Ex-Post Project Evaluation 2014: Package II-5
(Burundi, Ethiopia, Zambia)

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Republic of Burundi

Ex-Post Evaluation of Technical Cooperation Project

"The Project for Strengthening Capacities of Prince Regent Charles Hospital and Public Health Centers in Bujumbura City for Improvement of Mother and Child Health"

External Evaluator: Makoto Tanaka, ICONS Inc.

0. Summary

This project was conducted in order to materialize improved operation and management, and to put into action patient-centered maternal and neonatal care through 5S[1] activities at Prince Regent Charles Hospital (hereinafter referred to as "HPRC") and 9 Health Centers (hereinafter referred to as "HC") in the Municipality of Bujumbura, Burundi's capital. The project activities were consistent with Burundi's national development policy, in which the improvement of maternal and neonatal care was addressed. It was a priority to reduce the maternal mortality ratio and child mortality rate that were important issues in Burundi. The project also aligned with Japan's ODA policy for Burundi, which had the improvement in basic living environment as a pillar. Therefore, its relevance is high. The project enhanced the leadership abilities of managers, thereby, improving work environments through 5S activities, further developing knowledge and skills among nursing staff, and continuously implementing preventive maintenance of medical equipment. These activities resulted in the improvement of operation and management of the targeted facilities and the implementation of patient-centered maternal and neonatal care. Therefore, both its effectiveness and impact are high. Although the project was completed within the planned timeframe, the project cost exceeded the planned one. Therefore, its efficiency is fair. The target facilities have developed a monitoring system and transfer of the techniques beyond a certain level. The improvement of maternal and child health remains one of the national issues of high priority, for which the government of Burundi continues to allocate the necessary budget. Therefore, its sustainability is high.

In light of the above, this project is evaluated to be highly satisfactory.

[1] 5S stands for Seiri, Seiton, Seiso, Seiketsu and Shitsuke in Japanese, which are Sort, Set, Shine, Standardize and Sustain respectively. Seiri (Sort) is to remove unused stuff from your venue of work; and reduce clutter (Removal organization). Seiton (Set) is to organize everything needed in proper order for easy operation (orderliness). Seiso (Shine) is to maintain high standard of cleanness (Cleanness). Seiketsu (Standardize) is to set up the above three Ss as norms in every section of your place (Standardize). Shitsuke (Sustain) is to train and maintain discipline of the personnel engaged (Discipline) (Source: JIS Z 8141:2001 "Glossary of terms used in production management").

1. Project Description

Project Location

Prince Regent Charles Hospital (HPRC)

1.1 Background

Due to the civil war that lasted over a decade since 1993, medical and health facilities in the Republic of Burundi (hereinafter referred to as "Burundi") have been deteriorating and the quality of their service has also been a big challenge in the country. Among the several problems in the health sector, the Burundian government prioritizes the reduction of Maternal Mortality Ratio (MMR) and Infant Mortality Rate (IMR), and the improvement of access to medical services and their quality by the year 2015. In this regard, the Burundian government requested a technical cooperation project — "The Project for Strengthening Capacities of HPRC and Public Health Centers in Bujumbura City for Improvement of Mother and Child Health" (hereinafter referred to as "the Project") — to the government of Japan. In response to the request, Japan International Cooperation Agency (hereinafter referred to as "JICA") launched the three year project from January 2009 to January 2012 having the Ministry of Public Health and Fight against AIDS (Hereinafter referred to as "MOPH") of Burundi as a counterpart (C/P) organization.

1.2 Project Outline

Overall Goal		Quality of services for maternal and neonatal care is improved at the targeted facilities.
Project Purpose		Patient-centered maternal and neonatal care is practiced under improved management at HPRC and targeted health centers.
Outputs	Output 1	Leadership of the top and middle class managers is fostered at HPRC and targeted health centers, involving directors of facilities and heads of all departments & units.
	Output 2	Work environment for maternal & neonatal care is improved through practicing 5S activities under the leadership of directors.
	Output 3	Preventive maintenance of medical equipment is continuously practiced with full participation of health staff in the targeted facilities.
	Output 4	Knowledge and skills of nursing staff (including midwives) are upgraded for maternal & neonatal care at the targeted facilities.
Total cost (Japanese Side)		290 million yen
Period of Cooperation		January, 2009 – January, 2012
Implementing Agency		Ministry of Public Health and Fight against AIDS
Supporting Agency/Organization in Japan		National Center for Global Health and Medicine (Cooperation in operational direction surveys, etc.)
Related Projects		➢ Technical Cooperation Project: "Project for Capacity Building of Provincial Health Staff for Maternal and Child Health" (2013-2017) ➢ Grant Aid: "The Project for Improvement of Health Facilities in Bujumbura City" (2009-2010) ➢ World Health Organization (WHO): assistance for policies, assistance to the reduction of MMR and IMR, assistance for strengthening reproductive health ➢ United Nations Children's Fund (UNICEF): assistance for policies, assistance to the prevention of mother-to-child transmission of HIV/AIDS, vaccination, etc.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the time of the Terminal Evaluation

The Project Purpose was expected to mostly meet the target by the end of the Project, January 2012. At the time of the Terminal Evaluation, since all the indicators were almost achieved, in spite that PBF (Performance Based Financing, hereinafter referred to as "PBF")[2] scores for HCs were not available, and the achievement of the Indicator c) could not be confirmed.

[2] PBF, Performance Based Financing, is a system that was adopted by MOPH at April 2010 after test adoption from 2006. The activities of each facility under the jurisdiction of MOPH are evaluated with indicators designated by MOPH (e.g. the number of deliveries). The budget of such facilities consists of two portions: the "minimum package of activities" (PMA) that is granted regardless of the evaluation and the "complementary package of activities" (PCA) or bonus portion that is granted in January, April, July, and October of each year depending on the results of the evaluation.

1.3.2 Achievement Status of Overall Goal at the time of the Terminal Evaluation

If the Burundian side maintains the effects of the Project and continues the initiatives started by the Project, the Overall Goal is more likely to be achieved in three years after the completion of the Project. However, the Terminal Evaluation team thought that among the five Indicators to measure the achievement of the Overall Goal, the Indicator d) "100% of normal deliveries are practiced based on the Normal Delivery Care Checklist" ought to be revised.

1.3.3 Recommendations at the time of the Terminal Evaluation

There are 19 recommendations at the time of the Terminal Evaluation. This report quotes 5 of them that are strongly related to the Ex-post Evaluation[3].

- To the 5S committees at the Provincial Health Office (hereinafter referred to as "BPS")[4] and HPRC: Each 5S committee meeting at BPS and HPRC is recommended to be held every three months, and should submit the monitoring report to the National 5S Committee.
- Ditto: The Working Improvement Team (hereinafter referred to as "WIT") meetings shall be held periodically so that the function of the WIT is consolidated in the 5S activity framework, and WIT members can lead and encourage other staff with strong leadership.
- To the National 5S Committee: The National 5S Committee shall share the monitoring results submitted by the 5S committees at BPS and HPRC with the relevant departments of MOPH for technical supervision.
- To the Project and MOPH: It is suggested that MOPH should carry out the same survey that will be included in the planned ex-post evaluation after a year of the Project's termination by the National 5S Committee, with the support of MOPH (i.e., EPISTAT and/or INSP).
- Ditto: Indicator d) of the Overall Goal "100% of normal deliveries are practiced based on the 'Normal Delivery Care Checklist'" should be modified, since those who get accustomed to the delivery procedures are not necessarily required to fill in the Checksheet.

[3] The expression is partly revised and reduced for the convenience of quotation.

[4] In the Municipality of Bujumbura, there exist three District Health Offices (BDS): North, Central and South. The North BDS has jurisdiction over 4 of the 9 targeted HCs, Buterere, Kamenge, Mutakura and Ngagara, while the Central over 2, Bwiza-Jabe and Buyenzi and the South over 3, Kanyosha, Musaga and Ruziba. BPS of the Municipality of Bujumbura unifies these three BDSs.

2. Outline of the Evaluation Study

2.1 External Evaluator

Makoto Tanaka, ICONS Inc.

2.2 Duration of the Evaluation Study

Duration of the Study: August, 2014 – August, 2015

Duration of the Field Study: October 27, 2014 – November 12, 2014, and February 15, 2015 – February 23, 2015

3. Results of the Evaluation (Overall Rating: A[5])

3.1 Relevance (Rating: ③[6])

3.1.1 Relevance to the Development Plan of Burundi

When this project was planned, the Government of Burundi enforced the "National Health Policy (2005-2015)", the "National Health Development Plan (2006-2010)" and the Decree on revision of "Subsidies for children younger than 5 years and deliveries performed in public health facilities and similar facilities[7] (June 2006)" to promote the qualitative improvement of maternal and child care and the expansion of access. The project aimed to materialize patient-centered care through the improvement of the working environment in the target facilities, to improve the quality of childbirth and neonatal care service, and also to improve access to these services all over the Municipality of Bujumbura, which supported the policy and programs by the Government of Burundi.

At the time of the project completion, the "National Health Policy (2005-2015)" and the "National Health Development Plan (2011-2015)" designated the reduction of the child mortality rate and maternal mortality ratio as important issues. The aim of the "National Health Development Plan" was to solve these problems by directing the three steps of (1) the improvement of care, (2) the improvement of maternal and child health, and (3) the reduction of the child mortality rate and maternal mortality ratio. The project contributed to the solving of important issues, and the reduction of the child mortality rate and maternal mortality ratio, with an aim to improve the working environment in health facilities and materialize patient-centered care.

3.1.2 Relevance to the Development Needs of Burundi

The ex-ante evaluation survey of this project clarified the following problems as the background of maternal and child health in Burundi.

[5] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[6] ③: High, ②: Fair, ①: Low

[7] Decree No. 100/38 of 16 March 2010 on the revision of subsidies for children under five years and deliveries performed in public health facilities and similar facilities.

[Political aspects]

① The quantity and quality of care was insufficient due to the lack of facilities, equipment, and manpower.

② Referral and counter-referral systems which provide appropriate care corresponding to patients' needs had not yet been established.

[On-site in facilities]

③ Comprehensive working environment is not adequately prepared to provide maternity care.

④ Proper techniques and knowledge of the preventive maintenance of equipment is insufficient. Such knowledge is important for the purpose of avoiding disorder and misuse of medical equipment.

⑤ Nurses and midwives knowledge and awareness of care procedures is insufficient to ensure the performance of safe deliveries which would secure the patients' peace of mind, etc.

This project fostered leadership, raised awareness for improving the working environment with 5S, developed working capacity and strengthened preventive equipment maintenance capacity, especially focusing on ③, ④ and ⑤, above. It was originally planned to promote the improvement of maternal care by directly addressing on-site issues related to maternal care, as well as building environment, in order to materialize patient-centered care that places a priority on the needs of expectant mothers. The plan was conceived as an effective strategy that could provide results in a short period of 3 years.

Medical equipment was provided to facilities (including the target facilities in this project), under a Grant Aid named "The Project for Improvement of Health Facilities in Bujumbura City" (Hereinafter referred to as "ADEM") that was implemented from 2009 to 2010 during the period of this project. ADEM and this project are related in the original plans. This project is expected to let the Burundian side learn those methods for proper use and maintenance of the equipment provided under ADEM. Therefore, the activities regarding equipment maintenance in this project correspond to the need for follow-up instruction concerning equipment maintenance.

3.1.3 Relevance to Japan's ODA Policy

When this project was planned, Japan's ODA policy for Burundi mainly consisted of two pillars: "the fixation of peace" and "the improvement of basic living environments". The activities of this project were expected to contribute mainly to the second 'pillar'.

This project was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness and Impact[8] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Project Output

This project targeted the HPRC and 9 HCs, and aimed to improve management at the target facilities (environmental improvements) and to cultivate patient-centered maternal and child care by: fostering the leadership skills of managers (Output 1); improving the working environment on maternal and child care under that leadership through 5S activities (Output 2); upgrading the knowledge and skills of nursing staff (Output 4); and, continuously practicing the preventive maintenance of medical equipment (Output 3). These 4 Outputs have been achieved or almost achieved. The achievement of each Output is shown in Table A1 at the end of this document.

3.2.1.2 Achievement of Project Purpose

The achievement of the Project Purpose is shown in Table 1. Each indicator of the Project Purpose was almost achieved at the time of the Terminal Evaluation. Concerning Indicator c), it was found that PBF scores in maternity/obstetric services achieved higher levels after the completion of the project.

Table 1. Achievement of Project Purpose

Project Purpose	Indicator	Actual
(3 years after the start of the project, around 2011) Patient-centered maternal and neonatal care[9] is practiced under improved management at HPRC and targeted health centers.	a) Working environment at the target facilities is improved. (The average score of 'Monitoring and Evaluation on the Progress of 5S Activity' at all targeted facilities exceeds 60%.)	Upon the completion of the Project, the score of 'Monitoring and Evaluation on the Progress of 5S Activity' at the 9 targeted HCs exceeded 60%. Since the score at HPRC was 59%, it can be said that this indicator is almost achieved, if not completely (see Table 2).
	b) The number of mothers who gives positive answers of being fully attended by health personnel and family all through their delivery process increases after 'Normal Delivery Care Checklist' is introduced.	It is judged that this indicator has been achieved upon completion of the project, since it has been almost achieved already at the time of the Terminal Evaluation.
	c) The PBF (Performance-Based Financing) scores on maternity/obstetric services at all target facilities increase.	It is determined that this indicator was achieved, since the PBF scores achieved high levels at Buterere, Kamenge, Kanyosha, Musaga and Mutakura HCs, where the scores before and after the completion of the Project can be compared (see Table 3).

[8] Sub-rating for Effectiveness is to be put with consideration of Impact.

[9] In this project, 'Patient-centered care' is defined as the care that focuses primarily on securing peace of mind and mitigating both mental and physical burdens for patients.

Scores for the "Monitoring and Evaluation on the Progress of 5S Activity" in Indicator a) and PBF scores in maternity/obstetric services in Indicator c) are shown in Tables 2 and 3 respectively. It can be said from Table 2 that Indicator a) has nearly been achieved, (although the score of HPRC in August 2011 does not exceed 60% as designated in Indicator a)). In Table 3, PBF scores are low in HCs in those years when they started to offer maternal and child health services. It is thought that it was difficult to achieve PBF evaluation indicators such as the numbers of deliveries and maternal consultations since those HCs were not familiar with providing services, and those PBF goals are automatically assumed to be taken from estimates based on the population under jurisdiction[10].

Table 2. Scores of "Monitoring and Evaluation on the Progress of 5S Activity"

(Unit: %)

Facilities	March 2009	August 2011
HPRC	39	59
Buterere HC	35	74
Bwiza-Jabe HC	37	74
Buyenzi HC	46	72
Kamenge HC	66	71
Kanyosha HC	36	65
Musaga HC	40	72
Mutakura HC	35	65
Ngagara HC	39	74
Ruziba HC	20	67

(Source) documents provided by JICA

Table 3. PBF scores in maternity/obstetric services

(Unit: %)

Facilities	2010	2011	2012
Buterere HC	84	57	99
Bwiza-Jabe HC	–	–	–
Buyenzi HC	–	–	–
Kamenge HC	100	98	99
Kanyosha HC	92	93	100
Musaga HC	88	96	98
Mutakura HC	–	20	81
Ngagara HC	–	–	–
Ruziba HC	–	–	79

(Source) data by PBF

According to the data above, the project achieved its purpose.

3.2.2 Impact

3.2.2.1 Achievement of the Overall Goal

The achievement of the Overall Goal is shown in Table 4. For evaluation purposes, it is thought that Indicators d) and e) should receive more emphasis, since Indicators a), b) and c) depend greatly on the population and health status of expectant mothers, etc. as well as

[10] For example, The PBF monthly target value for the number of deliveries in an HC is determined as the product of the population under its jurisdiction, the number of deliveries per year per population and the rate of pregnant women who use it, divided by 12 (months/year). The rates are decided under nationwide common assumptions: the number of deliveries per year is 5 per 100 inhabitants and the rate of pregnant women who use HCs is 80%. In the case of Ngagara HC that started providing maternal services in November 2013, and having a population of 34,110 under its jurisdiction, the target value of the number of deliveries is 34,110 × 0.05 × 0.80 ÷ 12 = 114 per month and 114 × 12 = 1,368 per year, while the results were 2 in the year, 1 in November and 1 in December. The achievement rate was 1 ÷ 114 × 100 = 0.88% in each month and 2 ÷ 1,368 × 100 = 0.15% in the year. The PBF scores will be determined from these achievement rates (Source: data by PBF).

the qualitative improvement of maternal and child care in HPRC and the target HCs.

Table 4. Achievement of the Overall Goal

Overall Goal	Indicator	Actual
(3 years after the termination of the project, 2014) Quality of services for maternal and neonatal care is improved at the targeted facilities.	a) The number of deliveries at the targeted health centers increases.	The number of deliveries at the targeted HCs continues to increase up to 2012 (see Table 5).
	b) The number of beneficiaries of antenatal care (ANC) and postnatal care (PNC) at the targeted health centers increases.	The number of maternal care cases at the targeted HCs continues to increase (see Table 6).
	c) The number of referral cases with obstetric complication to hospitals from the targeted health centers increases.	Sufficient data concerning the number of referral cases could not be obtained.
	d) 100% of normal deliveries are practiced based on "Normal Delivery Care Checklist".	The average utilization rate of the 'Normal Delivery Care Checklist' at normal deliveries at HPRC and at 4 HCs was 25.5% in July 2011 and 39.4% in August 2011[11]. Not enough data could be obtained for the period afterward.
	e) The rate of positive answers to each question from the mothers in the patient satisfaction survey will reach 75%.	According to yes-no surveys implemented by MOPH from 2011 to 2012, the rate of positive answers from mothers exceeded 75% (see Table 7). Mothers coming to the HCs were directly interviewed in this Ex-post Evaluation survey. Its result shows that the satisfaction is generally high from the viewpoint of patients as well (see Tables 8 and 9).

The number of deliveries in Indicator a) and the number of recipients of antenatal care in Indicator b) at the 9 target HCs since 2011 are shown in Tables 5 and 6, respectively. According to these tables, the number of patients receiving antenatal care in Indicator b) continues to increase through 2014, whereas the rate of increase or decrease of those patients receiving postnatal care is not clear and the number of deliveries in the 9 target HCs in Indicator a) decreased from 2013 through 2014. According to the results of interviews with the HCs, this is because there was an increase in the number of expectant mothers since 2013 who give birth at hospitals after receiving antenatal care at nearby HCs. It is thought that this was affected by the government policy that provides for free medical care[12], and also the improvement of security and traffic conditions in the Municipality of Bujumbura.

[11] Source: Terminal Evaluation Report, pp. 20-21.
[12] A presidential decree in 2002 declared that medical services were free of charge for pregnant women and children younger than 5 years.

Table 5. Number of deliveries at the 9 targeted HCs

Health Centers	2011	2012	2013	2014
Buterere	463	1,011	1,256	1,030
Bwiza-Jabe	0	0	58	278
Buyenzi	0	0	0	13
Kamenge	582	687	660	519
Kanyosha	984	881	477	428
Musaga	185	204	224	211
Mutakura	11	398	414	298
Ngagara	1	0	2	13
Ruziba	0	251	317	347
Total	2,226	3,432	3,408	3,137

(Source) data by PBF

Table 6. Number of maternal care cases at the 9 targeted HCs

Health Centers	Antenatal care (ANC)				Postnatal care (PNC)			
	2011	2012	2013	2014	2011	2012	2013	2014
Buterere	1,908	2,521	4,538	4,354	12	258	677	564
Bwiza-Jabe	6,318	9,890	10,453	10,411	141	490	667	485
Buyenzi	8,673	7,571	8,146	6,919	847	1,068	76	5
Kamenge	7,437	9,705	10,875	12,877	43	52	57	46
Kanyosha	3,896	4,416	4,042	3,546	260	198	73	99
Musaga	3,466	3,154	3,540	3,834	244	329	68	36
Mutakura	4,091	4,280	4,328	4,752	6	1	20	620
Ngagara	2,727	2,769	3,162	3,359	48	31	7	28
Ruziba	1,534	1,777	1,978	2,523	202	57	34	25
Total	40,050	46,083	51,062	52,575	1,783	2,484	1,679	1,908

(Source) data by PBF

For Indicator c), its achievement cannot be judged since sufficient data for the number of referrals were not obtained.

For Indicator d), it is certain that the utilization rate of the Normal Delivery Care Checklist was not 100%, although sufficient data were not obtained after the Terminal Evaluation (October 2011). However, according to the evaluator's observation, and the results of interviews with the HCs, the fact that the rate did not reach 100% is greatly affected by factors outside the scope of this project- one staff member cannot observe all stages of a delivery and countersign since he/she may have to deal with multiple deliveries at the same time, etc. Such factors preceded the start of the project, and have not changed during the project period. Considering these circumstances, the evaluator believes that it is not appropriate to determine that the Overall Goal was not achieved solely by the fact that Indicator d) was not achieved, and that it can be judged that the staff members use the Normal Delivery Care Checklist if they provide care following the procedure as described in the checklist. The staff members at the target facilities understand the contents of the Normal

Delivery Care Checklist and practice delivery care with the checklist affixed to the wall or placed on the side of the delivery table. It was then confirmed that their technical skills reached the levels where they could at least follow the contents described in the checklist. It is judged that Indicator d) has almost been achieved.

For Indicator e), the percentage of positive answers from mothers in the yes/no investigation implemented by MOPH is shown in Table 7. This project's plan was for MOPH to implement a beneficiary survey by using a questionnaire in French, which was prepared as part of the project. However, during interviews with MOPH it was found that such surveys had not been performed. During the Ex-post Evaluation a beneficiary survey was conducted from 12 to 27 January 2015 using the same French questionnaire, and mothers actually coming to the facilities were asked to respond to it with explanations in the local language[13]. As shown in Table 8, answers were collected from 114 mothers who had given birth from 15 July 2010 to 9 January 2015 at HPRC and the target HCs (except Buyenzi and Bwiza-Jabe). The mothers' responses are shown in Table 9.

Table 7. Percentage of positive answers from mothers in the investigation by MOPH on their satisfaction with health facilities

(Unit: %)

Facilities	1st trimester 2011	2nd trimester 2011	3rd trimester 2011	4th trimester 2011	1st semester 2012	2nd semester 2012
Buterere HC	92	92	82	95	88	87
Kamenge HC	86	94	100	94	93	95
Mutakura HC	91	98	96	93	90	92
Ngagara HC	88	93	93	98	98	92
Bwiza-Jabe HC	92	89	3	93	96	76
Buyenzi HC	94	88	94	98	98	95
Kanyosha HC	83	88	90	91	100	93
Musaga HC	100	100	93	95	97	93
Ruziba HC	98	96	90	95	81	92

(Source) data by Bujumbura Municipality Provincial Verification and Validation Committee (CPVV)

[13] The official languages of Burundi are French and Kirundi. Almost all Burundian nationals are native speakers of Kirundi. Even people who do not learn French or who are illiterate are capable of communicating conversationally in Kirundi.

Table 8. Facilities where samples were collected

Facilities	Number of samples	Area	Area total
Kamenge HC	11	Northern	37
Mutakura HC	12	Northern	
Ngagara HC	1	Northern	
Buterere HC	13	Northern	
HPRC	48	Central	48
Musaga HC	5	Southern	29
Kanyosha HC	11	Southern	
Ruziba HC	13	Southern	
Grand total			114

Table 9. Results of the beneficiary survey of mothers who experienced deliveries at the targeted facilities on their satisfaction with the care from nurses (number of answers to questions)

(Number of samples: 114)

Question[1)]	Yes	No	Not necessary[2)]	Unclear[3)]	No answer
① Welcomed me with smiles.	110	4	–	0	0
② Helped me when I walked.	98	15	–	1	0
③ Explained the health conditions.	109	5	–	0	0
④ Helped me lying on the bed of labor room.	110	1	3	0	0
⑤ Sometimes encouraged me during delivery.	102	11	–	0	1
⑥ Taught me how to breathe, etc.	110	4	–	0	0
⑦ Suggested me to take light meal and water.	61	29	24	0	0
⑧ Let me take a comfortable position.	87	22	–	3	2
⑨ Laid my baby on top of my stomach.	75	39	–	0	0
⑩ Taught me to keep holding my baby.	57	15	41	0	0
⑪ Celebrated with me after the delivery.	104	10	–	0	0
⑫ Explained the procedure to me beforehand.	98	16	–	0	0
⑬ Taught me health care.	104	10	–	0	0

1) The questions listed here are condensed. See the footnote[14] for the complete ones.

2) Designating the circumstances where the indicated service was not necessary in questions ④, ⑦ and ⑩. For example, "directly entered the delivery room after coming to the HC, not entered the antenatal care room" for question ④, "had no time to take light meal and water due to short labor pains" for question ⑦, "the baby weighed not less than 2,500 g and the mother brought baby clothes" for question ⑩, etc.

3) Including "Cannot understand the question".

[14] The complete questions are as follows (the following are English translations that the Project translated from the original ones that are in French (Source: documents provided by JICA)).

① Welcomed me with smiles.
② Helped me when I walked.
③ Explained the health condition of mother and child after the consultation.
④ Helped me to lie on the beds in the labor room.
⑤ Sometimes encouraged me during delivery.
⑥ Taught me how to breathe and push at the time of delivery.
⑦ Suggested for me to take light meals and water during labor pains.
⑧ Let me take a comfortable position at the time of delivery.
⑨ Laid my baby on of my stomach right after the delivery.
⑩ Taught me to keep holding my baby until putting in the incubator (baby less than 2,500 g).
⑪ Celebrated with me after the delivery.
⑫ Explained to me the procedure beforehand.
⑬ Taught me health care after the delivery and child care.

Based on the above, the project has achieved its overall goal.

3.2.2.2 Status of the expression of Outputs and Project Purpose (from the point of completion to the time of the Ex-post Evaluation)

After the completion of this project until the time of the Ex-post Evaluation, the 4 Outputs continues to express results. The improvement of working environments (Output 2) and the preventive equipment maintenance (Output 3) under the leadership of managers (Output 1) resulted in the achievement of "improved management at HPRC and targeted HCs" in the Project Purpose. Under such management, the staff members practice "patient-centered care" in the Project Purpose by demonstrating the knowledge and skills acquired in the project (Output 4). It was confirmed that for the former, 5S activities continued to show positive effects, and for the latter, PBF scores in maternity/obstetric services and patients' satisfaction remain high as shown in Table 3.

3.2.2.3 Other Impacts

This project was connected with ADEM from the beginning. ADEM supplied and installed medical equipment in all the facilities targeted in this project and also at two other hospitals in 2010. This equipment was supplied when it became necessary for the activities of this project. The Burundian side learned the methods to utilize and maintain the equipment supplied through this project. Therefore, it can be said that both projects contributed to each other to show their effects.

Indirect effects are as follows. According to HPRC, the plan-do-evaluate cycle of PBF became operational during the 4 years after its introduction, in addition to raising interest in 5S activities. Ruziba HC pointed out that its working environment became standardized and more orderly. On the other hand, with respect to 5S, it was confirmed that efforts to disseminate the effects of the project to other public hospitals and HCs in the country are being made, such that the National 5S Committee has become the main body to organize training for doctors and nurses working at public hospitals with HPRC as a model hospital. The staff members of HPRC who are also members of the National 5S Committee have begun to hold seminars while making their rounds of visits.

This project did not have any impact on the natural environment, or on resettlement or land acquisition.

As described so far, this project has achieved the Project Purpose of patient-centered maternal and neonatal care under improved management at the target facilities, and has also achieved the Overall Goal in terms of the improvement of maternal and neonatal care at HPRC and the target HCs. Therefore, the effectiveness and impact of the project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Planned and actual Inputs are shown in Table 10. It cannot be determined whether the actual Inputs were quantitatively sufficient for the activities described in the Ex-ante Evaluation Report, since the content of the Inputs was not clear- the quantity of experts dispatched is not described there. However, after the Mid-term Review pointed out the relationship between the activities and maternal and child health, there was a quantitative increase of the Inputs to revise the plan to dispatch more experts.

Table 10. Planned and actual Inputs

Inputs	Plan	Actual
(1) Experts	0 Long-Term 4 Short-Term (no description of MM*)	0 Long-Term 12 Short-Term (64.98 MM)
(2) Trainees received	Trainings in Japan Trainings in third countries (no description of the numbers of trainees)	Trainings in Japan Trainings in third countries AAKCP[15] trainings Other trainings 28 trainees in total
(3) Equipment	Not expected	1 vehicle (4WD), etc. About 5.6 million yen in total
(4) Local operational expenses	(no description of budget)	26 million yen
Japanese side Total Project Cost	250 million yen	290 million yen
Burundian side Operational Expenses	(no description of budget)	Building and repairs, light and heat expenses, etc. About 0.1 million yen in total

* MM stands for man month.

By comparison, planned and actual Inputs in a similar project "Project on Ensuring Maternal and Child Health Service with MCH Handbook Phase 2" in Indonesia (October 2006 – September 2009)[16] are shown in Table 11. Although the project costs and time frame of this project in Burundi are the same as those of the project in Indonesia, it can be noticed that the Inputs of the man-month of experts and local costs are less in this project.

[15] AAKCP, standing for Asia-Africa Knowledge Co-Creation Program, is one of JICA's cooperation initiatives started after TICAD III in 2003 emphasized the importance of Asia-Africa cooperation, where TICAD stands for "Tokyo International Conference on African Development".

[16] This project was conducted to integrate the Maternal and Child Health (MCH) service by utilizing the MCH Hand Book (HB) and strengthening a system for sustaining the MCH service through the MCH HB in Indonesia (Source: Ex-Post evaluation Report on the project)..

Table 11. Planned and actual Inputs in a similar project*

Inputs	Plan	Actual
(1) Experts	3 Long-Term 2-3 Short-Term × years (no description of MM**)	5 Long-Term in total (107.86 MM) 8 Short-Term in total (3.23 MM)
(2) Trainees received	C/P Trainings (about 5 persons per year × 2 weeks × 4 years)	Trainings in Japan: 35 trainees Domestic Trainings: 42 trainees
(3) Equipment	no description of budget	3.71 million yen
(4) Local costs	Daily expenses and special project expenses	96.84 million yen
Japanese side Total Project Cost	320 million yen in total	290 million yen in total
Burundian side Operational Expenses	(no description of budget)	(budget unclear)

* Technical cooperation project "Project on Ensuring Maternal and Child Health Service with MCH Handbook Phase 2" in Indonesia (October 2006 – September 2009); MCH stands for maternal and child health.
** MM stands for man month.
(Source) Joint Terminal Evaluation Report and Ex-post Evaluation Report of the above project

3.3.1.1 Elements of Inputs

The dispatch of experts and the trainings are as shown in Table 12. The Inputs were revised after the Mid-term Review and pointed out the relationship between the activities and maternal and child health. This caused the number of experts to increase as well as the diversification of their subjects. This also resulted in excess project costs. On the contrary, it is certain that the Input concerning maternal and child health was less when compared to the Project Purpose. It is determined that the Input of experts in maternal and child health supported "maternal and neonatal care" in the Project Purpose and was necessary for achieving it. The original plan of this project incorporated the dispatch of short-term experts for training in Japan and other countries with the aim to improve both management and clinical skills. The revision of the Inputs was also for the purpose of materializing these with the increase in the Inputs such as the increase of the number of experts and the application of AAKCP Trainings. In spite of this increase, the Inputs did not become much larger than those in the similar project cited above.

Table 12. Elements of Inputs

Elements	Contents
Dispatch of experts	12 fields: Chief Advisor / Hospital Management, 5S-KAIZEN, KAIZEN / Safety and Health Management, Equipment Maintenance, Community Health Nursing, Health Survey, Midwifery 1, Midwifery 2, Project Coordination, Project Coordination / IEC*, Project Coordination, Reinforcement of Monitoring System
Acceptance of trainees	➢ Trainings in Japan and in third countries: 2 in leadership (Japan), 12 in midwifery care (Madagascar) and 1 in maintenance of medical equipment (Japan) ➢ AAKCP Trainings: 2 in leadership (Sri Lanka), 3 in 5S activities (Sri Lanka), 2 in leadership (Morocco) and 2 in AAKCP Global Forum (Japan) ➢ Other trainings: 1 in maintenance of medical equipment (Japan), 1 in improvement of quality in maternal and child health (Japan) and 2 in TQM** (Japan and Sri Lanka)
Supply of equipment	1 vehicle (4WD), 6 computers, 2 copy machines, etc.

* IEC stands for Information, Education, Communication

** TQM stands for Total Quality Management

The Mid-term Review Report pointed out that the continuation of the activities without common understanding on "patient-centered care" caused the focus of attention to be placed on the improvement of working environment, mainly by 5S activities. In this regard, staff members of the target facilities were interviewed, all of whom answered that they were always aware of the aim to improve maternal and child health even though they were grappling with those 5S activities immediately before them. Strengthening the Inputs on maternal and child health is thought to contribute to fostering such awareness.

3.3.1.2 Project Cost

The project cost was higher than planned: the actual expenditure was 116% of what was originally planned. The increase in the number of experts dispatched affected the resulting cost, which was estimated to be about 250 million yen at the time of the ex-ante evaluation, but which exceeded this estimate and actually become 290 million yen.

3.3.1.3 Period of Cooperation

The period of cooperation was as planned. Although the Japanese experts had to evacuate due to a security problem that occurred during the presidential election in 2010, the extension of this period was avoided because of the efforts by local staff members and the re-adjustment of the dispatch schedule.

Although the project period was within the plan, the project costs exceeded the plan. Therefore, the efficiency of the project is fair.

3.4 Sustainability (Rating: ③)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

The improvement of maternal and child care is still a national issue of great importance, which is described in the "National Health Policy (2005-2015)". The plan-do-evaluate cycle of PBF worked every year even after 4 years from its introduction in April 2010. The National 5S Committee in MOPH maintains its activities and operates the structure and system to collect opinions from clients of the HCs.

The "National Health Policy (2005-2015)", the "National Health Development Plan (2011-2015)" and the "National Program for Reproductive Health", which are the related policies at the time of the Ex-post Evaluation, have declared the reduction of the child mortality rate and maternal mortality ratio to be an important issue. This policy did not experience any considerable changes from the period of its planning to the time of the Ex-post Evaluation. The sustainability of the effects of the project is high in policy and institutional aspects.

3.4.2 Organizational Aspects of the Implementing Agency for the Sustainability of Project Effects

Among the monitoring systems that BPS was aiming to build, two have been formulated: the one to collect opinions from the clients of HCs through "Suggestion boxes"[17] and oral consultation[18], and the one to report 5S activities in HCs to higher organizations. The opinions from clients are transmitted once a month from the HCs to MOPH through BDSs and BPS.

The target facilities (except HPRC) continue their training activities on 5S: their WITs hold meetings once or twice a month under the leadership of the managers. It was confirmed that because of such activities, the working environment was improved and preventive equipment maintenance is continuously performed.

The Directorate of Offer and Demand of Care of MOPH is currently formulating a training system for hospitals in the country with the assistance of the National 5S Committee. MOPH considers it to be the follow-up to this project. This training system is expected to play an important role in the organizational aspects of disseminating the effects of the project.

As described above, the structure for the Implementing Agency to continue 5S and

[17] "Suggestion boxes" are installed at HPRC and HCs as well as at MOPH and its subordinate agencies; they collect clients' opinions. Contributions to the suggestion boxes at HCs are reviewed by Suggestion Box Committees once a month, read by the staff members including the heads and the results are reported to HPRC. Each Suggestion Box Committee consists of two staff members: one representative from the commune under its jurisdiction and a person from the administration. Involving members other than the staff members prevents the HCs from suppressing and falsifying opinions.

[18] The responsible party at each facility establishes a meeting time of 2 hours per week and directly hears opinions from clients. This is for the purpose of collecting opinions from illiterate clients.

"improved management" in the Project Purpose is being built. Although the target facilities are troubled by the lack of manpower and an unstable supply of electricity, the effects of this project were visible even in such circumstances. Hence the evaluator has judged that the lack of manpower and unstable electric supply will not be factors that will inhibit project sustainability. Accordingly it is expected that to some extent the effects of this project will continue to be sustainable. The numbers of staff members at the maternity/obstetric services of HPRC and the target HCs are shown in Figures 1 and 2 respectively. From these figures, it can be seen that the lack of manpower did not worsen since the start of this project.

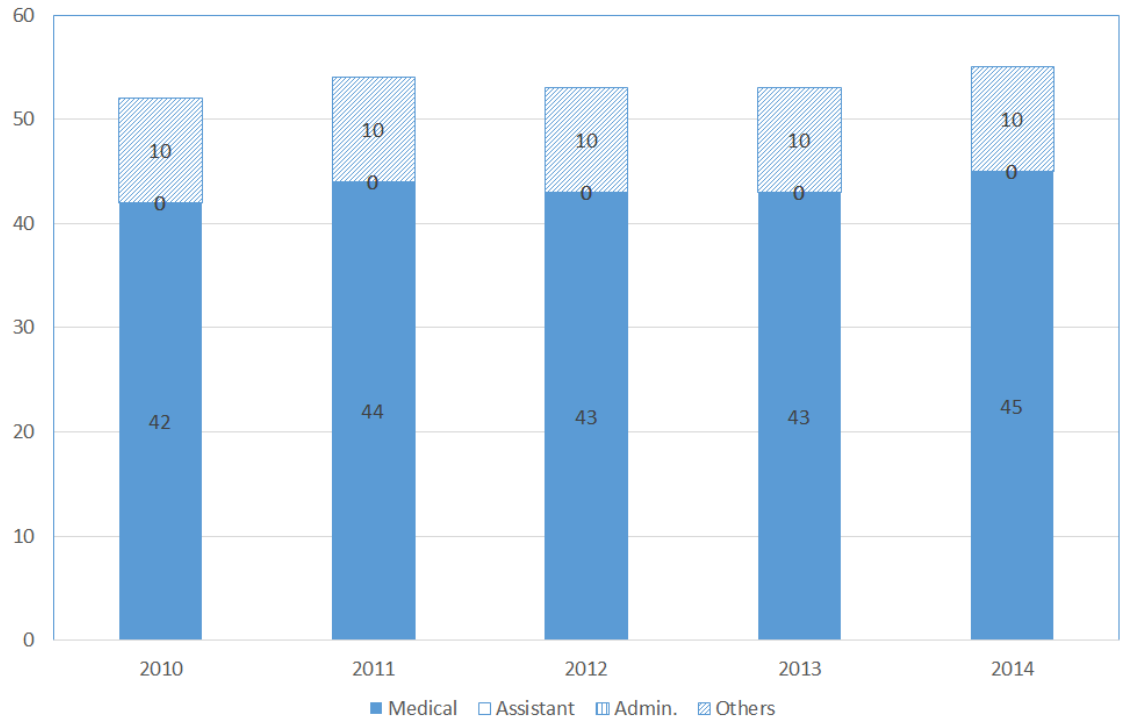

Figure 1. Number of staff members at the maternity/obstetric services of HPRC

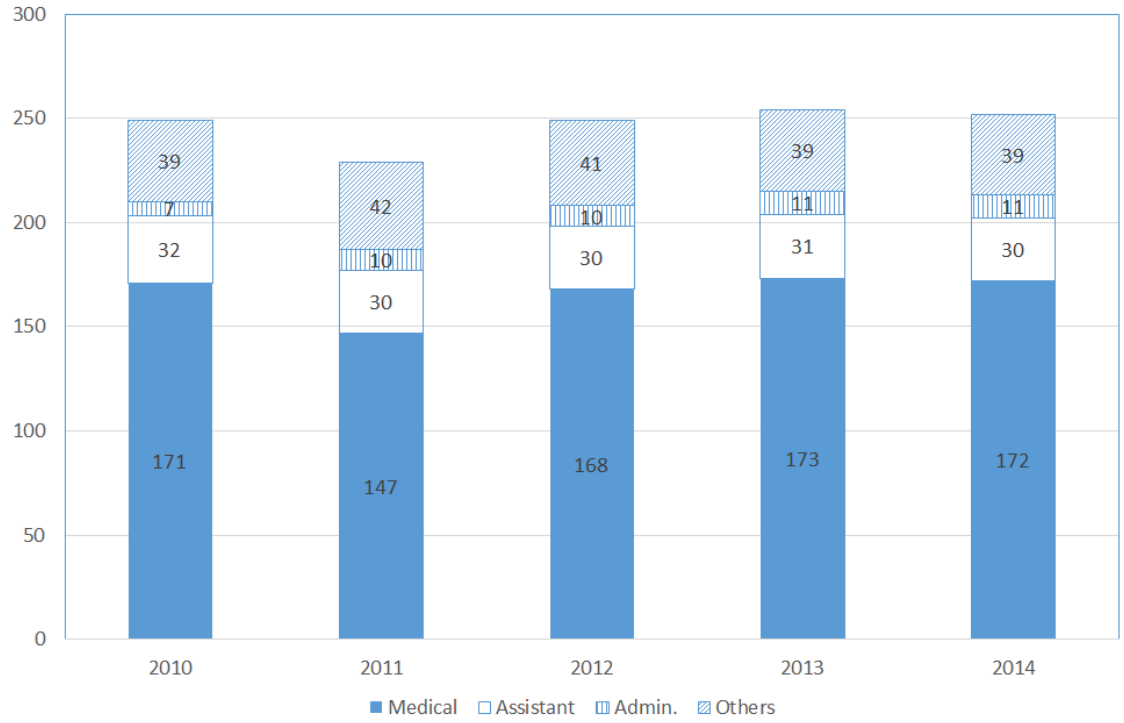

Figure 2. Number of staff members at the 9 targeted health centers

Considering the circumstances described above, the sustainability of the project's effects is high because of its organizational aspects.

3.4.3 Technical Aspects of the Implementing Agency for the Sustainability of Project Effects

Each of the health staff members at the target facilities has national qualifications as medical doctors, midwives, or as nurses according to the proper regulations. It can be said that the technical skills of the staff achieves a certain level.

The skills and knowledge of the nursing staff, which were strengthened through trainings and practice, are transferred at turnovers during the project period and after its completion. The training on 5S is transferred from predecessors not only to those who had their capacities directly strengthened by the project but also to those who took up their new post after the completion of the project. There are no problems in the structure of technical transfers.

On the other hand, the utilization rate of the Normal Delivery Care Checklist does not reach 100%. This is mainly because of factors other than technical aspects such as insufficient manpower and the medical staff often being forced to work in the dark[19].

[19] Electricity supply is unstable in Burundi. It may stop in the midnight when care is being delivered in the HCs. Such situations will force staff members to provide care with makeshift or emergency lighting sources, such as flashlights.

Therefore, the technical skills of the staff in charge of care cannot be judged solely on the fact that the utilization rate of the checklist is not 100%.

The activities of this project include the operation and maintenance of medical equipment provided under ADEM that was implemented from 2009 to 2010 during the period of this project. During the project period, many staff members were re-trained on the operation and daily inspection of dry heat sterilizers, infant warmers and aspirators, and learned the correct procedure for their operation. It was confirmed that these items are actually utilized for health services, and the staff members in charge have mastered their operational procedures.

One task of this project was the preparation of manuals on the monitoring of 5S and the maintenance of medical equipment. These are helpful for the staff members at the target facilities to keep up with their technical skills. At the time of the Ex-post Evaluation, almost all pieces of the equipment are affixed with "How to use" tags and the staff members understand that they are digested medical equipment maintenance manuals. Preventive maintenance sheets are posted on the walls of the target facilities so that visitors can look at them. The responsible persons record scores of 10 items (2 points if good, 1 point if dubious, and 0 points if to be repaired or replaced) once a week on a specified day of the week.

Of the above-mentioned training system for hospitals in the country, the finalization of 5S guidelines is being attempted. This guideline is expected to address and disseminate awareness of technical issues, and also to ensure that technical skills are transferred within the target facilities themselves.

3.4.4 Financial Aspects of the Implementing Agency for the Sustainability of Project Effects

Upon disseminating the activities of this project, such as 5S, throughout the whole country, financial sustainability remains a great issue. MOPH and HPRC attempt to combine the budget for these activities into a budget item named "Quality of Service". This budget is expected to be secured for every year in future.

Monthly subsidies from the government to HPRC and the target 9 HCs from December 2012 to December 2014 are shown in Figures 3 and 4 respectively. These figures also show the bonus portions for January, April, July and October of each year, which are determined depending on the PBF evaluation. HPRC obtained 1,322 million Burundian Francs (BIF)[20] (including the bonus portion of 201 million BIF, and so on) in 2013 and 1,342 million BIF (226 million BIF) in 2014, while the 9 target HCs obtained 913 million BIF (87 million BIF) in total in 2013 and 809 million BIF (11 million BIF) in total in 2014. The bonus portion of the HCs in April 2014 is about 25 million BIF in the red. It is thought that this is because Ngagara HC was not familiar with the PBF targets of new maternal and child health services

[20] Burundian franc (BIF) is the currency of Burundi. BIF 1,000 = c.a. JPY 77 as of the end of 2014.

which began in 2013 (see “3.2.1.2 Achievement of Project Purpose”).

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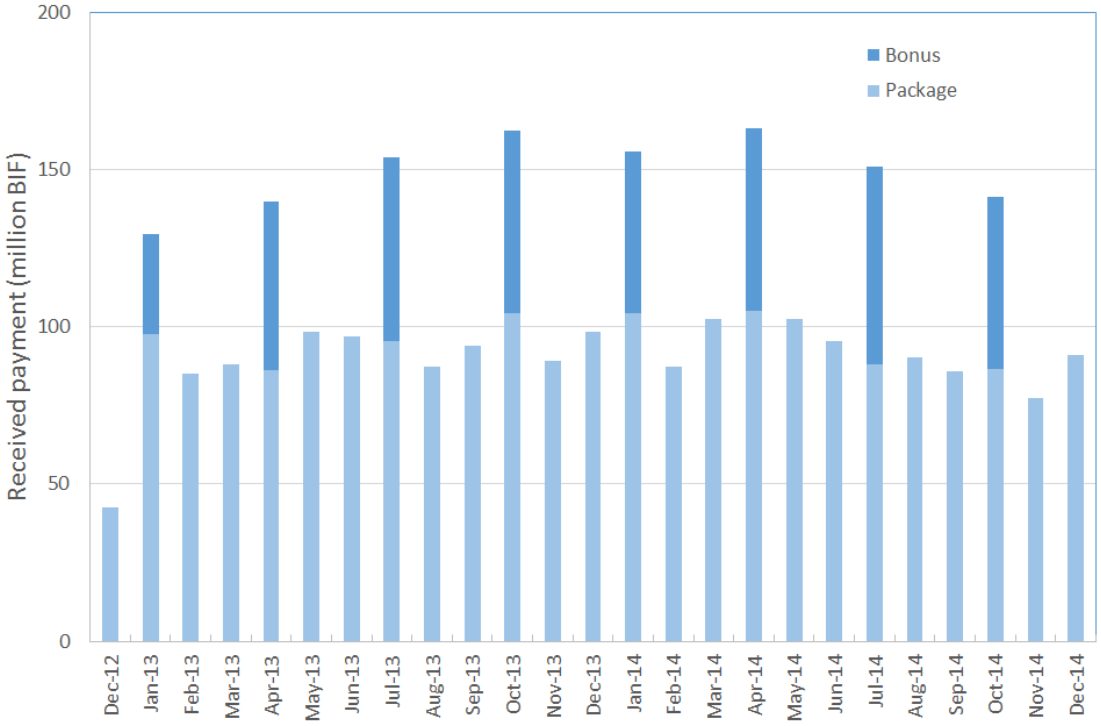

Figure 3. Monthly subsidies from the government to HPRC (Source: data by PBF)

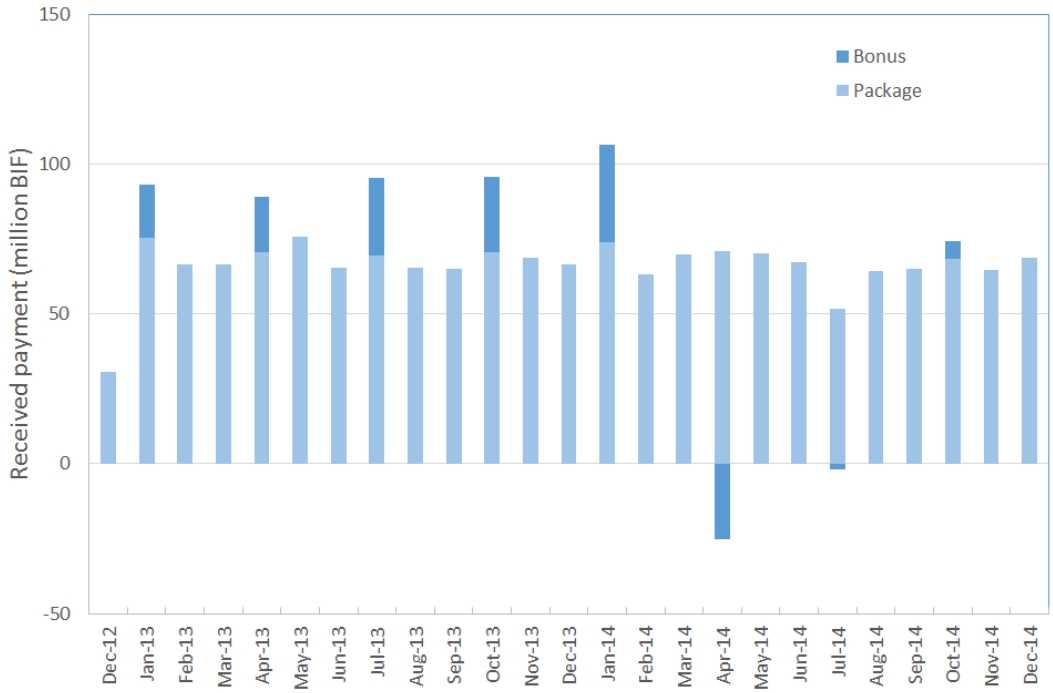

Figure 4. Monthly subsidies from the government to the 9 targeted HCs (Source: data by PBF)

PBF scores in maternity/obstetric services are shown in Table 13[21]. PBF scores in maternity/obstetric services achieved high levels after the completion of the project except for Ngagara HC, which started maternal and child health services in 2013. Mutakura HC, which started to offer maternal and child health services in 2011 and Ruziba HC, which started offering these services in 2012 have low scores in the years they started the services but they have had higher scores in subsequent years. Ngagara HC is expected to have similarly higher scores after 2014. If the scores increase, the negative portion will change into positive and the budget will be secured, since its allocation is dependent on these scores.

Table 13. PBF scores in maternity/obstetric services*

(Unit: %)

Facilities	2010	2011	2012	2013
Buterere HC	84	57	99	98
Bwiza-Jabe HC	–	–	–	–
Buyenzi HC	–	–	–	–
Kamenge HC	100	98	99	96
Kanyosha HC	92	93	100	90
Musaga HC	88	96	98	89
Mutakura HC	–	20	81	100
Ngagara HC	–	–	–	32
Ruziba HC	–	–	79	94

* Scores in 2010, 2011 and 2012 are listed in Table 3 as well.
(Source) data by PBF

No major problems have been observed in the policy's background or with the organizational, technical, and financial aspects of the implementing agency. Therefore, the sustainability of the project and its effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was conducted in order to materialize improved operation and management, and to put into action patient-centered maternal and neonatal care through 5S activities at Prince Regent Charles Hospital (HPRC) and 9 Health Centers (HCs) in the Municipality of Bujumbura, Burundi's capital. The project activities were consistent with Burundi's national development policy, in which the improvement of maternal and neonatal care was addressed. It was a priority to reduce the maternal mortality ratio and child mortality rate that were important issues in Burundi. The project also aligned with Japan's ODA policy for Burundi, which had the improvement in basic living environment as a pillar. Therefore, its relevance is high. The project enhanced the leadership abilities of managers, thereby, improving work environments through 5S activities, further developing knowledge and skills among nursing

[21] Partly duplicated from Table 3.

staff, and continuously implementing preventive maintenance of medical equipment. These activities resulted in the improvement of operation and management of the targeted facilities and the implementation of patient-centered maternal and neonatal care. Therefore, both its effectiveness and impact are high. Although the project was completed within the planned timeframe, the project cost exceeded the planned one. Therefore, its efficiency is fair. The target facilities have developed a monitoring system and transfer of the techniques beyond a certain level. The improvement of maternal and child health remains one of the national issues of high priority, for which the government of Burundi continues to allocate the necessary budget. Therefore, its sustainability is high.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Currently the National 5S committee has become the main body responsible for conducting training on 5S activities for doctors and nurses working at public hospitals, and has started to hold on-site seminars during their visits at the hospitals. In such efforts to disseminate 5S activities, it is expected that the trainees would be further inspired and motivated if the relevant officials who have engaged in the project activities would not only explain 5S, but also speak frankly in their own words concerning: what was improved though the activities of this project (ex. complaints from patients on queues disappeared due to the clarified order of acceptance, the time it took to look for necessary medicine, medical equipment in the case of emergency patients, etc., was reduced); and, what was difficult in establishing 5S activities.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Limitation of scopes of efforts of the moment

Burundi has been politically unstable since its independence in 1962. The civil war that lasted from 1993 to 2005 caused the deterioration of medical and health facilities, and as a result their quality of service has been a great challenge in the country[22]. This project was the first "technical cooperation project" by JICA in Burundi[23], and the second among the all projects following a development study named "The Emergency Study on Urban Transportation in Bujumbura" (January 2007 – December 2007). Although this project

[22] Source: Ex-ante Evaluation Report, Foreword.
[23] Source: Ex-ante Evaluation Report, p. 11.

declared the Project Purpose to be “Patient-centered maternal and neonatal care is implemented under improved management at HPRC and targeted health centers”, its initial focus was to improve the working environment through 5S activities. 5S could be implemented immediately even at deteriorated facilities and serve well the needs of such facilities, since it requires neither expensive equipment nor high levels of technology. It is thought to be an effective cooperation approach in a vulnerable, post-conflict country like Burundi not to try to necessitate achieving great results immediately, but instead to start with simple activities like 5S. Actual efforts through 5S contributed to the improvement of health services e. g. the clarification in the order of acceptance and the reduction in waiting time.

When cooperation projects are implemented in post-conflict countries like Burundi in the future, it is considered to be effective starting with simple things like 5S to build a foundation in the working environment first, rather than trying to solve many problems in a short period. If the infrastructure related to cooperation projects has deteriorated, it is effective to implement a grant aid and a technical cooperation project at the same time and also to utilize equipment supplied in the former for OJT, etc. in the latter, rather than to plan a cooperation project on the condition that such infrastructure is utilized. In this case, the timing of implementation should be carefully planned.

Table A1. Achievement of the Outputs

Output	Indicator	Actual
Output 1: Leadership of the top and middle class managers is fostered at HPRC and targeted health centers, involving directors of facilities and heads of all departments & units.	[Indicator 1-a)] 5S committees are established in HPRC and Provincial Health Office of Bujumbura City.	In July 2009, 5S committees were established at HPRC and the Provincial Health Office (BPS) of the Municipality of Bujumbura.
	[Indicator 1-b)] Working Improvement Teams (WIT) are established in the target facilities (within 8 months after the beginning of the project)	In October 2009, missing the deadline for one month, Work Improvement Teams (WITs) were established in three pilot departments (maternity, obstetrics and neonatal services) of HPRC and each of nine HCs. By January 2011, the number of WITs has expanded to 18 in HPRC, covering all departments.
	[Indicator 1-c)] Quality Assurance Policy is displayed on walls in the targeted facilities. (within 12 months after the start of the project)	By May 2011, missing the deadline for five months, Vision and Mission are displayed at three targeted departments in HPRC and nine HCs. The checklist for environment and sanitation is also displayed at the targeted three departments of HPRC. This delay was caused by the stoppage of the activities of Japanese experts during a 5 month-long evacuation in 2010.
	[Indicator 1-d)] Activity reports of WIT are made monthly.	From April 2010 until August 2011, the average number of monthly WIT meetings of three departments at HPRC was 0.37 (6 times out of 17 months). HPRC also organizes the chief meeting of WITs whose average number of monthly meetings was 0.65 (11 times out of 17 months). The average number of monthly WIT meetings at nine health centers was 0.72 (12 times out of 17 months). Mutakura HC has been conducting monthly meetings regularly.
Output 2: Work environment for maternal & neonatal care is improved through practicing 5S activities under the leadership of directors.	[Indicator] Following 5S activities are in operation by the WITs in the targeted facilities. 1) Segregating rules of hazardous articles and medical wastes are formulated and practiced. 2) Storing rules for articles are formulated and practiced. 3) Benches for outpatients are located and used in the proper places.	In the medical field, the criteria for waste fractionation has been created and conducted in each department. The rules for segregation of hazardous articles and medical wastes are formulated and posted in each department. Stationery, drugs, and medical materials being stored are designated by utilizing labels in order to improve the efficiency of operations. Segregation has been done in all facilities. Waiting areas for the patients have been set aside as one way to improve the environment for them. Some benches for the patients, which have been supplied by building and repair activities of the project, have been placed in appropriate locations. There are also some cases in which the bench seats themselves have been numbered with paint.
Output 3: Preventive maintenance of medical equipment is continuously practiced with full participation of health staff in the targeted facilities.	[Indicator 3-a)] All of the equipment is affixed with attention “How to use” tag in the targeted facilities (within 3 months after the completion of Japanese grant aid project).	The affixing rate was 0% at the start of the Project, but its mean reached 77.0% at the time of the Mid-term Review and increased to 98.4% at the time of the Terminal Evaluation.
	[Indicator 3-b)] Preventive Maintenance Sheets are displayed in the targeted facilities with medical equipment installed, and after-use-care and condition of the equipment is recorded. (within 6 months after the display)	The rate of display was 0% at the start of the Project, but its mean reached 72.5% at the time of the Mid-term review and 92.5% at the time of the Terminal Evaluation.

Output 4: Knowledge and skills of nursing staff (including midwives) are upgraded for maternal & neonatal care at the targeted facilities.	[Indicator 4-a)] All trainees score more than 50 out of 100 points on the post-test.	At the first maternity training in October 2009, 18% of participants scored more than 80 out of 100 points on the post-test. At the second maternity training in September 2010, 97% of participants scored more than 50 out of 100 points on the post-test. At the training for the normal delivery checklist in June 2011, 100% of 25 participants scored more than 50 out of 100 points. The average score was 70.8%. At the training for the check sheet and partogram[24] in August 2011, 88.9% of 18 participants scored more than 50 out of 100 points. The average score was 65.3%.
	[Indicator 4-b)] Accumulative more than 100 staffs at the targeted facilities complete obstetric skill trainings.	By December 2011, 273 staff members have been trained on obstetric skills in 9 trainings.
	[Indicator 4-c)] 'Normal Delivery Care Checklist' is formulated based on the knowledge obtained through the overseas trainings in Madagascar.	In May 2011, the 'Normal Delivery Care Checklist' was formulated. In June 2011, the 'Normal Delivery Care Checksheet' was formulated. In July 2011, MOPH and the National Program for Reproductive Health (PNSR) validated them. In December 2011, a revised 'Normal Delivery Care Checklist' was completed. Since January 2012, their utilization is being monitored following the established monitoring system.
	[Indicator 4-d)] Mindset and attitude of health personnel in work places are improved.	Improvement is observed in the mindset of heath personnel, according to the interviews regarding the relationships between service providers and patients conducted in March 2009 and September 2011. 104 and 81 answers were collected in each interview respectively. ➢ Staff members should approach patients with courtesy: 11.3% → 63.9% ➢ Satisfaction of patients is important: 3.8% → 63.9%

(Source) prepared by the evaluator referring to documents provided by JICA

[24] A table that can show the progress of deliveries at a glance.

Federal Democratic Republic of Ethiopia

Ex-Post Evaluation of Technical Cooperation Project

"The Water Sector Capacity Development Project in Southern Nations, Nationalities and People's Region"

External Evaluator: Makoto Tanaka, ICONS Inc.

0. Summary

This project was implemented in the Southern Nations, Nationalities and People's Regional State (hereinafter referred to as "SNNPRS") for the purpose of building sustainable water supply systems and developing their organizational and human resources capacity. The activities of this project were consistent with the improvement of the water supply rate and the water scheme functionality rate that were priorities of Ethiopia's national development policy, Ethiopia's development needs such as access to safe water, and Japan's assistance policy, which prioritized the development of the ability to supply safe water and maintain water facilities. However, problems in the planning and approach prevented the project from having the expected effects. Therefore, its relevance is fair. The Project Purpose and the Overall Goal have not been achieved and it cannot be said that a sustainable water supply management system has been built. The expression of the Outputs and the Project Purpose from its completion to the time of the ex-post evaluation is not sufficient as well. Therefore, its effectiveness and impact are low. Both the project cost and the project period exceeded the plan. Therefore, its efficiency is fair. There are problems left in the organizational aspects of the implementing agencies, such as cooperation between the region, zones and woredas[1], the supply of equipment and spare parts that are necessary for maintaining water facilities, the technical skills of the Woreda Water, Mining and Energy Offices (hereinafter referred to as "WWMEO"), and the bearing of costs by the users of water facilities, etc. The outlook for their resolution is not bright. There are slight problems in related policy and institutional aspects. Therefore, its sustainability is low.

In light of the above, this project is evaluated to be unsatisfactory.

[1] Ethiopia's administrative districts are classified into regions, zones, woredas (counties), and kebeles (villages) in order of level. Each level of administrative entity has a department in charge of water resources: the Water Resources Bureau (WRB) in regions, Zonal Water, Mining and Energy Departments (ZWMED) in zones, and Woreda Water, Mining and Energy Offices (WWMEO) in woredas.

1. Project Description

Project Location

Household rope pump installed in the Project[2]

1.1 Background

At the time of the project planning, the accessibility to safe water in Ethiopia was 24%, which was significantly lower than the average among Sub-Sahara African countries (54%)[3]. An increased rate of access to a supply of water is particularly urgent in rural areas, where 85% of the population live. There was also a pressing need for each regional government, which was responsible for the water supply, to train its technicians and to build water supply facilities so that they promote their own water supply work, since the budget allocation and human resource development at local administration organizations were delayed. In addition, many existing water supply facilities were left out of order. Accordingly, it was quite important to develop human resources and systems on the operation, maintenance and repair of water supply facilities in order to achieve the Universal Access Plan (hereinafter referred to as "UAP") in the water sector. In rural areas, it was a key to the sustainable operation and maintenance of water supply facilities to standardize hand pumps and to establish spare parts supply chains, since it was difficult to purchase spare parts.

SNNPRS is located in the south and southwest of Ethiopia. Its population was about 14 million, 93% of which was in its rural areas. The water supply rate was 34.1% in 2004, which is below 35%, the average of Ethiopia. It was said that about 30% of the existing water supply facilities in the region were left out of order and were unusable. It was then necessary to develop the capacities of Water Sanitation and Hygiene Committees (hereinafter referred

[2] A rope pump is a kind of pumps that are intended for shallow wells. It is believed that rural inhabitants can bear the initial cost of installation and maintain rope pumps by themselves, the users can pump water with simple operation, and they can save time for household work. The structure and the principal of rope pumps are shown in Figures A1 and A2 at the end of this document, respectively.

[3] Source: Data from the year 2002 by the United Nations Development Program (UNDP).

to as "WASHCO")[4] at community levels, which are responsible for the sustainable operation of such facilities and the activities for improving sanitation and hygiene. It was also important to strengthen the function of the Water Resources Bureau of the regional state (hereinafter referred to as "WRB"), which is in charge of the development of their capacities. Against this backdrop, the Government of Ethiopia has requested that the Japanese Government provide a technical cooperation program with the goal of building a sustainable water supply management mechanism and developing the capacities of concerned organizations and human resources with the WRB of SNNPRS as its counterpart (C/P).

1.2 Project Outline[5]

This project dealt with household rope pumps and public hand pumps. As for the former, there were 60 household rope pumps installed in 6 woredas[6] and users and WWMEOs connected to the project were taught maintenance techniques. As for the latter, 205 pumps were installed in woredas in SNNPRS including these 6, and WASHCOs were established involving the users of the installed pumps, in a preceding grant aid named "The project for water supply in Southern Nations, Nationalities and People's Regional State" (1st phase: fiscal year (FY) 2005 and 2nd phase: FY 2006, hereinafter referred to as "the preceding grant aid"). This project selected 21 WASHCOs from these that are located in 6 targeted woredas[7], and assisted those in charge of the maintenance of these WASHCOs and WWMEO personnel that have jurisdiction over them through trainings, etc. In addition, the project invited spare parts outlets to places accessible from each woreda, in order to establish a system to supply spare parts for rope pumps and hand pumps. The communication system in the project activities is shown in Figure 1.

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[4] A WASHCO is a self-administering organization consisting of the users of water supply facilities.

[5] The Project Design Matrix (PDM) of this project was revised four times in June 2008, June 2009, December 2009 and May 2011. The project outline described here depends on PDM4 revised in May 2011.

[6] The project invited inhabitants in each woreda to install household rope pumps on the condition of paying 2,000 Birr as a share of the expenses. The WWMEO personnel installed pumps at 60 residences that agreed with this condition, as part of their on-the-job trainings (OJT) under the instruction of project experts. Birr is the currency of Ethiopia: 1 Birr = about 5.9 Japanese Yen as of the end of 2014.

[7] According to the results of the baseline survey implemented in 2008, 6 target woredas were selected among the 78 (then), and among WASHCOs in those 6 woredas, 21 were selected based on the results of several investigations (Source: documents provided by JICA).

Overall Goal		Sustainability on water supply system is improved in SNNPRS.
Project Purpose		Organizational capacity in implementation, operation and maintenance of water supply system is improved in SNNPRS.
Output(s)	Output 1	Rural Water Supply Scheme Development / O&M Plan is formulated in each of the 6 Target Woredas[8]
	Output 2	Rope Pump Dissemination System is established in the 6 Target Woredas[9]
	Output 3	Operation and Maintenance of Water Schemes are improved in 6 Target Woredas.
Total cost (Japanese Side)		467 million yen
Period of Cooperation		December, 2007 – December, 2011
Implementing Agency		Water Resources Bureau, Southern Nations, Nationalities and People's Region
Other Relevant Agencies / Organizations		Related Zonal Water, Mining and Energy Department (ZWMED), Relate Woreda Water, Mining and Energy Office (WWMEO)
Supporting Agency / Organization in Japan		Japan Techno Co., Ltd. and Kokusai Kogyo Co., Ltd. (JV)
Related Projects		<Technical Cooperation Projects> "The Groundwater Development and Water Supply Training Project" (1998-2003) "The Groundwater Development and Water Supply Training Project – Phase II" (Water Technology Center) (EWTEC2, 2005-2008) "The Ethiopian Water Technology Center Project Phase-3" (2009-2014) "Project for Rural Water Supply, Sanitation and Livelihood Improvement through Dissemination of Rope Pumps (RPs) for Drinking Water" (WAS-RoPSS, 2013-2016) <Grant Aid> "The Project for Water Supply in Southern Nations, Nationalities and People's Regional State" (FY 2005) "The Project for Water Supply in Southern Nations, Nationalities and People's Regional State" (Phase 2, FY 2006) <The World Bank (WB)> "Ethiopia Water Supply and Sanitation Project (2004-2013)" "Ethiopia Water Supply, Sanitation and Hygiene Project (2014-2019)" <United Nations Children's Fund (UNICEF)> "Projects on Rural Water Supply Facilities"

[8] 6 woredas in 6 zones: Angacha Woreda in Kembata Tembaro Zone, Arba Minch Zuria Woreda in Gamo Gofa Zone, Boloso Sore Woreda in Wolayita Zone, Hula Woreda in Sidama Zone, Loma Woreda in Dawuro Zone and Silti Woreda in Silte Zone.

[9] Rope pumps were not installed in Loma Woreda among the above mentioned 6 woredas, where it was judged that there were no wells applicable to rope pumps, but were installed in Chencha Woreda, Gamo Gofa Zone instead (Source: documents provided by JICA).

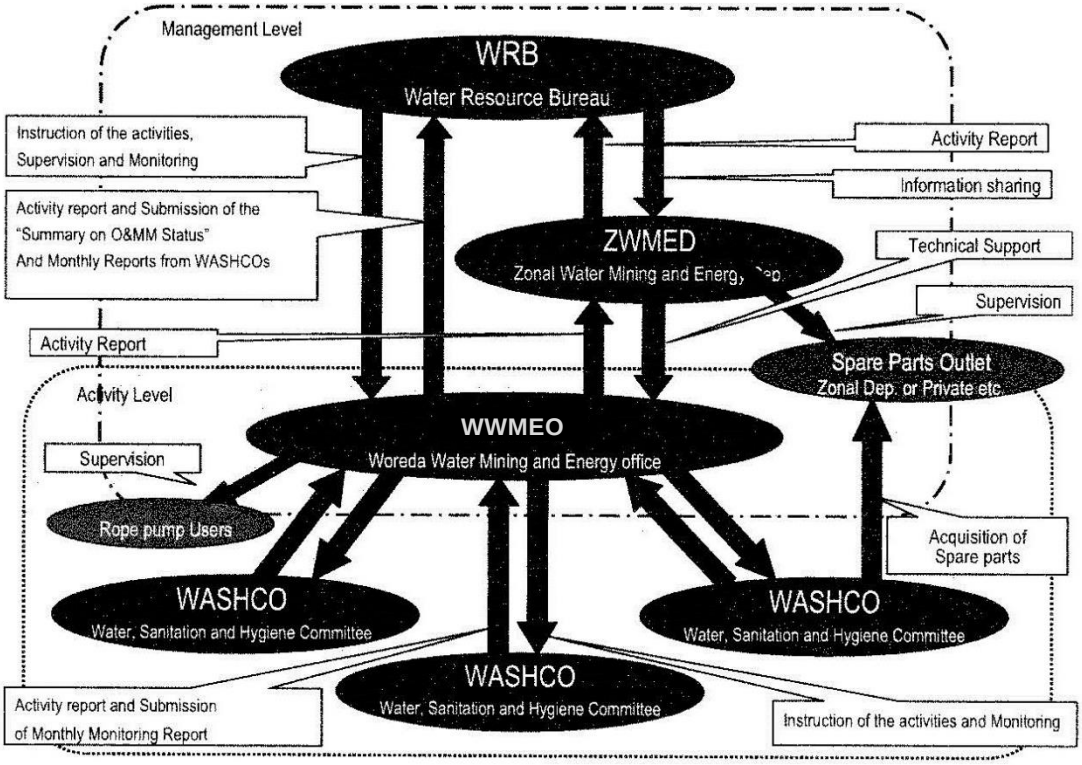

Figure 1. Communication System in the Project Activities

(Source: documents provided by JICA)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the time of the Terminal Evaluation

The Project resulted in the development of models of WASHCO, Preventive/Curative O&M, and the dissemination of rope pumps and spare parts supply chains. Thus the Project Purpose was expected to be achieved by the end of the Project period.

1.3.2 Achievement Status of Overall Goal at the time of the Terminal Evaluation

The Terminal Evaluation Team confirmed that the target woredas and zones had been ready for the implementation of preventive O&M and the dissemination of rope pumps in spite of their limited budget and other limitations. Thus it was expected that the Overall Goal would be achieved.

1.3.3 Recommendations at the time of the Terminal Evaluation

The following recommendations were made for the short-term perspective before the end of the Project.

(1) For the dissemination of the project effect, the WRB of SNNPRS should develop a detailed implementation plan in cooperation with JICA experts by the completion of the project.

(2) In order to promote the aggressive participation of the C/P in the project, the project activities should be described in the "performance evaluation sheet" from July 2011 when Ethiopia's fiscal year starts[10].

(3) Personnel from the Planning, Monitoring and Evaluation Office of the WRB should participate in regular meetings and site investigations for the purpose of increasing the quality of the implementation of the project such as promoting the aggressive participation of the C/P and ensuring the sustainability of the WRB of SNNPRS.

(4) Dissemination of rope pumps is the official policy of the country. The WRB ought to assist WWMEOs in developing a detailed implementation plan. In this regard, the WRB should form a specific unit and assign key persons therein.

The following recommendations are made for the long-term perspective.

(5) An appropriate budget should be allocated for maintenance. The WRB should make efforts to find potential financial sources from donors and international agencies, etc. so that it can ensure external sources of funds to support WWMEOs, which do not have a large enough budget, means of transportation, or maintenance equipment.

2. Outline of the Evaluation Study

2.1 External Evaluator

Makoto Tanaka, ICONS Inc.

2.2 Duration of the Evaluation Study

Duration of the Study: August, 2014 – August, 2015

Duration of the Field Study: November 13, 2014 – December 9, 2014 and February 24, 2015 – March 4, 2015

2.3 Constraints during the Evaluation Study

This project installed 60 household rope pumps in 6 target woredas and technically assisted 21 WASHCOs that use part of the hand pumps supplied in the preceding grant aid to maintain them. However, the evaluator could not check all the hand pumps in the ex-post evaluation due to the constraints on field survey periods and budget. In addition, the evaluator could not directly interview part of the users of household rope pumps and

[10] Ethiopia's fiscal year starts in the eleventh month of the Ethiopian calendar and ends in the tenth month. July 8th, 2011 in the European calendar is the first day of the eleventh month of the year 2003 in the Ethiopian calendar.

WASHCOs and interviewed them by telephone instead[11].

It should be noted that for items at the completion of the project that cannot be directly checked, the evaluator estimated the situation at that time from the situation at the time of the ex-post evaluation by taking into account additional information obtained from interviews.

3. Results of the Evaluation (Overall Rating: D[12])

3.1 Relevance (Rating: ②[13])

3.1.1 Relevance to the Development Plan of Ethiopia

At the time of the project planning, the water sector, particularly water supply and sanitation, was one of the important issues in Ethiopia's five-year plan, i.e. the "Plan for Accelerated and Sustained Development to End Poverty" (2005-2009). In Ethiopia, not only the "Millennium Development Goals" (MDG)[14] aimed to improve the water supply rate to 100% by 2012, but also the UAP that is the mid- and long-term plan of the water sector. To achieve the goal in this plan, it designated as main strategies the development of human resources and capacities at WWMEOs, the aggressive adoption of low-cost technologies and the repair of non-functioning water facilities, etc. In addition, the WRB of SNNPRS formulated a regional strategy for developing the water sector in March 2004 to establish a sustainable water supply system.

At the completion of the project, the "Growth and Transformation Plan" announced in 2010, the five-year plan succeeding the "Plan for Accelerated and Sustained Development to End Poverty," mentioned the goal of improving the water supply rate to 98.5% by 2015. The UAP2, which started in 2011 as a revised version of the UAP, clearly specifies the goal of improving the accessibility to safe water[15] up to 98% and reducing the rate of non-functionality to 10% by 2015. In that strategy, developing human resources and capacities in the water sector at all levels, and introducing water supply facilities that can be operated and maintained on a small budget are regarded as important. From the above, this project, which aims to develop water supply systems and to strengthen the capacities for their maintenance in SNNPRS, is highly consistent with Ethiopia's development policy.

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[11] Interviews by telephone are limited to residences with members who have telephone services and understand Amharic (the official language of Ethiopia) or English.

[12] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[13] ③: High, ② Fair, ① Low

[14] The MDG declared that the water supply rate should reach 63% by 2015.

[15] The definition of access is Ethiopia specific: in rural areas, that is provided access to water of 15 ℓ per capita per day within 1.5 km of water supply points, and in urban areas, that is provided access to improved water of 20 ℓ per capita per day from domestic / household water consumptions (Source: Report on Inventory of Water Supply and Sanitation Facilities in SNNPR as part of The National WaSH Inventory (2011), pp. 46-47).

3.1.2 Relevance to the Development Needs of Ethiopia

At the time of the project planning, the accessibility to safe water was extremely bad among Ethiopia's development indices and securing domestic water was of high priority. The development of rural water supply systems, the rehabilitation of non-functioning water facilities, and the strengthening of maintenance capacities, at which the project aimed, were directly connected to development needs such as access to safe water and management of domestic water. Still, even at the completion of the project, there was a need to strengthen the maintenance capacity of existing water supply facilities for access to safe water. According to the summary by the World Bank (WB)[16], the overall water supply rate in rural areas of Ethiopia was 31.9% and 39.3% in 2007 and 2011 respectively. After "The National Water, Sanitation and Hygiene Inventory" of Ethiopia, the rate of population supplied with water in SNNPRS was 44.29% in 2011, and the functionality rate of water supply facilities was 72.95% (the non-functionality rate was 27.05%) in the same year[17]. From these things, it is clear that access to safe water and the strengthening of the capacity of the maintenance of water supply facilities in SNNPRS were highly needed.

3.1.3 Relevance to Japan's ODA Policy

This project was consistent with Japan's assistance policy for Ethiopia at the time of the project planning, since Japan's "Country Assistance Policy for Ethiopia" at that time pointed out the shortage of safe water supply and noted the need to "assist the strengthening of the capacity to supply safe water through the coupled implementation of water supply projects in rural areas, develop human resources in the water sector, and provide assistance to groundwater investigation" in the section of "agriculture and rural development".

3.1.4 Appropriateness of the Planning and Approach of the Project

The basic direction of this project, that is, to promote the installation of rope pumps as a mean corresponding with the above-mentioned development need, was consistent with Ethiopia's development policy. However, the following problems existed in its planning and approach.

As described in 3.2.1, it is judged that the Project Purpose (interpreted as the improvement of organizational capacity in implementation, operation, and maintenance of water supply systems in the 6 target woredas) has not been achieved. The Overall Goal (targeting the whole SNNPRS) has not been achieved either as described in 3.2.2, and the Sustainability (described in 3.4) is also low. These are likely caused by the lack of discussions on the

[16] Improved water source, rural (% of rural population with access), WB Databank, http://data.worldbank.org/indicator/SH.H2O.SAFE.RU.ZS

[17] Source: Report on Inventory of Water Supply and Sanitation Facilities in SNNPR as part of The National WaSH Inventory (2011), p. 4 and p. 6

planning of the system for disseminating rope pumps and improving the maintenance system of water supply facilities and the approach to them. These factors are summarized as follows.

- Dissemination of rope pumps: While this project installed 60 household rope pumps in 6 woredas, it did not show the way to disseminate rope pumps to all SNNPRS. As described in 3.2.2.1, the dissemination of rope pumps is one of the conditions for achieving the Overall Goal. Not having shown the way to disseminate means that the activities and outputs necessary for achieving the Overall Goal were not included in the framework of the project planning.
- Sustainability of spare parts outlets: It is necessary for the maintenance of water supply facilities that spare parts supply chains are established and spare parts can be purchased there with prices that users can afford. However, the spare parts outlets the project invited withdrew for reasons of profit and the difficulty in acquiring wholesale spare parts. In other words, the factors that govern whether or not the sustainable maintenance of water supply facilities would be possible were not included in this project, that is, a killer assumption[18] existed in the very framework. Such a project plan is not sufficient for ensuring sustainability. However, it could not be verified from the documents and information obtained in this ex-post evaluation whether the sustainability of spare parts outlets was studied in this project.
- Installation of rope pumps: The interviews of household rope pump users showed that there were some cases where the installation works were not appropriate or the groundwater level was not sufficiently confirmed. As described in 3.4.4, the users of such pumps testified that they lost their willingness to pay their share of the expenses as a result of the rope pumps becoming unusable because of disorders due to such inappropriate installation[19].

In light of the above, this project was highly relevant to Ethiopia's development plan and development needs, as well as Japan's ODA policy. On the other hand, there were some problems in the appropriateness of the planning and approach of the project. Therefore, its relevance is fair.

[18] A killer assumption is an Important Assumption that would kill the project. An Important Assumption is a condition that is important for the project being successful but cannot be controlled by the project and uncertain to be satisfied.

[19] Inhabitants who wanted to have rope pumps installed agreed to pay the share of the expenses of 2,000 Birr that is half of the installation cost per pump, passed the examination of their ability to pay by financial institutions, and signed on the installation contracts with WWMEOs. Nevertheless, there appeared some users who lost their willingness or ability to pay afterwards.

3.2 Effectiveness and Impact[20] (Rating: ①)

3.2.1 Effectiveness

During the implementation of this project, the following factors severely affected the expression of the project effects.

(1) Significant modifications to the implementation system after the start of the project

From September 2008, after the start of the project, to June 2009, administrative reform named Business Process Re-Engineering (hereinafter referred to as "BPR")[21] was implemented on all public organizations in Ethiopia. The plan had to be revised many times, since the pressure of business to the C/P, large-scale turnovers, etc. due to the BPR after September 2008 greatly affected the implementation of this project[22]. A situation occurred where the head of the WRB was changed, the main department in charge of this project in the WRB was abolished, and the C/P became absent except for one person[23]. These affected the expression of the project effects.

(2) Framework of the project planning

Although the target areas have been narrowed down to 6 woredas in 6 zones, the statement "in SNNPRS" in the Project Purpose and the Overall Goal was not changed and only the Indicator to the Project Purpose was revised as targeted to these 6 woredas. At the discussion in the Mid-term Review in December 2009, it was a precondition that the Project Purpose and the Overall Goal would not be changed[24]. Although this precondition was not satisfied when the target areas were narrowed down to 6 woredas in 6 zones, the Indicator to the Project Purpose and the actual areas of the activities were narrowed without changing the Project Purpose or the Overall Goal. This caused an estrangement between the Project Purpose and its Indicator and an illogical gap between the Outputs and the Project Purpose[25]. As a result, the activities and outputs necessary for achieving the Overall Goal were not involved in the framework of the project planning as described in 3.1.4.

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[20] Sub-rating for Effectiveness is to be put with consideration of Impact.

[21] The Business Process Re-Engineering (BPR) was implemented from September 2008, after the start of the project, to June 2009 in all Ethiopia, as one of the greatest governmental projects. Along with this, the department in charge of this project in the WRB was abolished, the C/P became absent except for one person due to large-scale turnovers, and many of the personnel members of zones and woredas who had been involved in this project were convened to the regional government (Source: Joint Mid-term Review Report (in Japanese), p. 3-3 and documents provided by JICA).

[22] Source: Joint Mid-term Review Report (in Japanese), p. 4-2

[23] Source: documents provided by JICA

[24] Source: Joint Mid-term Review Report (in Japanese), p. 7-1

[25] All the statements of the three Outputs described on the PDM after December 2009 say "in the 6 target woredas". If the statement "in SNNPRS" in the Project Purpose is interpreted as in all the region, the achievement of the Outputs in the 6 target woredas would cause the achievement of the Project Purpose in all SNNPRS. It should be said that there is an illogical gap between the Outputs and the Project Purpose in such a situation.

3.2.1.1 Project Output

This project aimed to strengthen the development and maintenance capacities of water supply facilities. It formulated "Rural Water Supply Scheme Development / O&M Plan" (Output 1) and prepared the circumstances necessary for the activities on sites[26]. Then Output 1 was achieved. Under these circumstances, the project focused on two goals, to establish a system for the dissemination of rope pumps (Output 2) and to improve the system of operation and maintenance of water supply facilities (Output 3). As the activities on Output 2, personnel members of WWMEOs installed 60 household rope pumps, which had been supplied to the WRB in a preceding technical cooperation project[27] but had not been installed, as part of their on-the-job training (OJT). The project monitored them and developed a model for disseminating rope pumps[28]. As a result, a system for the dissemination of rope pumps was established, and then Output 2 was achieved. As for the activities on Output 3, the project formulated a manual on the maintenance of rope pumps, performed trainings for the maintenance of rope pumps, established spare parts supply chains, and prepared a system for maintenance involving inhabitants. However, it was delayed in distributing the guidelines for spare parts supply chains to WWMEOs, and the system for the operation and maintenance of water supply facilities was not improved in some WASHCOs because of the difficulties in the saving of maintenance costs and the storage of spare parts for hand pumps. Then Output 3 was not achieved.

The achievement of each indicator to the Outputs is shown in Table A1 at the end of this document.

3.2.1.2 Achievement of the Project Purpose

(1) Components of the Project Purpose

Although the Project Purpose is "Organizational capacity in implementation, operation and maintenance of water supply system is improved in SNNPRS," this project practically aimed at "the improvement of organizational capacity in implementation, operation and maintenance of water supply systems" not in all SNNPRS but in 6 woredas. From the interpretation of the Project Purpose in the Mid-term Review[29], it is understood that the

[26] In this plan, a GIS database was prepared and the personnel members of the WRB, ZWMEDs and WWMEOs learned how to use it. GIS stands for Geographic Information System.

[27] "The Groundwater Development and Water Supply Training Project – Phase II (Water Technology Center)" (2005 – 2008)

[28] The federal government and the government of SNNPRS declared a policy of disseminating rope pumps to rural areas. The model for disseminating rope pumps is a model that consists of activities such as the implementation of actual installation trainings and follow-up trainings for technicians who have been trained in the Water Technology Center, trainings on the quality management of rope pumps for the personnel members of the regional and zonal governments, etc.

[29] It was proposed to revise the plan of the project, having divided the Project Purpose into two sub-purposes, ① the improvement of organizational capacity in the implementation of water supply systems and ② the improvement of organizational capacity in the operation and maintenance of water supply systems (Source:

Project Purpose consists of the components listed in Table 1.

Table 1. Components of the Project Purpose

	Component	Remarks
Component 1	Improvement of organizational capacity in implementation of water supply systems in 6 woredas (Angacha, Arba Minch Zuria, Boloso Sore, Hula, Chencha and Silti)	Of the 6 target woredas (Angacha, Arba Minch Zuria, Boloso Sore, Hula, Chencha and Silti), no rope pumps were installed in Loma Woreda in this project but in Chencha Woreda.
Component 2	Ability to purchase spare parts for rope pumps in 6 woredas (Angacha, Arba Minch Zuria, Boloso Sore, Hula, Chencha and Silti)	
Component 3	Establishment of the ability of the target 21 WASHCOs to repair hand pumps (including technical assistance by WWMEOs)	The WASHCOs which are targeted in this project are located in the 6 target woredas (2 in Angacha Woreda, 2 in Arba Minch Zuria Woreda, 5 in Boloso Sore Woreda, 2 in Hula Woreda, 5 in Loma Woreda and 5 in Silti Woreda).
Component 4	Establishment of the ability of the target 21 WASHCOs to bear the cost of operating and maintaining hand pumps	

Components 1 and 2 are related to rope pumps, while Components 3 and 4 are related to hand pumps. Component 1 corresponds to "Organizational capacity in the implementation of water supply systems" and the other three correspond to "organizational capacity in the operation and maintenance of water supply systems" in the Project Purpose[30].

(2) About the Indicator to the Project Purpose

In PDM4, which is the final version of the PDM, the Indicator to the Project Purpose is stated as "OJT target Woredas achieve the objective of rate of access running rate (utilization) of rural water supply system by December 2011." However, the evaluator believes that this Indicator is not sufficient for directly measuring the strengthening of the above-mentioned capacity of "implementation" since the rope pumps dealt with in this project were installed under the instruction of project experts and the hand pumps were installed by the Japanese side in the framework of the preceding grant aid, and not sufficient for directly measuring that of "operation and maintenance" since the increase in access running rate is only a result of the strengthening of organizational capacities. Consequently, from the viewpoint of "the increase in capacity," two indicators are assumed in addition to the Indicator in PDM4 and the achievement of Output 3 is used as an indicator to the Project Purpose[31]. These are listed in Table 2.

Joint Mid-term Review Report (in Japanese), p. 7-1).

[30] This project did not deal with the improvement of the organizational capacity in the implementation of public hand pumps.

[31] It is thought that for hand pumps, this project aimed only to increase the capacity of operation and maintenance, not implementation. Therefore, "the implementation of organizational capacity in the operation and maintenance of water supply systems" is focused. This is judged directly by the achievement of Output 3.

Table 2. Indicators for the Project Purpose in the Ex-post Evaluation[32]

	Indicator	Reasons
Additional Indicator A1	The number of WWMEOs that can install rope pumps with just their own personnel in the 6 target woredas (target: 4 WWMEOs or more[33]).	The indicator to measure the capacity to develop rope pumps is included in the water supply system.
Additional Indicator A2	The rate of the beneficiaries in the 6 target woredas who answered that they can easily purchase spare parts from the spare parts supply chain established in the project (target: 60%[34]).	The capacity to operate and maintain both rope pumps and hand pumps included in the water supply systems.
Output 3	Operation and Maintenance of Water Schemes are improved in 6 Target Woredas.	Hint for judging the capacity itself to operate and maintain hand pumps.
Indicator in PDM4	OJT target Woredas achieve the objective of rate of access Running rate (utilization) of rural water supply systems by December 2011.	Collateral evidence supporting the above 3 indicators.

[32] Additional Indicators A1 and A2 are assumed and the achievement of Output 3 is added because the capacities in installation and technical support by WWMEOs and the capacities in operation and maintenance by WASHCOs are focused, since household rope pumps and public hand pumps are operated and maintained respectively by the beneficiaries and WASHCOs that represent the beneficiaries under their own costs and responsibilities, while WWMEOs are to install and technically support the beneficiaries. Additional Indicator A1 mainly measures the capacities in the implementation of rope pumps, while Additional Indicator A2 measures the capacities in operation and maintenance of water supply system (the ability to purchase spare parts for rope pumps and WASHCOs' ability to repair and bear the cost including the support provided by WWMEOs).

[33] The majority of the 6 woredas is assumed to be the goal of the achievement, since this project practically aimed at "the improvement of organizational capacity in the implementation, operation and maintenance of water supply systems" in 6 woredas, as described in 3.2.1.2(1).

[34] It is assumed to be the goal of the achievement that 60% of the beneficiaries can easily purchase spare parts, considering that this indicator reflects answers from randomly selected samples.

(3) Achievement of the Project Purpose

The achievement of the Project Purpose is shown in Table 3.

Table 3. Achievement of the Project Purpose

Project Purpose	Indicator[35]	Actual
Organizational capacity in implementation, operation and maintenance of water supply system is improved in SNNPRS.	[Indicator in PDM4] OJT target Woredas achieve the objective of rate of access Running rate (utilization) of rural water supply system by December 2011.	The Indicator in PDM4 was not fully achieved at the completion of the project. The running rates in October 2011 were 81% in Angacha Woreda (target: 88%), 87% in Arba Minch Zuria (target: 87%), 77% in Boloso Sore Woreda (target: 82%), 80% in Hula Woreda (target: 85%), 91% in Loma Woreda (target: 92%) and 87% in Silti Woreda (target: 88%) and 96% for the rope pumps installed in the project (target: 80%).
	[Additional Indicator A1] The number of WWMEOs that can install rope pumps with just their own personnel in the 6 target woredas (target: 4 WWMEOs or more).	Additional Indicator A1 was achieved at the completion of the project. At the completion of the project, 4 WWMEOs (Angacha, Arba Minch Zuria, Boloso Sore and Chencha) could install rope pumps with their own personnel acting alone. This capacity is unknown for Hula and Silti WWMEOs.
	[Additional Indicator A2] The rate of the beneficiaries in the 6 target woredas who answered that they can easily purchase spare parts from the spare parts supply chain established in the project (target: 60%).	Additional Indicator A2 was not achieved at the completion of the project. At the completion of the project, this indicator was achieved in 3 woredas (Angacha, Arba Minch Zuria and Hula) and not achieved in 3 woredas (Boloso Sore, Chencha and Silti). It is judged that this indicator was not achieved throughout the 6 woredas[36].
	[Output 3] Operation and Maintenance of Water Schemes are improved in 6 Target Woredas.	Output 3 was not achieved at the completion of the project (see Table A1).

(Source: documents provided by JICA and the results of site surveys)

It should be noted that for items at the completion of the project that cannot be directly checked, the evaluator estimated the situation at that time from the situation at the time of the ex-post evaluation clarified by site visits and interviews with beneficiaries, by taking

[35] It is desirable that all the Indicators to the Project Purpose would be achieved by 100% for the achievement of the Overall Goal after that of the Project Purpose. However, the evaluator assumed 60% i.e. the majority, as criteria of achievement.

[36] These actual results are summarized from the following interviews.

- Direct interviews by the evaluator to 29 households that have rope pumps installed (11 households in Angacha Woreda, 9 in Arba Minch Zuria Woreda and 9 in Boloso Sore Woreda) – 29 answers
- Direct interviews by the evaluator to 4 WWMEOs (Angacha, Arba Minch Zuria, Boloso Sore and Silti) – 4 answers
- Interviews by local assistants to 31 households that have rope pumps installed (5 households in Chencha Woreda, 14 in Hula Woreda and 12 in Silti Woreda) – 31 answers
- Interviews by local assistants to 2 WWMEOs (Chencha and Hula) – 2 answers

There were no interviewees who gave different answers on the easiness of purchasing spare parts in the same woreda.

into account additional information obtained from interviews with the WRB, ZWMEDs and WWMEOs.

The Indicator to the Project Purpose in PDM4 was not fully achieved. In October 2011, just before the completion of the project, the access running rate of the rural water supply system was achieved in Arba Minch Zuria Woreda and for rope pumps which were installed during the project, but it did just miss the target in 3 woredas (Hula, Loma and Silti) and was over 5 points below each target in 2 woredas (Angacha and Boloso Sore). From the above, this indicator is judged not to be fully achieved.

Additional Indicator A1 was achieved. Although the situation at the completion of this project is not clear, it was confirmed through the field survey in the ex-post evaluation that the 2 WWMEOs of Arba Minch Zuria and Chencha can install rope pumps with their personnel alone while the 4 WWMEOs of Angacha, Boloso Sore, Hula and Silti cannot. It is estimated that the former two, Arba Minch Zuria and Chencha had already obtained their capacities by the completion of the project, since no intervention has been made in the personnel of the two WWMEOs from outside for further strengthening. On the other hand, it was confirmed in the field survey of this ex-post evaluation that among the 4 WWMEOs that answered in the negative, there used to be one person who could install pumps at the completion of the project, who then went away, in each Angacha and Boloso Sore. Thus it is estimated that Indicator A1 was achieved at the completion of the project in these two woredas[37]. The situation is unknown in Hula and Silti Woredas.

Additional Indicator A2 was not achieved. Since it was impossible to know the situation at the completion of the project due to the lack of survey on the beneficiaries, it was estimated from the answers by inhabitants[38] at the time of the ex-post evaluation. It can be said that this indicator was achieved at the completion of the project in Angacha and Hula Woredas: according to documents provided by JICA, there existed inventories of spare parts in spare parts outlets in Durame Town, Kembata Tembaro Zone and Aleta Wendo Town, Sidama Zone (Angacha and Hula Woredas are inside Kembata Tembaro and Sidama Zones respectively)[39]. In addition, the results of interviews with beneficiaries living in Arba Minch Zuria Woreda show that spare parts had been already available for purchase in Arba Minch Town inside the woreda before the completion of the project. In Boloso Sore, Chencha and Silti Woredas, there was no spare parts outlet opened at the completion even though there

[37] According to the interviews with the two WWMEOs, personnel left due to retirement (Angacha Woreda) and turnover (Boloso Sore Woreda) and those vacancies were not filled afterward.

[38] See Footnote 36.

[39] Durame Town is located 29km from the central part of Angacha Woreda, and Aleta Wendo Town is located 30km from the central part of Hula Woreda. In these 2 woredas, spare parts could be purchased at the completion of the project. It should be noted, however, that these are judged from the viewpoint of the implementation side. Since it is very difficult for inhabitants in these woredas to go to spare parts outlets within a day, they are forced to ask other inhabitants who have the means of transportation to purchase spare parts.

were plans to invite outlets. The above situation is summarized as follows.

- There was a spare parts outlet in the same woreda: 1 woreda (Arba Minch Zuria)
- There was a spare parts outlet within a day trip: 2 woredas (Angacha and Hula)
- There were no spare parts outlets even though there were plans to invite them: 3 woredas (Boloso Sore, Chencha and Silti)

Thus, spare parts can be easily purchased in 3 woredas of the 6 (50%), below 4.

From the above, Additional Indicator A1 was achieved, while Additional Indicator A2 was not achieved and the indicator to the Project Purpose in PDM4 was not fully achieved except in some part. Output 3 was not achieved as described beforehand. Generally judging from the above, the project did not achieve its purpose.

3.2.2 Impact

3.2.2.1 Achievement of the Overall Goal

(1) Definitions of terms of the Overall Goal

The Overall Goal continues to be "Sustainability on water supply system is improved in SNNPRS." from the initial planning to the completion. It is focused on "sustainability" while the Project Purpose aims at "organizational capacity in implementation, operation and maintenance." The Overall Goal is supposed to be achieved by both the achievement of the Project Purpose and other factors. In the case of this project, while the achievement of the Project Purpose reflects, as it is, the state at the moment of the completion of the project, the achievement of the Overall Goal does not mean the state at a certain moment but a continuous state after the completion of the project. Then this "sustainability" should be defined as "the ability to continue the implementation, operation and maintenance of water supply systems by the self-help of the Ethiopian side."

(2) About the interpretation of the target area of the Overall Goal

In PDM4, which is the final version of the PDM, the Indicator to the Overall Goal is stated as "Scale up activities to strengthen WASHCO, disseminate Rope Pumps and implement preventive O&M are being conducted in the 6 targeted zones and woredas." However, in this ex-post evaluation, the evaluator believes that the target area of the Overall Goal is not the 6 target woredas but all SNNPRS. This is because it is clear that the project aimed to disseminate rope pumps to all SNNPRS, since the Joint Terminal Evaluation often referred to the dissemination of rope pumps to SNNPRS and other regions[40], and the then head of the WRB declared in the 6th JCC held in November 28, 2011 that "All the components of the project activities should be distributed to the woredas in the region. The WRB will promote

[40] e. g. Joint Terminal Evaluation Report (in Japanese), pp. 3-4 - 3-6, pp. 4-3 - 4-4, p. 7-2, etc.

the dissemination activities all over the region."[41]

From the above discussion, it is thought that the achievement of the Project Purpose would contribute to the achievement of the Overall Goal if the project effects (the strengthening of implementation, operation and maintenance of water supply systems) had been disseminated to other areas in the region together with sustainability.

(3) About the Indicator to the Overall Goal

It is thought that the Indicator to the Overall Goal in PDM4 "Scale up activities to strengthen WASHCO, disseminate Rope Pumps and implement preventive O&M are being conducted in the 6 targeted zones and woredas" is activities or conditions for achieving the Overall Goal, rather than an indicator, and does not directly measure the "Sustainability" in the Overall Goal. In the case of this project, the sustainability is thought to greatly depend on whether the techniques necessary for maintaining water supply facilities are kept and spare parts can be continuously and easily purchased. Thus, in this ex-post evaluation, the following indicators are assumed in addition to the Indicator in PDM4:

- Additional Indicator ①: The users themselves, personnel of WWMEOs that have jurisdiction or other related persons learn techniques for repairing household rope pumps.
- Additional Indicator ②: A supply chain of spare parts for hand pumps is built.

as conditions for maintaining water supply systems, and,

- Additional Indicator ③: A functionality rate of water supply facilities in the woredas

as a condition reflecting the sustainability of water supply systems.

(4) Achievement of the Overall Goal

The achievement of the Overall Goal is shown in Table 4.

[41] Source: documents provided by JICA

Table 4. Achievement of the Overall Goal

Overall Goal	Indicator	Actual
Sustainability on water supply system is improved in SNNPRS.	[Indicator in PDM4] Scale up activities to strengthen WASHCO, disseminate Rope Pumps and implement preventive O&M are being conducted in the 6 targeted zones and woredas	According to the WWMEOs that have jurisdiction over the target 21 WASHCOs, the activities are not implemented in 3 woredas (Angacha, Boloso Sore and Silti) and unknown in 3 woredas (Loma, Arba Minch Zuria and Hula) out of the 6 target woredas.
	[Additional Indicator ①] The users themselves, personnel of WWMEOs having jurisdiction or other related persons learn the techniques for repairing household rope pumps.	According to the results of interviews with users and each WWMEO, this is achieved in 2 woredas (Loma and Angacha), almost achieved in 1 woreda (Silti), partly achieved in 1 woreda (Arba Minch Zuria) and not achieved in 1 woreda (Boloso Sore) and unknown in 1 woreda (Hula).
	[Additional Indicator ②] A supply chain of spare parts for hand pumps is built.	According to the results of interviews with users and each WWMEO, this is achieved in 1 woreda (Loma), partly achieved in 1 woreda (Arba Minch Zuria) and not achieved in 3 woredas (Silti, Angacha and Boloso Sore) and unknown in 1 woreda (Hula).
	[Additional Indicator ③] Functionality rate of water supply facilities in the woredas	According to each WWMEO, the functionality rate in September 2014 was unknown in Angacha Woreda (the goal in the Indicator to the Project Purpose: 88%), 100% in Arba Minch Zuria Woreda (goal: 87%), 84% in Boloso Sore Woreda (goal: 82%), 84% in Hula Woreda (goal: 85%), 28.8% in Loma Woreda (goal: 92%) and 61% in Silti Woreda (goal: 88%).

The achievement of each Indicator is summarized in Table 5.

Table 5. Achievement of each indicator for the Overall Goal

Woreda	Indicator in PDM4	Additional Indicator ①	Additional Indicator ②	Additional Indicator ③
Angacha	Not implemented	Achieved [1)]	Not achieved [2)]	Unknown
Arba Minch Zuria	Unknown	Partly achieved	Partly achieved [3)]	Achieved
Boloso Sore	Not implemented	Not achieved	Not achieved	Achieved
Hula	Unknown	Unknown	Unknown	Almost achieved
Loma	Unknown	Achieved	Achieved	Not achieved
Silti	Not implemented	Almost achieved	Not achieved [4)]	Not achieved

1) Trainings were effectively implemented for WASHCOs.

2) There is no spare parts outlet in the woreda and the users have to take a bus on a regular route to Hawassa, the capital of the region, which is situated 100km from there*.

3) Both Additional Indicators ① and ② are achieved in some kebeles and not achieved in others (there is only one spare parts outlet inside the woreda and the users in some kebeles have to walk or take donkey carts for 40km each way).

4) A spare parts outlet had opened once, but it withdrew because of the duty to issue receipts for the strengthened collection of value-added tax. Currently the users have to take a bus on a regular route to a town named Hossaina which is situated 30km from there*.

* Both in Silti and Angacha Woredas, the pumps may continue not to be working for some time since spare parts are purchased after the pumps break down.

From the above, among the 6 target woredas, none of the woredas achieved all 4 indicators, i.e. the Indicator in PDM4 and Additional Indicators ①, ② and ③. Even for the two indicators that directly measure the achievement of the Overall Goal, i.e. Additional Indicators ① and ②, these were achieved in Loma Woreda, partly achieved in Arba Minch Zuria Woreda and both or one of these were not achieved in the other 4 woredas (Angacha, Boloso Sore, Hula and Silti).

In addition, there is no sign on the dissemination of the project effects expressed in the 6 target woredas to other areas. Although the regional government has shown its intention to disseminate the project effects to other woredas, the plan has not been concretized because it is difficult to continuously develop personnel due to limitations of budget and human resources (turnover etc.). There are many limitations due to natural conditions as well[42]. Therefore, it should be said that both the two factors, the dissemination to other areas and the sustainability, have not materialized and do not even seem to have materialized, which contributes to the achievement of the Overall Goal after the achievement of the Project Purpose as described in "(2) About the interpretation of the target area of the Overall Goal."

(5) Functionality status of household rope pumps installed in this project

Since it is only natural that the "water supply system" in the Overall Goal includes the 60 rope pumps installed in this project, whether they maintain their functionality is collateral evidence supporting the "Sustainability" of the Overall Goal. On the other hand, the regional government regards the dissemination of rope pumps as one of the most important means to improve access to safe water. Their functionality status is useful information for the regional government to promote its policy of disseminating rope pumps, since the installation of rope pumps in this project is thought to be a preceding case for the policy.

The functionality status is shown in Table 6. Only 27 pumps (45%) of the 60 are still functioning, while 33 pumps (55%) are not. This is much worse than 96%, the functionality rate at the completion of the project (see Table 3). According to interviews with users, the main reason for their non-functionality is difficulties in purchasing spare parts, and no parts have been replaced in many of the functioning pumps.

[42] The WRB points out as natural conditions making the dissemination of the effects difficult that the groundwater is polluted with fluorine, iron and manganese, etc., and many villages become difficult to be accessed in rainy seasons due to road conditions.

Table 6. Functionality status of household rope pumps installed in the project

Woreda	No. of pumps installed	No. of pumps in operation	Operating rate
Arba Minch Zuria	9	7	78%
Angacha	11	6	55%
Boloso Sore	9	1	11%
Chencha	5	4	80%
Hula	14	5	36%
Silti	12	4	33%
Total	60	27	45%

(Source: investigation by the evaluator)

Generally judging from the above, the Overall Goal has not been achieved.

3.2.2.2 Other Impacts

This project did not have any impact on the natural environment, or on resettlement or land acquisition. According to the results of interviews with WRB, it is reported from each woreda to the regional government that the number of cases of water-caused disease decreased in the 6 target woredas, especially in Hula Woreda, and people who defecate or urinate on streets and in public squares disappeared so that sanitation was improved in Gara Godo Kebele, Boloso Sore Woreda. These can be said to be indirect effects of this project. At public hand pump sites in this kebele and Sile Sira Kebele in Arba Minch Zuria Woreda, the upper limit of monthly water quantity, the charge and the order of pumping and water collection were decided in meetings at each WASHCO, so that the order in pumping was established (see Photo. 1). Through the fact that the inhabitants share the common work of pumping at public hand pump sites, local order is established and the connection between the inhabitants is strengthened.

Photo. 1 Scene of water pumping
at a public hand pump site
(Gara Godo Kebele, Boloso Sore Woreda)
(Photo by the evaluator)

In rural areas, where the habit of hand washing was not popular, the habit has been going to be spread. This is thought to be because of the multiplication of two factors: ① it became easier to enlighten inhabitants on hand washing and ② it became possible to use water not only for drinking but also for hand washing due to increased water supply facilities in rural areas represented by the ones installed in this project (knowledge dissemination and the supply of opportunities for implementation).

From the above, the sustainability of organizational capacity in implementation, operation, and maintenance of water supply systems has not been improved enough, and the dissemination to other areas does not seem to have materialized, although some indirect positive impacts can be seen. Thus the expression of the effects of this project is limited compared to its plan. Therefore, the effectiveness and impact of the project are low.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The planned and actual Inputs are shown in Table 7. In the original plan, the first 6 months were designated as Stage 1 for investigations such as baseline investigations, etc. and then the detailed plan for the remaining 3 years (Stage 2, including PDM and PO) was to be established depending on the results of those investigations. Hence there is not enough information on the Inputs at the time of the planning. Therefore, it is difficult to compare the plans on the Inputs between the time of the ex-ante and the ex-post, and it cannot be judged if the actual Inputs increased from what was planned.

Table 7. Planned and actual Inputs

Inputs	Plan	Actual
(1) Experts	Dispatched as the need arises in 6 fields (no descriptions on number and MM*)	0 Lond-Term 12 Short-Term[43] (104.26MM)
(2) Trainees received	No descriptions	None
(3) Equipment	Descripted only as "Required equipment will be decided in Stage 1"	1 4WD, 1 copying machine, 6 motorcycles, etc.
(4) Others	No descriptions	109 million yen Domestic training: 182 times, 4,211 trainees in total
Japanese side Total Project Cost	379 million yen in total	467 million yen in total
Ethiopian side Operational Expenses	No descriptions	0 million yen in total

* MM stands for man month.
(Source: documents provided by JICA)

The postponement of the start of this project can be judged to be relevant according to the weather conditions[44] and the preparations made by the Ethiopian side. However, the project

[43] The chief advisor was replaced in the first half of 2010. The total number of experts is 13 if the chief advisor is counted as 2.
[44] Ethiopia has the following seasons: small rainy season from March to May, large rainy season from June to September and dry season from October to February.

period of 3 years and 6 months or 4 years was too short compared to the number of woredas in all SNNPRS, in consideration of the time necessary for the access to the sites. This caused the overhaul of the succeeding activities.

In the original plan, general trainings and OJT were to be implemented for the personnel of 78 woredas in 13 zones in SNNPRS. Due to the results of various investigations performed from the start of the project to June 2008, the target areas were narrowed down to 6 woredas in 6 zones when the PDM was revised in June 2008[45]. Although it is unknown if the original plan considered narrowing the target areas because of the lack of reference materials, it should be said that the original plan was not feasible as a result.

3.3.1.1 Elements of Inputs

In the original plan, experts in 6 fields were considered: Chief Advisor, Training Planning, Water Supply Planning / Management / Civil Engineering, GIS / Remote Sensing / Hydrological Geography, Social Development, Supply of Hand Pump Spare Parts, and additional experts in other fields were to be dispatched if necessary. The experts who were actually dispatched were for 12 subjects: Chief Advisor / Water Supply Planning (Groundwater Development), Deputy Advisor / Water Supply Planning (Facility Improvement), Water Supply Planning (Facility Operation and Maintenance), Water Supply Planning (Electrical / Mechanical), Water Supply Planning (Rope Pump / HDW[46]), Water Supply Planning (Rope Pump), Social Economy, Social Development / Rural Sanitation and Hygiene (1)(2), GIS / Information Management, and Project Coordination / Training Management. The total actual Inputs were 3,073 man-days (including 142 man-days that were at their own expense) for the field activities and 55 man-days for the activities in Japan.

The project judged that it was necessary to introduce GIS for access to the sites selected as targets, since all of them are in rural areas with insufficient maps. Then the project added the introduction of GIS and the dispatch of experts for it. In addition, since some of the sites are situated on steep slopes and there are roads that become impassable in rainy seasons as shown in Photo. 2, off-road type motorcycles as shown in Photo. 3 as well as 4WD vehicles were required. Such motorcycles were added to the equipment list of the project and supplied in 2011 together with maintenance tools.

[45] According to the interviews with the assistant project manager of the WRB, the reason the target areas were narrowed down was problems of cost and access.
[46] HDW stands for hand-dug wells.

Photo. 2. A bad road over which it is difficult to travel with 4WD vehicles (Boloso Sore Woreda, Wolayita Zone)
(Photo by the evaluator)

Photo. 3. An example of an off-road type motorcycle[47] (Suzuki TS185 owned by Wolayita ZWMED)
(Photo by the evaluator)

3.3.1.2 Project Cost

According to documents provided by JICA, the planned project cost was 379 million yen, while the actual was 467 million yen, which was higher than planned (123%). It cannot be judged whether the project cost exceeded the plan in consideration of the expression of its effects, since the evidence to calculate the planned project cost is not described in the references.

3.3.1.3 Period of Cooperation

The start of this project was initially planned as April 2007, but was postponed until December 2007. The Summary of Ex-ante Evaluation Results says that the planned period of cooperation was 3 years and 6 months, while the actual period was 4 years, which was longer than planned (114%). Due to these factors, the completion of this project was delayed by more than a year until December 2011 from the planned date of September 2010. However, it cannot be judged whether the project period exceeded the plan in consideration of the expression of its effects, since the evidence to calculate the planned project period is not described in the references.

From above, both the project cost and project period exceeded the plan. Therefore, the efficiency of the project is fair.

3.4 Sustainability (Rating: ①)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

The expected effects of this project were the improvement of organizational capacity in implementation, operation and maintenance of water supply systems. The policies of the government of Ethiopia are in agreement with these.

[47] The motorcycle in Photo. 3 was not supplied in this project, but is shown here as an example.

The UAP still continues to be a national policy, where the access to safe water is designated as one of the most important issues. The regional government regards the dissemination of rope pumps as one of the most important means to tackle the issue. According to Sidama ZWMED and some WWMEOs, although the regional government orders woredas through zones to promote the dissemination of rope pumps[48], the zones and the woredas are fully responsible for concretizing the dissemination methods. It cannot be said that the support by the regional government is enough for zones and woredas to sustain the effects by this project[49].

From the above, the policies of Ethiopia are in agreement with the direction of this project, while the institutional aspects necessary to implement them in water supply systems contain problems. Thus the related policy and institutional aspects for the sustainability of the project effects are fair.

3.4.2 Organizational Aspects of the Implementing Agency for the Sustainability of Project Effects

It is public entities at each administrative level i.e. the WRB, ZWMEDs and WWMEOs that are in charge of "organizational capacity in implementation, operation and maintenance of water supply systems." The roles of each administrative level on water supply systems are as follows.

- Regional government (WRB): collects data such as the functionality rate of existing water supply facilities and the access rate, and plays a role in disseminating rope pumps as its policy. It also declares the orders of data collection and the dissemination of rope pumps to woredas through zones[50].
- Zone (ZWMED): transfers the orders from the regional government to woredas under its jurisdiction, and collects reports from woredas on the functionality rate of water supply facilities, the access rate, and activities on the dissemination of rope pumps and summarizes them to transfer to the region. The zones also support woredas in the

[48] The regional government ordered all 135 woredas in 13 zones and 5 special woredas (woredas that do not belong to zones) to install 10,000 rope pumps by the end of FY 2006 in the Ethiopian calendar (July 7, 2015 in the European calendar) and 28,802 pumps in FY 2007 in the Ethiopian calendar (from July 8, 2015 to July 7, 2016 in the European calendar). In the former, the number of installations is allocated to each woreda and special woreda corresponding to the water supply rate as of 2005 in the Ethiopian calendar (2012 in the European calendar). In the latter, the goals of the allocated numbers are calculated under the assumption that 20% of the planned rope pump water supply population is targeted in that FY and one rope pump will be installed for each 50 persons. Since the planned rope pump water supply population in the region is 7,200,539, the goal of the total number in all SNNPRS is $7,200,539 \times (20/100) \div 50 = 28,802$ (Source: documents provided by WRB).

[49] Wolayita ZWMED, which is ordered to promote the dissemination, expressed an opinion: "It is good indeed to advertise rope pumps as tools with simple technologies and low costs. But we do not want the WRB to automatically assume the goal is the number of installations without considering local conditions such as seasonal variation of groundwater levels and water pollution.

[50] Source: results of interviews to the deputy head of the WRB and the head of Sidama ZWMED

operation and maintenance of water supply facilities technically. They do not support woredas financially[51].

- Woreda (WWMEO): receives the orders from the region through zones, investigates and reports the functionality rate of water supply facilities existing inside it and access rate, etc. The woredas disseminate rope pumps within their borders. They also accept consultations from inhabitants for technical assistance with maintaining water supply facilities[52].

Cooperation between these organizations is necessary for the sustainability of the effects of the project. However, this cooperation is prevented by the lack of participation in regular meetings and field surveys after project completion by the "Office of Development Plan Preparation, Monitoring, Evaluation and Feedback Supportive Process" of the WRB personnel.

The shortage of manpower in these organizations, especially WWMEOs, is serious. After the implementation of BPR in September 2008, the number of personnel in ZWMEDs and WWMEOs who have technical skills in the operation and maintenance of water supply facilities actually decreased rather than increased. Personnel who have technical skills in operation and maintenance retired from Boloso Sore WWMEO for reasons of turnover and from Angacha Woreda for reasons of starting higher education. The posts in these two WWMEOs were not filled, resulting in a lack of personnel. Each WWMEO does not have enough manpower to visit all water supply facilities with sufficient frequency, some of which require a long time to visit: some woredas have sites that are located 30 – 40km from their WWMEOs and there is no means of access except moving slowly by off-road type motorcycles as shown in the above-mentioned Photo. 3 or donkey carts as shown in Photo. 4. ZWMEDs, which are to technically support WWMEOs under their jurisdiction, do not sufficiently support WWMEOs since the zonal side does not have enough manpower either.

It is generally judged that the technical transfers are limited, since transfers of the activities of this project are sometimes insufficient during turnovers of executive members of the WRB, ZWMEDs and WWMEOs after the terminal evaluation.

In addition, there was a case of mutual distrust due to the lack of technical know-how in Boloso Sore WWMEO[53] (see Photo. 5).

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[51] Source: results of interviews to the head of Gamo Gofa ZWMED

[52] Source: results of interviews to each WWMEO

[53] The installed rope pump became nonfunctional because the rope was cut 5 months after the installation. The user consulted the WWMEO but it could not keep up with it due to a lack of technical know-how. The user felt unsatisfied and refused the payment of his revolving fund. Then the WWMEO removed a part of the pump as shown in Photo. 5 to make it unusable because of an installation agreement violation.

Photo. 4. A donkey cart loaded with a generator traveling over a bad road (Boloso Sore Woreda, Wolayita Zone)
(Photo by the evaluator)

Photo. 5. The wheel of a rope pump that is not working because it has had its bolt removed (Boloso Sore Woreda, Wolayita Zone)
(Photo by the evaluator)

Since the regional government constructed public simple water supply systems[54] in some parts of Lante Kebele, Arba Minch Zuria Woreda, the rope pumps installed in this project became less significant. In other woredas, the operation and maintenance of the rope pumps installed in this project are generally insufficient. It can be easily estimated that the functioning rope pumps will be nonfunctioning within several years if the operation and maintenance are not sufficient. This is because WWMEOs that have jurisdiction do not have sufficient manpower for the operation and maintenance and because the spare parts supply chain disappeared.

Before the start of this project, the WRB and WWMEOs supplied spare parts for hand pumps to users free of charge. This project invited spare parts outlets to each woreda in order to build spare parts supply chains for existing hand pumps and newly installed rope pumps, and lobbied to stop these free supplies for the WRB, WWMEOs, other donors and NGOs etc. in order to promote their use and to promote the independence of the WASHCOs to be able to maintain their pumps by themselves. Many WASHCOs are thought to have become independent. On the other hand, some spare parts outlets withdrew their business after the completion of this project for reasons of profit and the difficulty in acquiring wholesale spare parts[55]. The inhabitants of woredas where spare parts outlets withdrew must travel a long distance to purchase spare parts. Since most of the inhabitants who use water supply facilities targeted in this project make a living by agriculture or stock farming, they do not have sufficient time to purchase spare parts. There are also many inhabitants who do not have their own cars. Such people have limited transportation options, including public buses,

[54] This type of simple system uses gravity to supply water to each household through water pipes from a large tank constructed on a tower at the center of the community. The tap water is supplied from other areas by tank trucks.

[55] Among spare parts, a part called a piston (see Figures A1 and A2 and Photo. A1 at the end of this document) is difficult to purchase domestically in Ethiopia, partly because such a part has no use except for rope pumps (Source: results of interviews to Boloso Sore WWMEO and beneficiaries living in Boloso Sore Woreda).

walking, and donkey carts. According to Angacha WWMEO, a plan was submitted that representative inhabitants would go to purchase parts, which disappeared due to the lack of the candidates for the representatives. The ease of purchasing spare parts for hand pumps and rope pumps at the time of the ex-post evaluation is shown in Table 8.

Table 8. Ease of purchasing spare parts for hand pumps and rope pumps

Woreda	Easiness	Situation
Angacha	Not easy	The users have to take a bus on a regular route to the nearest spare parts outlet, which is situated 100km from there.
Arba Minch Zuria	Partly not easy	There is one spare parts outlet inside the woreda, which is situated about 40km from some of the kebeles.
Boloso Sore	Not easy	Spare parts can be purchased at a shop in Wolayita Zone to which the woreda belongs, although there is no spare parts outlet inside the woreda. However, it is not easy. The users do not know where they can purchase some kinds of parts.
Chencha	Unknown	Unknown
Hula	Not easy	It is not easy to purchase spare parts. The zone sometimes purchases them and assists the users financially, instead of the woreda.
Loma	Unknown	Unknown
Silti	Not easy	After the spare parts dealer that used to be located in the woreda withdrew, the nearest shop was located in a town named Hossaina, about 30km from there. Sometimes they cannot purchase spare parts even at that shop.

(Source: results of interviews to each WWMEO)

In all woredas that answered the interview questions, it was not easy to purchase spare parts, and the price of parts is rising. It can be said that it is difficult for the inhabitants to purchase spare parts by themselves.

From the above, problems remain unsolved in the cooperation between organizations at each administrative level, the manpower, and the spare parts supply chains. Thus the organizational aspects for the sustainability of the project effects are low.

3.4.3 Technical Aspects of the Implementing Agency for the Sustainability of Project Effects

For the operation and maintenance of existing hand pumps and rope pumps that will be installed, the manuals in English and Amharic prepared in this project are distributed to related entities. However, although the activities of this project are transferred from the preceding executive members to their successors at each administrative level of the region, zones and woredas, the transfers are sometimes sufficient and sometimes insufficient. It cannot be said that the technical transfer is sufficiently done among general personnel of WWMEOs who actually implement technical support to inhabitants: when personnel of WWMEOs who acquired the technical skill to some level move to other posts or retire, no

successors would fill their positions or no applicants would apply for the job[56]. For these reasons, there are cases where personnel members of WWMEOs cannot install a rope pump by themselves or they cannot sufficiently implement technical support to the users who maintain rope pumps and hand pumps.

Some cases were seen where inhabitants did not trust the technical skills of the WWMEOs[57]: some of the users of the household rope pumps joined technical workshops on repairing rope pumps held by NGOs, some requested repairs on their rope pumps from NGOs or private companies. Information as shown in Table 9 was obtained on the technical skills of WWMEO personnel on rope pumps and hand pumps.

[56] The followings are the reasons no applicants would apply (Source: results of interviews to Angacha WWMEO).

- Job invitations are limited to bulletin papers in woreda offices and advertisement in newspapers, which are not noticeable for many people.
- The salaries of local public workers are low (actually some of them have other sources of income to make a living).
- There are few people who understand Amharic, the official language, in rural areas in SNNPRS. People who do not understand the language do not apply for the job since it is quite clear that such people will not be employed as local public workers.

[57] WWMEOs have direct jurisdiction over the water supply facilities installed in this project. ZWMEDs receive reports from WWMEOs and sometimes support them technically, but they do not deal directly with inhabitants.

Table 9. Technical skills of WWMEO personnel members

Woreda	On rope pumps	On hand pumps
Angacha	A PVC pipe, a part of a rope pump installed in this project was broken. The user consulted the WWMEO but it refused to keep up with it for reasons that this project was completed and there is no stock of PVC pipes.	The WWMEO takes no technical action against the disorder of pumps and implements no technical support for inhabitants.
Arba Minch Zuria	The WWMEO's technicians have skills for repairing pumps*.	The WWMEO's technicians give advices for repairing pumps*.
Boloso Sore	One of the household rope pumps became nonfunctioning. A technician of the WWMEO's who received communication from the user tried to repair it but could not. One of the household rope pumps (other than the above) became nonfunctioning. The WWMEO received communication from the user, but could not keep up with it due to a lack of technical know-how.	The WWMEO takes no technical action against the disorder of pumps and implements no technical support for inhabitants.
Chencha	WWMEO's technicians have general skills for repairing rope pumps.	(Not targeted)
Hula	The WWMEO takes no technical action against the disorder of pumps and implements no technical support for inhabitants.	The WWMEO takes no technical action against the disorder of pumps and implements no technical support for inhabitants.
Loma	(Not targeted)	Unknown
Silti	The WWMEO's technicians do not know how to purchase pump parts.	Regarding pumps for deep wells, the WWMEO's technicians have skills for repairing, but currently they are not able to repair because both the WASHCOs and the WWMEO do not have a tool (a tripod) that is necessary for repairing. A tripod is so expensive that it cannot be purchased with just the WWMEO's budget. Regarding pumps for shallow wells, pumps are repaired by the WASHCOs themselves. The WWMEO's technicians advise them if necessary.

* The WWMEO can receive technical support from Gamo Gofa ZWMED if it cannot keep up with the disorder of hand pumps (note: this technical support is available because the ZWMED is located near the WWMEO).
(Source: results of interviews to the users)

The manual and guidelines for spare parts supply chains are only prepared in Loma Woreda among the 6 target woredas. Many repair techniques depend on very simple manuals. On the other hand, GIS inventories that are important for the operation and maintenance plan were revised, but there was no confirmed example of a clear strategy having been established for revising them.

From the above, there are some cases where transfers at turnovers or technical transfers

are not sufficient, and technical skills of some WWMEOs have problems. Thus the technical aspects for the sustainability of the project effects are fair.

3.4.4 Financial Aspects of the Implementing Agency for the Sustainability of Project Effects

As described in 3.4.1, the government of SNNPRS orders woredas to promote the dissemination of rope pumps and allocates the budgets for that purpose corresponding to the goal of the numbers of installation in each woreda. Hence it is thought that there is no financial prevention for installing rope pumps in the region.

The users of household rope pumps received an explanation about 2,000 Birr of the shares of the expenses and agreed to their payment in revolving funds. However, there were many cases in which payments were stopped. Among the users of all 60 household rope pumps in 6 woredas, those of 29 pumps in 3 woredas were interviewed[58]. 10 of them answered: 2 users pay as promised in the agreements, 7 users do not pay or stopped the payment of the revolving funds (5 users among the 7 became unwilling to pay), and 1 user is unclear if they will continue the payment[59]. As described in 3.2.1.2, household rope pumps are installed by WWMEOs and maintained by users under their cost and responsibilities. On the contrary, it is often difficult to pay 2,000 Birr of the shares of the expenses for many users. They also have to bear the maintenance costs by themselves. It is expected in such a situation that the non-functionality of installed pumps would affect their willingness to pay. It was confirmed in interviews that there are users who became unwilling to pay. Although the number of samples is no more than 10, there were 5 answers among the 10 that they became unwilling to pay, 50%. Since it is not WWMEOs but users that are responsible for the operation and

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[58] The targets of the interviews were the users of household rope pumps in Angacha Woreda (11 installed and 6 functional), Arba Minch Zuria Woreda (9 and 7) and Boloso Sore Woreda (9 and 1). For the reason not all the users of the 60 pumps were interviewed, see 2.3.

[59] Some of the answers were as follows.

- Functional at the time of the ex-post evaluation (14 pumps, of which 4 answered)
  - I have already paid 500 Birr. I am not sure if I will pay the rest.
  - The fixtures of the rope pump are pretty bad. I fear the pump is broken, and I cannot repair it by myself. I have already paid 300 Birr but I do not want to pay the rest in such a situation.
- Non-functional at the time of the ex-post evaluation (15 pumps, of which 6 answered)
  - I will never pay because the pump is non-functional from the beginning and I am disappointed.
  - I will not pay because I am dissatisfied that the pump was broken after the installation and the WWMEO has taken no action even though I made a request.
  - The pump became non-functional 2 years after the installation. I would like to continue to use it if it can be repaired, but I do not have ability to pay anymore.
  - The pump became non-functional 5 months after the installation. I can never pay for this non-functional pump while I am in poverty.

The reason why the number of answers was only 10 of 29 households was: there were many cases where the interview was done when the person who manages the family budget (e.g. the head of the family) is absent for reasons of agricultural work, grazing, and taking care of the domestic animals, etc.; it took a long time to interview due to multiple interpretation between English – Amharic (Ethiopia's official language) – local languages (Wolayita language etc.) and the interviewees should have returned to their work.

maintenance of household rope pumps, they are not repaired and the effects do not continue unless the users bear the costs. In addition, there is no way but to request funds for repairing household rope pumps from the regional government[60], since WWMEOs do not ensure sufficient budgets for repairing household rope pumps and they cannot collect repair costs from the users. However, the budget of the regional government is not sufficient at the time of the ex-post evaluation. The evaluator believes that the appearance of users who became unwilling to pay is a great problem that affects the plan of rope pump dissemination by the regional government.

On the other hand, WASHCOs are responsible for the maintenance costs of hand pumps that are managed by WASHCOs. WWMEOs are to support WASHCOs through consultations, etc. Thus, the budgets of WWMEOs do not include the direct costs for the maintenance of water supply facilities managed by WASHCOs but include the costs for purchasing vehicles and fuel that are necessary for supporting WASHCOs. The budgets for these purposes, being granted by the regional government, are not sufficient at the time of the ex-post evaluation, although an increase has been planned. For example, a tripod, which is necessary to repair hand pumps for deep wells, is as expensive as 40,000 Birr and cannot be purchased with just the WASHCO's financial capacity. There was a case where a WASHCO consulted a WWMEO about purchasing a tripod and the cost could not be borne even by that WWMEO's budgets[61].

For public hand pumps, orderly utilization continues through the efforts of WASHCOs that have been strengthened in this project, and the users keep agreeing to the payment of the charge, e.g. 0.50 Birr per 20ℓ. However, the prospects are gloomy, since the prices of spare parts for hand pumps keep rising year by year, and it is difficult to ask the users to raise the charges for the purpose of purchasing more expensive spare parts.

The evaluator questioned 25 inhabitants who benefited from this project about the charges for public hand pumps. The results are shown in Table 10.

- Number of persons surveyed: 25
- Number of sites: 8 sites in 4 woredas (designated in Table 10)
- Occupations of the persons surveyed: 18 farmers and stock farmers, 5 public workers, 1 employee and 1 other
- Sexes: all male
- Ages: all unknown

[60] In Ethiopia's local administrative system, zones are not to financially support WWMEOs (Source: results of interviews to Gamo Gofa ZWMED and Kembata Tembaro ZWMED).

[61] Considering such situations, the regional government decided to distribute a tripod to each WWMEO and will implement from 2016 (Source: results of interviews to Silti WWMEO and Asano WASHCO in the woreda). If this is realized, the sustainability of hand pumps for deep wells will greatly increase. On the other hand, it cannot be judged if WASHCOs have enough capacity for repair, since they have not experienced repairing pumps by using tripods except in trainings.

Table 10. Results of questionnaire survey on the rate for public hand pumps to the beneficiaries

Woreda	Site	No. of answers	Rate*	Feeling for burdens
Arba Minch Zuria	Sile Sira	6	5 Birr/month	Too expensive: 1 Appropriate: 5
Silti	Agode	1	1 Birr/month	Appropriate: 1
		1	0.1 Birr/25ℓ	Appropriate: 1
	4-Bari	3	1 Birr/month	Appropriate: 3
Loma	Elea Bacho	3	2.5 Birr/month	Appropriate: 1 No answer: 2
	Lala	3	3 Birr/month	Cheap: 3
	Gessa Egidat	4	7 – 18 Birr/month	Too expensive: 1 Appropriate: 3
	Zima	3	1 Birr/month	Cheap: 3
Hula	Loya	1	0.1 Birr/25ℓ	Too expensive: 1

* Most of the WASHCOs declare the upper limit of water supply from public hand pumps as 20 – 25ℓ per household per day.
(Source: answers to the questionnaire to the beneficiaries)

From these results, it is understood that there are a variety of feeling among the users. Assuming that the price of water from public hand pumps is 0.1 Birr per 25ℓ and the quantity of water supplied is 10m^3 per pump per day, the income is about 1,200 Birr per month. This amount of money will be allotted for spare parts and maintenance costs.

For the operation and maintenance of public hand pumps, the evaluator interviewed two WASHCOs among the target 21 WASHCOs: Asano WASHCO in Silti Woreda which manages a hand pump for a deep well and Sabola WASHCO in Silti Woreda which manages one for a shallow well. Answers were obtained from the two: the former answered that the WASHCO cannot repair the pump because it cannot bear the cost of purchasing a tool that is necessary for repairs, and the latter answered that it is currently possible for the WASHCO to maintain the pump but it might be impossible to raise the charges in order to keep up with the prices of spare parts that are currently rising[62]. From the answers, it was found that Asano

[62] The 2 WASHCOs answered as follows respectively.

- Asano WASHCO: This WASHCO manages a hand pump installed on a well 69m in depth. 2 years ago, a bolt that was used in an important part fell into the pumping pipe, and since then the pump has become non-functioning. A tripod, which is necessary for repairing it, is so expensive that the WASHCO cannot purchase one even with the WWMEO's budget. Because of this, the WASHCO cannot repair it. The users have water shared from other wells in the vicinity, but it takes a long time to get water. They are at a loss.
- Sabola WASHCO: This WASHCO manages a hand pump installed on a shallow well. The WASHCO could save the costs for the moment for the maintenance of the pump by collecting charges from the users. But the saved money is not sufficient in consideration of the prices of parts that are currently rising. The WASHCO is planning to hold a general meeting to discuss a bill of doubling the charges. The bill can be passed with a majority of the households that are supplied with water from the pump. The repair itself is relatively easy and the WASHCO itself can deal with it.

The leader of Sabola WASHCO stated the idea that the WASHCO collects raised charges only from the supporters and persuades the opponents, since some of the users are against the bill of raising the charge. The prospects are gloomy on whether the WASHCO can collect double the current charge from all the users, since

WASHCO, which manages a deep well, cannot repair the pump managed because the WASHCO and even the WWMEO cannot bear the cost for purchasing a tripod necessary for repairing, and on the contrary, Sabola WASHCO, which manages a shallow well, does not currently have such a problem. However, the prospects are gloomy on whether the inhabitants can bear the increased expenditure due to the rising prices. Although such a situation cannot be generalized only with these 2 answers, it is certain that the management of pumps installed on deep wells faces certain financial difficulty.

Comparing household rope pumps and public hand pumps, it can be said that it is difficult to use the former continuously due to heavy personal bearing, while the latter is sustainable due to light personal bearing if WASHCOs save sufficient funds for their maintenance. However, the prices of spare parts for public hand pumps are rising, and the finances of the WASHCOs that manage the pumps depend on the unhopeful prospect of users agreeing to pay increasing higher charges.

From the above, there is a serious problem, that is, the users of household rope pumps became unwilling to pay their shares of the expenses, which would affect the sustainability of the project effects and further the success of the dissemination of rope pumps, in addition to other problems: the prospects are gloomy on whether the users can bear the increased costs due to the rising prices of spare parts of public hand pumps; WASHCOs that manage deep wells and WWMEOs that support them do not have the financial ability to purchase tools that are necessary for repairing pumps; the budgets of the regional government for the operation and maintenance of pumps are not currently sufficient. Thus the financial aspects for the sustainability of the project effects are low.

From the above, major problems have been observed in terms of the organizational aspects of the implementing agency and financial aspects of the beneficiaries, and some minor problems have been observed in terms of the policy background and technical aspects of the implementing agency. Therefore, the sustainability of the project effects is low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented in the Southern Nations, Nationalities and People's Regional State (SNNPRS) for the purpose of building sustainable water supply systems and developing their organizational and human resources capacity. The activities of this project were consistent with the improvement of the water supply rate and the water scheme functionality rate that were priorities of Ethiopia's national development policy, Ethiopia's development needs such as access to safe water, and Japan's assistance policy, which

the opponents are poorer than the other users.

prioritized the development of the ability to supply safe water and maintain water facilities. However, problems in the planning and approach prevented the project from having the expected effects. Therefore, its relevance is fair. The Project Purpose and the Overall Goal have not been achieved and it cannot be said that a sustainable water supply management system has been built. The expression of the Outputs and the Project Purpose from its completion to the time of the ex-post evaluation is not sufficient as well. Therefore, its effectiveness and impact are low. Both the project cost and the project period exceeded the plan. Therefore, its efficiency is fair. There are problems left in the organizational aspects of the implementing agencies, such as cooperation between the region, zones and woredas, the supply of equipment and spare parts that are necessary for maintaining water facilities, the technical skills of the Woreda Water, Mining and Energy Offices (WWMEO), and the bearing of costs by the users of water facilities, etc. The outlook for their resolution is not bright. There are slight problems in related policy and institutional aspects. Therefore, its sustainability is low.

In light of the above, this project is evaluated to be unsatisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

The evaluator recommends as follows to the WRB, the Implementing Agency, and the related agencies, the ZWMEDs and WWMEOs.

The regional government declares the policy of disseminating rope pumps to SNNPRS and other regions under a hierarchical structure consisting of the regional government (the WRB), zones (ZWMEDs) and woredas (WWMEOs). In this project, problems have been brought out such as bad fixtures of rope pumps themselves, the withdrawal of outlets that carry spare parts supply chains, nonpayment of the shares of the rope pump expenses by the beneficiaries (users becoming unwilling or unable to pay), lack of trust in the relationship between inhabitants and WWMEOs, and the existence of wells that are unsuitable for installing rope pumps, etc. Promoting the installation of rope pumps without solving these problems is likely to cause similar problems and to make rope pumps unreliable. On the contrary, if measures are taken to solve these problems and successful cases were established, it is expected that rope pumps would be recognized as a really inexpensive and simple means to improve rural water supply and evoke the interest of inhabitants. To that end, information should be shared among the regional government and zones that are to promote the policy and woredas that are at the forefront of installation of rope pumps and consultation to beneficiaries, by discussing measures. They are recommended to tackle the problems together.

In the case of the lack of manpower at woreda sides, flexible utilization of human

resources is necessary, such as the short-term transfer of personnel who have technical skills to install from the regions or zones to woredas that want manpower, since unilateral orders on installing rope pumps to woredas never advance the situation.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Measures against preventing factors before the start

In the case of this project, there is no denying the fact that the greater part of C/P members moved to other positions due to the BPR just after the start, affected the sustainability of organizational aspects, as described in 3.4.2. This possibly fell under the Important Assumptions "There is no significant turnover in the WRB and WWMEOs" that is clearly stated in successive PDMs. Under these circumstances, it should be considered that there was an option of terminating the project. In addition, as described in 3.1.4, the project effects are not expressed; it is impossible to maintain pumps unless spare parts supply chains are established and parts are sold there at prices that the users can bear.

In general, there are several conditions for projects to express their effects. The effects cannot be expressed unless all of them are satisfied. It is recommended to examine successful and failed examples of cooperation projects that aimed to improve rural water supply in Ethiopia and other countries (regardless of cooperative agencies: JICA, other donors or NGOs), not only for this project, and to analyze to what the successful ones paid attention and what the preventing factors were in the failed ones[63]. It is necessary to take resolute

[63] Examples of similar projects are described below.

In the preceding grant aid, that is, "The project for water supply in Southern Nations, Nationalities and People's Regional State" (Phase 1: FY 2005, Phase II: FY 2006), there were problems that the allocation at each WWMEO is hardly sufficient to monitor water supply facilities in their jurisdiction, WWMEOs' capacity to implement training for WASHCOs has room for further reinforcement and improvement, and some WASHCOs did not keep financial books or did not save money in their bank accounts. The sustainability of the project was evaluated as fair (Source: Ex-post Evaluation Report on "The project for water supply in Southern Nations, Nationalities and People's Regional State"). In the Grant Aid "The Project for Water Supply in Amhara National Regional State" (August 2005 – October 2008), which was implemented before this project in Ethiopia, there were some factors that lowered the sustainability: Amhara Water Works Construction Enterprise, which is in charge of the management of water supply facilities, does not have sufficient technical skills, and there are difficulties in purchasing spare parts. A lesson learned is stated: "It is thought that the project effects would have been higher if the original plan had covered necessary spare parts" (Source: Ex-post Evaluation Report (internal evaluation) on the project).

In the Technical Cooperation Project "The Project on Rural Water Supply Technology in the Central Dry Zone" in Myanmar (November 2006 – October 2009), two factors contributed to heightening the sustainability: institutions and technical aspects were established where organizations by inhabitants were in charge of the daily maintenance and slight repair of well facilities and the personnel of the governmental organizations or local administrative entities were dispatched if more difficult repair jobs were necessary, and the charges collected from inhabitants and the grant from public budgets were well allocated (Source: Ex-post Evaluation Report (internal evaluation) on the project). On the other hand, in the Grant Aid "The Project for Rural Drinking Water Supply in Memot District of Kampong Cham Province" in Cambodia (July 2009 –

steps against those factors; preventing factors should be dealt with if they can be solved, and if they cannot be solved, the project implementation should be postponed or stopped in worse cases.

Necessity of discussion on the feasibility of the operational model

The rope pumps introduced in this project consist of inexpensive and easily purchased parts such as bicycle wheels, reinforcing rods, used tires, PVC pipes and ropes, etc. It was thus expected that the project could not only introduce but also maintain them with low costs, and easily repair them as well. However, a part called a "piston" (see Photo. A1) among their parts does not have any other use, and is difficult to purchase without spare parts supply chains. On the other hand, rope pumps have not been widely distributed yet. Spare parts outlets are skeptical about their profitability and some of them actually withdrew after they launched. Though this project invited spare parts outlets, it was unable to ensure that these outlets would continue operation and thus the loss of spare parts supply chains was a result of many outlets leaving. The evaluator believes that a number of aspects of the feasibility should have been examined more thoroughly before the start of the project. These include in which households pumps would be installed, whether users would pay their share of the expenses, whether WWMEOs would provide technical support for operation and maintenance, the establishment and sustainability of spare parts supply chains, and the possibility of charging for the free supply of parts from WWMEOs instead of inviting outlets. This is the same for public hand pumps, the costs for the operation and maintenance of which are borne by collecting charges from the users. Efforts should be concentrated on learning from failures, e.g. "The sustainability is unexpected if the conditions for projects to express their effects greatly depend on Important Assumptions, and there is not a good possibility that those Important Assumptions are satisfied in the future". Those who plan future projects should examine the followings before their implementation. Starting projects without

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February 2011), the fact that spare parts could only be purchased in the capital was a problem for the management of facilities in rural areas and it lowered the sustainability. There were also some confirmed cases where the organizations run by inhabitants could not bear the cost of purchasing spare parts. It was then recommended that the governmental organization should consider the conditions of the organizations run by inhabitants and support them if necessary (Source: Ex-post Evaluation Report (internal evaluation) on the project). In addition, in the Technical Cooperation Project "Project on the Safe Water and the Support on Community Activities" in Senegal (January 2003 – January 2006), since the sustainability in organizational and financial aspects decreased in the case where the organizations run by inhabitants have to revise pumps and engines by themselves, support from the government was required. It was also pointed out that "it should have evaluated the feasibility of the continuous operation of existing facilities before the implementation of the project". There was obtained a lesson learned "it was necessary to confirm if the conditions to continuously operate water management committees by grasping the functionality of equipment and the population supplied with water and estimating the income, and necessary measures should have been taken unless such conditions were not satisfied" (Source: Ex-post Evaluation Report on the project).

From the above, it is thought that the success of the activities by the organizations run by inhabitants is affected by the fact that the public organizations such as the government and local administrative entities prepare institutional and financial conditions and intervened in them if necessary.

considering these things may affect the expression of project effects during and after the implementation.

- Do those who should bear the costs (beneficiaries in the case of this project) have the financial ability and willingness to bear the costs?
- In the case that the expression of the project effects depends on the behavior of persons other than those who are related to the projects (spare parts outlets in this project), are those persons likely to behave so that the expression of project effect will be enhanced?
    - In the case that the above possibilities are not strong (spare parts outlets are not likely to continue their business in this project), can the project activities establish sustainable systems that are not affected by external factors?
- In the case that the capacity of the personnel of the implementing agencies or the equivalent (the WRB, ZWMEDs and WWMEOs in the case of this project) are to be strengthened, and those members change or go away due to retirement or turnover, are transfers available? Who transfers technical communication at what time in such transfers?

Sufficient investigation on natural conditions

Ethiopia has both dry and rainy seasons. The groundwater level varies by season. In order to pump groundwater from wells with pumps, it is necessary to maintain the distance between the groundwater surface to the bottom of the well. In order to guarantee the ability to pump groundwater throughout the year, wells should be designed based on the annual lowest groundwater level. This project was to install 60 rope pumps during the period of cooperation. In the project, existing wells were used and groundwater levels were investigated in dry seasons. However, it is not clear whether the annual lowest levels were obtained. There were some cases where the required distances were not ensured in some seasons. The evaluator believes that it should have been examined based on the annual lowest levels whether additional excavations were necessary or not, since the required distances in the case of drawing with well buckets differ from those in the case of pumping.

In cases where projects are planned in which seasonally varying natural conditions such as air temperature, frequency and degree of rainfall, the existence of snowfall, flowrate in rivers, groundwater level, tide level, direction and velocity of wind and daylight hours, etc. (groundwater levels in the case of this project), not only momentary data of these natural conditions but also their degree of variation should be grasped and involved in the plan beforehand.

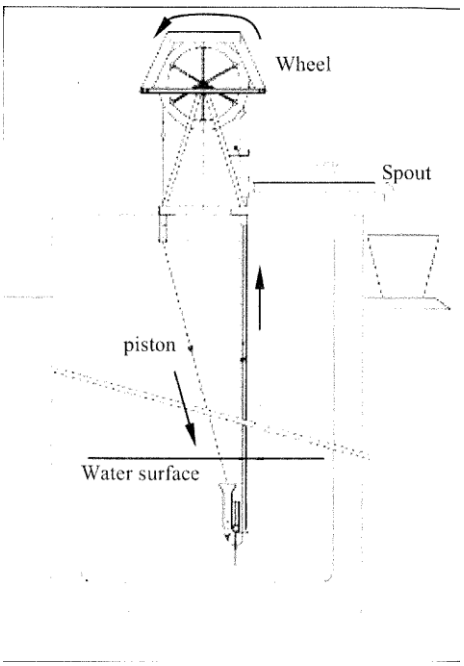


Figure A1. Structure of rope pumps

(Source: The Rope Pump, Textbook for Comprehensive Rope Pump Training, WAS-CAP, Oct. 2011, p. 2)

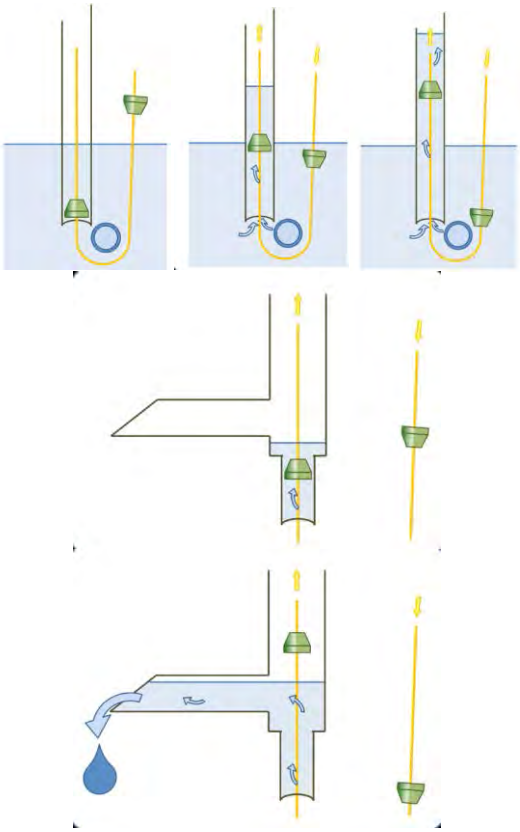


Figure A2. Principal of rope pumps

(Source: Rope Pump Manual, Technical Training Handbook on Rope Pump Production, Installation and Maintenance, Third Edition, August 2011, Practica Foundation, p. 3)

Photo. A1. Piston

(Photo by the evaluator)

Table A1. Achievement of the Outputs

Output	Indicator	Actual
Output 1: Rural Water Supply Scheme Development / O&M Plan is formulated in each of the 6 Target Woredas	[Indicator 1] Rural Water Supply Scheme Development / O&M Plan on the basis of thematic maps is formulated in each of the 6 Target Woredas. 2003 in Ethiopian Calendar (2010 in European Calendar) year's version by October 2010 and 2004 in Ethiopian Calendar (2011 in European Calendar) year's version by May 2011.	Indicator 1 had been already achieved by the completion of the project. The plans of the 2010 and 2011 editions were completed by June 2010 (goal: October 2010) and May 2011 (goal: May 2011) respectively.
Output 2: Rope Pump Dissemination System is established in the 6 Target Woredas	[Indicator 2.1] The collection rate of monthly information from users in O&M monitoring system for rope pumps, which are installed by the Project, is 80% by the end of the Project.	Indicator 2.1 had been already achieved by the completion of the project. The mean collection rate of monthly information from users in 5 woredas, the target woredas except Loma Woreda, was 96.8% in October 2011.
	[Indicator 2.2] The rate of awareness of rope pump in each rope pump installation site is 70% by the end of the Project.	Indicator 2.2 had been already achieved by the completion of the project. The mean rate of awareness of rope pumps in 5 woredas, the woredas where rope pumps were installed except Chencha Woreda, was 91% in December 2011.
Output 3: Operation and Maintenance of Water Schemes are improved in 6 Target Woredas.	[Indicator 3.1] The defined numbers of staffs in each WWMEO score over 70 points in exam of repair / O&M Training by the end of the Project.	Indicator 3.1 had been already achieved by the completion of the project. The examination results in the repair / O&M Training was 85.6% in December 2011.
	[Indicator 3.2] Caretakers of WASHCO in 21 target water schemes implement preventive maintenance (regular maintenance) according to the established frequencies in the different water schemes after repair / O&M training by the end of the Project (goal: all 21 schemes).	Indicator 3.2 had been almost achieved by the completion of the project. Regular maintenance was implemented in 18 water schemes of the 20, the target water schemes except one out of order, in December 2011.
	[Indicator 3.3] All the WASHCO of the target water schemes save the established cost for O&M by the end of 2003 in Ethiopian Calendar (August 2011 in European Calendar) (goal: all 21 schemes).	Indicator 3.3 had not been achieved by the completion of the project. The cost for O&M was saved in 13 water schemes of the 16, the target water schemes except 5 in Silti Woreda where the reports were not collected due to large-scale turnovers, in December 2011.
	[Indicator 3.4] 9 target WASHCOs which monitor Afridev Hand Pumps regularly keep its hand pump spare parts for half a year O&M by the end of the Project (goal: all 9 WASHCOs).	Indicator 3.4 had not been achieved by the completion of the project. Spare parts were kept in 2 water schemes of the 9, the 9 WASHCOs which monitor Afridev Hand Pumps, in December 2011.
	[Indicator 3.5] A Guideline for spare parts supply chains is prepared and distributed in the region by the end of the Project.	Indicator 3.5 had not been achieved by the completion of the project. The Guideline was prepared at the completion of this project, but not distributed. However, it was distributed in Loma Woreda by 2012 just after the completion.

Source: the Evaluator, making reference to documents provided by JICA

Republic of Zambia

Ex-Post Evaluation of Technical Cooperation Project

"The Project for Participatory Village Development in Isolated Areas (PaViDIA)"

External Evaluator: Yumiko Nakamura, Binko International Ltd.

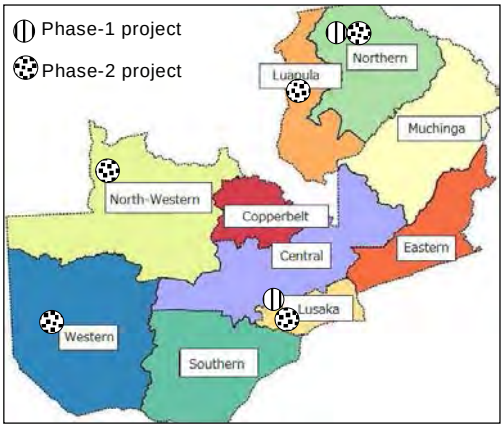
0. Summary

This project aims to develop a practical model for participatory village development to alleviate poverty in isolated areas. The direction of the project was highly relevant not only to the country's socio-economic development policy that emphasized poverty reduction and support to small-scale farmers, but also to the national agricultural policy that aims to promote sustainable agricultural practices and development activities that take the poor into consideration. It also met the needs of the Ministry of Agriculture and Livestock (hereinafter referred to as "MAL") to realize the participatory extension approach (hereinafter referred to as "PEA"). In addition, it was consistent with the Japan's aid policy for Zambia that put a large focus on providing support for poverty reduction through rural development. Thus, relevance of this project is high.

The project established an implementation mechanism for participatory village development in isolated areas (hereinafter referred to as "PaViDIA") as a result of the project activities during the first phase (hereinafter referred to as "phase-1"), and developed a practical model for village development in the relevant areas (hereinafter referred to as "PaViDIA model") as expected based on several tests and modifications undertaken during the second phase (hereinafter referred to as "phase-2"). In addition, after the project was completed, the MAL, in cooperation with a new JICA technical cooperation project: "Rural Extension Service Capacity Advancement Project-Through PaViDIA Approach" (2009-2014) (hereinafter referred to as "RESCAP"), revised the model through which rural development activities were undertaken in other areas. Thus, the effectiveness and impact of the project is high. On the other hand, although the project period was within the plan, the project cost exceeded the plan as a result of the increased number of inputs along with add-on activities to strengthen the project monitoring system. Thus, efficiency is fair. With regard to the future utilization of the PaViDIA model, some issues in terms of policy background and organizational aspects of the implementation agency remain. Additionally, the funds for future implementations of the model are not ensured at the time of Ex-post evaluation. Therefore, the sustainability of the project effects is low.

In light of the above, this project is evaluated to be partially satisfactory.

1. Project Description



Project Locations

Participatory village meeting (May, 2011)

1.1 Background

In the Republic of Zambia (hereinafter referred to as "Zambia"), approximately 60% of the total population or about 70% of the population below the national poverty line reside in rural areas. The number of farmers accounts for approximately 70% of the total working population, and are categorized into three groups under a two-layered structure: 10% of them are large-scale and medium-scale farmers who produce crops for export under capital intensive farm management, and the rest (90%) are small-scale farmers engaged in subsistence farming. Thus, the Government of Zambia has given a high priority to poverty reduction through rural development including support to small-scale farmers.

On the other hand, the Zambian government adopted a structural adjustment program under the guidance of the World Bank in 1991 after suffering from long-lasting accumulated debt, abolished public support such as price adjustments of Maize production and subsidies, and privatized agriculture-related services like production input supplies and logistics support. While it provided small-scale farmers an opportunity to improve their livelihood by producing crops for export led by the private sector, it brought about a further deterioration of farm management in rural areas due to a steep rise in production input prices as well as limited access to agricultural inputs and services especially by small-scale farmers who live in rural areas where infrastructure development is delayed or where markets are far away.

In view of this aforementioned background, the MAL, with the support of Japan International Cooperation Agency (hereinafter referred to as "JICA"), launched a grant aid for a grassroots project called "Participatory Approach to Sustainable Village Development" (hereinafter referred to as "PaSViD"[1]) in Lusaka province in 1999 aiming to halt further

[1] PaSViD refers to a rural development technique with additional content related to sustainable agriculture practices to the CARD (CIRDAP Approach to Rural Development) approach which was developed by the CIRDAP（Centre of Integrated Rural Development for Asia and the Pacific) in Bangladesh (Source: JICA, 2001," Preparatory Study Report for Agricultural and Rural Development in Isolated Areas").

deterioration of farm management and to reactivate farming practices. The project adopted the PaSViD methodology to the pilot activities, and confirmed that the method was applicable in Zambia.

Based on the results of the PaSViD project, the Government of Zambia requested technical support from the Government of Japan for alleviating poverty among small-scale farmers in isolated areas with the use of a participatory village development approach and sustainable agriculture techniques. Upon this request, the Japanese government dispatched JICA's preparatory survey team twice to Zambia to develop the project plan. Based on the results of the survey, the "Project for Participatory Village Development in Isolated Areas" (hereinafter referred to as "PaViDIA project") was launched in June 2002.

1.2 Project Outline[2]

Overall Goal		The model for participatory village development in isolated areas established by the project is realized and replicated in other areas for poverty reduction.
Project Purpose		Phase-1: Essential implementation mechanism for PaViDIA is established. Phase-2: A practical model for participatory village development in isolated areas is established.
Phase -1 Outputs	Output 1	Project Management Organization is established.
	Output 2	Sustainable agriculture technology package (a manual and model farmers) is established.
	Output 3	PaViDIA training programme is established.
	Output 4	Monitoring and risk management methods are established.
	Output 5	PaViDIA implementation guidelines are established.
Phase -2 Outputs	Output 1	PaViDIA expansion strategy is established.
	Output 2	Primary budget source for PaViDIA is secured.
	Output 3	Selected staff are trained for implementation of PaViDIA.
	Output 4	PaViDIA Operation Room (POR) is strengthened.
	Output 5	Sustainable agricultural practices are integrated into Micro Projects.
	Output 6	Existing manuals and guidelines are improved.
Total cost (Japanese Side)		860 million yen
Period of Cooperation		June, 2002 – May, 2009
Implementing Agency		Ministry of Agriculture and Co-Operative (MACO)
Supporting Agency /Organization in Japan		Phase-1: Yamagata Prefecture, Ministry of Agriculture and Fishery, Japan Phase-2: Yamagata Prefecture
Related Projects[3]		[JICA] Individual Expert ・ Agriculture and Rural Development Advisor (2003-2006) Technical cooperation project ・ Development through Empowerment of Rural Communities in Zambia Initiative Areas (2006-2008). ・ Food Crop Diversification Support Project Focusing on Rice Production (2006-2011). ・ Rural Extension Services Capacity Advancement Project (2009-2014). [Other donors and International Organizations] ・ World Bank：Agricultural Development Support Program (2006-2011). ・ IFAD：Smallholder Enterprises and Marketing Program (2000-2008). ・ Sida：Agriculture Support Program (2003- 2007). ・ EU：Support to Agricultural Diversification and Food Security in Western and North Western Zambia (2006- 2011). ・ FINNIDA：Program for Luapula Agricultural and Rural Development (PLARD) (I:2006- 2010, II:2011- 2014).

[2] The project outline for the phase-1 is cited from the Project Design Matrix (PDM) Ver. 3 developed on 27 January 2006, and summaries of the phase-2 are cited from PDM ver.1 developed in 05 December 2007.
[3] IFAD: International Fund for Agricultural Development. Sida: Swedish International Cooperation Agency. EU: European Union. FINNIDA: Finnish International Development Agency.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the time of the Terminal Evaluation

The Terminal Evaluation concluded that the project purpose was likely be attained by the end of the project with the following reasons; firstly, all elements constituting the PaViDIA model such as the PaViDIA Expansion Strategy, funding for future activities, and the implementation mechanism, which includes human resources, organization, and methodologies, were being developed and all well underway. Secondly, it was highly expected that the MAL (then MACO) would officially adopt the PaViDIA model as one of their rural development and extension approaches.

1.3.2 Achievement Status of Overall Goal at the time of the Terminal Evaluation

The Terminal Evaluation concluded that the overall goal of the project was likely to be achieved for the following two reasons. Firstly, Micro Project (hereinafter referred to as "MP") activities showed favorable progress. Secondly, there was a positive outlook on securing funding for MP activities by 2012 from the Collateral Fund[4] of Grant Aid for Increased Food Production, the so-called Second Kennedy Round[5] (hereinafter referred to as "2KR"), as well as from the World Food Programme (hereinafter referred to as "WFP") .

1.3.3 Recommendations at the time of the Terminal Evaluation

The Terminal Evaluation team provided the following recommendation to the Project; 1) to put additional information relating to MAL's policy, human resource allocation, budget arrangement, and brief data on provinces before completing the PaViDIA Expansion Strategy; 2) to clarify the division of the roles and function of PaViDIA Operation Room (hereinafter referred to as "POR") at each administrative level; 3) to set target figures for indicators to verify the achievement of the overall goals which were not set; 4) to develop a survey plan to identify changes in MP villages in terms of livelihood, attitude of participating villagers, and their saving conditions. In order to sustain the effects of the project, the team

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[4] Collateral Funds refers to the fund that the recipient government is required to possess in order to accumulate funds through past grant aids provided by Japan including "Grant Aid for Increased Food Production". The mode of accumulation varies: some deposits proceed sales of goods and supplies provided by the Grant Aid to the national bank, and others deposit relevant fund prepared by fiscal measures of the recipient government in case that the government provided goods and supplies for free, or that the government utilized them by themselves. Collateral funds are utilized under the supervision of diplomatic missions abroad (Source: the International Development Journal Co., Ltd ,2004, "International Cooperation Glossary")

[5] Second Kennedy Round (2KR) is one of the Grant Aid schemes offered by the Government of Japan to assist developing country efforts to increase food production and to alleviate chronic food shortages based on the understanding that food security issues should be solved by the relevant country on its own. Specifically, this type of aid provides the funds needed to purchase fertilizers, agrochemicals, agricultural machinery, and other agricultural supplies based on a request by a recipient country in relation to the plan for increased food production (Source: Ministry of Foreign Affairs of Japan, http://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/hakusyo/03hakusho/ODA2003/html/siryo/sr3110210.htm (as of July, 2015) .

also recommended that the project accumulate and share the know-how which was obtained through quarterly monitoring on MP implementation among all the stakeholders, and enhance capacities to obtain additional budget sources for further expansion of MP activities.

In addition, the team recommended that JICA post a Japanese expert in Zambia to promote the integration of sustainable agriculture practices into the PaViDIA approach, and to carry out a survey relating to the technical level and village activities of extension officers.

Moreover, the team made the following recommendation to the MAL: 1) to operate and manage on-going MPs; 2) to set up a budget and personnel for PORs to initiate new MPs; 3) to strengthen the roles and the function of the POR-province to provide adequate management and backstopping when the number of MPs increases in the future; 4) to consider how to handle non-agricultural activities in sub-projects of MPs; and 5) to carry out continuous monitoring in the Northern province where the PaViDIA activities were started on a full scale from the project phase-2.

2. Outline of the Evaluation Study

2.1 External Evaluator

Yumiko Nakamura, Binko International Ltd.

2.2 Duration of Evaluation Study

The Ex-post evaluation was done in the following durations.
Duration of the Study: August, 2014- August, 2015
Duration of the Field Study: (I) October 27, 2014 - November, 24, 2014;
(II) February 03, 2015 – February, 10, 2015

2.3 Constraints during the Evaluation Study

Although more than 100 MPs were implemented in the following five provinces, namely Lusaka, Northern, North-western, Luapula, and Western province, during the project, the Ex-post evaluation team was not able to visit all the villages due to time constraints and limited resources. Thus, the sustainability of the project effects and project impact in this report were evaluated based on the results of questionnaire surveys[6] including a beneficiary survey[7] carried out in eight districts in the five provinces during the Study.

[6] The Ex-post evaluation includes a questionnaire survey for the project stakeholders: MAL headquarters, five provincial agriculture offices, eight district agriculture offices, 12 block extension officers, and 21 camp extension officers as well as a beneficiary survey for villages that implemented Micro Project (MP) activities.
[7] During the beneficiary survey, a total of 254 villagers in 31 villages were surveyed using focal group discussion method in the beneficiary survey. 31 villages include; 10 villages in Chongwe district, four villages in Rufunsa district, one village in Kafue district in Lusaka province, six villages in Mporokoso district, six villages in Luwingu district, one village in Kasama district in Northern province, two villages in Kaoma district in Western province, and one village in Solwezi district in North Western province.

3. Results of the Evaluation (Overall Rating: C[8])

3.1 Relevance (Rating: ③[9])

3.1.1 Relevance to the Development Plan of Zambia

At the time of the project planning, the "National Poverty Reduction Action Plan (1999-2004)" (hereinafter referred to as "NPRAP") set the target of reducing poverty to 50% (2004) from 70% (1994), and identified agriculture and rural development as important issues in achieving this goal. In addition, support for small-scale farmers was expected to be emphasized in the "Agriculture Commercialization Programme (2002-2005)" which was in the drafting stage at the time of project planning. In this context, the project was expected to contribute to the reduction of poverty as well as to support small-scale farmers.

At the time of the project completion, the "Fifth National Development Plan (2006-2010)", which was a successor document of NPRAP enacted in 2006, held up a policy for the commercialization of agriculture based on a market-oriented economy, and highlighted the importance of development activities that attempted to benefit the poor as a social approach for boosting the economic growth of the country.

In addition, the "National Agricultural policy (2004-2015)", which is a higher national policy in the agricultural sector, set forth five priority objectives including ensuring national and household food security, generating income and employment, and maintaining and improving agricultural resources. The above stated objectives are expected to be realized through a set of strategies, in which strengthening and facilitating the provision of agricultural services to small-scale farmers, the development and promotion of appropriate technologies, and the promotion of sustainable and environmentally-friendly farming systems are included.

In light of the above, the Government of Zambia has consistently placed a great emphasis on poverty reduction and poverty-centered development since the time of project planning; therefore, projects that aim at developing rural development models in order to promote self-sustaining development by small-scale farmers have been highly relevant to the development plan and policies that the Zambian government upholds.

[8] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[9] ③: High, ② Fair, ① Low

3.1.2 Relevance to the Development Needs of Zambia

At the time of the project planning, approximately 70% of the population under the poverty line lived in rural areas, and 90% of the workers in the agricultural sector, which accounted for 70% of the total working population, were small-scale farmers. Therefore, in order to reduce poverty, it was necessary to revitalize rural areas where a number of small-scale farmers lived. In terms of the agriculture extension approach in Zambia, the MAL adopted the "modified Training & Visit (T&V)[10]" approach in the 1980's. However, through decades of usage, it became clear that disseminating appropriate agricultural information according to regional characteristics and farmers' needs was difficult under a so-called top-down approach. To overcome this difficulty, the MAL, with support from the World Bank, introduced another approach called the PEA (Participatory Extension Approach). However, the PEA remained as primarily theoretical knowledge and provided few opportunities to be actually practiced by extension officers.

At the time of the project completion, the improvement of living standards in rural areas, where many of the poor lived, was still a pressing issue. The PEA was recognized as one of the agricultural extension methodologies at the MAL, but most external support did not go beyond theoretical training. Thus, the MAL was required to provide opportunities for putting knowledge into practice.

Thus, the need to revitalize the rural sector and practice rural development under the guidance of the Agricultural Ministry, which was identified at the time of planning, was still present at the end of the project.

3.1.3 Relevance to Japan's ODA Policy

In accordance with the declaration of the Millennium Development Goals in 2000, the Government of Japan highlighted poverty reduction measures and development activities that give consideration to small-scale farmers as one of the objectives for development assistance for African countries, and supported poverty alleviation efforts through rural development in "Japan's Country Assistance Program to the Republic of Zambia". In addition, poverty alleviation through agriculture-centered development was emphasized as one of the key areas for assistance also in JICA's country assistance plan for Zambia. Thus, this project was consistent with the development policy that the Government of Japan upheld at the time of project planning.

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[10] One of the extension methodologies that was introduced for the purpose of disseminating information promptly by the limited number of staff. More specifically, information is given to so-called "Contact Farmers" in the village who were selected by extension officers and "Contact Farmers" then disseminate it to neighboring farmers. Extension officers pay a periodical visit to villagers.
After modification of T&V, the information dissemination target was changed from "Contact Farmers" to "Village Extension Groups (VEG)" that were selected in each zone of the camp (Source: JICA, 2001, "Preparatory Study Report for Agricultural and Rural Development in Isolated Areas").

In light of the above, this project was highly relevant to the development plan of Zambia and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness and Impact[11] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Project Output (Phase-1)

After the project was launched, the project established the POR on the premises of the Cooperative College as a hub for PaViDIA activities with the approval of the MAL, and welcomed MAL's officers in charge of PaViDIA activities on a full-time or part-time basis. Taking this opportunity, the project activities including the development of the PaViDIA training programme (Output 3) and the development of the monitoring and risk-management method (Output 4) were accelerated, and the implementation mechanism led by the POR was established by the end of the project. In addition to the institutional arrangement, the project placed much focus on capacity building for farmers, extension officers, and trainers through the implementation of sustainable agricultural technologies (Output 2), and PaViDIA trainings (Output 3).

As a result of the 5-year activity, the project developed a guideline called the "PaViDIA Implementation Guideline" as well as the following three manuals on PaViDIA activities (hereinafter referred to as "PaViDIA manual") such as 1) Planning, 2) Monitoring and Evaluation (hereinafter referred to as "M&E"), and 3) Sustainable Agriculture Practices, and distributed it to the project stakeholders afterwards. Please see Annex 1 for a summary of the achievements of each project output.

3.2.1.2 Achievement of Project Purpose (Phase-1)

The project set forth the following four indicators to assess the status of the achievement of the Project Purpose. Table 1 shows the records of activities either at the time of terminal evaluation or at the end of the project.

[11] Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 1 Achievement of Project Purpose

Project Purpose	Indicator	Actual
Essential implementation mechanism for PaViDIA is established.	1. Compilation of texts/manuals and training program.	By May 2009, the project produced three PaViDIA training manuals including 1) Planning, 2) M&E, and 3) Sustainable Agriculture Practices.
	2. Existence of three model villages implementing Micro Projects and four demonstration fields of Sustainable Agriculture.	By May 2009, MP was implemented in 29 villages, of which four villages[12] were identified as model villages. In addition, a total of 20 demonstration fields were opened in three districts including Chongwe in Lusaka province, and Luwing and Mporokoso in Northern province.
	3. Trained trainers (partial, dependent)[13].	By May 2009, three officers including one from MAL headquarters and two from the Chongwe district office were trained as trainers.
	4. Functional POR and other relevant agencies.	By May 2009, the project produced the POR structure chart and Terms of References (TOR) for POR headquarters. The project also developed outlines of provincial and district PORs and compiled them in the PaViDIA Implementation Guideline, though a detailed division of labor between province and district was carried over to the next phase of the project.

As mentioned above, although clarification of the roles and responsibilities of PORs (Indicator 4) remained an issue for future PaViDIA activities, the favorable results of project activities helped establish the essential mechanism for promoting participatory village development in isolated areas led by the POR headquarters. In light of the above, it is judged that the project largely achieved its purpose.

3.2.1.3 Project Output (Phase-2)

In the second phase, the project expanded the target areas to three provinces[14], namely Northern, North-western and Luapula province, from Chongwe district in Lusaka province, and implemented activities under the following two-pronged strategies: continuing and extending activities based on the results of the previous phase; and strengthening policies and the financial aspect for further expansion of the PaViDIA model in the future. In particular, the project continuously focused on the following activities in order to strengthen the implementation mechanism; 1) enhancing the function of the PORs (Output 4); 2) providing trainings for trainers (Output 3); 3) implementing MPs using sustainable

[12] These villages are Kapuka village, Kwale village, and Kalimansenga village that started MP in 2004 along with Chibango village that started MP in 2005.

[13] According to the PaViDIA project phase 1 terminal evaluation report (2007), the “partial. Dependent” was interpreted as “not perfect, but have ability to teach”. Thus, this report also adopts this interpretation for the assessment on the achievement of indicator 3.

[14] During the PaViDIA project, MP was implemented also in Western Province as a part of the activities done by another JICA project: “Development through Empowerment of Rural Communities in Zambia Initiative Areas”.

agriculture practices (Output 5); and 4) revising existing manuals and guidelines (Outline 6). Along with these activities, the project also took various measures to secure MP funding (Output 2) as well as to develop the PaViDIA expansion strategy (Output 1).

Through two years of consecutive efforts including technical guidance and instruction by Japanese experts, the project further reinforced the function of the POR headquarters, and as a result, the POR headquarters became able to conduct PaViDIA activities independently. Meanwhile, difficulties were reported in achieving active involvement from some provincial-POR and district-POR because of insufficient understanding of their respective roles in PaViDIA activities even though the MAL assigned responsible officers based on a decision to initiate MPs[15]. Therefore, challenges remain in the clarification of the division of the roles played by provincial and district POR as well as in strengthening the partnership between PORs.

During the project phase-2 activities, MPs were implemented in about 120 villages. The rate in the number of agriculture related sub-projects among the MPs reached more than 80%, which was double that of the phase-1 project. But, in fact, it was reported that farmers were more likely to rely on traditional farming technologies rather than sustainable agricultural practices. Thus, the output 5 of implementing MPs using sustainable agriculture technologies is regarded as having been achieved at a limited level[16].

The project achieved the desired results with regard to the rest of the project outputs listed above. For instance, 2-3 trainers both at the MAL Headquarter (HQ) and at the target provinces were trained. In addition, the PaViDIA methodology were assessed and revised based on the results of MP implementation in other areas during this phase, and the results were summarized into the revised PaViDIA Field Manuals[17]. Moreover, the project successfully arranged the funds from 2KR and WFP for future MP activities, and formulated a PaViDIA Expansion Strategy in accordance with the budget. Please see Annex 1 for a summary of the achievements of each project output.

3.2.1.4 Achievement of Project Purpose (Phase-2)

Table 2 shows the achievement status of the project purpose for the phase-2 project. The project set forth the following two indicators to assess its achievement level.

[15] Source: JICA, 2009, "PaViDIA project phase 2 terminal evaluation report".
[16] Ditto.
[17] Gender consideration as well as effective utilization of women's groups in MP activities were added into the PaViDIA Field Manual for planning, and also guidance in utilizing a monitoring system that was newly introduced during the phase-2 project was added to the manual for M&E. In addition, the concept of Farmer Field School was also added in the PaViDIA Field Manual for Sustainable Agriculture Practices (Source: JICA provided materials).

Table 2 Achievement of Project Purpose

Project Purpose	Indicator	Actual
A practical model for participatory village development in isolated areas is established.	1. Adoption and integration of the model into MACO (current MAL) activities.	The PaViDIA model was understood as one of the developed models of PEA among relevant parties including other donors. It was also positioned as one of PEA's approaches at the MAL; however, the PaViDIA model was not integrated into MACO's routine activities by the end of the project due to the scarce of operational funds and insufficient organizational and institutional arrangement at the MAL.
	2. Number of Micro Projects implemented in target areas.	During the phase-2 period, approximately 120 MPs were implemented in four provinces, namely Lusaka, Northern, Luapula, and North-western provinces.

The project implemented about 120 MPs[18] in different provinces from the one in the previous phase to assess the replicability of the PaViDIA approach, and finalized the practical model for rural development in isolated areas, the so-called "PaViDIA model", by the end of the project. Although it is quite difficult to measure the achievement status as no specific criteria was set for the indicator 2 above, considering the number of MPs implemented in the first phase to develop the basic model, which was 29 at that time, the 120 MPs implemented during this phase were judged to be sufficient to assess its replicability.

In addition to the development of the PaViDIA model, the POR headquarters organized a number of seminars and workshops to facilitate the integration of extension methodologies, and promoted PaViDIA activities using a "weekly bulletin" in order to disseminate the effectiveness of the model among relevant parties. As a result, the model became well known as one of the PEA of the MAL by the end of the project, although it needed some more time to be integrated into MAL's routine activities as mentioned the above.

As the facts demonstrate in accordance with the indicators above, although integration of a model into the MAL's routine activities remains a challenge in the future, a practical model called the PaViDIA model was developed through expansion of MP activities in the designated areas. Thus, it is evaluated that the project largely achieved its purpose.

3.2.2 Impact

3.2.2.1 Continuity of Project Outputs

As mentioned above, the project developed the PaViDIA model that is comprised of 1)

[18] The total number of MPs implemented between 2000 and 2009 is 170 if including 19 MPs by the PaSViD project, 35 MPs during the project phase 1 including 29 MPs by this project, three by the MAL, and three by the JICA project: Development through Empowerment of Rural Communities in Zambia Initiative Areas.

the PaViDIA Expansion Strategy, 2) funds for MPs, and 3) an Implementation Mechanism with human resources, the POR, and the methodology. In order to expand rural development activities using the PaViDIA model after the end of the project, it is necessary that these elements be functioning continuously.

As a result of the Ex-post evaluation relating to the continuity of these elements, it became clear that although the forms and framework have changed gradually in accordance with the launch of the RESCAP project by the MAL, most of them are still functioning or utilized (Figure 1).

With regard to the PaViDIA approach, which is the core of the model, the RESCAP, in cooperation with the MAL, revised it during the course of the project activities. The background of the modification can be explained as follows: as a result of PaViDIA project, it became clear that the PaViDIA approach contributed not only to the revitalization of rural areas but also to strengthening agriculture extension activities, and that there was an increased need to overcome newly recognized issues including the integration of the PaViDIA activities into MAL's routine activities and strengthening the agricultural extension system of the MAL in realizing the PaViDIA model in other areas[19].

To deal with these challenges, the RESCAP project changed the positioning of MP activities to "activities for strengthening the capacity of agricultural extension" from "activities for rural development activities led by farmers." This decision made after the end of the project contributed to strengthening the linkage between PaViDIA activities and MAL's routine activities, and facilitated further revision of the PaViDIA approach for future integration with the basic principle of MAL's extension approach, called "PEA."

The RESCAP project completed modification work around 2012 and changed the name of the PaViDIA approach to the PaViDIA approach with integration of PEA cycle (hereinafter referred to as "PEA-PaViDIA"). Based on the modification of the approach, all field manuals produced during the PaViDIA project were revised to the "PEA-PaViDIA Manual," and were distributed to the concerned parties[20].

In rural development by the PEA-PaViDIA approach, although there was a slight change in the position of MP activity, its implementation framework, and funds (budget) per farmer,

[19] The vulnerability of the agricultural extension system became a problem from time to time during the project period. It called for a review of the project plan in the middle of the phase-1 activities and led to an inclusion of the perspective of institutional strengthening in the project plan to reinforce the existing extension system. It was the background against which POR was established in 2005 as the core organization of PaViDIA activities. According to the project reports, the project activities made favorable progress thereafter. However, it became evident from a wide range of activities till the end of the project that the system of interdepartmental communication and information sharing for the agricultural extension activities was not fully functioning, and this fragile system became a bottleneck for extending the model in other areas.

[20] It was distributed not only to those agricultural offices both at provincial and district levels where MPs were implemented during the RESCAP project but also to the extension officers in the relevant areas (Source: Results of the Ex-post evaluation).

the basic concept and implementation procedures including planning MP activities with the participation of farmers, implementing MP with the use of local resources, and adopting sustainable agricultural practices in MP activities have been taken over[21] (See Table 3).

Table 3 Modification Points

	PaViDIA	PEA-PaViDIA
Positioning	Rural development including human resource development	Rural development through agricultural extension activities
Perspective	Rural development including agriculture	Rural development through agriculture
Manuals	4 documents in total* (Both theoretical and practical)	1 manual (Practical) - added extension activities by MP[22]
Procedure	4 phase	5 phase in accordance with PEA procedure (Shortened training period and simplified documentation)
MP fund per farmer	USD50～USD 100	USD10～USD 20
Financial Management	Carried out by each MP village (needed to open a bank account)	Carried out by district agricultural office (No need to open a bank account)
Means of MP Execution	Implementing multiple MPs at a time in the MP village.	Adopting starter sub-project and expanding activities step-by-step based on its' success.

* Four documents include three PaViDIA Field manuals for planning, M&E, and Sustainable Agriculture Practices, as well as the PaViDIA Implementation Guideline.
Developed by evaluator based on JICA provided documents

As a result of the Ex-post evaluation survey, a certain decrease in the number of personnel trained during the project because of death, career change, or resignation was confirmed. However, six out of a total of 17 PaViDIA trainers trained continuously held a post as a master trainer during the RESCAP project and have played an important role in rural development activities through agriculture.

After the launch of the RESCAP project, the Department of Agriculture of the MAL, which has a vital role in agricultural extension activities, took over the role and responsibility of the POR, which was established during the project and functioned as a hub of the project activities. Along with restructuring the PaViDIA implementation mechanism, the MAL rearranged the MP monitoring activities[23] in the following two ways: for those villages at

[21] The PaViDIA model had following four (4) stages including a strategy-formulating phase, a planning phase, an implementation phase, and an expansion phase (Source: JICA, 2009, "PaViDIA project phase 2 terminal evaluation report"). On the other hand, the PEA-PaViDIA provides the following five (5) phases according to those of PEA; Preparatory, Analysis, Planning, Implementation, and M&E and Self-Expansion (Source: JICA provided document).

[22] When villages implement MP activities by the PEA-PaViDIA approach, each selected sub-project is required to organize a Farmer Study Group at the preparatory phase, and to open a demonstration field where the CEO, together with lead farmers, demonstrates some useful knowledge and techniques during MP implementation.

[23] The monitoring frequency by the Camp Extension Officer (CEO) for the 31 villages that are on expansion stage are as follows; monitoring activities are carried out more than once a week at six villages out of 31 villages (22%), monthly monitoring is done at five villages (16%), quarterly monitoring is held at five

the implementation stage, intensive monitoring activities by extension officers are continuously carried out. Meanwhile, for those villages at the expansion stage of MP implementation, monitoring is integrated into the routine activities of the Camp Extension Officer (hereinafter referred to as "CEO").

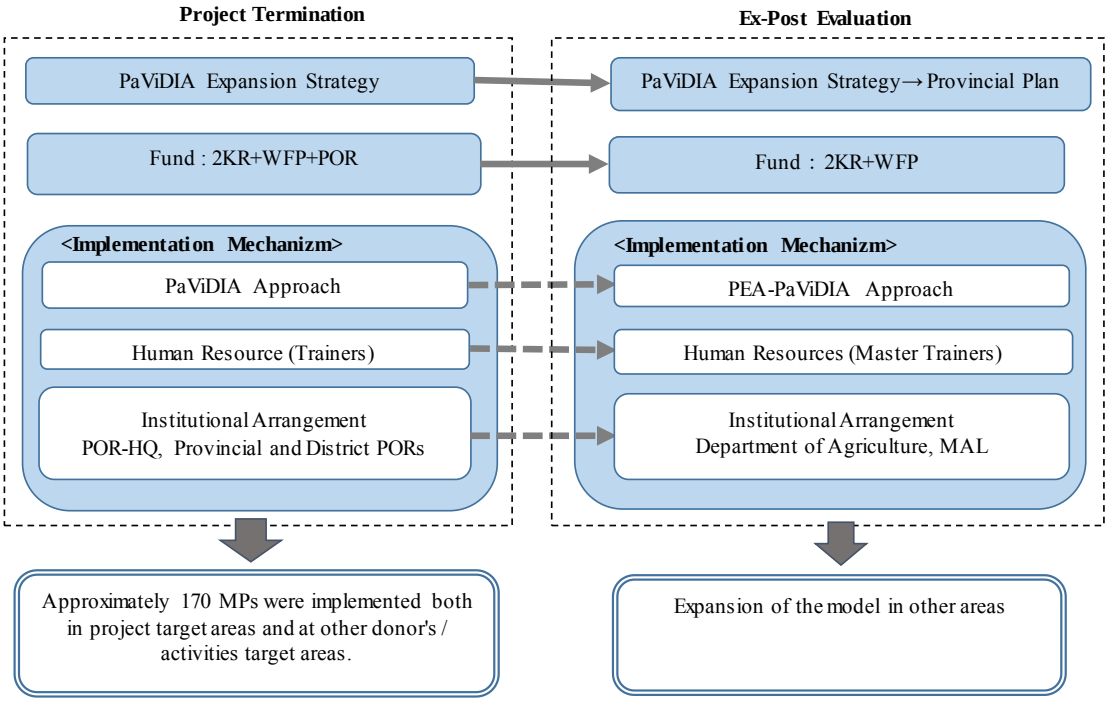

Figure 1 Continuity of Project Outputs at a glance

3.2.2.2 Achievement of Overall Goal

The overall goal of the project was "The model for participatory village development in isolated areas established by the project is realized and replicated in other areas for poverty reduction," as Table 4 indicates below. To assess its achievement status, the following two indicators including the number of MPs in other areas except for the project target areas as well as the number of districts that adopted the model were provided.

villages (16%), every-forth night monitoring is carried out at four villages (13%), irregular monitoring is done at 4 villages (13%), and no monitoring is done in the past one year at three villages (10%). CEOs are required to contact and report to upper agencies by way of the monitoring system provided by the MAL when any issues that should be shared are recognized through monitoring activities (Source: Results of the Ex-post evaluation).

Table 4 Achievement of the Overall Goal

Overall Goal	Indicator	Actual
The model for participatory village development in isolated areas established by the project is realized and replicated in other areas for poverty reduction.	1. Number of Micro projects replicated in other areas.	After the completion of the PaViDIA project, the PaViDIA approach was modified to PEA-PaViDIA. Based on this revised approach, MPs were implemented in 354 villages in 13 districts of the following five (5) provinces; Lusaka, Northern, North-Western, Muchinga, and Western.
	2. Number of district adopting the model.	The PEA-PaViDIA model approach was adopted in 13 districts of the five provinces in the above.

By the time of the Ex-post evaluation, the MAL implemented MPs by the PEA-PaViDIA approach in a total of 354 villages[24] in 13 districts in the 5 provinces, namely Lusaka province, Northern Province, North-western province, Muchinga province, and Western province. 7 districts out of the 13 districts had similar experiences in the past but selected unexperienced villages for MP sites during the RESCAP project. In other districts, the MPs were newly launched after the end of the PaViDIA project. In light of the above, it is evaluated that the project achieved the designated overall goal. It should be noted that the continued activities by the RESCAP project including developing a system to reinforce the agricultural extension system with the use of MPs made a great contribution to the achievement of the overall goal.

3.2.2.3 Other Impacts

(1) Incidental Impact

As a result of the phase-1 project activities, four villages out of MP implementing villages were selected as MP model villages, and five of the farmers that engaged in

[24] 354 villages include 12 villages in Kafue district in Lusaka province, 30 villages in Kaputa district, 10 villages in Nsama district, and three villages in Kasama district, 22 villages in Luwingu district, and 30 villages in Mporokoso district in Northern province, 54 villages in Chinsali district, 26 villages in Shiwangandu district in Muchinga province, 13 villages in Kaoma district, 16 villages in Lukulu district, 15 villages in Senanga district in Western province, and 60 villages in Solwezi district, and 63 villages in Kasempa district in North-Western province (Source: JICA provided documents).

sustainable agricultural practices were appointed as model farmers for sustainable agriculture practice. According to the result of the Ex-post evaluation, only one MP model village out of the four has continued relevant activities[25], and all of the five model farmers have been practicing sustainable agriculture methods continuously. Two of these farmers were selected as lead farmers[26] in the relevant camp.

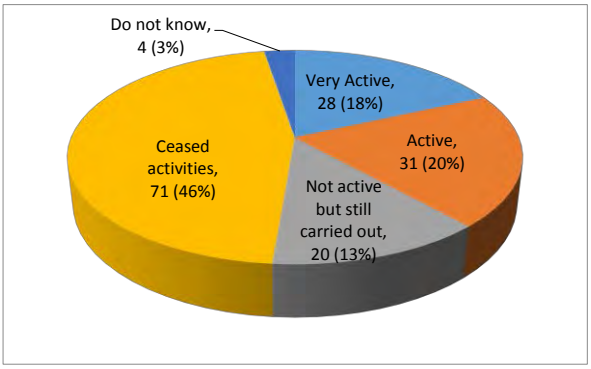

Figure 2 Status of MP Implementation (N=154)

Moreover, according to the results of the beneficiary survey conducted during the Ex-post evaluation, although forms of implementation of MP activities shifted from a community basis to an individual basis or to a small-scale group basis, 29 villages out of the total respondent 31 villages have continued MP activities in some way. As Figure 2 shows, the number of sub-projects implemented in the 31 villages at the beginning was 154, and almost half (79) of them have carried out activities on a continuous basis till the time of the Ex-post evaluation[27].

With regard to the implementation of MPs, evaluation reports in the past pointed out some negative impacts including conflict over fund management and arrangement[28]. However, socio-economic impacts were also recognized including an increase in additional income generated from the re-investment of MP profit into new activities, the expansion of cultivated land, and the enhancement of social cohesion through implementation of activities such as HIV/AIDS care and a soup kitchen for the social vulnerable. In addition, "Studies on the Impact and Successful Factors of PaViDIA Micro Projects" conducted in 2009 by the project indicated that MP activities brought not only economic and social impacts but also an impact on the capacity development of farmers. Moreover, the Ex-post evaluation also confirmed

[25] With regard to the rest of the model villages, activities are implemented on an individual basis rather than on a community basis (Source: Results of the Ex-post evaluation).
[26] Camp Extension Officers (CEO) nominate a lead farmer/lead farmers in each zone of the camp and demonstrate new skills and technologies at a demonstration field, so-called "Demo" together with those lead farmers. The number of Demos varies from provinces; however, CEOs are encouraged to open five (5) demos at Northern province, two (2) demos at Luapula province, and at least one (1) demo in Lusaka province (Source: Results of the Ex-post evaluation).
[27] The breakdown of 79 activities above is as follows: livestock (27), Infrastructure (24), and Agriculture (8). For the rest of the activities, there were 71 total activities, some ceased activities due to death from diseases, a lack of animal husbandry skill, breakdowns, the scarcity of water, or property loss. Amongst all those ceased activities, 14 ADP (Animal Draft Power) sub-projects, six (6) Piggery sub-projects, five (5) Hammer Mill sub-projects, and five (5) Fishery sub-projects, which accounted for 20% of the total, 8%, 7%, and 7% respectively (Source: Results of the Ex-post evaluation).
[28] Source: JICA, 2007, "PaViDIA phase 1 terminal evaluation report" and JICA, 2009, "PaViDIA phase 2 terminal evaluation report".

socio-economic impacts such as the revitalization of rural communities and the improvement of rural living standards through the following activities including the reopening of the same sub-project that failed once, starting similar sub-projects utilizing acquired skills and know-how, and expanding activities with the participation of the Zambian National Farmers Union and Cooperatives (Photo-1).

(Photo-1) One of the villages where initial MP activity was ceased but resumed new activity of village chicken rearing. (Photo was taken by the evaluator at Shambole village in Kafue district of Lusaka Province)

(2) Indirect Impacts

As a result of the Ex-post evaluation, a number of indirect impacts of the project were also found. For instance, Kapuka village in the Chongwe district received additional funding from other donors taking advantage of MP activities and was able to construct an elementary school as a result. In addition, PADA village in the Chongwe district, which constructed a borehole as a sub-project, became able to supply safe and clean water and was thereby chosen as the construction site of an elementary school. Moreover, some neighboring villages started growing Irish potatoes and tomatoes in imitation of the agricultural practices in MP villages as an indirect result of MP activities.

With regard to the impact on the natural environment from the implementation of the project or from land acquisition and resettlement during the project activities, no negative impacts were observed.

As mentioned above, this project has largely achieved the project purpose of both phases aiming to establishing a PaViDIA implementation mechanism for phase-1 and establishing a practical model for participatory village development in isolated areas for phase-2. With regard to the overall goal of the project, although the model was revised by the RESCAP project to integrate it into the MAL's extension system, it is evaluated that the overall goal of the project was achieved based on the fact that the MAL has continuously implemented MP activities in other areas utilizing the improved model. Therefore, effectiveness and impact of the project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The result of inputs of this project is shown in Table 5 below.

Table 5 Input (Plan and Actual)

Inputs	Plan	Actual
(1) Experts	[Phase-1] 4 Long-Term 10 Short-Term (2-expert/year) M/M (man/month) was not indicated.	4 Long-Term (~2004) 5 Long-Term (2005~) Including chief advisor and coordinator. 7 Short-Term
	[Phase-2] No specific figures indicated either for Long-Term or Short-Term experts.	3 Long-Term (Chief advisor, Coordinator, Sustainable Agriculture) 1 Short-Term
(2) Trainees received	Phase-1: 15 Trainees (3 trainees/year)	Phase-1: 23 Trainees
	Phase-2: No figure was indicated.	7 Trainees
(3) Equipment	Phase-1: 20 Million Yen (Vehicle, PC, Copy machines, etc.)	Phasei-1: 26 Million Yen (Vehicles, PCs, Copy machines etc.)
	Phase-2: No figure was indicated. (Office equipment, other necessary equipment for the project activities)	Phase-2: 3.4 Million Yen (Vehicle)
(4) Local Cost	Phase-1: 60 Million Yen	Phase-1: 122 Million Yen
	Phase-2: No figure was indicated.	Phase-2: 41 Million Yen
Japanese side Total Project Cost	620 Million Yen	860 Million Yen
Zambian side Operational Expenses	Operational Cost (No figure was indicated)	2.33 Million Yen

Source: JICA, 2007, "Terminal Evaluation Report for the PaViDIA Project Phase 1"
JICA, 2009, "Terminal Evaluation Report for the PaViDIA Project Phase 2"

3.3.1.1 Elements of Inputs

The actual inputs such as experts, trainees received, and equipment during the project phase-1 period were higher than planned. This was caused by additional input of long term experts on participatory farmers' activities promotion that have been dispatched since 2005. As the Mid-term Review team recommended that "Those monitoring the cycle and system of MP should be established for the sustainability of the project as a whole," the assignment of an additional expert was indispensable and appropriate in facilitating MP activities, and to establish the MP monitoring system. For the project phase-2, planned values for all items were not set at the time of the project planning; thus, the efficiency of each element of inputs cannot be assessed based on a comparison of the actual values.

3.3.1.2 Project Cost

With regard to the cost incurred with this project, the planned budget was 620 million yen, yet the actual project budget was 860 million yen, which was higher than the initially planned amount by 37%. This is attributed to the additional expenses related to dispatching a long-

term expert (one person), the increased cost of operation associated with the additional input of the expert, and the increased number of pieces of equipment associated with revision of the project plan that were provided.

Additionally, although the total number of project outputs did not differ before and after the revision of the Project Design Matrix (hereinafter referred to as "PDM"), output 1 was changed to "establishing POR" from "survey for the socio-economic conditions". Moreover, the former output 3 and output 4 were combined and became one single output (Output 3) in the latest PDM. With regard to the output 4 of establishing monitoring and risk-management methods in the latest PDM, it was newly added after the third PDM modification. Judging from the above, two outputs were newly added substantively as a result of PDM modifications carried out during the project phase-1.

In light of the above, it can be concluded that although the project cost is higher than planned, it was in line with the increased outputs mentioned above.

3.3.1.3 Period of Cooperation

The project was planned to continue for seven (7) years from June, 2002 to May, 2009 and was completed within 7 years as planned (100%).

In summary, although the project period was within the plan, the project cost was exceed the plan. Therefore, efficiency of the project as a whole is fair.

3.4 Sustainability (Rating:①)

In order to utilize the PaViDIA model (the current PEA-PaViDIA model) in the MAL's routine activities, PaViDIA activities should be consistent with the development plan and policy of the country. At the same time, it is also necessary that the position of the model and its implementation policy are specified precisely in the agricultural strategy of the ministry. Moreover, the arrangement of funds from internal and/or external sources is also vital in carrying out MP activities continuously under the agricultural extension system of the MAL.

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

The "Revised Sixth National Development Plan (2013-2015)" positions activities related to poverty reduction as one of the policy priority issues, and places emphasis on the revitalization of rural areas through proactive resource dissemination as well as through increased interventions for the poor and the social vulnerable. Also, the "National Agricultural Policy (2004-2015)" set forth objectives such as implementing competitive and

effective agriculture in consideration of regional characteristics and promoting livestock and fishery sector development. Thus, rural development activities utilizing the PEA-PaViDIA approach are consistent with the plan and policy of the country. However, the "National Extension Strategy" which was drafted by the Department of Agriculture of the MAL HQ was in the process of finalization at the time of the Ex-post evaluation. Thus, the overall direction for the future implementation of the model is not yet determined.

The institutional aspect has been developed a lot since the completion of the project. For instance, the PaViDIA approach is currently indicated as one of the participatory agriculture extension approaches mentioned in the "National Agricultural Extension Manual (2013)," and it has gradually come to be understood as a method to realize "Human Development"; one of the four pillars of extension services, indicated in the "General Operational Guidelines for Agricultural Extension Service Providers for Small-Scale Farmers in Zambia". This movement toward the integration of the PaViDIA approach to the MAL's routine activities is expected to contribute to the expansion of the project's effects in the future.

On the other hand, some issues were recognized in terms of financial arrangements for future MP activities as a result of the Ex-post evaluation. Firstly, financial arrangements from outside resources were not institutionalized at the time of the Study even though it had been predicted that external funds would be utilized for future MP implementation. In this situation, the expansion of PaViDIA activities in the future largely depends on to what extent the officers in charge at the department of agriculture of the MAL conduct promotion and fund-raising activities. Secondly, no subsidy programme other than the Farmers Input Support Program[29] (hereinafter referred to as "FISP") and the Food Reserve Agency[30] (hereinafter referred to as "FRA") and no financial system that can prepare a budget based on activity plans developed with citizens' participation exist at the MAL. Thus, it is very difficult to secure internal funds even if the MAL requests funds from the national treasury. Thus, it is evaluated that sustainability for the project effects in terms of the policy and institutional aspect is fair.

[29] FISP is one of the government subsidies introduced in 2002 aiming to provide agricultural resources including seeds and fertilizer. It was started as a provisional scheme for three years at the beginning; however, it's been continuously provided till the time of the Ex-post evaluation by changing the level (rate) of subsidy for fertilizer as follows: 50% (2002-2005), 60% (2006-2007), 75% (2008-2009), 76% (2010), 79% (2011), and 50% (2013). In addition, the Government of Zambia also started assisting seeds with a rate of 50% from the 2008/2009 agricultural season. The number of target beneficiaries was 120,000 in 2002 and has gradually increased to 900,000 in the 2013/2014 agricultural season (Source: MAL, 2014, "FISP Implementation Manual 2014/2015 Agricultural Season").

[30] The FRA was established in 1996 and has been playing a central role in purchasing maize upon the request of the government since 2005 (Source: The Japanese Institute of Irrigation and Drainages, 2012, *'ARDEC-World Agriculture Now',* Vol.47).

3.4.2 Organizational Aspects of the Implementing Agency for the Sustainability of Project Effects

(1) Implementation Framework

MAL currently consists of eight (8) departments. Under this structure, the department of agriculture has played a core role in implementing PaViDIA activities in collaboration with other relevant departments since the PaViDIA project started (Figure 3). In accordance with the improvement of the model during the RESCAP project, the department of agriculture of the MAL took over the roles and responsibilities of the POR, which was established as the hub of the PaViDIA activities during the project phase-1. After the integration, the basic framework for the implementation of PaViDIA activities under the existing agricultural extension system remained the same, and agricultural officers, in cooperation with policy and planning officers, have carried out PaViDIA related activities under the supervision of the Department of Agriculture. With regard to the CEO, who plays a significant role in MP activities, the staff allocation of one CEO per camp remains unchanged.

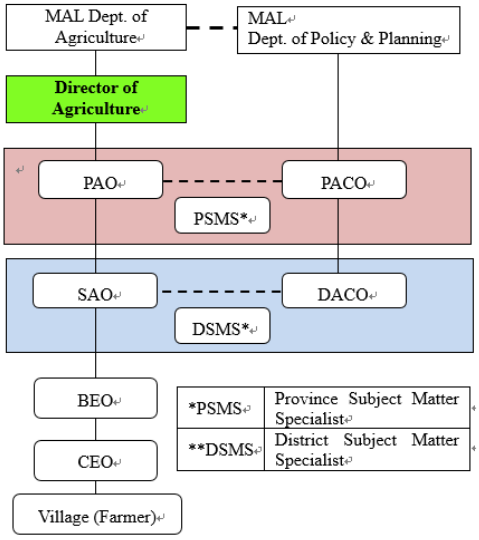

Figure 3 Implementation Framework of PEA-PaViDIA

The roles of stakeholders at each administrative level in PaViDIA activities are summarized in Table 6.

Table 6 The Roles of the Stakeholders and their major responsibilities in PaViDIA activities

Stakeholders	Major Responsibility
MAL, Headquarters (Superintendent)	Policy (Strategy) making, fund arrangement based on strategies; promotion of PaViDIA activities; and backstopping on issues that provinces and districts are not able to handle.
Province (Superintendent of PaViDIA activities in their jurisdictional province)	Selection of target areas; planning of PaViDIA activities; implementing trainings and monitoring, supervising activities; report making; and providing backstopping to activities at the district level.
District (Superintendent of PaViDIA activities in the relevant district)	Development of PaViDIA implementation plan for targeted areas; selection of MP villages, providing support to extension officers and monitoring; selection of MP proposals; preparing, requesting; managing MP budgets, and report making.
Extension Officer (Facilitator)	Facilitating MP planning, providing support in implementation; conducting monitoring; and providing feedback.

Source: JICA provided documents and Results of the Ex-post evaluation

(2) Human Resource Allocation

1) MAL-Headquarters

At the MAL headquarters, officers such as the director of agriculture, head of the extension unit, and the principle officer of agricultural methodology remain key members in the implementation of PaViDIA activities, and cooperate with officers concerned with sufficient knowledge and experience with the PEA-PaViDIA approach such as officers of M&E at the Department of Agriculture and those at the Department of Policy and Planning when needs arise. However, given the fact that only a few officers are currently assigned to PaViDIA activities and all of them usually have multiple tasks, there is a possibility that they will not be able to provide sufficient and appropriate support depending on the size and scale of future PaViDIA activities. Thus, concerns regarding human resource allocation at the MAL headquarters remain.

2) Province

PaViDIA activities are recognized not as routine activities of the MAL but rather as events, and therefore officers in charge of PaViDIA activities will be assigned as a task force based upon a decision on MP implementation[31]. According to the results of the questionnaire survey relating to the allocation of human resources both in the past and in the future, agriculture offices in five provinces, namely Luapula province, Lusaka province, Northern province, Western province, and North-Western province, posted 2-7 officers including the PACO (Provincial Agriculture Coordinator) and the PAO (Provincial Agriculture Officer) in the past, and responded that approximately 2-10 officers should be deployed for future MP activities.

With regard to the allocation of human resources for the whole agriculture office in the provinces, although the number varies between offices, 50-100 posts are currently filled[32]. Of these, 10-20 officers are currently assigned at the Department of Agriculture. Moreover, it was also found as a result of the Ex-post evaluation that one to two (1-2) PaViDIA core trainers who played an important role in implementing MP activities continued to work at these offices[33]. In light of the above, the personnel required for sustaining project effects are largely sufficient.

[31] Task-forces for PaViDIA activities will not be formed if a MP is not implemented.

[32] Source: Results of the Ex-post evaluation.

[33] The number of core trainers in five provinces is as follows; one in Luapula province, two in Lusaka province, one in Northern province, two in Western province, and two in North-Western province (Source: Results of the Ex-post evaluation).

3) District

An average of forty officers are assigned at agricultural offices in eight districts in the five provinces. Of these, six officers on average are posted to the Department of Agriculture. When it comes to the implementation of PaViDIA activities, likewise the provincial agricultural offices' task force teams, led by the Senior Agriculture Officer (hereinafter referred to as "SAO"), are to be formed. According to the results of the questionnaire survey during the Ex-post evaluation, while only two actual staff members were allocated in past PaViDIA activities, they responded that at least five to six officers should be assigned for future PaViDIA activities as districts offices have a wide variety of duties in the implementation of PaViDIA activities. In this situation, backstopping from super agencies are vital in order to sustain project effects.

Table 7 CEO Allocation

District	No. of Camp	No. of CEO
Chongwe	16	16
Kasama	28	22
Mporokoso	22	18
Luwingu	16	15
Mansa	36	30
Solowezi	55	50
Kaoma	16	14
Kafue	12	12
Total	201	177

Source: Results of the Ex-post evaluation

In addition, the staffing-rate of extension officers at the eight districts is as high as 80% as indicated in Table 7. However, as a result of the Ex-post evaluation, it was found that some CEOs were not living in their duty stations but rather in town due to delays in the arrangement of lodging facilities including the construction of camp houses as seen in the Western province[34]. In light of the above, careful consideration of staff allocation is required when implementing PaViDIA activities in the future.

Based on the above, it is presumed that organizational settings in implementing MP activities are likely to be sustained unless there is a significant organizational restructuring in the future. However, there are still some issues left for personnel assignments. Thus, the organizational aspect of the sustainability of the project effects are considered to be fair.

3.4.3 Technical Aspects of the Implementing Agency for the Sustainability of Project Effects

(1) MAL-Headquarters

In order to carry out PEA-PaViDIA activities in future, MAL headquarters is expected to have sufficient capabilities for management, marketing, policy making, and facilitation.

The MAL, with the support of the RESCAP project, has taken the initiative in revising manuals, training operations and management, and the implementation of MP activities in other areas since the PaViDIA project was completed. In addition, a number of experienced

[34] Source: Results of the Ex-post evaluation.

officers were still working at the MAL at the time of the Ex-post evaluation: some officers are familiar with the administrative work of PaViDIA activities through years of engagement in related activities; others are trainees who received training in Japan, and are trained as trainers either during the PaViDIA project or during the RESCAP project[35]. Meanwhile, it was found that as no particular activities have been done toward acquiring external funding, no funds were prepared for future activities by the time of the Study. It revealed that the fund-raising capability is less than sufficient.

(2) Province

As mentioned above, although PaViDIA related activities are regarded as events, they are implemented as a part of routine activities of the MAL. Therefore, the skills and techniques required for PaViDIA activities are similar to those needed for their routine activities. However, PaViDIA activities that are carried out in a step-by-step manner over a long period of time in particular areas require the facilitation of coordination and cooperation with MAL headquarters as well as district agriculture offices. In view of this, PaViDIA projects focused on fostering trainers and resource people, and subsequent projects, which are RESCAP, made every effort to strengthen institutional capacity through human resource development at each administrative level including the provincial level.

As mentioned above, of those officers trained as trainers or resource people, at least one or two officers have been assigned continuously in the five provinces, and have responsibility for the coordination and collaboration of PaViDIA activities in other areas. Thus, the technical level required for the implementation of PaViDIA activities for the agriculture office in the provinces is likely to be maintained unless a significant staff rotation takes place in the future. On the other hand, additional efforts to enhance technical capability and coordination skills are required when the MAL initiates PaViDIA activities in other inexperienced provinces in the future.

(3) District

This project, as well as the RESCAP project, implemented MP activities in a total of 21 districts, and offered several opportunities to strengthen planning and management skills for PaViDIA activities as well as facilitation skills through relevant trainings, CEO trainings, and the implementation of MP activities in villages. Therefore, those who had PaViDIA experience in the past possess basic skills and techniques required for its implementation in the future. On the other hand, as a result of the Ex-post evaluation, it was found that those

[35] The RESCAP project certified 45 agriculture officers from all over the country as master trainers, and of which six officers including three in Lusaka, and three in provinces are trainers trained during the PaViDIA project (Source: Results of the Ex-post evaluation).

who were transferred from other regions without any experience of MPs or were newly employed by the MAL after the completion of the project did not have sufficient skills and understanding with regard to the concept of participatory village development through agriculture, the implementation process, and facilitation activities at villages that are required for the PaViDIA activities. Taking that into account, continuous activities on capacity building for those inexperienced officers should be carried out to sustain project effects.

In summary, the technical aspect of the implementing agency for the sustainability of project effects is considered fair.

3.4.4 Financial Aspects of the Implementing Agency for the Sustainability of Project Effects

(1) MAL-Headquarters

Table 8 shows the status of the budget and expenditures of the MAL between 2010 and 2013. Although the ratio of the budget released to the MAL remains around 10% against the national budget, there has been a decreasing trend in recent years. With regard to the budget allocation to each administrative level, most (about 90%) of the MAL budget was provided to the Headquarters and only about 10% of the total budget was released to agricultural offices at provinces as well as at districts in the whole country.

Table 8 The budget for the MAL

Unit: Billion (K)

Budget	2010	2011	2012	2013
(A) Released	2,315	2,946	NA	2,956
Expenditure	2,069	2,785	NA	2,246
Balance	246	161	NA	710
(B) Approved Budget	20,119	28,672	NA	34,607
(A) Against (B) (%)	11.5%	10.3%	NA	8.5%

Source: Auditor General's Report, Ministry of Finance, Zambia

According to the budget analysis provided by IAPRI[36] , almost half (58%, 2015) of the total budget provided to the MAL is secured for the Poverty Reduction Programmes (PRPs), and of which 98% is allocated to the two major policy programmes such as FISP and FRA, which means that only the remaining 2% of the PRPs budget can be used for routine activities of the MAL. In addition, the ratio of the budget released to the Department of Agriculture against the total budget of the MAL remains 0.4% between 2010 and 2011. In light of the above, the MAL HQ is still in a harsh financial condition, and continuity of the project effect is still greatly affected by the donor country's trends and Zambia's national budget.

[36] IAPRI stands for Indaba Agricultural Policy Research Institute (Source: IAPRI, 2014, 'Budget analysis for Agricultural Sector')

(2) Province and Districts

According to the financial report of the Lusaka Agricultural Office between 2013 and 2014, only half or one-third of the approved budget was actually released to the office, and the budget for the Department of Agriculture of the province was about 10-20% of the total budget provided to the entire office. In addition, financial data of the Kafue District of Lusaka province acquired during the Ex-post evaluation indicates that the budget is quite variable over the years, and the ratio of the released budget against that of the approved has great variability. Moreover, the ratio of the budget allocated to the Department of Agriculture at the district against the total budget for the entire district office varies from year to year. Therefore, financial capacity for the provinces and districts is not sufficient to continue project effect.

(3) MP Fund-Raising

At the time of Ex-post evaluation, the MAL indicated the possibility of applications for financial assistance to donors and for the 2KR collateral fund; however, no funds for MP activities from 2015 onward were secured. The following points are considered background factors in the current fund arrangement. Firstly, although the Department of Agriculture of the MAL has been drafting the "National Extension Strategy", it is neither finalized nor approved yet, which means that there is no future direction in the utilization of the PaViDIA model. Secondly, the fund-raising capability of the MAL is not sufficient to meet the requirement. In addition, it turned out to be extremely difficult to obtain funds from the national treasury due to the following four factors; firstly, the Government of Zambia has been in a dire financial situation, and the recurrent budget accounts for most of the total budget released from the national treasury to the MAL. In this situation, the MAL relies heavily on assistance from other donors for the development budget. Secondly, under the current budget implementation system, the allocation of the budget is not necessarily done based on a budget plan. Thirdly, although the budget for poverty reduction is secured, huge budget allocations to the FISP and the FRA result in a very low budget for other developing activities in this sector. Lastly, although MP activities cover cross-sectoral issues including livestock, fisheries, agri-business, and crop production, the MAL's budget is vertically-structured, in which the budget is requested and executed by the designated activities and/or programmes. Therefore, subsidizing the MP funds from the

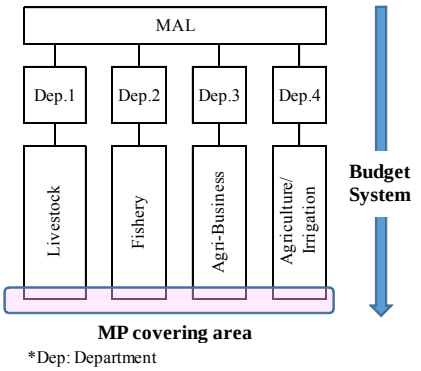

Figure 4 Relation between the Budget for the MAL and MP activities (An example)

budget of the Department of Agriculture is difficult in practice.

In light of the above, some minor problems have been observed in terms of policy background, organizational and financial aspects of the implementing agency. Therefore, sustainability of the project effect is low.

4. Conclusion, Recommendations and Lessons Learned

4.1 Conclusion

This project aims to develop a practical model for participatory village development to alleviate poverty in isolated areas. The direction of the project was highly relevant not only to the country's socio-economic development policy that emphasized poverty reduction and support to small-scale farmers, but also to the national agricultural policy that aims to promote sustainable agricultural practices and development activities that take the poor into consideration. It also met the needs of the Ministry of Agriculture and Livestock (MAL) to realize the participatory extension approach (PEA). In addition, it was consistent with the Japan's aid policy for Zambia that put a large focus on providing support for poverty reduction through rural development. Thus, relevance of this project is high.

The project established the implementation mechanism for participatory village development in isolated areas (PaViDIA) as a result of the project activities during the project phase-1, and developed the practical model for village development in the relevant areas (PaViDIA model) as expected based on several tests and modifications undertaken during the project phase-2. In addition, after the project was completed, the MAL, in cooperation with a new JICA technical cooperation project: "Rural Extension Service Capacity Advancement Project-Through PaViDIA Approach" (RESCAP), revised the model through which rural development activities were undertaken in other areas. Thus, the effectiveness and impact of the project is high. On the other hand, although the project period was within the plan, the project cost exceeded the plan as a result of the increased number of inputs along with add-on activities to strengthen the project monitoring system. Thus, efficiency is fair. With regard to the future utilization of the PaViDIA model, some issues in terms of policy background and organizational aspects of the implementation agency remain. Additionally, the funds for future implementations of the model are not ensured at the time of Ex-post evaluation. Therefore, the sustainability of the project effects is low.

In light of the above, this project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Clarification of the MAL's strategy toward the expansion of the PEA-PaViDIA model

As mentioned above, the "Agricultural Extension Manual" of the MAL indicates the PaViDIA approach (current PEA-PaViDIA) as one of the participatory extension approaches along with the PEA. This enhanced recognition of MP activities as a means of strengthening the agricultural extension system after the completion of a PaViDIA project, as well as to the expansion of the approach in other areas in the course of RESCAP activities. Meanwhile, even at the time of the Ex-post evaluation, the MAL had not established strategies including the "National Extension Strategy", which the mid-term review for the RESCAP project recommended to formulate for the expansion of the PEA-PaViDIA model.

In order to sustain skills and techniques acquired through consecutive activities over a decade and more, it is necessary for the Department of Agriculture of the MAL; 1) to review the achievements of the PaViDIA project and the results of several surveys conducted in the past; 2) to examine how PaViDIA activities have contributed to the revitalization of rural areas; and 3) to establish a policy of the MAL so that the PEA-PaViDIA model is put into practical use in the future.

(2) Strengthening coordination between the MAL-Headquarters, province and district offices

In realizing the PEA-PaViDIA model in the future, the activities will be implemented under the existing extension system of the MAL. However, staffing and funding for the MP is not sufficiently ensured at district offices, which stand at the front line for its implementation. With these issues in mind, it is necessary to take measures to strengthen coordination and collaboration between the MAL headquarters, provincial offices, and district offices for efficient and effective support to the district offices.

(3) Strengthening Capacity Development of Agricultural Officers

A number of officers at project targeted regions were offered an opportunity to acquire knowledge of the basic concept of the PaViDIA and extension skills from time to time through activities over the past 10 years and more. In addition, the MAL implemented more than 500 MP activities in various places, and thereby deepened understanding on the approach. However, a result of the Ex-post evaluation indicates that the officers' lineup had changed because of resignation, changing jobs, transfer, or death during the past seven years after the completion of the PaViDIA project, and that some of the officers who had never experienced PaViDIA activities in the past did not have sufficient understanding on the PaViDIA. Thus, for continuous implementation of PEA-PaViDIA activities as a means of agricultural extension activities, the MAL is required to hold periodical staff trainings including in-service training and PaViDIA related trainings to enhance the performance of relevant officers.

4.2.2 Recommendations to JICA

(1) Support for the continuation of project effects

When implementing agriculture-centered rural development activities through JOCV (Japan Overseas Cooperation Volunteers) and/or through a technical cooperation project including the on-going project: "Food Crop Diversification Support Project Focusing on Rice Production", JICA should promote the effective use of those PaViDIA trainers, dissemination of ideas on rural development utilizing the PEA-PaViDIA approach, and sharing lessons from past experience of the projects.

4.3 Lessons Learned

(1) Flexible responses through modification of the project plan

During the project phase-1, several modifications were undertaken. In many cases, frequent changes to the project plan caused delays for activities and/or confusion among project stakeholders; however, the Ex-post evaluation found that these modifications functioned effectively for the efficient implementation of the project activities for the following reasons. Firstly, changes in the plan enabled the project to accommodate the dynamics of the villages in the isolated areas. Secondly, with such modifications, projects were given a number of opportunities to summarize findings and recommendations extracted from each implementation stage of the model establishment, testing, and improvement, as well as to adopt the best course of actions based on these findings. Thirdly, these changes in the project plan provided a platform for continuous discussion on model development among project stakeholders including senior government officers, and resulted in deepening mutual understanding of the effectiveness of the approach and sharing the final direction of development of the PaViDIA model among relevant parties. In light of the above, when similar projects are implemented with a a longer timeframe, it is necessary to remain flexible for responding to development agendas newly found in the process of project implementation taking into account the possibility of dynamics and the particularities of the targeted areas.

(2) Adopting a strategic approach beyond the project purpose of "Development of a Model"

This project aimed at establishing a practical model for rural development to reduce poverty in isolated areas, and focused on developing a practical model based on the existing approach developed during the PaSViD project between 1999 and 2002 rather than building a new model from scratch. Additionally, the project was implemented on the premise of utilizing the existing extension system of the MAL. Such strategies had contributed to the achievement of the project purpose within the designated period as well as to the advancement of the agricultural and rural development approach tailored to Zambia.

Moreover, utilization of the existing system led to extracting lessons on strengthening the extension system for future expansion of the model, which led to the implementation of the RESCAP project thereafter.

The RESCAP project was launched shortly after the completion of the PaViDIA project and implemented a wide range of activities to strengthen the extension system of the MAL as well as to modify the PaViDIA model during its 5-year project period. Continuous and constructive efforts made by the RESCAP after the completion of the PaViDIA project had contributed to the achievement of the expected impact and sustaining project effects. In other words, the achievement of expected impact was attributed to the fact that the RESCAP project addressed the issues that the PaViDIA project had not fully dealt with.

In light of the above, when similar projects are implemented in the future, it is important to first assess the capacity of the implementation agency, and then examine how to make use of existing activities, organization, and system. It is also vital to adopt a strategic approach beyond the project purpose of developing a model by including necessary activities for the project plan to strengthen organizational and institutional capacities.

(3) Development and/or modification of a model in accordance with organizations and systems of the implementing agency

The project developed the implementation mechanism as a result of the phase-1 activities, and enhanced the foundation for extending the PaViDIA model in other areas during the remaining two years. In the first phase of the project, several measures were undertaken to develop the implementation mechanism including the establishment of POR, the provision of technical support and backstopping by Japanese experts, and direct intervention of the MAL headquarters in the activities at a grass-root level. As a result, the project, in cooperation with the MAL headquarters, provincial offices, and district offices, developed a PaViDIA approach that requires financial input of USD 100.00 per participating household, and an intensive, long-term commitment by the extension officers. In the latter half of the project, although activities went smoothly, it became clear that even if the implementation mechanism had sufficient funds, approach, and organizational setting, it will be difficult to implement the PaViDIA activities effectively in situations where the agricultural extension system is fragile. Based on the findings, the need for strengthening the operational capacity of the implementing agency and for revising the model to a more user-friendly one was recognized. Accordingly, the RESCAP project re-positioned the MP activity as a means for reinforcing the existing extension system, and then revised the PaViDIA approach by strengthening the linkage with routine activities of the MAL, reducing the MP budget, simplifying activities at the preparation and implementation phases. Again, revising the approach during the RESCAP project was a big step forward for the integration of the model

into the MAL.

The following points can be derived as the lessons learned from project activities over the years. Firstly, a model itself cannot be a universal model but rather can evolve itself according to the situation. Secondly, a model which requires lots of inputs and additional activities puts a tremendous burden on the implementing agency as well as entails high risks in operation and management. It then leads to the unsuccessful operation of a model by an implementing agency on its own. Thirdly, in order to enhance the sustainability of a model developed as a result of project activities, a model should be developed in accordance with the routine activities of the implementing agency, its organizations and systems, as well as operational capacity.

Thus, when similar projects are planned, it is necessary to develop a mechanism that ensures a certain level of output with a smaller input, and to design a project plan which enables the modification of a model according to the organizational settings and financial situation of the implementing agency.

(4) Consideration for Utilizing External Funds

It was a breakthrough and novel challenge to implement project activities utilizing external funds. This idea was widely accepted by the MAL during a dire financial situation with budget suspensions, and provided an opportunity for them to take a new step forward in developing a rural development approach. In addition, ensuring a certain amount of external funds contributed to the realization of mid to long-term collaborative work with Japanese experts to develop a model, and further contributed to the expansion of the model to other areas. However, as stated above, while the MAL indicated a possibility of applying for financial support, no funds were secured for future activities at the time of the Ex-post evaluation due to the scarcity of fund-raising capacities and/or opportunities.

These experiences from the PaViDIA project indicate; 1) that it is not necessarily easy to secure external funds without interruption over a period of years; 2) that external fund-driven activities will sooner or later reach the limit of their fund-raising ability, and 3) that it then becomes difficult to maintain the sustainability of project effects.

Thus, when similar technical cooperation projects are planned with the use of external funds, it is necessary to verify if the external funds should be used or not, based on a due consideration of their advantages and disadvantages. The following pre-arrangements also should be made at the time of project planning including; 1) setting a limit or period of utilization of external funds; 2) verifying existing subsidies in the implementing agency; and 3) exploring the possibility of utilization of the existing subsidies as a source of funds.

Annex-1 Achievement of Project Output

(1) Output for the Phase-1 Project

Output	Indicators	Record
Output 1: Project Management Organization is established.	1-1. Funds allocated by MACO for POR	POR was established in the premises of the Cooperative College in April 2005. The MAL allocated necessary funds including electricity fee, salaries of the officers posted at the POR, and seed-money (funds) for MP activities in Mporokoso and Luwingu district in Northern province.
	1-2. Allocation of human resources (staff-hours) in project management office.	The director of agriculture appointed one officer in charge of the POR, and six officers on secondment basis.
Output 2 : Sustainable Agriculture technology package (a manual and model farmers) is established.	2-1. Existence of a manual (version 1)	By the end of the project, the PaViDIA field manual on sustainable agriculture practice was developed, and in which more than 10 techniques in four different areas including irrigated maize, small-scale livestock rearing, agro-forestory were included.
	2-2. No. of farmers with increased agriculture income resulting from implementation of farm sustainable agriculture practices	The technique of irrigated maize cultivation in dry season was practiced by 19 farmers in Chongwe district in Lusaka province as well as 20 farmers in Mporokoso and Luwingu district in Northern province with guidance of the project. Due to a dried well and severe weather, the number of farmers enjoyed harvests decreased. However, 33 farmers out of 39 farmers harvested crops, and of which 31 farmers (90%) realized income from it.
	2-3. No. of MP villages adopting sustainable agriculture practices.	By the end of the project, 25 MP villages out of 29MP villages in Chongwe district adopted sustainable agriculture practice into MP activities.
Output 3: PaViDIA training programme is established.	3-1. Existence of a manual and qualified trainers.	3 qualified trainers were trained and became able to conduct a range of PaViDIA trainings. Training manuals, the so-called PaViDIA field manuals, in terms of planning, monitoring and evaluation, and sustainable agriculture practice were also produced by the project.
	3-2. No. of villages implement MPs.	29 villages implemented MP funded by JICA in Chongwe district[37].
Output 4: Monitoring and risk management methods are established.	4-1. Existence of documents and manuals of monitoring and risk management.	PaViDIA field manual for M&E was produced by the end of the project based on the quarterly monitoring carried out in Chongwe district, and a survey on risk-management.
	4-2. No. of villages continuing implementing MPs.	All of the 29 villages continued to implement MP activities, and of 10 villages initiated new activities such as irrigated-maize production, a shop, goat rearing, maize sales, and tourism using MP profit.
Output 5: PaViDIA implementation guideline is established.	5-1. Existence of described document of PaViDIA implementation guideline.	By the end of the project, the PaViDIA implementation guideline was produced and was distributed to project stakeholders in March, 2007.

Source: the Evaluator, making reference to documents provided by JICA

[37] In addition, a total of six MP was implemented: two MPs and one MP in Chongwe and Kafue district in Lusaka province respectively, one MP by JICA project called "Development through Empowerment of Rural Communities in Zambia Initiative Areas" in Kaoma, Senanga, and Shangombo district in Western province (Source: JICA, 2009, "PaViDIA project phase 1 terminal evaluation report", and JICA, 2008, "Terminal evaluation report for Development through Empowerment of Rural Communities in Zambia Initiative Areas").

(2) Output for the Phase-2 Project

Output	Indicators	Record
Output1: PaViDA expansion strategy is established.	1-1. Existence of MAL (then MACO) strategy paper for PaViDIA expansion.	By April 2009, the strategy was revised with the contents including the budget plan and MP expansion schedule which the PaViDIA phase-2 terminal evaluation team recommended to add, and finalized.
Output2: Primary budget source for PaViDIA is secured.	2-1. PaViDIA funding agreements signed.	By the end of the project, the project had made arrangements with the following development partners to secure budget sources in addition to the MAL; the collateral fund of 2KR (approximately 100 million yen), the WFP fund (approximately 50 million yen), POR consultation fee including developing training texts (1 million yen).
Output3: Selected staff are trained for implementation of PaViDIA.	3-1. Existence of at least 3 certified trainers in POR-HQ, and in each targeted province.	Three trainings were held between May and August 2007 for agricultural officers in the following five provinces, namely Northern, Luapula, North-Western, Central, and Lusaka provinces. In addition, a trial MP was implemented in three villages in the first three provinces mentioned above. By the end of the project, 17 trainers were trained in the five provinces, including trainer, assistant trainer, and apprentice. In three target provinces except Lusaka, at least three officers were certified as trainers.
Output4: PaViDIA Operation Room (POR) is strengthened.	4-1. Existence of at least 5 functional program officers in POR-headquarters.	The director of agriculture assigned a total of 5 five officers including 1 full-time officer and four part-time officers to the POR headquarters. During the project phase-2, the following teams including management team, training and MP implementation team, and sustainable agriculture team, carried out the PaViDIA activities in collaboration with Japanese experts, and strengthened technical skills.
	4-2. Existence of at least 2 functional program officers in POR-province and POR-District.	In addition to 2-3 officers including PAO and SAO, other 2-3 officers were appointed at POR-province and POR district. The phase 2 terminal evaluation team pointed out their little commitment to PaViDIA activities.
Output5: Sustainable agricultural practices are integrated into Micro Projects.	5-1. Number of sustainable agricultural practices in Micro Project.	40 MPs were newly implemented in Northern province after the project phase-2 started. A total of 189 sub-projects were included in the 40 MPs, and of which 171 sub-project (90%) were agriculture related activities.
Output6: Existing manuals and guidelines are improved.	6-1. Existence of revised and updated manuals and guidelines.	Based on testing of the PaViDIA model in other areas, the manuals and guideline were revised. In addition, Step by Step Guide which compiles four different manuals into one manual was also produced by the end of the project

Source: the Evaluator, making reference to documents provided by JICA