfer of staff in charge of dissemination of the developed technology at the project formulation stage. For (i), the "dissemination plan" planned in the project should have been formulated as a specific plan to be implemented by UPJN and Urban Development Department (UDD), Government of Uttar Pradesh (State government in charge of dissemination). The plan could have aimed to facilitate the continuation of research and the establishment of new DHS plants, rather than simply holding workshops to present the project results. In addition, the concerned division in JICA HQ (in-charge of the SATREP project) should have formulated mechanism of the handholding support to UPJN/UDD, Government of U P for a specific period after the project completion, in order to not only help UPJN/UDD in dissipation of the project knowledge for its replication but also periodical reporting of the DHS plant O&M performance to UDD, Govt of U P and also NRCD/MoH&UA Government of India.

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

conducted by Sri Lanka Office: August, 2021

Country Name	**The project for development of pollution control and environmental restoration technologies of waste landfill sites taking into account geographical characteristics in Sri Lanka**
Democratic Socialist Republic of Sri Lanka	

I. Project Outline

Background	In Sri Lanka, due to rapid urbanization and population growth, the quantity of municipal solid waste generation was increasing and unregulated waste dumping caused serious social and environmental problems. In order to solve the problems, not only strengthening of solid waste management system at each local authority but also development of new sustainable engineering techniques based on site-specific, low cost, low maintenance, and low environmental impact were needed for pollution control and restoration at final disposal landfill sites. In addition, it was often the case that researchers in Sri Lanka left the country after graduation to continue their research due to the shortage of equipment and materials as well as research funds. It was required for Sri Lankan research institutions to improve their capacity of research and development as well as to improve the research environment to attract researchers.
Objectives of the Project	Through (i) identifying policy framework of solid waste management in Sri Lanka and recognizing and assessing components of social capacity, (ii) defining methodology of appropriate site selection for new waste landfills, (iii) monitoring existing waste landfill sites and those surroundings to grasp environmental situations, (iv) developing pollution control and environmental restoration technologies for waste landfill sites, and (v) finalizing the Guide for sustainable planning, management, and pollution control of waste landfills in Sri Lanka, the project aimed at strengthening research and development capacities on pollution control and environmental restoration technologies of waste landfill sites, thereby contributing to the sustainable solid waste management in Sri Lanka. 1. Expected Overall Goal: N/A 2. Project Purpose: Strengthen research and development capacities on pollution control and environmental restoration technologies of waste landfill sites, thereby contributing to the sustainable solid waste management in Sri Lanka. *The English expression of the project purpose is slightly modified from that described in R/D.
Activities of the Project	1. Project Site: Sri Lanka 2. Main Activities: (i) Finding of social and economic conditions for appropriate new waste landfill site selection, Formulation of draft of action plan, etc., (ii) Preparation of hazard maps for site selection, Preparation of procedures for new waste landfill site selection, etc., (iii) Planning and establishing of monitoring system, Implementation of quality assurance/quality control (QAQC), Prediction of transport of pollution plumes and implementation of risk assessment, etc., (iv) Examination of materials and methods related to pollution control and environmental restoration technologies, Planning and implementation of a field scale study and reflection of the results to techniques developed, etc., (v) Formulation of the guideline for sustainable pollution control of waste landfills in Sri Lanka, Holding of workshops to share knowledge and experience and reflection of the comments to finalize the guideline, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 23 persons 2) Trainees Received: 18 persons 3) Equipment: Spectrophotometer, liquid chromatograph, gas chromatograph, computers, etc. 4) Local expense: Sri Lankan Side 1) Staff Allocated: 19 persons 2) Land and facility: Project office at the University of Peradeniya (UOP), laboratories, sites for the field scale study 3) Local expense:
Project Period	April 2011 – March 2016 / Project Cost: (ex-ante) 365 million yen, (actual) 376 million yen	
Implementing Agency	University of Peradeniya (UOP) National Solid Waste Management Support Center (NSWMSC) University of Ruhuna (UOR) Institute of Fundamental Studies, Kandy (IFS) Central Environment Authority (CEA)
Cooperation Agency in Japan	Saitama University, Center for Environmental Science in Saitama (CESS), National Advanced Industrial Science and Technology (AIST), Waseda University

II. Result of the Evaluation

<Constraints on Evaluation>

- In this Ex-Post Evaluation, an evaluation judgment was made primarily by analyzing information acquired by sending and collecting questionnaires, and through telephone and e-mail interviews, however, due to the impact of COVID-19, a part of information that was initially planned to be collected was not obtained, that is, the information in all the questions listed in the questionnaire was not obtained, including the details of current organizational structure of the implementing agencies.

< Special Perspectives Considered in the Ex-Post Evaluation>

- Overall Goal is not specified in the framework of this SATREPS project. However, it can be assumed that contribution to sustainable solid waste management (described as a part of the Project Purpose) is what was expected by the outputs of the project, and considered as "Expected Overall

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development

Goal". As an indicator to verify the contribution to sustainable solid waste management, utilization of research outcomes is applied.

1 Relevance

<Consistency with the Development Policy of Sri Lanka at the Time of Ex-Ante Evaluation>

In the Ten-Year Horizon Development Framework (2006–2016), appropriate and sustainable solid waste management was one of the priority issues. In 2009, the Sri Lankan government formulated "the National Action Plan for Haritha Lanka Programme (2009-2016)", in which solid waste management was listed as priority and presented the strategy to improve the infrastructure for solid waste management or to develop appropriate alternative method at each municipality.

<Consistency with the Development Needs of Sri Lanka at the Time of Ex-Ante Evaluation>

In order to solve solid waste management problems, development of new sustainable engineering techniques based on site-specific, low cost, low maintenance, and low environmental impact were needed. It was required for Sri Lankan research institutions to improve their capacity of research and development as well as to improve the research environment to attract researchers.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The priority areas in the Japanese assistance toward Sri Lanka were i) assistance toward peace building and reconstruction and ii) assistance in mid- and long-term view. In the area of the assistance in mid- and long-term view, one of the three priority issues was improvement of economic infrastructure, including improvement of urban environment[2].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The appointed authors finished writing most chapters of the "Guide for sustainable planning, management and pollution control of waste landfills in Sri Lanka" ("Guide") at the time of the terminal evaluation and the draft final of the Guide was presented to stakeholders at the end of the project. Although there was some delay in completion of the Guide due to some coordination issues among the relevant organizations, the Guide was completed in 2016[3].

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects continued to the time of the ex-post evaluation. First the key research outputs produced by the project have been utilized. The Guide was published and has been available and utilized at Waste Management Authority (WMA), NSWMSC and CEA. The Guide is followed in any case of construction of new landfill by private or public sector as per the CEA's recommendation, although the Guide has not become a legal document. The Action Plans formulated by the project were used to develop their own solid waste management plan at Kandy Municipal Council (MC), Gampola Urban Council and Matale MC. The Manuals for waste landfill site selection have been also used for actual site selection at UOP, and the procedures and reports on QAQC have been used at UOP laboratories. The pollution control and environmental restoration technologies for waste landfill sites have been also utilized, for example, at UOP for designing the leachate treatment at Gahagoda for Kandy MC. Second, research projects have been continuously conducted based on the research outputs by the project. At UOP, using the output of the project, seminars/presentations were conducted and articles and post-graduate thesis on related topics were presented. At UOR, a new research project on landfill leachate treatment has been launched. Third, the key research facilities/equipment provided by the project have been continuously utilized. The majority of the facilities/equipment have been well utilized for research studies at UOP and UOR, although at IFS, they are not currently very much used as no research has been designed for the use. Some of the equipment at UOR are out of order at the time of the ex-post evaluation and need services but other equipment is functioning.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

The Expected Overall Goal is achieved. The research outcomes by the project have been utilized to contribute to sustainable solid waste management in Sri Lanka. For example, the findings of project were utilized at UOR to design and construct the landfill site at Kataragama PS (Pradeshiya Saba: the third-level administrative unit, next to municipality and urban.)[4]. In the design, locally available expansive soil and coir fibers were used for landfill liner construction and coir brushes were used for leachate treatment. CEA and UOR, in collaboration with the National Building Research Organization, used shear strength parameters of solid waste obtained from the project for analysis and the restoration work of failed Meethitamulla dumping site. CEA and a few local government authorities are applying the project outcomes on site selection for landfills to a certain extent.

<Other Impacts at the time of Ex-post Evaluation>

According to the questionnaire to each implementing agency, positive impacts have been reported. At IFS, knowledge was enhanced with regard to landfill site selection and management, analytical instrumentation and dealing with the local authorities. At UOP, UOR and CEA, research capacity has been improved in terms of undergraduate and postgraduate students research, facilities to industries, service to industries/society, and research publications. Scientific literacy at CEA and local governments has been improved as they make decisions based on the investigations and proposals by universities. In addition, collaboration between the universities and CEA as well as local governments were strengthened in terms of landfill management. No negative impacts were observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose)	Indicator 1	Status of the Achievement: achieved (continued)

[2] Ministry of Foreign Affairs, "ODA Country Data Book in 2010"

[3] Although the Guide was completed in 2016 after project completion, the draft was almost completed at project completion. Therefore, the Project Purpose was considered to be achieved at the time of the project completion.

[4] The design of landfill at Kataragama PS was supported by JICA's technical cooperation "Pollution Control and Reduction of Environmental Burden in Solid Waste Management" (2016-2019).

Strengthen research and development capacities on pollution control and environmental restoration technologies of waste landfill sites, thereby contributing to the sustainable solid waste management in Sri Lanka.	The Guide for sustainable planning, management, and pollution control of waste landfills in Sri Lanka (2016) is formulated jointly with the Ministry of Local Government and Provincial Councils and the Ministry of Environment.	(Project Completion) - The appointed authors finished writing most chapters of the Guide by the end of the project. The draft final of the Guide was presented to stakeholders at the end of the project and the "Guide" was completed in 2016. (Ex-post Evaluation) - The Guide has been utilized by relevant organizations and is followed in any case of construction of new landfill by private or public sector as per the CEA's recommendation. - Other key research outputs produced by the project have been also utilized, i.e., the Action Plans developed by the project, Manuals for waste landfill site selection, Procedures and reports on QAQC, and pollution control and environmental restoration technologies for waste landfill sites. - Research projects have been continuously conducted based on the research outputs by the project, for example, the research on landfill leachate treatment at UOR. - The majority of key research facilities/equipment provided by the project have been continuously utilized.
(Expected Overall Goal) Contribution to sustainable solid waste management in Sri Lanka	Indicator 1 Utilization of Research Outcomes (such as implementation of policy or program based on/using the research outputs) by the SATREPS project	(Ex-post Evaluation) achieved - The research outcomes by the project have been utilized. UOR: Utilization of the findings of the project to design and construct the landfill site at Kataragama PS CEA and UOR: Utilization of shear strength parameters of solid waste for analysis and the restoration work of failed Meethitamulla dumping site CEA and a few local governments: Applying the project outcomes on site selection for landfills

Source：Terminal Evaluation Report, Questionnaire to implementing agencies (UOP, UOR, IFS, CEA)

3 Efficiency

Although the project cost exceeded the plan, the project period was within the plan (ratio against the plan: 103% and 100%, respectively). The outputs of the project were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The Ministry of Environment developed National Policy on Waste Management (2019), which covers the period up to 2030, to facilitate solid waste management. The National Policy was designed to establish an integrated waste management system by providing more detailed focused directions. Furthermore, the Nationally Determined Contributions (NDCs) (2016), with the target period of 2021-2030, aims to track progress and achieve a collective ambition level sufficient to limit global warming in alignment with the Paris Agreement. The NDC identified waste sector as one of key issues in terms of emission reduction.

<Institutional/Organizational Aspect>

Each organization involved in the project has its own established organization structure to conduct research, and collaboration between stakeholders is observed to some extent. There are some collaborative programs after the project but not developed yet to the expected level and it seems that concrete organizational structure has not been established among stakeholders yet to fully utilize research outputs/outcomes by the project. As to the organizational arrangement for the maintenance of the facilities/equipment, at UOP, the laboratory established by the project has been managed by the support of the university. The organizational structure for the maintenance of the facilities/equipment is established in general. At UOP and UOR, maintenance is conducted by the university with additional research funding from other sources, and at IFS, maintenance is implemented through government funds and technical support.

<Technical Aspect>

According to the questionnaire to the implementing agencies, researchers sustained and improved their research capacity to continue the related research activities and start new research projects using the research outputs by the project. Government authorities such as CEA have sustained and improved scientific literacy to utilize the research outcomes by the project. At IFS, the capacity developed by the project was helpful for obtaining research grants in the field of waste management. One professor has moved from IFS to other university, but there he was able to start a new research project on landfill waste management. At UOR, the department technical staff has been already properly trained to operate the provided equipment.

<Financial Aspect>

Necessary budget has been secured at each institution and government agencies and no major financial problems have been reported, according to questionnaire to the implementing agencies.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational aspect of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose of formulation of the Guide for sustainable planning, management, and pollution control of waste landfill, as the draft of the Guide was completed by the appointed authors. At the time of the ex-post evaluation, the Guide and other key research outputs, such as the Manuals as well as the pollution control and environmental restoration technologies, have been utilized at implementing agencies and relevant organizations. Therefore, the project effects have been continued. The Expected Overall Goal of utilization of research outputs for contribution to sustainable solid waste management has been achieved, as the research outcomes of the project have been utilized for designing and constructing landfill sites, for example. Regarding sustainability, although policy, technical, financial sustainability is high, some problems have been observed in the institutional/organizational aspect because concrete collaborative organizational structure has not been established among stakeholders yet. In the efficiency, the project cost exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

・The Guide currently utilized by the CEA/ NSWMSC. However, this has not been legally binding yet. To further enhance the sustainable utilization of the Guide, it is effective to establish the Guide as legal-binding document, therefore, relevant officials at implementing agencies should take initiative to make the document legitimate

・It was found out that some of the equipment have gone out of order and some are needed replacements of parts, etc. Hence, the implementing agencies (UOP, UOR, IFS) should maintain them properly (financial allocation, service agreements etc.).

Lessons Learned for JICA:

・In regard to this project, the findings obtained through the project have been utilized in several projects, including JICA's technical cooperation implemented following this project, as well as actual solid waste management activities by the Government of Sri Lanka. It would be helpful that JICA assists the implementing agencies to develop guidelines, such as the Guide in this project, while obtaining agreement with the implementing agencies during the SATREPS project, , and then, facilitates the implementing agencies to utilize/follow the guidelines to enhance the sustainability of the project as well as to smoothly implement following project and/or other relevant project(s).

Discussion between experts at landfill site

Analysis of composition of waste

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Dominican Republic Office: February 2022

Country Name	Project for Strengthening Primary Health Care for Pregnant Women and Newborns in Health Region III
Dominican Republic	

I. Project Outline

Background	In Dominican Republic, the maternal mortality rate was 92 per 100,000 live births in 2015, and it was much higher than the average of 67 for the whole Latin American and Caribbean Region. The under 5 child mortality rate for the country was 30.9 per 1,000 live births in 2015 while 17.96 for the whole Latin American and Caribbean Region. On the other hand, the coverage of fourth antenatal care (98%), skilled birth attendance (97.7%), and hospitalized delivery (98%) were all high. The reason for the relatively high mortality rates were, thus, pointed out in the quality of health care for pregnant women and newborns. Deliveries were made in most cases at hospitals, while antenatal and puerperal medical checkup and care for newborns were mainly responsibilities of Primary Attention Units (UNAPs). However, the quality of services provided by health facilities differed from each other and collaboration was not well established and functioning among medical facilities at primary, secondary, and tertiary levels.		
Objectives of the Project	Through capacity development of the primary health facilities, improvement of the counter referral, prevention of accidents/incidents in the Health Region III, the project aimed at improving the quality of prenatal, neonatal and puerperal care provided by the health facilities, especially the primary health care centers and UNAPs, thereby contributing to a decrease in maternal and neonatal mortality.		
	1. Overall Goal: Maternal and neonatal mortality is reduced in Health Region III. 2. Project Purpose: The quality of prenatal, neonatal and puerperal care provided by health facilities, especially the primary health care centers and the UNAPs, is improved.		
Activities of the project	1. Project site: Health Region III (Provinces of Duarte, Maria Trinidad Sanchez, Hermanas Mirabal and Samaná) 2. Main activities: Training of UNAP staff on maternal and child health and information, education and communication (IEC), development of training materials, training of Regional Health Service-Health Area Management (SRS-GA), hospitals and UNAPs on counter referral, training of hospitals and SRS-GA on prevention of incidents/accidents, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts from Japan: 5 persons 2) Trainees in Japan: 12 persons 3) Equipment: Doppler fetal photo-cardiographs, blood pressure monitors, baby scales, ultrasonic diagnostic equipment, UPS electronic fetal monitors for ultrasonic diagnostic equipment, etc. 4) Local cost: training implementation, etc. Dominican Republic Side 1) Staff allocated: Counterpart personnel from SRSN and MOH. 2) Land and facilities: Office space, 3) Local cost: activity operation, travel expenses, etc. electricity and water fee, etc.		
Project Period	May 2013 to May 2017	Project Cost	(ex-ante) 303 million yen, (actual) 295 million yen
Implementing Agency	Ministry of Public Health (MSP) and National Health Service (SNS)		
Cooperation Agency in Japan	None.		
Related Project	Technical cooperation: Regional Primary Health Service Reinforcement Project (2004-2009)		

II. Result of the Evaluation

1 Relevance

<Consistency with the Development Policy of Dominican Republic at the time of Ex-ante Evaluation>

The "National Development Strategy 2010-2030" aimed at decreasing maternal and infant mortality rates which were set as important indicators. Also, the "National Health Plan 2006-2015" put emphasis on improvement of maternal and children care. Thus, the project was consistent with the development policy of Dominican Republic at the time of ex-ante evaluation.

<Consistency with the Development Needs of Dominican Republic at the time of Ex-ante Evaluation>

In Dominican Republic, the maternal mortality rate and the under-5 child mortality rate were higher than the average of the Latin American and Caribbean countries, due to the low quality of health care for pregnant women and newborns. There were needs for better maternal and child health services, and the project was consistent with these development needs of Dominican Republic at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

Based on the policy dialogue in 2011, three priority areas including poverty reduction were set[1]. The project targeted the public health services which were usually utilized by the low-income people. Thus, the project was consistent with Japan's ODA policy at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

[1] Ministry of Foreign Affairs, "ODA Databook" (2012).

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. The prenatal, neonatal and puerperal care for pregnant women and newborns were improved in quantity and quality. More pregnant women received health orientation from the doctor or nurse regarding nutrition, signs and symptoms of alarm during pregnancy, etc., as described in the booklet promoted by the project[2] (Indicator 1), and more women who gave birth and newborns received home visits from the UNAP team within 72 hours of discharge, than planned (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued. UNAPs have continued the health orientation to the pregnant women. The booklet of care for women during pregnancy, childbirth and postpartum developed by the project have been utilized, and the 20 items described in the booklet have continued to be applied. Women have been guided about nutrition, signs and alarm symptoms during pregnancy, childbirth and puerperium in all first-level centers in the Health Region III. Deliveries have been notified from the provincial and municipal hospitals to SRS-GA based on the guideline, but not from the regional hospitals. It is because the regional hospitals have been too busy with response tasks to COVID-19, although they have been in charge of many deliveries. Actually, Duarte Province were classified by MSP as one of the most severely affected provinces with many numbers of infection and death at the beginning of the pandemic, and thus it was presumed that regional hospitals were very busy dealing with COVID-19 patients. Notifications that SRS-GA have received have been forwarded to the first-level centers. In case of Duarte Province, deliveries had been notified from SRS-GA to the first-level centers by e-mail, but as of the time of ex-post evaluation, they have been limited due to the personnel shortage because of the pandemic of COVID-19. Instead, deliveries have been notified through health promoters or nursing staff of the first-level centers. UNAP teams have continued home visits to mothers and newborns as mentioned. However, the visits have not been conducted in all cases, because the postpartum notification has not perfectly been conducted and also because some mothers have refused the visit to prevent the infection of COVID-19. Thus, the pandemic of COVID-19 has much affected the provision of maternal and child health services, as the majority of health personnel have had to work for treating and controlling of the infection and also some of them themselves have got the infection.

UNAP health promotors have continued health promotion activities with the livelihood approach. For example, the Health Committee and community leaders have been made aware of re-purifying water of the health center and beautifying the facility structure and environment in a community in Santa Ana, Villa Tapia Municipality of Hermanas Mirabal Province. In another community in Pimentel Municipality of Duarte Province, the Health Committee and community leaders were facilitated for carrying out activities including fund raising to purchase the center's power generator.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved by the time of ex-post evaluation. The maternal mortality ratio decreased to 45.9 per 100,000 births in 2017 but then increased to 111.9 in 2020 in the Health Region III (Indicator 1). The ratio varied much among the four provinces (0.0 in María T. Sanchez, 66.8 in Hermanas Mirabal, 139.7 in Duarte, and 203.8 in Samaná). According to the Regional Health Services of the Nordest (SRSN), the increase in Duarte and Samaná in 2020 was caused by the pandemic of COVID-19 as explained above. Major causes of maternal death were pregnancy-induced hypertension, hemorrhages, sepsis and abortion which has been totally banned in the country. Another factor for the maternal death in the two provinces was the overloaded work of the health personnel which hindered careful attention to the delivery services at the regional hospitals. Also, in Duarte, it was pointed out by the Provincial Direction of Health (DPS) of Duarte that some migrants, mainly Haitians, arrived at the moment of delivery without any evidence of and with added pathologies (Hypertensive disorders of pregnancy, severe anemia and infections), which in many cases has made it difficult to reverse the conditions..

On the other hand, factors for decreasing or stable maternal mortality ratio in the Health Region III have been attributed to the improved prenatal care, use of the “Clinical Guide for Women's Care during Pregnancy, Childbirth and Puerperium” in all the first-level centers, activated Extreme Maternal Morbidity Committee, improved equipment provided by the project, bimonthly meetings with the regional management team including SRS-GA, etc. Factors or good practices of no maternal death in María T. Sanchez in 2020 could not be confirmed in the ex-post evaluation. The neonatal mortality ratio decreased to 12.2 per 1,000 births in the Region III in 2017, but it turned to increase in 2020, while the national average was decreasing (Indicator 2). Factors for the neonatal mortality were imperfect adherence to neonatal management protocols such as the home visits within 72 hours, poor follow-up in antenatal care, high-rate pregnancy in adolescents, unavailable neonatal unit, deficiency in the articulation of the network, and so on, due to the earlier mentioned reasons. In 2019, SNS identified 27 public hospitals that had contributed the most to reducing maternal and infant mortality, which included the San Vicente de Paul Regional Hospital in Duarte Province and the Leopoldo Pou Hospital in Samaná Province.

<Other Impacts at the time of Ex-post Evaluation>

Several positive impacts have been confirmed. First, fathers were sensitized to understand better the situations that mothers’ went through during pregnancy and became more empathetic with them, according to DPS of Duarte where the focal point person on gender equity was assigned. By participating in the fathers’ classes, they could perceive what the mothers felt with the pregnancy. By putting an artificial pregnancy weight on their stomach, they simulated a pregnant women to collect things on the floor, feel the low back pain, etc. However, these classes have been suspended since the personnel were moved to other offices. Second, in the Municipality of Las Guáranas of Duarte Province, community activities have been conducted, where mothers from low income families have been benefitted by the support from the municipality, such as “pregnancy baskets” which contain necessary inputs for the care of newborns through the breastfeeding circle. Third, the project experiences, such as use of monitoring instruments of maternal and child care, conduct of home visits, and establishment of health committees, have been diffused to other Health Networks, through meetings organized by MSP.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results

[2] Before the project was implemented, the use of the booklet was very limited in the Health Region III. The use was extended to the whole region by the project’s promotion.

<table>
<tr><td>(Project Purpose)
The quality of prenatal, neonatal and puerperal care provided by health facilities, especially the primary health care centers and the UNAPs, is improved.</td><td>1. By May 2017, among the pregnant women who attend prenatal consultations in UNAPs, more than 50% receive health orientation from the doctor or nurse regarding nutrition, signs and symptoms of alarm during pregnancy, etc., according to the scheme established in the booklet of care for women during pregnancy, childbirth and postpartum that describes 20 items.</td><td><u>Status of achievement: Achieved (Continued).</u>
(Project Completion)
- 93.5% of the pregnant women received health orientation from the doctor or nurse regarding nutrition, signs and symptoms of alarm during pregnancy, etc., according to the scheme established in the booklet of care for women during pregnancy, childbirth and postpartum that describes 20 items.
(Ex-post Evaluation)
- UNAPs have continued the health orientation to almost all of pregnant women who attended prenatal check-ups in UNAPs, regarding nutrition, signs and symptoms of alarm during pregnancy, etc., according to the 20 items of the maternity health record book.</td></tr>
<tr><td></td><td>2. More than 50% of women giving birth in municipal, provincial and regional hospitals and newborns receive home visits from the UNAP team within 72 hours of discharge, compared to the percentage recorded in May 2017.</td><td><u>Status of achievement: Achieved (Continued).</u>
(Project Completion)
- 71.0% of women giving birth in municipal, provincial and regional hospitals and newborns received home visits from the UNAP team within 72 hours of discharge.
(Ex-post Evaluation)
- All UNAP teams have continued home visits to mothers and newborns within 72 hours of discharge.</td></tr>
<tr><td>(Overall Goal)
Maternal and neonatal mortality is reduced in Health Region III.</td><td>1. The maternal mortality ratio against 100,000 births decreases from 106 (2011) to 50 (2022).</td><td><u>Status of achievement: Not achieved.</u>
(Ex-post Evaluation)
- The maternal mortality ratio against 100,000 births decreased in 2017 but increased to 111.9 in 2020.
Table: Maternal mortality ratio per 100,000 births
<table>
<tr><td></td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr>
<tr><td>National</td><td>104.4</td><td>107.1</td><td>89.0</td><td>109</td></tr>
<tr><td>Region III</td><td>45.9</td><td>73.7</td><td>64.9</td><td>111.9</td></tr>
<tr><td>Duarte</td><td>19.9</td><td>99.6</td><td>19.9</td><td>139.7</td></tr>
<tr><td>Maria T. Sanchez</td><td>45.0</td><td>44.7</td><td>133.4</td><td>0.0</td></tr>
<tr><td>Hermanas Mirabal</td><td>62.0</td><td>63.5</td><td>65.1</td><td>66.8</td></tr>
<tr><td>Samaná</td><td>98.0</td><td>49.6</td><td>100.5</td><td>203.8</td></tr>
</table>
Note: Figures for 2019 and 2020 are preliminary.
Source: Project Completion Report, information provided by MSP, SRSN and DPS of the Health Region III.</td></tr>
<tr><td></td><td>2. The neonatal mortality ratio against 1,000 births decreases from 22 (2011) to 13 (2022).</td><td><u>Status of achievement: Achieved.</u>
(Ex-post Evaluation)
- The neonatal mortality ratio against 1,000 births decreased to 14.0 in the Region III in 2020, although it slightly increased from 12.2 in 2017.
Table: Maternal mortality ratio per 100,000 births
<table>
<tr><td></td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr>
<tr><td>National</td><td>18.7</td><td>18.4</td><td>15.6</td><td>13.4</td></tr>
<tr><td>Region III</td><td>12.2</td><td>13.3</td><td>14.8</td><td>14.0</td></tr>
<tr><td>Duarte</td><td>13.4</td><td>13.5</td><td>16.6</td><td>14.0</td></tr>
<tr><td>María T. Sánchez</td><td>14.9</td><td>11.2</td><td>15.6</td><td>7.1</td></tr>
<tr><td>Hermanas Mirabal</td><td>9.9</td><td>12.7</td><td>11.1</td><td>15.4</td></tr>
<tr><td>Samaná</td><td>8.3</td><td>15.4</td><td>12.6</td><td>7.1</td></tr>
</table>
Note: Figures for 2019 and 2020 are preliminary.
Source: Project Completion Report, information provided by MSP, SRSN and DPS of the Health Region III.</td></tr>
</table>

Source: Project Completion Report and information provided by MSP, SRSN and DPS of the Health Region III..

3 Efficiency

Both of the project cost and period were within the plan (ratio against the plan: 97% and 100%, respectively). Outputs were produced as planned. Therefore, the project efficiency is high.

4 Sustainability

<Policy Aspect>

SNS has launched the “Maternal and Neonatal Mortality Reduction Plan 2020” and the “Plan to Accelerate the Reduction of Maternal and Infant Mortality” in 2019 to decrease the maternal and neonatal mortality ratio, which have been in line with the “National Development Strategy 2030.”

<Institutional/Organizational Aspect>

There has been no change in the organizational structure to provide maternal and child services, sustaining the SRS-GA-Hospital-UNAP circuit. Regular meetings were conducted between SRS (hospitals, GA, UNAPs, etc.) and MSP (DPS) to analyse situations of maternal and child care. However, since the outbreak of COVID-19, they have been suspended like other meetings in the country so as to prevent infection of COVID-19. The number of hospitals been sufficient to attend deliveries, although it has been desired to have one more regional hospital to ensure geographically equitable access to the pregnant women in the four provinces, according to SRSN. The extreme maternal morbidity committee has been sustained in the hospitals, and meetings have been held upon the needed cases. As the system for proactive prevention of incidents/accidents, infrastructure problems have been reviewed and solutions have been implemented. However, human incidents have not been formally reported or recorded. There had not been much culture of risk prevention and notification, as they were reluctant to report risks or incidents/accidents for fear of being reprimanded or losing his job. Since the time of project completion,

SRSN has tried motivating the hospitals for the operation, but it has not been very successful. At the time of ex-post evaluation, 131 UNAPs was functioning to conduct pre-natal check-up, post-natal check-up, and referral/counter referral and health promotion activities with the livelihood approach in the Health Region III, which, however, has not been sufficient to cover all community health services. Although a UNAP needs to consist of one family physician, one physician assistant, one bachelor in nursing, nursing assistants per 250 families and promoters per 100 families at the urban level, it has been difficult to assign sufficient qualified unit members as regulated. UNAP performance has been monitored by the Zone Coordinators assigned in each province. However, since the pandemic of COVID-19, due to the lack of vehicles and financial inputs, the supervision has become irregular.

<Technical Aspect>

UNAP members have sustained necessary skills and knowledge for their functions, thanks to continuous training of new staff and feedback to existing staff, and regular monitoring of maternal and child actions. However, training of the health personnel including UNAPs by the nursing health committees has been limited since 2020 because of the pandemic of COVID-19 and also the personnel turnover made by the new administration. In addition, the hospitals have not sustained necessary skills and knowledge for preventing incidents/accidents, as they have not been continuously trained. The guidelines and reporting formats introduced by the project have been utilized, but due to the outbreak of COVID-19, regular meetings or opportunities where the reports are used have been suspended.

<Financial Aspect>

The budget of SNS for the first level health care has been on an increasing trend. SRSN has received budget in general, not specifically earmarked for maternal and child health care. 1.6% of the gross domestic product has been assigned to the health sector in 2020, but it should be 7% for the further proper functioning of the sector, according to SRSN. At the first-level centers, supplies and equipment to guarantee maternal and child health care have been budged mainly from the sales of services, which have been sufficient for prenatal care and other maternal and child services. SNS has provided the budget to the regional hospital to strengthen its maternal and child care in the Health Region III for the equipment[3] valued at RD$8,000,000. In addition, a maternal and neonatal unit was established at the Pablo A. Paulino Hospital in Las Terrenas Municipality of Samaná Province with all the necessary equipment. All hospitals in the Health Region III have allocated the necessary fund both from the central budget and the sales of services.

SNS budget for the first level health care (million RD$)

	2018	2019	2020	2021
Budget	3,585	3,728	3,878	4,033

Source: SNS

<Evaluation Result>

In the light above, there have been issues in the institutional and technical aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The Project Purpose which was to improve the quality of prenatal, neonatal and puerperal care provided by health facilities, especially first level centers, was achieved. Both the maternal mortality ratio and the neonatal mortality ratio decreased as targeted right after the project completion, and since then the ratios have been fluctuating. Regarding sustainability, the SRS-GA-Hospital-UNAP circuit has been sustained to provide maternal and child services. Although more UNAPs would be needed to attend all health needs at the community level, they have sustained necessary skills and knowledge for their functions.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- The Nursing Health Committees would be a key for capacity development and empowerment of health personnel. It is recommended to SRSN to encourage their training function within the region and extend their experience to other regions.
- It is recommended to SRSN to reconsider the notification route of deliveries so that sufficient information would be conveyed to the first level centers in a responsive and reliable manner based on the inter-institutional discussion and agreement between SRSN and MSP.

Lessons Learned for JICA:

- Since the time of project completion, regardless of the influences of COVID-19 pandemic, many efforts for maternal and child health care services strengthened by the project have continued. For example, deliveries have been notified from the provincial and municipal hospitals to SRS-GA and then to the first-level centers so that they could provide necessary post-natal services, with an exception of the regional hospitals that have been too busy with response tasks to COVID-19. This continuity has been regarded successful in the Dominican Republic where the administration change would often cause personnel change and thus affect follow-up of the project effects. In such cases, the project should be designed to involve and empower stakeholders at various levels, such as the community members, first-level centers, hospitals and strengthen the inter-institutional partnership among them. Besides, it is important to identify and empower leaders of each group and accumulate the protocol of partnership in the documents. By taking these approaches, the project effects would continue in a way appropriate for the situations and places.

[3] 10 incubators, 2 gynecological stretchers, 4 goose lamps, 1 sonography, 6 Dopplers, 2 phototherapy lamps and 1 fetal monitor for the maternity and neonatology area of the regional hospital.

Training of nurses in the Health Region III

Contest of the posters on MCH made by UNAPs

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Paraguay Office: September, 2021

Country Name	**Project for Strengthening Primary Health Care System**
Republic of Paraguay	

I. Project Outline

Background	In Paraguay, it presented the worst record of main indicators on reproductive and child health in the South American region before the project; the under-five mortality rate was 23 per 1,000 live births (verses regional average 18), and the maternal mortality rate was 95 per 100,000 live births (verses regional average 66) (WHOSIS 2009). Major factors included bottlenecks of health administration, lack of skills and knowledge of medical staff, insufficient infrastructure and medical supplies, poor access to medical facilities due to poverty especially in terms of lack of transportation means, and heavy medical expenses. To ameliorate this condition, the government of Paraguay prioritized a policy of improving access to first-level health services, and the Ministry of Public Health and Social Welfare (MHSW) established the Unit of Health and Family (Unidades de Salud de la Familia: USF). There were, however, no rules and manuals developed for the implementation of PHC at the department level as well as issues that revolved in a lack of human resources at the USF.		
Objectives of the Project	Through concretization of the desired Primary Health Care (PHC) system, strengthening of the management capacities of health service providers and local authorities and, improvement of quality of USF's services with an established emergency contact system in the Department of Caaguazú, the project aimed at establishing a health service system centered on the USF, thereby contributing to improving the level of service for maternal and newborn care in Department of Caaguazú. 1. Overall Goal: The maternal and child health status is improved in the target area. 2. Project Purpose: A health service system centered on the USF is established in the target area.		
Activities of the Project	1. Project Site: Department of Caaguazú (V Health Region)[1] 2. Main Activities: (1) Concretization of the PHC system in terms of health services (including the USF) in the MHSW (2) Strengthening of the management capacities of health services providers and administrative authorities within the area of designated USF's activities. (3) Improvement of the quality of USF's services. (4) Establishment of emergency contact system at the department level. 3. Inputs (to carry out the above activities): Japanese Side 1) Experts: 8 persons 2) Experts from the third country: 8 persons (from El Salvador) 3) Trainees Received in Japan: 10 persons 4) Third country training: 18 persons (in El Salvador) 5) Equipment: PC, Printer, sphygmomanometer, weight scale, stethoscope, ambulance, vehicle, etc. 6) Local cost Paraguayan Side 1) Staff Allocated: 17 persons 2) Land and facilities: office space for experts 3) Local cost: administrative and operational expenses		
Project Period	February 2012 – January 2017 (Extension period: February 2016 – January 2017)	Project Cost	(ex-ante) 321 million yen, (actual) 321 million yen
Implementing agency	Ministry of Public Health and Social Welfare (MHSW), Directorate General of Primary Health Care, Directorate of Sanitation in the V Health Region (Since 2018, the Directorate General of Primary Health Care has been renamed as the Directorate of Primary Health, transferred to be under the Directorate General of Development of Health Networks and Services)		
Cooperation Agency in Japan	--		

II. Result of the Evaluation

<Constraints on Evaluation>

Due to travel restrictions and lockdown measures raised during the COVID-19 pandemic, data gathered in the rural areas during the ex-post evaluation was lower in quantity and quality as on-site data collection, as well as direct observation, was not as feasible as planned. In addition, as there was an alarming number of infections in the Caaguazú department, the circumstances did not allow to conduct planned field survey considering the infection risk in visiting hospitals. It should be noted that operative personnel in target sites had to pay undivided attention to COVID-19 patients at the time of the ex-post evaluation. Nonetheless, mitigation measures were taken as follows; 1) rely more on existing monitoring data collected prior to COVID-19, 2) increase scope of desk-based review of administrative data, 3) use of remote data collection and analysis methods where available.

< Special Perspectives Considered in the Ex-Post Evaluation >

Issues in the logical configuration in the Project Design Matrix (PDM) and misplaced indicators for the Overall Goal

As the Project Purpose described as "a health service system centered on the USF is established " the project mainly addressed the improvement of the PHC system on the whole in the Department of Caaguazú. Nonetheless, the Overall Goal was determined as "the maternal and child health status is improved in the target area," which was limited to cover reproductive and child health. Thus, it has no causal relationship to the Project Purpose and conceptually confused correlation with causality in the PDM. Further, the indicators of the Overall Goal were not to measure the service quality per se for reproductive and child health by the continuous efforts, but the improvement of the maternal and infant mortality rates whose causes are deemed to be

[1] The V Health Region is designated by the Directorate of Primary Health Care and the Directorate of Sanitation as a region under the jurisdiction of the Department of Caaguazú. The location of the V Region is therefore on a par with the Department of Caaguazú composed of 22 districts as an administrative division.

considerably varied to achieve the respective target values. In an effort of making the evaluation logically coherent in the ex-post evaluation, the time-series data of hypertensive pregnancies was sought to supplement the reproductive child health status and contribution of the project activities but there was no such data readily available. Furthermore, due to the change of statistical method in data measurement since 2017, the evaluation of the data in the official database was difficult and inconclusive.

1 Relevance

<Consistency with the Development Policy of Paraguay at the Time of Ex-Ante Evaluation >

The project was consistent with the development policies of Paraguay at the time of ex-ante evaluation. in the "Public Policy for Quality of Life and Health," issued by the MHSW, it guaranteed the people's right of the people to receive and to be benefitted from health care services. It also addressed the establishment of a legal framework for the purpose, as well as poverty reduction through programs focused on those with needs, implementation of PHC, and promotion of public participation.

<Consistency with the Development Needs of Paraguay at the Time of Ex-Ante Evaluation >

The project was consistent with the needs of Paraguay at the time of ex-ante evaluation. Local health service delivery had some imminent challenges; 1) regulations and protocol manuals for PHC implementation as well as the system at the prefecture-level were not put in place, 2) insufficient education and training for personnel in the USF, 3) lack of a well-defined mechanism for emergency response extended to cover the medical institutions withing the regional referral system.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy towards Paraguay. The three priority areas of the assistance were poverty alleviation, sustainable economic development, and governance. In poverty alleviation, it addressed the enhancement of social services that included the improvement of health care[2].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved. The number of clients who seek medical consultation at the USF in the Department of Caaguazú increased by 55% in 2016 compared to that of 2012 (indicator1). The percentage of pregnant women who received prenatal medical examinations during the fourth month of pregnancy in the Department of Caaguazú exceeded 50% in 2015 (indicator 2). The percentage of hospital delivery in the Department of Caaguazú reached 95% in 2015 (indicator 3). The number of hypertensive patients being monitored by the USF in the Department of Caaguazú increased by 56.3% in 2015 compared to that of 2012 (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued after project completion. The number of health workers (N=249) at the time of the ex-post evaluation associated with the USF and PHC system deployed in the Department of Caaguazú almost doubled the number before the project (N=133). Some of the training modules of the project have been implemented after project completion. According to the MHSW database, the number of medical consultations at the USFs in the Department of Caaguazú steadily increased from 229,677 cases (2016) to 260,736 cases (2019) that account for a 76% increase from the baseline year of 2012. On the other hand, regarding the percentage of pregnant women who received prenatal medical examinations during the fourth months of pregnancy, compared with 50% achievement in 2015, the percentage has been dropped to 29.4% (2016) and those remained substantially lower than the once achieved target value of 50% until the time of the ex-post evaluation in 2020. By the same token, the percentages of hospital delivery have remained generally on a plateau since project completion. As for the number of hypertensive patients being monitored by the USFs in the Department of Caaguazú, the numbers have more than doubled over the past 3 years. Note, however, the data readily available could not specify the number of hypertensive pregnancies. Thus, the data only imply the aggregated number of all hypertensive patients who have access to the USFs in the area.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal had not been achieved at the time of ex-post evaluation. The maternal mortality rate per 100,000 live births in the V Health Region was still higher than 50 in the past 4 years (2017-2020) (Indicator 1). The infant mortality rate per 1,000 live births in the V Health Region was still higher than 10 in the past 4 years (2017-2020) (Indicator 2).

<Other Impacts at the time of Ex-post Evaluation>

There were positive impacts observed in the survey for the ex-post evaluation. Women empowerment regarding issues of gender violence was notably observed as women became capable of openly seeking help on time in the health service system and verbalizing imminent risks to the USF professionals and community agents. In the meantime, no negative impact was confirmed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The health service system centered on the USF is established in the target area.	Indicator 1: The number of clients who seek medical consultation at the USFs in the Department of Caaguazú increases by 50% compared to 2012.	Status of the Achievement: achieved (continued) (Project Completion) The number of clients who seek medical consultation at the USF in 2016 (note the total sum from January to October of the year) was 229,677. Thus, compared to the actual number of 148,113 in 2012, the increase rate was 55%. (Ex-post Evaluation) The number of clients was 230,632 (2018) and 260,736 (2019), respectively. Thus, the increase rate was 56% and 76 %. The reasons for the steady increase were the expanded coverage of PHC service delivery by the USF and the improvement of service quality and the public recognition of the services.
	Indicator 2:	Status of the Achievement: achieved (not continued)

[2] Ministry of Foreign Affairs, "ODA Country Databook" (2011)

<table>
<tr><td></td><td>The percentage of pregnant women who received prenatal medical examinations during the fourth month of pregnancy in the Department of Caaguazú exceeds by 50%</td><td>(Project Completion)
The percentage of pregnant women who received medical examinations during the 4th month of pregnancy was 50% in 2015.
(Ex-post Evaluation)
Despite the 50% achievement reported in 2015 above, according to the time-series data obtained by the survey, it has been lower than 50 % since project completion as follows. And as indicated even lower than the level before the project, it is concluded not continued :29.4% (2016), 25.8% (2017), 25.7% (2018) 36.8% (2019) 30.5% (2020).</td></tr>
<tr><td></td><td>Indicator 3:
The percentage of hospital delivery in the Department of Caaguazú reaches 95%.</td><td>Status of the Achievement: achieved (partially continued)
(Project Completion)
The percentage of hospital delivery in 2015 was 95%.
(Ex-post Evaluation)
Despite the 95% achievement reported in 2015 above, according to the time-series data obtained by the survey, the percentage in 2015 was 64.7%. As it was not possible to verify raw data in 2015 that create the difference in the percentage of the year at the time of the ex-post evaluation, the status of continuation was thus judged based on the percentage obtained by the survey: 63.7% (2016), 63.1% (2017), 61.7% (2018), 63.0% (2019), 47.4% (2020). Due to the COVID-19 epidemic since early 2020, the government-imposed restrictions on inter-city travel and pressure on hospitals may have affected hospital delivery in 2020. Based on the time series from 2015 to 2019, they have remained on a plateau, it was thus deemed partially continued.</td></tr>
<tr><td></td><td>Indicator 4:
The number of hypertensive patients being monitored by the USFs in the Department of Caaguazú increases by 50% compared to 2012.</td><td>Status of the Achievement: achieved (continued)
(Project Completion)
The number of hypertensive patients regularly controlled by the USF in 2012 was 33,783, whereas in 2015 was 52,818 that made the rate of increase 56.3%.
(Ex-post Evaluation)
The numbers of hypertensive patients under the USFs' surveillance after project completion were 107,645 (2018), 115,056 (2019), 137,390 (2020). All exceeded a 50%, rate of increase from 2012 and doubled in the number with comparison to 52,818 (2015). One of the likely reasons for the increase was a greater control and periodic visits exercised by all the USFs, consequently, the interventions may have motivated patients in communities to be monitored properly. Note, however, it was confirmed that the data readily available could not specify the number of treated hypertensive pregnancies that implies the safer delivery in the Overall Goal below.</td></tr>
<tr><td>(Overall Goal)
The maternal and child health status is improved in the target area.</td><td>Indicator 1:
The Maternal Mortality Rate per 100,000 live births in the V Health Region is below 50.</td><td>(Ex-post Evaluation) not achieved
Table 1: The Maternal Mortality Rate in the V Health Region
<table>
<tr><td></td><td>Baseline</td><td colspan="3">Actual</td></tr>
<tr><td></td><td>2014</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr>
<tr><td>Maternal Mortality (per 100,000 live births)</td><td>72.3</td><td>86.7</td><td>63.1</td><td>78.8</td><td>97.7</td></tr>
<tr><td>The number of childbirths (hospital delivery)</td><td>8,295</td><td>8,071</td><td>7,914</td><td>7,610</td><td>6,138</td></tr>
</table></td></tr>
<tr><td></td><td>Indicator 2:
The Infant Mortality Rate per 1,000 live births in the V Health Region is lower than 10.</td><td>(Ex-post Evaluation) not achieved
Table 2: The Infant Mortality Rate in the V Health Region
<table>
<tr><td></td><td>Baseline</td><td colspan="3">Actual</td></tr>
<tr><td></td><td>2014</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr>
<tr><td>Infant Mortality (per 1,000 live births)</td><td>13.3</td><td>11.5</td><td>13.2</td><td>12.6</td><td>11.0</td></tr>
</table></td></tr>
</table>

Source: SSIEV (Vital Statistics Computer Sub-System)

3 Efficiency

The project cost was within the plan (ratio against the plan: 100%), whereas the project period exceeded the plan (ratio against the plan: 125%). The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Promotion of the PHC has been fundamentally important as addressed in the "Regional strategic plan" of the V Health Region (2011-2013). The plan remained valid without any revisions at the time of the ex-post evaluation. The plan has emphasized the promotion of quality of life and health with equity through strategic operation for reproductive child health as well as the extension of an effective

network of service delivery in the V Health Region. Based on the said plan, collaborative works with the municipalities and local councils have been conducted for the installation of the new USFs of the department. As such, training for the local officials in "early childhood development" in the 10 USFs (out of 45 USFs) was implemented within the V Health Region.

< Institutional/Organizational Aspect>

The roles and responsibilities of MHSW have not been changed. However, according to the survey results, although it was required to have one dentist and 5 community agents in every 3 USFs, it was observed impossible and understaffed due to a lack of public funding for personnel costs. It thus resulted that a team of personnel with different tasks and expertise could not cover all the areas of the PHC as much as expected to provide quality services with the official capacities. Thus, it was deemed that it remained insufficient in terms of manpower. Implementation of multipurpose personnel who would collaborate in the data management has been absent in current SICIAP[3] and other subsystems.

<Technical Aspect>

According to the survey results, they perceived that all the required skills were considered generally sufficient, as various training modules and technical assistance have been provided to enable to improve the capacities to promote the PHC in the V Health Region. Having trained through various courses, the personnel have been aware of adhering to the manual, the importance of their mission as well as coordinated teamwork for the PHC in health networks in the Region. As such, they have committed to supporting USF activities, including the promotion of awareness-raising and participation in communities. As for coordination with the district capitals to improve the health network system, the job description manual and the work guide were shared with all regional programs and their head offices.

To mention the recent responses to the COVID-19 pandemic in the context of the project, the teleconsultation modality was launched in the region in September 2020. As a result, 2,195 inquiries from communities through this modality were made within the 5 months. Further, a comprehensive situation analysis of micro territories was carried out by a total of 45 USFs and duly reported to the MHSW Headquarters. Their suggested solutions to imminent emergencies have been swiftly executed. Considering the high-risk group, the Mobile Health Unit[4] made it possible to intervene in the situation in nursing homes. As for the early detection of respiratory symptoms of the coronavirus, a digital monitoring form (in excel format) was created to be systematically reported on a daily/monthly basis to conduct personalized monitoring required in communities in the region.

<Financial Aspect>

It has not guaranteed that the amount of budget would be disbursed as no financial data were presented to be verified. Even though the annual budget was allocated, the amount may not be fully disbursed, and the public funding would not cover all the operation costs as expected. According to the survey results, as stated in the issue of existing manpower along with necessary expenditure to provide PHC services to remote areas, there was a concern for the insufficient level of the budget in light of the required funding level to cover comprehensive implementation of the USF activities and the extension of USFs network.

<Evaluation Result>

In light of the above, Slight problems have been observed in terms of the institutional/Organizational and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose but could not achieve the Overall Goal. Nonetheless, it was deemed that the capacities being enhanced have positively affected the PHC in a broad sense in the V Health Region. As for sustainability, institutionally understaffed to perform required services and financially challenging to further extend the service coverage especially the geographically remote areas in the region. As for the efficiency, the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency／JICA::

During the ex-post evaluation survey, some data to measure the effects of the project were not readily available and found some critical discrepancies that failed robust comparison. Valid data collection, analysis as well as management are fundamental for informed decisions especially in terms of resource allocation to enforce essential activities, it is necessary to select and utilize verifiable indicators where data can be collected from routine systems for regular monitoring and evaluation.

Lessons Learned for JICA:

As it turned out, high-level staff participated more than operational staff in the project. However, in reality, the operational staff members are permanently employed and engaged in daily tasks in the institution. Whereas the high-level staff members (such as hospital director and deputy director) in general are transferred and replaced every 4 years. If more operational staff had been invited to participate in the project, a wider participatory methodology could have been continuously carried out and thus contributed to enhancing the sustainability of the project. Therefore, it is recommended that JICA should deliberately verify the common practice of human resource management of the relevant organizations and then consider the greater participation of permanent staff who engage in the tasks longer than staff in a management position.

It is also clearly important to check from the project-design stage as to how the pertinent data is defined and measured. As such, it is imperative to identify who and/or which unit would be in charge of the data management through due procedures to serve the public interest such as PHC. Furthermore, during the project implementation, it is essential to ensure their involvement for effective project monitoring from the initial planning as the majority of health personnel are not usually required to be trained to use statistical tools and data collection.

[3] SICIAP (for its acronym in Spanish): Information System and Automated Inventory Control of Paraguay. It is a system to control the distribution and supply of medicines, and data can be crossed on the type of patients, in addition to favoring USF networks.

[4] The Mobile Health Unit is made of a team of doctors and nurses, whose function is to cover the territories where the USF has not yet been set up. The unit is expected to fulfill the same functions in working with communities.

Health promotion in rural communities

Training of USF members by regional facilitators

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Paraguay Office: November 2021

Country Name	**Rural Development Project for Strengthening of Territorial Management System in Itapúa and Caazapá**
Republic of Paraguay	

I. Project Outline

Background	In Paraguay, agriculture is a key sector, representing 30% of GDP (2010) and 40% of exports (2012)[1]. Employment in agcitulre accounted for 25.6% (2010)[2] of the total employment. On the other hand, it was often pointed out that there was an evident economic disparity among big-scale farmers and small-scale farmers (smallholders). In order to solve that problem, the Government of Paraguay had provided a variety of assistance to smallholders. Nevertheless, the effectiveness of support to smallholders had not been satisfied due to factors such as a vertically divided top-down administrative system, lack of establishment of necessary technologies to support smallholders, absence of service delivery in terms of social development, limited capacity of extension workers and technicians, insufficient coordination between services for technology development, extension and financing, and limited capacity of local governments. In addition, the country promoted a territorial approach to implement rural development in each territory by combining several cities in the same province into a single region (territory). However, the country did not have any experiences in rural development based on the territorial approach, nor did it have an implementation structure for this. Therefore, it was necessary to implement a model project based on the territorial approach, develop rural development methodologies, and establish an implementation system.		
Objectives of the Project	Through the 1) establishment and strengthening of the Instancias[3], 2) planning, implementation and evaluation of pilot rural development projects, 3) training of the stakeholders including the Ministry of Agriculture and Livestock staff on the Territorial Approach, 4) development and distribution of the guideline on the Territorial Approach, the project aimed at achieving the development goals in the target territories, thereby contributing to the improvement of social and economic situations in a sustainable manner through the Territorial Development System and introduction of the Participatory Territorial Management system as a medium-and long-term national strategy in 13 Departments in the Eastern Region.		
	1. Overall Goal: 1) Social and economic situations are improved in a sustainable manner through the territorial development system in the selected Territories. 2) The Participatory Territorial Management system is introduced as a medium-and long-term national strategy in 13 Departments in the Eastern Region. 2. Project Purpose: Development goals defined by each territory are achieved through application of participatory territorial management system and reinforcement of inter-institutional coordination mechanism.		
Activities of the project	1. Project site: Department of Itapúa (16 municipalities) and Department of Caazapá (5 municipalities) 2. Main activities: 1) Establishment and strengthening of the Instancias, 2) Planning, implementation, and evaluation of pilot rural development projects, 3) Training of the stakeholders including the Ministry of Agriculture and Livestock staff on the Territorial Approach, 4) Development and distribution of the guideline on the Territorial Approach, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts from Japan: 12 persons 2) Trainees in Japan: 9 persons 3) Trainees in the third country: 26 persons (7 in Chile, 14 in Costa Rica, 2 in the Dominican Republic, 2 in Honduras, and 1 in El Salvador) 4) Equipment: Grain separators、PCs, vehicles, copy machines, etc. 5) Local Cost: Activity operation expenses Paraguayan Side 1) Staff allocated: 88 persons 2) Land and facilities: project offices in the Ministry of Finance, Departmental Government of Itapúa, and Departmental Government of Caazapá as well as offices of Instancia Secretariat in the Municipal Development Council of Itapúa and Municipal Government of Natalio, etc. 3) Local cost: Utility cost, etc.		
Project Period	May 2012 to February 2017	Project Cost	(ex-ante) 406 million yen, (actual) 386 million yen
Implementing Agency	Ministry of Agriculture and Livestock, Ministry of Finance		
Cooperation Agency in Japan	None.		

II. Result of the Evaluation

<Evaluation Constraint>

- A sufficient level of data and information could not be collected in the ex-post evaluation survey. One of the reasons was that restrictions were placed

[1] World Bank "Análisis de Riesgo del Sector Agropecuario en Paraguay: Identificación, Priorización, Estrategia y Plan de Acción." https://documents1.worldbank.org/curated/en/105821468332711721/pdf/928660WP0SPANI00Box385339B00PUBLIC0.pdf (accessed on October 24th, 2021).

[2] ILOSTAT, https://www.ilo.org/shinyapps/bulkexplorer5/?lang=en&segment=indicator&id=EMP_TEMP_SEX_ECO_NB_A (accessed on October 24th, 2021).

[3] Instancia is a platform where the territorial development is discussed in a participatory and inclusive manner in each territory.

on travel within the country due to the outbreak of the new coronavirus infection (COVID-19), and the field survey could not be conducted. The other reason was that it was difficult to obtain the cooperation of the staff in charge due to personnel changes at the Ministry of Agriculture and Livestock, Instancia, Departmental Government of Itapúa.

1 Relevance

<Consistency with the Development Policy of Paraguay at the time of Ex-ante Evaluation>

The project was consistent with Paraguay's development policies, such as the "Public Policy for Social Development" (2010-2020) and the "Socio-Economic Strategic Plan" (2008-2013), which promoted rural development by adopting a territorial approach and setting policies to enhance social services for the poor and to improve and reform government organizations.

<Consistency with the Development Needs of Paraguay at the time of Ex-ante Evaluation>

The project was consistent with Paraguay's development needs for implementing a model project based on a territorial approach, developing rural development methods, and establishing an implementation structure.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

The project was in line with Japan's ODA policy to Paraguay, which set "poverty reduction", including "improving the livelihoods of the poor", as one of the three priority areas[4].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was not achieved by the time of project completion. Through the project, two Instancias were established in the Department of Itapúa and one Instancia in Caazapá, and the Participatory Territorial Management system was established to a certain extent. In the Department of Itapúa, pilot projects were planned and implemented in the areas of environment and waste management, etc. "The Territory Development Vision" was formulated starting in 2014, followed by the "Itapúa Department Program" (2013-2018) and the "Itapúa Department Priorities set at the joint meeting between the Itapúa Department Development Committee and the National Strategic Team held on November 6th, 2015," and "KATUPYRY Project Territorial Development Strategy" (2014-2024). Based on these documents, "Itapúa Department Development Strategies" was developed by Provincial Decree No. 263/2016. In the Department of Caazapá, the five-year development plan equivalent to the said plan was formulated. However, since the Strategic Development Plans of the Department and Municipalities were formulated in 2016, the target was not achieved by the end of 2015 (Indicator 1). It should be noted that in the Department of Itapúa, 29 of the 30 municipalities, except for Jesus de Tavarangüé, developed their Municipal Development Strategic Plan in 2016. The formulation of these plans was led by the Technical Secretary of Planning (STP) and coordinated and supported by the constituent members of the Instancias (T1 and T2) established by the project. No facilitator team on the Participatory Territory Management system was formed (Indicator 2), because the training system was not established. On the other hand, in December 2016, the "Guidelines for Territorial Development in Paraguay" were developed, including recommendations and proposals to the central, department, and municipal governments on the territorial development approach (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued at the time of ex-post evaluation. The facilitator team has been still not formed, but as mentioned above, in 2016, the targeted Territories of Itapúa and Caazapá Departments formulated their department and municipal development plans using the "Guidelines for Territorial Development in Paraguay." Since then, activities have continued at the department level, including the submission of progress reports to STP and the roundtables for public-private partnerships. In the Department of Caazapá, the Municipal Development Strategies have been formulated by all municipalities.

In the Department of Itapúa, although the Instancias formed by the project have stopped their activities, they have been set up as places for public-private partnerships through sectoral committees and councils[5]. The Itapúa Departmental government held a meeting to revitalize the Instancia (T2) in June 2019 and developed the activity plan. However, it has been suspended due to the COVID-19 pandemic after 2020. In the Department of Caazapá, since the COVID-19 pandemic, the activities of the Municipal Development Committee, in collaboration with citizens, have been limited to addressing COVID-19, and activities related to the promotion of the Territorial Approach have been suspended. On the other hand, the Office of the President in charge of social affairs has set up the "Social Protection Roundtable in the emerging municipality of San Juan Nepomuceno, Caazapá Department, to introduce an integrated and phased social security system. The members of the roundtable have included officials from the central, department, and municipal governments, for each sector[6]. According to the Mayor of San Juan Nepomuceno and the head of the San Juan Nepomuceno branch (former Director of the Planning Department of the Caazapá Departmental Government), they have participated in meetings regarding the current situation of the municipality and the needs of the citizens, utilizing the methods of citizen participation acquired from the project. Subprojects have continued since the project completion, including an ongoing collaboration with public institutions such as the Local Agency of Technical Assistance as needed in response to local initiatives and development of collaboration with another donor (Chile).

According to the Ministry of Agriculture and Livestock and other stakeholders, the "Guidelines for Territorial Development in Paraguay" have been utilized, based on which, the Strategic Development Plans have been developed in both departments. In both departments, activities of the Instancias and municipal development committees have been suspended because, in addition to the restrictions on going out in Paraguay due to the COVID-19 pandemic, some newly appointed mayors responsible for implementing the

[4] Ministry of Foreign Affairs (2012) "ODA Databook".

[5] Department Development Council of Itapúa, Regional Health Council of Itapúa, Department Education Council of Itapúa, Department Emergency Countil of Itapúa, Department Council of Environmental Ceritification, Department Child and Adolescent Council of Itapúa, Department Child and Adolescent Committee of Itapúa, Industry Development Council of Itapuá, Northeastern Industry Development Council of Itapúa, Intersectoral Table of Development Plan for Drug Prevention, Department Interinstitutional Coordination Table for Agricultural and Rural Development, Mayors' Association of Itapúa.

[6] Ministry of Public Health and Social Welfare, Ministry of Education and Science, Ministry of Labor, Employment and Social Security, Minister of Industry and Trade, Ministry of Agriculture andLivestock, Ministry of Justice, Internal Affairs Agency, Ministry of Child and Adolescence, Ministry of Women, Adolecence Agency, Agricultural Finance Corporation, Social Welfare Institute, National Institute of Indignious People, National Institute of Disability and Human Rights, Ministry of Information and Communication Technologies, Ministry of Public Works and Communication, National Electrical Administration, Corporation of Hygene Services, Directorate of Environment and Hygene, Departmental Governments, Municipalities, etc.

plan have not shown understanding, and coordination among stakeholders in the Instancias has been hampered.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved by the time of ex-post evaluation. Based on data of the Paraguayan General Directorate of Statistics, Surveys and Censuses (DGEEC) on the socio-economic situations (five aspects: economy and production, society and culture, politics and institutions, environment, and human development), in the Departments of Itapúa and Caazapá, there was an overall improvement in economy and production, society and culture, and environment. On the other hand, there were no data on politics and institutions, and human development (Indicator 1). As for the adjustment of the Territorial Approach to the related laws and regulations, Presidential Decree No. 6715/17 (2016) was issued during the project period, requiring the department and municipal governments to develop the Development Strategic Plan. At the time of ex-post evaluation, the "Guidelines for Territorial Development in Paraguay" were being used as a tool to implement the Presidential Decree, and therefore, there was no need to adapt them (Indicator 2). In both Itapúa and Caazapá Departments, the Participatory Territory Management system has been used in daily operations. However, the system functions have been temporarily suspended due to the COVID-19 pandemic (Indicator 3). In addition, in the Department of Itapúa, the progress of subprojects has been monitored to share information among stakeholders, while the monitoring has been suspended in Caazapá due to the COVID-19 pandemic.

<Other Impacts at the time of Ex-post Evaluation>

Several positive impacts have been confirmed in the ex-post evaluation. In the Department of Itapúa, the government has been eager to utilize the project experience and acquired knowledge. Specifically, six staff members participated in the "Geographic Information System Course" provided by the National University of Itapúa, and based on the experience of the territory information system gained through this project, the government has been planning an information improvement project through an agreement with the Itapúa Brach of the Catholic University. In addition, as an initiative of the Environment Working Group, environmental education, such as waste management, has been conducted. Furthermore, in May 2018, the Environmental Certification System Project was launched in collaboration with the Ministry of Environment of Chile in order to address the importance of the environmental sector, the need to obtain external funding for ensuring the sustainability of the efforts, and the need to ensure the motivation of key actors as indicated in the Guidelines for Territorial Development. In the Municipality of Capitan Miranda, a vegetable production pilot project was implemented within the project, and after the completion of the project, the Vegetable Growers Committee established and incorporated the Capitan Miranda Vegetable and Fruit Agricultural Cooperative to promote vegetable sales.

In the Department of Caazapá, the pilot project, the cafeteria project at Kaabo Market (vegetable market), had a large number of female participants, and the meal sales activities continued until 2019 after the project was completed. Due to the subsequent measures to prevent the transmission of COVID-19, the meal service activity has stopped at the time of ex-post evaluation. The market had a legal entity and was also the provider of the school lunch program of the Ministry of Education because it was able to issue legitimate receipts. However, due to the closure of schools as a result of the COVID-19 outbreak, the market has been unable to collaborate with the school lunch program. On the other hand, Vegetable sales have continued to be conducted every Tuesday and Friday.

No negative impact on the natural environment has been caused by the project.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Development goals defined by each territory are achieved through application of participatory territorial management system and reinforcement of inter-institutional coordination mechanism.	1. At the end of 2015, more than 60% of the Territories will achieve the predefined goals for the same year in their Strategic Plans for the Development of the Territory.	Status of achievement: Not achieved (Not verified). (Project Completion) • The Strategic Plan for Development was not formulated and implemented in Instancias in the Department of Itapúa. (Ex-post Evaluation) • Although the Strategic Plan for the Development has not been formulated and implemented in Instancias in the Department of Itapúa, the Department Strategic Plan and Municipal Strategic Plans were formulated based on the “Territorial Development Guidelines in Paraguay” and the “Territorial Development Vision.” And, the progress report on goal achievement has been submitted to STP each year, and therefore it is considered that efforts have been made for achieving the goals. • In the Department of Caazapá, the Strategic Plan for Development was formulated, but no data directly related to the strategic goals were available. However, considering the statistics from DGEEC which showed the improvement in “economy and production,” “society and culture,” and “environment,” there has been improvement.
	2. By 2016, the team of trained and experienced facilitators for the strengthening of Participatory Territorial Management System will be established.	Status of achievement: Not achieved (Not achieved). (Project Completion) • The team of facilitators was not established as planned. (Ex-post Evaluation) • The team of facilitators has not been established.
	3. The recommendations/proposals which are made based on the results of the project will be submitted to the central, departmental and municipal governments.	Status of achievement: Achieved (Continued) (Project Completion) • The “Guidelines for Territorial Development in Paraguay” which included recommendations/proposals to the central, departmental and municipal governments were developed. (Ex-post Evaluation) • The “Guidelines for Territorial Development in Paraguay” has been fully utilized by the stakeholders in sharing the Territorial Approach concept and

<table>
<tr><td></td><td></td><td>collaboration principles, according to the Ministry of Agriculture and Livestock and others.</td></tr>
<tr><td>(Overall Goal)
1) Social and economic situations are improved in a sustainable manner through territorial development system in the selected Territories.
2) The Participatory Territorial Management system is introduced as a medium- and long-term national strategy in 13 Departments in the Eastern Region.</td><td>1. Improvement of the selected social and economic indicators which present the 5 dimensions, in the Territories by 2020.</td><td>Status of achievement: Not verified.
(Ex-post Evaluation)
• Because the definitions of the social and economic indicators were not clear, some data from DGEEC was referred to in the following tables.
• In the Department of Itapúa, improvement was confirmed in all indicators excluding the poverty rate, waste incineration, and landfill. In the Department of Caazapá, all indicators showed improvement, excluding waste incineration. In both departments, overall, the trend of improvement was confirmed in the aspects of “economy and production,” “society and culture,” and “environment.” However, the aspect of “politics and institutions” and “human development” could not be verified.

[Socio-economic indicators of Itapúa]
<table><tr><th>Indicator</th><th>2015</th><th>2017</th><th>2019</th></tr><tr><td><economy and production></td><td></td><td></td><td></td></tr><tr><td>Poverty ratio (%)</td><td>26.6</td><td>-</td><td>27.5</td></tr><tr><td>Employment rate (%)</td><td>53.8</td><td>-</td><td>57.3</td></tr><tr><td><society and culture></td><td></td><td></td><td></td></tr><tr><td>Enrollment ratio (%)</td><td>95.3</td><td>-</td><td>98.1</td></tr><tr><td>Medical insurance coverage (%)</td><td>20.5</td><td>-</td><td>25.0</td></tr><tr><td>Access to the water (%)</td><td>-</td><td>66.7</td><td>70.8</td></tr><tr><td><environment></td><td></td><td></td><td></td></tr><tr><td>Waste incineration (%)</td><td>-</td><td>47.3</td><td>45.1</td></tr><tr><td>Waste collection (%)</td><td>-</td><td>45.1</td><td>48.9</td></tr><tr><td>Waste landfill (%)</td><td>-</td><td>7.5</td><td>6.0</td></tr></table>
[Socio-economic indicators of Caazapá]
<table><tr><th>Indicator</th><th>2015</th><th>2017</th><th>2019</th></tr><tr><td><economy and production></td><td></td><td></td><td></td></tr><tr><td>Poverty ratio (%)</td><td>52</td><td>-</td><td>35.9</td></tr><tr><td>Employment rate (%)</td><td>68.7</td><td>-</td><td>71.5</td></tr><tr><td><society and culture></td><td></td><td></td><td></td></tr><tr><td>Enrollment ratio (%)</td><td>96.2</td><td>-</td><td>96.7</td></tr><tr><td>Medical insurance coverage (%)</td><td>18.7</td><td>-</td><td>19.2</td></tr><tr><td>Access to the water (%)</td><td>-</td><td>71.5</td><td>73.4</td></tr><tr><td><environment></td><td></td><td></td><td></td></tr><tr><td>Waste incineration (%)</td><td>-</td><td>75.5</td><td>69.1</td></tr><tr><td>Waste collection (%)</td><td>-</td><td>14.5</td><td>16.6</td></tr><tr><td>Waste landfill (%)</td><td>-</td><td>5.5</td><td>7.7</td></tr></table></td></tr>
<tr><td></td><td>2. Adjustment to the related laws and regulations by 2020, in accordance with the presented recommendations/proposals.</td><td>Status of achievement: Not verified.
(Ex-post Evaluation)
• During the project period, Presidential Decree No. 6715/17 (2016) was issued, requiring the department and municipal governments to formulate Strategic Plan for the Development. At the time of the ex-post evaluation, the "Guidelines for Territorial Development in Paraguay" formulated by the project was used as a tool to implement the Presidential Decree. The need to adjust related laws and regulations for 2020 has not arisen.</td></tr>
<tr><td></td><td>3. Formulation of the strategy for the implementation for the Participatory Territorial Management System.</td><td>Status of achievement: Achieved.
(Ex-post Evaluation)
• In both Itapúa and Caazapá Departments, the Participatory Territory Management system established in this project has been used in daily operations such as collecting information on each territory. However, due to the outbreak of COVID-19, its function has been temporarily suspended.</td></tr>
<tr><td></td><td>4. Progress in the follow-up to other aspects of the presented recommendations/proposals by 2020.</td><td>Status of achievement: Partially achieved.
(Ex-post Evaluation)
• In the Department of Itapúa, the progress of the subprojects has been monitored using social networking systems and other means to share information among stakeholders. In Caazapá, the monitoring has been suspended due to the temporary interruption of the Participatory Territory Management system caused by the COVID-19 epidemic.</td></tr>
</table>

Source: Project Completion Report and information provided by the Ministry of Agriculture and Livestock, etc.

3 Efficiency

The project cost was within the plan (ratio against the plan: 95%), and the project period was as planned (ratio against the plan: 100%). Most of the Outputs were partially, and related to the capacity building the training plan and materials were not develop as planned, which hindered the achievement of the Project Purpose. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

The Presidential Decree No. 6715/17 (2016) requires the department and municipal governments to submit to STP their development plans and to report on their progress. In addition, the “National Development Plan” (2014-2030) includes "participatory community

development in the territories" as one of its strategic objectives. Thus, the project effects have been supported by such policies.

<Institutional/Organizational Aspect>

[National level]

Under the Presidential Decree No. 6715/17 (2016), the General Directorate of Regional Development and Land Clearance of STP has managed the development plans of the department and municipal governments in Paraguay. According to the Director General of the Directorate, 11 staff members have been assigned to implement the Territorial Approach methodology acquired in another project (Human Resource Development for Strengthening the Territorial Approach), but the number has not been sufficient to manage the development plan of 17 Departmental Governments and 250 Municipal Governments. In addition, the Territorial Management Division of the Directorate of Agricultural Extension under the Ministry of Agriculture and Livestock established by Ministerial Order No. 700/2010 has been still in operation and its role has been to establish an organization to coordinate inter-organizational cooperation. The Director who has worked since April 2021 has been familiar with the Territorial Management approach because he was engaged in the project. He has intended to revitalize the Instancias in Itapúa and Caazapá Departments to promote the Territorial Approach. The division has had eight staff members, and the Director has planned to increase the number of members. The Territorial Management Division has managed the operations of 20 agricultural technology centers and 188 technical assistance centers nationwide, with 460 local technicians, 20 planners, and 18 soil experts.

[Department of Itapúa]

The Government of Itapúa Department has been responsible for the formulation and implementation of the department development plan, the management of the formulation and implementation of the municipal development plan, and the management of the Instancias. According to the Departmental Governmental, the Instancias have been maintained until the time of ex-post evaluation. However, due to the pandemic of COVID-19, activities of the Instancias have been suspended, and there has been no plan to resume its activities. Therefore, the Department Development Council and the sectoral councils have been playing their roles. The Department Development Council has been run by 33 members dispatched from various organizations such as universities, private sectors, and livestock associations. According to the members, the council has been able to implement the Participatory Territory Management system without any problems because the members are representatives of the Departmental Governmental and Municipal Governments which have operated the system.

[Department of Caazapá]

The Departmental Government of Caazapá, like that of Itapúa, has been responsible for the formulation and implementation of the department development plan, the management of the formulation and implementation of the municipal development plan, and the operation of the Department Development Council. According to the Municipal Government of San Juan Nepomuceno, the Municipal Development Committee, which played the role of Instancia in the project, has been maintained at the time of ex-post evaluation to respond to the COVID-19 pandemic (mainly to provide food and medicine to the citizens), not to promote the Territorial Approach. On the other hand, the Office of the President in charge of social affairs has launched the Social Protection Committee to provide social services in the municipalities[7]. Officers of the Municipality of San Juan Nepomuceno and the Director of the San Juan Nepomuceno Brach of the Departmental Government of Caazapá have participated in the committee.

<Technical Aspect>

In both Departments of Itapúa and Caazapá, the staff members trained through the project have been still working, and they have maintained the acquired knowledge and skills as they have used them in their daily work. In addition, the staff who train extension workers of the Territorial Approach have been assigned at Agricultural Development Centers of Caazapá and Guairá in the Department of Caazapá. They have conducted workshops on coordination of the stakeholders for the Territorial Approach and formulation of the development plans. The Departmental Government of Itapúa has sent its officers to take the "Geographic Information Systems Course" at the National University of Caaguazú.

<Financial Aspect>

At the national level, the Territorial Management Division of the Agricultural Extension Directorate of the Ministry of Agriculture and Livestock has had a sufficient budget. On the other hand, due to the complexity of the budgeting process at the national level, the central government has not allocated a budget for the planning and implementation of the Territorial Approach in the Departments of Itapúa and Caazapá, and thus the Department and Municipal Governments have had to secure the budget by themselves. For some time after the completion of the project, the Department and Municipal Governments of both Itapúa and Caazapá were able to secure the budget for promoting the Territorial Approach. At the time of ex-post evaluation, the Municipality of San Juan Nepomuceno answered that the budget required for the planning and implementation of the Territorial Approach, including investments outside of the administration area and the costs of promoting the Territorial Approach in the wider area, was difficult to allocate with other municipalities. Costs of maintaining the Instancias including the transportation and meeting expenses could be paid by each of the Municipal Governments, and some municipalities have got financial support from donors such as the International Fund for Agricultural Development. Therefore, overall, the budget has been sufficient.

<Evaluation Result>

In the light above, there have been issues in the institutional/organizational and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

Both of the Project Purpose, which was to achieve the development goals defined by each territory through application of Participatory Territorial Management system and reinforcement of inter-institutional coordination mechanism, and the Overall Goals, which were to improve social and economic situations through the said system and to introduce the system as a medium-and long-term national strategy in 13 Departments in the Eastern Region, have not been achieved. Regarding sustainability, the roundtable has been established, replacing the Instancia established by the project. Although the Departments of Itapúa and Caazapá have not secured the necessary budget for the planning and implementation of the Territorial Approach, its maintenance costs have not been almost needed. However, some financial challenges have remained. Concerning efficiency, the project cost and period were within the plan, but the outputs were not produced as

[7] The Social Protection Committee has been established in the following four municipalities: 1) Santa Rosa de Aguaray of San Pedro Department, 2) Mariscal Estigarribia of Boquerón Department, 3) Villeta de Central Department, and 4) San Juan Nepomuceno of Caazapá.

planned.
Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

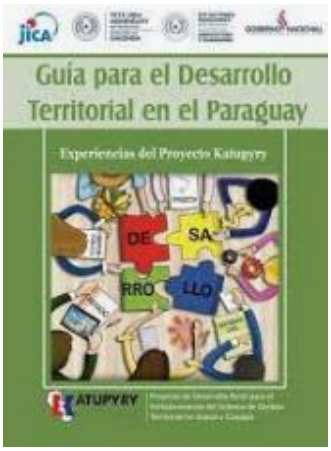
Recommendations for Implementing agency:

- It is recommended to continue the promotion of the Territorial Approach method in both Departmental Governments, since they have had staff members who have shown high interest in the approach.
- To make the mechanism for promoting the Territorial Approach in Instancias effective, the central government needs to be more involved in providing appropriate incentives to the main actors for implementation, which are Municipal Governments and others, so that they could carry out their mission properly.

Lessons Learned for JICA:

- The method for promoting the Territorial Approach introduced by the project aims at “overcoming structural barriers to sustainable and inclusive development" and "establishing the development mechanism which brings about local cohesion." After the project was completed, some subprojects of the Territorial Approach were taken over by other donors' projects, thus contributing to the continuation of the impact. Thus, it is effective to develop a comprehensive and versatile approach which could promote collaboration with other donors even after the project for enhancing sustainability.
- The project established a system to promote the Territorial Approach using the “Guidelines for the Territorial Development in Paraguay,” but this system was not continued after the project was completed. When strengthening a system which is not well established or introducing a new system for the target country, it is essential for JICA and the implementing agency to thoroughly examine not only the effectiveness of the system but also its applicability to the target country.
- One of the indicators for the Overall Goal of the project had not been clear which data was to be measured, and although supplemental data was used in the ex-post evaluation, the achievement status was judged unverifiable. At the time of completion of the project, it was pointed out that the indicator was inappropriate because there were many uncertain factors, but no suggestion for revision was presented. The clear setting of the Overall Goal and its indicator is important not only for the ex-post evaluation but also for the implementing agency to monitor the status of their efforts after the project completion. For this purpose, it is essential to set an indicator that can confirm the contribution of the project as much as possible, and to clarify which specific data will be collected and verified by the time of project completion at the latest.

Participatory Workshop in the target sites



“Guidelines for Territorial Development in Paraguay”

Internal Ex-Post Evaluation for Development Planning Project

conducted by Afghanistan Office: May 2021

Country Name	
Islamic Republic of Afghanistan	**Project for Socio-economic Activation of Rural Afghanistan**

I. Project Outline

Background	In the transition period from the post-war reconstruction to the development heading towards a stable and sustainable growth, economic activation in rural areas had been essential to achieve the sustainable growth for Afghanistan where around 80% of the population lived in rural areas (at the time of ex-ante evaluation). Since 2002, the National Programs under the Ministry of Rural Rehabilitation and Development (MRRD) had functioned as the driving force for rural development in the country, through implementing the significant number of sub-projects to cope with the individual development needs. However, it was identified that a comprehensive framework should be considered since it was needed to overview the regional development potentials and constraints, and to indicate the direction towards which investment should be made in order to efficiently attain its effects.		
Objectives of the Project	This project aims to (i) formulate a Promotion Plan and Action Plan for Rural Economic Activation in Bamyan Province, (ii) verify the effectiveness of approaches and technologies to improve farmers' livelihood through pilot projects, (iii) strengthen the capacity of central and local government staff in project planning and administration, and (iv) establish a Rural Economic Activation Model that can be utilized for the provinces in the central highland region, thereby contributing to the improvement of livelihood of rural communities in Bamyan Province and the improvement of the capacity of local government staff (through introduction of the Rural Economic Activation Model) and the implementation of development projects (based on the Promotion Plan for Rural Economic Activation) in the central highland region.		
	Expected Goals through the proposed plan[1]: 1) Through the implementation of development projects based on the Promotion Plan of Rural Economic Activation, the livelihood of rural communities in Bamyan Province is improved. 2) Through introduction of the Rural Economic Activation Model into the central highland region (Ghor Province, Daykundi Province), the capacity of local government staff in the project planning and administration is improved and the development projects are implemented based on the Promotion Plan of Rural Economic Activation.		
Activities of the Project	1. Project site: Bamyan Province and Kabul city 2. Main activities: (1) To formulate a Promotion Plan and Action Plan for Rural Economic Activation in Bamyan Province, (2) To verify the effectiveness of approaches and technologies to improve farmers' livelihood through pilot projects, (3) To strengthen the capacity of central and local government staff in project planning and administration, and (4) To establish a Rural Economic Activation Model that can be utilized for the provinces in the central highland region. 3. Inputs (to carry out above activities) Japanese Side 1) Mission members: 11persons 2) Equipment: Facilities and equipment for the small-scale pilot projects Afghanistan Side 1) Staff allocated from MRRD and Bamyan Provincial Department of Rural Rehabilitation and Development (PRRD) 2) Land and facilities: Office space		
Project Period	August 2011 - August 2013 (extended period: January 2012 to August 2013)	Project Cost	(ex-ante) 240 million yen (actual) 313 million yen
Implementing Agency	Ministry of Rural Rehabilitation and Development (MRRD) Bamyan Provincial Department of Rural Rehabilitation and Development (PRRD)		
Cooperation Agency in Japan	Oriental Consultants Co., Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

・Due to the state of emergency caused by COVID-19, all information was obtained through questionnaires and follow up phone calls/emails to MRRD and PRRD. No site visits were conducted.

<Special Perspectives Considered in the Ex-Post Evaluation>

Use of Supplementary Information:

・In order to examine the motivation of MRRD and PRRD to proceed with the projects proposed by the Promoted Plan/Action Plan, "Was the implementing agency satisfied with the Promoted Plan/Action Plan?" is used as supplemental information 1.

Evaluating the Utilization Status of the Proposed Plan:

・The Promotion Plan and Action Plan for Rural Economic Activation (Action Plan) proposed 22 development projects to be executed for the period of ten years from 2013 at the moment. As stated in the Final Report, however, the Action Plan is to be updated by responding to the future changes, such as changes in the social situations, expected budget allocations and other relevant factors. Therefore, this ex-post evaluation study does not make an evaluation judgment by setting the cut-off point, such as the number of development projects implemented by the given time period, but by the fact on whether the utilization of

[1] The degree of achievement of expected goals is not to be assessed in principle at the time of ex-post evaluation, since it is defined as the medium-to-long-term goals which will be attained as a result of crystallizing the proposed plan ("output" of the project).

the proposed plan is progressed to some degree by responding to the social changes and other relevant factors.

1 Relevance

<Consistency with the Development Policy of Afghanistan at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, the project was consistent with the development plan, "Afghanistan National Development Strategy (ANDS) (2008-2013)" in which the agricultural and rural development is stated as one of the three priority issues of social economic development. Promotion of the diversification of farming and value-added agriculture was considered as "Economic Growth Engine", thus the Government of Afghanistan (GOA) prioritized the sub-sector of agriculture such as horticulture crop, animal husbandry and industrial crop.

<Consistency with the Development Needs of Afghanistan at the Time of Ex-Ante Evaluation>

This project was consistent with Afghanistan's development needs for economic activation in rural areas at the time of ex-ante evaluation as described in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The Japanese Government set its assistance policy toward Afghanistan in November 2009. One of the three pillars was "Sustainable Development" in which the "Integrated Rural Development", including agriculture, rural development, infrastructure development was included[2].

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Objectives at the time of Project Completion>

The project achieved its objectives by the time of project completion. The Action Plan was formulated in Bamyan Province based on the analysis of development potentials and its impact by the project completion. The effectiveness of approaches and technologies to improve farmers' livelihoods were partially verified and valuable lessons learned were drown through implementing three small-scale pilot projects, that are "Potato Production and Processing Project" by PRRD and Department of Agriculture, Irrigation and Livestock (DAIL), "Dairy Product Improvement Project" by DAIL and "Village Naan-Baking Service Project" by PRRD. Through the process of planning and implementation of these pilot projects, the capacity of project planning and administration for the central and local government staff engaged in the Rural Economic Activation was strengthened. The Rural Economic Activation Model that can be utilized for the provinces in the central highland region was established throughout the process of above-mentioned activities. Interviews with officials of MRRD/ PRRD revealed that MRRD/ PRRD had been satisfied with the contents of the Action Plan which responded to the needs of the implementing agencies (Supplementary Information 1).

<Utilization Status of the Proposed Plan at the time of Ex-post Evaluation>

The Action Plan has been partially utilized by the time of ex-post evaluation. It was identified by the study that in Bamyan Province, two development projects were executed from 2013 to 2019 in the program of Comprehensive Agriculture and Rural Development Facility (CARD-F)[3]. Three development projects have been ongoing in the priority programs since 2013 (Indicator 1). Those development projects in the priority programs have been on going in other central highland region, namely Ghor Province, Daykundi Province as well (Indicator 2). All of development projects referred above are either under the Corp Farming Development Plan or the Livestock Development Plan of six sectoral development plans[4].

According to the PRRD, 22 development projects proposed by the Action Plan have been under the management of the Program Unit of PRRD which bears the responsibilities to actually implement the project, while MRRD coordinates the collaboration with external donors including the funding. It is reported that some external factors such as the unstable security situation in 2014, turmoil among government agencies after the presidential election in 2014 and 2019 have adversely affected the utilization status of the proposed plan to some degree.

<Status of Achievement for Expected Goals through the Proposed Plan at the time of Ex-post Evaluation>

Sufficient data was not available due to that accessibility to the information was limited under the effect of COVID-19. Therefore, it is not possible to examine the achievement status of Expected Goals through the Proposed Plan, "(1)Through the implementation of development project based on the Promotion Plan of Rural Economic Activation, the livelihood of rural communities in the Bamyan Province is improved" and "(2)Through introduction of a Rural Economic Activation Model into the central highland region (Ghor, Day Kundi Provinces), the capacity of local government staff in the project planning and administration is improved and the development projects are implemented based on the Promotion Plan of Rural Economic Activation".<Other Impacts at the time of Ex-post Evaluation>

It was identified by the study that some development projects under the Action Plan which have not been implemented yet in the provinces of central highland area, have been implemented in other provinces. The development project under the Crop Farming Development Plan, namely "Project for Strengthening Potato Production and Sales" have been implemented in Herat, Kabul, Nangarhar and Kandahar Provinces from 2013 to 2022. The other development project under the Livestock Development Plan, namely "Project for Improving Milk Processing" has been ongoing from 2013 in Kabul, Logar, Parwan and Nangarhar Provinces. No negative impact was observed by the study.

<Evaluation Result>

In light of the above, the effectiveness/impact of the project is fair.

Status of Achievement of Utilization Status of the Proposed Plan and Expected Goals through the Proposed Plan

Aim	Indicators	Results

[2] Ministry of Foreign Affairs, ODA Country Data book in 2011

[3] CARD-F is the large-scale program in which GOA had promoted in collaboration with external donors under the "National Comprehensive Agriculture Production & Market Development Program".

[4] The Action Plan consists of twenty-two development projects based on the six sectoral development plans, proposing the activities to be implemented for the first ten years to materialize the Promotion Plan for Rural Economic Activation.

<table>
<tr>
<td>(Utilization Status of the Proposed Plan)
(1) Development projects have been implemented in Bamyan Province based on the Promotion Plan of Rural Economic Activation.</td>
<td>(Indicator 1)
The implementation progress of development projects in Bamyan Province based on the Promotion Plan of Rural Economic Activation.</td>
<td>Status of the Achievement: partially achieved
(Ex-post Evaluation)
・In the Action Plan, 22 development projects were proposed under the 6 sectoral Development Plans to be executed in 10 years from 2013 to 2023. It was identified by the study that one project under the Crop Farming Development Plan and the other under the Livestock Development Plan respectively were completed from 2013 to 2019. They were executed in the CARD-F. Currently, two development projects under the Crop Farming Development Plan and the one under the Livestock Development Plan have been on going at the time of ex-post evaluation in 2020.
・It was identified by the study that the food processing centers constructed during the project period for community people has been continuously operated since project completion under the Project for Agro-Processing Business Establishment. The required food processing machines were purchased and 35 direct beneficiaries started working to make income.

<table>
<tr><th>Development Plan/ Development Projects</th><th>Implementing Agency</th><th>Project Period</th></tr>
<tr><td colspan="3">1. Crop Farming Development Plan</td></tr>
<tr><td>1-3 Project for Strengthening Potato Production and Sales</td><td>MRRD and PPP[5]</td><td>2013 ongoing under the priority program</td></tr>
<tr><td>1-5 Project for Strengthening Vegetable Production and Sales</td><td>MAIL[6] and MRRD CARD-F Program</td><td>2013-2019</td></tr>
<tr><td>1-6 Project for Agro-Processing Business Establishment</td><td>MRRD and MAIL</td><td>2013 ongoing under the priority program</td></tr>
<tr><td colspan="3">2. Livestock Development Plan</td></tr>
<tr><td>2-2 Project to Improve Ruminant Livestock Feeding System</td><td>MAIL and DAIL, CARD-F Program</td><td>2013-2019</td></tr>
<tr><td>2-6 Project for Improvement of Poultry-Raising Technology</td><td>MRRD, AREDP[7] and PPP</td><td>2013 ongoing under the priority program</td></tr>
</table>
</td>
</tr>
<tr>
<td>(2) Rural Economic Activation
Model established by the project has been applied in the provinces of the central highland region (Ghor Province, Daykundi Province).</td>
<td>(Indicator 2)
The progress of the planning of Rural Economic Activation in other provinces (including Ghor Province, Daykundi Province)</td>
<td>Status of the Achievement: partially achieved
(Ex-post Evaluation)
・It is not confirmed whether the Promotion Plan of Rural Economic Activations have been planned, but it was identified by the study that following three projects have already been implemented in other central highland region, namely Ghor Province, Daykundi Province according to the interview with PRRD.
<table>
<tr><th>Development Projects</th><th>Areas of implementation</th><th>Implementing Agency</th><th>Project Period</th></tr>
<tr><td colspan="4">1.Crop Farming Development Plan</td></tr>
<tr><td>1-3 Project for Strengthening Potato Production and Sales</td><td>Ghor Province</td><td>MRRD and PPP</td><td>2013 ongoing under the priority program</td></tr>
<tr><td>1-6 Project for Agro-Processing Business Establishment</td><td>Daykundi Province</td><td>MRRD, MAIL</td><td>2013 ongoing under the priority program</td></tr>
<tr><td colspan="4">2.Livestock Development Plan</td></tr>
<tr><td>2-6 Project for Improvement of Poultry-Raising Technology</td><td>Ghor Province
Daykundi Province</td><td>MRRD, AREDP and PPP</td><td>2013 ongoing under the priority program</td></tr>
</table>
</td>
</tr>
<tr>
<td>(Expected Goals through the Proposed Plan)
(1)Through the implementation of development project based on the Promotion Plan of Rural Economic Activation, the livelihood of rural communities in the Bamyan Province is improved.</td>
<td>(Indicator 1)
The number of projects, the number of beneficiaries and livelihood changes in the Bamyan Province brought out through implementation of development projects based on the Promotion Plan of Rural Economic Activation</td>
<td>(Ex-post Evaluation)
・Accessibility to the information was limited under the effect of COVID-19. Five development projects were executed or have been ongoing in the Bamyan Province as described above. However, it is unknown for the number of beneficiaries and livelihood changes in the Province.</td>
</tr>
<tr>
<td>(2)Through introduction of a Rural Economic Activation Model into the central highland region (Ghor, Day Kundi Provinces), the capacity of local government staff</td>
<td>(Indicator 2)
The number of provinces, the number of projects in other provinces brought out through implementation of development projects</td>
<td>(Ex-post Evaluation)
・Accessibility to the information was limited under the effect of COVID-19. It was confirmed that three development projects in two provinces have been implemented as described above. However, it is unknown whether those projects are based on the Action Plan of each province since it was not confirmed that the Promotion Plan of Rural Economic Activations were developed for those provinces.</td>
</tr>
</table>

[5] PPP: Private Public Partnership
[6] MAIL: Ministry of Agriculture, Irrigation and Livestock
[7] AREDP: Afghanistan Rural Enterprise Development Programme

in the project planning and administration is improved and the development projects are implemented based on the Promotion Plan of Rural Economic Activation.	based on the Promotion Plan of Rural Economic Activation	

Source：Final Report, Questionnaires and Interviews with the implementing agencies

3 Efficiency

Both the project cost and the project period exceeded the plan (ratio against plan: 130% and 139%, respectively). The project period was extended to complete the implementation of the three pilot projects. The project cost exceeded to cover the operation for extended period. The Outputs of the project were produced as planned.

Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

"Afghanistan National Peace and Development Framework (ANPDF) (2017-2021)", a five-year strategic plan for achieving self-reliance, sets the development strategy specifying the National Priority Programs (NPP). Under the NPP, there is the "Comprehensive Agricultural Development Program" with investment priorities toward the national irrigation plan, national wheat sector plan, national horticulture plan, national livestock development policy, livestock development and women in agriculture. In addition, GOA has a number of policies and strategies for better community development such as, "MRRD strategic intent (2010-2025)", "Provincial Development Plan (PDP) (2010-2025)", etc.

<Institutional / Organizational Aspect>

According to the interview with PRRD, the Program Unit of PRRD office located in each Province is in charge of the implementation of the project including those development projects under the Action Plan. The number of staff of Program Unit varies from province to province such as from 9 to 25 depending on the scope and the requirements of the project. The staff of Program Unit not only implement the project, but also plan, monitor and design the project, etc. The coordination among MRRD, PRRD and related organization including external donors has been effectively carried out by MRRD to implement the development projects. As explained above, some of development projects were executed in the program of CARD-F and National Rural Access Program.

<Technical Aspect>

It is reported that those staff of MRRD and PRRD have been able to supervise and monitor the projects. However, there is no sufficient data to examine the technical aspect, due to the limited accessibility to the information under the effect of COVID-19.

<Financial Aspect>

Accessibility to the information is limited under the effect of COVID-19. No data was obtained to examine the financial aspect.

<Evaluation Result>

Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

A Promotion Plan and Action Plan for Rural Economic Activation were developed by the time of project completion based on the analysis of development potentials and its impact through implementation of three pilot projects in Bamyan Province. Some external factors such as the turmoil among government agencies after the presidential election in 2014 and 2019 have adversely affected the utilization status of the proposed plan to some degree. However, the consistent efforts of Program Unit of PRRD have enabled to implement some development projects by obtaining the funds of GOA and the external donors. As a result, the Promotion Plan for Rural Economic Activation has partially been utilized by the time of ex-post evaluation,

As for sustainability, no problem has been observed in terms of policy aspect and institutional / organizational aspect. However, sufficient data and information to make an evaluation judgement for other aspects are not available due to the limited accessibility under the effect of COVID-19. As for efficiency, both the project cost and the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

1) It is recommended that MRRD/PRRD should follow up the progress of development projects implemented in Bamyan, Groh and Daykundi Provinces to examine the status of achievement for Expected Goals through the Action plan. The utilization status of the Action Plan was confirmed by the interviews and questionnaire surveys during the study. However, it was not sufficient to examine the achievement status of Expected Goal through the Action Plan due to the effect of COVID-19.

2) It is recommended that MRRD/PRRD should review the staff's technical capacity of Program Unit in charge of the Action Plan and their financial aspects in order to identify any issues to be coped with and should prepare the strategy to overcome those issues. Due to the effect of COVID-19, these aspects under the sustainability were not assessed.

Lessons Learned for JICA:

1) This ex-post evaluation was conducted seven years after the project completion. It was mainly because the deterioration of local security condition has hampered carrying out the evaluation as planned which is three years after the project completion. With this period, lots of turn over and change of situation have occurred and it was difficult to communicate with those who were aware of the project. In order to make the follow-up activities effective and timely, it is recommended that JICA should explore any simpler ways which enable an Overseas Office to carry out the ex-post evaluation study even under such severe constraints. For example, if the severity of constraints does not allow an Overseas Office to carry out the full-fledged ex-post evaluation study at the ex-post

evaluation year, the Overseas Office should at least monitor the situation via questionnaire survey or interview with the implementing agency just to identify whether there are any crucial issues to be coped with.

2) It is understood that the scheme of "Development Planning Project" provides the technical transfer mainly required to proceed the development study in rather short period of time during the project period. After the project completion, only if required, some additional assistance is followed in the form of technical cooperation project or technical assistance by Japanese experts. In case of Afghanistan where the security condition is often unstable, it is crucial to proceed the implementation by themselves after the project completion if the continuation of technical assistance is not made available due to security reasons.

Photos

<table>
<tr><td colspan="2">  </td><td>  </td></tr>
<tr><td colspan="2">  </td><td></td></tr>
<tr><td colspan="2">Qarghan food processing center in Bamyan Province was constructed in 2012 and has been operated mainly by women.</td><td>Qargatww food processing center in Bamyan Province was constructed in 2012 has been operated by both Men and Women.</td></tr>
</table>

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS[1])

conducted by Tunisia Office: June 2021

Country Name	Sahara Solar Energy Research Center Project
People's Democratic Republic of Algeria	

I. Project Outline

Background	The Algerian economy highly depended on the energy sector such as oil and natural gas, which accounted for approximately 98% of export, 50% of GDP and 75% of revenue of the country. However, employment absorption rate of this sector was subdued around 2% of the total employment. The country's unemployment rate in 2007 was 11.8%, and employment creation, fostering of new industries as well as human resource development responsible for the industries became important policy issues. Under those circumstances, there was an increasing expectation for possibility of solar power generation in Algeria as the country had a large land area on the African continent, and the volume of solar radiation in the southern region was 6kWh/m^2/day, which was about twice as much as that of Tokyo. On the other hand, about 90% of the country's land was covered by Sahara Desert, and 3.5% of the land area was used only for the agricultural land. For these reasons, there are great expectations for (i) reducing silicon from the desert sand that was not used, (ii) using it as the main material for photovoltaic panels, (iii) using the reduced silicon to build a solar power plant in the desert area for utilizing it as an energy production base, and (iv) fostering research human resources through these joint studies. Internationally, Algerian government had played a leading role in establishment of African Energy Commission as well as advocating a clean development mechanism in the region, and promotion of a search of global warming prevention measures in Africa as African Group chairperson in the Conference of Parties of United Nations Conventions (COP)-new phase development.
Objectives of the Project	Through development of silicon reduction process by designing new thermodynamics for silicon production and establishment of bases for energy engineering education in the Africa, the project aimed at verifying the feasibility of sustainable scaling up of the solar breeder concept and establishing basic research and education for new global energy supply system. 1. Expected Overall Goal: N.A. 2. Project Purpose: The feasibility of sustainable scaling up of the solar breeder concept (construction of Si solar cell plants and solar power plants) is verified and the basic research and education for new global energy supply system are established.
Activities of the Project	1. Project Site: Oran, Saida, Adrar 2. Main Activities: (i) To develop silicon reduction process by designing new thermodynamics for silicon production, (ii) to find new applications of solar energy in Africa, and (iii) to establish bases for energy engineering education in the Africa area and to perform remote education and research with the use of Web-Based E-Learning System (WebELS). 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 46 persons 2) Trainees received: 54 persons 3) Equipment: Solar panels, Scanning Electron Microscope (SEM-EDX), Atomic Force Microscope (AFM), Optical microscope, Deionized water (DIW), Solar Panel monitoring, Weather monitor, and WebELS server Algerian Side 1) Staff allocated: 37 persons 2) Facilities and land: Office spaces for Japanese experts and WebELS, and equipment in laboratories in USTO-MB 3) Local operation cost: salaries of counterpart staff, travel cost, workshop and meeting costs, etc.
Project Period	November 2010 to November 2015 / Project Cost: (ex-ante) 309 million yen, (actual) 338 million yen
Implementing Agency	Responsible Agency: Ministry of High Education and Science Research (MHESR) Implementing Agency: University of Science and Technology of Oran Mohamed Boudiaf (USTO-MB) Cooperation Agency: Saida University, Renewable Energy Development Center (CDER) Adrar
Cooperation Agency in Japan	The University of Tokyo, Tokyo Institute of Technology, Hirosaki University, Chubu University, Tokyo University of Science, Nihon University, Tohoku University, National Institute of Informatics (NII), National Institute for Materials Science (NIMS), Shimizu Densetsu Kogyo Co., Ltd., and Taiheiyo Cement Corporation

II. Result of the Evaluation

<Constraints on Evaluation>

Due to the epidemic of COVID-19, in this ex-post evaluation, the evaluation judgement was made based on the information obtained through questionnaire survey and telephone interviewing with the people concerned to the project. The field visit to the project sites was not conducted.

<Special Perspectives Considered in the Ex-Post Evaluation>

- Since the Overall Goal for the project was not set in the project design matrix, "Utilization of the research outcomes" was verified by this ex-post evaluation as a part of expected positive impacts by the Project.

1 Relevance

<Consistency with the Development Policy of Algeria at the Time of Ex-Ante Evaluation>

The Project was consistent with the Algeria's development policy of "the National Action Plan 2009" and "the National Action Plan 2014" emphasizing on the development of renewable energy and energy efficiency of the country.

<Consistency with the Development Needs of Algeria at the Time of Ex-Ante Evaluation>

[1] SATREPS: Science and Technology Research Partnership for Sustainable Development.

The Project was consistent with the Algeria's development needs to build a solar power plant in the desert area by utilizing silicon from the desert sand and to foster the research human resources through the joint studies of this Project.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The Project was consistent with Japan's ODA policy for Algeria at the time of ex-ante evaluation putting priority on technical cooperation for strengthening basic technology and fostering industrial human resources in order to promote the industrial base[2].

<Evaluation Result>

In light of the above, the relevance of the Project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. The feasibility of sustainable solar breeding approach with solar power plants and cell project plants at the time of project completion was as follows. Firstly, the generation of a high-purity silica and silicon reduction, which was the core of the technology in the Project, were carried out in both Japan and Algeria. The silicon reduction from sand was achieved. Secondly, the cost and energy balance of silicon reduction with the technology, which was more efficient than that of the current silicon manufacturing, was established. The silicon reduction from diatom was successfully implemented in USTO-MB. Thirdly, the silicon reduction from the sand had been continuously carried out in Algeria as planned after installation of a test plant in June 2015. Fourthly, the five (5) types of solar cells were installed, their operational records were obtained at least for 2 years, and quantitative data about cell performance such as efficiency and reliability were accumulated as planned (Indicator 1).

The situation of sustainable basic research and education for new global energy supply system at the time of project completion was as follows. Firstly, the human resource had been developed steadily based on the Project's research results through the dispatch of students and researchers to Japan. Secondly, USTO-MB established a PhD and master's degree courses related to solar cells and superconductivity for platform of technology introduced from Japan. Eleven (11) master and five (5) PhD theses were submitted under the framework of this Project. Thus, the institutional capacity of the research institutes also had been strengthened through the Project. Thirdly, the researchers and students in Algeria had continued their research activities by utilizing the project equipment and technologies introduced from Japan. Fourthly, the remote education system utilizing WebELS was established, and USTO-MB signed MOU with Japanese universities for joint studies. Fifthly, the experimental sites in Saida University were of great help for USTO-MB and Saida University to continue research. Other universities were also concerned such as Pan African University Institute of Water and Energy Sciences (PAUWES) which was a center of excellence at the University of Tlemcen in Algeria (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been sustained by the time of ex-post evaluation. The key research outputs produced by the Project such as the silicon reduction process using silica stone, the silicon production test plant and the solar cell have been utilized at the Semiconductor Research Center for Energy (CRTSE) in Algiers. For example, CRTSE conducts diverse research for instance in processing and enrichment of the raw material and crystal growth of silicon. It also developed knowhow of putting crystal growth technology into industrial use in photovoltaic and silicon electronics. Furthermore, the cooperation between Japanese universities/research institutes and USTO-MB has been maintained and a collaborative research on silicon production from sand and diatom has been undertaken. A Japanese professor and an Algerian researcher jointly attended to the International Conference on Renewable Energy and Energy Conversion organized in November 2019 at USTO-MB.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

Since no Overall Goal was set, utilization of the research outcomes was verified to evaluate positive impacts by the Project. Based on the scientific knowledge and research output acquired in the Project, "the Strategic Energy Research and Innovation Plan for Transition and Security in Algeria" (2020-2030) was formulated by Commission for Renewable Energies and Energy Efficiency, a public body responsible for designing the national strategy for the development of renewable energies and energy efficiency. The representative researcher of the Project was involved in the formulation of this plan as an expert and was in a position to give advice, which made it possible to reflect the project results in the policy aspect. In addition, the High Commission for Renewable Energies provides for the establishment of a coordination between the scientific community and the industry.

<Other Impacts at the time of Ex-post Evaluation>

The cooperation between Japanese universities/research institutes and USTO-MB has been expanded to other related joint activities such as (i) Monitoring and evaluation of photovoltaic modules in Saida, (ii) Modelling of photovoltaic modules installed in Saida University by design of experiment, (iii) Experimental implementation of photovoltaic module emulator, and (iv) Performance assessment of the five different photovoltaic module technologies under outdoor conditions in Algeria.

<Evaluation Result>

Therefore, the effectiveness/impact of the Project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The feasibility of sustainable scaling up of the solar breeder concept (construction of Si solar cell plants and solar power plants) is verified and the basic research and education for new global energy supply system are established.	(Indicator 1) Current feasibility situation of sustainable solar breeding with solar power plants and cell project plants.	Status of the achievement: achieved (continued) (Project Completion) • The generation of a high-purity silica and silicon reduction, which was the core of the technology in the project, were carried out in both Japan and Algeria. The silicon reduction from sand was achieved. • The cost and energy balance of silicon reduction with the technology, which was more efficient than that of the current silicon manufacturing, was established. The silicon reduction from diatom was successful in USTO-MB. • The silicon reduction from the sand had been carried out continuously in Algeria as planned after installation of a test plant in June 2015. • The five (5) types of solar cells were installed, their operational records were obtained at least for 2 years, and quantitative data about cell performance such as efficiency and reliability were accumulated as planned.

[2] ODA data book 2011, Ministry of Foreign Affairs, Japan.

		(Ex-post Evaluation) • The key research outputs produced by the Project such as the silicon reduction process using silica stone, the silicon production test plant and the solar cell have been utilized at the Research Center in Semiconductors Technology for Energy (CRTSE) in Algiers. For example, CRTSE conducts diverse research for instance in processing and enrichment of the raw material and crystal growth of silicon. It also developed knowhow of putting crystal growth technology into industrial use in photovoltaic and silicon electronics
	(Indicator 2) Current situation of sustainable basic research and education for new global energy supply system.	Status of the achievement: achieved (continued) (Project Completion) • The human resource had been developed steadily based on Project's research results through the dispatch of students and researchers to Japan. • USTO-MB established a PhD and master's degree courses related to solar cells and superconductivity for platform of technology introduced from Japan. Several master and PhD theses were submitted under the framework of the Project. Thus, the institutional capacity of research institutes also had been strengthened through the project. • The researchers and students in Algeria had continued their research activities by utilizing the project equipment and technologies introduced from Japan. • The remote education system utilizing WebELS was established, and USTO-MB signed MOU with Japanese universities for joint studies. • The experimental sites in Saida University were of great help for USTO-MB and Saida University to continue research. Other universities were also concerned such as Pan African University Institute of Water and Energy Sciences (PAUWES) which was a center of excellence at the University of Tlemcen in Algeria. (Ex-post Evaluation) • The cooperation between Japanese universities/research institutes and USTO-MB has been maintained and a collaborative research on silicon production from sand and diatom has been undertaken. A Japanese professor and an Algerian researcher jointly attended to the International Conference on Renewable Energy and Energy Conversion organized in November 2019 at USTO-MB.

Source: Questionnaire and interviews

3 Efficiency

Although the project period was within the plan, the project cost exceeded the plan (100% and 125% respectively). The outputs were produced as planned. Therefore, efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The Strategic Energy Research and Innovation Plan for Transition and Security in Algeria (2020-2030) established by the Ministry of Energy Transition and Renewable Energies aims at establishing a scientific research database in the field of energy security in order to consolidate the research outputs and outcomes to achieve a transition to renewable energy and enhance energy efficiency. The research outputs/outcomes acquired by the project are expected to be integrated in this database and used for the implementation of the national strategic plan.

<Institutional/Organizational Aspect>

USTO-MB, Saida University, CDER Adrar, and CRTSE have been responsible to utilize the research outputs by the Project. USTO-MB and Saida University have undertaken operation and maintenance of the equipment provided by the Project. Approximately 100 students and researchers in Algeria have been continuously involved in research activities related to the Project. The cooperation between Algerian and Japanese universities has been maintained for promoting joint studies. Also, the collaborative mechanisms between government authorities and researchers. such as an advisory board with experts in energy and climate change, were established for reinforcing the government-academic policy dialogue to promote renewable energy and enhance energy efficiency.

<Technical Aspect>

The researchers have been sustained and improved their research capacity by exchange of knowledge among them and other personnel, under the continuous support of USTO-MB and Saida University. They often start new research projects based on the research outputs of the Project. Also, many master and PhD research related to the research areas of the Project have been carried out in several Algerian universities. For instance, they studied, in a PhD project in October 2017, the installation of a large photovoltaic system at USTO-MB in order to provide enough energy for the university. They also studied the possibility of connecting this system to the Sonelgaz (national power utility)'s power grid. WebELS system and user manual have been used. By using WebELS system, national and international universities and research organizations benefit from distance education, online meeting, and international conference distribution without difficulty even in areas with low-speed Internet. The skills and knowledge to operate and maintain the research facilities in USTO-MB and Saida University have been sustained and improved with the support of specialized and qualified persons.

<Financial Aspect>

USTO-MB and Saida University have managed to obtain the budgets from the Ministry of High Education and Scientific Research to continue the operation and maintenance of the equipment installed by the Project to a minimum degree. Given this track record, it is likely that the operation and maintenance budget for some years will continue to be allocated. However, it is desirable in the long term to mobilize additional financial support to develop further research related to the Project within the framework of funding from the Ministry of Energy Transition and Renewable Energies, the Ministry of of High Education and Science Research or an international cooperation program.

<Evaluation Result>

Therefore, the sustainability of the effects through the Project is high.

5 Summary of the Evaluation

The Project achieved the Project Purpose and the project outcomes have been utilized through the continuous research to scale up the solar breeder concept based on the research output of the Project. As for efficiency, the project cost exceeded the plan. Considering all of

the above points, this Project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Although the budget to sustain the project outputs/outcomes is mobilized so far, given their importance on renewable energy sector development of the Algerian authorities, as well as some prospect of industrialization of the outputs/outcomes in new projects, further mobilization of financial resources is recommended to scale up the impact of the Project.

Lessons Learned for JICA:

- Based on the establishment of a good relationship between Algerian and Japanese researchers, Algerian researchers are highly motivated to utilize the project outputs/outcomes and continue to do so after the project completion through communication with relevant parties including Japanese researchers. The main reasons are as follows:
  - Implementation of the training programs not only in the project but also in other cooperation schemes such as JICA's Knowledge Co-Creation Programs (KCCP) or the Scholarship Program of the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT)) created abundant opportunities for the researchers to interact each other,
  - They established a practice to frequently share and exchange the research results on a regular and remote basis, and
  - Research theme was of great interest not only for Japanese researchers but also Algerian authorities who seek to diversify energy resources other than hydrocarbons (untap the unexploited potential of the Algerian Sahara to create solar breeder)

Installation of a solar cell

Visit to Adrar in deep Sahara desert of Algeria

conducted by Ethiopia Office: July, 2021

Country Name	**Project for Strengthening of Agricultural Pesticide Residue Analysis System**
Federal Democratic Republic of Ethiopia	

I. Project Outline

Background	Agriculture was one of the core economic sectors of Ethiopia, which supported 85% of livelihoods of the population and accounted for approximately 40% of GDP and more than 90% of the total export value (2009/10). It had contributed to steady economic growth of the country and been the key for poverty reduction. According to the Ethiopia Trade Statistics in 2009/10, coffee was the top agricultural export commodity with the total value of 5,300 million US dollars. However, in 2008, pesticide contaminations found in succession in coffee to Japan, which accounted for 21% of the total coffee export. The Ministry of Health, Labour and Welfare of Japan issued an administrative order to inspect all coffee from Ethiopia and started its execution in May 2008. As a result, the export of coffee to Japan significantly declined, and the incident heavily harmed the Ethiopian economy. Coping with the situation, the Ethiopian government has established the Quality Monitoring and Pesticide Testing Laboratory in the Ministry of Agriculture to strengthen the oversight of safety of agricultural export commodities. The laboratory started its operation and soon identified problems such as insufficient experience of the staff members, shortage of consumables including solvents, and unidentified infection routes of commodities.		
Objectives of the Project	Through the accumulation of baseline data for pesticide residue analysis, establishment of the validation[1] of residue analytical methods, establishment of the laboratory management to accumulate analytical data, application of the residue analysis methods, and implementation of the trial monitoring in pilot areas, the project aimed at the strengthening of pesticide residue analytical capacity of the laboratory, thereby contributing to increase in the number of analyzable target agricultural products and pesticides analysed by the laboratory and establishment of effective oversight to the supply chain of agricultural commodities. 1. Overall Goal: 1) The number of analyzable target agricultural products and pesticides of the Quality Monitoring and Pesticide Testing Laboratory is increased. 2) Effective oversight to the supply chain of agricultural commodities is established. 2. Project Purpose: The pesticide residue analytical capacity of the Quality Monitoring and Pesticide Testing Laboratory is strengthened.		
Activities of the Project	1. Project Site: Quality Monitoring and Pesticide Testing Laboratory in Addis Ababa 2. Main Activities: 1) Accumulation of the baseline data to implement pesticide residue analysis and selection of the priority pesticide/agricultural commodities including coffee for analysis, 2) Establishment of the validation of residue analytical methods of target agricultural commodities with pesticide combination, 3) Establishment of the laboratory management to accumulate reliable analytical data, 4) Application of the residue analysis knowledge/techniques/methods obtained to agricultural commodities and other samples, 5) Conduct of monitoring of the trial activities concerning coffee in pilot areas using check sheet and supplemental chemical analysis. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 4 persons 2) Trainees received in Japan: 12 persons 3) Equipment: analytical instrument for residue analysis, vehicles, PCs, printers, projectors, consumables for residue analysis, etc. Ethiopian Side 1) Staff Allocated: 7 persons 2) Land and Facilities: project office 3) Local cost: cost for utility of offices (electricity, water and telephone)		
Project Period	November 2011 - November 2016 (Extension: November 2015 - November 2016)	Project Cost	(ex-ante) 300 million yen, (actual) 313 million yen
Implementing Agency	Quality Monitoring and Pesticide Testing Laboratory, Ministry of Agriculture (MoA)		
Cooperation Agency in Japan	Ministry of Health, Labor and Welfare		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

・ The "certificates of analysis" expected by the Indicator 2 for the Project Purpose to be issued by the laboratory was considered as "advice notes" in this ex-post evaluation. A document titled "certificate of analysis" can be issued only by an institute accredited by an international standard such as the International Organization for Standardization (ISO). Since the laboratory was expected by the Indicator 1-2 for the Overall Goal to be accredited some years after the completion of the project, the laboratory could not issue "certificates of analysis" at the time of project completion but "advice notes." The terminal evaluation (2015) also evaluated the achievement of Project Purpose interpreting the "certificates of analysis" as "advice notes."

[1] A process to scientifically verify the validity of test method.

1 Relevance

<Consistency with the Development Policy of Ethiopia at the Time of Ex-Ante Evaluation>

Under the policy of the "Agricultural Development Led Industrialization" (ADLI), the government of Ethiopia has aimed at the improvement of living standard of farmers through commercialization of agriculture and economic growth supported by the export of agricultural commodities. Also, in the national development plan of the "Growth and Transformation Plan 2010/11-2014/15," agriculture, which was a core of economic growth and played important roles to create preferable conditions for economic growth, was expected to be vitalized as one of the seven strategies to achieve the national target. Therefore, the project was consistent with the development policies of Ethiopia at the time of ex-ante evaluation.

<Consistency with the Development Needs of Ethiopia at the Time of Ex-Ante Evaluation>

Although the hardware including new analytical instruments has been well prepared in the Quality Monitoring and Pesticide Testing Laboratory (hereinafter "the laboratory") newly established in 2009, the instruments and equipment has not been properly utilized due to a lack of analysts who have experiences of pesticide residue analysis. Thus, the performance of the laboratory conducting unreliable quality analysis has been an issue to be addressed. Therefore, the project was consistent with the development needs of Ethiopia at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

In the "Country Assistance Program for the Federal Democratic Republic of Ethiopia" (June 2008), agriculture/rural development focusing on the "research and development of agricultural technology, dissemination of improved technologies and support for their application" was designated as one of the five priority areas along with water, education, health and socioeconomic infrastructure. Therefore, the project was consistent with the Japan's ODA policy for Ethiopia at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. Coffee beans to Japan were examined before exporting according to the standardized procedures[2] by the methods validated by the laboratory (Indicator 1). Analytical staff members of the laboratory were trained by the project and became able to issue "advice notes" when necessary (Indicator 2) and to review and evaluate the "certificates of analysis" issued by the Japanese inspection institutions (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued at the time of ex-post evaluation. Coffee beans' pesticide contamination has not been found since 2011, and mandatory inspection enforced by the Japanese government was deregulated in April 2017. Since the deregulation, the laboratory has not conducted pesticide residue analysis for coffee exported to Japan because the inspection is non-dispensable. Therefore, the project effects directly contributed to pesticide residue control and to the increase of coffee export to Japan up to April 2017. Since 2017, the laboratory has mainly conducted the test methods validations for other agricultural products such as tomato, haricot beans, and sesame seeds. The total volume of coffee export to Japan has constantly increased from 18,482 tons in 2015/16 to 33,824 tons in 2018/19. Although the laboratory is ready to issue "advice notices" and review and evaluate "certificates of analysis", due to insufficient technical manpower, it would be difficult to deal with a large volume request.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal 1 was partially achieved, and the Overall Goal 2 was achieved. Although an analytical method for 23 kinds of pesticides was established by the project and the laboratory has applied it for coffee and other varieties of agricultural products, the capacity of the laboratory has not improved to be able to establish analytical methods for arbitrary combinations of samples and pesticides (Indicator 1-1). The laboratory has not applied for the accreditation to receive international certification due to insufficient technical manpower caused by the turnover of the staff trained by the project (Indicator 1-2). The number of incidents of excess of chemical residue over the standard value found in the target agricultural commodities has been very limited after the completion of the project in 2016 (Indicator 2-1). When an incident of excess of pesticide residue found on sesame in 2019, MoA requested the laboratory to develop a test method for it. The laboratory promptly responded to the request by adopting a test method developed in the project to the incident, and the incident was properly handled by MoA. (Indicator 2-2).

<Other Impacts at the time of Ex-post Evaluation>

With the technical capacity and facilities enhanced by the project, the laboratory has started conducting test method validations of other crops other than coffee. Besides, based on the comprehensive judgements including the improved capacities of the laboratory, the government of Japan has removed its import restriction on coffee beans from Ethiopia. Because of this, the annual amount of coffee export to Japan has constantly increased after the completion of the project. The total volume of export to Japan in 2018/19 became 1.8 times of the one in 2015/16. No negative impact on natural, social and economic environment has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
Project Purpose: The pesticide residue analytical capacity of the Quality Monitoring and	Indicator 1: Every coffee to Japan is examined by inspection based on validation before it is exported.	Status of the Achievement: Achieved (not applicable) (Project Completion) Every lot of coffee to Japan was examined before exporting according to the standardized procedures by the methods validated by the laboratory.

[2] The standardized inspection procedures were composed with the process of 1) sampling of coffee beans (quarantine stations), 2) pretreatment and pre-analysis (the laboratory), 3) analysis in Japan and issuance of a "certificate of analysis" (Japanese inspection institutions), 4) review and evaluation of a "certificate of analysis" (the laboratory), and 5) issuance of an "advice note" for export permission (the laboratory). An "advice note" is a certificate of cleanliness and grade of coffee beans issued by the laboratory sent to exporters via Coffee Quality Inspection Center of MoA.

Pesticide Testing Laboratory is strengthened.		(Ex-post Evaluation) The laboratory has not conducted pesticide residue analysis for coffee exported to Japan since 2017 because the mandatory inspection enforced by the Japanese government was deregulated in 2017 and the inspection has been non-dispensable since then.
	Indicator 2: The certificates of analysis are issued when necessary.	Status of the Achievement: Achieved (partially continued) (Project Completion) The laboratory became able to issue an advice notice when necessary. (Ex-post Evaluation) The laboratory is ready for issuing an advice notice when it is requested. However, because the analysts trained by the project have left the laboratory except one analyst and a new analyst recruited after the project does not have enough experience of coffee beans pesticide residue analysis, it would be difficult to deal with a large volume inspection request.
	Indicator 3: The laboratory becomes capable of reviewing and evaluating analysis report from the coffee exporting companies.	Status of the Achievement: Achieved (partially continued) (Project Completion) The capacity of analysts of the laboratory was improved through the project, and the laboratory was able to review and evaluate “certificates of analysis” issued by the Japanese inspection institutions. (Ex-post Evaluation) The laboratory is ready for reviewing and evaluating “certificates of analysis” when it is requested. However, due to insufficient technical manpower stated above, it would be difficult to deal with a large volume request.
Overall Goal: 1. The number of analyzable target agricultural products and pesticides of the Quality Monitoring and Pesticide Testing Laboratory is increased. 2. Effective oversight to the supply chain of agricultural commodities is established.	Indicator 1-1: Necessary analytical method for the arbitrary combination of samples and pesticides is established.	(Ex-post Evaluation) Partially achieved An analytical method for 23 kinds of organochlorine and organophosphate pesticides was established by the project, and the laboratory has applied the method for coffee beans and other varieties of agricultural products including tomato, haricot beans, sesame seeds, and others. However, the capacity of the laboratory has not improved to be able to establish analytical methods for the arbitrary combinations of samples and pesticides.
	Indicator 1-2: The laboratory's analytical capability fulfills the technical requirements for application of international standards, e.g., ISO/IEC17025.	(Ex-post Evaluation) Not achieved Due to insufficient technical manpower caused by the turnover of the staff trained by the project, the laboratory has not applied for the accreditation to receive international certification such as ISO/IEC17025.
	Indicator 2-1: The number of the incidents of excess of chemical residue over the standard value found in the target agricultural commodities is declined compared to the year 2008.	(Ex-post Evaluation) Achieved According to the interview with a laboratory analyst, after the completion of the project in 2016, very limited number of incidents of excess of chemical residue over the standard value has found in the target agricultural commodities. One of them was the incident of excess of organophosphorus residue found in 2019 on sesame which was the second most export commodity next to coffee. The incident was promptly and properly handled by MoA in collaboration with the laboratory.
	Indicator 2-2: Effective measures to investigate the causes of such incidents and to prevent them are taken, when necessary.	(Ex-post Evaluation) Achieved When the incident of excess of pesticide residue found on sesame in 2019, MoA requested the laboratory to develop a test method for it. The laboratory promptly responded to the request by adopting a test method developed in the project to the incident, and the incident was properly handled by MoA.

Source: Quality Monitoring and Pesticide Testing Laboratory

3 Efficiency

Both the project period and cost exceeded the plan (ratio against the plan was 125% and 104% respectively) due to the delays of provision of equipment and dispatch of Japanese experts, and the trouble of an analytical instrument the laboratory had. The outputs were produced as originally planned by the end of the extended period of the project. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The “Agriculture Sector Growth and Transformation Plan II 2015-2020” has set a goal on the establishment of a modern and organized laboratory which enable proper and prompt investigations on pesticide residue in agricultural products in order to fulfill the requirements of buyer countries and to increase the export of agricultural comoditeis. Also, the “Agriculture Growth Program Phase II 2015-2020” (AGP-II) aims at the establishment of an international standard pesticide laboratory to strengthen plant health services for the consumers both at home and overseas.

<Institutional/Organizational Aspect>

The total number of staff of the laboratory at the time of ex-post evaluation is seven, and it is not sufficient for the volume of work of the laboratory. MoA has assessed the system and structures of national agricultural pesticide residue control and is in the process of changing them to accommodate the growing demand for analysis. Changes proposed by MoA include recruitment of 16 new staff members of the laboratory to increase the variety of crops to be tested. The proposals for changes are not yet implemented at the time of ex-post evaluation.

<Technical Aspect>

Project effects on the technical aspect of the laboratory’s activities has not been sufficiently sustainable because most of the analysts

trained by the project except one analyst have left the job mainly due to low salaries. However, the analyst staying in the laboratory has transferred her knowledge and skills learned in the project to a newly assigned analyst through hands-on training in their daily activities. Standard operating procedures (SOP)[3] compiled by the project has been continuously utilized in the laboratory not only for coffee but also for other agriculture products.

<Financial Aspect>

The budget for the laboratory has been allocated from the government's sub-sector budget for agricultural development which has been steadily increasing from 2,202 million Birr in 2015/16 to 2,504 million Birr in 2019/2020. Although the specific amount of budget for the laboratory was not available, according to the laboratory staff members, it has not been sufficient for its activities and salaries, and it has caused staff turnovers and significantly affected the performance of the laboratory.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The Project Purpose was achieved by improving the capacity of the laboratory to examine coffee beans to Japan before exporting according to the standard procedures. However, the activities of the laboratory have been significantly limited due to insufficient technical manpower caused by the turnover of the staff. The Overall Goal was partially achieved by keeping no incident of agricultural pesticide residue after the completion of the project. But the capacity of the laboratory has not improved to be able to establish analytical methods for the arbitrary combinations of samples and pesticides and to apply for the accreditation to receive international certification. However, the project has contributed to the resumption of coffee export to Japan, and this has a great impact on Ethiopia's coffee industry. As for sustainability, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- It is recommended that MoA accelerates the implementation of the proposals for strengthen the laboratory by recruiting of new analytical staffs including part-time staffs and allocating sufficient budget for the activities and salaries of the laboratory. The training of the new staff to be recruited will also be urgently required to improve the performance of the laboratory.
- After the implementation of the MoA's proposals for strengthen the laboratory including the assignment of new analytical staffs, it is recommended that the laboratory transfers the knowledge and skills learned in the project to the new staff members, improves and stabilizes the performance of agricultural pesticide residue analysis, and applies for the accreditation to receive international certification in order to be able to issue "certificates of analysis."

Lessons Learned for JICA:

- Although the technical capacity of the laboratory was improved by the project, most staff members trained by the project have left the job due to low salaries, and activities of the laboratory has been significantly limited after the completion of the project. To ensure sustainability of the effects of a technical cooperation project, it is recommended that a project focuses not only on the technical issues but also on the institutional managerial issues, and to includes possible tactics in its plan to improve institutional management of the counterpart agency. For that, it is recommended to make a detail study on the counterpart agency relating to staffing and financing at the initiation stage of a project.

Preparation for a test method validation

Vertical shaker for sample preparation

[3] A set of step-by-step instructions compiled by the project to help laboratory analysts carry out their routine testing operations.

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Uganda Office: June 2021

Country Name	National Wetlands Management Project
Republic of Uganda	

I. Project Outline

Background	In Uganda, wetlands cover 2.9 million ha, accounting for 10-13 % (2008) of the total land area of the country. They have intrinsic attributes, perform functions, and produce goods and services. The Government of Uganda recognized its vital role for the sustainable development of the country, and thus placed wetland conservation and management on the primary policy agenda. Wetland management planning was an indispensable process in translating the policies into specific actions. However, most local governments did not come up with such plans or did not bring them into action. Limited information availability on wetland characteristics was also a constraint for the effective and efficient management of wetlands. It was said that about 25% of wetland areas had diminished in the past fifteen years over the country.		
Objectives of the Project	Through the upgraded information system, wetland management plans, pilot activities for the wise use of wetlands, training of wetland management officers, the project aimed at establishing a model of conservation and wise use of wetlands, thereby contributing to the dissemination of the model.		
	1. Overall Goal: A model of conservation and wise use of wetlands is disseminated. 2. Project Purpose: A model of conservation and wise use of wetlands is established.		
Activities of the project	1. Project site: Doho-Namatala and Awoja wetland systems. 2. Main activities: Upgrading of the National Wetland Information system, preparation of wetland management plans, implementation of pilot activities for the wise use of wetlands, training of wetland management officers, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts from Japan: 10 persons 2) Training in Japan: 10 persons 3) Equipment: Vehicles, PC, UPS, etc. 4) Local cost: travel expenses, etc. Ugandan Side 1) Staff allocated: 17 persons 2) Land and facilities: Office space, etc. 3) Local cost: Replacement of machinery, spare parts, transportation of equipment, etc.		
Project Period	January 2012 to December 2016 (Extended period: January 2016 to December 2016)	Project Cost	(ex-ante) 556 million yen, (actual) 558 million yen
Implementing Agency	Ministry of Water and Environment (MWE), Wetlands Management Department (WMD), District Local Governments (DLGs).		
Cooperation Agency in Japan	CTI Engineering International Co., Ltd, OYO International Corporation, Earth & Human Corporation.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- Continuation of the project effects (utilization of the model of conservation and wise use of wetlands) were not confirmed with the three indicators set by the project, but it was verified by confirming if the wetlands management plans developed by the project were utilized and income-generating activities introduced by the project continued, because the two indicators were related to the pilot activities which were concluded by the time of project completion and the other indicator was about developed manuals which would be verified as part of the technical aspect of sustainability.
- Because of the outbreak of COVID-19, information was collected mainly through a questionnaire survey and phone interviews to make evaluation judgement in the ex-post evaluation.

1 Relevance

<Consistency with the Development Policy of Uganda at the time of Ex-ante Evaluation>

Wetlands management was one of the priority areas in the National Development Plan (2010/11-2014/15). And, it was explained related to the sustainable use of natural resources which was one of the priority areas in the "Environment and Natural Resources Sector Investment Plan" (2008/09-2017/18). Thus, the project was consistent with the development policy of Uganda at the time of ex-ante evaluation.

<Consistency with the Development Needs of Uganda at the time of Ex-ante Evaluation>

About 25% of wetland areas diminished after the 2000s. It was reported that lowering the water level and associated soil erosion reduced the rice yield. Wetland users were vulnerable because their means of production depended on the productivity of the land. Thus, the project was consistent with the development needs of Uganda at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation >

In the policy consultation with the Government of Uganda in 2006, one of the priority areas for the assistance was the agricultural development such as the promotion of rice production and the improvement of added value of agricultural products[1]. Thus, the project, which aimed to establish a model for conservation and wise use of wetlands including paddy rice promotion was consistent with Japan's ODA policy at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

[1] Ministry of Foreign Affairs. "ODA Databook 2011."

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. At the catchment level, significant impacts on ecology have not emerged since the pilot activities began in 2015 for demarcating wetlands and setting out rules for management and tree planting activities were commenced in 2016 which does not provide adequate time to generate visible impacts. However, the ecological monitoring activity has identified the improvement of ecological character as a result of the project intervention through the creation of protection zones and tree planting along the important water bodies in the pilot sites (Indicator 1). All the target communities adopted the sustainable livelihood options introduced by the project in a participatory manner, specifically in preparing the plans and identifying the preferred livelihood options (Indicator 2). All of the manuals and guidelines for wetlands management were printed by MWD. It could be judged that the manuals were approved as official documents (Indicator 3). From these achievements, it can be said that a model of conservation and wise use of wetlands was established by the project.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued. First, MWE has utilized the model by adopting the approach for supporting communities with the Green Climate Fund (GCF) of the United Nations Framework Convention of Climate Change (UNFCCC) and funds from other donors including the German Agency for International Cooperation (Gesellschaft für Internationale Zusammenarbeit: GIZ). Specifically, the model has been used in zoning the wetland before restoration and demarcation initiatives in Districts of Budaka, Butaleja, Kibuku, and Pallisa. Also, based on the Framework Management Plan developed by the project, the project for Enhancing Resilience of Communities to Climate Change through Catchment Based Integrated Management of Water and Related Resources in Uganda (EURRECCA Project) in Awoja and the GCF-Wetland Restoration Project in Namatala have been implemented. The new five-year action plan was developed from the Sub-county Wetland Action Plan, and it has been integrated into the District Wetland Action Plan (DWAP). Furthermore, following the model developed by the project, efforts have been started for the restoration of River Mpologoma in 18 districts including Kaliro, Namutumba, Kibuku, Mbale, Pallisa in the Eastern Region and Kabale, Kisoro, Ntungamo, Mitooma in the South-Western Region, with support from the United Nations Development Programme and GCF. In addition, based on the experience, MWD has implemented the GCF project "Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda" (2017-2025) with the aim of restoring 64,370ha of degraded wetland areas.

Second, according to the tree investigated DLGs (Budaka, Sironko, and Kibuku), pilot IGAs have been sustained to some extent as they have been the basis for wetlands planning and conversation in the respective districts. However, it was reported that some wetlands have been degraded with destructed buffer zones since they have been no law on wetlands which could enforce conservation.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved. The model of conservation and wise use of wetlands developed by the project has been disseminated to other wetland systems. In the Nalugugu wetland system in Bukiise Sub-County of Sironko District, part of the catchment area has been conserved by establishing contour bunds in Bukiridya village. In Limoto wetland system located between Pallisa and Kibuku Districts, 936 hectares of wetlands have been restored with livelihood options supported at the edge of the restored wetland. The livelihood improvement activities have been implemented through fishponds, water retention facilities, small scale irrigation facilities, and many others. For diffusing the model, WMD has conducted training for staff of the districts and other key institutions, and more than 200 staff have been trained in the Eastern Region. The manuals produced by the project have been disseminated to the local governments and some were shared at the 13th Meeting of the Conference of the Contracting Parties to the Ramsar Convention on Wetlands (COP13) held in Dubai in 2018.

<Other Impacts at the time of Ex-post Evaluation>

First, as various livelihood alternatives such as horticulture and fishing have been introduced by the project and become active, the road networks have been improved and new markets for vegetables have been established, by DLGs, MWE, the Uganda National Meteorological Authority, development partners including the World Bank and the United Nations Development Programme, and so on, which have contributed to the increased in farmers' income. Second, related to gender, there have been both positive and negative impacts. Both men and women have come to actively participate in agricultural activities. Women have been involved in horticulture farming during the dry season when other agricultural work is off. However, it has brought overburdening to women and even children because the labor-intensive horticulture work has been added to their house chore such as weeding, fetching water, fastening plantlets on the stakes. To tackle this issue, efforts have been made by MWE for promoting gender equality, by sensitizing both male and female farmers for work scheduling and encouraging to hire laborers to lessen the female burden, as all the costs could be comfortably offset by the agricultural profits.

Another negative impact has been reported by DLG of Sironko that soil and water contamination was caused by the misuse of agrochemicals. As a follow-up, DLG has continuously provided monitoring and extension services for adherence to prescribed quantities of agrochemicals, and it has been mitigated

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) A model of conservation and wise use of wetlands is established.	1. Ecological character of the pilot sites shows no changes or improvement in pilot sites based on the ecological monitoring plans of each site.	Status of achievement: Achieved. (Project Completion) - The ecological monitoring plans adopted a combination of three tools: photo point monitoring, water quality monitoring, and description and recording of plant community by using Relevé datasheets. At the catchment level, significant impacts on ecology did emerge since the pilot activities began in 2015 for demarcating wetlands, and setting out rules for management and tree planting activities were commenced in 2016. - The ecological monitoring activity identified the improvement of ecological character as a result of the project intervention through the creation of protection zones and tree planting along with the important water bodies in the pilot sites.

	2. At least 50% of the pilot activity participants adopt sustainable livelihood options introduced by the project.	Status of achievement: Achieved. (Project Completion) - All the target communities supported adopted the sustainable livelihood options introduced by the project.
	3. Wetland Management Manual is approved as one of the WMD's official document.	Status of achievement: Achieved. (Project Completion) - WMD agreed to print the following manuals and other materials 1. Implementation Guideline 2. NWIS Handbook 3. Guideline for Wetland Assessment 4. Ecosystem Assessment Report 5. Livelihood assessment Doho-Namatala Wetland System 6. Livelihood assessment Report Awoja Wetland System 7. Framework Management Plan‐Doho-Namatala Wetland System 8. Framework Management Plan‐Awoja Wetland System 10. Sub-County and District Wetland Action Plans Development Manual 11. Sub-county Wetland Action Plans 12. Wetland Management Planning Process Manual 13. Community-Based Wetland Management Plan 14. Guideline for Paddy Rice - It could be judged that the manuals were officially approved because WMD agreed to print them, although the evidence as official documents was not confirmed.
(Overall goal) A model of conservation and wise use of wetlands is disseminated.	1. Measures for conservation and wise use of wetlands introduced by the project are implemented in at least 1 wetland system other than the target wetland systems.	Status of achievement: Achieved. (Ex-post Evaluation) - The model of conservation and wise use of wetlands has been introduced in the wetland systems of Nalugugu in Sironko District and Limoto in Pallisa and Kibuku Districts.

Source: Project Completion Report and information provided by MWE and District Local Governments.

3 Efficiency

Although the project cost was as planned, the project period exceeded the plan (ratio against the plan: 100% and 125%, respectively). Outputs were produced as planned. The project period was extended because livelihood improvement activities were started in the last period of the project and therefore time was required to fully monitor their performance and conduct follow-up them. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

Promotion of the wetland management has been prioritized in the "Wetland Sub Sector Strategic Plan" (2011-2020) and the "National Wetlands Management Bill" which was effective at the time of ex-post evaluation. The "National Wetland Policy" (2019) was reviewed and to be submitted for approval at the time of ex-post evaluation.

<Institutional/Organizational Aspect>

The organizational structure of the National Wetland Advisory Group to sustain and disseminate the model established by the project has remained the same since the time of project completion. Two technical staff have been assigned at the Regional Office of MWE in Mbale, and WMD answered that this has been sufficient to sustain and diffuse the model established by the project, although there has been a shortage of staff at the sub-county and district level to fully mainstream and guide the wetlands conservation concept.

The National Wetland Information System has been sustained, as it has functioned as the guiding principle for generating maps for degraded sections and hotspot areas. Wetlands have been given a unique identifier that is a numerical value that defines the system followed by the name to aid mapping and guiding decision-making in gazettement. The monitoring system of the Framework Management Plan strengthened by the project has been utilized in Doho-Namatala and Awoja, through which WMD has been able to coordinate and supervise DLGs to ensure compliance with existing environmental regulations and standards.

<Technical Aspect>

WMD staff has sustained necessary skills and knowledge to disseminate the model introduced by the project, through continuous refresher training. Also, WMD staff have exercised their skills acquired from the project in the ongoing GCF initiatives (2017-2025). The manuals and guidelines developed by the project have been utilized. For example, the "Wetland Management Planning Manual" has been referred to by WMD for developing community-based wetland management plans. "Community Wetlands Action Planning Manual" and "Wetland Use and Livelihood Assessment" have been used by DLGs for making action plans and training.

<Financial Aspect>

Financial data could not be available at the ex-post evaluation survey. WMD answered the budget has not been sufficient for disseminating the model introduced by the project. Funds from the central government have been limited to key annual priorities like wetland demarcation, management planning and restoration. However, MWE has shown commitment for streamlining the wetland management, coordination, and collaboration with DLGs and other non-state actors by committing and mobilizing funds to ensure that the concept of conservation and wise use be integrated into wetland management.

<Evaluation Result>

In the light above, there have been issues in the institutional and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The model of conservation and wise use of wetlands was developed and has been disseminated to other wetland systems. Both positive

impacts (female participation in agricultural activities and income improvement) and negative impacts (water and soil contamination and labor burden on women and children) have been reported. Regarding sustainability, the organizational structure and WMD's skills have been sustained for diffusing the developed model, while more staff at the district level and budgets have been needed. As for efficiency, the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- In order to secure funds for further dissemination of the developed model, it is recommended to WMD to discuss the importance of the wetland management as well as its demarcation and restoration within MWE and also to have a dialogue with other institutions for financial collaboration.

Lessons Learned:

- The project succeeded in developing and diffusing the model of wetland restoration and its wise use, although there has been a human and financial resource shortage at the sub-county and district level. This is because the model was developed by reflecting the wetland users' needs for its restoration and being accompanied by practical livelihood improvement options for them. Also, it is because the guidelines for wetland management have been not only officially approved by WMD but also made known in other ministries, related agencies and local government. Multisectoral coordination such as agriculture, land use in the upper stream of catchment was also a key factor. For diffusing a multi-sectoral model, it is important to develop a practical one based on users' needs and then share it with organizations of related sectors other than the implementing agency for gaining their cooperation.

conducted by Zambia Office: March 2021

Country Name	**The Project for Support in National Roll-out of Sustainable Operation and Maintenance Programme (SOMAP 3)**
Republic of Zambia	

I. Project Outline

Background	In Zambia, approximately 50% of the rural population had access to safe water as of 2011. Thus, the improvement of the rural water supply sector was an important development issue. As such, the Government of Japan had assisted the construction of borehole-well water-supply facilities fitted with hand pumps in hope of contributing to the improvement of accessibility of safe water in rural areas. However, there was a valid concern that they might not be fully capable of availing of the introduced water supply facilities in absence of functional operation and maintenance (O&M) systems in the areas. Therefore, a JICA technical cooperation project as SOMAP1 (2005-2007) was implemented with the aim of building and strengthening the operation and maintenance system of the local water supply facilities. Subsequently, the Zambian government decided to adopt the "National Operation and Maintenance Guideline" formulated in SOMAP1 above. Thereafter, SOMAP 2 (2007-2010) was duly carried out to refine the above model. Yet, the establishment and strengthening of the O&M system were much needed then and it was necessary to roll out the program in order to sustainably achieve the better accessibility of safe water in the rural areas across the country.		
Objectives of the Project	Through strengthening the capacity for O&M of water supply facilities and hands-on support to roll out SOMAP O&M model in Mansa, Milenge, Mwense, and Nchelenge Districts in Luapula Province as well as the other target districts on a countrywide scale, the project aims at improving the operation rate of rural water supply facilities, thereby contributing to increasing the proportion of rural residents with access to the safe water supply in Zambia. 1. Overall Goal: The proportion of rural residents who have access to a safe and accessible water supply is increased. 2. Project Purpose: The operation rate of rural water supply facilities is improved.		
Activities of the Project	1. Project Site: All 93 target districts of the National Rural Water Supply and Sanitation Programme (NRWSSP)[1] 2. Main Activities: 1) Strengthening the capacity of the Department of Housing and Infrastructure Development (DHID) for O&M of water supply facilities; 2) implementation of the SOMAP O&M model in the NRWSSP target districts, and 3) supporting the implementation of the SOMAP O&M model in Mansa, Milenge, Mwense, and Nchelenge Districts in Luapula Province. 3. Inputs (to carry out the above activities) Japanese Side 1) Experts: 10 persons 2) Equipment: vehicles, PCs, Printers, Copiers, 13 GPS, pH meter, and the initial stock of spare parts for 4 districts in Luapula, etc. 3) local operating cost Zambian Side 1) Staff allocated: 106 persons 2) Facilities: a total of three offices in MLGH/HQ, DHID Lusaka, and DHID Luapula and its utilities for the experts 3) Local cost: Administrative and operational expenses		
Project Period	September 2011 – March 2017	Project Cost	(ex-ante) 478 million yen, (actual) 666 million yen
Implementing Agency	Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP); has taken over water-related issues from the Ministry of Local Government and Housing (MLGH) and Department of Housing and Infrastructure Development (DHID) since the ministerial reform in 2017.		
Cooperation Agency in Japan	Japan Techno Co., Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

Due to travel restrictions and lockdown measures raised during the COVID-19 Pandemic, data gathered in the rural areas during the ex-post evaluation was lower both in quantity and quality as on-site data collection and direct observation were not as feasible as planned. Nonetheless, mitigation measures were taken as follows; 1) rely more on existing monitoring data collected prior to COVID-19, 2) increase scope of desk-based review of administrative data, 3) use of remote data collection and analysis methods where available.

< Special Perspectives Considered in the Ex-Post Evaluation >

The necessity of supplemental data/information to examine the impact

At the outset, the indicator for the overall goal (at least 75% of rural residents use safe water) was set based on a specific design standard within the scope of the project which was the design total population served by protected water points with the aggregated total number of 250 hand pumps in the target districts at that time. Yet, to address local monitoring and evaluation, Management Information System (MIS) was introduced by the project. The MIS stipulated that the percentage was supposed to be calculated based on households/population within 500m (or 30-minute return journey) of a protected functioning water point, and households/population using the protected functioning water point as the main source for drinking at the target districts. At the time of the ex-post evaluation, however, it was deemed that the situation would not allow obtaining justifiable data of each target district to calculate the total percentage within the given timeframe. Thus, to maintain data coherency as much as possible, the achievement level was

[1] Since mid-1990s, the Government of Zambia has implemented reforms on the water supply and sanitation sector, the water sector reform led to the elaboration and adoption of a National Water Policy in 1994, and enactment of the Water Supply and Sanitation Act of 1997. The NRWSSP has been implemented into two phases. The first phase encompassed the period of the Fifth National Development Plan (FNDP) (2006-2010), during which the activities of the program were implemented on Area Based implementation approach. While the second phase of the program (2011-2015) was implemented in the subsequent national development plan period on the basis of nation-wide full-fledged program approach. <Source> African Development Fund Appraisal Report, July 2006, p.1

comprehensively surmised through pertinent background information (e.g., charging water usage) and data of the sample 10 districts from 9 provinces selected for the end-line survey conducted in 2016.

1 Relevance

<Consistency with the Development Policy of Zambia at the Time of Ex-Ante Evaluation >

The project was consistent with the development policies of Zambia at the time of ex-ante evaluation. In order to improve water supply and sanitation in rural areas, the government of Zambia implemented activities based on the NRWSSP (2006-2015) promulgated in 2007. The overall goal was to provide safe and clean water sustainably and equitably to improve the health status and to reduce poverty in the rural areas that would contribute to the achievement of the MDG (Millennium Development Goals) targets of the relevant sectors. In this regard, operation and maintenance of local water supply facilities were one of the seven pillars of the NRWSSP, and the goal was 70-80% of local water supply facilities will be in operation by 2015.

<Consistency with the Development Needs of Zambia at the Time of Ex-Ante Evaluation >

The project was consistent with the needs of Zambia at the time of ex-ante evaluation. Access to safe water in Zambia remained low at 46% in 2008. Also, the maintenance of the water supply facilities was not properly performed, and the decrease in the operation rate was a challenging issue. The Zambian government decided to adopt the "National Operation and Maintenance Guideline" and to deploy it nationwide with the SOMAP O&M model. However, in order to promote the SOMAP O&M model on a nation-wide scale, proper dissemination and deployment activities were required in those provinces where the model had been unintroduced thus far. Also, it was deemed necessary for the implementing agency to further develop the dissemination capacity for the model and to ensure sufficiently equipped for the evaluation and planning of the implementation of the model.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy towards Zambia. The Country Assistance Program for Zambia (2002) was formulated and both countries have held policy consultations every year. Among the priority areas based on the result of the close consultation, the project was considered to correspond to the two areas: (1) support for poverty reduction through rural development, (2) Human resource development, and system construction for sustainable development.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved. According to the end-line survey conducted in the 10 selected districts of the 9 provinces in 2016, 77.7% of rural water supply facilities in the 10 target districts were in operation which was slightly below the target value of 80% (Indicator 1). Regarding the average downtime within 14 days, the end-line survey data showed that the percentage increased by 4.87% in comparison to the baseline survey in 2012 (Indicator 2). 71 District Local Authority (DLA) out of 93 target districts of NRWSSP incorporated the rehabilitation programs for the repair of water supply facilities that could not be repaired by communities and Area Pump Menders (APMs) into the District Rural Water Supply and Sanitation (RWSS) Plan (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued after the project completion. According to the survey result, the total average percentage of well-functioned water facilities in the 10 sample districts (71~74%) was slightly below target (80%) since 2017. Further, 6 out of the 10 sample districts responded that the average downtime takes less than 2 weeks, whereas the other 4 districts reported that it takes more than 2 weeks. Compared to the baseline data (67%), it slightly improved to reduce the downtime. Although the data was not comparable to the time of project completion, 80% of surveyed districts formulated the rehabilitation program as planned. It is slightly better than the total average of the 93 districts (76%).

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved at the time of ex-post evaluation. According to the survey result, although it is not comprehensive data as described in the section "Special Perspectives Considered in the Ex-Post Evaluation," 6 districts exceeded the minimum target value of 75% (Indicator 1). And where data available, the percentage of the population with access to safe water generally demonstrated an upward trend after project completion.

<Other Impacts at the time of Ex-post Evaluation>

According to the survey, cross-cutting issues such as gender relations and young people were duly taken into consideration in providing a fair opportunity to represent in the V-WASHE (Village Water, Sanitation and Health Education) committee. As such, they became visible in the decision-making process for the public interests of their community such as hygiene education at school through activities of the V-WASHEs committees. The other unintended impact mentioned was the improvement of sanitation through community-led hand wash campaigns. Also, a notable synergy was that basic accounting and book-keeping skills through training V-WASHE were applied to many other things concerning livelihood in the village and individual households. On the other hand, although the project made pre-warning and suggested preventive measures, there was a concern that handpumps of India Mark II sometimes showed the chemical reaction of metal with water as they might become corrosive On the other points of concern, there was no resettlement and land acquisition caused by the project, and thus there were no ramifications to do with them.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The operation rate of rural water supply facilities is improved.	Indicator 1: At least 80% of rural water supply facilities in NRWSSP target districts are in operation.	Status of the Achievement: partially achieved (partially continued) (Project Completion) Sample data in the end-line survey showed that 233 units of protected water point with a hand pump were in operation (77.7% of a total 300 water points). (Ex-post Evaluation) According to the survey result, the total average percentage of well-functioned water facilities in 10 sample districts was below 80% (71% in 2017, 72% in

		2018, 74% in 2019, 73% in 2020). Concerning the percentage of charging water usage among 10 districts, 4 out of 10 surveyed districts charge the residents, less than 50% of all. Only two districts had more than 80% charging water usage.
	Indicator 2: The average downtime of a rural water supply facility is reduced below 14 days for repair works that can be handled by community members and APMs.	Status of the Achievement: partially achieved (partially continued) (Project Completion) There were difficulties with 146 units of 300 samples of protected water points with a hand pump in the period between January and September 2016, of which 63 units (43.15%) were repaired within 14 days, allowing the water points to be recovered. By comparison of 38.28% obtained by the baseline survey in 2012, the percentage of the water points that had been repaired within 14 days increased by 4.87%. (Ex-post Evaluation) According to the survey results, 6 out of 10 districts responded that the average downtime takes less than 2 weeks, whereas the other 4 districts reported that it takes more than 2-week time. According to the end-line survey in 2016, 67% of the handpumps in these 10 districts have required more than 2-week downtime, which may mean that there has been an improvement of the downtime over the last 4 years although no specific records were not presented. In general, it was deemed that the availability of necessary spare parts, proactive V-WASHE committees, APMs, and caretakers were conducive to reduce the downtime.
	Indicator 3: The DLAs incorporate rehabilitation of a rural water supply facility of which repair work cannot be handled by community members and APMs into the District RWSS Plan.	Status of the Achievement: partially achieved (partially continued) (Project Completion) 71 DLAs (76% of all 93 target districts of NRWSSP) incorporated the rehabilitation programs for the repair of water supply facilities that could not be repaired by communities and APMs into the District RWSS plan. The rehabilitation program was not yet formulated in many of the newly established DLAs. (Ex-post Evaluation) 80% of surveyed districts formulated the rehabilitation program. According to the interviews in each district, availability of funds and support from other donors was the key to a success in the formulation of rehabilitation programs and proper enforcement in order.
(Overall Goal) The proportion of rural residents who have access to a safe and accessible water supply is increased.	Indicator 1: At least 75% of rural residents use safe water.	(Ex-post Evaluation) partially achieved In light of the original scope of the project, it is hardly conclusive given limited data availability. However, 6 districts exceeded the minimum target value of 75%. And where data available, the percentage of the population with access to safe water demonstrated a largely upward trend. According to the interviews in each district, it was confirmed that those activities and services of V-WASHE were pivotal to make the local community aware of the importance of O&M supported by the beneficiaries-pay principle. That would inevitably affect the sound management of local SOMAP shops to provide needed spare parts in a timely and efficient manner.

Table: The Percentage of Local Residents with Access to Safe Water, the Percentage of V-WASHEs Collecting Community User Fee for O&M Services, and Availability of Spare Parts in Local SOMAP Shop in the Selected 10 Target Districts (2017-2020)

District	Indicator	Actual			
		2017	2018	2019	2020
Average of 93 target districts		N/A	N/A	N/A	N/A
Kazungula	Access to water (%)	83%	83%	83%	83%
	Fee collection(%)	92%	90%	92%	91%
	Spare parts	○	○	△	×
Chongwe	Access to water (%)	N/A	N/A	67%	69%
	Fee collection (%)	N/A	N/A	30%	35%
	Spare parts	N/A	N/A	N/A	N/A
Serenje	Access to water (%)	50%	50%	50%	50%
	Fee collection (%)	N/A	N/A	N/A	N/A
	Spare parts	○	○	○	○
Lundazi	Access to water (%)	100%	100%	100%	N/A
	Fee collection (%)	N/A	N/A	N/A	N/A
	Spare parts	○	○	○	N/A
Sesheke	Access to water (%)	73%	73%	78%	78%
	Fee collection (%)	60%	62%	82%	82%
	Spare parts	N/A	○	○	○
Mufumbwe	Access to water (%)	90%	92%	92%	93%
	Fee collection (%)	69%	71%	77%	79%

	Spare parts	○	○	○	○
Luwingu	Access to water (%)	N/A	N/A	N/A	N/A
	Fee collection (%)	No denominator value available			
	Spare parts	○	○	○	○
Mansa	Access to water (%)	97%	97%	97%	100%
	Fee collection (%)	30%	28%	28%	32%
	Spare parts	○	○	○	○
Nchelenge	Access to water (%)	100%	100%	100%	100%
	Fee collection (%)	76%	80%	83%	83%
	Spare parts	○	×	×	×
Chinsali	Access to water (%)	N/A	N/A	N/A	100%
	Fee collection (%)	N/A	N/A	N/A	N/A
	Spare parts	N/A	N/A	N/A	○

Note: ○: regularly provided, △: provided but not regularly, ×: not provided

Source：Field survey report at the target district offices.

3 Efficiency

Both the project cost and project period exceeded the plan (ratio against the plan: 139% and 128%, respectively). The outputs were produced as planned. Thus, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The O&M of water supply facilities in the rural areas has retained its importance in the national policy of the Government of Zambia. The "National Rural Water Supply and Sanitation Programme Phase II" (2016-2030) addressed sustainable O&M for all water supply and sanitation infrastructure in-country. The MWDSEP launched the "Ministerial Action Plan" (2018-2021) in order to provide details of prioritized issues on the O&M, activities, and targets. Furthermore, this was resonated with the "Water Supply and Sanitation Policy" issued in 2020 which has provided the specific direction of relevant sub-sectors of water supply and sanitation.

<Institutional/Organizational Aspect>

The role and responsibility of the promotion of the O&M for water supply facilities were effectively taken over by the MWDSEP as of 2017. The MWDSEP has been responsible for relevant policymaking, planning, budgeting, monitoring, evaluation, and capacity development to ensure the O&M of water supply facilities in rural areas as was the MLGH. The survey results show that it has strengthened the roles and responsibilities of local authorities at the provincial and district levels on the whole. As per the manpower status of the MWDSEP, Provincial offices of 10 provinces, and DLAs of the 93 target districts to ensure the water supply in rural areas, it was reported adequate by the MWDSEP.

<Technical Aspect>

According to the survey results, as the current staff members at each DLA office have been trained and had hands-on experiences after project completion, required skills have been mostly available in the target districts. The O&M for water supply facilities in rural areas has been institutionally retained through the utilization of guidelines to enhance equitable access to safe water. Each Provincial office has carried out technical and supportive supervision on APMs to increase their performance level. Likewise, DLAs have been generally capable of supervision for their water supply facilities through the support of communities, notably the V-WASHE activities at the target districts. Also, it was observed that through hands-on practices at the community level, staff members served to maintain level hand pumps and their relevant facilities through the utilization of training on installation, repair, supply chain, and operation of SOMAP shops.

<Financial Aspect>

The MWDSEP has not guaranteed to disburse the amount of budget as anticipated the lesser amount of revenue for the next fiscal year. Thus, even though the annual budget was allocated, the grants from the central government were not fully disbursed as originally scheduled, some provinces have entirely depended on donors' financial/technical supports, for example, boreholes were rehabilitated in 2019, 180 units by UNICEF and 282 units by African Development Bank, respectively and in-kind services of local authorities for O&M of water supply facilities.

<Evaluation Result>

In light of the above, Slight problems have been observed in terms of the financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project has partially achieved the Project Purpose and the Overall Goal as rural water supply facilities generally better function and thus, the access of water supply showed an upward trend in the survey of the 10 target districts. As for sustainability, it is deemed technically sufficient to perform each duty and to retain the skill set to promote the rural water supply although the national budget has been precarious to ensure operation thus, it may need to depend on interested donors' support. As for efficiency, the project cost and period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

In order to achieve the Overall Goal through enhanced sustainability, it is recommended that the MWDSEP should secure and disburse the budget for a training program for V-WASHEs and APMs on the O&M for water supply facilities, primarily to efficiently sensitize the local community with the beneficiaries-pay principle to cover the costs of O&M. As such, it is thus imperative for the MWDSEP to make a concrete plan by the end of 2021, in light of a pivotal role of V-WASHE to promote a sustainable water supply in rural areas through local community support and the sound supply chain of SOMAP shops.

Lessons Learned for JICA

It was observed that import prices of major spare parts have nearly doubled mainly due to the recent deprecation of Zambian Kwacha in the foreign exchange market since 2019. As such, more local APMs could not afford to purchase the spare parts and SOMAP shops became suffering from a smaller margin in tandem with higher costs could not replenish spare parts for local water supply facilities in a timely

manner. Thus, the supply chain was keyed to be weakened. Therefore, when JICA formulates the establishment of a water supply system with a hand pump or any other water facilities under any schemes, essential spare parts and/or materials of the facilities should be procured sustainably within the country to avoid risks of unexpected price fluctuation in the mid and long terms. The cost projection covered the time frame after project completion should be carefully taken into consideration to enhance the sustainability from the project design stage.

Kazungula SOMAP shop

Sesheke hand water pump

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Senegal Office: October, 2021

Country Name	**Capacity-Building Project for the Control of Land Degradation and the Promotion of Land Recovery in Degraded Soil Areas**
Republic of Senegal	

I. Project Outline

Background	In Senegal, expansion of bare land, soil salinization, and weakening of cropland caused by the excessive practice of monoculture and overgrazing were serious issues. In the regions of Fatick and Kaolack, soil salinization caused by acid sulfate soil and sea water permeation, and soil degradation of inland farmlands were two major land degradation issues. Due to those issues, crop yield per unit area continuously reduced along with the decrease in farmland and forest land. In particular in the regions with rapid population growth, land degradation seriously affected the life of rural population.		
Objectives of the Project	Through improvement/development of necessary techniques, including local community awareness raising, the project aimed at reinforcement of capacities of stakeholders needed to control land degradation and promote land recovery, thereby contributing to implementation of activities for controlling land degradation and land recovery in the target areas of the project. 1. Overall Goal: The activities aiming at controlling land degradation and land recovery are conducted in the target areas[1] of the project. 2. Project Purpose: The capacities of stakeholders needed to control land degradation and to promote land recovery are reinforced.		
Activities of the Project	1. Project Site: departments of Fatick and Foundiougne in Fatick region and departments of Kaolack and Nioro du Rip in Kaolack region 2. Main Activities: 1) Definition of the priority areas[2] for the implementation of measures aiming at controlling land degradation and promoting land recovery, 2) Improvement/development of the necessary techniques to control land degradation and promote land recovery, 3) Definition of effective techniques and measures to control land degradation and to promote land recovery through the implementation of pilot projects[3], 4) Development of a system for awareness raising in communities and for dissemination of techniques to control soil degradation and promote efficient land use in the priority areas. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 5 persons 2) Trainees received: 14 persons 3) Equipment: cars, motorcycles, PCs, printers, projectors, GIS receivers, etc. Senegalese Side 1) Staff allocated: 43 persons 2) Land and facilities: project office 3) Local cost: cost for utility of offices (electricity, water, and telephone), fuel for cars and motorcycles		
Project Period	March 2011 - March 2017 (Extension: March 2016 - March 2017)	Project Cost	(ex-ante) 500 million yen, (actual) 694 million yen
Implementing Agency	Directorate of Water, Forestry, Hunting and Soil Conservation (DEFCCS: Direction des Eaux, Forêts, Chasses et de la Conservation des Sols), Ministry of Environment and Sustainable Development (MEDD: Ministère de l'Environnement et du Développement Durable)		
Cooperation Agency in Japan	Earth and Human Corporation		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

・ Because there were no quantitative data available, the continuity of the Project Purpose and the achievement of the Overall Goal were evaluated by the qualitative data collected by the questionnaires, interviews, and observations conducted by the project and the ex-post evaluation.

1 Relevance

<Consistency with the Development Policy of Senegal at the Time of Ex-Ante Evaluation>

Following the publication of Environmental Sector Policy Letter (LPSE: Lettre de Politique Sectorielle de l'Environnement) in 2010, the government of Senegal launched its first "Medium-Term Sector Expenditure Framework 2011-2013" (CDSMT: Cadre de Dépenses Sectorielles à Moyen Terme) for robust implementation of LPSE. CDSMT prepared eight programs for improving the living standard of people through rational management of natural resources. One of the eight programs was the countermeasures for forest destruction and land degradation including a plan for recovery of salinized land. Therefore, the project was consistent with the development policies of Senegal at the time of ex-ante evaluation.

<Consistency with the Development Needs of Senegal at the Time of Ex-Ante Evaluation>

The government of Senegal took measures against land degradation by implementing projects of land improvement, forestration, protection areas setting, and others. However, the activities and technologies were deployed according to local decisions different from place to place and made insufficient effects. And those activities and technologies have neither been collected nor accumulated

[1] Target areas: 2 regions of Fatick and Kaolack.

[2] Priority areas: 25 villages in a department or 100 villages in 4 departments in 2 regions of Fatick and Kaolack.

[3] Pilot projects areas: 5 villages in 25 priority villages in a department or 20 villages in 100 priority villages in 4 departments in 2 regions of Fatick and Kaolack.

systematically. Therefore, comprehensive and systematic coordination of the projects and accumulation of knowledge and experience to be shared were required. For realizing this, capacity development of the forest officers (heads of forestry brigades) of the Regional Water and Forestry Inspectorates (IREF: Inspection Régionale des Eaux et Forêts) was an urgent issue. Therefore, the project was consistent with the development needs of Senegal at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

In the "Country Assistance Program for the Republic of Senegal" (April 2009), one of the two minor goals for the Major Goal I of "improvement in the quality of life of poor population in rural areas" was rural development through the enhancement of the people's capacity to manage natural resources to secure sustainability and the assignment of independent and active roles to the people. Therefore, the project was consistent with the Japan's ODA policy for Senegal at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the time of project completion. Although the capacity of forest officers was improved and their activities became active at least in the pilot areas, the level of capacity improvement significantly varied from officer to officer due to frequent replacements of the personnel caused by transfers and turnovers (Indicator 1). According to the questionnaire survey conducted by the project, the ratio of the villages in the priority areas that introduced and utilized the techniques for land degradation control and efficient land-use verified by the project reached 81% (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued at the time of ex-post evaluation. Although knowledge and techniques of the forest officers involved in the project have been improved through the activities of the project, most of them have moved to other areas. However, IREFs in the Fatick and Kaolack regions encouraged the officers to transfer their knowledge and techniques to newly assigned forest officers. According to the questionnaires to and interviews with IREFs and forest officers of the regions, significant number of officers have transferred their knowledge and techniques to new forest officers, and some of the new officers have applied the knowledge and techniques to their community awareness raising activities with the help of technical manuals developed by the project. As for the continuation status at the community level, according to the observations made by the officials of IREFs and forest officers of the regions, in the priority areas, significant number of villages have introduced and utilized the techniques verified by the project such as the stone cordon[4] technique and framed bund[5] technique, and tree planting[6] have been progressing in some villages involved in the project.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved at the time of ex-post evaluation. The techniques introduced by the project have been continuously practiced in the priority areas, and anti-erosion techniques introduced by the project have been implemented under the mentorship of forest officers in some non-priority areas. However, the extension of the techniques in the target areas has not been verified because no data was available (Indicator 1). Although most of the forest officers involved in the project have moved to other areas, according to the questionnaires to and interviews with IREFs and forest officers of the regions, more than 50% of them have introduced and applied the knowledge and techniques learned in the project in the newly assigned areas (Indicator 2).

<Other Impacts at the time of Ex-post Evaluation>

Ecological sanitation (ECOSAN) latrines[7] for soil fertilization, composting[8], and training for gardening[9] techniques introduced by the project have made a positive impact on the yield of market gardening mainly practiced by women in villages. According to the interviews with women in villages, owing to the increase of yield of market gardening, their income has increased by selling the products including tomato, onion, eggplant, and lettuce in weekly markets. In some villages, they have started collective management of income from market gardening, which allowed them to be more financially independent and to prepare for further gardening activities. No negative impact on natural, social and economic environment has been observed at the time of ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
Project Purpose: The capacities of stakeholders needed to control land degradation and to promote land recovery are reinforced.	Indicator 1: Techniques and knowledge of forest officers regarding controlling land degradation and promoting efficient land-use are improved compared with the time when the project starts.	Status of the Achievement: Partially achieved (partially continued) (Project Completion) According to the interviews with the officials of IREFs and community members conducted by the project, capacity of the forest officers was improved, and their activities became active at least in the pilot areas. Questionnaire survey on the forest officers also indicated that they had become positive about their own capacity. However, the level of improvement significantly varied from officer to officer due to frequent replacements of them caused by transfers and turnovers.

[4] Stone line structures made to prevent sheet erosion caused by rainfall.

[5] Wooden frame structures filled with stones or sandbags made to prevent gully erosion caused by rainfall.

[6] Tree planting has preventive effects for soil flow, wind erosion, soil salinization, and has soil fertilization effect. The project also expected farmers' income generation by planting eucalyptus for timbers and fruit trees (mango, cashew, etc.).

[7] Environmentally friendly sanitation technology that allows economic use of human excreta after decomposition. In the project, weakening of cropland and overexploitation were reduced because organic manure produced by ECOSAN latrines fertilized croplands. Hygienic environment was also improved by the installation and utilization of latrines.

[8] See the footnote 7 for the effects of fertilization by composting. Increase of income associated with the increase of agricultural products by compost improved the motivation of farmers for the control of land degradation and promotion of land recovery, thus, contributed to the sustainability of the effects of the project.

[9] Gardening promoted effective utilization of non-cropland around houses and reduced weakening of cropland and overexploitation. In addition, increase of income from vegetable selling also had the effects on the sustainability of the project as stated in the footnote 8.

		(Ex-post Evaluation) Although techniques and knowledge of the forest officers involved in the project were improved through the activities of the project, most of them have moved to other areas. IREFs in Fatick and Kaolack regions encouraged the forest officers moved to other areas to transfer their knowledge and techniques to newly assigned forest officers in their posts. According to the questionnaires to and interviews with IREFs and forest officers of the regions, some new forest officers have applied the knowledge and techniques transferred from predecessors using the technical manuals developed by the project in their community awareness raising activities.
	Indicator 2: The techniques whose efficiency has been verified through the project to control land degradation and to promote efficient land-use are introduced and utilized in at least more than 50% of villages in the priority areas.	Status of the Achievement: Achieved (partially continued) (Project Completion) According to the questionnaire survey conducted by the project, the ratio of the villages in the priority areas that introduced and utilized the techniques for land degradation control and efficient land-use verified by the project reached 81%. (Ex-post Evaluation) According to the observations made by the officials of IREFs and forest officers of Fatick and Kaolack regions, some villages in the priority areas have continuously utilized the techniques verified by the project. For example, the stone cordon technique and framed bund technique have been practiced in some villages in the priority areas in the Departments of Nioro, Foundiougne, and Kaolack. In Keur Bakary village in Kaolack Department and Prokhane Toucouleur village in Nioro du Rip Department, more than 4 ha has been planted with trees in each village during and after the project.
Overall Goal: The activities aiming at controlling land degradation and land recovery are conducted in the target area of the project.	Indicator 1: The techniques whose efficiency has been verified through the project to control land degradation and to promote efficient land-use are implemented in more than 75% of rural communities[10] in the project's target areas.	(Ex-post Evaluation) Not verified. The techniques introduced by the project have been continuously practiced in the priority areas. Although anti-erosion techniques (bunds, stone cordons, windbreaks, assisted natural regeneration, etc.) introduced by the project have been implemented under the mentorship of forest officers in some non-priority areas such as Gossasse department in Fatick region, the extension of the techniques in the target areas has not been verified because no data was available.
	Indicator 2: More than 75% of forest officers introduce the techniques and knowledge to other areas in the project target areas.	(Ex-post Evaluation) Partially achieved Most of the forest officers involved in the project have moved to other areas as stated above. However, RFs in the regions encouraged them to introduce and apply their knowledge and techniques learned in the project in the newly assigned areas. According to the questionnaires to and interviews with IREFs and forest officers of the regions, more than 50% of the forest officers moved to other areas have introduced the knowledge and techniques in the newly assigned areas.

Source: DEFCCS, IREFs, forest officers, Terminal Evaluation Report (November 2015), Project Completion Report (February 2017)

3 Efficiency

Because of the delay in the achievement of the Project Purpose or capacity building of stakeholders in the priority areas, the terminal evaluation (July 2015) recommended the extension of the project period. The project was extended accordingly, thus the project period and cost exceeded the original plan (the ratios against the plan were 120% and 139% respectively). The outputs were produced as originally planned by the end of the extended period of the project. Therefore, efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The new policy of the "National Strategic Investment Framework for Sustainable Land Management 2020-2035" (CNIS/GDT: Cadre National d'Investissement Stratégique pour la Gestion durable des Terres) declared a determination of the government to create political, legal, institutional, technical and financial environments to enable Senegal to control land degradation in all ecosystems and promote land recovery for sustainable agroforestry production, food security, and well-being of the people.

<Institutional/Organizational Aspect>

There have been no major institutional and functional changes in MEDD, DEFCCS, and IREFs during and after the project. Insufficient human resources to fight against land degradation has been a significant issue at all levels of responsibility. Forestry sector, in particular, has faced challenges caused by the limited number of staff and slow-going recruitment due to budgetary constraints. In order to make up for the deficient and unstable IREFs' staffing, forest officers and brigades, the involvement of local authorities and community people have been encouraged. The project has introduced the Local and Green School Actions (AVLOS: Actions Vertes Locales et Scolaires), an approach developed by the project to disseminate the project's outcomes in wider areas using the existing education networks and encouraging the participation of administrations widely from the ministries to local governments. This approach has been continuously practiced by an environmental NGO called Nébéday[11] to promote reforestation mobilizing schools and school management committees.

<Technical Aspect>

The knowledge and techniques introduced by the project have been used after the project only to a limited extent because most of forest officers involved in the project have moved to other areas and/or other activities. Some officers continue to conduct the training of local population using the techniques learned in the project. Besides, some new forest officers keep using the technical manual developed by the project in their community awareness raising activities. Composting has been continued mainly by women to fertilize their plots for market

[10] Rural community (communauté rurale) is the fourth-level administrative division (below country, region and department) comprising the villages.

[11] A NGO based in Senegal and France, which aims to protect, manage and develop natural resources participatory by and for local populations. (Source: website of Nébéday)

gardening. Tree planting and ECOSSAN system have also been continued in some villages because the community members became aware of the benefits from these activities. The training materials provided by the project have been used by the local people for these activities.

<Financial Aspect>

Although the budget for land degradation control and land recovery promotion has been continuously allocated to DEFCCS, IREFs, and brigades, the amount of budget has not been sufficient. Therefore, the IREFs and brigades have requested the villages under the jurisdiction to get involved in the activities and make financial contributions. Since the means of transportation for IREFs and brigades were indispensable and critical for their daily activities visiting forests and villages, the project provided motorcycles for them. However, the fund for their maintenance, fuel, and additional procurement has been a challenging issue.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The Project Purpose was partially achieved. Over 80% of the villages in the priority areas introduced the techniques verified by the project, and the capacity of forest officers has improved. However, the level of capacity improvement varied from officer to officer due to frequent replacements of the personnel. The Overall Goal was partially achieved. The techniques verified by the project have been applied in the priority areas in the two regions of Fatick and Kaolack. However, because most of the forest officers involved in the project have been transferred to other areas, dissemination of the techniques to other areas other than the priority areas has been limited. As for sustainability, some problems have been observed in terms of the institutional, technical, and financial aspects. As for efficiency, both the project period and cost exceeded the plan. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Since composting, tree planting, and ECOSSAN latrines have been continuously conducted and used in some villages in the priority areas, it is recommended that IREFs and forest officers strongly assist the local population with these activities, and disseminate composting, tree planting, and ECOSSAN latrines to other areas as a means of land degradation control and land recovery. It is recommended that MEDD backs up these activities by allocating necessary human and financial resources.

Lessons Learned for JICA:

- Land degradation control and land recovery, intending environmental improvement of land, requires farmers to employ restrained and deliberate farming by, for example, setting up protection areas and introducing fallow periods and fallow zones. It sometimes goes against economically efficient farming desired by farmers, which often result in monoculture farming, overgrazing, haphazard reclamation, etc. Therefore, it is not easy to get local population involved in the project activities, though their involvement is indispensable and highly required. And because it takes time to make visible land recovery accomplishments, after getting local population's involvement, it is necessary to keep their commitments. For that, some specific devices are required to maintain the motivations of farmers to be involved. Composting, tree planting, and ECOSSAN latrines introduced by the project have been continuously conducted and used after the project by the local population because they produce tangible benefits for the people in a relatively short period of time, working as motivators for farmers to keep them conducting restrained and deliberate farming. Therefore, it is recommended that a reforestation and land recovery project introduces some components to produce short-term tangible benefits for local population to keep getting them involved during the project and keep them doing right actions after the project.
- The project has developed and introduced an approach named AVLOS involving the education sector to disseminate the project's outcomes in wider areas using the existing education networks, and to raise awareness of the people including schoolteachers and students. The approach has functioned as expected making up for the staffing shortage of brigades and continued after the completion of the project. For a reforestation and land recovery project which requires the involvement of various stakeholders in large numbers, a mechanism for creating collaborations involving other sectors other than forest sector could be an effective and efficient approach.
- The project has made contributions towards the improvement of human resource development only leaving staffing shortages and financial constraints as issues for the sustainability of the project effects. Limited human and financial resources often stand in the way of success of a project particularly of the sustainability of project effects. Although staffing and financing are out of the scope of a technical cooperation project in many cases, it is recommended that a project includes possible tactics in its plan to improve staffing and financing of the counterpart agency and to mitigate negative effects on the project by the staffing and financing issues. For that, it is recommended to make a detail study on the staffing and financing situation of the counterpart agency at the initiation stage of a project.

Market garden cared by women
in Lerane Coly in Fatick region

Stone cordon for water erosion prevention
maintained by villagers in Kematane Bambara
in Fatick region

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Indonesia Office: August, 2021

Country Name	**Project on Small and Medium Industry Development based on Improved Service Delivery in Indonesia**
Republic of Indonesia	

I. Project Outline

Background	The government of Indonesia had promoted fiscal and economic structural reforms since the Asian Financial Crisis in 1997. As a result, the economy rebounded and were annually growing by over 6% since 2007 except for 2009. As for industrial policies, the "Regulation of the President No.28, 2008 on the National Industrial Policy" was issued in May 2008, aiming to further promote industrial development. Under the situation, JICA implemented a developing planning project, "Cooperation for Strengthening Clusters (SENTRA) of Small and Medium Industries" (2009-2010). Through the project, prepared were the guidelines to deal with challenges in industrial development such as the establishment of a system for efficient cluster development across administrative divisions and departments. Those guidelines were expected to be used by the central and regional governments and to contribute to acceleration of cluster development in small and medium industries (SMIs). However, some issues remained in service deliveries for the cluster development, and the services did not function well. Therefore, it was necessary to improve and/or strengthen such service deliveries.		
Objectives of the Project	Through the establishment of Local Working Groups (LWGs), trainings to their members on SMI development, the development of a Service Directory, the planning, implementation and evaluation of the Local Industry Action Plan (LIAP) and the development of a model for SMI development, the project aimed at arranging the preparation for expansion of a model for SMI development based on the efficient service delivery platform (the SMIDeP model[1]) in the Ministry of Industry, thereby contributing to increases in the production and competitiveness of SMIs in target regions and practices of the established model in other regions. 1. Overall Goal: SMIs in target regions will increase the production and competitiveness and the established model for SMI development based on the efficient service delivery platform ("the SMIDeP model") will be also practiced in other regions. 2. Project Purpose: Preparation for expansion of the model for SMI development based on the efficient service delivery platform is arranged in MOI.		
Activities of the Project	1. Project Site: Jakarta city, Samosir regency in North Sumatra province, Tegal regency in Central Java province, Palu city and its surrounding regencies in Central Sulawesi province, Pontianak city in West Kalimantan province, and Mojokerto city in East Java province 2. Main Activities: 1) Establishment of LWGs, 2) Trainings to the members of LWGs on SMI development, 3) Development of a Service Directory, 4) Planning, implementation, and evaluation of the LIAP, 5) Development of a model for SMI development, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 8 persons 2) Trainees received: 39 persons (including 2 observers) 3) Equipment: PCs, photocopier, laser printer, etc. 4) Local expenses: cost for project activities Indonesia Side 1. Staff allocated: 114 persons 2. Land and facility: a project office in Directorate General of Small and Medium Industry of the Ministry of Industry and a project office in Dinas Industry & Trade in each target region 3. Local expenses: travel cost and honorarium		
Project Period	April 2013 – April 2016 (Extended period: April 2016)	Project Cost	(ex-ante) 351 million yen, (actual) 382 million yen
Implementing Agency	Directorate General of Small and Medium Industry (DG-SMI) of the Ministry of Industry (MOI)		
Cooperation Agency in Japan	KRI International Corp. (currently Koei Research & Consulting Inc.) UNICO International Corporation		

II. Result of the Evaluation

<Constraints on Evaluation>

- In the process of evaluating this project, it was difficult to access to some of necessary data and information due to the facts that many of the related officials have already transferred and retired, and many officials had to work from home due to the COVID-19 pandemic. In addition, no field survey (including on-site interviews) was conducted to find necessary data and information. Amid these constrains, JICA made an evaluation judgment by collecting and analyzing information that was possible to access and by sending and collecting questionnaires through telephone and e-mail interviews with persons concerned.

<Special Perspectives Considered in the Ex-Post Evaluation>

- The project set the indicator 2 in the Project Purpose, "Budgetary and organizational arrangement of MOI to expand the established model to other regions" to verify the financial and organizational status to expand the SMIDeP model. However, it would be appropriate to verify such status from a "Sustainability" perspective. Therefore, the continuous status of the indicator 2 at the time of ex-post evaluation was verified at the institutional/organizational and financial aspects of the "Sustainability".2

1 Relevance

[1] The SMIDeP model is the model to make budgetary and organizational provisions necessary for preparing and implementing guidelines as a foundation to provide services for SMI development.

<Consistency with the Development Policy of Indonesia at the Time of Ex-Ante Evaluation>

The project was consistent with Indonesia's development policies of the "Strategic Plan" (2010-2014) aiming to promote cluster development and local industry development and the "Masterplan for Acceleration and Expansion of Indonesia's Economic Development" (2011-2025) setting the expansion of value-chain, the integration of regional development and sectoral development, the development of local industry and the strengthening of connectivity between regions as goals.

<Consistency with the Development Needs of Indonesia at the Time of Ex-Ante Evaluation>

The project was consistent with Indonesia's development needs of the improvement of service deliveries for efficient cluster development in SMIs to promote industrial development in the country.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with "Country Assistance Policy for Indonesia" (2012) raising "support to further economic growth" as one of the prioritized areas, including support to improve various regulations and systems for the improvement of business and investment environments.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. During the project, a model for SMI development based on the efficient service delivery platform (the SMIDeP model) was established, and a technical guideline for facilitation of local industry development (the technical guideline) was prepared. Both were officially adopted by the DG-SMI, and the project also disseminated them to other regional governments with interests in them (Indicator 1). Then, in order to further disseminate the SMIDeP model based on the technical guideline, the DG-SMI was committed to the following preparatory arrangements: 1) narrowing down regional governments and industries according to their capacity of staffing and budgeting, 2) establishing a specialized internal team for the dissemination, and 3) making financial arrangements for necessary activities such as the provision of the technical guideline (Indicator 2). Through the project, a certain number of producers in the target industries attained their goals set in the LIAP (Ulos[2] fashion industry: 20 producers, Ship-part industry: 4 producers, Cacao processing industry: 16 producers) (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued since project completion. The SMIDeP model and the technical guideline have still been adopted by the MOI and used in all the target areas except for West Kalimantan province. It was confirmed that 26 success cases in the cacao-processing industry and 20 success cases in the rattan furniture industry have made use of the model at the time of ex-post evaluation. According to the regional governments, although the exact number of the success cases for other industries targeted by the project was not confirmed, the industries have also continued. According to the MOI and the regional governments, this is because the model is a good approach and the guideline is also a good reference in developing SMIs. It was also reported that the MOI has disseminated/promoted the model based on a request from regional governments due to its decentralization system in the country. For instance, after project completion, receiving a request from Pasuruan city, a non-target city in East Java province, the MOI expanded the model to the automotive-part industry and the metal industry in the city. It should be noted that the entry point to an industrial cluster development has moved away from LWG, one of the components of the model, and shifted to the so-called field-facilitator approach named TPL-IKM after the end of the project. In the background, the establishment, operation and management of LWG necessitate much time, staff and effort. The MOI reported that the TPL-IKM approach has played a role in disseminating/promoting the model. As mentioned above, it was also confirmed that the model has no longer been adopted in West Kalimantan province due to turnaround of staff and limited human resources and that the staff in the province have endeavored to develop SMI's business by providing different trainings than the model.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was not achieved at the time of ex-post evaluation. According to the regional government of Central Sulawesi province, the turnover and market segments of SMIs in the chocolate industry have been increasing along with the recognition of the chocolate products and the expansion of the marketing area. It was also reported that the rattan product becomes much easier to find due to the expansion of the marketing area. However, data on turnover and market channel of SMIs in all the target areas was not available at the time of ex-post evaluation. This was partly because the data is not properly managed in some of the SMIs, they are even not able to make their financial reports to be presented to government, and there has not been any database to store the data. Therefore, it could not be verified whether the SMIs could increase their productivity and competitiveness after applying the SMIDeP model (Indicator 1). In terms of the number of provinces which adopt the model, South Sulawesi province is the only province among non-target provinces that started a preparation to introduce the model into gold and silver crafter after project completion even though it has yet to be fully realized due to COVID-19 (Indicator 2). According to the MOI, the reasons why the model had not been well-disseminated/promoted after the project were because non-target provinces do not have any interests in it due to LWG requiring much time, staff, and effort, and under the decentralization system in the country, the national government cannot force regional governments to adopt it. Therefore, the MOI has currently set out to disseminate/promote the model with the TPL-IKM approach which imposes less burden on regional governments.

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts were observed at the time of ex-post evaluation. Even though gender-based targeting was not originally planned in the project, some industries with the SMIDeP model have involved more women's income generating activities. For example, as for chocolate products, most of the business actors are women. Other than that, local governments in Central Sulawesi province started to support SMIs there in ways that they established a regional technical service unit for chocolate product to develop processed chocolate commodities and set up infrastructure (buildings and equipment) for the Small Industry Center on rattan processing.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

[2] Ulos is the traditional cloth of the Batak people in North Sumatra province.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td rowspan="3">(Project Purpose)
Preparation for expansion of the model for SMI development based on the efficient service delivery platform is arranged in MOI.</td><td>1. Official adoption of developed guideline for SMI development by MOI.</td><td>Status of the Achievement: Achieved (Continued)
(Project Completion)
• The SMIDeP model and the technical guideline were officially adopted by the DG-SMI, and the project also disseminated them to other regional governments with interests in them.

(Ex-post Evaluation)
• The SMIDeP model and the technical guideline have still been adopted by the MOI and used in the target areas as shown in the table below.

[The continuous status of the SMIDeP model among the target areas]
<table>
<tr><th>Target areas</th><th>Continuous status of the model (Yes/No)</th></tr>
<tr><td>North Sumatra province (Samosir regency)</td><td>Yes</td></tr>
<tr><td>Central Java province (Tegal regency)</td><td>Yes</td></tr>
<tr><td>Central Sulawesi province (Palu city)</td><td>Yes</td></tr>
<tr><td>West Kalimantan province (Pontianak city)</td><td>No</td></tr>
<tr><td>East Java province (Mojokerto city)</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>2. Budgetary and organizational arrangement of MOI to expand the established model to other regions.</td><td>Status of the Achievement: Achieved
(Project Completion)
• In order to further disseminate the SMIDeP model based on the technical guideline, the DG-SMI was committed to the following preparatory arrangements: 1) they narrowed down regional governments and industries according to their capacity of staffing and budgeting, 2) they established a specialized internal team for the dissemination and 3) they made financial arrangements for necessary activities such as the provision of the technical guideline.

(Ex-post Evaluation)
• This will be confirmed at “Sustainability”.</td></tr>
<tr><td>3. Number of success case (SMIs/producers which realized the goal set in the Local Industry Action Plan).</td><td>Status of the Achievement: Achieved (Partially Continued)
(Project Completion)
• The following success cases were observed in each target industry.
<table>
<tr><th>Target Industry</th><th>No. of SMIs/Producers which attained the goal</th></tr>
<tr><td>Ulos fashion</td><td>20 producers entered and continued the transactions with the buyers & sales channels in the tourist/local markets of the handicraft products.</td></tr>
<tr><td>Ship-part</td><td>4 SMIs received Indonesia’s Classification Society (BKI) certification, entered the transactions with ship-building/industries, and received inquiries for transaction in the subsequent years.</td></tr>
<tr><td>Cacao processing</td><td>16 producers entered and continued the transactions with the buyers/sales channels in the modern segment market of chocolate products.</td></tr>
<tr><td>Rattan furniture</td><td>Not observed. Although 5 SMIs became capable of producing according to the standard manufacturing practice which was set by the LWG, tangible transaction with the buyers/users in the local modern segment was not reported.</td></tr>
</table>
Note: Concerning aloe processing and footwear industries targeted by the project in the latter stage, achievement of the main goal was not reviewed since the LWGs recognized that LIAP implementation was only half-way facilitated.

(Ex-post Evaluation)
• The following success cases were confirmed. According to regional governments, other industries targeted by the project have also continued. However, the exact number of the success cases was not confirmed.
<table>
<tr><th>Target Industry</th><th>No. of SMIs/Producers with the SMIDeP model</th></tr>
<tr><td>Cacao processing</td><td>26</td></tr>
<tr><td>Rattan furniture</td><td>20</td></tr>
</table></td></tr>
</table>

(Overall Goal) SMIs in target regions will increase the production and competitiveness and the established model for SMI development based on the efficient service delivery platform ("the model") will be also practiced in other regions.	1. Turnover and market channel of SMIs in target regions are increased.	(Ex-post Evaluation) Unverified • Data on the turnover and market channel of SMIs in target provinces was not available. This was because some of the SMIs have not been managed professionally and not been able to make their financial reports to be presented to government. In addition, there has not been any database to store such data.
	2. Number of regions which opt the established model and improve SMI development service are increased.	(Ex-post Evaluation) Not Achieved. • South Sulawesi province, which was not originally a target province for the project, started to adopt the SMIDeP model for gold and silver crafts after the project completion. However, the activities were being suspended due to the COVID-19 pandemic. The model has yet to be expanded to other non-targeted provinces.

Source : Project Completion Report, Interview and questionnaire to the MOI and regional governments of North Sumatra province, Central Java province, Central Sulawesi province, West Kalimantan province and East Java province

3 Efficiency

The project cost and period slightly exceeded the plan (ratio against the plan: 109% and 103%, respectively). The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

"Master Plan for National Industrial Development" (2015-2035) is a guideline for the government and industry players in industrial planning and development including SMIs. "National Industrial Policy" (2015-2019) and the draft of "National Industrial Policy" (2020-2024) represents the direction and action for implementing the "Master Plan for National Industrial Development" (2015-2035). As the project aims to develop SMIs, it has been endorsed by these policies.

<Institutional/Organizational Aspect>

There were some changes in the organizational structure of the MOI in 2018 after the project completion. The DG-SMI, the implementing agency during the project, changed to the Directorate General of Small, Medium and Multifarious Industry. In addition, during the project, the MOI adopted a territorial approach, for instance the Directorate SMI Region I (covered area: Sumatra and Kalimantan), the Directorate SMI Region II (covered region: Java, Bali and Nusa Tenggara) and the Directorate SMI Region III (covered area: Sulawesi, Maluku, Maluku Utara, Papua Barat and Papua) whilst it changed to the following commodity approach; the Directorate SMI of Food, Wood Products and Furniture, the Directorate SMI of Chemical, Clothing, Crafts and Multifarious Industry and the Directorate SMI of Metal, Machine, Electronics and Transport Equipment. According to the MOI, the changes enable more comprehensive and sustainable SMI development.

[The Directorate General of Small, Medium and Multifarious Industry of the MOI]

The Directorate General of Small, Medium and Multifarious Industry (particularly, the Legal and Cooperation Division of Secretary) takes responsibilities of formulating a strategy/program for the SMI development. They also financially support regional governments to disseminate/promote the SMIDeP model, such as the provision of budget for salary or honoraria for a facilitator to implement the model. According to the MOI, 21 staff members are allocated to the Division but are not devoted to disseminating/promoting the SMIDeP model, and instead, the TPL-IKM approach mentioned in the <Continuation Status of Project Effects at the time of Ex-post Evaluation> has played the role on a demand basis from regional governments. There has currently been one facilitator deployed to Pasuruan city to guide the SMI development with the model.

[Regional governments]

The regional government controlling North Sumatra province has 3 staff who are responsible in SMIs development, the one controlling Central Sulawesi province has 32 staff members, the one controlling Central Java province has 13 staff members, the one controlling East Java province has 20 staff members and the one controlling West Kalimantan province does 6 staff. Considering that North Sumatra province, Central Sulawesi province, Central Java province, and East Java province have continued the SMIDeP model even at the time of ex-post evaluation, it is considered that the number of the staff has been sufficient. West Kalimantan province has also secured a certain number of staff to promote the model but has not had an interest in doing it as LWG necessitates much time, staff, and effort as mentioned above.

[The Service Directory]

The web-based service directory was developed by the project. However, after project completion, the directory became discontinued due to lack of human resources who handle it. Thereafter, the Directorate General of Small, Medium and Multifarious Industry launched a new website (http://ikm.kemenperin.go.id/) as a platform for SMIs development and operates the website at the time of ex-post evaluation.

<Technical Aspect>

[The Directorate General of Small, Medium and Multifarious Industry of the MOI]

The staff of the Legal and Cooperation Division of the Secretariat of the Directorate General of Small, Medium and Multifarious Industry have sustained the skills and knowledge necessary to disseminate/promote the SMIDeP model. In the background, they regularly participate in internal and external workshops/trainings.

[Regional governments]

The staff of regional governments have had the knowledge and skills to continue the SMIDeP model to some extent. However, they have not been given any specialized trainings to disseminate/promote the model due to the budget constraints. They mostly rely on invitations from the MOI to participate in training/workshop.

[The Technical Guideline for the Facilitation of Local Industry Development]

As mentioned in the Continuation Status of Project Effects at the time of Ex-post Evaluation, the technical guideline for the SMIDeP model has still been used by the MOI and the regional governments. The technical guideline can help the TPL-IKM solve the problems they face in the development of SMIs by placing facilitators in their groups/association. The group/association regularly holds meetings to

discuss various problems.

<Financial Aspect>
[The MOI]

The budget data for the MOI is shown in the table. According to the MOI, they have stably secured their budget every year and allocated a certain amount of budget for the dissemination/ promotion of the SMIDeP model even though the specific budget is publicly undisclosed. Its source is the national budget. As mentioned in <Institutional/Organizational Aspect>, the dissemination/promotion of the model is a demand base from regional governments, so when regional governments make a request to introduce the model, the MOI can allocate a necessary budget affiliated to deploy a facilitator as well as to organize LWG meetings in order to implement the SMIDeP model.

Budget for the MOI[3]
(Unit: Trillion Indonesian Rupiah)

2016	2017	2018	2019	2020	2021 (plan)
3.25	2.83	2.83	3.61	2.10	2.99

[Regional governments]

The budget data for regional governments was not available. According to the regional governments, they have not had a sufficient amount of budget for the SMIDeP model so that there have been some problems in the operation and dissemination/promotion of the model. For instance, they cannot hold any training to their staff. The budget to implement the model needs to be secured by the regional government.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose aiming to establish and disseminate the SMIDeP model but not achieved the Overall Goal aiming to increase the production and competitiveness of SMIs in target provinces by applying the model and practice the model in other provinces. As for sustainability, lack of personnel has occurred at provincial levels, regular workshop/training opportunities have not been given to staff at a provincial level, and a sufficient amount of budget for the dissemination/promotion of the SMIDeP model has not been secured. As for efficiency, the project cost and period slightly exceeded the plans.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- To enable the evaluation of the effectiveness of the assistances provided by the Ministry of Industry, inclusive of SMIDeP model, it is recommended that the ministry may consider putting a mechanism and database to trace the performance (inclusive of financial performance) of the SMIs supported.
- It is also recommendable to incorporate the SMIDeP model into the Trainings of Trainers' curriculum of TPL-IKM so that the model would become more familiar to the trainers and the application of the model (or its essence) could be considered in the field.

Lessons Learned for JICA:

- The entry point of an industrial cluster development has shifted from LWGs, which was one of the components of the SMIDeP model facilitating a cluster development, to the TPL-IKM approach after the end of the project. Although being recognized since the time of project planning, the TPL-IKM approach saw some problems in its sustainability so that the project did not adopt it as a tool to disseminate/promote the model. Instead, the project determined to establish LWGs. However, formulation and facilitation of LWGs need to get through a process of making stakeholders for the development of local industries engage in the preparation of LIAP, and the process necessitates much time, staff, and effort. This has been the significant obstruction for regional governments to introduce the SMIDeP model. Therefore, it is recommended that projects should carefully consider how to make well use of or improve an existing system to maximize the project effects at the time of project planning and/or implementation.

2019 Focus Group Discussion for Follow up of the SMIDeP Model on the Development of Metal and Automotive Part SMI in Pasuruan city

2018 Focus Group Discussion among Stakeholders for the Adoption of the SMIDeP Model in Pasuruan city

[3] The budget data are referred from Ministry of Industry's website (from 2016 to 2018) as well as from Ministry of Industry (from 2019 to 2021)

Country Name	**Project for Strengthening Medical Services in Northwest Provinces**
Socialist Republic of Viet Nam	

I. Project Outline

Background	Most skillful health workers were concentrated in big cities and urban areas, while the remote and rural areas were lacking health professionals in both quality and quantity. Particularly, the Northwest Region, one of the poorest regions in Viet Nam, was facing an extreme shortage of medical staff, leading to the poor quality of medical services. Therefore, improvement of medical services at the region was considered as an urgent task of the sector. Under such circumstances, "The Project for Strengthening Health Provision in Hoa Binh Province (2004-2009)" supported by JICA made some achievements, which had set up the network of the Direction Office for Healthcare Activities (DOHA) at provincial and district level, and had made the referral system operated among the provincial and district hospitals through trainings to enhance the technical capacities of medical staff. It was then needed to build a complete cycle of DOHA and referral system from commune to provincial level in Hoa Binh Province, known as "the Hoa Binh model" and to disseminate this model to neighboring provinces, where improvement of medical service was urgently requested to respond the increasing needs of the people living in these areas. In parallel manner, the Japanese ODA Loan for "Regional and Provincial Hospital Development Project (2006-2011)" for the purpose of strengthening the hospital capacities in neighboring regions was implemented.		
Objectives of the Project	Through strengthening the managerial capacity of Ministry of Health (MOH) on DOHA, the establishment of referral system in Hoa Binh Province and the dissemination of the system to other five provinces, the project aimed to strengthen DOHA and referral system in the Northern mountainous provinces, thereby contributing to the improvement of the medical services in the target areas. 1. Overall Goal: The strengthened DOHA and referral system contribute to the sustainable improvements of medical services in Northern mountainous provinces. 2. Project Purpose: DOHA and referral system in the target provinces are strengthened.		
Activities of the Project	1. Project site: 6 Northwest Provinces (Hoa Binh Province, Son La Province, Dien Bien Province, Lai Chau Province, Lao Cai Province and Yen Bai Province) 2. Main activities: (1) Strengthen the managerial capacity of MOH on DOHA, (2) Establish the referral system from the commune to District Hospitals (DHs) and Provincial General Hospitals (PGHs) in Hoa Binh Province, (3) Strengthen the managerial capacity on DOHA and referral system of other five provinces 3. Inputs (to carry out above activities) *at the time of Terminal Evaluation Japanese Side 1) Experts: 6 persons (4 long-term, 2 short-term) 2) Trainees received: 39 persons 3) Provision of Equipment: Vehicle, office equipment, audiovisual equipment and resuscitation simulators for trainings of medical staff 4) Local cost Vietnamese side 1) Staff allocated: 70 from Medical Service Administration (MSA), Provincial Department of Health (DOHs), PGHs and DHs of 6 provinces 2) Land and facilities: Office space 3) Local cost		
Project Period	March 2013 – March 2017	Project Cost	(ex-ante) 254 million yen, (actual) 253 million yen
Implementing Agency	Medical Service Administration (MSA) of Ministry of Health (MOH) Provincial Department of Health (DOHs), Provincial General Hospitals (PGHs), District Hospitals (DHs)		
Cooperation Agency in Japan	The National Center for Global Health and Medicine (NCGM)		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

[Evaluating the Achievement of Project Purpose at the time of Project Completion]

・The number of referral patients used in the indicator 2 of the project purpose is not appropriate for measuring the achievement level of the Project Purpose because this number is heavily affected by other factors, such as the transfer of medical care technology, healthcare insurance, absolute number of patients rather than the contributions by the project such as DOHA unit management, referral activities and evidence-based planning, etc. This is also pointed out by the Terminal Evaluation Team. Moreover, the exact number of referral patients was not obtained during the Terminal Evaluation Study. Therefore, this ex-post evaluation study considered the achievement of this indicator as "not verifiable" at the time of project completion.

[Evaluating Continuation Status of Project Purpose after the Project Completion]

・The manner of assessment used at the Terminal Evaluation Study to examine the achievement of Indicator 1, "The operation of DOHA units is strengthened at PGHs and DHs in the target provinces. (to score maximum point of the Progress Evaluation Sheet for DOHA system)" could not be replicated and the judgmental standards used at the Terminal Evaluation Study were not available in the related documents. Therefore, this ex-post evaluation study examined the continuation status of the Project Purpose with alternative data, by focusing on the continuity of the operation of DOHA units and DOHA activities at PGHs and DHs in the target provinces. For this purpose, (i) the number of training on DOHA conducted per year, (ii) the number of participants of trainings per year, (iii) major referral activities (such as meetings) and its frequency and (iv) structures of DOHA establishment, were examined as Supplementary Information 1.

[Evaluating Achievement Status of Overall Goal]

・Since DOHA and referral criteria have not been reflected on the Hospital Quality Evaluation Criteria Book, it was not possible to use the Indicator 1, "Improved evaluation results on DOHA and referral criteria in the Hospital Quality Evaluation Criteria Book for PGHs and DHs in the Northern mountainous provinces, 05-10 years after project completion" to examine the achievement of the Overall Goal, "Strengthened DOHA and referral system are contributed to the sustainable improvements of medical services in Northern mountainous provinces". Therefore, this ex-post evaluation study

examined the Overall Goal with currently available data, quantitatively and qualitatively, such as (i) improvement of medical services by referring to Hospital Quality Evaluation, (ii) Patient Satisfaction of selected hospitals in the target provinces, and (iii) the contribution of DOHA activities to the improvement of medical services by obtaining the evaluation of DOHA activities by each DOH via questionnaire, as Supplementary Information 2.

[Target year of Overall Goal]

・The indicator states that the target year of the Overall Goal is five to ten years after the project completion, which specifically means 2022 to 2027. Therefore, the achievement of the Overall Goal at the time of ex-post evaluation is analyzed based on the effects until the time of ex-post evaluation and assumed effects at the target year. To make an evaluation judgment, the demonstration of an upward trend of the indicator should be taken into account.

1 Relevance

<Consistency with the Development Policy of Viet Nam at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, under the "Comprehensive Development Design for the Health System in Viet Nam to 2010 and Vision by 2020", known as the "Health Sector Master Plan for the year 2020", the Government of Viet Nam (GOV) set its goal to strengthen the human resource development of health professionals, medical institutes from primary level to the tertiary level and to improve the quality of medical services. These goals were once set under the "Health Master Plan (2006-2010)" developed in 2006, but were not achieved. MOH considered that it was essential to strengthen the regional health service system in order to achieve those goals.

<Consistency with the Development Needs of Viet Nam at the Time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, this project was consistent with Viet Nam's development needs in the quality of medical services and for improvement of health professionals as described in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

According to the "Country assistance policy for the Socialist Republic of Viet Nam (2012)", "Response to Fragility" was raised as one of the priority areas and Japanese Government committed the support to improve the social aspects and living, reduce poverty and correct disparity by developing the systems in the fields of health-care sector, social security and support to the socially disadvantaged etc, and developing rural areas. Assistance toward the six provinces targeted by the project, the ones of poorest areas and where their health indicators were unfavorable compared with that of national average, were thus relevant to the Japan's policy..

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

At the time of project completion, the project partially achieved the Project Purpose, "DOHA and referral system in the target provinces are strengthened". It was confirmed that the operation of DOHA units was strengthened in all six provinces. According to the Progress Evaluation Sheet for DOHA system, the score of DOHA system reached to the maximum point by the Terminal Evaluation as targeted. In respect of DOHA network and referral activities, the score also improved during the same period achieving 95% of the target (Indicator 1). On the other hand, how DOHA network and referral system implemented by the project actually contributed to the reduction of the number of referral patients (Indicator 2) could not be examined because of inappropriateness of the indicator, which was pointed out by the Terminal Evaluation Team. No exact data of referral patients' number was obtained, either.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

After the project completion, the project effects have partially continued. Hearings from the officials of MSA of MOH confirmed that DOHA has been functioning as one of hospital's regular activities and so far, 32 out of 37 Central Hospitals have DOHA Training Unit and 51 out of 63 PGHs have DOHA Unit in nationwide. In case of the target provinces, the aggregated number of trainings on DOHA conducted and of those training participants have been steadily increasing. During three years after the project completion from 2017 to 2019, in an average, 77 trainings with 3,023 participants were annually conducted for the target provinces. The structure of DOHA has been established in each province and the referral activities in the form of periodical meetings have been maintained (Supplementary Information 1). DOHA, which means the activities such as technical training, technical guidance for enhancing capacity of medical staff in respective level of health facilities, has been sustained from provincial hospital to district hospital and further to the Commune Health Stations (CHSs) in the six provinces. The Central Hospitals (Bach Mai Hospital, Viet Duc Hospital etc.) have also been making great contributions by organizing a lot of trainings through MOH projects such as "1816 Project"[1] and "Satellite Project"[2] to the six provinces. Two-way communication sharing is active among the Central Hospitals, PGHs and DHs by using group chats, particularly in providing feedbacks on referral cases and on-line consultation when having difficulties in making diagnosis of severe cases.

On the other hand, in terms of the referral system in the lower level health facilities, with the effective of revised Health Insurance Law in 2016, the people have been allowed to directly access to the DHs passing the CHSs so that the referral system between commune to district level is no more active. MOH fully recognized the importance of CHSs particularly in the context of managing non-communicable diseases (NCDs) and has been putting a lot of efforts to enhance the service of CHSs. However, the utilization of CHSs does not improve because the CHSs mainly provide the day care services, such as immunization, health education, NCD related diseases management and their service on medical treatment is limited. Therefore, people who need the medical treatment want to go to the DHs to get more benefits. In terms of the Referral Data Management Software (RDMS) introduced by the project for the purpose of improving the monitoring referral activities has not been utilized because the RDMS could not be directly linked with their existing Hospital Information System (HIS) in which the current referral data is included. Then, the application of HIS was required to all hospitals by a decision of MOH in December 2017.<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

It is observed that the project has partially achieved its Overall Goal, i.e. "The strengthened DOHA and referral system contribute to the sustainable improvements of medical services in Northern mountainous provinces". Since the indicator originally set to examine the achievement level is not verifiable as DOHA and referral criteria have not been reflected on the Hospital Quality Evaluation Criteria Book, the achievement level was examined by other source of information. According to the results of Hospital Quality Evaluation in

[1] "1816 Project": Approved in 2008 by Decision 1816 / QD-BYT under the title "Sending on rotation professional staff from upper hospitals (35 centrals under MOH, 25 under DOHs in Ha Noi and Ho Chi Minh City) to lower hospitals for supporting in enhancing quality of medical service".

[2] "Satellite Project": Approved in 2013 with an aim to enhance examination and treatment capabilities of provincial hospitals in 5 priority fields of oncology, trauma care, cardiology, obstetrics and pediatrics. During 2013-2015, 9 central hospitals under MOH and 5 hospitals under Ho Chi Minh City DOH are playing the central role as "nuclear hospitals", which provide training and technical transfer to 45 provincial hospitals nationwide. By 2019, nuclear hospitals number increased from 14 to 23 that provided technical guidance and support to 130 satellite hospitals in 10 specialties of oncology, trauma care, cardiology, obstetrics, pediatrics, endocrinology, neurology, clinical hematology, ICU and poisoning prevention.

which DOHA and referral criteria is not included, four out of the six provinces have demonstrated the gradual improvement. Three provinces have achieved 3.0 point (60%) out of 5.0-point scale, but other three provinces have not yet. As for the patient satisfaction for both in-patient and out-patient, most of provinces have shown the improvement after the project completion. Furthermore, all DOHs/PGHs of the six provinces responded to the questionnaire that the contribution of DOHA activities to the improvement of medical services was "high". This is because DOHA activities have enhanced the technical capabilities of medical staff through trainings, which eventually contributed to improving the medical services to attract more patients; DOHA activities have helped to tighten the connection between PGHs and DHs through two-way communication sharing (Supplementary Information 2).

It is stated in the original indicator that the target year of the Overall Goal is five to ten years after the project completion, which specifically means 2022 to 2027. It is assumed that the aim of Overall Goal has been steadily realized. At the same time, there are still some challenges, such as the referral system in lower level health facilities, etc.

<Other Impacts at the time of Ex-post Evaluation>

No negative impacts were observed and no specific ripple effects were identified during the ex-post evaluation study.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td rowspan="2">(Project Purpose)
DOHA and referral system in the target provinces are strengthened.</td><td>Indicator 1:
The operation of DOHA units is strengthened at PGHs and DHs in the target provinces.
(to score maximum point in the Progress Evaluation Sheet for DOHA system)</td><td><u>Status of the Achievement: achieved</u>
(Project Completion)
・The indicator was examined according to the Progress Evaluation Sheet for DOHA system by applying two numerical data, (i) the score of which level of DOHA system is quantified (scored) by the project according to MOH standard such as Decision and Circulars, with maximum point as 10.0 (shown in upper cell of each province of the table) and (ii) the score of which level of DOHA network and referral activities are quantified by the project, with maximum point as 13.0 (shown in lower cell of each province of the table).
・As for DOHA system, the average score of the six provinces was 7.8 at the beginning of the Project in 2013, while it improved further up to the maximum point of 10.0 at the Terminal Evaluation in 2016. As for DOHA network and referral activities, the average score of the six provinces was 1.2 at the beginning of the Project in 2013, while it improved to 12.3 at the Terminal Evaluation in 2016, achieving 95% of the target. As a whole, it was confirmed that DOHA system as well as DOHA network and referral activities were improved as expected.

Status of DOHA system established in 6 targeted provinces
(i) DOHA system and (ii) DOHA network and referral activities
<table>
<tr><th>Province</th><th>Data type</th><th>At the beginning of the project in 2013(1)</th><th>2015</th><th>2016</th></tr>
<tr><td rowspan="2">Hoa Binh</td><td>(i)</td><td>9.5</td><td>10.0</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>7.0</td><td>12.0</td><td>15.5(2)</td></tr>
<tr><td rowspan="2">Son La</td><td>(i)</td><td>8.0</td><td>9.0</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>0.0</td><td>11.0</td><td>13.0</td></tr>
<tr><td rowspan="2">Dien Bien</td><td>(i)</td><td>7.0</td><td>7.5</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>0.0</td><td>5.0</td><td>7.0</td></tr>
<tr><td rowspan="2">Lai Chau</td><td>(i)</td><td>7.0</td><td>10.0</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>0.0</td><td>10.0</td><td>13.0</td></tr>
<tr><td rowspan="2">Lao Cai</td><td>(i)</td><td>7.0</td><td>9.0</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>0.0</td><td>11.0</td><td>13.0</td></tr>
<tr><td rowspan="2">Yen Bai</td><td>(i)</td><td>8.0</td><td>10.0</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>0.0</td><td>8.0</td><td>12.0</td></tr>
<tr><td rowspan="2">Average of the six provinces</td><td>(i)</td><td>7.8</td><td>9.3</td><td>10.0</td></tr>
<tr><td>(ii)</td><td>1.2</td><td>9.5</td><td>12.3</td></tr>
</table>
Note:
(1) The scores of (ii) DOHA network and referral activities (figures of lower cell) for provinces except Hoa Binh Province were marked "0" at the beginning of the Project. This is because no DOHA network and referral activities based on the Hoa Binh model were introduced to these five provinces before the project.
(2) Maximum score of 15.5 is set for Hoa Binh Province which had been assisted by the previous technical cooperation project.</td></tr>
<tr><td>Supplementary Information 1:
Continuity of the operation of DOHA units and DOHA activities at PGHs and DHs to be measured by the followings:
(i) the number of</td><td><u>Status of the Achievement: partially continued</u>
(Ex-post Evaluation)
Supplementary Information 1-(i) and 1-(ii)
・The operation of DOHA unit has been maintained and trainings on DOHA have continued in all six provinces. Both aggregated number of trainings and the aggregated number of training participants for the six provinces have been steadily increasing. During three years after the project completion from 2017 to 2019, the averages of 77 trainings with 3,023 participants were annually conducted for the six provinces.</td></tr>
</table>

	training on DOHA conducted per year (ii)the number of participants of trainings on DOHA per year (iii) major referral activities (such as meetings) and its frequency (iv) structures of DOHA establishment	Supplementary Information 1-(iii) ・It was confirmed by the questionnaire survey that all provinces have maintained the referral activities in the form of periodical meetings. It should be noted that with the effective of revised Health Insurance Law in 2016, the people have been allowed to directly access to the DHs passing the CHSs so that the referral system in the lower health facilities between commune to district level is no more active. Supplementary Information 1-(iv) ・It was confirmed by the questionnaire survey that the structures of DOHA have been established in each province. Under DOHs, the Medical Professional Division is a focal point of DOHA and referral activities. In PGHs, DOHA -Training Unit was set up to overview all activities and has served as a hub to connect with Central Hospitals through conducting training and technical transfer activities. In DHs and other provincial specialized hospitals, DOHA unit is located inside of the General Planning Division. In CHSs, one staff is assigned to be in charge of DOHA.
	Indicator 2: Reduced more than 10% of number of referral patients in the fields which technical transfer/training has been conducted for at PGHs and DHs in the target provinces.	<u>Status of the Achievement: not verifiable</u> (Project Completion) ・As explained in the special perspective.
(Overall Goal) The strengthened DOHA and referral system contribute to the sustainable improvements of medical services in Northern mountainous provinces.	Indicator 1: Improved evaluation results on DOHA and referral criteria in the Hospital Quality Evaluation Criteria Book for PGHs and DHs in the Northern mountainous provinces, 05-10 years after project completion.	<u>Status of the Achievement: not verifiable</u> (Ex-post Evaluation) ・As explained under the "Special Perspectives Considered in the Ex-Post Evaluation", DOHA and referral criteria have not been reflected on the Hospital Quality Evaluation Criteria Book, it is not possible to examine the Overall Goal by this indicator. Therefore, the achievement level of Overall Goal is to be examined by the following supplementary information.
	Supplementary Information 2: (i) improvement of medical services by referring to Hospital Quality Evaluation (3) **the demonstration of an upward trend is to be examined.* (ii) patient satisfaction of selected hospitals in the target provinces **the demonstration of*	<u>Status of the Achievement: partially achieved</u> (Ex-post Evaluation) Supplementary Information 2-(i) - Average for all PGHs/DHs surveyed

Items	2016	Project Completion 2017	2018	2019	*Average per year (2017-2019)*
(i) the number of trainings on DOHA conducted, aggregated for the six provinces	34	83	62	86	*77*
(ii)the number of participants for the training on DOHA, aggregated for the six provinces	1,563	2,037	2,841	4,191	*3,023*

Province	Number of PGH/DH surveyed	2017	2018	2019	Status of change
Hoa Binh	14	2.89	2.88	3.05	improved
Son La	20	3.08	3.25	2.79	
Dien Bien	14	2.37	2.65	2.77	improved
Lai Chau	10	na	2.43	2.56	improved
Lao Cai	1	3.50	3.72	3.59	
Yen Bai	15	2.88	3.01	3.13	improved

Note: (3) Hospital Quality Evaluation shows the quality assessment of medical services according to 83 criteria set by MOH and examined with the scale of 5 levels as 5.0 being maximum point.

Supplementary Information 2-(ii) -Average for all PGHs/DHs surveyed
*Upper cell presents the data for in-patient and lower cell for out-patient

Province	Number of PGH/DH surveyed	2017	2018	2019	Status of change
Hoa Binh	14	85.08	79.26	87.51	improved
		84.20	81.78	85.95	improved

	an upward trend is to be examined.	Son La (4)	20	86.00	90.50	95.20	improved
		Dien Bien (4)	14	91.50	98.11	91.90	
		Lai Chau	10	81.32	82.00	87.50	improved
				89.30	83.85	83.38	
		Lao Cai	1	90.00	91.00	94.40	improved
				86.00	85.00	93.10	improved
		Yen Bai	15	92.39	94.10	97.30	improved
				92.43	94.53	97.50	improved
	(iii) contribution of DOHA activities to the improvement of medical services	Note: (4) Patient Satisfaction for in-patient and out-patient are aggregated. Supplementary Information 2-(iii) ・According to the questionnaire survey conducted by this study, all DOHs/PGHs responded that the level of contribution of DOHA activities toward the improvement of medical services was "high". ・There are several reasons. Main reasons are such that DOHA activities have enhanced the technical capabilities of medical staff through trainings, which eventually contributed to improving the medical services to attract more patients; DOHA activities have helped to tighten the connection between PGHs and DHs through two-way alternate communication, such as group chat; DOHA activities have made the referral data analyzed and reflected in designing training plan for DHs.					

Source: Terminal Evaluation Report, JICA documents, Questionnaires for MSA of MOH, DOHs/PGHs of the target provinces, interview with MSA of MOH and DOHs/PGHs of Hoa Binh and Yen Bai Provinces

3 Efficiency

Both the project cost and the project period were as planned (ratio against plan: 100% and 100%, respectively). The Outputs of the project were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

Under the "Five-Year Health Sector Development Plan (2016-2020)", it is stated that the quality of medical services should be urgently improved to cope with increasing needs for the people. One of its objectives is the improvement of the quality and effectiveness of the service delivery network through ensuring the collaboration, linkage and integration among different levels of cares.

<Institutional/Organizational Aspect>

At the central level, in MOH, the DOHA Division was merged with the Hospital Quality Management Division to become the Hospital Quality Management - DOHA Division as of July 2018. At provincial level, DOHA is managed by the Professional Medical Division under the DOHs, which serves as a hub to supervise all DOHA and referral activities in the province. In PGH, there are 2 to 3 staff under the DOHA division supervised by the leadership of the Vice Director. Staff in charge of DOHA and referral activities most likely work in part-time and do the clinical works as well. At the district level, DOHA unit belongs to the General Planning Division under DHs and one person is assigned to coordinate the work with all those belonged to CHSs and DOHA staff. As for the referral meetings, they were integrated with regular review meeting (either online or face to face) which is periodically held by monthly or quarterly basis. In terms of the improvement of the quality and effectiveness of the service delivery, it still requires the skill transfer to lower levels through various forms such as to continue rotating health professionals between health facilities and across levels, to enhance DOHA through training and coaching and to provide remote health counselling. MOH has also issued several decisions, circulars to further enhance the capacity development of health professionals.

<Technical Aspect>

Technical skills and knowledge of medical staff have been well sustained through the on-the-job training among staff in charge of DOHA and referral activities. It was observed through the field visits that the core staff in charge of DOHA in Hoa Binh and Yen Bai Provinces have actively engaged in DOHA activities. The Handbook on DOHA and Referral developed by the project has been utilized in the respective target provinces. On the other hand, the Referral Data Management Software (RDMS) introduced by the project has not been utilized. Considering that DOHs and PGHs develop the training plans by analyzing the data on HIS to identify the strengths and weaknesses of the hospitals, the direct linkage with the RDMS which facilitates the monitoring referral activities should have been well coordinated.

<Financial Aspect>

MSA of MOH has secured about 3 billion VND per year for DOHA activities nationwide. The budget is used for training on annual review meeting of the "1816 Project" and "Satellite Project" as well as monitoring and supervising DOHA activities. In provinces, however, the budget for DOHA is very limited, thus each hospital has to arrange budget for training by themselves. Furthermore, an autonomous financial policy on regular expenditure of hospitals implemented in 2018 has posed a big challenge for all hospitals. Interviews with leaders of DOHs, PGHs and DHs of Yen Bai and Hoa Binh Provinces revealed that they have faced some difficulties, particularly to conduct trainings to lower level health facilities. At the same time, they remarked that they would do their best for capacity improvement of lower level health facilities.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the technical and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose "DOHA and referral system in the target provinces are strengthened." The effects of the project have partially continued after the project completion. The structure of DOHA establishment has been properly formed and DOHA and referral activities have been continued in the target provinces. DOHA has been functioned as one of hospital's regular activities, but the referral system in the lower level health facilities needs further improvement. The Overall Goal "The strengthened DOHA and referral system contribute to the sustainable improvements of medical services in Northern mountainous provinces." has been partially achieved. As for the sustainability, there are no problems in the policy aspect, but some problems in the technical and financial aspects of the implementing agency. Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency：

The MSA of MOH

・DOHA network and its activities have been operating quite well in the target provinces and each province has its own initiatives in promoting DOHA activities despite of budget limitation. Therefore, it would be highly expected that MSA/MOH can explore some opportunities, such as a cross study visit among provinces for a purpose of sharing good practices.

Lessons Learned for JICA:

1) In the process of project designing as well as during its implementation, a software should be carefully developed with sound consultation with IT Department of MOH and also leading IT companies, so that it can be effectively utilized to match the needs in the hospital management. The RDMS introduced by the project and was once planned to be officially deployed in the six target provinces, in order to facilitate the monitoring referral activities, has not been utilized. Because the RDMS could not be directly linked with their existing Hospital Information System (HIS) in which current referral data is included, thus it would hamper the conveniences for users.

2) It is important to set the indicators that can be examined by the available data even after the project is completed.

- It was identified that the manner of assessment used at the Terminal Evaluation Study to examine the achievement of one of the indicators originally set for the Project Purpose could not be replicated and the judgmental standards were not clearly presented in the Terminal Evaluation Report, which made the data collection unavailable. The indicator to examine the achievement of the Overall Goal was identified as not verifiable at the time of ex-post evaluation due to the unavailability of data. This ex-post evaluation study examined the continuation status of the Project Purpose and the achievement of the Overall Goal by setting the Supplementary Information.
- In case that an inappropriateness of indicator is identified during the project period, the modification of indicator should be carefully determined with counterparts before the project completion. One of the indicators to examine the achievement of the Project Purpose was identified as inappropriate at the time of Terminal Evaluation Study, but no alternative indicator was determined. The feasibility and appropriateness of the indicator should have been thoroughly examined at the time of project formulation and during the project implementation period.

(Photo)

A nurse of Yen Bai General Hospital performs CPR technique in a training.

An infection control training course organized in Luc Yen DH / Yen Bai Province

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Balkan Office: March, 2021

Country Name	**The Project for Enhancement of the Capacity for Waste Management toward Sound Material-cycle Society**
Republic of Kosovo	

I. Project Outline

Background	After the independence in February 2008, the Republic of Kosovo put high priorities to reconstruct its economy and social development, while less emphasis to the environmental field. Consequently, waste collection service was not sufficient enough to cope with the increasing solid waste due to the population upsurge especially in the urban area. Those problems made the sanitary conditions of Prizren municipality severely worsened. Government of Kosovo (GOK) formulated the waste management strategies for the period of 10 years (2013-2022) as development policy for solid waste management (SWM). The strategies referred to the achievements of reduction of environmental pollution caused by waste, the improvement of waste collection service throughout the country and realization of a sound material-cycle society through 3R (reduce, reuse and recycling of waste).		
Objectives of the Project	Through the development of solid waste master plan based on the situation analysis of Prizren municipality and the implementation of SWM plan through pilot activities and awareness raising of citizens, the project aims to strengthen the SWM capacity of Municipality of Prizren (MOP), thereby contributing to the enhancement of the SWM capacity of other municipalities and to improve the conditions of SWM in Kosovo. 1. Overall Goal: The capacity for solid waste management of municipality level in Kosovo will be enhanced, and thus the waste management issue in Kosovo will be improved. 2. Project Purpose: The capacity of solid waste management in Prizren municipality will be strengthened.		
Activities of the Project	1. Project site: Prizren municipality 2. Main activities: (1) Situation analysis on SWM in Prizren municipality, (2) Development of SWM plan, (3) Implementation of pilot activities to confirm the feasibility, (4) Awareness raising for the people, (5) Implementation of SWM plan 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 7 persons (short-term) 2) Trainees received: 28 persons 3) Equipment: Office equipment, Audio Visual Aid 4) Local cost Kosovo Side 1) Staff allocated: 16 persons (4 persons from Ministry of Environment and Spatial Planning, 7 from MOP, 5 from Ekoregjioni Regional Waste Company) 2) Land and facilities: Office space 3) Others: Manpower for sample collection, sorting processing; Equipment for removal of residue		
Project Period	September 2011 – September 2015 (extended period: September 2014 – September 2015)	Project Cost	(ex-ante) 290 million yen (actual) 328 million yen
Implementing Agency	Ministry of Environment and Spatial Planning (MESP) * Reorganized as Ministry of Economy and Environment (MEE) in 2020. Municipality of Prizren (MOP), Ekoregjioni Regional Waste Company (RWC)		
Cooperation Agency in Japan	Kokusai Kogyo Co., Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

・Due to the state of emergency caused by COVID-19, all information was obtained through questionnaires and follow up phone calls/emails to MOP, Ekoregjioni RWC and MEE. No site visits were conducted.

・The outcome of the project studied under this ex-post evaluation is the combined effects with the preceding JICA Grant Aid Project, namely, "The Project for Improvement of Solid Waste Management (2011-2012)" which provided the collection vehicles and the equipment for vehicle maintenance for MOP.<Special Perspectives Considered in the Ex-Post Evaluation>

[Evaluating Achievement Status of Overall Goal]

・In order to examine the achievement level of Overall Goal, "The capacity for solid waste management of municipality level in Kosovo will be enhanced, and thus the waste management issue in Kosovo will be improved", the only one indicator, "Local governments that develop SWM plans increase" is originally set. Since this indicator alone does not suffice to examine the project effects on the improvement of waste management issue in Kosovo, "Waste collection rate achieved by the project is maintained in Prizren municipality after the project completion" and "Waste collection rate improves in other municipalities after the project completion" are used as Supplementary Information 1 and 2.

・In regard to the Indicator 1 "Local governments that develop SWM plans increase", the judgmental standard is not clearly defined. Considering that the Overall Goal is targeted for the areas of Kosovo as a whole but that the data collection was limited under the COVID-19, this ex-post evaluation study made an evaluation judgement based on the status of four neighboring municipalities whose data was obtainable for the given time period and who all have received the waste collection services from the same RWC, as well.

[Evaluating the sustainability]

・Considering that the Overall Goal is targeted for the areas of Kosovo as a whole but that the data collection was limited under the COVID-19, this ex-post evaluation study made an evaluation judgement based on the status of four neighboring municipalities for the same reasons on the above.

1 Relevance

<Consistency with the Development Policy of Kosovo at the Time of Ex-Ante Evaluation>
At the time of ex-ante evaluation, this project was consistent with "Strategy of the Republic of Kosovo on Waste Management 2013-2022" which emphasized the establishment of a sound material-cycle society through reduction of environmental pollution caused by waste, the improvement of the waste collection service nation-wide and waste minimization through 3Rs (reduce, reuse and recycle).
<Consistency with the Development Needs of Kosovo at the Time of Ex-Ante Evaluation>
At the time of ex-ante evaluation, this project was consistent with Kosovo's development needs to enhance the capacity of waste management as described in "Background" above.
<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>
The project was consistent with the basic policy of Japan's assistance to Kosovo in 2011 and beyond which was to implement bilateral economic cooperation in the areas of economic and social stabilization, including human resource development, and the environment[1].<Evaluation Result>
In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>
By the time of project completion, the project achieved its purpose, "The capacity of solid waste management in Prizren municipality will be strengthened". MOP could acquire the related knowledge and skills through pilot activities of the project in which the waste collection system was improved by the optimized allocation of collection vehicles, the introduction of a bell collection, on-time notification of collection service to residents and the coverage expansion of waste collection service, etc. Furthermore, MOP could manage to introduce the environmental education to the pupils at schools and the community-based public education and awareness raising as well. Through implementation of this Project, the roles of residents, business entities and the local government in Prizren municipality became clear and each of them started fulfilling their roles. MOP has reached a level where it disseminates knowledge and experience, as a SWM model city, to other municipalities. As a result, MOP became able to secure funding to sustainably implement the five-year SWM Plan through introducing the waste tax system (Indicator 1). Before the end of the project, MOP organized the seminars several times and shared their knowledge and experiences obtained through the project by inviting most of municipalities in Kosovo, so that they were guided to receive instructions from MOP on how to start with the new form of SWM. It was judged that the capacity of MOP in terms of SWM was enhanced and thus MOP was fully prepared to disseminate the acquired knowledge and experiences to other local governments (Indicator 2).
<Continuation Status of Project Effects at the time of Ex-post Evaluation>
After the project completion, the project effects have continued. MOP has continued to secure funding for SWM. The amount secured for SWM increased from Euro 1,000,000 which represents 2.63% of MOP's annual budget for 2015 to Euro 1,300,000, 3.25% of the same for 2020. MOP has also continued providing the support to other local governments in the form of administrative advice in which staff of the other municipalities has visited MOP (WMS Section) to learn on the system which is being implemented in Prizren municipality. Frequency and the participants for administrative advice varied depending on the needs of each municipality. In 2016, all of four neighboring municipalities received the administrative advice. Since then, Dragash municipality received it every year up to 2019. Malisheve did it again in 2017. In case of Rahovec and Suhareke, they took interval and received it for the second time in 2019. In 2020, partly due to the effect of COVID-19, no activities on dissemination have been done. Furthermore, according to MOP, the Association of Kosovo Municipalities has a Collegium for Waste Management whose member are consisted of all SWM officers from all Kosovo Municipalities. They organize meetings six times a year and discuss about all relevant topics in waste management field. Through this Collegium, knowledge and experiences learned from JICA projects has been shared as well.
<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>
It is observed that the Overall Goal, i.e. "The capacity for solid waste management of municipality level in Kosovo will be enhanced, and thus the waste management issue in Kosovo will be improved" has been achieved. With administrative advice from MOP, two out of the four neighboring municipalities successfully developed their own SWM plans. One of them, the Municipality of Rahovec, has already started the implementation of their SWM Plan from 2016. The other, the Municipality of Suhareke, will start its implementation in 2021. In addition, another neighboring municipality, the Municipality of Dragash, developed the draft plan and it is expected that they will complete the plan by the first half of 2021 with the support of external donors (Indicator 1). The improved status of SWM for Prizren municipality and four neighboring municipalities was confirmed by the increasing amount of collected waste as well as the improving waste collection rate of each municipality. As shown in the table blow, the amount of collected waste for Prizren as well as 4 neighboring municipalities have shown the increasing trends. Likewise, waste collection rate for Prizren municipality alone improved from 76.8% (2015) to 85.3% (2019) (Supplementary Information 1). A positive trend is also observed for the waste collection rate for these four municipalities, which in average improved from 47.5% (2015) to 71.7% (2019) (Supplementary Information 2).
<Other Impacts at the time of Ex-post Evaluation>
No specific ripple effect other than the above was observed during the study.
<Evaluation Result>
Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results

[1] Source: Ministry of Foreign Affairs, "ODA Country Data Book in 2011"

<table>
<tr>
<td>(Project Purpose)
The capacity of solid waste management in Prizren municipality will be strengthened.</td>
<td>Indicator 1:
Municipality of Prizren becomes able to secure funding to sustainably implement the five-year Solid Waste Management Plan.</td>
<td>Status of the Achievement: achieved (continued)
(Project Completion)
・The Assembly of Prizren approved the financial plan from 2014 to 2016 in September 2013 and the budget for SWM depending on the five-year SWM Plan. In order to secure the financial sources that were necessary for the realization of proper waste management, MOP introduced the waste tax system to improve the tax collection rate.
(Ex-post Evaluation)
・MOP has continued to secure funding to sustainably implement the five-year SWM Plan after project completion.
(Currency unit: Euro)
<table>
<tr><th></th><th>Project Completion 2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th></tr>
<tr><td>Amount of budget secured for SWM</td><td>1,000,000</td><td>1,200,000</td><td>1,200,000</td><td>1,300,000</td><td>1,300,000</td><td>1,300,000</td></tr>
<tr><td>Percentage of SWM budget out of total budget of Prizren municipality for the year</td><td>2.63%</td><td>3.12%</td><td>3.00%</td><td>3.25%</td><td>3.25%</td><td>3.25%</td></tr>
</table>
</td>
</tr>
<tr>
<td></td>
<td>Indicator 2:
Dissemination of experience and knowledge obtained in the project to other local governments is ready.</td>
<td>Status of the Achievement: achieved (continued)
(Project Completion)
・MOP was fully prepared to disseminate the experience and knowledge obtained through the project and to actually implement the awareness raising activities, environmental education and to supervise the waste collection service on its own.
・Before the end of project, MOP organized the seminars in July 2014 with 22 participants, in March 2015 with 59 participants and in July 2015 with 53 participants from 35 municipalities, where the presentation of the entire waste management reform was made and the experience and knowledge obtained through the project were disseminated. These seminars served to increase the interests among local governments whose representatives visited MOP to get the necessary instructions on how to start with the new form of SWM.
(Ex-post Evaluation)
・The experience and knowledge obtained in the project has been disseminated from MOP to other local governments after project completion in the form of administrative advice.
・Through the Collegium for Waste Management whose member are consisted of all SWM officers from all Kosovo Municipalities, knowledge and experiences learned from JICA projects has been shared as well.</td>
</tr>
<tr>
<td>(Overall Goal)
The capacity for solid waste management of municipality level in Kosovo will be enhanced, and thus the waste management issue in Kosovo will be improved.</td>
<td>Indicator 1:
Local governments that develop SWM plans increase.</td>
<td>Status of the Achievement: partially achieved
(Ex-post Evaluation)
・Two out of the following four local governments developed the SWM plans.
<table>
<tr><th>Municipality</th><th>Development of SWM plans</th><th>Implementation of SWM plans</th><th>Issues to be resolved</th></tr>
<tr><td>Malisheve</td><td>Draft commission was formed.</td><td>-</td><td>Lack of human resources/budget</td></tr>
<tr><td>Rahovec</td><td>Developed SWM plan</td><td>Implemented from 2016</td><td>–</td></tr>
<tr><td>Dragash</td><td>Prepared the draft
To be developed by 1st half of 2021</td><td>-</td><td>Lack of human resources
Support from donors</td></tr>
<tr><td>Suhareke</td><td>Developed SWM plan</td><td>To be implemented in 2021</td><td>Lack of human resources</td></tr>
</table>
</td>
</tr>
<tr>
<td></td>
<td>Supplementary Information 1:
Waste collection rate achieved by the project is maintained in Prizren municipality after the project completion.</td>
<td>Status of the Achievement: achieved
(Ex-post Evaluation)
<table>
<tr><th>Municipality</th><th>Waste amount (ton)</th><th>Project Completion 2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th><th>2020 as of July</th></tr>
<tr><td rowspan="3">Prizren</td><td>Generated waste (1)</td><td>52,521</td><td>52,521</td><td>52,521</td><td>52,521</td><td>52,521</td><td>26,260</td></tr>
<tr><td>Collected waste</td><td>40,361</td><td>42,175</td><td>44,775</td><td>45,746</td><td>44,775</td><td>24,767</td></tr>
<tr><td>Waste collection rate (%) (2)</td><td>76.8%</td><td>80.3%</td><td>85.3%</td><td>87.1%</td><td>85.3%</td><td>94.3%</td></tr>
</table>
Note:
(1) Amount of generated waste in ton is estimated as: 0.8337 kg (average amount of generated waste per person) x 365 days x 172,594 (population of Prizren from census in 2011 / 1000)
(2) Waste collection rate (%) = Collected waste (ton/year)/Generated waste(ton/year) x 100</td>
</tr>
</table>

	Supplementary Information 2: Waste collection rate improves in other municipalities after the project completion.	Status of the Achievement: achieved (Ex-post Evaluation)

Municipality	Waste amount (ton)	Project Completion 2015	2016	2017	2018	2019	2020 as of June
Malisheve	Generated waste (1)	14,609	14,609	14,609	14,609	14,609	na
	Collected waste	6,842	7,493	8,475	9,001	9,368	4,186
	Waste collection rate (%) (2)	46.8%	51.3%	58.0%	61.6%	64.1%	na
Rahovec	Generated waste	15,020	15,020	15,020	15,020	15,020	na
	Collected waste	5,027	7,599	8,471	8,279	8,853	3,863
	Waste collection rate (%)	33.5%	50.6%	56.4%	55.1%	58.9%	na
Dragash	Generated waste	8,985	8,985	8,985	8,985	8,985	na
	Collected waste	4,557	5,205	5,531	5,797	6,067	2,560
	Waste collection rate (%)	50.7%	57.9%	61.6%	64.5%	67.5%	na
Suhareke	Generated waste	15,995	15,995	15,995	15,995	15,995	na
	Collected waste	9,449	10,771	11,647	12,751	15,384	na
	Waste collection rate (%)	59.1%	67.3%	72.8%	79.7%	96.2%	na
Average Waste collection rate for 4 municipalities		*47.5%*	*56.8%*	*62.2%*	*65.2%*	*71.7%*	*na*

Note:
(1) Amount of generated waste in ton is estimated as: 0.75 kg (average amount of generated waste per person for smaller municipalities) x 365 days x population of each municipality from census in 2011 / 1,000
(2) Waste collection rate (%) = Collected waste (ton/year)/Generated waste (ton/year) x 100

Source: JICA documents, Project Completion Report, Questionnaires and Interviews with MEE, MOP and Ekoregjioni RWC

3 Efficiency

Both of the project period and project cost exceeded the plan (ratio against plan: 136% and 113%, respectively). The project period was extended for the purpose to complete the transformation of the financial resource of its SWM from collected fees to the waste tax newly introduced under the five-year SWM Plan, which was intended to sustain the project effects. The excess cost was to cover the operation of extended period. The Outputs of the project were produced as planned.

Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

GOK has adopted “Strategy of the Republic of Kosovo on Waste Management 2013-2022”, whose main objective is to create measures for the Republic of Kosovo in order to reduce the amount of waste and to establish a sustainable system of waste management. Furthermore, “Kosovo Integrated Waste Management Strategy (2021-2030)” and “Action Plan (2021-2023)” are under development, addressing the current shortfalls and constraints in the waste management sector by setting and delivering four strategic objectives: to develop a new generation of integrated waste management services and infrastructure, to professionalize the waste management and recycling sector, to strengthen regulation and control in the waste management sector by filling gaps and clarifying implementation mechanisms and to promote the values and practices of a Circular Economy.

<Institutional/Organizational Aspect>

In the central level, MEE is responsible for environmental policy and supervises activities related to the environmental protection and spatial planning. The Division for Waste Management and Chemicals, in charge of SWM, has six staff and three of them are well-trained in SWM. According to MEE, the number of staff for SWM is insufficient considering the large volume of workload they need to cope with.

In the municipality level, MOP newly created the Waste Management Section (WMS) under the Directorate of Public Service in 2017. WMS is in charge of commissioning, monitoring, reporting and tax collection from citizens. With five staff and one inspector, WMS also supervises the Ekoregjioni RWC which provides daily waste collection services to Prizren municipality. According to MOP, the current staff number is less than what was projected under the SWM plan and is not sufficient for the smooth operation. Therefore, two more staff would be necessary, especially to reinforce the monitoring activities. Ekoregjioni RWC was transformed from a government-run company

to the regional company in 2003 and has become a shareholding company funded by five municipalities since 2007. Ekoregjioni RWC is consisted of the Board Directors and those representing five municipalities as members, with total number of 448 employees, including 244 for Prizren, 51 for Suhareka, 56 for Malisheva, 44 for Rahovec, 33 for Dragash and 20 for Board Directors and other administrative staff in Head Office of Ekoregjioni. According to Ekoregjioni RWC, the number of staff is sufficient to provide the waste collection services.[2] As for the four neighboring municipalities, Malisheve municipality and Dragash municipality have not yet developed the SWM plan yet. It is reported that these two municipalities have not had sufficient human resources to work for it.

<Technical Aspect>

The staff of MOP and Ekoregjioni RWC have sustained necessary skills and knowledge to enhance the SWM system introduced by the project. The WMS of MOP has closely cooperated with Prizren Unit of Ekoregjioni in developing monitoring system through installment of GPS[3] on waste collection vehicles and proper reporting to the WMS. The manuals and guidelines on operational plans and on cost efficiency have been continuously utilized after the project completion. As for the staff of four neighboring municipalities, it is reported that they have not had necessary skills and knowledge to actively promote the SWM system introduced by the project.

<Financial Aspect>

MOP has a self-sustained mechanism to secure the budget through waste tax system based on their financial plan. Citizens of Prizren municipality should pay tax on waste disposal and the amount collected through this system is used for commissioning Ekoregjioni RWC. According to MOP, the waste tax system introduced by the project has contributed not only to promoting the SWM system but also improving the financial situation of SWM in MOP. As for the other four municipalities, they have not prepared the financial plan and they have some problems in financing the SWM. It is anticipated that financial situation in terms of the SWM of those four municipalities will be improved with proper guidance and experiences practiced by the project.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational, technical and financial aspect. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose of strengthening the capacity of solid waste management in Prizren municipality. The effects of the project have continued after the project completion, and the Overall Goal to enhance the capacity of SWM in municipality level and to improve the waste management issue in Kosovo has been achieved. As for the sustainability, there are no problems in the policy aspect, but slight problems have been observed in terms of the institutional/organizational, technical and financial aspect. As for the efficiency, both of project cost and project period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendation to Implementing Agency:

To MEE:

・It is recommended that MEE should newly recruit the staff for the Division for Waste Management and Chemicals. It was identified by the study that the current number of staff for SWM is insufficient considering the large volume of workload they need to cope with.

To MOP:

・It is recommended that MOP should increase the number of staff of WMS by 2. The WMS was newly created under the Directorate of Public Service, in charge of commissioning, monitoring, reporting and tax collection from citizens. It was identified that for the smooth operation of SWM plan, two more staff is needed, especially to reinforce the monitoring system.

・It is recommended that MOP should continue their supports in terms of capacity development of SWM for neighboring municipalities, which would certainly contribute to the capacity improvement for solid waste management of municipality level in Kosovo as a whole.

Lessons Learned for JICA:

In order to sustain and expand the project effects, it is effective to create the built-in mechanism in which the capacity development is further promoted by the target population who directly received the technical assistance by the project.

MOP, the municipality which benefited from JICA Grant Aid Project, had further improved their capacity of SWM and accumulated the knowledge and skills of SWM with this technical cooperation project. Then, MOP has played a role of trainers to disseminate the knowledge and skills to other neighboring municipalities in the form of seminars. MOP continued their support in the form of administrative advices to other municipalities after the project completion. It should be well noted that knowledge sharing was not only the one of the strategies of this particular project, but also a constant requirement from MEE to MOP to have an open-door policy for other municipalities, so that MOP supported anyone who requested advice on SWM. It is reported that other neighboring municipalities who were not directly supported by the project, has gradually improved their capacities by the administrative advice from MOP.

Photos

[2] Municipalities in Kosovo have a legal obligation to manage waste in accordance with the Law on Waste No. 04 / L-060 and a by-law to establish the body or unit. In practice, the targeted municipalities have usually one or two officials in charge of waste management duties.

[3] GPS: Global Positioning System

	
Rubbish bins in Prizren	Workers engaged in performing the waste collection service in Prizren

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Sudan Office: May 2021

Country Name	Project for Human Resource Development for Water Supply in Sudan (Phase 1) (Phase 2)
Sudan	

I. Project Outline

Background	In Sudan, the access rate to improved water sources was 67.5% in 1990. However, because of the civil wars, the situation was stagnant at around 65% (2010). The Government of Sudan made efforts for improving water supply facilities for the universal coverage of safe water supply by 2031.The Public Water Corporation (PWC) (renamed as the Drinking Water and Sanitation Unit (DWSU) in 2012) had overseen water supply throughout the country. After approval of the Law of Decentralization in 1994, the responsibility for operation and maintenance of water supply facilities was transferred from PWC to the State Water Corporations (SWCs). The role of PWC became limited to policy formulation, construction of large-scale water supply facilities, coordination of the international cooperation projects, monitoring of SWCs and human resources development. However, the water sector in Sudan faced serious problems associated with lack of budget, human resources, and equipment in most SWCs. In response, JICA implemented the "Project for Human Resources Development for Water Supply in Sudan" (Phase 1) was implemented (2008-2011). As a result, PWC Training Center (renamed as the Drinking Water and Sanitation Unit Training Center) developed its capacity for training implementation, while issues of human resources development at the state level remained to be improved further. Therefore, the Government of Sudan requested the Government of Japan for the succeeding project (Phase 2).		
Objectives of the Project	Through establishment of training and monitoring units at the Drinking Water and Sanitation Unit Training Center (DWST) and SWCs, the projects aimed attraining human resources in the water sector in Sudan, thereby contributing to enhancement of institutional capacity and appropriate management for water supply facilities. <Phase 1> Overall Goal: Institutional capacity for stabilizing water supply in the northern Sudan is enhanced. Project Purpose: PWC Training Center establishes the system the implementation of Training. <Phase 2> Overall Goal: Water supply system is properly managed in Sudan. Project Purpose: Human resources in water supply sector are properly trained in Sudan.		
Activities of the project	1. Project site: All states in Sudan 2. Main activities: <Phase 1>Development of training curriculum and materials, development of training management manuals, construction of the training center, training of trainers and coordinators, etc. <Phase 2> Development of the long-term and mid-term training plan, establishment of the training units at SWCs and monitoring units at DWST and pilot SWCs, etc. 3. Inputs (to carry out above activities) Japanese Side <Phase 1> 1) Experts from Japan:9 persons 2) Training in Japan: 11 persons 3) Equipment: Office equip, training facility and equipment, etc. <Phase 2> 1) Experts from Japan:10 persons 2) Experts from the third country (Morocco): 11 persons 3) Training in the third country (Morocco): 48 persons 4) Equipment: Vehicle, office equipment, etc. Sudan Side <Phase 1> 1) Staff allocated: 18 persons 2) Land and facilities: Office space, training facility and equipment, etc. <Phase 2> 1) Staff allocated: 68 persons 2) Land and facilities: Office space, training facility and equipment, etc.		
Project Period	<Phase 1> June 2008 to March 2011 <Phase 2> November 2011 to September 2015	Project Cost	<Phase 1> (ex-ante) 260 million yen, (actual) 374 million yen <Phase 2> (ex-ante) 550 million yen, (actual) 675 million yen
Implementing Agency	<Phase 1> Public Water Corporation (PWC) Training Center <Phase 2>Drinking Water and Sanitation Unit (DWSU), State Water Corporations		
Cooperation Agency in Japan	<Phase 1> Earth System Science Co., Ltd., Nihon Techno Co., Ltd. <Phase 2> Earth System Science Co., Ltd.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation>

- The Phase 2 was implemented with the aim of training human resources for proper management of the water supply system, based on the results of the Phase 1 (established the training system at DWST). Therefore, in the ex-post evaluation, the two projects were interpreted as one intervention, and for the evaluation of effectiveness/impact, and the Project Purpose and Overall Goal of the Phase 2 were referred to.
- Indicator 2 of the Project Purpose of the Phase 2 was set as the number of maintained water yards. Since it was a result of the trained human resources, it was utilized as an indicator for verifying the Overall Goal in the ex-post evaluation.

<Constraint on the Ex-post Evaluation>

- Because of the outbreak of COVID-19, information was collected through a questionnaire survey from DWSU and three SWCs and phone interviews

to make evaluation judgement in the ex-post evaluation. Site visits were not conducted.

1 Relevance

<Consistency with the Development Policy of Sudan at the time of Ex-ante Evaluation>

The "Quarter Century National Plan for Domestic Water Supply" (2003-2027) aimed at improvement of the equitable access safe water supply, and the "25-year Water Supply Plan" (2003-2027) aimed at increasing the water coverage ratio to 100% by 2027. Thus, both the Phase 1 and Phase 2 projects were consistent with the development policy of Sudan at the time of ex-ante evaluation of each project.

<Consistency with the Development Needs ofSudan at the time of Ex-ante Evaluation>

Due to the more than 20-year internal conflicts which ended in 2005, infrastructures including water supply facilities were fragile and there were not sufficient personnel for operation and management of water supply facilities. The Training Center was established at PWC by the Phase 1, but it still had needs for developing mid-term and long-term plans for human resources development for water supply. Thus, both the Phase 1 and Phase 2 projects were consistent with the development needs of Sudan at the time of ex-ante evaluation of each project.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

One of the priority issues mentioned in the ODA Charter (2003) was peace-building, and one of the priority areas was the support for basic human needs which included support in the water and hygiene sector[1]. In Sudan, after the Comprehensive Peace Agreement in 2005, the Government of Japan expanded its bilateral assistance to Sudan. Then one of the priority areas was the support for improvement of the basic livelihood which included strengthening water and hygiene facilities and maintenance capacity[2]. Thus, the two projects which aimed to develop human resources for proper management of the water supply system were consistent with Japan's ODA policy at the time of ex-ante evaluation of each project.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose of the Phase 2 at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. The system for training implementation was established and strengthened at DWST in the Phase 1 and the Phase 2. Training courses were implemented based on the mid-term/long-term human resources development plan. Also, support was provided for development of the training implementation structure in each SWC. In the Phase 2, a total of 5,851 personnel of DWST and SWCs were trained by DWST in the Phase 2 (Indicator 1).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued. DWST has continuously provided training courses. The number of the implemented courses and trainees decreased in 2018 and 2019 due to political, economic and social unrest which actually preceded the political turmoil that started on December 2018. Training topics were data management/GIS (Geographic Information System), M&E (Monitoring and Evaluation), pipe network management, rural water development and water analysis. Both of the two pilot SWCs investigated in the ex-post evaluation (Sennar and White Nile) have continued their training implementation. The number of the implemented courses decreased in 2018 and 2019 in Sennar, because the new training center was being constructed. State level training topics have included the government finance, electrical management and well management, data management, community development management, water quality management, etc. Regarding the non-pilot SWCs, the information was available only from SWC of River Nile. It has annually conducted training for water supply staff. The number of implemented training courses.

<Status of Achievement for Overall Goal of the Phase 2 at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of project completion. It was confirmed that the trained staff have utilized their learnings to maintain and operate water supply facilities at all of the surveyed two pilot SWCs and one non-pilot SWC (Indicator 1). Learnings from the training have been utilized at SWCs as listed in the table below. And, they have utilized their learning for maintaining water yards (borehole, elevator tank, generator house and public fountains) at each SWC (Indicator 2). The number of the operated and maintained water yards has increased in the three answered states, particularly in River Nile where the population has increased and so have the industrial and commercial activities.

<Other Impacts at the time of Ex-post Evaluation>

First, synergy effects have been confirmed with other JICA projects such as the "Project for Improvement of Public Services in Three Darfur States" (2015-2021), "Project for Strengthening Institutional Capacity for Operation and Maintenance of Water Supply Systems" (2016-2020) and "Project for Improvement of Water Treatment Plant in Kosti City" (2016-). Those trained by the project have become key persons in the mentioned projects because of their experience, and it helped the smooth project implementation because they have understood the technical cooperation projects of JICA.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Human resources in water supply sector are properly trained in Sudan.	1. The number of trainees that are trained in Sudan exceeds 2000.	Status of achievement: Achieved (Partially Continued). (Project Completion) - A total of 5,851 trainees were trained in whole country in the Phase 2: 1,469 of DWST, 1,147 of pilot states and 3,235 of other states. Training topics provided by DWST included water treatment plant, water supply facility, data management/GIS, well management, and so on. (Ex-post Evaluation) - In two pilot states surveyed in the ex-post evaluation, although the number of

[1]Ministry of Foreign Affairs "ODA Databook 2008."

[2]Ministry of Foreign Affairs "ODA Databook 2011."

trainees could not be confirmed, training itself has been continued. At SWCs of Sennar and White Nile, a total of 44 training courses were implemented for four years from 2016 to 2019. Training topics in Sennar SWC in 2017 and 2018 were the government finance, electrical management and well management. Training topics in White Nile SWC in the same years were project management, data management, community development management, water quality management, GIS, sanitation management, and organizational management.- In River Nile SWC (non-pilot), a total of 220 trainees were trained for four years from 2016 to 2019

	2016	2017	2018	2019	Total
Implemented courses in Sennar	10	3	2	2	17
Implemented courses in White Nile	9	8	5	5	27
Trainees in River Nile	40	60	80	40	220

- Also DWST has continuously provided training courses. A total of 858 trainees were trained for four years from 2016 to 2019. Training topics included data management/GIS, M&E, Pipe network management, rural water development, water analysis, and so on.

	2016	2017	2018	2019	Total
Implemented courses in DWST	17	21	13	6	57
Trainees in DWST	214	337	210	97	858

(Overall goal)
Water supply system is properly managed in Sudan.

1. SWC staff utilized their knowledge and technical skills to maintain and operate water supply facilities.

Status of achievement: Achieved.
(Ex-post Evaluation)
- Staff of Sennar SWC who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding water quality and safety, water network management, well management, mechanics, electricity management, data & information management, government accounts and computer basics.
- Staff of White Nile SWC who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding government financial systems, data management, security & safety management, generators & pumps water maintenance, organization management, community development management, water quality management, project management and GIS.
- Staff of River Nile SWC (non-pilot SWC) who were trained by the project have utilized their learnings to maintain and operate water supply facilities, regarding sanitation management, electric management, electronic water meter, computer skills, methods of tender & contracting, GIS, management of water supply facilities, well management, and how to use computer applications.

2. The number of annually maintained water yards* is increased to more than 20 in each SWC.
*Water yard: borehole, elevator tank, generator house and public fountains.

Status of achievement: Achieved.
(Ex-post Evaluation)
- The number of annually maintained water yards mostly reached more than 20 increased to more than 20 in each of the surveyed SWCs.

	2016	2017	2018
Sennar	60	75	90
White Nile	36	19	27
River Nile (Non-Pilot)	204	257	204

Source: Project Completion Report and information provided by DWST and SWCs of Sennar, White Nile and River Nile.

3 Efficiency

Although the total project period of the Phase 1 and Phase 2 was within the plan, the total project cost of the two projects exceeded the plan (ratio against the plan: 96% and 130%, respectively). The Outputs were produced as planned. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

Promotion of the operation and maintenance of water facilities has been prioritized in the "Quarter Century National Plan for Domestic Water Supply" (2003-2027). Also, the "25-year Water Supply Plan" (2003-2027) has aimed at increasing the water coverage ratio to 100% by 2027.

<Institutional/Organizational Aspect>

DWST has sustained the basic organizational structure to plan, implement and evaluate training courses. It has revised the mid-term training plan for human resource development developed by the project, and has implemented courses throughout the year according to the annual plan, which has included the budget allocation, number of target trainees and training courses. DWSU has assessed the training needs through the field visits and coordination with SWC training centers and also from interviews with the trainees at DWSU. The training database developed by the project has been updated and utilized. At the time of ex-post evaluation, DWST had five coordinators and 90 trainers. The trainers were mostly contracted by DWSU and have been assigned according to courses. However, the number of the coordinators and trainers has not been sufficient, because many of them have immigrated to work in other countries. DWST has planned to appoint additional staff and make internal transfers to avail more staff for trainings. Three staff has been assigned at the DWST Monitoring Unit, but the number has not been sufficient. DWSU has planned to appoint new staff based on the newly created organizational chart.

Regarding the state level, there have been three, eight and five staff in the monitoring unit of SWC of Sennar, White Nile and River Nile, respectively. The number has been sufficient at SWC of Sennar and White Nile, where they have periodically monitored various

activities with the standardized forms. In River Nile, the number of staff has not been sufficient, but they have planned to hire a new engineer and assign transportation and communication means for monitoring. For operation of water yard systems, SWC of Sennar has assigned three to five technicians for each well in the big cities and one technician for each well in the rural areas. According to them, the number has not been sufficient. SWC or River Nile has assigned five to 10 operators depending the well size, and the number of operators has been as planned. The number of operators of SWC of White Nile was not available, but they answered that the number has not been sufficient.

<Technical Aspect>

Training coordinators of DWST has sustained sufficient skills for management of training courses, based on evaluations of themselves, trainers and DWST. As well, trainers have sustained sufficient skills, as training of the trainers (TOT) has been performed as part of the annual training plan. The training materials and management manuals developed by the project have been utilized.

Regarding the state level, SWC of Sennar and White Nile answered that their trainers has sustained the skills acquired from the project, judging through practical trainings which they have conducted since the time of project completion. They also answered that their operators have sustained sufficient skills, too, although some of White Nile still needed more training. In the case of Sennar, they also have sufficient skills as a result of continuous training and acquired experience. In case of River Nile, SWC has considered that their operators needed additional trainings as most of them did not have a sufficient educational background.

<Financial Aspect>

DWST has received the budget from the Ministry of Finance and had project-based budgets from private sector entities or government institutions departments as per the agreements with them. Its budget request has been on a slight increasing trend, but the allocation ratio has not been high. According to DWSU, the budget, as shown in the table, has been sufficient for training implementation but not for covering monitoring costs, due to the high expenses caused by the high inflation rate.

Training budget of DWST (SDG)

	2016	2017	2018	2019
Budget requests	3,498,600	3,585,600	3,635,300	3,793,900
Budget allocated	596,907	497,824	1,546,565	1,055,025

Training budget of Sennar SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	450,000	450,000	400,000	547,000	1,000,000
Budget allocated	243,343	222,981	243,257	157,909	N/A

Training budget of While Nile SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	799,792	700,000	540,000	700,000	1,300,000
Budget allocated	501,599	133,592	306,155	574,160	N/A

Training budget of SWC of River Nile SWC (SDG)

	2016	2017	2018	2019	2020 (plan)
Budget requests	50,500	65,000	75,000	1,300,000	1,200,000
Budget allocated	32,400	40,000	45,000	531,240	N/A

Regarding the state level, SWC of White Nile and River Nile answered that the budget has been sufficient for training implementation and monitoring. On the other hand, SWC of Sennar has not secured a sufficient budget. Due to the low water tariff which is used for operation and maintenance of water facilities and training needs assessment, the training center in Sennar has not received sufficient funds. Because of various factors related to economic and political pressure such as necessary approval by the State Governor as well as instability of clean water supply, it was difficult for Sennar SWC to increase the water tariff in consistency with the cost of operation and maintenance.

<Evaluation Result>

In the light above, there have been issues in the institutional/organizational and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The projects achieved the Project Purpose and the Overall Goal. The human resource development mechanism was established, and training has been continuously conducted at DWSU and SWC training centers. Water yard systems have been continuously operated and maintained. Regarding sustainability, there have been staff and budgets shortages at DWST and some SWCs, but they have sustained sufficient skills for training implementation. As for efficiency, the total project cost of the two projects exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- Some SWCs' training was affected by construction or rehabilitation work such as the case of Sennar State. When SWCs include any similar planned work which may affect the training implementation in the annual training plan, it is recommended to them to prepare for continuation of training in other available facilities.
- Some SWCs such as River Nile and Sennar stated that their technicians did not have enough educational backgrounds. It is recommended to them to tailor some courses for such trainees by dividing the course contents by levels (primary and advanced). This can help them to graduate those with limited educational background from lower to higher-level courses, and thus ensure maximum benefits for all trainees.
- It is recommended to DWSU to provide the technicians trained by the project and training program even after the project completion with opportunities for disseminating their knowledge and experiences to other states. In states where staff or additional budgets cannot be deployed, DWSU could mobilize available resources through cooperation and linkages among SWCs. For example, some SWCs can exchange resources or apply lessons learned from other SWCs with strengths.

Lessons Learned:

- Despite the difficult circumstances that Sudan has gone through due to the unrest after the political turmoil and then the pandemic of Covid-19, training courses have continued, which has been attributed to the commitment and ownership of SWCs. The following efforts were made in the projects tried to enhance the counterpart personnel's ownership. First, they learned much from Morocco's experience in the water supply sector. Morocco is also an Arabic-speaking country in the North African region, and the natural environment is similar. Learning from developed Morocco was a great stimulus for them, most of whom did not have a learning experience overseas. For planning and implementing a project for capacity development, it is necessary to confirm if any neighboring country has the similar project experience. If there is any, it is effective to invite trainers from the country. Second, trainees who performed well in the training were given

awards. Third, opportunities for technical exchanges were provided to SWCs through the trainers' mutual visits. These efforts are effective for not only improving but also sustaining the counterpart personnel's skill and ownership. For a project where trainers are trained over the country, it is desirable to include such an award system and technical exchanges for producing and sustaining the effects.

Internal Ex-Post Evaluation for Grant Aid Project

conducted by Burkina Faso Office: January 2022

Country Name	**Project for Improvement of Teaching and Training Capacities of l' École Nationale des Eaux et Forêts (ENEF)**
Burkina Faso	

I. Project Outline

Background	In Burkina Faso, the northern half of the country is geographically located in the Sahel region. In the region, a progressive decrease in the forest area has become a major concern. The Government of Burkina Faso has recognized the prevention of desertification and environmental improvement as one of the important national issues and has been engaged in forest and natural resource management as well as prevention of desertification. In 2006, the National Action Plan on Climate Change (Projets du Programme d'Action National d'Adaptation: PANA) was adopted, and there was an urgent need to promote sustainable development in harmony with the conservation of the natural environment.			
Objectives of the Project	To improve teaching and training capacities of the École Nationale des Eaux et Forêts (ENEF), by constructing school facilities, procuring furniture and laboratory equipment, and providing technical assistance on the management of ICT and laboratory equipment, thereby contributing to promotion to prevent deforestation and conserve the natural environment in Burkina Faso.			
Contents of the Project	1. Project Site: Bobo-Dioulasso, Houet province, Hauts-Bassins region 2. Japanese side - Construction: a classroom building, laboratory, administration building, auditorium & toilets, sampling rooms, cafeteria & multi-purpose space, dormitories, electric room & generator, and waters supply tower, etc. - Procurement: school furniture and office and laboratory equipment, school bus, 4WD vehicle, etc. - Technical assistance (soft component): the establishment of the management system of ICT and laboratory equipment 3. Burkinabe side: - Removal of existing buildings and obstacles - Relocation of a nursery, trimming of grass establishment - Installation of a transformer and main circuit breaker - Procurement of furniture for teachers' dormitory			
Project Period	E/N Date	December 2, 2010	Completion Date	November 6, 2013 (Handover)
	G/A Date	December 2, 2010		
Project Cost	E/N Grant Limit / G/A Grant Limit: : 655 million yen, Actual Grant Amount: 653 million yen			
Executing Agency	Ministry of Environment, Economy and Climate Change (Ministère de l'Environnement, de l'Economie verte et du Changement Climatique : MEEVCC) : it was renamed twice prior to 2016, from the Ministry of Environment and Living Environment (Ministère de l'Environnement et du Cadre de Vie) (2002-2010), and the Ministry of Environment and Sustainable Development (Ministère de l'Environnement et du Developpement Durable) (2011-2013) National Schoole of Water and Forest (École Nationale des Eaux et Forêts: ENEF)			
Contracted Agencies	Main Contractor(s): 9 local companies Main Consultant(s): Fukunaga Architects-Engineers Agent: Japan International Cooperation System (JICS)			

II. Result of the Evaluation

1 Relevance

<Consistency with the Development Policy of Burkina Faso at the Time of Ex-Ante Evaluation>

The project was consistent with the development policy of Burkina Faso at the time of the ex-ante evaluation. Since the National Environmental Policy (Politique Nationale de l'Environnement: PNE) was formulated in 2007, sustainable environmental management has been a major issue in the development policy. Furthermore, to realize PNE, the overall goal of the Ten-year Environment and Livelihood Action Plan (Plan Décennal d'Action du Secteur de l'Environnement et du Cadre de Vie: PDA/ECV) was formulated. All activities in the environmental sector should be strategically executed as aligned with the PDA/ECV and/or Three-year Environment and Livelihood Program (Programme Triennal de l'Environnement et du Cadre de Vie: PROTECV). The Capacity building of officials of the Ministère de l'Environnement et du Cadre de Vie through ENEF was one of the three basic pillars in PDA /ECV, as ENEF has been one of the major human resource development institutions in the field of forestry and environment in the country.

<Consistency with the Development Needs of Burkina Faso at the Time of Ex-Ante Evaluation>

The project was consistent with the development needs of Burkina Faso at the time of the ex-ante evaluation. Progressive desertification and loss of forest resources were observed in Burkina Faso. Thus, there was a need for trained officers to respond properly to the ever-increasing demand in the field of forestry and the environment. Despite this, the facilities of ENEF were deemed insufficient and overloaded causing serious deterioration of the training environment as the number of students increased fivefold over 7 years prior to the project. Furthermore, as decrepit facilities and equipment were conspicuous, ENEF had difficulty carrying out its curriculums in an effective manner.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy for Burkina Faso at the time of the ex-ante evaluation. Japan intended to contribute

to the basic needs from the perspective of poverty reduction, as well as cooperation in the fields of environment and climate change such as prevention of desertification in Burkina Faso[1]. In light of the severe poverty situation in Burkina Faso, Japan emphasized basic human needs specifically, basic education, water and sanitation, health, and agriculture, and rural development, etc. Furthermore, since the northern half of the country is located in the Sahel region and faces serious desertification problems, it addressed to support environmental promotion through conservation of agricultural land and forests, in the context of desertification prevention.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Effectiveness>

The project partially achieved its objectives at the time of ex-post evaluation. The enhancement of the capacity of enrollment was achieved as the number of students/trainees has exceeded the target value since project completion. Also, its educational and training function in ENEF was considered reinforced compared to before the project. It was reported by ENEF that the quality of education and training was indeed improved since the curricula were duly updated and became capable of giving students those courses which are more educationally adapted to the requirements in the current context and challenges of environmental protection. Furthermore, ENEF has become internationally renowned by the augmentation through the project. ENEF started receiving a notable number of students who came across the country and from neighboring African countries such as Niger, Gabon, Congo, and Chad. However, as far as the management capacity for ICT and laboratory work is concerned, which was the main component of the technical assistance of the project, it was deemed ineffective to amply educate students in a self-sustaining manner. They have a legitimate cause for the concern as shown in a dwindling pass rate to enter the advanced course from 100% in 2015 to 95.64% in 2017 and in the number of students per supervisory staff increased seventeen-fold from 2016 to 2017. According to the survey, there was no viable management system of laboratory equipment put in place as planned in the project. Students were not trained to properly use laboratory equipment, due to the absence of a skilled supervisor and no timely replenishment of necessary consumables to conduct lab work.

<Impact>

The project has contributed to the improvement of the technical level of human resources responsible for implementing policies in the environmental sector. The time-series data of MEEVCC trained officers in ENEF show that compared to the number in the 2010 baseline year, the numbers after project completion doubled or were significantly larger since 2014. For example, each number of ENEF trained Inspectors, Supervisors, Assistants of water and forestry was 11, 33, and 57 in 2010, whereas the number increased to 26, 67, 302 respectively at the time of the ex-post evaluation conducted in 2020. By the same token, the number of ENEF-trained Senior Environmental Technicians and Environmental Technical Officers was 12 and 21 in 2010, whereas increased to 34 and 21 in 2020. It is noted, however, that the human resource shortage in the field was not yet solved as much as they would like, mainly due to the other imminent security-related challenges[2]. Regarding the implementation of environmental policies, it was difficult to show which policies ENEF had a direct impact on after project completion to date as there were no clear references to ENEF found at all to date. It is only surmised that the project may have had an implicit impact as ENEF has trained a considerable number of officials in the MEEVCC described above, who may have engaged in the formulation of policies for environmental preservation, etc.

In addition, there was no resettlement and land acquisition by the project so that no ramifications in this regard. However, there was a minor negative impact on the environment regarding waste disposal and treatment during project implementation. According to the administration of ENEF, it was reported that the local community suffered from waste being dumped in the vicinity without any proper treatment. On the other hand, having a new women's dormitory, the project contributed to promoting gender equality by being capable of increasing female admission. ENEF could not accommodate as many of the qualified women as it should, as there was a limited capacity in a dormitory before the project.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Quantitative Effects

Indicators	Baseline 2010 Baseline Year (average of 5 years from 2005 to 2009)	Target 2014 1 Year after Completion	Actual						
			2014 1 Year after Completion	2015 2 Years after Completion	2016 3 Years after Completion	2017 4 Years after Completion	2018 5 Years after Completion	2019 6 Years after Completion	2020 7 Years after Completion
The number of students/trainees	Approx. 240	Approx. 500	504	838	1110	1497	1494	1187	874*1

Note 1: The Government issued a decree to reduce the number of recruited staff in each ministry including the environment field in 2017. Also, another decree was issued in 2019 to cancel tuition-free admission for security reasons. These decrees explain the significant decrease in the number in 2020.

Source : ENEF

3 Efficiency

Although the outputs were produced more than the plan, and the project cost was within the plan (ratio against the plan: 99%), the project period exceeded the plan (ratio against the plan: 144%). Therefore, the efficiency of the project is fair.

4 Sustainability

< Institutional/Organizational Aspect>

Under the auspices of the Government of Burkina Faso, ENEF has had an organizational structure to manage the school as the sole

[1] Ministry of Foreign Affairs, "ODA Country Databook" (2010)

[2] Public officials have been under pressure that they should stay being stationed in the local municipalities to avoid possible terrorist attack. Also, the Government issued a decree in 2017 to reduce the number of public servant recruitments to half its previous level to increase staffing levels to deal with the national security issues.

educational institution specialized in environmental study. Moreover, the "National Environmental Policy" issued by the MEEVCC in 2007 addressed the importance of forestry and environment. It stated that accumulated knowledge and resources in ENEF were deemed to be essential capital assets that need to be reinforced. For this reason, the Government has been determined to retain a twin role of ensuring the quality of education and of creating adequate human resources for this sector. In the policy framework indicated above, the administration, regulation, and budgetary control of O&M of the public education facilities and equipment in this field have fallen under the MEEVCC. Having deployed approximately 45 members in total in 2020, ENEF has been rightly in charge of O&M of equipment through proper usage and daily cleaning. Therefore, the O&M system has remained institutionally unchanged in the foreseeable future. On the other hand, from ENEF's point of view as an end-user, it is deemed that the O&M has not been sufficiently managed and executed from the perspective of deployment of trained personnel. It was reported that qualified mechanics were not dispatched to check on the equipment regularly. It should also be noted that as there was no staff team designated for the O&M of the equipment, necessary maintenance and repairs were done on an ad hoc basis.

<Technical Aspect>

As stated above, technical assistance for the establishment of the management system of ICT and laboratory equipment was provided in the project. In this regard, the ex-post evaluation survey revealed that the management system of ICT and laboratory equipment was not sufficiently functioning as it was expected. Specifically, regarding the personnel issue, an ICT engineer was on the payroll of ENEF and the technical training was duly given to the engineer at the time of project implementation. He was still in his position at the time of this ex-post evaluation. In his role, he has given training to students on the procured IT equipment and has engaged in basic maintenance of the equipment. However, ENEF has contracted a private company that can provide technical support for more serious technical issues such as repairs when equipment failure occurs. It helped to keep the equipment generally in good condition. It was reported, however, that some technical problems remained in the maintenance of some equipment as most of the current ENEF staff were not directly trained by the project. By and large, ENEF has managed the ICT system by their budget and outsourcing for the maintenance although there are still some issues to be solved. In addition, the newly constructed buildings and a generator have been generally in good condition as ENEF has allocated the fund for the maintenance and repairs.

<Financial Aspect>

Although there is no data available to confirm the balance of payment including the budget amount allocated for ENEF, the O&M costs have not been sufficiently covered by the state budget. It was reported that there has been a problem in securing and maintaining the O&M costs for the equipment and facilities provided by the project. Although there was a legitimate concern in ENEF regarding the recent reduction of the state budget for ENEF, and the suspension of registered entries caused a shortfall in revenue, it has inevitably driven ENEF to seek external supports from potential partners as an alternative. And increasing the number of foreign students has become a managerial option to compensate for the shortfall.

<Current Status of Operation and Maintenance>

According to the ex-post evaluation survey, the building facilities and a generator were generally in good condition except for the water tower. It had not properly worked since project completion so that ENEF built a new water tower on its budget. ENEF also claimed that there was an issue related to the replenishment of consumables and spare parts, although it was ENEF's disposition by securement of the budget by mutual agreement. Regarding the ICT system equipment, as a result of outsourcing of the maintenance services, it was generally in good condition.

<Evaluation Result>

Some minor problems have been observed in terms of the institutional/organizational, technical, financial aspects. Therefore, the sustainability of the project effects is fair.

5. Summary of the Evaluation

The project partially achieved its objectives to provide a better learning environment in the field of forestry and environment to order to enhance the quality of education in the field of vital concern. As for sustainability, there have remained institutional, technical, and financial issues that need to be systematically improved in terms of O&M. As for efficiency, the project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory

III. Recommendations & Lessons Learned

Recommendations to Executing Agency:

Regarding the recommended areas to be strengthened at ENEF are as follows:

1) To train or recruit personnel specialized in the use of acquired equipment and materials.
2) To supplement technical equipment essential to the proper functioning of the laboratory.
3) To generate income via some school activities (such as pisciculture proposed at a certain time to design ponds for that purpose but being on hold)
4) To seek support from other technical or financial partners for the advisable activities mentioned above.

Lessons Learned for JICA:

The fact that no training was provided to teachers who use the provided equipment on a daily basis, and that only short-term technical support was provided to the engineer in charge of maintaining ICT equipment, is considered to be insufficient to ensure sustainability. For future project formulation and implementation, in a case where the technical gap is obvious and their plan to achieve the target is not concrete in the executing agency at the time of project planning, JICA should examine prudently as to how best to ensure the institutional anchoring to achieve the agreed goal of the executing agency in a self-sustaining way over a longer timeframe.

Classroom building

Laboratory benches with microscopes

conducted by Laos Office: March, 2021

Country Name	**Supporting Community Initiatives for Primary Education Development in the Southern Provinces** **Project for Supporting Community Initiative for Education Development (Phase 2)**
Lao People's Democratic Republic	

I. Project Outline

Background	In rural Laos, many primary schools were managed with the financial support of the local communities due to insufficient educational administration capacity and budget. In response, the Ministry of Education and Sports (MOES) established a Village Education and Development Committee (VEDC) in each village to promote school improvement with community involvement. Against this background, JICA implemented a technical cooperation project, aiming to improve primary education through community participation in school management (the Phase 1 project). The project provided technical support for introduction and implementation of a series of processes related to formulation and implementation of the School Development Plan (SDP) led by VEDC, and achieved a dramatic improvement in learning environment and educational indicators at the target schools. Furthermore, in cooperation with other Development Partners (DPs), JICA also assisted in formulating the Education Quality Standards (EQS) stipulated by the government of Laos. Under this circumstance, the second phase project (the Phase 2 project) was implemented to support and strengthen the management system and capacity of related organizations and stakeholders in order to roll-out the results of the Phase 1 project.
Objectives of the Project	Through developing modules for EQS training as well as SDP planning and implementation, enhancing capacities of the Provincial Education and Sports Service (PESS) and the District Education and Sports Bureau (DESB) to support SDP planning and implementation and others, the project aimed at improving access and quality of primary education in the target districts and thereby provinces. <Phase 1> 1. Project Purpose: Access and quality of primary education in the target schools are improved. <Phase 2> 1. Project Purpose: Access and quality of primary education in the target districts are improved. 2. Overall Goal: Access and quality of primary education in the target provinces are improved.
Activities of the Project	1. Project site: ＜Phase 1> 6 districts in 3 provinces: Salavan, Laongam (Salavan Province), Lamam, Thateng (Sekong Province)) and Samakhixay, Sanamxay (Attapeu Province) <Phase 2> 10 districts in 4 provinces: Champasack, Soukhouma, Mounlapamok, Khong (Champasack Province), Artsaphangthong, Songkhone, Xaybouly (Savannakhet Province), Lakhonpheng, Khongxedon (Salavan Province) and Lamam (Sekong Province)) 2. Main activities: <Phase 1> (1) MOES conducts Training of Trainers (TOT) on SDP planning to PESS/DESB and PESS/DESB organizes workshops to VEDC. (2) Strengthening capacity of principals and teachers on school management. (3) Development of teaching learning materials. (4) MOES develops training modules for SDP planning and review. <Phase 2> (1) MOES reviews and revises modules for EQS training and its TOT, develops modules for School Block Grant (SBG) training and its TOT, and MOES conducts TOT. (2) MOES prepares a guideline/handbook for situation analysis and conducts on-the-job training (OJT) to PESS/DESB, and PESS/DESB conduct situation analysis and implement measures. (3) PESS/DESB support schools and VEDC for SDP planning and implementation. 3. Inputs (to carry out above activities) Japanese Side <Phase 1> 1) Experts: 1 person 2) Trainees received: 6 persons 3) Equipment: printer, computers, motorbikes, vehicle 4) Operation cost: workshop expenses, contract with Non-Governmental Organization (NGO) <Phase 2> 1) Experts: 7 persons 2) Trainees received: 14 persons 3) Equipment: vehicles, utility charges Lao Side <Phase 1> 1) Staff allocated: 73persons 2) Land and facilities: Office space <Phase 2> 1) Staff allocated: 57 persons (cumulative total at organizations at MoES) 43 persons (cumulative total at PESS/DESB) 2) Land and facilities: office space for the project 3) Operation cost: cost for training, monitoring, materials and equipment
Project Period	<Phase 1> December 2007-December 2011	Project Cost: <Phase 1> (ex-ante)276 million yen (actual) 213 million yen

	<Phase 2> September 2012– August 2016		<Phase 2> (ex-ante) 392 million yen (actual) 358 million yen
Implementing Agency	- Ministry of Education and Sports (MOES) - Provincial Education and Sports Service (PESS) and District Education and Sports Bureau (DESB) of the target provinces and districts		
Cooperation Agency in Japan	n.a.		

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- As the Phase 1 and Phase 2 projects share the common goal, the indicators for the Phase 2 project are verified to check the level of achievement of the Project Purpose and the Overall Goal.
- Continuation of the project effects was analyzed as factors to achieve the Overall Goal.

1 Relevance

<Consistency with the Development Policy of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Laos. At the time of the Phase 1 project, the "National Growth and Poverty Eradication Strategy" and the "Sixth National Socio-Economic Development Plan (NSEDP) (2006-2010)" aimed to promote human resource development in all areas to fundamentally solve poverty and support national development. The priority was to disseminate and improve basic education. In the "Education For All (EFA) National Plan of Action", the main challenges for achieving EFA were improving access in remote rural areas. At the time of the Phase 2 project, the "Education Sub-sector Development Plan (ESDP) 2011-2015" prioritized three pillars of (1) expansion of equal access, (2) improvement of quality and relevance and (3) strengthening of planning and management.

<Consistency with the Development Needs of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs for primary education of Laos. At the time of the Phase 1 project, the primary school Net Enrollment Rate (NER) in the target three provinces were 74.23% in Sekong Province, 67.79% in Attapeu Province and 81.9% in Salavan Province in 2006, lower than the national average of Laos 84.2% (2005). After the Phase 1 project was completed, the challenge was to ensure the sustainability of the results of the Phase 1 project and to expand its areas, however, for that purpose, it was necessary to strengthen the capacity of the local education administration. MOES also started a school subsidy grant (SBG) program in 2011, and it was essential that SBG and SDP operate together at the school level in order for SBG to contribute to school improvement. And support this capacity building was an urgent issue.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy to Laos. One of the three goals under the "Country Assistance Program for Lao PDR" (September 2006) was promoting the reduction of poverty from the standpoint of "human security," It said Japan would support Laos in its steady steps towards the achievement of the Millennium Development Goals (MDGs). "Improving basic education" was one of the priority areas under this goal. In addition, the "Country Assistance Policy for the Lao People's Democratic Republic" (April 2012) listed the development of the educational environment and human resource development as one of the priority areas.

<Evaluation Result>

In light of the above, the relevance of the project is high

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the project completion. Although the target level of indicator 1 was not specifically set in the plan documents, NER, Net Intake Rate (NIR), promotion rate, drop out rate and survival rate improved in the target districts. The capability of MOES, provincial and district level officers, principals were raised by the project trainings, including more involvement from VEDCs to enhance the project effects to achieve project purpose.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The effects of the project have partially continued. As mentioned above, the status of continuation of the project effects at the time of ex-post evaluation was verified as the part of the verifiable indicators of the Overall Goal and the factors affecting the achievement levels of the verifiable indicators of the Overall Goal.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was partially achieved. The education indicators (Indicator 1) of NER and NIR mostly achieved the targets in the target provinces showing that most children have had access to primary education in those areas. However, due to economic and environmental factors, it is still difficult to improve the indicators related to the quality such as promotion rate, dropout rate, survival rate in some specific areas. All education indicators in Sekong and Attapeu did not achieve the targets in 2018/2019. One factor is that the provinces were affected by flooding in 2018 causing deterioration in education indicators and economic situation. Other factors are that many children live far from schools and some of them are from different ethnic tribes which use specific languages making it difficult to understand lessons taught in main language, according to MOES, PESSs and DESBs. The SDP submission rate (Indicator 2) has been partially achieved, as the rate varies depending on provinces.

The improvement in NER and NIR mentioned above resulted from capacity improvement of provincial and district level including school and village level raised through the project activities and with the assistance of many other DPs. Further to the capacity development under the project, MOES developed the training modules on School Based Management (SBM) after project completion. PESSs and DESBs have continued utilizing materials and lessons learnt from the project to provide support to VEDCs and school principals on SDP planning and school assessment.

Some schools in the target districts that were trained through SBM training are able to submit their SDP based on school self-assessment to DESB; however, there are still numbers of those that still have difficulty to submit SDP every year due to personnel turnover in school or VEDC which the new members do not understand the basic methodology of making SDP. DESBs also have insufficient understanding

on the methodology.

<Other Impacts at the time of Ex-post Evaluation>

According to MOES, there have been no negative impacts on the natural environment caused by the project.

In 2014, 9th Poverty Reduction Support Operation ODA assistance, general budget) included targets to support the project activities of the Phase 2 project on the implementation of EQS and SBM in the target provinces. This has positively contributed to the effort of the government to improve and develop the school management in primary level in local areas via activities under the Phase 2 project. Some primary schools constructed under "The Project for the Improvement of School Environment in Champasack and Savannakhet Provinces", a JICA grant aid project, were also included in target schools of the Phase 1 and Phase 2 project. This contributed to the schools to continue the school maintenance and improve the teaching-learning environment for the children through SDP.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td>(Project Purpose)
Access and quality of primary education in the target districts are improved.</td><td>Indicator 1. Average figures of the following education indicators of the target districts are improved from the baseline
- Net enrollment rate
- Net intake rate
- Survival rate
- Dropout rate
- Promotion rate</td><td>Status of the Achievement: achieved
(Project Completion)
Average of 10 districts (%)
<table>
<tr><th></th><th>2012/13</th><th>2014/15</th></tr>
<tr><td>NER</td><td>97.84</td><td>98.21</td></tr>
<tr><td>NIR</td><td>97.13</td><td>99.03</td></tr>
<tr><td>Survival Rate</td><td>72.02</td><td>78.62</td></tr>
<tr><td>Dropout Rate</td><td>7.18</td><td>4.73</td></tr>
<tr><td>Promotion Rate</td><td>85.03</td><td>90.8</td></tr>
</table>
(Ex-post evaluation)
Refer to the Overall Goal.</td></tr>
<tr><td rowspan="2">(Overall Goal)
Access and quality of primary education in the target provinces are improved.</td><td>Indicator 1. Education indicators in the target provinces reach ESDP (Education Sector Development Plan) targets consistent with MoES projections
- Net enrollment rate: 98%
- Net intake rate: 98%
- Survival rate: 80%
- Dropout rate: less than 5%
- Promotion rate: 90%</td><td>(Ex-post Evaluation) partially achieved
Figures for 2018/2019 (Target year) (%)
<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
<table>
<tr><th>Province</th><th>NER</th><th>NIR</th><th>Survival rate</th><th>Dropout rate</th><th>Promotion rate</th></tr>
<tr><td>Salavan (Phase 1&2)</td><td>98.9</td><td>98.8</td><td>72</td><td>6.6</td><td>87.8</td></tr>
<tr><td>Sekong (Phase 1&2)</td><td>95.8</td><td>91.8</td><td>69</td><td>7.1</td><td>82.4</td></tr>
<tr><td>Attapeu (Phase 1)</td><td>97.6</td><td>97</td><td>71</td><td>6.6</td><td>85.4</td></tr>
<tr><td>Champasack (Phase 2)</td><td>98.4</td><td>99</td><td>80</td><td>4.7</td><td>92</td></tr>
<tr><td>Savannakhet (Phase 2)</td><td>98.9</td><td>98.6</td><td>72</td><td>7.1</td><td>87.6</td></tr>
<tr><td>Average</td><td>97.9</td><td>97</td><td>72.8</td><td>6.4</td><td>87</td></tr>
</table></td></tr>
<tr><td>Indicator 2 (Supplementary indicator)
Submission rate of School Development Plan (SDP) from schools in target provinces becomes more than 85%?</td><td>(Ex-post Evaluation) Partially achieved
<table>
<tr><th>Province</th><th>Submission rate (Year: 2019)</th></tr>
<tr><td>Champasack</td><td>Approximately 50%</td></tr>
<tr><td>Savannakhet</td><td>56%</td></tr>
<tr><td>Salavan</td><td>Almost 100%</td></tr>
<tr><td>Sekong</td><td>57%</td></tr>
</table></td></tr>
</table>

Source：MOES, PESSs and DESBs

3 Efficiency

Both the project cost and project period were within the plan (the ratio against the plan: 85%, 100%). The outputs were produced as

planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

There has been policy support for continuation of the project effects. In its "Education Vision to 2030 and Strategy to 2025" and the "ESDP 2016-2020", MOES has stated clearly the intention to continuously provide support and effort in the improvement on access and quality of primary education.

<Institutional/Organizational Aspect>

MOES improved its organizational structure to improve the efficiency of its internal works and coordination. Along with the restructuring, staff turnover and retirement also cause staff insufficiency which affects to the continuation of project effect's promotion and dissemination.

At the provincial and district level, the support and monitoring of the implementation of SDP development and school assessment provided to school principals and VEDCs have been mainly done by DESBs, and PESSs have been mainly responsible for providing training and receiving report on the implementation results from DESBs. With limited number of persons in charge in district level comparing to the number of schools, it is still difficult to achieve the target submission rate of SDP in the province.

<Technical Aspect>

Some of MOES staff at all levels have been able to carry out the training based on lessons leant from the project from the new training modules developed by MOES and DPs following the project. However, in some target districts, it has been still difficult to sustain the project effects, since the new staff members do not understand well the project systems and some of them did not receive training as well as work transfer has not been effectively done in local level.

<Financial Aspect>

Although MOES has financial support by DPs as part to continue promoting the project effects, it has been still insufficient because of the large number of schools and amount of budget needed to implement school activities in order to achieve EQS.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose at the project completion as the education indicators improved at the target districts. The Overall Goal was partially achieved, as the access improved in the target provinces, though the quality partially improved. As for the sustainability, slight problems have been observed in terms of the institutional/organizational, technical, and financial aspects; however, no problem has been observed in the policy aspect.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

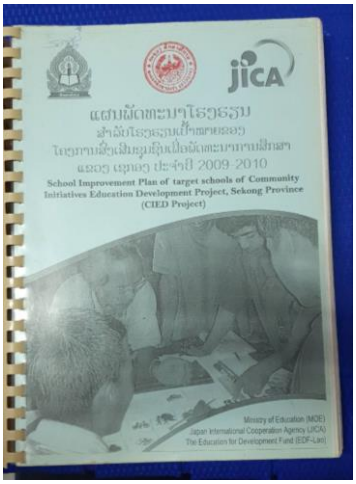
Recommendations for Implementing Agency:

To ensure that the improvement in access and quality of primary education in district and provincial level is sustainably continuing, it is recommended that, the Department of General Education of the Ministry of Education and Sports should support PESS and DESB to fully utilize knowledge and skills in their education planning and monitoring for improving learning at school level as well as to manage and carry out project work and knowledge transfer at the time of personal turnover and retirement, especially in the area of supporting and monitoring works both in central and local level in order to continuously enhance the project purpose and impact nationwide towards achieving the project overall goal.

Lessons Learned for JICA:

Some contents in training materials such as EQS was considered difficult in terms of implementation at school level. The contents of training materials contained large volume of activities to follow when compare to the limited staffing capacity and insufficient budget condition at local level. Because of this, it has been difficult to sustain the project effects, since the new staff members do not understand well the project systems and some of them did not receive training as well as work transfer has not been effectively done along with the restructuring, staff turnover and retirement. For the future projects, JICA should develop the training materials in appropriate volume considering the actual capacity of school principals along with local education committees such as VEDCs and also take into account the geological locations and characteristics of each target local areas which target schools are located (level of education indicators, school distance, economic situation, language use, communication style, culture, etc.) when creating project activities and training models/materials for easy understanding and continuous use as part of the continuation and promotion of the project effects.

Interview meeting with officials from Champasack PESS and DESBs (Champasack, Khong, Soukhouma, Mounlapamok) at Champasack PESS



School Improvement Plan of the Phase 1 project being used continuously as a basis to develop SDP in Maihuameuang Primary School in Lamam District, Sekong Province

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Solomon Islands Office: September, 2021

Country Name	**The Project for Improvement of Non Revenue Water Reduction Capacity for Solomon Islands Water Authority (SIWA)**
Solomon Islands	

I. Project Outline

Background	Solomon Islands Water Authority (abbreviated as "SIWA" at the time of ex-ante evaluation and currently as "SW"), in charge of water supply and sewerage services in urban areas, was operating in the red. One of the reasons was a high non-revenue water (NRW) ratio reaching 56% in 2011. In order to improve the financial conditions, "SIWA Short Term Recovery Strategy and Action Plan" (2011-2013) was developed, which declared to realize the improvement of water supply services and the increase of revenues as its main purposes and the Australian Agency for International Development (currently the Australian Department of Foreign Affairs and Trade: DFAT) concluded a Memorandum of Understanding with SIWA to promote the implementation of RAP. However, with regard to NRW, no plans for the reduction were established. SIWA only repaired leakage on the ground after complaints or reports from customers and did not perform planned leakage detection. SIWA was short of engineers who could plan NRW reduction strategies and conduct countermeasures against leakage and illegal connections. (Figures at the time of ex-ante evaluation.)		
Objectives of the Project	The project aimed to assist SW to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015 by way of (i) systemization of planning process of SW for NRW reduction, (ii) establishment of the procedure for NRW reduction through the pilot areas and leakage control zones (LCZs)[1], (iii) implementation of NRW reduction in accordance with the procedure in pilot areas and/or LCZs in the selected District Metered Areas (DMAs)[2] and monitoring and maintenance of the improved NRW ratio[3], and (iv) improvement of water meter reading and billing process management, thereby improving SW's service levels and increasing SW's revenue.		
	1. Overall Goal: SW's service levels are improved and SW's revenue is increased. 2. Project Purpose: SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015.		
Activities of the Project	1. Project Site: Honiara City 2. Main Activities: (i) systemization of planning process of SW for NRW reduction; (ii) establishment of the procedure for NRW reduction through the pilot areas LCZs; (iii) implementation of NRW reduction in accordance with the procedure in pilot areas and/or LCZs and monitoring and maintenance of the improved NRW, and (iv) improvement of water meter reading and billing process management 3. Inputs (to carry out above activities) Japanese Side 1) Experts:10 persons. 2) Trainees Received: 12 persons. 3) Equipment: Portable ultrasonic flow meter, water leak detectors, bulk flow meters, etc. 4) Local Cost Solomon Side 1) Staff Allocated: 27 persons. 2) Building and Facilities: Office for the expert team. 3) Local Cost		
Project Period	October 2012-June 2016 (Extension: October 2015-June 2016)	Project Cost	(ex-ante) 259 million yen, (actual) 284 million yen
Implementing Agency	Solomon Islands Water Authority (SW) * *Abbreviation was changed from SIWA to SW during the project implementation.		
Cooperation Agency in Japan	Yachiyo Engineering Co., Ltd. & Yokohama Water Co., Ltd		

II. Result of the Evaluation

<Constraints on Evaluation>

- Due to spread of COVID-19, site visits could not be conducted. Information was collected through a face-to-face interview, questionnaires and follow-up interviews by email. Also, it was difficult to collect additional information to confirm the initial survey results sufficiently from SW because some of the key NRW members were on job rotation or on leave because of COVID-19.

<Special Perspective Considered in the Ex-Post Evaluation>

- Continuation status of part of the Project Purpose indicators (i.e., continuation status of level of NRW ratio in the pilot areas and target DMAs) could not be verified as the monitoring data of the pilot areas was not available. The pilot areas, established for the project, were integrated as part 6 out of 24 DMAs created after the project completion, and NRW reduction activities, including monitoring and maintenance, were carried out based on the DMAs. Thus, the NRW ratio in the 2 target DMAs was used to verify continuation status of the Project Purpose indicators. In addition, continuation status of selected Output indicators was used to verify the continuation status of the project effects.
- The target year of the Overall Goal was set to be 2019 as the ex-post evaluation was planned 3 years after the project completion (i.e., 2019) according

[1] "Leakage Control Zone (LCZ)" introduced specially in SW is defined as a discrete zone of a distribution system tentatively created for implementation of countermeasures against leakage such as active leakage control.

[2] "District Metered Area (DMA)" is defined as a discrete area of a distribution system permanently created by isolation or the complete disconnection of pipe work in which the quantities of water inflow and outflow are metered. Total of 28 DMAs were identified and demarcated by the project.

[3] Capacity development in DMA based monitoring and maintenance of the improved NRW was added to Output 3 from the viewpoint of preventive maintenance through the Minutes of the Meeting (M/M) for Amendment of the Record of Discussion (R/D) (30 October 2015) based on the recommendation of the terminal evaluation (Output 3 was changed from "NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs" to "NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs in the selected DMAs, and then improved NRW ratio is monitored and maintained"). Some activities were also added to reflect the additional capacity development.

to the ex-ante evaluation sheet.

- As for the Overall Goal (i.e., SW's service levels are improved and SW's revenue is increased), the initial indicators on the NRW ratio in Honiara City and the ratio of operational revenue-to-expenditure (i.e. "The NRW ratio in Honiara City is reduced to 20% by 2018" and "Ratio of operational revenue-to-expenditure is sustained at greater than 100%") were deleted respectively for their technical infeasibility and the existence of factors which positively affected the achievement other than the project effects [4], and a new indicator (i.e. "A NRW reduction activities are carried on by Task Force composed of relevant Departments or Units") was added based on the agreement at the time of terminal evaluation, which was approved through the M/M for the Amendment of R/D (20 October 2015). Although the continuation of NRW reduction activities does not directly reflect the achievement status of the Overall Goal, it was justified for its contribution to increase of SW's revenue and to improvement of SW's service according to the above M/M. In order to have the same perspective as that of the terminal evaluation, the current indicator was used in the ex-post evaluation. In addition, whether the NRW reduction activities contributed to the improvement of SW's service level and revenue was checked as Supplementary Information by asking SW's opinion with grounds
- Since the target figure for the Overall Goal indicator is not available, the appropriateness of the number of DMAs in which NRW reduction measures were conducted was confirmed in light of the plan/schedule in the latest Strategic Implementation Plan (SIP) for NRW prepared under the project because its utilization and revision as needed was recommended by the terminal evaluation.

1 Relevance

<Consistency with the Development Policy of Solomon Islands at the time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, the project was consistent with the National Development Strategy 2011 to 2020, which placed "Improving the livelihoods of all the people of the Solomon Islands" as one of its two pillars of the central focus areas and declared "Develop physical infrastructure and utilities to ensure all Solomon Islanders have access to essential services and markets" in its Objective 6, which included water supply facilities.

<Consistency with the Development Needs of Solomon Islands at the time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, the project was consistent with the needs of reduction of the NRW ratio by SIWA as described in <Background>.

<Consistency with Japan's ODA Policy at the time of Ex-Ante Evaluation>

At the time of ex-ante evaluation, the project was included in the "Program for development and maintenance of economic infrastructure" under a development issue of "Revitalization of island economy" of one of the priority area "Enhancement of economic growth base" of the Rolling Plan for the Solomon Islands (2011).

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The NRW ratio was reduced by at least 30 points in each pilot area (except for one pilot area where the initial NRW ratio was less than 30%, which is covered by Indicator 2) and the selected /2 target DMAs (Indicator 1). In the pilot area where the initial NRW ratio was less than 30%, the NRW reduction measures were implemented in accordance with its feature. The NRW ratio was reduced from 23% to 4% so that the effectiveness of the NRW reduction measures was validated (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects were partially continued at the time of ex-post evaluation. SW used the NRW manuals developed under the project as their bases for NRW reduction and monitoring works[5] and internal training in 2018 and 2020 for both the existing and newly recruited staff involved in NRW reduction. The standard operation procedure (SOP) on customer meter reading and billing system developed under the project were utilized for the regular work. The SOP and training materials on meter reading were utilized to train newly employed meter readers. In the 2 target DMAs, monthly monitoring was continued and some maintenance works were done. The data and records of DMA-based monitoring and maintenance were continuously accumulated to sustain NRW reduction activities. The NRW ratio in each target DMAs was still lower than the one before the NRW measures but was not maintained at 30% plus or minus 5% because not all newly recruited staff fully understand the monitoring and maintenance process yet (also see <Technical Aspect> of "4 Sustainability")

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was /partially achieved in the target year because the indicator was partially achieved and supplementary information was achieved respectively. For reference, it was achieved at the time of ex-post evaluation because both indicator and supplementary information were achieved. The NRW reduction activities were carried on as part of the normal business operation by the task force, consisting of relevant departments of Operation Division and Finance Division. They were conducted based on the 30-year strategic plan and 5-year action plans of SW developed by the Asian Development Bank (ADB) in 2017 and part of the SIP for NRW developed under this project in 2016. Out of 28 DMAs, NRW reduction activities (i.e., primary NRW reduction measures and/or monitoring and maintenance) were introduced in 22 DMAs by 2019 (i.e., the target year) and were introduced in 2 more DMAs and being introduced in the other 4 DMAs as of September 2020. According to the implementation schedule of the SIP (2016), the NRW reduction activities were to be introduced to 28 DMAs by 2017 so that the achievement rate was 79% in the target year (and 86% at the time of ex-post evaluation) although it was behind the schedule[6] (Indicator). In the DMAs where NRW reduction activities were introduced, the average NRW ratio was decreased from 65% (before the primary measures) to 60% (after the primary measures/monitoring and maintenance) in 2019. According to SW, implementation of NRW reduction activities contributed to increase in revenue to some extent as illegal/un-metered

[4] As for the first indicator, it became unfeasible due to several incidents that had been hardly expected at the beginning of the project. For example, SW started its policy to disconnect area customers very strictly and thoroughly after 2013, and it negatively affected the NRW ratio. As for the second indicator, its achievement was affected not only by the outcome of the project, but also by other factors. For example, SW's water tariff had been almost doubled since the beginning of the project. and it positively affected the ratio of operational revenue-to-expenditure.

[5] SW introduced additional equipment for NRW reduction measures after the project completion and felt the need to revise the manual to incorporate it.

[6] It is noted that the implementation schedule of the SIP was subject to change and, in fact, SW expected that it would take at least 5 years to complete the full program in its annual report (2017). The schedule, however, was not revised by SW. No further details were available.

connection was decreased. It also contributed to improvement of service level of SW. For example, the average water supply hour /day was increased from 22 hours/day in 2016 to in 23 hours/day in 2019 because of decrease in water loss (Supplementary Information).

<Other Impacts at the time of Ex-post Evaluation>

Some other positive impacts were observed. There was a synergetic effects between this project and the Japanese grant aid "Project for Improvement of Water Supply System in Honiara and Auki" (2009-2014). The data on the number of customers, water demand, and leakage obtained through the project resulted in effective utilization of the facilities provided through the grant aid project. There were also synergetic effects between this project and the ADB's project for "Urban Water Supply and Sanitation Sector Project (UWSSSP)" (2019-2027)", co-financed by the ADB, the European Union (EU), and the World Bank, as the equipment procured through the ADB's project was used by SW applying the skills and knowledge acquired through the project. Meanwhile, no negative impacts were observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

<table>
<tr><th>Aim</th><th>Indicators</th><th>Results</th></tr>
<tr><td>(Project Purpose)
SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015.</td><td>1. The NRW ratio is reduced by 30 points in each pilot area, selected DMAs and/or LCZs.</td><td>Status of the Achievement: achieved (not continued)
(Project Completion) (Ex-post Evaluation)
< NRW ratio (%) in the pilot areas *>
<table>
<tr><th colspan="2" rowspan="2">Name of pilot area</th><th colspan="2">Project completion</th></tr>
<tr><th>Before NRW measures</th><th>After NRW measures</th></tr>
<tr><td>1</td><td>Namo Ruka</td><td>87</td><td>32</td></tr>
<tr><td>2</td><td>Independence Valley</td><td>58</td><td>10</td></tr>
<tr><td>3</td><td>Lenikki (2nd)</td><td>62</td><td>15</td></tr>
<tr><td>4</td><td>Mlbokonavera-1</td><td>53</td><td>15</td></tr>
<tr><td>5.</td><td>Tuvaruhu-1 (2nd)</td><td>65</td><td>11</td></tr>
<tr><td>6</td><td>Tuvarulu-2</td><td>67</td><td>21</td></tr>
<tr><td>7</td><td>Vavayea Ridge</td><td>63</td><td>27</td></tr>
<tr><td>8</td><td>Mbokona</td><td>37</td><td>19</td></tr>
<tr><td>9</td><td>Mbaranamba</td><td>23</td><td>*See Indicator 2</td></tr>
<tr><td>10</td><td>Mbua Valley</td><td>51</td><td>7</td></tr>
<tr><td>11</td><td>Bahai Kulkmm</td><td>59</td><td>16</td></tr>
<tr><td>12</td><td>Panatina Valley</td><td>38</td><td>7</td></tr>
<tr><td>13</td><td>Naha 2</td><td>52</td><td>16</td></tr>
<tr><td>14</td><td>Naha 3</td><td>61</td><td>26</td></tr>
<tr><td>15</td><td>FFA Kola Road</td><td>47</td><td>15</td></tr>
<tr><td colspan="2">Average</td><td>55</td><td>16</td></tr>
</table>
*Continuation status of the NRW ratio in the pilot areas was not confirmed (see <Special Perspectives to be considered in the Ex-Post Evaluation>).
<NRW ratio (%) in the target DMAs >
<table>
<tr><th colspan="2" rowspan="2">Name of Target DMA</th><th colspan="2">Project completion</th><th rowspan="2">Ex-post Evaluation (as of September 2020) *</th></tr>
<tr><th>Before NRW measures</th><th>After NRW measures</th></tr>
<tr><td>1</td><td>Tasahe A&B (with pressure control)</td><td>86</td><td>33</td><td>73</td></tr>
<tr><td>2</td><td>West Kola Ridge A</td><td>60</td><td>18</td><td>40</td></tr>
<tr><td colspan="2">Average</td><td>73</td><td>26</td><td>57</td></tr>
</table>
*The figures at the time of ex-post evaluation were without pressure control using the pressure reduction valves (PRVs) procured by DFAT because SW did not feel the need for it.</td></tr>
<tr><td></td><td>2. Regarding the Pilot Project areas, selected DMAs, and/or LCZs where the NRW ratio before the implementation of NRW reduction measures are less than 30%, the NRW reduction measures are implemented in accordance with features of each area and/or zone, so that effectiveness of the NRW reduction measures are validated.</td><td>Status of the Achievement: achieved/unverifiable.
(Project Completion)
-In the pilot area where the initial NRW ratio was less than 30% (i.e., Mbaranamba), the NRW reduction measures were implemented in accordance with its feature. The NRW ratio was reduced from 23% to 4% so that the effectiveness of the NRW reduction measures was validated.

*Continuation status of the NRW ratio in Mbrannamba (a pilot area) was not confirmed (see <Special Perspectives to be considered in the Ex-Post Evaluation>).</td></tr>
<tr><td>(Overall Goal)
SW's service levels are improved and SW's revenue is increased.</td><td>1. NRW reduction activities are carried on by Task Force composed of relevant Departments or Units.

Also see <Special Perspectives to be considered in the Ex-Post Evaluation>.</td><td>(Ex-post Evaluation) partially achieved
-The NRW reduction activities were carried on in by the task force, consisting of relevant departments of Operation Division and Finance Division.
<Number of DMAs in which NRW reduction activities were conducted>
-Total number of DMAs: 28
-Target indicated in the SIP: 28 DMAs by 2017
<table>
<tr><th>Item</th><th>By 2016 (Year of project completion)</th><th>2017</th><th>2018</th><th>2019 (Target year)</th><th>2020 (as of September)</th></tr>
<tr><td>No. of DMAs in which primary NRW reduction measures were conducted</td><td>2</td><td>10</td><td>5</td><td>5</td><td>Completed: 2:
Ongoing: 4</td></tr>
</table></td></tr>
</table>

		No. of DMAs to which DMA-based monitoring and maintenance was introduced	2	12	17	22	24
		Total no. of DMAs in which NRW reduction activities were conducted	2	12	17	22	24
		Achievement rate of the target indicated in the SIP	14%	43%	61%	79%	86%

*Achievement status in the target year.

Source: Project Final Report; questionnaire and interview survey to SW.

3 Efficiency

The project cost and the project period exceeded the respective plans (ratio against the plan: 110% and 122% respectively). The project period exceeded the plan since mainly because capacity development in monitoring and maintenance activities of the improved NRW ratio was delayed due to delay of completion of the primary NRW reduction activities because of several reasons such as flood, delay of procurement of equipment by DFAT, etc. and additional capacity development in DMA based monitoring and maintenance was incorporated to one of the existing Outputs (see footnote 3 in detail). The Outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The National Development Strategy 2011 to 2020 mentioned in "1 Relevance" was effective at the time of ex-post evaluation.

<Institutional/Organizational Aspect>

The organizational setting to promote the NRW reduction activities (i.e., the task force) was continued. Some of the task force members left the organization, but SW recruited the new staff members and allocated to the task force. Although the exact number of staff could not be confirmed, at least the minimum necessary number of staff was allocated because NRW reduction activities were introduced/being introduced to all DMAs and the NRW ratio was decreasing gradually as stated in "Effectiveness/Impact".

<Technical Aspect>

As mentioned above, some of the staff trained by the project left SW after the project completion. The trained staff who were still with SW maintained the acquired skills and knowledge through applying them in their daily operation and joint training with the newly recruited staff. The NRW manuals were shared to the newly recruited staff and the internal training on NRW reduction was given to them. According to SW, however, they were still building their capacity and understanding about the monitoring and maintenance process and more training would be necessary so that they could understand the NRW reduction process fully. Also, refresher training to the existing staff was important so that they could work more effectively. The concrete plan for internal training could not be confirmed, however. Meanwhile, SW hired an NRW expert from November 2019 to April 2020 and was considering making a two-year contract for another expert as soon as possible. Most of the provided equipment was used in good condition. It is noted that the bulk flowmeters installed in 10 field sites were already replaced by SW due to malfunction.

<Financial Aspect>

Necessary budget to promote NRW activities in 28 DMAs, including operation and maintenance of the provided equipment, was secured by SW. For example, it secured the budget to build 20 flow meter chambers and to procure 28 magnet flow meters, 7,000 cash water meters (pre-paid customer meters), materials for pipe replacement, leakage detection equipment, etc. after the project completion. In addition, it secured the budget to hire the NRW expert as mentioned in <Technical Aspect>. Some equipment was procured through UWSSSP as stated in "2 Effectiveness/Impact". According to SW, it may be possible to use some part of budget of UWSSSP for NRW reduction in the future as well.

<Evaluation Result>

Some problems were observed in terms of the technical aspects of the implementing agency. Therefore, the sustainability of the effect through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose ("SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015"). The effects of the project partially continued because the level of the NRW ratio of the target DMAs was not maintained at 30% plus or minus 5% due to insufficient understanding of the newly recruited staff about the monitoring and maintenance). The Overall Goal ("SW's service levels are improved and SW's revenue is increased") was partially achieved in the target year (2019) mainly because the introduction rate of the NRW measures in the DMAs was 79% of the target indicated in the SIP developed under the project. Regarding the sustainability, some problems were observed in terms of the technical aspects such as insufficient capacity and understanding of the newly recruited staff about monitoring and maintenance. Nevertheless, no major problems were observed in terms of the policy, institutional/organizational, and financial aspect. As for the efficiency, the project cost and the project period exceeded the respective plans. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- In order to sustain the project effects and enhance sustainability, it is recommended that SW do regular internal training for the newly recruited staff who have just joined SW and internal refresher training for the existing staff on the NRW reduction process. The internal training should be conducted by the remaining staff of the NRW team who were with the project once a year.

Lessons learned for JICA)

- In order to ensure proper monitoring and evaluation of a technical cooperation project using the indicators and thus to ensure accountability, it is important to examine whether the indicators are direct measures of the project objectives, including the Overall Goal, and whether or not factors other than the project outputs/outcome which may directly affect achievement of the indicators positively exist at the time of planning. During the project implementation, it is also important to review the indicators, including those

of the Overall Goal, when incidents, which had not been expected at the planning stage and may affect their achievement, happen after the commencement.

Tasahe A, B & C receiving tank in one of the target DMAs

Tahahe A, B & C distribution mains in one of the target DMAs

conducted by Cuba office (March 2021)

Name of country	**Project for reinforcement of certified seed production and extension system for popular rice (2008-2010 Project)** **Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba (2012-2016 Project)**
Republic of Cuba	

I +Project summary

Background of the projects	In Cuba, as the amount of production of rice, a staple food, was less than the demand, to increase the self-sufficiency of rice was one of the important policies of the government. In order to improve the sustainable production of popular rice in the central 5 provinces, which occupied 40% of rice field in the country, JICA implemented a technical cooperation for development planning project "The Study on sustainable technical development for rice cultivation in the central area in the republic of Cuba" (2003-2005). As the usage rate of certified seeds was only 27% (2003) in the production of popular rice, which made lower the quality and productivity of rice production, the study suggested that in order to expand its production the introduction of excellent varieties suited to the characteristics of the area was urgently needed and the improvement of system of certification of seeds for popular rice was needed. On receiving the suggestions of the study, a technical cooperation project, "Project for reinforcement of certified seed[1] production and extension system for popular rice" (2008-2010) was implemented. After the project, toward the use of registered seeds, one of the categories of seeds[2], by more rice farmers, there were challenges of the expansion of production of certified seeds, improvement of technical capacity for seed production of seed production farmers, and improvement of a flow of certified seeds to be distributed to rice farmers. Thus, a technical cooperation project, "Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba" (2012-2016) was undertaken.
Objectives of the project	[2008-10 Project] Though developing a plan of seed production and distribution in order to produce certified seeds, training stakeholders of seed production farms, extension workers, seed inspectors, and leader farmers, conducting training and providing information on the varieties promoted by Grain Research Institute (IIGranos), the project aimed at distributing certified seeds with a plan, thereby contributing to the seed production of excellent varieties by popular rice producers (small scale farmers). 1. Overall goal: The producers of popular rice (small scale farmers) use high quality seeds. 2. Project purpose: Use of the certified seeds II is promoted.
	[2012-16 Project] Through the production of original seeds, basic seeds, and registered seeds based on the registered seed production plan, implementing training to extension workers, conducting technical training of seed production to seed producers and conducting training to Seeds Inspection and Certification System (SICS) inspectors, in the central 5 provinces, the project aimed at increasing the production of registered seeds by trained leader seeds producers, thereby contributing to increase in the rice production and productivity. 1. Overall goal: The rice production is increased by improving productivity in the central zone of Cuba. 2. Project purpose: The amount of certified seeds produced by leader seed producers, who are trained through the Project, is increased in the central zone of Cuba.
Activities of the Project	1. Project sites: 5 central provinces (Cienfuegos, Villa clara, Sancti Spiritus, Ciego de Avila, and Camaguey) (Same project sites for 2008-10 Project and 2012-2016 Project) 2. Main activities: [2008-10 Project] (i) Producing original, basic, and registered seeds, (ii) Elaborating a seed production and distribution plan for producing certified seeds, (iii) Delivering training to extension workers, seed inspectors and leading farmers, (iv) Providing training and information about varieties recommended by Rice Research Institute (IIArroz) (Current IIGranos). [2012-16 Project] (i) Elaborating a rural extension guideline for rice seeds production and extension of rice cultivation techniques (ii) Producing registered seeds based on the production plan of registered seeds, (iii) Delivering training to extension workers, (iv) Delivering training on production techniques of seeds to seed farmers, (v) Delivering training to SICS inspectors. 3. Inputs Japanese side [2008-10 Project] (1) Experts: 5 persons (2) Third country training: 6 persons (Bolivia) (3) Equipment: Computer, projector, portable generator, printer, tractor, harvester, transplanting Cuban side [2008-10 Project] (1) Staff allocated: 9 persons (2) Facility and Land: Office space for experts in IIArroz (3) Local operation cost: Personnel cost, utility cost,

[1] To be certify from the levels of Original seed→Basic seed→Registered seed→Certified seed.

[2] Main seed categories include original seed (produced by the original breeder/institute as original seed stock), basic seed (produced from original seed), registered seed (produced from basic seed), certified seed I (produced from registered seed) and certified seed II (produced from certified seed I).

	machine, rice seed adjusting machine, etc. (4) Local operation cost: Field activity costs [2012-16 Project] (1) Experts: 5 persons (2) Trainees received: 5 persons (3) Equipment: Computer, projector, portable generator, printer, seeder, transplanting machine, etc. (4) Local operation cost: Field activity costs		etc. [2012-16 Project] (1) Staff allocated: 16 persons (2) Facility and Land: Project office, rice seed cultivation field (Total 16 ha), storage for project equipment, construction site for post- harvest treatment facility (3) Local operation cost: Fuel cost for harvesting, import tax of project equipment, preparation cost for constructing facilities, utility cost, etc.
Project Period	[2008-10 Project] Mar. 2008 - Nov. 2010 [2012-16 Project] Apr. 2012 - Apr. 2016	Project Cost	[2008-10 Project] (ex-ante) 190 million yen, (actual) 262 million yen [2012-16 Project] (ex-ante) 310 million yen, (actual) 436 million yen
Implementing Agency	Grain Research Institute (IIGranos) (Renamed from Rice Research Institute (IIArroz) since 2010)		
Cooperation Agency in Japan	None		

II. Result of the Evaluation

1 Relevance

<Consistency with Development plan of Cuban government at the time of preparatory study>

The projects were consistent with development policies of Cuba, including the "Strategic Plan 2005" of Cuban Agricultural Ministry aiming to 63% of rice self-sufficiency rate and "Strategic Projection of Various Crops until year 2015" aiming at doubling the rice yield from 2008 to 2015.

<Consistency with Development needs in Cuba at the time of preparatory study>

The projects were consistent with development needs of Cuba for production of popular rice, that is, an establishment and strengthening of seed production and distribution system for diffusion of certified seeds necessary to the introduction of excellent varieties, and improvement of quality and quantity of the registered seeds production.

<Consistency with Japanese aid policies at the time of preparatory study>

The projects were consistent with the Japan's ODA policies for Cuba at the time of 2008 and 2012[3] emphasizing support for increasing food production as one of its priority areas.

<Evaluation Result>

In the light of above, the relevance of these projects is high.

2 Effectiveness/ Impact

[2008-2010 Project]

<Achievement status of Project Purpose at the time of completion of the project>

The Project Purpose was achieved by the time of project completion. 7 tons of registered seeds were produced by the 2008-2010 project.

<Continuation status of project effects at the time of Ex-post evaluation>

The project effects have been continued by the time of ex-post evaluation. The production and distribution amount of registered seeds increased from 7 tons in 2010 to 1,960 tons in 2019. The institutions producing registered seeds are not only IIGranos, but also Territorial Station of Grain Research (ETIG), "El Corojal" business base unit of Artemisa Agro-Industrial Company of Grains (EAIG), and selected seed producers. The institutions distributing registered seeds are IIGranos, ETIG, "Los Palacios" Experimental Station of National Institute of Agricultural Science (INCA), El Corojal, various Credits and Services Cooperative (CCS), which distribute them to more than 30 cooperatives. The reason for continuing project effects is good quality of registered seeds produced by seed producers.

<Status of achievement of Overall Goal at the time of Ex-post evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. In the targeted 5 provinces 100% of rice producers used certified seeds from 2015 to 2019. Certified seeds were used in 90%, 95% and 97% of producing area in the country in 2017, 2018, and 2019 respectively. According to IIGranos, the reasons for the widespread use of certified seeds are good quality of certified seeds, improvement of productivity by using them, and that IIGranos and Agricultural Enterprise Group (GAG) promoted use of certified seeds and diversification of varieties to rice producers in the country.

<Other impacts confirmed at Ex-post evaluation>

At the time of Ex-post evaluation other impact was not confirmed.

[2012-16 Project]

<Achievement status of the Project Purpose at the time of completion of the Project>

The Project Purpose was achieved by the time of project completion. In the targeted 5 provinces the amount of certified seeds produced by the trained leading seed producers was increased, and the total production of certified seeds (Certified seed-I and II) reached to 7,956 tons in 2013, and 9,824 tons in 2014. Although the data for 2015 was not available, it increased to 11,319 tons in 2016.

<Continuation status of the project effects at the time of Ex-post evaluation>

The project effects have been continued at the time of ex-post evaluation. The certified seeds are produced mainly by EAIGs[4], and the

[3] ODA Data books 2008 and 2012, Ministry of Foreign Affairs, Japan.

[4] While a part of EAIG itself produces seeds, the farmers belong to local producers' organizations such as Basic Units of Cooperative Production (UBPC),

production in the target 5 provinces was 9,229 tons in 2017, 13,502 tons in 2018, and 9,199 tons in 2019, while the project aimed at 2,000 tons annually by 2015. The reason is that the productivity has been improved in many areas due to the improved quality, quantity and variety of provided certified seeds.

<Achievement status of Overall Goal at the time of Ex-post evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. In the 5 central provinces it is assumed that the average productivity of the certified seeds increased by 15% from 2016 to 2019, after the completion of the project. It is due to that seed producers were able to access to good quality seeds of popular varieties, and in recent years they had access to trainings, technical support, extension system and technology, supported by the government.

<Other impact confirmed at the Ex-post evaluation>

No other impacts were observed at the time of ex-post evaluation.

<Evaluation Result>

From above, the effectiveness and impact of the projects is high.

Achievement of Project purpose and Overall goal

Target	Indicators	Achievement
[2008-10 Project]		
Project Purpose Registered seeds are distributed as planned.	7 tons of registered seeds are distributed to UBPC, CCS, CPA and seed producing farmers in the target 5 provinces.	Status of achievement: Achieved (Continued) (At the time of completion of the project) • In August 2010, 7 tons of registered seeds were produced and distributed, in accordance with the Project purpose. (At the time of Ex-post evaluation) • Amount of production and distribution of registered seeds increased from 7 tons in 2010, to 150 tons, 800 tons and 1,960 tons in 2019. The registered seeds are produced by ETIG of IIGranos, "El Corojal" business base unit of Artemisa EAIG, and selected seed producers. Registered seeds are distributed from ETIG of IIGranos, "Los Palacios" Experimental Station, El Corojal, and CCS to more than 30 cooperatives.
Overall Goal The producers of popular rice (small scale farmers) use high quality seeds.	In the targeted 5 provinces by 2015 80% of small-scale farmers producing popular rice use good quality seeds originated from Certified seed II.	Status of achievement: Achieved (Ex-post evaluation) • In the target 5 provinces 100% of producers used certified seeds from 2015 to 2019. The certified seeds were used in 90%, 95%, and 97% of rice acreage of the country in 2017, 2018, and 2019, respectively. • Following a policy to increase rice production, Ministry of Agriculture aims at the use of certified seeds by all rice producers and securing sufficient production of certified seeds for it. Based on the above policy, IIGranos and GAG have been promoting the use of certified seeds and the diversification of varieties to all rice producers in the country. As a result, the stakeholders (research institutes, EAIGs, seed producers, etc.) relating to seed production and diffusion recognized the effectiveness of production and diffusion of certified seeds (the use of good quality certified seeds and subsequent improvement of productivity).
[2012-16 Project]		
Project Purpose The amount of certified seeds produced by leading seed producers, who are trained through the Project, is increased in the Central zone of Cuba.	2.000 tons of certified seeds are produced in the 5 central provinces of Cuba in 2015.	Status of achievement: Achieved (Continued) (At the time of completion of the project) • The amount of production of certified seeds (Certified Seed-I and II) in the 5 central provinces increased to 7,957 tons in 2013, 9,824 tons in 2014, and 11,319 tons in 2016 (the data for 2015 was not available). (At the time of Ex-post evaluation) • The amount of certified seeds produced in the target 5 provinces by EAIGs, producers organizations and farmers was 9,229 tons in 2017, 13,502 tons in 2018, and 9,199 tons in 2019. The usage rate of certified seeds in the country increased to 95% and 97% in 2018 and 2019, respectively. By improving the quality of seeds and training the personnel of SICS, the rate of disqualified seeds is about 10% a year.
Overall Goal The rice production is increased by improving productivity in the central zone of Cuba.	The average yield of certified seeds is increased 15% by 2018 compared with the one at the end of the project in the 5 central provinces of Cuba.	Status of achievement: Achieved (At the time of Ex-post evaluation) • Considering that the average productivity (around 5 t/ha) of the certified seeds from 2016 to 2019 and the one (around 4.04-4.65 t/ha) in the target 5 provinces during the implementation of the Project, an increase of about 15% is assumed to have been achieved. • Recently, with the support from the government, producers gained access to trainings, technical support, diffusion system and technology, and the knowledge

Agricultural Production Cooperative (CPA) and Credit and Service Cooperative (CCS) produce certified seeds. EAIG provides technical extension services, collaborating with ETIG, and agricultural input necessary for the producers' organizations and farmers to produce seeds. Also, EAIG collects the produced seeds and distributes to local rice producers as certified seeds, after drying and processed accordingly.

		and technology of seed producers and institutions have been improved. By the diffusion of seed production technology, the selection and adoption of adequate varieties suited to land conditions have been proceeded, which has promoted the development and seed production of adequate varieties. As a result, seed producers have gained access to good quality seeds of popular varieties.

Source: Report of Terminal evaluation, Answers to the questionnaire to IIGranos, Information provided by GAG, IIGranos, and Japanese experts in charge of current technical cooperation.

3 Efficiency

For the 2008-10 Project, although the project period was within the plan (ratio against plan: 88%), the project cost exceeded the plan (ratio against plan: 138%) due to the increase of project cost because of additional dispatch of Japanese experts, etc. For the 2012-16 Project, although the project period was as planned (ratio against plan: 100%), the project cost exceeded the plan (ratio against plan: 135%) due to a delay in the construction of a post-harvest treatment facility and an increase in the construction cost. Outputs of both projects were achieved as planned.

From the above, the efficiency of the overall projects is fair.

4 Sustainability

<Policy Aspect>

"Rice Seed Production Program" plans annually the planting area, yield and production of certified rice seeds with the objective of assuring the adequate quality and necessary amount of certified rice seeds for the rice production of the country, and "Seeds Policy (2020-2030)" aims for 100% use of certified seeds in all domestic agricultural production by 2030. Increasing rice production for food security and the use and production of certified seeds to achieve it are described as the priorities for Cuba. The undertakings of these Projects are assumed to continuously contribute to realization of the current national policies even after the termination of the Projects.

<Institutional/Organizational Aspects>

Based on the achievement of the project in the strengthening of rice seeds production technique, a technical cooperation project "The Project on Improvement of Agricultural Extension System for Grain Production in Cuba" (2017~2022) has been under implementation, with the objective of strengthening the technical extension system for rice, frijol, and corns producers. This project targets grain-producers in 8 provinces including 5 provinces targeted by the 2012-16 Project and Island of Youth special municipality, and its implementing agency is IIGranos as well. In this project, training of trainers (TOT) is provided to extension workers of the ETIG of IIGranos, and then the trained extension workers are expected to develop their activities in alliance with agricultural companies' technical officers (potential extension workers), technicians of producers' organizations and cooperating farmers, providing necessary training for them.

The system of production, inspection, distribution and use of registered and certified seeds which was established by the Projects has been disseminated nationwide through extension workers at the time of the ex-post evaluation. In IIGranos, while it had 7 extension officers assigned at the time of the terminal evaluation of the 2012-2016 Project, currently 42 persons in total (25 extension officers and 17 researchers/technicians) are taking roles of research and extension related to rice production, and the number of personnel engaged in the promotion and extension system developed by the projects is considered sufficient. 23 agricultural state-owned companies have 5 extension officers each assigned to implement the extension activity in model farms on a trial basis, and it is planned to extend it to other areas in the future. These companies are considered as participants and beneficiaries of this project. In this project, 250 farmers are selected as cooperating extension farmers, and they are also participants and beneficiaries. The information exchange and sharing are promoted and strengthened among extension workers, between extension workers and producers and among producers.

<Technical Aspect>

The specialists and researchers of IIGranos have maintained knowledge and skills related to the rice cultivation through training, self-learning and studying in post-graduate schools. In the above-mentioned on-going technical cooperation project, IIGranos is taking a leading role to deliver trainings to leading seed farmers, and their knowledge and skills are maintained and updated. The manuals and guides prepared by the projects, such as "Manual of agricultural extension for production and diffusion of certified seeds of rice in Central zone of Cuba", "Field guide for rice cultivation", "Manual of production of rice seeds", and "Technical instructions for rice cultivation", have been used as training materials by IIGranos, other institutions under Ministry of Agriculture and Ministry of Higher education, agricultural companies and producers. The manuals for rice cultivation techniques have also been revised, including the addition of varieties (the current project is also supporting the revision). In addition, restrictions on import of spare parts and financial problems have occurred due to economic sanctions by the US. Although it is difficult to purchase spare parts for equipment provided by this Project, when the provided equipment breaks down, it has been dealt with creatively by using spare parts domestically available.

<Financial Aspect>

The financial source of IIGranos includes the budget allocated by the national budget of Financial Fund of Science and Innovation (FONCI), the budget of the agricultural companies allocated by GAG (occupying 60% of the overall budget), and the revenue from the provision of services and the sale of seeds, among others. The budget of IIGranos has increased compared to the one at the time of the project completion. Construction of the training building of IIGranos, which had been suspended, has resumed this year, and measures to reduce necessary budget for activities have been taken, including the cost sharing in kind such as food and venue, with participating agricultural companies and cooperatives.

<Evaluation Result>

In the light of above, the sustainability of the effects though the projects is high.

5 Overall evaluation

The 2008-10 Project achieved project purpose which aimed at planned distribution of registered seeds and achieved overall goal which aimed at utilization of high-quality seeds by popular rice producers. The 2012-16 Project achieved project purpose which aimed to increase the production of certified seeds by trained leader seed producers in the central 5 provinces and achieved overall goal which aimed to increase the yield of certified seeds and rice production. With reference to sustainability, restrictions on the import of spare parts and financial problems have occurred due to the economic sanctions by the US, which made difficult for them to purchase spare parts, but they deal with it using domestic spare parts. IIGranos has sufficient personnel and technical officers and researchers of related institutions have

maintained knowledge and skills of rice cultivation through training and self-learning. Supported by the on-going project, the knowledge and skills of stakeholders are maintained and updated. With reference to efficiency, the duration of the project for the 2012-16 Project was as planned, but its project cost was significantly exceeded.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III Suggestion / learning

Recommendations for Implementing Agency:

- It is expected to deliver necessary technical training sustainably by completing the construction of training building of IIGranos to utilize it for future training, and continuing and extending the measures such as partial cost-sharing in alliance with participating companies etc.

Lessons Learned for JICA:

- Strengthening of the linkage between the research institutions for seed development and producers is one of the achievements and the lessons of this Project. The ongoing project which follows this Project took up the undertaking of this Project as a model of agricultural extension system. Research institutions on agricultural products other than rice are interested in this Project so that IIGranos have actively exchanged opinions with other research institutions. Also in the policy of agricultural extension being drafted by the government the undertaking of this Project is being referred. (Ex-Director of IIGranos presented the system of agricultural extension based on the experience of this Project in the meeting attended by the President.).
- These projects were highly consistent with the strategy of Cuban government aiming to increase seed production and dissemination for the improvement of self-sufficiency of rice. With the result of implementation of the projects in two phases, 100% dissemination rate of certified seeds in the target 5 provinces (since 2015) and 97% at national level (in 2019) was achieved for rice production. Since it was the first full-scale technical cooperation for Cuba, the cooperation was planned as phase projects in divided period, and set the achievable goal within the each projects. In order to correspond to the policy and needs of the partner country, conducting the analysis of the overall challenges in seeds production, realistic goals that are achievable in a timeframe of single project were set in each phase (phase 1: the planned distribution of registered seeds, and phase2: the increase of certified seed production), which derived self-help efforts of the counterpart institution. The subsequent phase was started after taking a certain period between a phase to another and confirming the independent efforts of the counterpart institution, As a result, the sustainability of the projects was enhanced. The achievement of concrete goals in each phase and sustainable efforts of Cuban side triggered the subsequent phase of cooperation, which led further sustainable and independent efforts of counterpart institution. It is important to have medium- to long-term vision in project formulation and management, conduct adequate project monitoring and target management at each stage, and shift carefully toward a next phase depending on the degree of capacity development of implementing institutions.
- With the extension of production techniques, the selection and adoption of various adequate varieties suited to different land conditions were progressed, and the seed production of adequate varieties was promoted. These made rice producers possible to access to good quality seeds of popular varieties suited to their needs, which promoted the dissemination of certified seeds. In order to extend the seed production from registered seed to certified seed, it was important to have collaboration and communication between research institutions and leader farmers (local exemplary farmers who engage in the certified seeds production) in relation to the development of adequate seeds suited to each area and the extension of seed production techniques. Such communication was promoted through the preparation of learning materials in cultivation practices, training sessions, and the farm demonstration in these projects. By seeking close communication between research institutions for seed development and producers, a positive cycle described above is considered to have arisen. Therefore, it is considered important to strengthen the linkage between the research and the agriculture extension.

Training materials prepared by the project.

Experimental field by leader seed producer
(Sancti Spiritus Province)

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Bolivia Office: April 2021

Country Name	Project of Capacity Development for Agriculture with Irrigation
Plurinational State of Bolivia	

I. Project Outline

Background	Bolivia had the largest income gap among Latin American countries. In rural areas with 34% of the population, 66% of the rural population were in poverty, and 45% were in extreme poverty (2009). 76% (2009) of the rural population was engaged in agricultural activities, and most of them were poor farmers, being mainly engaged in crop production for their own consumption. Lack of water was considered as the most problematic among difficulties facing subsistence farmers, such as lack of farming technologies, seeds, and fertilizers. In areas where farmers did not count on irrigation, they suffered from low productivity, instability of production, and limited options of crops. Also, one of the bottlenecks was the lack of technical capacity of human resources in irrigation. Both municipalities which were in charge of identification and implementation of irrigation projects and departments which should give technical assistance to municipalities suffered from a shortage of competent human resources in irrigation.		
Objectives of the Project	Through the analysis of technical issues in agriculture with irrigation, consideration of countermeasures, development of the mid-term master plan on capacity development activities of the National School of Irrigation (ENR), and follow-up of training in seven departments, the project aimed at utilization of knowledge and technologies acquired from ENR by irrigation engineers/technicians and irrigation farmers, thereby contributing to promotion of agriculture with irrigation.		
	1. Overall Goal: Agriculture with irrigation will be promoted in 7 departments of Bolivia. 2. Project Purpose: Irrigation engineers/technicians and irrigation farmers utilize knowledge and technologies acquired in the capacity development activities implemented by National Irrigation School.		
Activities of the project	1. Project site: Departments of La Paz, Oruro, Potosí, Chuquisaca, Cochabamba, Tarija and Santa Cruz. 2. Main activities: Analysis of technical issues in agriculture with irrigation, consideration of countermeasures, development of the mid-term master plan on capacity development activities of ENR, follow-up of training, etc. 3. Inputs (to carry out above activities) Japanese Side 1) Experts from Japan: 7 persons 2) Training in Japan: 29 persons 3) Equipment: PC, portable weather meter, irrigation equipment, soil analysis kit, etc. 4) Local cost: hiring local consultants, travel cost, etc. Bolivian Side 1) Staff allocated: 31 persons 2) Land and facilities: Office space, training facility, etc. 3) Local cost: travel cost, assignment of office personnel, electricity charge, communication cost, etc.		
Project Period	November 2012 to November 2016	Project Cost	(ex-ante) 367 million yen, (actual) 265 million yen
Implementing Agency	National Service of Irrigation (SENARI)		
Cooperation Agency in Japan	None.		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

- The indicators of the Project Purpose were to verify the use of knowledge and skills acquired by irrigation technicians and farmers in the capacity development activities by ENR. The Overall Goal was to promote agriculture with irrigation in the target 7 departments. In the ex-post evaluation, for verification of the continuation status of the project effects to contribute to the achievement of the Overall Goal, it was decided to confirm ENR's monitoring of the trained farmers and reflection of in the annual plan and other qualitative information regarding the of irrigation technicians and farmers who have continued to use the knowledge and skills acquired.
- Because of the outbreak of COVID-19, information was collected through a questionnaire survey and phone interviews to make evaluation judgement in the ex-post evaluation. Site visits were not conducted.

1 Relevance

<Consistency with the Development Policy of Bolivia at the time of Ex-ante Evaluation>

The "National Irrigation Development Plan" (2007-2011) set the policy objectives of improving and expanding technical support, training, research, and technology development for irrigation, which were to be addressed through ENR. Thus, the project was consistent with the development policy of Bolivia at the time of ex-ante evaluation.

<Consistency with the Development Needs of Bolivia at the time of Ex-ante Evaluation>

The irrigated area in Bolivia was only 226,500ha or 11% of the total agricultural land area, and agricultural productivity was low in under-irrigated areas, resulting in unstable production and limited cropping, which directly led to instability in food security for poor farmers. On the other hand, lack of technical capacity of human resources in irrigation was a bottleneck. In many cases, irrigation facilities did not function effectively due to design errors and inadequate construction management. In this sense, the project was consistent with the development needs of Bolivia.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation >

In the "Country Assistance Policy for Bolivia" (2012), two pillars of the assistance were "social development with a focus on human resource development" and "improving productivity through community development and other means. In the agricultural sector, the program for poverty reduction among small-scale farmers was planned to contribute to improving productivity through community

development and other means.
<Evaluation Result>
In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>
The Project Purpose was achieved by the time of project completion. In the project, among the technicians who were trained in seven departments (La Paz, Oruro, Potosí, Chuquisaca, Cochabamba, Santa Cruz, and Tarija), 402 of them actually used the knowledge and skills (Indicator 1). In addition to the technicians, training was provided to 2,455 farmers and 1,102 promoters. Promoters had a role in disseminating irrigation technologies to neighboring farmers and community members after the training. According to the promoters of 28 model irrigation systems, the training participants used the knowledge and skills acquired and used various irrigation systems, including sprinkler irrigation systems (Indicator 2). Also, in 399 other irrigation systems, farmers used the knowledge and technology acquired.
<Continuation Status of Project Effects at the time of Ex-post Evaluation>
The project effects have partially continued. According to SENARI, ENR has monitored irrigation users after the training and incorporated the results into its annual plan. According to questionnaire responses from several Department Services of Irrigation (SEDERI), one of them has supported farmers after the training including monitoring as agreed with ENR (Oruro), and another department has organized groups to continue training and promoted farmer-to-farmer training (Potosí). On the other hand, some have not been able to fully support farmers due to a lack of budget and staff allocations from the department government (Chuquisaca and Cochabamba). In all the five responding departments (La Paz, Oruro, Potosí, Chuquisaca, and Cochabamba), farmers who received training under the project have continued to use the technology they acquired to practice agriculture with irrigation.
<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>
It is judged that the Overall Goal has been partially achieved. In the seven target departments, irrigated areas with appropriate irrigation systems that meet the standards of survey and design determined by the Ministry of Environment and Water (MMAyA) have increased (Indicator 1), according to SENARI, although exact data did not exist. According to SEDERIs and SENARI, 130 irrigation system have been utilized, but in some systems farmers have not properly implemented water management and maintenance systems (Indicator 2). In some systems, water management has not been carried out, due to lack of waterway rehabilitation and technical training. Water quality management has been implemented under SEDERI supervision in four of the five responding departments. However, SEDERI operations have been suspended in Chuquisaca Department since 2015. Since the project completion, promoters in the majority of the departments have provided training to farmers and community members to diffuse irrigation techniques to other irrigation systems model systems. On the other hand, in one department (Chuquisaca), the promoters have not provided training but SENARI has provided training directly through the municipalities.
<Other Impacts at the time of Ex-post Evaluation>
Firstly, there have been positive impacts related to gender. The irrigation technologies introduced by the project have been easy to use and women who had not previously participated in agriculture have become actively involved in irrigation management works. They have participated in general and ad hoc meetings of irrigation groups. These changes have been probably brought by the project's intention to invite the same number of women as men to training. According to SEDERI of Potosí, while men's sources of income have become diversified, women have often remained engaged in agriculture, and thus the inclusion of women in training was important to improve their productivity, and women were also interested in training. Secondly, the project worked together with other projects. In Oruro, due to the "Project for the Development of the Training Facility for Irrigation in Challapata" (2017) which developed a training facility, 1,200 households became able to receive hands-on training in water-saving irrigation technologies. Thirdly, various training events have been conducted by irrigation technicians of SENARI and SEDRI through ENR at the national level to replicate the knowledge and technologies acquired in this project.
There has been no negative impact on the natural environment.
<Evaluation Result>
Therefore, the effectiveness/impact of the project is fair.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Irrigation engineers/ technicians and irrigation farmers utilize knowledge and technologies acquired in the capacity development activities implemented by National Irrigation School.	1. Among irrigation technicians who have participated in capacity development activities, 350 technicians utilize knowledge and technologies acquired.	Status of achievement: Achieved (Partially continued) (Project Completion) - Of the 2,269 training participants (2,165 general technicians and 104 postgraduate level technicians), 402 reported that they were actually using the knowledge and skills acquired. (Ex-post evaluation) - ENR has monitored irrigation users after the training and incorporated the results into its annual plan. - According to SEDERI, some departments have supported farmers but others have not.
	2. In 28 model irrigation systems, irrigation farmers who have participated in capacity development activities utilize knowledge and technologies acquired.	Status of achievement: Achieved (Continued) (Project Completion) - Training participants utilized knowledge and technologies acquired, according to the promoters of 28 model irrigation systems. They used a variety of irrigation systems, including sprinkler irrigation systems. - 399 irrigation systems reported that they were actually using the knowledge and skills acquired. - More than 90% of training participants reported that they were satisfied with the training and more than 80% were satisfied with the instructor's lectures. (Ex-post evaluation)

		- In all the five responding departments, farmers who received training under the project have continued to use the technology they acquired to practice agriculture with irrigation.
(Overall goal) Agriculture with irrigation will be promoted in 7 departments of Bolivia.	1. Increase 7,200ha of irrigated areas with appropriate irrigation systems that meet survey and design and standards determined by MMAyA.	Status of achievement: Achieved. (Ex-post Evaluation) - Irrigated areas with appropriate irrigation systems that meet the standards of survey and design determined by MMAyA have increased, although data was not available.
	2. In 130 irrigation systems, irrigation farmers implement water management and maintenance system in the proper manner.	Status of achievement: Not verified. (Ex-post Evaluation) - 130 irrigation systems have been utilized, but in some systems farmers have not properly implemented water management and maintenance system. - Irrigation water quality management has been conducted under SEDERI supervision in 4 out of 5 surveyed departments.

Source: Project Completion Report and information provided by SENARI and SEDERI.

3 Efficiency

Both the project cost and period were within the plan (ratio against the plan: 72% and 100%m respectively). Outputs were produced as planned. Therefore, the project efficiency is high.

4 Sustainability

<Policy Aspect>

Promotion and diffusion of agriculture with irrigation have been prioritized in the "National Food Security Policy". The law "Irrigation Decade: 2015-2025" (2015) has aimed to revitalize irrigation systems and increase productivity for increasing the irrigated area to one million ha by 2025. ENR has been considered as one of the means for agriculture with irrigation, which has been also aligned with the Law No. 786 “Comprehensive Socio-Economic Development Plan” (2016-2020). Besides, in SENARI's “Organizational Strategic Plan” (2016-2020), capacity development of stakeholders was one of the strategic objectives.

<Institutional/Organizational Aspect>

According to SENARI, there has been no change in the organizational structure of SENARI to promote human resource development activities and farmers’ agriculture with irrigation, including ENR strengthened by the project. However, sufficient staff has not been assigned due to a lack of budgets. At the department level, SEDERI in three of the five surveyed departments has had sufficient personnel to provide technical assistance to irrigated farmers (Oruro, Potosí and La Paz). In Oruro, technicians have also been assigned to the facility developed by the "Project for the Development of the Training Facility for Irrigation in Challapata" (2017). On the other hand, there has been a lack of monitoring support to farmers (Chuquisaca), insufficient field experiments and technology dissemination to farmers (La Paz). In Chuquisaca, SEDERI has not functioned since 2015 due to a lack of budget and staff allocation. SEDERI in four of the surveyed departments has worked with ENR to conduct training for irrigation technicians and farmers per its medium-term and annual plan (Oruro, La Paz, Potosí and Cochabamba). It is noteworthy that SENARI and the Ministry of Education have worked together to issue formal certificates to training participants, which has increased their motivation.

<Technical Aspect>

According to SENARI, SENARI including ENR has established training methods and has sustained the knowledge and skills necessary to continue its capacity development activities. Among the five surveyed departments, three responded with specific examples of how SEDERI has maintained skills to promote agriculture with irrigation. For example, in Oruro, capacity building of staff has been carried out, including training on fundraising methods as well as technical matters. In La Paz, there has been staff with up-to-date knowledge and the training environment has been well-developed. In Potosí, not only farmers but also its staff members have participated in the training, with instructions from the governor. Not only full-time staff but also the fixed-term staff have participated in the training. Training manuals (PDCA, gender, etc.) prepared by the project have been utilized.

<Financial Aspect>

Budget data of SENARI and ENR were not available, but SENARI answered that the budget has not been sufficient to continue capacity development activities. Similarly, in the five surveyed departments, the budget has not been sufficient to promote agriculture with irrigation, according to SEDERI. In SEDERI of Potosí, the training unit has been funded separately from the general budget, while others have not been able to provide adequate training.

<Evaluation Result>

In the light above, there have been issues in the institutional/organizational and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The Project Purpose was achieved. Irrigation technicians and farmers in the seven target departments attended the training and have used the knowledge and skills acquired from the project. After the project completion, the irrigated area in the seven target departments has increased. Also, ENR has monitored the training participants and reflected the result in the annual plan. On the other hand, although farmers have conducted water management and facility maintenance, SEDERI’s support to farmers has not been sufficient in some departments. Regarding sustainability, SENARI has faced lack of staff and budget. At the department level, although structures have varied, staff and budget shortages have been common. However, SENARI including ENR has established the training system, collaborated with the Ministry of Education for increasing training participants’ motivation, and sustained necessary knowledge and skills to sustain capacity development activities.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to SENARI to work with the department governments to follow up on the role of SEDERI and related agencies, so

that SEDERIs could continue training irrigation technicians and farmers per ENR's plan and that irrigation facilities would be properly maintained.
- One of the reasons of the insufficient waterway rehabilitation is that the water fees have not been properly collected. As a result, water management has not been carried out in some irrigation systems. SENARI should train the staff of the department governments and municipalities on the importance of the facility operation and maintenance.
- Some farmers have acquired advanced technologies and acted as promotors. It is recommended to ENR to ask their opinions to revise the training curriculum for further development.
- The organizational setting for supporting agriculture with irrigation depends on each department, and some have made efforts that could be a model for others and produced better results. SENARI would need to share and disseminate their experiences.
- It motivated the participants that SENARI implemented the training collaborated with ministry of education and issued the certificates to them. It is recommended that such collaboration should be replicated in the other future activities.
- SENARI should continually prepare and approve the mid-term plan of ENR, and it should be authorized by MMAyA, and it is expected that the feasibility of the plan would be enhanced. It is necessary to strengthen the coordination with SEDERI for planning ERN and conduct training for irrigation technicians and farmers.
- It is recommended to SENARI to monitor the data of the number and surface of the irrigation systems and analyze their contribution to the increase in the agricultural production. Based on these results, SENARI would request the personnel and financial allocation and increase the farmers' motivation.

Lessons Learned:
- In some departments, SEDERI has not functioned as it was initially expected to. In Bolivia, the individualistic connection of the heads of organizations may change decisions or make it difficult to communicate with other organizations. It should be borne in mind that targeting multiple organizations, as in the case of the project, might pose risks related to coordination and also make it difficult to achieve and sustain the project effects. In such cases, it should be necessary to have policy support for minimizing the impact of personnel, by involving the responsible authorities not only the implementing agency from the project's inception stage.
- The project concentrated on capacity building of farmers and irrigation technicians, and the project achieved its objectives in this regard. However, in some areas, irrigation facilities have not been properly maintained because user fees have not been collected. In projects for agriculture with irrigation, support should be provided not only in the technical aspect but also in the organizational aspect such as improvement of the fee collection system, in parallel. Also, coordination of the various actors involved in the facility operation and maintenance should be conducted.
- The project succeeded in increasing the training participants' motivation by issuing the certificate in collaboration with the Ministry of Education. Even for informal training outside the education sector, it can motivate training participants by providing certificates issued by the Ministry of Education, which will also help to sustain the training effects.

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Palestine Office: August 2021

Country Name	Technical Assistance and Capacity Building Project for the Jericho Sanitation Project
Palestine	

I. Project Outline

Background	There were no proper wastewater treatment facilities in Jericho Jordan Valley. Wastewater generated in urban areas was posing a serious concern for the contamination of groundwater, which was the primary source for the water supply in Jericho Municipality. For the effective use of the limited water source, treated wastewater was expected to be utilized as a new water source. A wastewater treatment plant (WWTP) was constructed by Japan's grant aid project "Jericho Wastewater Collection, Treatment System and Reuse Project" (2011-2014). Jericho Municipality did not have sewerage facilities before and had no experience in wastewater management. This technical cooperation project was to complement the grant aid project to develop capacity of Jericho Municipality in operation and management of sewerage facilities.		
Objectives of the Project	This project aims to establish a system for the operation and management of sewerage facilities in Jericho Municipality through the establishment of the departments for the operation and management of sewerage facilities and development of a management plan; capacity development in operation and management of WWTP; capacity development in maintenance of sewer networks; and capacity development in financial management of sewerage facilities, thereby contributing to their operation and management under sound financial conditions. 1. Overall Goal: Sewerage facilities in Jericho Municipality are operated and managed appropriately under sound financial conditions. 2. Project Purpose: System for operation and management of sewerage works in Jericho Municipality is established.		
Activities of the Project	1. Project site: Jericho Municipality 2. Main activities: 1) To establish a department for the operation and management of sewerage facilities in Jericho Municipality, to develop by-law for users of the sewerage facilities; and to develop a management plan. 2) To train staff in operation and management of WWTP; to develop an effluent regulation; and to promote utilization of treated wastewater and sludge for agriculture; etc. 3) To train staff in maintenance of sewer networks; to connect private sewers with public sewers. 4) To train staff in financial management of sewerage facilities; to establish user charge collection system; to develop a financial plan. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 12 persons 2) Trainees received: 11 persons 3) Equipment: Electric panel for pump, distribution pipe for treated effluent, oxygen & hydrogen sulphide meter, etc. 4) Local cost Palestinian Side 1) Staff allocated: 14 persons 2) Office, electricity, water, operation-maintenance cost for wastewater treatment plant, etc.		
Project Period	(ex-ante) May 2012-March 2016 (actual) December 2012-March 2018	Project Cost	(ex-ante) 394 million yen (actual) 549 million yen
Implementing Agency	Jericho Municipality, Palestine Water Authority (PWA)		
Cooperation Agency in Japan	NJS Consultants Co., Ltd., Yokohama Water Co., Ltd.		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

- Achievement of Project Purpose Indicator 4 "Sewerage works are managed based on a Strategic Business Plan" is measured considering the achievement of the targets of the Business Plan; i.e., household connections, water bill collection, reuse of treated wastewater and use of sludge. They were among Output indicators, therefore the achievement at project completion is compared to the target values of these Outputs. To measure the continuous situation at the time of ex-post evaluation, the values are compared to the target values (in 2020) of the Business Plan.

1 Relevance

<Consistency with the Development Policy of Palestine at the Time of Ex-Ante Evaluation >

This project was consistent with Palestine's National Sector Strategy for Water and Wastewater (2011-2013). One of its priority areas was wastewater management including construction of wastewater treatment plants and reuse of treated wastewater for the improvement of hygiene and protection of water resources.

<Consistency with the Development Needs of Palestine at the Time of Ex-Ante Evaluation >

This project was consistent with the needs for capacity development in wastewater management as mentioned in "Background" above.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

Promotion of civilian stability by provision of basic infrastructure, including sewerage systems, was one of the priority areas of Japan's

ODA policy for Palestine. Reuse of wastewater for agricultural use was also relevant to the sustainable economic growth, which was another priority area.[1]

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the Time of Project Completion>

The Project Purpose, "System for O&M of sewerage works in Jericho Municipality is established" was partially achieved at the time of project completion. Water and Sanitation Department in Jericho Municipality was officially established (Indicator 1), the regulation for users of sewerage facilities was enforced (without penalty clause) (Indicator 2), and operation and maintenance of sewerage facilities was conducted based on manuals and plans developed under the project (Indicator 3). Sewerage works were managed based on the Strategic Business Plan (Indicator 4), but some of the targets of the Plan (rate of water tariff collection and household connections) were not achieved. As these targets of the Plan are important indicators for the sound management, Project Purpose was judged to have been "partially achieved" at the Time of Project Completion, as was in the Terminal Evaluation.

<Continuation Status of Project Effects at the Time of Ex-Post Evaluation>

The project effects have been partially continued till the time of ex-post evaluation. Water and Sanitation Department is functioning, the status of the regulation for users of sewerage facilities is the same, and operation and maintenance of sewerage facilities is conducted based on manuals and plans. The Strategic Business Plan is expected to be updated. Rate of water tariff collection has not achieved the target values of the Plan (2020) mainly due to the absence of penalty against non-payment. A new by law called "Tariff System for Water and Sanitation No. (4) for the year 2021" including penalties will be enforced soon.

<Status of Achievement of the Overall Goal at the Time of Ex-Post Evaluation>

The Overall Goal, "Sewerage facilities in Jericho Municipality are operated and managed appropriately under sound financial conditions", has been achieved in terms of indicators. Annual income exceeds annual expenditure although by a small margin (Indicator 1) and effluent from wastewater treatment plant is below effluent standard (Indicator 2). However, water tariff collection rate is low mainly due to the absence of penalty and the municipality does not save the balance for the O&M or future investment in wastewater services. With this, it is hard to say at this moment that the service is financially viable and hence the Overall Goal "Sewerage facilities in Jericho Municipality are operated and managed appropriately under sound financial conditions" has been partially achieved.

<Other Impacts at the Time of Ex-Post Evaluation>

No negative impacts have been observed.

The implementing agencies pointed out positive impacts as follows:

- Groundwater pollution has been mitigated by treating the wastewater in the region where there was no wastewater treatment system before.
- WWTP accepts visitors from other municipalities and universities and shares technical knowledge on wastewater treatment.
- Water reuse for agriculture in the area where water is scarce generates income for the Municipality.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) System for O&M of sewerage works in Jericho Municipality is established.	Indicator 1 Water and Sewerage Department is officially approved.	Status of the Achievement (Status of the Continuation): Achieved (Continued) (Project Completion) (Ex-post evaluation) The department (Water and Sanitation Department) was established in June 2013 and keeps functioning.	source：Terminal evaluation report and information from Jericho Municipality.
	Indicator 2 The by-law for users of sewerage facilities is enforced.	Status of the Achievement (Status of the Continuation): Partially achieved (Partially continued) (Project Completion) The Cabinet Resolution no. 16/2013 on "the House and Facilities' Connection System to the Public Sewage Network", which has a similar scope as the "draft by-law" for the Municipality of Jericho supported by the Project was enforced. The draft penalty clause was prepared, but was not approved by PWA and Ministry of Local Government (MoLG) as of February 2018. The Resolution was authorized as a law and was made public on the website of MoLG on January 28, 2014." This resolution is applied to all municipalities without exception. (Ex-post evaluation) Jericho Municipality follows the resolution above. The tariff collection for water and wastewater was merged. There is a new by law called "Tariff System for Water and Sanitation No. (4) for the year 2021" to be enforced soon, the penalties are mentioned there.	source：Terminal evaluation report, Project completion report Information from Municipality of Jericho, PWA.
	Indicator 3 Operation and Maintenance	Status of the Achievement (Status of the Continuation): Achieved (Continued) (Project Completion)	source：Terminal evaluation report,

[1] ODA country data collection (2012)

	of sewerage facilities is conducted based on manuals and plans.	The manuals of security control, operation & maintenance and troubleshooting for sewerage facility were prepared in 2014. The daily operation was conducted according to the manuals. (Ex-Post Evaluation) Manuals are properly and regularly used.	Project completion report, Interview of WWTP (Manager, Technicians, engineers, Lab manager - water quality & operators).
	Indicator 4 Sewerage works are managed based on a Strategic Business Plan.	Status of the Achievement (Status of the Continuation): Partially achieved (Partially continued) (Project Completion) (Ex-Post Evaluation) The Strategic Business Plan was developed in 2014 and revised in 2015 and 2016 (for 2016-2020). It has not been updated. Since March 2020, the Municipality's function is affected by COVID-19. The Municipality sees updating the business plan is their priority and looks to get technical support from the Japanese expert who will be dispatched in the second half of 2021. The status of important targets of the Strategic Business Plan are as follows: <u>Connection to sewer system</u> In 2018 (Project completion), 1,824 households were connected. As of April 2021, 2,114 households were connected. The connection is behind the schedule as the target as of end 2020 was set to be 2,733 in the business plan. <u>Sewer bill collection</u> Collection rate in 2018 (Project completion) was 53%. The 'Strategic Business Plan' aimed at 70% collection rate of 'sewer tariff' in 2020. The actual collection rate in 2020 was 36%. It should be noted that the water bill and sewer bill are combined and collected together. The low rates of sewer bill collection need to be addressed in conjunction with the water bill collection. Main users who do not pay the bill are reported to be the national government institutions. The military and security services' unpaid water tariff was 82% of total unpaid tariff in Dec 2017. As of today, the military and security services remain the top contributors of unpaid tariff. Users are taking advantage of the absence of strict penalty measures against users who do not pay water tariff. The collection rate is further deteriorated due to COVID-19. PWA does not have power to enforce the payment to the military and security services while they prepare reconcile file to be submitted to the National Reconciliation Committee. For customer level, introduction of pre-paid water meters and awareness efforts are supported by PWA. The Municipality has already started to replace the water meters with 'pre-paid water meters', which can improve the water and sewer bill collection. The Municipality is also looking at a) strengthening the billing system and increase of the number of collection service staff; b) strengthening policing of water thefts; c) legal actions against users who do not pay. <u>Reuse of treated wastewater</u> The percentage of reuse can be considered 100%, taking the figure from summer months when the demand peaks (100% in summer and 64% in winter (average 2018-2021)). The reuse rate in 2018 (Project completion) was 73%. Jericho Municipality signs an annual contract with each farmer who purchases the treated water and the farmer pays upfront. The Municipality is responsible for providing sufficient quantity of water during the summer months to all contracted farmers when the demand is high. In summer, 100% of water is used. In winter it is not possible to use all water as the demand is low, and the size of the pond to store the treated water is limited so the water needs to be discharged in wadi (dry riverbed). There are more farmers who are interested in purchasing the water but it is not possible to contract with more farmers unless the wastewater inflow increases. <u>Use of sludge</u> The sludge from the WWTP has not been used for agriculture. The Ministry of Agriculture has standards and regulations on sludge reuse, guided by the standards issued by Palestinian Standard Institute. Nonetheless, there is a safety concern over the reuse of sludge for agriculture. Jericho Municipality is keen to explore the possibility of reuse. Therefore, JICA plans to dispatch an expert of sludge reuse, who will support Jericho Municipality to conduct an experiment on sludge reuse on their own premises so that relevant data can be generated for	source：Project completion report, Jericho Municipality Questionnaire and Interview, "Monthly Report for Sewage Network Maintenance & Household Connection Report, Strategic Plan updated in July 2016. collection fee statement (financial department), Strategic Plan updated in July 2016.

<table>
<tr><td></td><td></td><td>further discussion and examination by MOA.</td><td></td></tr>
<tr><td>(Overall Goal)
Sewerage facilities in Jericho Municipality are operated and managed appropriately under sound financial conditions.</td><td>Indicator 1
Annual income exceeds annual expenditure</td><td>(Ex-Post Evaluation) Achieved
The income exceeds expenditure as the number of sewerage service users is increasing. The income is from the sewer service fee (which is collected with water tariff), connection service fee, and the sales of the treated water. The municipality does not save the balance from wastewater service for the O&M or future investment in wastewater services. The balance is used to meet other needs of the Municipality. The maintenance of the WWTP had not been costly as the facility was still new and was well maintained by the trained staff, however, in coming years, the Municipality will require to replace damaged equipment due to normal wear and tear.
<table>
<tr><td colspan="5">Income and expenditure of wastewater service (Unit: ILS)</td></tr>
<tr><td></td><td>2018
(1 year)</td><td>2019
(1 year)</td><td>2020
(1 year)</td><td>2021 (as of April)</td></tr>
<tr><td>Income</td><td>877,515</td><td>1,110,903</td><td>1,182,306</td><td>458,895</td></tr>
<tr><td>Expenditure</td><td>1,055,288</td><td>1,370,641</td><td>994,126</td><td>148,880</td></tr>
<tr><td>Balance</td><td>(177,773)</td><td>(259,738)</td><td>188,180</td><td>310,015</td></tr>
</table></td><td>source : Interview & Questionnaire with Jericho Municipality, Strategic Business Plan July 2016 Table 8.15 ‘Repair Cost’.</td></tr>
<tr><td></td><td>Indicator 2
Effluent from wastewater treatment plant become below effluent standard.</td><td>(Ex-Post Evaluation) Achieved
The quality of treated wastewater meets the standard.
<table>
<tr><td>Standards of Treated WW</td><td>Accepted Standard</td><td>2018 (April)</td><td>2019 (April)</td><td>2020 (April)</td><td>2021 (April)</td></tr>
<tr><td>Biochemical Oxygen Demand: BOD (mg/l)</td><td>20</td><td>5</td><td>4</td><td>6</td><td>5</td></tr>
<tr><td>Chemical Oxygen Demand: COD (mg/l)</td><td>50</td><td>18</td><td>15</td><td>19</td><td>17</td></tr>
<tr><td>Temp.(℃)</td><td>35</td><td>24</td><td>25</td><td>23</td><td>26</td></tr>
<tr><td>pH</td><td>6-9</td><td>8.1</td><td>8</td><td>8</td><td>8.2</td></tr>
<tr><td>Dissolved Oxygen: DO (mg/l)</td><td>1<</td><td>5.5</td><td>5.8</td><td>5.1</td><td>5.4</td></tr>
<tr><td>Turbidity (Nephelometric Turbidity Unit: NTU)</td><td>10</td><td>2.6</td><td>2.3</td><td>2</td><td>2.5</td></tr>
<tr><td>Electric conductivity: EC (micro Siemens/cm)</td><td>n/a</td><td>1,650</td><td>1,700</td><td>1,720</td><td>1,680</td></tr>
<tr><td>Total Dissolved Solids: TDS (mg/l)</td><td>1200</td><td>750</td><td>820</td><td>800</td><td>780</td></tr>
<tr><td>Total Nitrogen: TN (mg/l)</td><td>30</td><td>1.2</td><td>2</td><td>1.8</td><td>2.1</td></tr>
<tr><td>Total Phosphorus: TP (mg/l)</td><td>n/a</td><td>7</td><td>5</td><td>8</td><td>9</td></tr>
<tr><td>Total suspended solids: TSS (mg/l)</td><td>30</td><td>4</td><td>4</td><td>6</td><td>4</td></tr>
<tr><td>Fecal coliforms: FC</td><td>n/a</td><td>*</td><td>*</td><td>*</td><td>*</td></tr>
</table>
* No record / Not required as chlorine is added to the effluent.</td><td>source : Interview with Jericho Municipality, Project Completion Report.</td></tr>
</table>

3 Efficiency

Both the project cost and period exceeded the plan (ratio against the plan: 139% and 136% respectively). The project period was extended twice (1st extension in September 2016 (10 months extension until July 2017) and 2nd extension in July 2017 (8 months extension until March 2018)) because some output indicators (house connections, user fee collection rate, financial plan, income) were not achieved by the original (and the first extended) end dates of the project. There was no change in the planned outputs.
Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>
Palestine has the “National Water Sector Strategic Plan and Action Plan (2017-2022)” including “Strategic Objective for Wastewater Sector: Improving wastewater services and structure (collection, treatment, and reuse).” Wastewater treatment/management and reuse continue to be a priority of Palestinian Authority and PWA. Absence of penalty clause in the Cabinet Resolution on “the House and Facilities’ Connection System to the Public Sewage Network” is the main reason for low tariff collection rate. A new by law called “Tariff System for Water and Sanitation No. (4) for the year 2021” including penalties will be enforced soon.
<Institutional/Organizational Aspect>
The Water and Sanitation Department of Jericho Municipality was restructured in 2021 to achieve higher efficiency with limited number of staff. It has three sections: Domestic Water and Sanitation, Subscribers Services, Irrigation Water. While Jericho Municipality considers that they are understaffed, the facilities are operated without major problems. Additional staff would be necessary to respond to the increase of wastewater inflow and ensure sustainability of wastewater services.
<Technical Aspect>
During the project, all eight staff passed technical examination for O&M of the WWTP and all five staff passed technical examination for sewer maintenance. The staff sustain skills by self-learning, training by other staff, and participation in workshops. The Municipality

existing staff has the technical capacity to train new staff when assigned. Operation manuals are utilized in daily operation and guidance and lab test manual is utilized for assessment of inflow and outflow water quality. Some update in the manual was done by the staff. The quality of treated water of WWTP meets the standards.

<Financial Aspect>

The revenue of the Municipality on the wastewater treatment is from wastewater user tariff, connection fee, and sale of the reuse water, and it is operating with a surplus. User tariff collection rate is low due to absence of penalty clause. The surplus is used for other municipality needs and not saved for future needs of the wastewater services such as major repairs. There will be an evaluation on the strategic business plan and updating at the end of 2021.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional/organizational and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose, "System for O&M of sewerage works in Jericho Municipality is established", at the time of project completion, and the achievement status is more or less the same at the time of ex-post evaluation. The Overall Goal, "Sewerage facilities in Jericho Municipality are operated and managed appropriately under sound financial conditions", has been partially achieved as the service is not financially viable because water tariff collection rate is low mainly due to the absence of penalty while annual income exceeds annual expenditure by a small margin. Although the sewerage facilities have been operated and maintained based on manuals developed under this project and the staff retain related knowledge and skills, the municipality has not saved the balance for the O&M or future investment in wastewater services. The current level of staffing is just good enough to carry on the day-to-day operations to maintain the status quo, and falls short of implementing additional efforts to address persisting challenge of financial sustainability. As for the efficiency, both the project cost and period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

Jericho Municipality

1. The leadership should make a decision to keep aside the revenue from wastewater service for future O&M needs.
2. The Finance Department and the Water and Sanitation Department should review and update the business plan which will allow the Municipality to have a clearer strategy/target to improve the sustainability of the wastewater service.
3. As part of the effort to update the business plan, the Water and Sanitation Department in coordination with relevant departments should make a concrete plan and targets to reduce Non-Revenue Water (NRW) to enhance the sustainability of wastewater service. One of the actions could be to reactivate the effort to introduce penalty for users who do not pay for the services. It is recommended that the Department consult MoLG and relevant departments in the Municipality on the way forward. Impact of penalty on vulnerable people and their protection should be considered.
4. As part of the effort to update the business plan, the Water and Sanitation Department should work on a plan to expand the sewer network so that remaining unserved areas will have access to sewer service. This will also help mitigate negative impact on environment/ increase reuse of wastewater.
5. In order to implement the plans discussed in 3 and 4, the Water and Sanitation Department should make further effort to mobilize funds.
6. The Water and Sanitation Department should continue examination of sludge use.

PWA

1. PWA should continue advocating for ringfencing of water and wastewater revenues (i.e., separate the revenue from water services from the rest), and take necessary actions to implement this strategy.

2-1. PWA should continue to work with the Ministry of Finance, Ministry of Local Government, and if necessary, with Prime Minister Office to resolve the issue of non-compliance of PA institutions with the obligation to pay water tariffs.

2-2. PWA should continue to provide technical guidance for Jericho Municipality to reduce NRW

3. PWA should advocate for the need for the expansion of sewer network and its reuse program in Jericho among international donors and lead the fund-raising effort at the national level (while Jericho should make effort on its own).

JICA

JICA has an ongoing technical cooperation project with Jenin Municipality to improve the management of the water service with emphasis on the reduction of NRW. Jenin Municipality has been successful in this effort and notably in cultivating citizens' support for introducing Prepaid Water Meters. JICA could liaise between the two municipalities so that they can share experiences.

Lessons Learned for JICA:

- It had been taking a longer time than anticipated to connect houses with the sewer network. Facilitated by JICA, PWA received support from the Representative Office of Japan (RoJ) to implement house connections, finish manholes and procure pre-paid water meters. Coordination between JICA and RoJ contributed to enhancing the impact and sustainability of the project outcomes. Both JICA and RoJ were well aware of the challenges facing related to WWTP supported by the Government of Japan. In close communication and coordination, both were ready for the joint effort to increase the utilization of WWTP. The collaboration was especially useful when JICA was facing budget constraints.

Treated water is kept in the pool and is supplied to dates farmers, who installed pumps along the pool.

A garden is available to experiment sludge reuse

Well maintained facility by the staff trained by the Project

Name of country	**Project for Sustainable Management of Coastal Fisheries Resources (Project 2005-2010)**
Republic of Tunisia	**Project for Co-Management of Coastal Fisheries in the Gulf of Gabes (Project 2012-2016)**

I +Project summary

Background of the projects	Coastal water of southern Tunisia, especially the Gulf of Gabes, is known not only as good fishing grounds but also as important nursery grounds of fish juveniles in the Mediterranean Sea where seagrass bed develops well. However, recently overfishing and destruction of seagrass bed have been caused by illegal fishing, and consequently catch of demersal fish has dramatically decreased in the area. On the other hand, a cooperation system among fisher's organization, local people and the governmental organizations was insufficient and actions for conservation of environment of fishing grounds were ineffective. In addition, the restrictive regulations were not compiled due to lack of measures to supplement the fishers' income against the fishing control.
Objectives of the project	[Project 2005-2010] Through conservation and rehabilitation of seagrass bed being demonstrated with participation of fishers in the selected project sites, experimental activities of stock enhancement being promoted, the plan to diversify income source of fishers being elaborated on the basis of project activities, technical exchanges with neighboring countries being promoted to practice the coastal fisheries resource management, the project aimed at development of models of coastal fisheries resources management for sustainable use of demersal fish in the selected project sites, with participation of fishing communities, thereby contributing to adaption of the models of coastal fisheries resource management for sustainable use of demersal fish around the southern coastal zone of Tunisia, with participation of fishing communities. 1. Overall goal: Models of coastal fisheries resource management for sustainable use of demersal fish are adapted around the southern coastal zone of Tunisia with participation fishing communities. 2. Project Purpose: Models of coastal fisheries resource management for sustainable use of demersal fish are developed in the selected project sites, with participation of fishing communities.
	[Project 2012-2016] Through enhancement of capacity of stakeholders to implement fisheries co-management, formulation of coastal fishery resource management plan (CFRMP) based on the information on fishery resources/eco-system, fishing operation and socio-economic aspects of the coastal communities, and verification of viability of CFRMP in the target areas, the project aimed at practice of co-management of coastal fishery resources in the target areas of the Gulf of Gabes, thereby contributing to extension of the practice of the co-management of coastal fishery resources throughout the Gulf of Gabes. 1. Overall Goal: The practice of co-management of coastal fishery resources is extended throughout the Gulf of Gabes. 2. Project Purpose: Co-management of coastal fishery resources is practiced in the target areas of the Gulf of Gabes.
Activities of the Project	1. Project sites: [Project 2005-2010] Mahares, Zarat, Ajim, Kraten and Ataya (Kerkenah Island) [Project 2012-2016] Zabboussa, Skhira (Sfax governorate), Ghannouch, Metouia, Zarat (Gabes governorate), and Hassi Jerbi, Zarzis (Medenine governorate) in the Gulf of Gabes 2. Main activities: [Project2005-2010] i) Demonstration of conservation and rehabilitation of seagrass bed in the selected project site, ii) Promotion of experimental activities of stock enhancement, iii) Elaboration of a plan to diversify income source of fishes based on project activities. [Project 2012-2016] i) Establishment of Local CFRMP Committees and implementation of guidelines for coastal fisheries co-management, ii) Elaboration of draft of CFRMP in each pilot site, iii) Implementation of drafted CFRMP and extensions of CFRMPs in the target areas. 3. Inputs Japanese side [Project 2005-2010] 1) Experts:12 persons 2) Trainees received: 10 persons 3) Equipment: pH meter, electric current meter, depth meter, water quality checker, portable GPS, microscope, digital camera, video camera, etc. 4) Operation cost: Cost for consumable, installation of facilities and equipment of INSTM [Project 2012-2016] 1) Experts: 12 persons Tunisian side [Project 2005-2010] 1) Staff allocated: 22 persons 2) Land and facilities: office space and others 3) Operation cost: Cost for transportation, driver, operation cost of vehicle, cost for seminars, utility costs, etc. [Project 2012-2016] 1) Staff allocated: 50 persons

	2) Trainees received: 24 persons 3) Training in the third country: 15 persons 4) Equipment: Vehicles, underwater camera, GIS software, Survey devices (e.g, data logger, etc.), etc. 5) Operation cost: Seminar cost, transportation cost, vehicle operation cost, etc.		2) Land and facilities: office space and 150 artificial reeves 3) Operation cost: Cost for transportation, utility costs, etc.
Project Period	[Project 2005-2010] June 2005 – June 2010 [Project 2012-2016] October. 2012 – October. 2016	Project Cost	[Project 2005-2010] (ex-ante) 350 million yen; (actual) 516 million yen [Project 2012-2016] (ex-ante) 400 million yen; (actual) 440 million yen
Implementing Agency	[Project 2005-2010] Direction General of Fishery and Aquaculture (DGPA), Ministry of Agriculture, Hydraulic Resources and Fishery, Agricultural Extension and Training Agency (AVFA), National Institute of Marine Sciences and Technologies (INSTM), Regional Branch for Agricultural Development (CRDA), Ports Fishing and Facilities Agency (APIP), Inter-professional Organization of the Fishing Products (GIPP), Tunisian Agriculture and Fisheries Union (UTAP) [Project 2012-2016] DGPA		
Cooperation Agency in Japan	[Project 2005-2010] and [Project 2012-2016] Overseas Agro-Fisheries Consultants Co., Ltd. (OAFIC)		

II. Result of the Evaluation

1 Relevance

<Consistency with development plan of Tunisian government at the time of ex-ante evaluation and project completion>

The project was consistent with the national development policies of Tunisia such as "The 10th Five-Year National Economic Development Plan (2002-2006)" and "The Socio-Economic Development Strategy (2012-2016)" aiming to equilibrium and sustainable development of fishery resources.

<Consistency with development needs in Tunisia at the time of ex-ante evaluation and project completion>

The project was consistent with development needs of Tunisia such as to establish a co-management system of coastal fishery resources in the Gulf of Gabes with the collaboration of fisher's organization, local people and the governmental organizations for sustainable fishery resources development in Tunisia.

<Consistency with Japanese aid policies at the time of ex-ante evaluation>

The project was consistent with the Japan's ODA policy for the Republic of Tunisia at the time of ex-ante evaluation of Project 2005-2010[1] focusing on the development and promotion of agriculture and fishery as one of the five priority areas, as well as the Japan's ODA policy for the Republic of Tunisia at the time of ex-ante evaluation of Project 2012-2016[2] focusing on the employment promotion and industry development as one of priority areas in which support for agriculture and fishery sectors was addressed.

<Evaluation Result>

In the light of above, the relevance of this project is high.

2 Effectiveness/ Impact

[Project 2005-2010]

<Achievement status of Project Purpose at the time of completion of the project>

The Project Purpose was achieved by the time of project completion. Fifty-seven workshops and seminar for co-management between fisher's organizations, local communities and governmental bodies to jointly plan, implement and evaluate the coastal fisheries resource management were organized by the project completion (Indicator 1). Also, some improvement of fishers' activities in self-disciplined manner for rehabilitation of seagrass bed and reservation of coastal fisheries resource were identified in 4 out of 5 project sites (Indicator 2).

<Continuation status of project effects at the time of ex-post evaluation>

The project effects have been continued at the time of ex-post evaluation. More than 10 regular co-management meetings have been held with the participation of fishing organizations, local communities and governmental bodies to jointly plan, implement and evaluate the management of coastal fisheries resources. 4 out of 5 project sites, which are Mahares, Ataya, Zarrat, Ajim, adopted the national program for the management of the Gulf of Gabes by artificial reefs. In this regard, however, the installation of artificial reefs sometimes met with resistance from certain fisheries' groups because the levels of understanding of co-management among stakeholders were different. On the other hand, planting seaweed operation for the rehabilitation of seagrass bed and reservation of coastal fisheries resource did not give significant results.

<Status of achievement of Overall Goal at the time of ex-post evaluation>

The Overall Goal was partially achieved at the time of Ex-post evaluation. The number of fish landing sites where the coastal fishery resource management is practiced has considerably increased from 5 project sites to 8 sites (Indicator 1). On the other hand, there is a concern on reduction in the number of fishers in Ghannouch and Ajim due to increasing migration of young people. Catch per Unit Effort (CPUE) has increased in some sites but production has remained stationery in other sites (Indicator 2). This could be linked to the artificial reef impacts as the regeneration of the marine ecosystem and the return of marine species were observed on artificial reef areas. After the project completion, Tunisia continuously held seminars for technical exchanges with neighboring countries particularly Algeria, within the

[1] ODA Databook 2005, Ministry of Foreign Affairs, Japan.

[2] ODA Databook 2012, Ministry of Foreign Affairs, Japan.

context of regional projects such as Blue Hope Technical Cooperation Project by the Food and Agriculture Organization (FAO) and other technical meetings with the General Fisheries Commission for the Mediterranean (GFCM) (Indicator 3).
<Other impacts confirmed at ex-post evaluation>
There have been some positive impacts observed at the time of ex-post evaluation. This project contributed on identifying a large quantity of a new invasive species the scientific name blue crab Portunus segnis by providing expertise in fishing techniques, organizing cooking shows for the preparation of blue crab dishes and identifying tools for the valorization of this new species. No negative impact on natural environment was confirmed.

[Project 2012-2016]
<Achievement status of the Project Purpose at the time of completion of the project>
The project purpose was achieved by the time of project completion. Through dozens of meetings/workshops by participatory approach philosophy, the project almost satisfactorily elaborated CFRMP at 6 out of 7 project sites and it was confirmed that the ratio of CFRMP participating boats/boat owners exceeded 50% at each site (Indicator 1). Also, the project completed one turn of its management cycle of CFRMP according to the implementation guideline at all 7 project sites (Indicator 2).
<Continuation status of the project effects at the time of ex-post evaluation>
The project effects have been continued at the time of ex-post evaluation. The boat owners, captains and fishers of the registered fishing units participated in the CFRMP for all target areas, especially in Ghannouch, and Ajim, (the percentage differs from one region to another but there was a strong mobilization for Ghannouch and Ajim regions, up to 100% of fishers). Also, all regional government agencies have supported the management cycle of CFRMP according to the implementation guidelines.
<Achievement status of Overall Goal at the time of ex-post evaluation>
The Overall Goal was partially achieved at the time of ex-post evaluation. Particularly due to lack of extension workers, difficulties in identifying leading people, absence of professional organizations (groups, associations), and lack of human resources and logistics especially that some isolated sites are difficult to access, the CFRMP was only implemented at 11 of the 21 fishing ports/landing sites in the Gulf of Gabes with reference to implementation guidelines by the end of 2020, therefore, the target value was not fully met (Indicator 1). The 60 to 100% of the owners/captains of registered coastal fishing boats participated in CFMP at least 10 ports/landing sites in the Gulf of Gabes by the end of 2020. This result can be explained by the continuous self-help efforts made by all the actors involved in the co-management of coastal fisheries (Administration, Research units Extension services and NGOs). Technical cooperation projects with various donors such as the United Nations Development Program (UNDP), FAO, the European Union (EU), and the World Wild Foundation for Nature (WWF) have provided a strong participatory approach that strengthened the percepts of coastal fisheries co-management. For example, the environmental conservation project was implemented in the governorate of Gabes based on the outcome of the project, and its target area includes the one of the project sites of this project. From this point, it is considered that the project played a role of primming water for other donors' assistance to some extent (Indicator 2).
<Other impact confirmed at the Ex-post evaluation>
There have been some positive impacts observed at the time of ex-post evaluation. At the time of ex-post evaluation, an exchange of know-how between the beneficiaries in Tunisia and Senegal was confirmed through a collaboration with JICA's technical cooperation project in Senegal "Project on Reinforcement of Capacity in Organization and Training of the Professional Leaders in the Field of Artisanal Fishery: Co-management of Artisanal Fisheries in Senegal (COGEPAS)". No negative impact on natural environment was confirmed.
<Evaluation Result>
From above, the effectiveness and impact of the two project is high.

Achievement of Project purpose and Overall goal

Target	Indicators	Achievement
[Project 2005-2010]		
(Project Purpose) Models of coastal fisheries resource management for sustainable use of demersal fish are developed in the selected project sites, with participation of fishing communities.	(Indicator 1) Meetings are regularly held for co-management between fisher's organizations, local communities and governmental bodies to jointly plan, implement and evaluate the coastal fisheries resource management.	Status of achievement: Achieved (Continued) (At the time of project completion) • Fifty-seven workshops and seminars were held with participation of fishers organizations, local communities and governmental bodies. (At the time of ex-post evaluation) • More than ten (10) regular co-management meetings have been held with the participation of fishing organizations, local communities and governmental bodies to jointly plan, implement and evaluate the management of coastal fisheries resources.
	(Indicator 2) Fishers act in self-disciplined manner for rehabilitation of seagrass bed and reservation of coastal fisheries resource. Note: To be measured by whether fishing activities (including the manner of use of fishery grounds) are self-controlled around the artificial reefs functioning as nursery areas, whether small	Status of achievement: Achieved (Continued) (At the time of project completion) • Some changes of fishers' activities were identified in 4 out of 5 project sites. Some fishers in Ajim changed their fishing method from trammel net to hook and line fishing in the areas around the installed artificial reefs (Ars). Some women started to release caught small size clam. (At the time of ex-post evaluation) • 4 out of 5 project sites, which are Mahares, Ataya, Zarrat, Ajim, adopted the national program for the management of the Gulf of Gabes by artificial reefs. • However, planting seaweed operation for the rehabilitation of seagrass bed and reservation of coastal fisheries resource did not give significant results.

	juveniles are released when they are caught, etc. Achievement level is to be evaluated by the number of waters with changes of fishers' behaviors.	
(Overall Goal) Models of coastal fisheries resource management for sustainable use of demersal fish are adapted around the southern coastal zone of Tunisia, with participation of fishing communities.	(Indicator 1) The number of fish landing sites "fishing ports" where fishers practice coastal fisheries resource management has doubled in the southern coastal zone of Tunisia (from 5 to 10 sites).	Status of achievement: Partially Achieved (At the time of ex-post evaluation) • The number of fish landing sites where the coastal fishery resource management is practiced has increased from 5 project sites to 8 sites supported by several development projects financed by donors. • This is partially due to the reduction in the number of fishers in the project area influenced by increasing migration of young people.
	(Indicator 2) Catch per Unit Effort (CPUE) is increased at the fish landing sites where the comprehensive coastal fisheries resource management is practiced.	Status of achievement: Partially Achieved (At the time of ex-post evaluation) • CPUE increased in some areas and production has remained stationary in other areas.
	(Indicator 3) Tunisia prepares plans to continuously hold seminars for technical exchanges with neighbouring countries.	Status of achievement: Achieved (At the time of ex-post evaluation) • Tunisia continuously held seminars with neighboring countries, particularly with Algeria.
[Project 2012-2016]		
(Project Purpose) Co-management of coastal fishery resources is practiced in the target areas of the Gulf of Gabes.	(Indicator 1) At the end of the Project, 50% of the owners/captains of the registered coastal fishing boats participate in the CFRMP for each Target Area.	Status of achievement: Achieved (Continued) (At the time of project completion) • Through dozens of meetings/workshops by participatory approach philosophy, the project almost satisfactorily elaborated CFRMP at 6 out of 7 project sites and it was confirmed that the ratio of CFRMP participating boats/boat owners exceeded 50% at each site. (At the time of ex-post evaluation) • Boat owners, captains and fishers of the registered fishing units participated in the CFRMP in all target areas. The percentage differs from one region to another but there was a strong mobilization for Ghannouch and Ajim regions, up to 100% of fishers.
	(Indicator 2) Regional government agencies are able to support management cycle (plan/implement/evaluate/ revise) of CFRMP according to the implementation guidelines.	Status of achievement: Achieved (Continued) (At the time of project completion) • The project completed one turn of its management cycle of CFRMP according to the implementation guideline at all 7 project sites. (At the time of ex-post evaluation) • All regional government agencies have supported the management cycle of CFRMP according to the implementation guidelines.
(Overall Goal) The practice of co-management of coastal fishery resources is extended throughout the Gulf of Gabes.	(Indicator 1) CFRMP is newly implemented with reference to the implantation guidelines at least in 15 out of 21, coastal fishing ports/landing sites throughout the Gulf of Gabes by the end of 2020.	Status of achievement: Partially achieved (At the time of ex-post evaluation) • Although, the CFRMP was implemented at 11 of the 21 fishing ports/landing sites in the Gulf of Gabes with reference to implementation guidelines by the end of 2020, the target was not fully achieved. The ports/landing sites where the introduction of CFRMP is delayed observed the issues such as lack of extension workers, difficulties in identifying leading people, absence of professional organizations (groups, associations), and lack of human resources and logistics especially that some isolated sites are difficult to access.
	(Indicator 2) At least 70% of the owners/ captains of the registered coastal fishing boats participate in the CFRMP at least 10 coastal fishing ports/landing sites throughout the Gulf of Gabes by the end or 2020.	Status of achievement: Achieved (At the time of ex-post evaluation) • A percentage ranged from 60 to 100% of the owners/captains of registered coastal fishing boats participated in the CFRMP at least 10 ports/landing sites in the Gulf of Gabes by the end of 2020. • This result can be explained by the efforts made by all the actors involved in the co-management of coastal fisheries (Administration, Research units Extension services and NGOs). Technical cooperation projects with various donors (UNDP/FAO/EU/WWF etc.) have provided a strong participatory approach that strengthened the percepts of coastal fisheries resource co-management. • For example, the environmental conservation project was implemented in the

		governorate of Gabes based on the outcome of the project, and its target area includes the one of the project sites of this project.

Source: Terminal evaluation report, the project related documents, the response of questionnaire and interview with the implementing agencies.

3 Efficiency

For Project 2005-2010, although the project cost exceeded the plan (ratio against the plan: 148%) due to the increase in numbers of experts to respond the needs identified by the Mid-term review which are the rehabilitation of seagrass bed as well as the institutional capacity for the management of finishing ground, the project period was as planned (ratio against the plan: 100%). For Project 2012-2016, although the project cost exceeded the plan (ratio against plan: 110%) due to additional activities such as (i) collection of fishers' opinions to design new co-management activities, and (ii) activities for preventing fishers' damages caused by abnormal increase of blue crabs in the Gulf of Gabes as well as effective utilization of this marine resource, the project period was as planned (ratio against plan: 100%). Outputs of both projects were achieved as planned.

From the above, the efficiency of the overall projects is fair.

4 Sustainability

<Policy Aspect>

The National Program of Protection of the Sensitive Areas of the Gulf of Gabes by the Artificial Reef has been launched in 2016 following the implementation of Project 2005-2010 and Project 2012-2016. This national program aims to expand the areas of artificial reefs wider than the project target area

<Institutional/Organizational Aspect>

Three local co-management committees (Ajim, Ghannouch and Skhira) continue to work and hold technical and consultation meetings (particularly in Ajim and Ghannouch). In the 3 CRDAs (Sfax, Gabes and Medenine) nearly 60 individuals are involved in the technical administrations in charge of the fishing sector. DGPA has recently reinforced the staff with the recruitment of more than 50 fishing guards. At the time of ex-post evaluation, the fishing guards do not have the necessary means such as their patrol boats to ensure surveillance operations. However, their capacity of surveillance operations is expected to be strengthened soon by introducing the patrol boats provided by the Japanese grant aid.

<Technical Aspect>

The staff of DGPA have sustained necessary skills and knowledge to disseminate the model developed by the project. However, there is a need to further strengthen the capacities of personnel in charge of the fishing sector continuously. DGPA is encouraging the CRDAs to implement OJT trainings. The guidelines developed by the project, which are considered as a manual of procedures, are considered as an essential tool for co-managing the coastal fisheries for dissemination to new pilot sites, have been used by all the members of the steering committee. While there is a lack of extension workers in ports and fishing sites who support fishers to apply co-management, at local ports and fishing sites, stakeholders of co-management including fishers's associations, fishers and local residents voluntarily gathered and they have mutually shared and disseminated what they have learned from the project in the local level, which supplement the shortage of regular extension workers. In addition, the other donors plan to implement the project which support to disseminate and capitalize the co-management of fisheries resources like this project. It is expected that the dissemination the co-management system will be strengthened in the future through support for local fishery training centers in terms of hardware and software aspects. From the above, it is judged that there is no major issues on the sustainability of technical aspect.

<Financial Aspect>

The ministry of Agriculture has allocated 10 million Tunisian dinar for the national program of artificial reefs in the Gulf of Gabes over 5 years. As part of the agreement on the conversion of Tunisia's debt to Belgium into a development project, a new project of the DGPA based on the same model developed by Project 2012-2016 has been selected for a sum of 1.8 million euros. The necessary budget has been secured to continue the project outcomes.

<Evaluation Result>

In the light of above, the sustainability of the effects though the project is high.

5 Overall evaluation

Both Project 2005-2010 and Project 2012-2016 achieved project purpose which aimed to develop models of coastal fisheries resource management for sustainable use of demersal fish as well as to practice co-management of coastal fishery resources in the target areas of the Gulf of Gabes as planned. The overall goal which aimed to extend the practice of co-management of coastal fishery resources throughout the Gulf of Gabes has been partially achieved although the number of fish landing sites which adopted the coastal fisheries resource management model for sustainable use of demersal fish with participation of fishing communities has considerably increased in the area. With reference to efficiency, the project periods of both projects were as planned, but their project costs exceeded the plan.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- Efforts have been made to sensitize local actors by the projects but some gaps were identified on the ground. These include poor understanding of fishers organizations duties and responsibilities in good governance at the local level. Policies and regulatory provisions are sometimes unknown or interpreted wrongly by most stakeholders. Therefore, it is essential to establish a mechanism to enhance the integration of extension methods of fisheries programs. For this aim, provision of training program for officials and selected leaders among fishers either in specialized facilities or through hands-on training is necessary in order to raise their awareness of their responsibilities properly as well as to promote a common understanding of the good co-management practices.

Lessons Learned for JICA:

- In this ex-post evaluation, there were difficulties to collect the statistical data for analyzing the effectiveness and impacts of the project as the location of project site were scattered and the project related organizations were varied. In order to realize the effective evaluation of the project as well as to understand the status of the fisheries sector in the project targe areas, the project should have established a

relevant statistics and data collection system needed for the evaluation of indicators related to the effectiveness/impacts of the project as defined in the project documents in coordination with JICA, the implementing agency and other stakeholders.

- The project for co-management of coastal fisheries was the first experience in Tunisia and the participatory approach applied in the project was new for the implementing agency. There was no formal inter-agency coordination in the Tunisia's fisheries sector at the biggening of the project. However, through the implementation of the projects, a coordination and exchange mechanism between the national Committee for Coastal Fisheries Resources Co-management, the administrative, associative and scientific bodies at the governorate level and the field actors (fishermen) was created to promote the exchange of experiences and know-how between localities and governorates but also at national level. The promotion of this mechanism was possible thanks to concerted actions between all the key actors, awareness-raising and dissemination actions, field work and a detailed diagnosis (exhaustive analysis) of the project target areas. A common understanding of the co-management among the stakeholders involved in this project was thus promoted. This project contributed to introduce a formal inter-agency coordination system/practice in the Tunisia's fisheries sector thanks to the following factors: (i) existence of a number of professional organizations, and has in part built upon the success of previous development projects, and the (ii) leadership of the fishing communities themselves .It will be a good reference for other projects.

Improved type of artificial reef prepared by the project.

Fishers installing artificial reef

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Ethiopia Office: September, 2021

Country Name	**Project for Rural Water Supply, Sanitation and Livelihood Improvement through Dissemination of Rope Pumps (RPs) for Drinking Water**
Federal Democratic Republic of Ethiopia	

I. Project Outline

Background	In Ethiopia, the proportion of the rural population who had access to safe water was as low as 26%, while the average in Sub-Saharan African countries was 49% in 2010, thus the extension of water supply coverage was an urgent issue in the country. The government of Ethiopia introduced a concept of Self-supply as a way of improving water supply facilities by 100% self-investment of rural population and deployed plans and programs to materialize the concept. Recognizing the rope pump (RP) technology as one of the simple and low-cost technologies which contributed to Self-supply, the government aimed to increase the number of RPs at a large scale. However, there were some issues which hampered dissemination of RP technology such as inconsistency of RP qualities in the market and absence of financial support facilities for rural households. With that background, it was required for the government of Ethiopia to control the quality of RPs and create enabling environments to accelerate the dissemination of RPs.		
Objectives of the Project	Through standardization of specifications of RP for drinking water, formulation of strategies for quality control of RP, acceleration of promotion activities on RP, and continuous support for the practice of RP use, the project aimed at improvement of situation of water supply, sanitation, and livelihood in the project target areas, thereby contributing to improve water supply and sanitation conditions and livelihood in rural areas in the Southern Nations, Nationalities and Peoples' Region (SNNPR). 1. Overall Goal: Water supply and sanitation condition and livelihood in rural areas are improved through dissemination of RPs for drinking water in SNNPR. 2. Project Purpose: Situation of water supply, sanitation, and livelihood are improved through dissemination of RPs for drinking water in project target areas.		
Activities of the Project	1. Project Site: 10 kebeles (villages) in 4 woredas (districts) (Dale, Damot Pulasa, Meskan, Yirgachefe) of SNNPR 2. Main Activities: 1) standardization of specifications of RP for drinking water and installation technologies at the federal level, 2) formulation of strategies for manufacturing and installation technologies, and operation and maintenance of RP for drinking water, 3) acceleration of promotion activities on RP including hygiene education by the governmental and semi-governmental organizations in the target woredas, 4) continuous support for practice of RP use including hygiene improvement by the village technicians and extension workers in the target areas, 5) compilation of project knowledge and experiences as dissemination tools and acknowledged in SNNPR and other Regions. 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 7 persons 2) Trainees received in Japan: 12 persons 3) Equipment: vehicles, PCs, printers, projectors, copy machines, etc. Ethiopian Side 1) Staff Allocated: 7 persons 2) Land and Facilities: project office 3) Local cost: cost for utility of offices (electricity, water and telephone)		
Project Period	February 2013 - December 2016	Project Cost	(ex-ante) 516 million yen, (actual) 532 million yen
Implementing Agency	・ Water Supply and Sanitation Directorate (WSSD), Ministry of Water and Energy (MoWE) (current Ministry of Water, Irrigation and Energy (MoWIE) reorganized in 2019) ・ Water Resource Bureau (WRB) (current Water Resource and Irrigation Development Bureau (WRIDB) reorganized in 2019), SNNPR ・ Woreda Water, Mine and Energy Offices, SNNPR		
Cooperation Agency in Japan	Earth and Human Corporation		

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

・ The field survey for this ex-post evaluation was conducted in 9 kebeles in 4 woredas in the target areas of the project. "Continuation status of project effects at the time of ex-post evaluation" was evaluated using the data collected by the field survey.

・ Since no field survey was conducted outside of the target areas of the project due to corona virus pandemic and other reasons, the "status of achievement for Overall Goal at the time of ex-post evaluation" was evaluated by the qualitative data collected through the questionnaire to WRIDB of SNNPR.

1 Relevance

<Consistency with the Development Policy of Ethiopia at the Time of Ex-Ante Evaluation>

The government of Ethiopia developed the "Universal Access Plan" (UAP) in 2006 and committed itself to increase water supply coverage to 98% by 2015. The 5-year national development plan of "Growth and Transformation Plan 2010/11-2014/15" (GTP I) was announced in 2010 sustaining the target of UAP. In 2012, the government issued the "National Guidelines for Self-supply in Ethiopia" and

introduced the concept of "Self-supply" as one of the service modalities to achieve the target. Self-supply was defined as a way of improving water supply facilities by 100% self-investment or with partial subsidy for groups. The RP technology was recognized as one of the low-cost technologies which could be burdened by rural households. Therefore, the project was consistent with the development policies of Ethiopia at the time of ex-ante evaluation.

<Consistency with the Development Needs of Ethiopia at the Time of Ex-Ante Evaluation>

Through the technical cooperation projects assisted by the government of Japan including the "Groundwater Development and Water Supply Training Project Phase 2 and 3" (2005-2008, 2008-2013) and the "Water Sector Capacity Development Project in Southern Nations, Nationalities and People's Region" (2007-2011), the skills and knowledge on training of RP manufacturing, constraints on installation and dissemination of RPs, and the needs of rural population for RPs were identified and accumulated. However, the national level standardization of specifications for manufacturing and installation of RPs was not progressed, the technical training for manufacturers and installers for consistent quality of RPs were not systematically conducted, and sales promotion of RPs for local households was not deployed by the government. Therefore, the project was consistent with the development needs of Ethiopia at the time of ex-ante evaluation.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

In the "Country Assistance Policy for the Federal Democratic Republic of Ethiopia" (April 2012), agriculture/rural development focusing on a comprehensive cooperation including water resource development was designated as one of the four priority areas. Specifically, water supply projects in rural areas and development of human resources in the watering field were identified as high priority assistances for Ethiopia. Therefore, the project was consistent with the Japan's ODA policy for Ethiopia at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved at the time of project completion. The total number of 210 RPs were installed in 204 households in the target areas (Indicator 1), and all (100%) of 171 RP users surveyed by the project had knowledge about at least one method of hygiene and sanitation improvement (Indicator 2). As for the improvement of livelihood, out of 171 RP users surveyed, 159 users (93%) were satisfied with the RPs and 168 users (98.3%) felt that their livelihoods had improved by the installation of RPs (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued at the time of ex-post evaluation. Households in the project target areas have purchased and installed RPs from their own motives after the completion of the project. Therefore, the total number of RPs in the areas must not decrease but increase to be at least over 210 at the time of project completion. The RPs have been generally well maintained by the RP users themselves and the fee-based maintenance service systems formulated and operated by the groups of village technicians and woreda water experts. According to the interviews with RP users in the target areas, most of them keep the knowledge about hygiene and sanitation improvement they learned in the project, and they have felt that their livelihoods had improved after the installation of RPs since they could get safe water, reduce water fetching time, and grow vegetables in their backyards by using RPs.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was achieved at the time of ex-post evaluation. 10,000 RPs were procured by WRIDB of SNNPR and more than 8,500 out of 10,000 were purchased by rural residents inside and outside of the project target areas at the time of ex-post evaluation. According to WRIDB, most of the users understood the importance of water point cleaning and fencing to keep animals away from the wells (Indicator 1), and they found that their livelihoods have improved being able to get safe water for drinking, domestic use, gardening, and irrigation by RPs (Indicator 2).

<Other Impacts at the time of Ex-post Evaluation>

Various positive impacts made by RPs were observed at the time of ex-post evaluation. For example, safe water for drinking and domestic use has become easily available, women's and children's workload of water fetching has been eased, vegetable and horticulture production at backyards of houses has expanded or started. Besides, seeing the RPs installed by the project for demonstrations in the target communities, other local community members have been inspired and started purchasing RPs with the funds from microfinances. No negative impact on natural, social and economic environment has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
Project Purpose: Situation of water supply, sanitation and livelihood are improved through dissemination of RPs for Drinking Water in project target areas.	Indicator 1: The number of RP users who installed RPs by Self-Supply which are made in the project becomes 200.	Status of the Achievement: Achieved (continued) (Project Completion) The total number of 210 RPs were installed by Self-supply in 204 households in the target areas by the time of project completion. (Ex-post Evaluation) Data of the number of RP users in the project target areas at the time of ex-post evaluation was not available. According to the interviews with RP users and village technicians in the target areas, since local people keep purchasing and installing RPs, the total number of RPs in the areas must not decrease but increase to be at least over 210 at the time of project completion. And the RPs installed have been generally well maintained. RP users take care of the RPs by doing regular maintenance such as oiling and checking of rope tension, while using the village technicians' technical services in minor repairs on fee basis.
	Indicator 2: The percentage of RP users who knows the	Status of the Achievement: Achieved (continued) (Project Completion)

<table>
<tr><td></td><td>methods of improving water hygiene and sanitation becomes more than 90% among the RP users.</td><td>According to the end-line survey conducted by the project, all (100%) of 171 RP users surveyed had knowledge about at least one method of hygiene and sanitation improvement.
RP users having knowledge about the methods
<table>
<tr><th>Method</th><th>RP users</th><th>%</th></tr>
<tr><td>Water point cleaning</td><td>171</td><td>100%</td></tr>
<tr><td>Keeping animals away</td><td>169</td><td>99%</td></tr>
<tr><td>Fencing around the well</td><td>102</td><td>60%</td></tr>
<tr><td>Household Water Treatment and Storage</td><td>75</td><td>44%</td></tr>
</table>
(Ex-post Evaluation)
According to the interviews conducted in the ex-post evaluation with 9 RP users in the target areas, 9 (100%) of them had knowledge about at least one method of hygiene and sanitation improvement.
RP users having knowledge about the methods
<table>
<tr><th>Method</th><th>RP users</th><th>%</th></tr>
<tr><td>Water point cleaning</td><td>9</td><td>100%</td></tr>
<tr><td>Keeping animals away</td><td>8</td><td>90%</td></tr>
<tr><td>Fencing around the well</td><td>6</td><td>70%</td></tr>
<tr><td>Household Water Treatment and Storage</td><td>6</td><td>65%</td></tr>
</table></td></tr>
<tr><td></td><td>Indicator 3:
The percentage of RP users who find that their livelihood is improving becomes more than 90%.</td><td>Status of the Achievement: Achieved (continued)
(Project Completion)
According to the monitoring conducted by the project, 125 (89%) out of 140 users answered that they felt their livelihoods had improved by RPs. In addition, according to the end-line survey conducted by the project, out of 171 RP users surveyed, 159 users (93%) were satisfied with the RPs, and 168 users (98.3%) felt that their livelihoods had improved due to RPs.
(Ex-post Evaluation)
According to the interviews with 9 RP users in the target areas, 8 RP users (90%) out of 9 felt that their livelihoods have improved in various ways after the installation of RPs. The improvement included safe water, less time for water fetching, coffee seedling nursery and back yard gardening for income generation.</td></tr>
<tr><td>Overall Goal:
Water supply and sanitation condition and livelihood in rural areas are improved through dissemination of RPs for Drinking Water in Southern nations, Nationalities and People's Region.</td><td>Indicator 1:
The percentage of users who knows the methods of improving water hygiene and sanitation becomes more than 80% among the RP users.</td><td>(Ex-post Evaluation) Achieved
10,000 RPs were procured by WRIDB of SNNPR and delivered to zonal and woreda offices inside and outside of the project target areas. At the time of ex-post evaluation, more than 8,500 rope pumps were purchased by rural residents and installed by local installers or village technicians. According to the questionnaire survey on WRIDB, the necessity of water point cleaning and fencing to keep animals away from the wells is explained by installers to users at the time of installation. Therefore, although no quantitative data was available, most of the users must know the methods of water hygiene and sanitation. This procurement and dissemination activity of 10,000 RPs was conducted in parallel with the project, the project provided some technical and financial assistance.</td></tr>
<tr><td></td><td>Indicator 2:
The percentage of RP users who find that their livelihood is improving becomes more than 80%.</td><td>(Ex-post Evaluation) Achieved
Though quantitative data was not available, according to the questionnaire survey on WRIDB, most of RP users found that their livelihoods have improved due to RPs. They can easily get safe water for drinking, domestic use, gardening, and irrigation.</td></tr>
</table>

Source: Project Final Report (2016), questionnaire to and interview with WRIDB, RP users

3 Efficiency

Although the project period was within the plan (the ratio against the plan: 100%), the project cost slightly exceeded the plan (the ratio against the plan: 103%). The outputs were produced as originally planned by the end of the project period. Therefore, efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Succeeding the targets and strategies of GTP I, 100% national potable water supply coverage was aimed by the "Growth and Transformation Plan II 2015/16-2019/20" (GTP II) as well as by the "Ten Years Development Plan 2021-2030." As one of the strategies to achieve the target, GTP II and the Ten Years Plan focused on the strengthening of water facilities construction capacities of the public and private sectors including community organizations. In line with GTP II and Self-supply concept, the "Hidden Resource of Self-supply Guidelines" approved by MoWIE in 2019 outlined how to assess potential sites of water resources, create self-supply demands of rural people, provide technical and managerial supports for construction and operation of water supply facilities including family wells. Regarding the quality of RP, the standard specifications of RP developed by the project was approved by the Ethiopian Standards Agency (ESA) as the "National Standard ES3968: 2016, Rope Pumps" in April 2016.

<Institutional/Organizational Aspect>

WRIDB of SNNPR rearranged its departments related to rural water supply to enable a strategic and integrated approach for increasing the water supply coverage in the region. Reinforcing the new institutional setup, WRIDB recruited water engineers and assigned them as

self-supply experts in Woreda Water Offices to activate and manage the self-supply activities in kebeles. Because of this staffing, according to the WRIDB's focal persons of Self-supply, the number of staff has increased and is currently sufficient for their activities. As for financial institutions, the Omo Micro Finance Institute (OMFI) involved in the project has extended its services for woredas outside of the project target areas in SNNPR.

<Technical Aspect>

Water supply experts of WRIDB trained by the project have knowledge and skills about manufacturing, installation and quality inspection of RP and have applied them to the region-wide dissemination of 8,500 RPs in SNNPR. The experts involved in the project in the standardization of RP specification had monitored and inspected RP manufacturers. Although outflow of the knowledge and skills associated with the transfer and turnover of the experts has become a challenging issue, newly assigned staff members have conducted the monitoring and inspection depending on the manuals and guidelines prepared by the project. Since WRIDB ordered in a large quantity of 10,000 RPs for region-wide dissemination, it was a heavy burden for local manufactures and caused some quality defects of the products. According to the manufacturers, because they could not get enough amount of standardized materials in market, they came to compromise on quality of materials. Besides, unavailability of spare parts such as pistons, ropes, and PVC (polyvinyl chloride) pipes is another issue for the maintenance of RPs. The guidelines, manuals and handbooks developed by the project have been highly utilized in various training programs for federal, regional and zonal experts, instructors of the Technical and Vocational Education and Training College (TVETC), credit officers of OMFI, manufacturers, installers, and village technicians. In terms of human resource development, TVETC, which made a notable contribution to the project, keeps implementing the training and skill-certification tests for RP manufacturers, installers, and village technicians utilizing its existing acknowledged certification system of Certificate of Competency (COC).

<Financial Aspect>

The Bureau of Finance of SNNPR has allocated more than 10 million Birr per year to RP extension activities. In addition, the dissemination of 10,000 RPs has been supported by development partners including JICA, the International Water and Sanitation Centre (IRC)[1] and the Millennium Water Alliance (MWA)[2]. According to OMFI credit officers, although the demand for loans for RPs has increased along with the dissemination of 10,000 RPs, repayment has been significantly delayed. This was probably due to the coexistence of different modalities for RP extension operated by WRIDB, the Bureau of Agriculture (BOA), and some NGOs. While WRIDB extended RPs under the concept of Self-supply which encourages 100% self-investment for water facilities, BOA and the NGOs promoted the use of RPs for agriculture with subsidies or at no charge. This situation confuses RP users and demotivate them to make loan repayments. BOA's provision of RPs with subsidies or at no charges was a temporary measure for severe drought in the region.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The Project Purpose was achieved by installing over 200 RPs, diffusing knowledge among RP users about water hygiene and sanitation methods, and improving the livelihoods of RP users in the target areas of the project. The Overall Goal was achieved by disseminating RPs region-wide and improving the livelihoods of RP users in SNNPR. As for sustainability, although some problems have been observed in terms of the technical and financial aspects, the strengthening of the institutional/organizational aspect has been progressed. As for efficiency, the project cost slightly exceeded the plan. Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- In order to improve supply of the spare parts in market, it is recommended that WRIDB with the support of MoWIE organizes discussions with the association of RP manufacturers, spare parts suppliers, village technicians, and other related agencies to find possible governmental interventions.
- In order to improve the situation of RP loan repayment by RP users, it is recommended that WRIDB organizes coordination meetings with BOA, NGOs involved, OMFI, and other related agencies to align their payment modalities in line with the national policy of Self-supply. It is also needed for the agencies to make unambiguous announcements to rural residents that the subsidy or grant for purchasing RPs is a temporary measure for severe drought.

Lessons Learned for JICA:

- Creating and adopting a unique RP credit system, the involvement of the micro finance institution was one of the major success factors of the project. However, repayment of loans by RP users has been delayed due to the coexistence of inconsistent modalities for RPs promotion by water sector and agriculture sector. As a contingency plan of a project, it is required for a technical cooperation project to draft a cross-sectoral consistent system design for any system construction, and comprehensive stakeholders' analysis is an indispensable prerequisite for such a system design.

[1] An international non-profit organization based in Holland active in water supply research and development to build resilient local and national WASH (water, sanitation, and hygiene) systems. (Source: website of IRC)

[2] A permanent and operational alliance based in the US working to bring safe drinking water, sanitation, and hygiene to the people in poor communities. (Source: website of MWA)

Housewives in Dale woreda using well water.
RP was provided by the project.

RP installed after the project in Meskan woreda.
It was purchased with the fund from micro-finance.