Ex-Post Project Evaluation 2012: Package III-5

(Egypt, Bosnia Herzegovina, Guinea, Mauritania, Mexico)

February 2014

JAPAN INTERNATIONAL COOPERATION AGENCY

Earth and Human Corporation

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of ODA Loan projects that were mainly completed in fiscal year 2010, and Technical Cooperation projects and Grant Aid projects, most of which project cost exceeds 1 billion JPY, that were mainly completed in fiscal year 2009. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

February 2014
Toshitsugu Uesawa
Vice President
Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations, the English translation of the original Japanese version, shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this volume is posted on JICA's website.

JICA's comments may be added at the end of each report when the views held by the operations departments do not match those of the external evaluator.

Arab Republic of Egypt

Ex-post Evaluation of Japanese ODA Technical Cooperation Project

"Regional Environmental Management Improvement Project"

External Evaluator: Jun TOTSUKAWA, Sano Planning Co., Ltd.

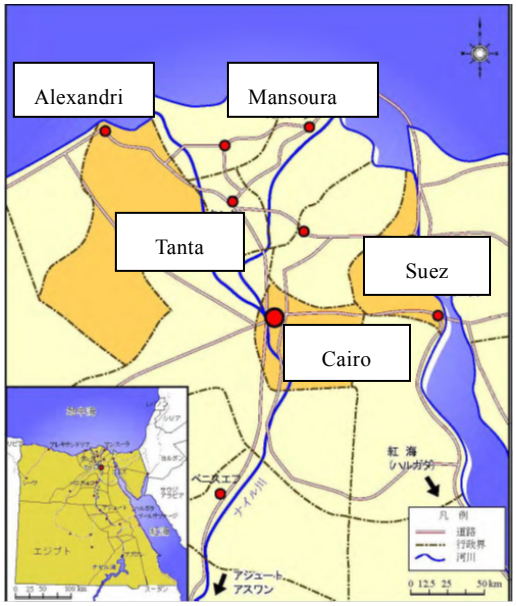
0. Summary

The purpose of the Project was to improve the capabilities of the Egyptian Environmental Affairs Agency (hereinafter called EEAA) to take measures against environmental pollution (capabilities to propose environmental protection measures and to carry out awareness raising activities). Such purpose met the environmental policy and needs of Egypt at the time of project planning and also at the time of project completion. Especially at the time of project planning, when the Egyptian government announced that the country would join the Stockholm Convention, a treaty concerning control of hazardous chemical substances, the country was expected to further enhance its capabilities for environmental measures and for analysis. In this light, the relevance of the Project, which supported the enhancement of such capabilities, is high.

During the Project period, guidelines and pollution measure proposals were developed through working groups established for each environmental issue, and sending information to the public on environmental pollution was promoted. Thus the Project objective is largely achieved. After the completion of the Project, activities are still carried out under the initiative of the departments in charge of the respective environmental issues. Therefore, the achievement level of the overall goal is also high. On the other hand, as for the Project activities, the Project cost exceeded the plan and the Project period was extended for one of the outputs. However, as most of the inputs including inputs of experts and equipment were appropriate, the efficiency of the Project is considered fair. Considering that loss of personnel is still occasionally seen and the budget for the laboratories is slightly insufficient while the sustainability is ensured through government policies, the sustainability of the Project effect is considered fair.

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

1. Project Description



Project Location
(Major RBO locations where the Project was carried out)

RBO Laboratory in Suez

1.1 Background

As the country was getting more industrialized, environmental damage caused by air and water pollution was getting increasingly serious. It was pointed out that air pollution was causing health damage and financial loss (especially in the tourist industry, which is a major source of foreign revenue), and there was a report that air pollution put more than 6,000 people's lives in danger and more than 5,000 people at risk for cancer every year. Especially, suspended particulate matters from factories and vehicles, which may cause respiratory diseases, were causing serious damage, and the daily mean concentration sometimes reached 400 $\mu g/m^3$ (six times higher than the Egyptian environmental standard of 70 $\mu g/m^3$). Especially from September to November every year, field burning of agricultural wastes and climate conditions affected the air quality in Cairo so much that visibility was not secured (the issue of Black Smoke). It was also pointed out that water pollution caused damage to health and industries. In the Suez Canal and along the Red Sea, pollution from oil discharged and spilled from petroleum refineries and petrochemical plants, and oil spilled from tankers and tourist boats was considered as serious problems.

To address the series of issues described above, EEAA established a 5-year environmental action plan for 2002 to 2007, setting priority areas and countermeasures. However, regarding the environmental pollution that requires multiple measures, EEAA of that time did not have sufficient capabilities or experiences to propose measures after managing, analyzing and evaluating various environmental data and information in an appropriate manner. Therefore, seeking support for technical capability improvement of EEAA personnel, the Egyptian government requested the Japanese government to carry out this technical cooperation project.

1.2 Project Outline (Abbreviations listed below the table)

Overall Goal		EEAA and its ROBs together with other competent stakeholders become capable of valuating environmental situations, identifying the problems, defining the causes of such problems, acknowledging possible solutions, and implementing countermeasures through raising the environmental awareness of EMUs (Environmental Management Units), enterprises, NGOs and citizens.
Project Purpose		EEAA and its RBOs are enhanced on the capability of managing environmental data and information, suggesting countermeasures through on-the-job training.
Outputs	Output 1	EQS of EEAA and EQDs of RBOs become capable of proposing countermeasures against air pollutions based on the data and information collected and interpreted.
	Output 2	Suez RBO becomes capable of proposing countermeasures against oil pollution based on the data and information collected and interpreted.
	Output 3	EQS and EMS of EEAA, and EQDs and EMDs of RBOs become capable of identifying hazardous substances, compiling the data and information, and identifying their risks.
	Output 4	CDCEA(GDTD) becomes capable of planning, designing, and implementing trainings within EEAA based on the information provided by all other relevant departments/ organizations.
	Output 5	EQD and EMD of Alex RBO become capable of proposing production process improvement and pollution abatement for industries and factories based on the data and information collected and interpreted.
	Output 6	GDME&E of EEAA and concerned RBOs become capable of raising public awareness to EMUs, enterprises, NGOs, and citizens.
	Output 7	Air Quality Department (AQD) and GDME&E of EEAA become capable of disseminating environmental information to the public by effectively utilizing a real-time air monitoring station with display.
	Output 8	Sector for Regional Branches Affairs (SRBA) of EEAA and concerned RBOs become capable of enhancing their capacities by mutual interaction through CC2 (Coordination Committee 2) mechanism.
Inputs		Japan side: 1. Short-term experts: 16 2. Trainees Received : 17 3. Equipment: about 127 million yen (34 types) 4. Other Mid-term review and terminal evaluation: 1 each Egypt Side: 1. Counterparts (179 including technical counterparts) 2. Equipment: None 3. Land and facilities, project office, utilities 4. Counterpart salary, travel expenses, equipment owned by EEAA, cost for equipment maintenance/management/repair, test reagents, etc.
Project Cost		586 million yen
Cooperation Period		November 2005 – November 2008 (Output 7 only till March 2010)
Implementing Agency		Egyptian Environmental Affairs Agency
Cooperation Agencies in Japan		None
Related Project		Environmental Monitoring Training Project in Egypt (1997-2004), Project for Supply of Equipment for the Regional Environmental Monitoring Network (1997), Project for Supply of Equipment for the Regional Environmental Monitoring Network Phase II (2002), Environmental Pollution Abatement Project (LA signed in 2006)

The abbreviations for the organizations concerned in the Project are as follows.
* AQD: Air Quality Department)
* CDCEA: Central Department of Communication and Environmental Awareness
* EEAA: Egyptian Environmental Affairs Agency
* EQD: Environmental Quality Department
* EQS: Environmental Quality Sector in EEAA
* GC: Greater Cairo
* GDME&E: General Directorate of Media and Environmental Education
* GDTD: General Department for Training and Development
* HSMD: Hazardous Substances Management Department in EEAA
* SRBA: Sector of Regional Branches Affairs in EEAA
* RBO: Regional Branch Office

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

As for the overall goal, it was considered that the Project was on track toward the realization of the overall goal although it might take 3-5 years or longer for the overall goal to be fully achieved.

Concrete impacts were produced through cooperative actions with other organizations to raise awareness of environmental issues and hazardous chemical substances; e.g. the cement industry and the petroleum industry in Alexandria discussed potential collaboration to solve the issue of industrial wastes, and the water police made an arrest for violating the regulation concerning the handling of polychlorinated biphenyl (hereinafter called PCB[1]).

1.3.2 Achievement of Project Objective

The report said the Project objective would be mostly achieved by the time of complete termination of the Project. The indicators – 1) development of effective countermeasures against environmental pollution and hazardous substances, 2) collection and dissemination of data and information, and 3) initiation of new activities at RBOs – were considered to have reached the level where the complete achievement could be expected by the time of the Project completion.

1.3.3 Recommendations

The following three were the recommendations made for the post project period.

1) Develop and allocate sufficient budget so that the counterparts can smoothly continue activities on their own after the Project completion.
2) In order to ensure technical sustainability, consider a human resource management system to avoid loss of counterpart personnel who gained experience through the Project and to make up for loss of human resources.
3) In order to incorporate the Project outcome into the national/regional policies, give official recognition, and utilize the countermeasure proposals developed by the Project and the coordination functions with internal/external personnel concerned.

[1] Because of its excellent insulation properties and non-flammability, PCB had been used for a wide range of purposes, including transformers, condensers and other electric devices. However, due to its high toxicity, PCB production was banned in 1973 in Japan. (Information from the website of the Environmental Restoration and Conservation Agency)

2. Outline of the Evaluation Study

2.1 External Evaluator

Jun TOTSUKAWA, Sano Planning Co., Ltd.

2.2 Duration of Evaluation Study

The External Evaluator performed an evaluation study as follows in the course of this ex-post evaluation:

Duration of the Study: September 2012 - February 2014

Period of the Field Study: February 25 – March 10, and June 10 – 14, 2013

3. Results of the Evaluation (Overall Rating: B[2])

3.1 Relevance (Rating:③[3])

3.1.1 Relevance with the Development Plan of Egypt

(1) At the Time of the Project Initiation

The "Egypt and the 21st Century", Egypt's long-term economic and social action plan (1997-2017), stressed the importance of the measures for "environmental protection" as an essential item to the continuous development of the nation.

Later, the Egyptian government formulated the National Environmental Action Plan (hereinafter called NEAP) 2002-2017 and, based on the action plan, EEAA developed the EEAA 5-year Action Plan 2002-2007. The EEAA Action Plan included such goals as air quality improvement in Greater Cairo (GC), protection of the Nile and other water resources, environmental education and training, awareness raising, capacity development in EEAA and compliance with international environmental treaties. The action plan also stressed the importance of further capacity development of EEAA personnel in areas of expertise and cited the increase of their technical expertise as one of the priority items.

Based on the above, the Project's intention of promoting environmental protection and enhancing capabilities of EEAA personnel, which contributes to the promotion of environmental protection, is relevant to the development plan of the country.

(2) At the Time of the Project Completion

Since the time of project completion to the present time of ex-post evaluation, NEAP has been considered as a fundamental environment policy of the country.

The latest annual plan (2012/2013), which is based on NEAP, includes major programs for water quality improvement, air quality improvement, control of hazardous chemical substances, environmental awareness raising, enhancement of technical capabilities of the personnel, and enhancement of capabilities of RBOs to conduct inspection. These programs have almost the

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

[3] ③: High, ②: Fair, ①: Low

same contents as the priority support items of the Project. Therefore, it is considered that the contents of the Project are still deemed important in the environmental policy of Egypt at the time of ex-post evaluation.

In light of the above, the Project has been relevant to the country's policy since the completion of the Project to the time of ex-post evaluation

3.1.2 Relevance with the Development Needs of Egypt

(1) At the Time of the Project Initiation

Through Japan's technical cooperation projects, equipment provision with grant aid and cooperation with other donors (mainly Denmark, for arrangement of environment management data, installation of air pollution measurement devices, etc.), EEAA had acquired capabilities to monitor air and water quality, which are fundamental environment data items, and were able to conduct on-the-spot inspection of factories and other pollution sources[4]. However, regarding environmental pollution that required more complex measures (pollution that had more than one possible sources), they were not fully able to make proposals for effective countermeasures after proper analysis and evaluation of the monitoring data.

As appropriate involvement of various stakeholders was necessary when carrying out measures against complex pollution, training and awareness raising activities for relevant stakeholders were considered important. However, EEAA did not have a sufficient organizational structure to carry out such training and awareness raising activities in an efficient manner and, on this point, capability development was also considered necessary.

Moreover, looking at external relations, the country was expected to conduct monitoring in a more advanced and detailed manner after the announcement of 2004 to join the Stockholm Convention, a treaty concerning control of hazardous chemical substances.

Thus EEAA of that time was expected to enhance their technical capabilities. Therefore, the support from the Project for their capability development was highly relevant to the needs of EEAA.

(2) At the Time of the Project Completion

The Project was to enhance the capabilities of the Headquarters and RBOs of EEAA to address issues through establishment of cooperative relationships among departments and with external parties concerned with analysis of accumulated data and various environmental issues. Thus the contents of the Project were relevant to the needs of EEAA throughout the Project period.

Environmental issues still existed in the country at the time of the Project completion and

[4] Specifically, EEAA was considered to have capabilities for smooth operation of 43 air quality monitoring points, annual water quality monitoring survey in the Nile, monitoring survey at canals and drainages, water quality monitoring on the coast, etc.

especially air and water pollution was still serious. In addition to air and water pollution, the issues of waste management and soil contamination caused by expansion of industrial areas in the country is gaining more attention and EEAA is expected to take further diversified environmental measures.

In light of the above, the capability development of EEAA personnel is as important at the time of ex-post evaluation as was during the Project implementation period. Therefore, the Project is relevant to the needs of the country.

3.1.3 Relevance with Japan's ODA Policy

As for Japan's ODA policy, the Country Assistance Program for Egypt (2000) included "Environmental conservation and improvement of the living environment" in the five priority areas. The program mentioned the aid policy in the field that serious efforts should be made for water quality conservation in the Nile, securing of safe drinking water, prevention of air pollution in large cities, etc., and comprehensive support in the environmental field should be considered.

The Project ultimately contributes to the environmental conservation and improvement of the living environment of the country, while enhancing capabilities of EEAA personnel. Therefore, the Project is relevant to Japan's ODA policy.

In light of the above, the Project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness and Impact[5] (Rating:③)

3.2.1 Project Outputs

3.2.1.1 Project Output

* In the Project, working groups (WG) were formed for each output with multiple members selected from among counterpart personnel. The WGs are called WG1 for Output 1, WG2 for Output 2, and so on. For Output 3 and Output 8, Coordination Committees (CCs) were created instead of WGs and named CC1 (Output 3) and CC2 (Output 8). These names are also used in this ex-post evaluation. [6]

1) Output 1: EQS of EEAA and EQDs of RBOs become capable of proposing countermeasures against air pollutions (site-evaluation, technical and administrative measures) based on the data and information collected and interpreted.

[5] Effectiveness should be judged in consideration of impact to determine a rating.

[6] Such implementation structure with WGs started during the midterm review of the Project. During the evaluation, PDM was revised after the roles of WGs were clarified. As each WG was linked to relevant output, responsibilities of project members were clarified for each output and the Project operation was made smooth and clearly explainable to external parties.

At the time of the Project completion, Output 1 was largely achieved.

Through project activities, an inventory of pollution sources was created and counterparts learned analytical skills for air pollution control such as how to analyze emission load. On the other hand, some counterpart members in charge of Output 1 left EEAA before the end of the Project and it caused some inefficiency in terms of number of persons who acquired skills. The achievement status of the output against indicators is described below.

Table 1 Achievement of Indicators for Output 1

Indicator	Achievement
Indicator 1-1: 60% of energy consumption in 9 related target governorates is directly captured.	A total of 1,301 pieces of inventory information, including information of small- to mid-sized pollution sources in industrial areas, were collected. The capture rate was over 70% in terms of all energy consumption including mobile pollution sources.
Indicator 1-2: Emission Inventory Report is prepared at selected sites.	Reports were developed on thermal power generation, bricks, cement, coal and other sectors and also on pollution sources such as industrial parks and rice straw burning.
Indicator 1-3: Internal reports are issued based on the analysis of collected data.	Analytical data and other collected data concerning SOx, NOx and PM was compiled by WG1 and shared with AQD and 3 RBOs in August 2008. (SOx: sulfur oxide, NOx: nitrogen oxide, PM: particulate matters)
Indicator 1-4: EMA/EEAA MM5/CAAX2* model are to be validated and executed in five scenarios with the reasonable level of accuracy. *Simulation model of regional dispersion of air pollutants	As the start of simulation calculation was significantly delayed due to a delay in the input of inventory information, the calculation officially started only in July 2008. Therefore, load analysis was also delayed. Considering such situation, this indicator was not fully achieved.
Indicator 1-5: Four activities (required fixed sources, mobile sources, nonpoint sources and estimation of required cost) for countermeasure preparation are mastered by at least 10 staff representing EEAA, GC RBO, Tanta RBO and Mansura RBO.	Activities and methods required for countermeasure proposals have been mastered by WG1 members through OJT. However, partly because many of the major members of WG1 have left the position, the number of the counterpart staff who have mastered "all" the activities is less than 10. However, as the number of counterpart staff who has mastered "individual" activities exceeds 10, the indicator is achieved at a certain level.
Indicator 1-6: Integrated workshop with at least 60 participants is to be conducted before the end of August 2008 in order to share countermeasure proposals for air quality.	Integrated workshop was held with 47 participants on August 18, 2008. Considering the fact that it was held in a summer vacation season and just before Ramadan, when many people were on vacation, and that such comprehensive presentation activities had never been carried out before in EEAA, the number of participants is considered high. Although the number of participants did not reach the indicator (60), representatives of all the relevant department attended the workshop as intended. Therefore, the indicator has exceeded the expected level in a practical sense.

2) Output 2: Suez RBO becomes capable of proposing countermeasures against oil pollution based on the data and information collected and interpreted.

Output 2 was largely achieved at the time of the Project completion.

Suez RBO mastered the analysis method for oil fingerprinting through project activities and it led them to develop the Plan for Measures against Oil Pollution in the Suez Canal. The achievement status of the output against indicators is described below.

Table 2 Achievement of Indicators for Output 2

Indicator	Achievement
Indicator 2-1: Integrated countermeasure plan that is effective for reducing oil pollution risk in Northern Gulf Region and viable for Suez ROB is prepared and approved by EEAA.	The Plan for Measures against Oil Pollution in the Suez Canal was developed through a total of 13 workshops. The contents of the plan were judged effective in reduction of oil pollution by the concerned personnel of EEAA. Out of the three strategies consisting of the plan, two have been agreed on within the EEAA Headquarters, but the third strategy did not get final approval from the viewpoint of budget allocation because it included a plan to install an emergency measure unit.
Indicator 2-2: Database for fingerprint data on crude oil and derivatives is furnished.	With a physical property measurement system and other devices, measurement of oil fingerprint data of 12 types of crude oil from overseas and 3 types of petrochemical products has been completed.

3) Output 3: EQS and EMS of EEAA, and EQDs and EMDs of RBOs become capable of identifying hazardous substances, compiling the data and information, and identifying their risks.

Output 3 was largely achieved at the time of the Project completion.

In the course of the Project activities, techniques for identification of pollution sources through sampling and analysis of hazardous chemical substances, for evaluation of analysis data, etc. have been learned and, based on such techniques, such deliverables as monitoring reports and guidelines have been developed. The achievement status of the output against indicators is described below.

Table 3 Achievement of Indicators for Output 3

Indicator	Achievement
Indicator 3-1: Monitoring report(s) are annually issued on hazardous chemical substances and information reported is shared and discussed with relevant stakeholders.	・ Inventory and monitoring activities were carried out for PCB, PAH, chrome and cadmium from 2006 to 2008 and a report was developed. ・ The report on PCB inventory and monitoring was presented at an international seminar in February 2008 and used as a tool for the discussion of activities required for appropriate management of PCB wastes.
Indicator 3-2: Reports of Egyptian situation of hazardous chemical substances are issued.	A report that describes management of PCB, PAH and heavy metal (chrome and cadmium) was developed in August 2008 as a report concerning the situation of hazardous chemical substances in Egypt. (PAH: polycyclic aromatic hydrocarbon)

Indicator 3-3: Number of staff acquires knowledge and skills to manage the process from identifying possible pollution sources by sampling and analysis of hazardous chemical substances, evaluation of analyzed data, identification of hazardous chemical substances risks, and proposing countermeasures.	Through the training and OJT provided by the Project, EEAA and RBO personnel acquired knowledge and techniques for appropriate management of hazardous substances. The number of such personnel has undoubtedly increased compared with the number before the Project initiation. (A total of 16 people)
Indicator 3-4: Data of pollutants is compiled as database, and shared the database with EEAA and RBOs.	Database of hazardous chemical substance data was completed in July 2008. The Hazardous Substances Management Department (HSMD) of EEAA entered the result of the PCB inventory survey as well as the result of monitoring of PAH and heavy metal (chrome and cadmium) and the data was shared among EEAA and RBOs.
Indicator 3-5: Guidelines for hazardous substances management are prepared.	Guidelines concerning appropriate management of PCB wastes, especially old type transformers and used oil that may be contaminated with PCB, were completed in August 2008.

4) Output 4: CDCEA (GDTD) becomes capable of planning, designing, and implementing trainings within EEAA based on the information provided by all other relevant departments/ organizations.

Output 4 was achieved at the time of the Project completion.

Counterpart personnel learned how to plan, implement and evaluate training through project activities. The achievement status of the output against indicators is described below.

Table 4 Achievement of Indicators for Output 4

Indicator	Achievement
Indicator 4-1: All training courses held by EEAA are registered at GDTD.	All training courses held by EEAA, including those in the Project, were registered in the Project period.
Indicator 4-2: Training courses are implemented.	After TNA (Technical Needs Assessment) training, a pilot training course was planned and implemented under the theme of "Inspection of Petroleum Industry" based on the result of the training.
Indicator 4-3: Evaluation by participants of training courses is utilized for improving new courses.	With the evaluation sheet created by counterparts, evaluation was conducted when the TNA training was completed in May 2008. Analysis of training exams and evaluation sheets for instructors and trainees, are now used for the planning of new courses has started.
Indicator 4-4: Materials for training are compiled in GDTD.	The training materials used in the Project are stored in GDTD.
Indicator 4-5: At least 6 staff under GDTD become capable of managing the procedures of training activities (to conduct/analyze TNA, plan, implement and evaluate the training course).	6 GDTD staff members took TNA training and learned the methodologies and knowhow of TNA activities. As the 6 members were involved in the planning, implementation and evaluation of the pilot course of "Inspection of Petroleum Industry", they are deemed to have understood the series of training activities.

5) Output 5: EQD and EMD of Alex RBO become capable of proposing production process improvement and pollution abatement for industries and factories based on the data and information collected and interpreted.

Output 5 was achieved at the time of the Project completion.

Through the Project activities, procedures for the inspection of enterprises (on-the-spot inspection) were clarified and the contents of the report were improved. Introduction and guidance concerning production process improvement was also conducted in a more effective manner after on-site practice. The achievement status of the output against indicators is described below.

Table 5 Achievement of Indicators for Output 5

Indicator	Achievement
Indicator 5-1: Manuals/guidelines for inspectors are prepared and published.	Manuals for on-the-spot inspection of the petroleum and petrochemical industries were developed in July 2008. Through the work to develop the inspection manuals, WG4 acquired knowledge about production processes of the petroleum and petrochemical industries, good practice for pollution prevention equipment, cleaner production technologies, and environment, health and safety management systems.
Indicator 5-2: Seminars are held for industries to introduce successful introduction of cleaner production processes including any good practices and of other organization(s).	A seminar was held to introduce advanced production processes (2008) to relevant stakeholders including environmental management managers of local factories. Several local enterprises and cleaner production centers introduced the financial support mechanism for the introduction of advanced production processes to the participants.
Indicator 5-3: Number of countermeasure proposals prepared by RBOs is increased in the target industries.	WG4 collected proposals for petroleum, petrochemical and cement industries. They especially considered the possibility of using industrial wastes in the cement industry as materials and/or fuel.
Indicator 5-4: Assessed inspection reports for the selected industries show significant improvement in quality.	In August 2008, experimental on-the-spot inspection was conducted at 2 plants – a polyethylene plant and a natural gas plant. After the inspection, based on the discussion of the inspection team, JICA experts and counterparts took the initiative in developing inspection reports. The reports specified the points for improvements based on the discussion.
Indicator 5-5: A report of best practices and recommendations for the selected industries is prepared and distributed.	The report on the introduction of best practices of pollution prevention equipment and cleaner production technologies was developed in August 2008. The report was distributed to local industries and local government units in November 2008.

6) Output 6: GDME&E of EEAA and concerned RBOs become capable of raising public awareness to EMUs, enterprises, NGOs, and citizens.

Output 6 was largely achieved at the time of the Project completion.

A public environmental awareness survey and public awareness raising activities were

conducted as part of project activities. In the public awareness raising activities, EEAA performed tasks in a systematic manner and mastered the skills although they had little previous experience. However, they were not able to reflect the result of the impact evaluation in their next plan during the Project period due to lack of time for trial. Therefore, this output is considered to be "largely" achieved. The achievement status of the output against indicators is described below.

Table 6 Achievement of Indicators for Output 6

Indicator	Achievement
Indicator 6-1: Reports of baseline surveys of public awareness are issued.	Public awareness survey was conducted in the area of each RBO and a report was developed after discussion on such matters as target groups, number of samples and sample areas. Under the leadership of local consultants, 4 staff members from EEAA and RBO joined the survey as OJT and were involved in the development of the report.
Indicator 6-2: The number and details of awareness raising activities conducted in the Project are registered in CDCEA.	4 RBOs (Suez, Asyut, Tanta and Alexandria) and CC1 conducted awareness raising activities five times and CDCEA recorded and registered the contents.
Indicator 6-3: The report of second survey is issued.	With the aim of evaluating the activities of WG5, analyzing the level of public awareness raised by the activities, and considering total impact of the activities, the 2nd environmental awareness survey was carried out and a report was developed in 2008.
Indicator 6-4: Evaluation by participants of awareness raising activities is utilized for designing new activities.	The Project carried out the 2nd environmental awareness survey and measured the impact of the awareness raising activities. However, they did not reach the level of utilizing the evaluation result for the development of next PO.

7) Output 7: Air Quality Department (AQD) and GDME&E of EEAA become capable of disseminating environmental information to the public by effectively utilizing a real-time air monitoring station with display.

Output 7 was largely achieved at the time of the Project completion (March 2010). (The Project period for this output was extended to March 2010 as there were delays in the procurement of equipment, etc.)

At the time of completion of the activities for this output, information release to citizens had started with the equipment in operation and contents of environmental messages were being prepared. However, the achievement is considered to be at the level of being "largely" achieved because the number of message contents was not enough and the equipment had often troubles. The achievement status of the output against indicators is described below.

Table 7 Achievement of Indicators for Output 7

Indicator	Achievement Status
Indicator 7-1: Real-time air monitoring station with display is operated and properly maintained.	The operation of the real-time air monitoring station installed in the Tahrir Square started in a proper manner. However, as the display system sometimes has trouble, troubleshooting skills should be further enhanced.
Indicator 7-2: Management plan of contents of display is prepared.	The minimum contents required has been created through collaboration between the expert team and local experts and the base of the content library has been completed. Although the contents required for daily operation of the display have been completed, there is not enough contents in the medium run.
Indicator 7-3: Real-time air monitoring station with display is well-recognized by the people in Cairo city, serving as a "symbol of environmental watchdog".	After the installation of the monitoring station, newspapers reported on the monitoring station and the air monitoring. It is expected that such coverage will help increase understanding and interest of citizens concerning the air monitoring station and also promote public understanding of the air quality in Cairo.

8) Output 8: Sector for Regional Branches Affairs (SRBA, former CDBA) of EEAA and concerned RBOs become capable of enhancing their capacities by mutual interaction through CC2 (Coordination Committee 2) mechanism.

Output 8 was achieved at the time of the Project completion.

Relevant RBOs shared information with each other through project activities. As the information obtained through such opportunities was then fed back within each RBO, it probably contributed to the enhancement of organizational capabilities of RBOs. The achievement status of the output against indicators is described below.

Table 8 Achievement of Indicators for Output 8

Indicator	Achievement Status
Indicator 8-1: Seminar(s) for sharing the experiences and information obtained through the project activities are held among RBOs.	After a kick-off seminar was held in January 2007, CC2 action plan was developed at the initiative of SRBA and approved by concerned technical departments. After that, seminars were held in FY2007 and FY2008 to share experience and knowledge obtained through the Project.
Indicator 8-2: To ensure that the mechanism for sharing the experiences and information among RBOs are developed, monthly report from all RBOs includes CC2 activities.	Activities through CC2 were covered in monthly reports as part of the activities of each RBO. Therefore, they contributed capacity development of individuals and organizations.

On the whole, the major contents of the eight outputs were achieved at a high level although some indicators were underachieved.

3.2.1.2 Achievement of Project Objectives

Project Objective: EEAA and its RBOs are enhanced on the capability of managing environmental data and information, suggesting countermeasures through on-the-job training.

The Project objective is largely achieved.

In this project, various environmental issues were linked to individual outputs and the Project objective was to achieve comprehensive capabilities to address the issues. As mentioned in the section of the achievement status of the outputs, the outputs mostly show good results and the achievement level of the Project objective is also good as well in this connection. The achievement status of the Project objective is described below.

1) Indicator 1: Effective countermeasures against environmental pollution and hazardous substances are prepared.

(Achievement)

Effective countermeasures against environmental pollution and hazardous substances have been prepared. For example, Suez RBO has already established strategies and an action plan against oil pollution. Guidelines for PCB waste management was also developed in the final stage of the Project.

2) Indicator 2: More concrete data, information and achievements obtained from RBO activities (including proposal of decrees) are published.

(Achievement)

Data and information obtained through the Project activities were gathered and published. Activity progress and results were presented to external organizations and citizens through such opportunities as workshops.

3) Indicator 3: EEAA/RBOs start their new activities after sharing information and implementation of training

(Achievement)

Movements to expand the Project outputs to other RBOs gradually started before the completion of the Project. For example, in the case of PCB, all RBO conference was called on May 2008 and it was confirmed that each RBO would carry out the same survey and activities. Based on this, each RBO started formulation of a survey planning action plan. Although no activity was actually initiated within the Project period, there were movements for the initiation of activities.

Thus, although most of the contents of the indicators were achieved, initiation of new activities mentioned in Indicator 3 was not confirmed before the completion of the Project. Therefore, the Project objective is considered to be “largely” achieved.

3.2.2 Impact

3.2.2.1 Continuity of Outputs until the ex-post evaluation

As stated above, EEAA is still consecutively taking actions on the contents of the outputs after the Project completion and for the achievement of the overall goal. On the other hand, there are some issues to be addressed to improve future sustainability as well. This section discusses the status of continuing impact of each output after the Project completion.

Table 9 Continuing Impact of Outputs

Outputs	Rating at the Time of Project Completion	Continuity from the Time of Project Completion to Date
Output 1: Countermeasures against air pollution	Largely achieved	➔ The output has been continued and further developing. Positive points 1) At the time of project completion, it was pointed out that EEAA did not have solid cooperative structure with other concerned government ministries. However, they have started receiving information from the most important ministries concerning pollution sources, including the Ministry of Petroleum and the Ministry of Electricity and Energy. Thus the cooperation with other concerned organizations have been improved. 2) Although it was judged that the simulation models were not completed during the Project period, 4 AQD staff members are currently taking training on the models. (Training is provided by the model analysis software company.) 3) Dissemination of information to the public is becoming regular activities; e.g., air quality information is updated daily on a website. 4) Training on air quality was conducted (with 30 participants).
Output 2: Countermeasures against oil pollution	Largely achieved	➔ The output has been continued and further developing. Positive points 1) The countermeasure plan concerning oil pollution in the Gulf of Suez was developed during the Project period and has been utilized as a basic policy for the annual planning of the Suez RBO. As for the emergency response unit that was not approved during the Project period, the establishment plan was included in EEAA's annual plan for the fiscal year of 2012/2013. 2) The fingerprint database has been updated and the standard samples of 18 types of domestic oil have been added since the time of project implementation.
Output 3: Countermeasures against hazardous chemical substances	Achieved	➔ The output has been continued and further developing. Positive points 1) After the completion of the Project, a presentation made by the Project counterpart at an international conference drew aid from donors – Integrated Management of PCBs Project (2010-2013) by UNEP and Sustainable Management of POPs Project (2009-2011) by GEF. The implementation of these two projects made it possible to follow up the technical transfer made by the Project and to update PCB inventory.

Output 4: Planning and implementation of training	Achieved	➔ Although there are some ongoing positive points, there are also issues to be solved. Positive points 1) When trainings are conducted, evaluation sheets are handed out for the evaluation of training contents. The evaluation result serves as a basis for next year's training plan and is especially used for the review of training contents and the selection of instructors. Issues to Be Solved in the Future 1) The training courses conducted in the Project were not basically continued after the completion of the Project. According to the training department, the reasons are 1) lack of personnel who can serve as a training instructor, and 2) lack of budget for test reagents required in many of the training courses. However, core personnel with expertise concerning air, hazardous substance management, etc. are still in EEAA and it seems that some personnel can actually be the instructors. Real underlying causes seem to be that the training department does not fully recognize the importance and necessity of training, or RBOs, who should need training, do not acknowledge their own technical necessity and such needs do not come to the surface.
Output 5: Production process improvement	Achieved	➔ The output has been continued and further developing. Positive points 1) Guidance on production process improvement is still provided to industries. One of the seminars was held in November 2010 for local association of small and medium enterprises. With the participation of 26 companies, the Alexandria RBO, as a main presenter, showed the current situation of industrial pollution and cleaner production. 2) About 20-30 inspections are conducted every year, and cleaners introduced through the opportunity of inspection. (Successful cases of such introduction are described in the section of the overall goal.)
Output 6: Public awareness raising	Largely achieved	➔ The output has been continued and further developing. Positive points 1) During the Project period, questionnaires were conducted only to access the situation "after" the awareness raising activities, not to access the situation "before" the activities, which could be a benchmark. However, comparison of "before and after" status started in 2009 so that change in awareness can be checked. They also plan contents for next awareness raising activities using survey results and collected comments.
Output 7: Real-time air monitoring station with display	Largely achieved	➔ There are challenging issues (caused by unexpected external factors). Positive points 1) The number of types of environmental contents has increased to 15. Issues to Be Solved in the Future 1) The equipment installed in the Tahrir Square is not operated at the time of ex-post evaluation as some devices were destroyed and lost in a massive demonstration that started in January 2011.

Output 8: Information sharing among RBOs	Achieved	➔ There are challenging issues. Issues to Be Solved in the Future 1) The opportunities for information and experience sharing have shifted almost completely to the training activities conducted by GDT for the whole EEAA and sporadic seminars and other events. In the process of training planning, there is collaboration between GDT and SRBA, but SRBA does not take the initiative in holding seminars as they did during the Project period.

3.2.2.2 Achievement of Overall Goal

Overall Goal: EEAA and its ROBs together with other competent stakeholders become capable of valuating environmental situations, identifying the problems, defining the causes of such problems, acknowledging possible solutions, and implementing countermeasures through raising the environmental awareness of EMUs, enterprises, NGOs and citizens.

The achievement level of the overall goal is high at the time of ex-post evaluation.

The contents of the overall goal have been generated not only in light of indicators but also in terms of actual activities; e.g., EEAA Headquarters, Alexandria RBO, Suez RBO, Tanta RBO, etc. made concrete proposals to industries and many activities for raising environmental awareness were carried out in cooperation with NGOs and citizens.

The achievement status of each indicator is described below.

1) Indicator 1

- EEAA is acknowledged as the reliable supporting agency for private and public sectors in Egypt.

(Achievement)

To determine “whether EEAA is acknowledged as a supporting agency”, one proof is the level of implementation of environmental improvement proposals to the private sector. On this point, for example, in the area covered by the Alexandria RBO, five large leading local plants accepted improvement proposals (introduction of cleaner production) after the completion of the Project, as shown in the following table.

The fact that 26 large plants in the country have participated in the Telemetry Monitoring System, which was established by the initiative of AQD of the EEAA, is also the result of progress based on a certain level of trust in EEAA.

These achievements were the fruit of recently tightened environmental regulations and the long-time negotiation between EEAA and the private sector.

Table 10 Examples of Production Process Improvement in the Alexandria Region

Company Name	Major Introduction/Improvement Items
Amreyah Cement	Improvement in the method to treat wastes from clinkers
SESCOtrans	Reduction of hazardous substances from clinkers
Amreyah Refinery	Improvement in plant effluent (introduction of N-methylpyrrolidon)
Egyptian Petrochemical	Improvement in plant effluent
Alexandria Cement	Improvement of the emission system (introduction of an electric precipitation system)

Source: Documents from Alexandria RBO

2) Indicator 2

- Regulations/decrees which enhance the implementation of countermeasures proposed by the Project are stipulated.

(Achievement)

The Law for the Protection of the Environment was amended in April 2009. Of the amendments, amendments concerning 1) tightening of industrial pollution control along the coast and 2) tightening of pollutant emission control standards were relevant to the contents of the Project and were to promote countermeasures proposed by the Project.

Specifically, after the tightening of legal regulation concerning industrial pollution along the coast mentioned in 1), plants may not satisfy the standards without improving production processes. Moreover, as the pollutant discharge standards have also been tightened as mentioned in 2), plants are required to improve methods for water discharge and emissions.

3) Indicator 3

- The regulations and guidelines, etc. to support the implementation of countermeasures suggested by the Project are promulgated and executed by sector ministries concerned.

(Achievement)

The Guidelines for the participation in the Telemetry Monitoring System have been developed by EEAA and other relevant parties, and monitoring activities for air quality improvement have started. As for the management of hazardous chemical substances, the Guideline for Blending and Handling of Insulating Oil has been developed and utilized. In addition, EEAA and the Ministry of Electricity and Energy have started discussion on the standards for quality and handling of recycled oil by the time of the ex-post evaluation.

These guidelines were developed after the completion of the Project as the independent activities of EEAA. It is a typical example of EEAA's ongoing activities.

4) Indicator 4

- Environmental awareness of enterprises and the citizens is enhanced.

(Achievement)

EEAA's activities to raise environmental awareness have been gradually spreading in the society. For example, in December 2012, GDME&E conducted a survey with the cooperation of a NGO about the existence of the air monitoring station established in the Tahrir Square by the Project and the status of air quality. The result showed that 62% of the respondents knew the existence of the station and understood the status of the air quality (the fact that the air quality is not good).

While the result of the questionnaire in 2012 as part of GDME&E's activities to raise environmental activities showed that only about 5% of the respondents was aware of or interested in waste problems and recycling before the awareness raising activities, the result of the follow-up survey after the activities showed that about 85% of the respondents were more aware and interested and paying more attention to waste separation, etc. Thus it would be fair to say that the environmental awareness of the citizens has been raised generally.

5) Indicator 5

- New activities to improve environment at the commute level are started with combined efforts among EEAA/RBOs together with other competent stakeholders.

(Achievement)

There are many cases that NGOs, universities, elementary, middle and high schools and local government units cooperate in carrying out activities to raise environmental awareness such as campaigns for beach cleaning. There are also some cooperative activities with relevant ministries and agencies. For example, to address the issue of Black Smoke from rice straw burning, which becomes serious in Egypt from August to November, EEAA and the Ministry of Agriculture and Land Reclamation jointly hold many workshops and carry out activities for farmers to use rice straws for other purposes. Such community-based awareness raising activities are carried out in a stable manner.

Based on the above, the overall goal is achieved in light of all the indicators.

3.2.2.3 Other Impacts

1) Impacts on the Natural Environment

As mentioned earlier, in Alexandria, cleaner production has been introduced and the quality of wastewater and emissions has improved. The following table shows the changes in environmental data obtained in this study.

Table 11 Changes in Environmental Data in Egyptian Petrochemical

	Before Introduction	After Introduction
PH	9.8	7.9
TSS	120mg/l	20mg/l

Source: Documents from Alexandria RBO

Note: TTS is Total Suspended Solid. According to the environmental regulation, TSS has to be below 60 mg/l. PH has to be between 5.8 and 8.6.

As for other impacts, there was no resident relocation or land acquisition for the implementation of the Project. There was no negative impact of the Project implementation.

Thanks to the implementation of the Project, the Project objective – the improvement of the capabilities to take countermeasures against environmental pollution – was largely achieved, and regarding the overall goal, many proposals for countermeasures against pollution were implemented. Therefore, there are impacts as planned and the effectiveness and impact of the Project is high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Table 12 Inputs in the Project

Inputs	Plan	Actual Performance
Inputs from Japan		
Project Cost	About 440 million yen	About 586 million yen
Cooperation Period	November 2005 – October 2008 (36 months)	November 2005 – November 2008 (37 months) *Period for Output 7 till March 2010 (53 months)
Experts	Short-term experts: 87 man-months Experts (from the private sector)	Short-term experts: 72.46 man-months ・ Leader ・ Training advisor ・ Environmental management (air quality) ・ Environmental management (water quality) ・ Suspended particle matters and countermeasures ・ Analysis of spilled oil and countermeasures ・ Hazardous substance analysis and management, and production process improvement ・ Production process improvement ・ Equipment management/equipment procurement ・ Public awareness raising and public relations ・ Analysis of smoke pollution sources ・ Dispersion model approach ・ Engineer for electricity, telecommunication and system ・ Public awareness raising and public relations (2)/administrative sharing mechanism development/coordinator ・ Coordinator
Trainees Received	No description of the number of trainees received	17
Equipment	About 75 million yen	About 127 million yen
Local Service Cost	Cost to strengthen foreign projects (50 million yen)	-
Inputs from the Recipient Country		
Counterpart	45 counterparts as project experts (25 from RBOs and 20 from EEAA Headquarters) 150 participants in training and awareness raising activities conducted in the Project (60 from RBOs, 60 from enterprises and 30 citizens)	A total of 179 technical counterparts
Facilities	Project office, etc.	Project office, etc.
Local Cost	Labor cost for counterparts, travel expense, equipment owned by EEAA, cost for maintenance, management and repair of equipment, test reagents, etc.	Same as on the left

Source: Information from JICA

3.3.1.1 Elements of Inputs

As for the fields of expert inputs, experts in specific areas were carefully input according to various environmental issues and this supported the achievement of outputs. The working groups created for individual environmental issues had the effect of increasing the sense of unity in the team as well as work efficiency. It would not have been possible without the inputs of experts according to the various environmental issues. On this point, the input of human resources of the Project was appropriate.

As for the trainees received, counterparts were dispatched 6 times separately for such fields as environmental issues, air pollution, oil pollution and management of hazardous chemical substances and they were provided the opportunity to learn the current status of environmental measures in Yokkaichi and other parts of Japan. As each trainee incorporated such successful results in the proposals and planning concerning environmental issues that he/she is in charge of, the input is proved effective.

As for the equipment, analysis equipment and other types of equipment were provided to the central laboratory in the EEAA Headquarters and other RBOs. Such equipment was required for the Project activities and was appropriate in terms of volume and type.

3.3.1.2 Project Cost

The Project cost was higher than planned. One major reason for this is the increase of equipment cost. The possible underlying cause was the underestimate of cost at the time of project planning.

3.3.1.3 Period of Cooperation

The Project period was from November 2005 to March 2010. It was because the activities for Output 7 were extended. The activities for all the other outputs were completed within the 3-year period from November 2005 as originally planned.

The date of the Project completion for Output 7 was extended due to delays in determination of specifications of a real-time air monitoring station with display and preparations for the installation of the station such as installation of a telephone line and electricity supply. The midterm review report suggested considering extending the period to March 2009. However, as technical guidance to ensure stable operation of the station and installation of the equipment required time, the period was eventually extended to March 2010. The input of human resources from the Japanese side for the extended period was as small as a total of 1.5 man-months and it was not the cause of significant cost increase.

As described above, the Project cost was higher than the planned amount and the cooperation period also partially exceeded the plan. However, the extension of the period was only for one of the 8 outputs and the elements of inputs were mostly appropriate to generate outputs. Therefore, the efficiency of the Project is fair.

3.4 Sustainability (Rating:②)

3.4.1 Related Policy towards the Project

Response to environmental issues still remains as an important task in the long-term national development plan at the current time of ex-post evaluation. The National Environmental Action Plan (NEAP) for the period till 2017 is still considered as the major environment policy of the nation. As seen in the amendment of the Law for the Protection of the Environment, recently there has been increasing awareness of the importance of environmental measures and the intention to tighten regulations in a comprehensive manner has been further emphasized.

Thus such awareness of the importance of taking countermeasures against environmental issues and improving capabilities for that will almost certainly continue. Therefore, the sustainability of the policy aspect is high.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

After the completion of the Project, EEAA established 3 new RBOs and is now in the stage of expanding a network for the implementation of environmental measures across Egypt.

While their organizational network has been improved, loss of human resources is still observed in the organization at the present time of ex-post evaluation. However, the status of personnel loss varies depending on department or RBO. For example, AQD, where personnel loss was the most serious during the Project period, has not experienced any loss since the completion of the Project. Some RBOs including Tanta RBO have had a low staff turnover since the implementation period of the Project. On the other hand, many of the staff members involved in the Project have left the central laboratory in Cairo and the laboratory of the Mansoura RBO to get similar posts in neighboring countries. The following table shows the employment status of the members involved in the Project.

Table 13 Current Employment Status of the Counterparts of the Project (Persons)

	At the time of project completion	Present time
AQD	4	4
HSMD	5	5 (including 2 who have moved to other departments)
Central Laboratory in Cairo	10	5 (including 2 who have moved to other departments)
Tanta RBO	4	4
Alexandria RBO	8	5
Mansoura RBO	6	2

Source: Data from the result of questionnaire of the ex-post evaluation

There are still no effective measures to retain excellent human resources in the organization and, on this point the organization still has been in challenging status. However, in terms of "number" of the personnel, vacant posts are usually filled with new employees including those from outside, thus, there are no serious issues derived from the shortage of personnel.

3.4.3 Technical Aspects of the Implementing Agency

There are various successful results of the environmental measures taken by EEAA after the Project. It is judged that the maintenance and/or further development of EEAA's technical knowledge and skills made it possible to increase implementation cases of the proposals.

On the other hand, EEAA still experiences continuous loss of personnel in some departments and has been failing to conduct various training courses, which were conducted during the Project implementation period. These factors may threaten the technical sustainability. Fortunately, the personnel from each department who learned core techniques still remain in EEAA and such personnel take the lead in maintaining outputs of the Project. However, if these members leave EEAA, the various techniques they learned might not remain in the organization. Therefore, to further ensure technical sustainability, such personnel should be effectively introduced as instructors and the techniques mastered by some staff members in the headquarters, etc., should be expanded to other entities including RBOs. Such actions are expected to serve as a hedge against loss of personnel and can increase technical sustainability.

3.4.4 Financial Aspects of the Implementing Agency

The expected sustainable outcome of the Project is "EEAA can propose effective countermeasures against environmental pollution (can make proposals on an ongoing basis)". One element that supports the continuance of making effective proposals is training of EEAA personnel. However, they do not have abundant training budget at the present time. Although laboratory analysis is also important in supporting proposals from a scientific perspective, each laboratory does not always get enough budget and some laboratories cannot conduct detailed analysis because they cannot obtain test reagents and other necessary materials. Behind such situation, there is a background factor of budget cut due to political uncertainty from 2011. Such financial issue can be a hindrance to producing sustainable outcomes.

However, we should stress that the training activities in EEAA do not require significant budget increase. (According to the training department, about 120% of the current budget would be enough. The internal budget for training is about 150,000 Egyptian Pounds = about 2.1 million yen). The underlying cause for the laboratory issues is not equipment trouble but the budget shortfall for consumable supplies including solvents. Therefore, the size of required budget is not large, which can be handled with an internal decision of EEAA. It all depends on the decision-making for budget.

Judging from such situation in a comprehensive manner, although there are currently some

issues with financial sustainability, they are solvable. Therefore, the sustainability of the Project is fair.

As stated above, some problems have been observed in the structural, technical and financial aspects of the executing agency, therefore, sustainability of the Project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The purpose of the Project was to improve the capabilities of the Egyptian Environmental Affairs Agency (hereinafter called EEAA) to take measures against environmental pollution (capabilities to propose environmental protection measures and to carry out awareness raising activities). Such purpose met the environmental policy and needs of Egypt at the time of project planning and also at the time of project completion. Especially at the time of project planning, when the Egyptian government announced that the country would join the Stockholm Convention, a treaty concerning control of hazardous chemical substances, the country was expected to further enhance its capabilities for environmental measures and for analysis. In this light, the relevance of the Project, which supported the enhancement of such capabilities, is high.

During the Project period, guidelines and pollution measure proposals were developed through working groups established for each environmental issue, and sending information to the public on environmental pollution was promoted. Thus the Project objective is largely achieved. After the completion of the Project, activities are still carried out under the initiative of the departments in charge of the respective environmental issues. Therefore, the achievement level of the overall goal is also high. On the other hand, as for the Project activities, the Project cost exceeded the plan and the Project period was extended for one of the outputs. However, as most of the inputs including inputs of experts and equipment were appropriate, the efficiency of the Project is considered fair. Considering that loss of personnel is still occasionally seen and the budget for the laboratories is slightly insufficient while the sustainability is ensured through government policies, the sustainability of the Project effect is considered fair.

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

4.2 Recommendations

4.1.1 Recommendations to the Executing Agency

・ Implementation of Training Activities

Since the completion of the Project, various training courses conducted during the Project have not been conducted by the training department and technical guidance has been provided only through internal OJT in the concerned departments. Ideally, in addition to OJT in each department, systematic and planned technical guidance should be provided by the training

department, who covers the whole EEAA. Using as instructors core personnel from AQD, HSMD and other departments who learned techniques through the Project, the base of technical transfer should be expanded from the Headquarters to concerned personnel in RBOs. Moreover, with a view to the possibility of change and loss of personnel in the future, it is also necessary to increase the personnel who can be instructors in the future. On this point, we suggest that the training department should appoint multiple members as instructors, instead of asking the same people all the time, from a mid- and long-term perspective of developing instructors.

・ Development of Training Plan

Although TNA (Technical Needs Analysis) is effective and important in the process of planning training, we should keep it mind that too much weight should not be put on visible needs because the techniques and methods the trainees do not recognize may not be mentioned as their needs. For example, methods for hazardous substance control are rarely mentioned as training needs in the relevant field because many RBOs have no experience. Giving full attention to such important points for needs analysis, the training department should develop a training plan after sufficient discussion with concerned departments in the headquarters that address various environmental issues.

・ Budget Allocation (for Solvents and Other Consumable Supplies)

In order to propose environmental measures in a scientific and timely manner, continuous analysis at laboratories is absolutely necessary. However, due to shortage of solvents and other consumable supplies, some laboratories cannot fully conduct analysis.

On the other hand, the stock status of consumable supplies varies depending on laboratory and some laboratories usually have enough stock. Therefore, the ex-post evaluation team suggests that each RBO should be required to make a clear report about the stock status of consumable supplies they have and then budget for such consumable supplies should be secured and allocated.

・ Reactivation of the Information Sharing Mechanism among RBOs

The information sharing mechanism among RBOs that the Project aimed to establish is not really functioning at the present time of ex-post evaluation. Although there are some opportunities for RBO personnel to access other RBO's information in the form of "training", activities that the Project originally aimed at, such as sharing of good practice information among RBOs and mutual introduction of new techniques, have rarely been conducted since the completion of the Project. Effect of such activities has been proved in some cases, e.g. a case where information exchange among RBOs led to the adoption of oil fingerprinting. Therefore, we suggest that the information sharing mechanism among RBOs should be reactivated.

・ Restoration of the Real-Time Air Monitoring Station with Display after Political Stabilization

The real-time air monitoring station with display has been left broken and/or loss some parts due to massive demonstrations. Although it has not been able to be repaired by the continuity of demonstration since 2011, the monitor should be repaired and restored after the current situation calms down.

4.1.2 Recommendations to JICA

None.

4.3 Lessons Learned

One large characteristic of the Project was that it dealt with techniques concerning a wide range and variety of environmental issues. Therefore, the number of counterpart personnel was large. The Project created a working group for each environmental issue and assigned counterparts to individual groups. This brought a sense of belonging and ownership to the counterparts when they were involved in the Project. In other projects, especially projects with outputs in various fields, such project implementation structure with a working group for each output may lead to significant effect and efficiency through clarification of responsibilities and promotion of a sense of ownership.

Bosnia and Herzegovina

Ex-post Evaluation of Japanese ODA Technical Cooperation Project

The Project for Sustainable Regional Development through Eco-Tourism

External Evaluator: Jun TOTSUKAWA, Sano Planning Co., Ltd.

0. Summary

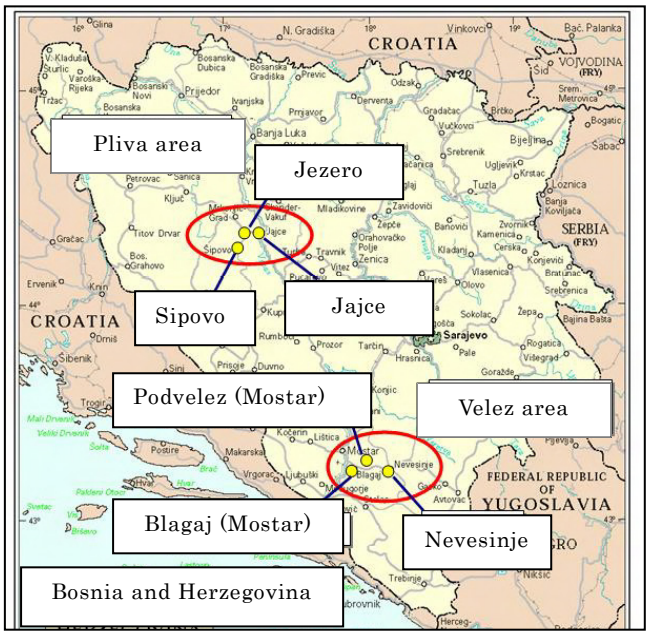
This project was intended to develop human resources and organizational/institutional capacities to facilitate regional development through eco-tourism in the Pliva and Velez areas in Bosnia and Herzegovina (hereinafter referred to as "BiH"). From its planning stage to completion, the objectives of the project have been highly relevant with BiH's national development policies as well as the development needs of the target areas.

The project has established umbrella associations called Eco Pliva and Eco Velez for which public and private sectors work in partnership for eco-tourism promotion. However, they were unable to obtain organizational stability before project completion. Nonetheless, through a series of trainings and seminars carried out by the project, related administrators and stakeholders of model projects have developed their knowledge and skills required for the eco-tourism business. Furthermore, the project has made a positive impact on ethnic relations and employment opportunities for local people. Given these outcomes, the effectiveness and impact of this project are evaluated to be fair. As for the project period, it was within the plan, however the project cost was exceeded, and therefore efficiency of the project is also considered to be fair.

The project has a certain degree of sustainability, given that related municipalities have signed a Memorandum of Understanding (MOU) to provide financial support to Eco Pliva, one of the umbrella associations. Moreover, Eco Pliva will appoint new staff, which will presumably increase the project's sustainability. Eco Velez, on the other hand, has not yet obtained a commitment agreement between the two supporting municipalities. Consequently, this will most likely result in continued activities in only one of the target municipalities. Therefore, the overall sustainability remains fair.

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

1. Project Description



Project Locations

A Country Lodging (A model project)

1.1 Background

BiH fell into civil war in 1992, and through arbitration of the international community the Dayton Peace Agreement was reached in 1995. In its post-war reconstruction period under the observation of the international community, BiH had worked for infrastructure development and the return of internally displaced people. However, the process of transitioning to a market economy, including privatization of government-controlled corporations which had employed a large population in the Former Yugoslavia, had been rather stagnant. Unable to recover their livelihoods, many people who had once returned to their native place emigrated to inner cities or outside of the country to find jobs.

Given that the country had to address the challenge of recovering its economy and people's livelihoods, the Japan International Cooperation Agency (JICA) launched "The Study on Sustainable Development through Eco-Tourism in Bosnia and Herzegovina" in 2003. The study developed a master plan on eco-tourism promotion, covering two entities (recognized as second-tier governments within BiH), the Federation of Bosnia and Herzegovina (FBiH) and the Republic of Srpska (RS). These target entities comprise of three northern municipalities and three southern communities in two municipalities.

In order to implement the master plan, BiH recognized its urgent need for developing human resources and organizational foundations in both the public and private sectors. Accordingly, the Government of BiH has requested Japan provide technical cooperation to develop organizational/institutional sustainability as well as human resources that would contribute to eco-tourism promotion in the country.

1.2 Project Outline

Overall Goal		The institutional systems organized by the project continue to be managed jointly by administrative agencies and the people concerned.
Project Objective		Human resources are developed and institutions/organizations are strengthened in order to promote regional development through eco-tourism both at administrative and private levels in the target areas.
Outputs	Output 1	The purpose of eco-tourism as a measure for regional development, and knowledge and skills on eco-tourism are understood by relevant personnel.
	Output 2	Cooperative system is established between administrative agencies and the private sector to jointly promote eco-tourism.
	Output 3	Organization and personnel capable of formulating development strategies and supporting implementation of projects for eco-tourism promotion are developed.
	Output 4	Personnel capable of engaging in the main fields of eco-tourism, which include developments of local agricultural products, country lodging, preservation and utilization of historical/cultural heritage, sports activities are developed.
	Output 5	Regional development models through promotion of eco-tourism are compiled as a guideline.
Inputs		Japan side: 1. Expert dispatch: a total of 10 experts (short-term experts only) 2. In-country training: a total of 8 trainees 3. Equipment: 189 pieces of 34 kinds 4. Local administration cost: 123 million yen Other (1) a terminal evaluation study Bosnia and Herzegovina side: 1. Counterpart agency: not officially assigned 2. Equipment: none 3. Land, facilities, project offices, utilities
Project Cost		412 million yen
Cooperation period		January 2007 to December 2009
Implementing Agency		Central Government: Ministry of Foreign Trade and Economic Relations (MOFTER, BiH) Entity Government: Federation of Bosnia and Herzegovina (FBiH): Ministry of Environment and Tourism (MOET) Republic of Srpska (RS): Ministry of Physical Planning, Civil Engineering and Ecology (MOPPCEE), Ministry of Trade and Tourism (MOTT)
Cooperation Agencies in Japan		None
Related Project		A development study: “The Study on Sustainable Development through Eco-Tourism in Bosnia and Herzegovina” (2003-2005)

*Supplementary explanation to the Summary

1) Project site

As listed below, the project had been implemented across two areas administered by respective entity governments. Rather than focusing on a single entity, the project is unique in working together with both entity governments. This is primarily because its activities were hoped to contribute to friendlier ethnic relation between these two entities.

Area	Related Municipalities
Northern model area: Three municipalities in the Pliva River Valley	FBiH: Jajce RS: Sipovo, Jezero
Southern model area: Two municipalities in the Mount Velez Region	FBiH: Mostar (Blagaj and Podvelez) RS: Nevesinje

2) Umbrella associations

The project had worked for establishing umbrella associations in each model area (as noted in the Project Design Matrix (PDM) which states that a "cooperative system is established between administrative agencies and the private sector to jointly promote eco-tourism"). Working in a public-private partnership, these associations have a threefold structure including an Assembly, a Board of Directors and a Secretary Office. Initially, related municipalities had agreed to finance the operations of the associations. The project carried out various model projects at the local level, and their implementing organizations were members of the umbrella associations. Accordingly, some of the model project representatives were also on the Board of Directors in the associations they had respectively belonged to.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

With respect to the achievement of the overall goal, the terminal evaluation study concluded "it is difficult to prospect whether the overall goal will be achieved in future because of some possible risks with umbrella associations."

Nonetheless, during implementation of the model projects, local communities came to recognize the profitability of the eco-tourism business. This has resulted in the impact of some people starting self-financed country lodging or new projects proposed by local groups successfully gaining other donors' funding.

1.3.2 Achievement of Project Objective

The terminal evaluation study concluded that "the project objective is expected to be mostly achieved within the project period." Accordingly, indicators to verify the achievement of the objective suggested it would obtain expected outcomes by the time of the project's completion.

1.3.3 Recommendations

The terminal evaluation included recommendations to JICA experts as well as to related administrative agencies in their post-project efforts.

Recommendations to JICA experts:

(1) Further capacity development

Some of the model projects require more capacity development efforts or other relevant measures to facilitate self-supporting operations.

(2) An in-depth discussion over management of umbrella associations

In order to develop the capacities of umbrella associations and improve their management, members of these associations need to explore an effective approach to eco-tourism promotion, including more sustainable public-private partnership and better coordination mechanisms.

(3) Website of umbrella associations

The website of each umbrella association needs to be renewed or updated to make them more appealing to visitors.

Recommendations for related administrative agencies:

(1) Continuous support of administrative agencies for the umbrella associations

It is recommended that municipal offices, ministries and agencies related to the project continue to provide support to meet the associations' needs for financial, human and material resources.

2. Outline of the Evaluation Study

2.1 External Evaluator

Jun TOTSUKAWA, Sano Planning Co., Ltd.

2.2 Duration of Evaluation Study

The External Evaluator performed an evaluation study as follows in the course of this ex-post evaluation:

Duration of the Study: September 2012 - February 2014

Duration of the Field Study: February 25-March 10, 2013, and June 15-28, 2013

3. Results of the Evaluation (Overall Rating: C[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Relevance with the Development Plan of Bosnia and Herzegovina

(1) At the time of the project initiation

As noted in the Mid-term Development Strategy (MTDS, 2004), one of BiH's essential development polices, tourism is considered to be one of the key sectors in the country. The Strategy seeks to develop the legal frameworks, infrastructure, and human resources

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

[2] 3: High, 2: Fair, 1: Low

conducive to foreign and domestic investment, while at the same time preserve the rich natural and cultural resources in the country. Furthermore, it suggests that strengthening partnerships with NGOs and the private sector is critical in the development of the tourism sector.

In light of the above, the project has been relevant with the development objectives of BiH, as it consistently seeks to expand the tourism sector, incorporating efforts for human resource development and capacity enhancement.

(2) At the time of project completion

Under the policy framework of MTDS mentioned above, the project had retained its relevance up until its completion.

Throughout the project period, neither of the two entity governments had a complete tourism sector policy. MOPPCEE in RS had then developed the "Tourism Development Strategy of the Republic of Srpska 2011-2020." This proposes that local municipalities promote tourism and consolidate their inter-regional partnership, and therefore, the project is consistent with this latest policy framework[3].

In light of the above, the project has been relevant with policies pursued by BiH both upon its completion as well as at the time of the ex-post evaluation.

3.1.2 Relevance with the Development Needs of Bosnia and Herzegovina

(1) At the time of the project initiation

In postwar BiH, the country tried to ensure employment and income for citizens in a transitional process within which a planned economy was being replaced with a liberal, market economy based on the principle of competition. Restructuring the key industries started from privatizing the government-controlled corporations and obtaining foreign investment. However, this transition process has been rather slow, requiring enormous efforts such as redevelopment of facilities and buildings outdated or destroyed in the civil war, improvement of product quality, and large-scale restoration of the marketing system and distribution networks.

While working for its economic recovery, BiH also approached making use of its abundant natural environment resources in different parts of the country, though on a small scale, as well as its unique historical and cultural heritage. Small-scale eco-tourism was thus expected to contribute to sustainable, self-supporting community development. It was expected that the promotion of local industries including tourism would presumably lead to market expansion of local agricultural products and specialty goods, while also provide local people with more

[3] While MOET-FBiH has also developed the "Tourism Development Strategy of the Federation of Bosnia and Herzegovina 2008-2018), part of the contents have not been approved by the parliament (as of June, 2013). Nonetheless, promotion of eco-tourism and rural tourism will continue to be treated as an important issue in FBiH, provided that the Strategy has been revised for authorization.

job opportunities and a source of income, thus improving their livelihoods.

As previously publicly owned tourism agencies had limited experience being guided by the country's leisure policy under a planned economy, the sector needed more effective collaborative mechanisms between public and private agencies in order to promote the tourism industry in a market economy.

With its objectives to develop human resources and an organizational basis to promote eco-tourism, the project was relevant with the development needs that the country had to address at that time.

(2) At the time of the project's completion

Throughout the project period, it has been highly expected that the project, working for eco-tourism promotion, would contribute to regional economic development including an increase in job opportunities in local communities.

The ex-post evaluation recognized that the country continues to have this development need of expanding eco-tourism. Given the high unemployment rate in the project target areas of Pliva and Velez, their entity governments and municipal offices envisage a significant potential of tourism to create new employment and sources of income for these communities. Located in the countryside, the target areas have less advantage in attracting a large scale industry. Thus, tourism as well as agriculture and forestry are considered to be important sectors that require more development efforts. The ex-post evaluation confirmed this strategic sector choice has been consistent with BiH to date, as it was at the time of project completion.

As indicated in the Table below, the unemployment rate in the target areas has remained high in recent years. This has increased the expectation for the tourism industry to create new employment opportunities.

Table 1 Change in Unemployment Rate (%)

		2009	2010	2011	2012
Pliva	Sipovo	25	27	30	30
	Jajce	56	54	55	55
	Jezero	NA	NA	NA	23
Velez	Mostar*	NA	NA	NA	NA
	Nevesinje	33	34	35	35
National average		24.1	27.2	27.6	28.0

Source: Responses to questionnaires submitted by municipalities, and Agency for Statistics B&H

* With its world heritage site, Mostar is the most renowned tourist resort in the country. Far from Mostar, the project has targeted Blagaj and Podvelez areas which have a much smaller number of tourists.

The Table below shows primary figures in tourism in recent years.

Table 2 An Overview of the Tourism Sector in Bosnia and Herzegovina

	2009	2010	2011	2012
Number of domestic tourists*1	395	432	435	448
Number of foreign tourists	405	461	489	541
Number of beds (FBiH)*2	13,289	12,975	13,379	13,289
Number of hotels (RS)	150	156	168	175

Source: Agency for Statistics RS and Federal office of statistics of FBiH
*1 The number of tourists is indicated in units of 1,000.
*2 Each entity government provided a variant record on the number of hotels, and the data on beds and hotels are indicated separately.

As indicated above, the number of domestic and foreign tourists has been gradually increasing, and therefore the tourism sector is considered to have growth potential.

In light of the above, the needs for eco-tourism promotion have been highlighted not only during the project period, but also at the time of the ex-post evaluation. Therefore, the project has been relevant with the needs of the country.

3.1.3 Relevance with Japan's ODA Policy

Based on its areas of knowledge and comparative advantage, Japan is supporting BiH by focusing on the following three sectors: "(1) private sector growth including small and medium-sized enterprises, (2) the environment, (3) establishment of peace and human security (facilitating the return of displaced people and ethnic cooperation)." These development priorities are underpinned by the Policy Dialogue with Bosnia and Herzegovina in March 2004, the Policy Discussion in April 2005, and BiH's Mid-term Development Strategy in 2004. Addressing all of these objectives, the project has been relevant with Japan's ODA policy.

In light of the above, this project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, and therefore its relevance is high.

3.2 Effectiveness and Impact[4] (Rating: ②)

3.2.1 Project Outputs

3.2.1.1 Project Output

[4] Effectiveness should be judged in consideration of impact to determine a rating.

1) Output 1

The purpose of eco-tourism as a measure for regional development, and knowledge and skills on eco-tourism are understood by relevant personnel.

Output 1 has been achieved upon the project's completion. Through a variety of training programs provided by the project, the administrative agencies and implementing organizations of model projects in the target areas have acquired various knowledge and skills, making up for their limited experiences in the eco-tourism business. The indicator to verify this achievement was "the number of personnel who understood the knowledge and skills necessary for regional development through eco-tourism promotion among administrative agencies, relevant organizations and residents." As shown in the Table below, a series of training programs and seminars have involved a sufficient number of people to achieve Output 1.

Table 3 Training programs and Seminars Provided by the Project and the Number of Participants

Target trainees	Number of training programs and seminars	Number of trainees
Administrative agencies	14	362
Related organizations (model projects)	110	600
Local people, schools, etc.	7	252
Total	131	1,214

Source: Project document

2) Output 2

Cooperative system is established between administrative agencies and the private sector to jointly promote eco-tourism.

The degree of achievement of Output 2 is lower than expected at the time of the project completion.

The project has been unable to deliver the requirement of operating umbrella associations or a "cooperative system between administrative agencies and the private sector," as expected for Output 2. Although umbrella associations (Eco Pliva and Eco Veleze) were established in the Pliva and Velez areas, they could not secure funding sources throughout the project period. Due to such financial restraint and instability, project activities have failed to fulfill the expectations of stakeholders. Furthermore, these associations lacked adequate personnel assignment until the end of the project, resulting in a weak organizational basis. In some cases, an administrative position in charge of day-to-day operations had been left vacant or covered by temporary staff from the municipal office.

The ex-post evaluation has verified the intended outputs of indicator 2 and 4, as umbrella associations and stakeholders had held an expected number of meetings. As for indicator 3, on the other hand, the survey result shows half of the model project organizations are unsatisfied with the operations of umbrella associations, with the other half responding "generally satisfied." There are no organizations which have indicated "highly satisfied" with the umbrella associations. Indicator 1 assesses the output of establishing umbrella associations. [5]

3) Output 3

Organizations and personnel capable of formulating development strategies and supporting implementation of projects for eco-tourism promotion are developed.

Output 3 has been mostly achieved upon the project's completion.

The intended output is the capacity development of Eco Pliva and Eco Velez as umbrella associations. By the time the project was completed, Eco Pliva had acquired the capabilities required to prepare an eco-tourism promotion plan and assist its member organizations in their applications for donors' funding. Eco Velez, on the other hand, has been less competent than expected, partly because a member of the secretary office was replaced during the project period. As mentioned in the Output 2, though the organizational basis of umbrella associations remains weak, the staff have generally improved their skills. Given these circumstances, Output 3 has been mostly achieved.

To verify this output, Indicator 1 targeted performance of umbrella associations in supporting their member organizations' application process to gain donors' funding. Six out of 13 proposals have been accepted and started to receive funding during the project. Three other proposals, though approved, were awaiting a decision on the amount of funds. The remaining four proposal documents were under review. This implies umbrella associations have sufficient experience to prove their increased capabilities in raising funds for their member organizations. [6] The project has also engaged in a variety of promotional activities, as assessed by Indicator 2, including the creation of a website and tourist map, promotion at an international tourism exhibition as well as sales promotion at primary and secondary schools (fieldtrips).

[5] Eco Pliva was established in a pilot project of the Development Study implemented from 2003 to 2005. Velez area, on the other hand, had to create an umbrella association at the outset of this project, and thus it was presumably included in the indicator 1 for its verification.

[6] Eco Velez has supported drafting eight out of 13 proposals, and the rest were assisted by Eco Pliva. Since Eco Velez required more technical assistance inputs from Japanese experts than Eco Pliva, the ex-post evaluation assessed its skills to be lower than Eco Pliva, conversely speaking. The actual performance of Eco Velez in terms of the number of assisting proposal documents, however, suggests it bears comparison with that of Eco Pliva.

4) Output 4

Personnel capable of engaging in the main fields of eco-tourism, which include developments of local agricultural products, country lodging, preservation and utilization of historical/cultural heritage, and sports activities are developed.

Output 4 has been achieved at the time of the project's completion.

It set out capacity development of personnel and organizations to implement model projects. By participating in a series of training programs and seminars, those people involved in the model projects have gained knowledge and skills relevant to their works. Also, through practical experience of the eco-tourism business, they have attained or renewed their business mindset and essential expertise.

Outputs to be verified by Indicator 1 through indicator 3 have been achieved, having fulfilled expected participation rates, trainees' satisfaction with training programs, and utilization of their knowledge acquired through the training.

5) Output 5

Regional development models through promotion of eco-tourism are compiled as a guideline.

Output 5 has been achieved at the time of the project completion.

Prospective users of the guideline include local people, NGOs (community groups) and municipalities promoting eco-tourism for regional development or those who intend to undertake such activities. The guideline explains (1) strategies for regional development through eco-tourism, (2) case studies of eco-tourism promotion (successful model projects in Pliva and Velez), and (3) issues to be addressed for sustainable eco-tourism.

This guideline was made open to the public, distributed by related ministries, municipal agencies and umbrella associations. To enhance the availability for local people, the project held a briefing session for administrative agencies in Pliva and Velez, persons involved in umbrella associations, and selected local people.

3.2.1.2 Achievement of Project Objectives

Project objective

Human resources are developed and institutions/organizations are strengthened in order to promote regional development through eco-tourism both at administrative and private levels in the target areas.

This project has several stages of achieving its outputs; developing core capacities, entrepreneurship and awareness of people involved in eco-tourism both in the public and

private sectors (Output 1), establishing umbrella associations (Output2), strengthening management skills (Output 3), and enhancing capacities of implementing organizations of eco-tourism model projects (Output 4). In the PDM of this project, these outputs constitute its overarching objective.

The status of the project objective's achievement was "middle" at the time of the project's completion.

As a whole, various project activities have facilitated human resource development of people involved in model projects and those who engage in eco-tourism. As for umbrella associations, while the management skills of staff in the secretary office of Eco Pliva have been steadily improved, it has not been able to obtain a solid organizational basis that would ensure its sustainability. Also in Eco Velez, the project ended before it attained stability as an umbrella association. Given these circumstances, although the project has significantly developed human resources, particularly in terms of technical skills in umbrella associations, it has left some challenges in terms of overall organizational capacity improvement. In light of the above, the ex-post evaluation concludes the project objective reached the "middle" achievement status.

The achievements of target indicators for the project objective are as follows.

1) Indicator 1: Administrative agencies, umbrella associations and model project implementation organizations are able to take various measures for eco-tourism promotion under their collaboration.

(Achievement)

Entity government agencies supported model projects to participate in a tourism exhibition as well as to procure necessary equipment and facilities. Model project organizations were increasingly working together to mutually reinforce their activities.

Related municipal offices gave financial assistance to umbrella associations to cover their operational expenses. However, schedule of the allocations were varied among municipalities, and some offices failed to pay out within a reasonable time period.

2) Indictor 2: More than half of model project implementing organizations (17) have acquired the capacity to operate and manage model projects in a sustainable way.

(Achievement)

To assess the achievement of the above target indicator, the ex-post evaluation was required to observe whether these implementation organizations have durable capacities to

manage their model projects. While the indicator expected at least 17 organizations to become competent, it was actually 13 organizations, excluding those double-counted, that have been operating 14 model projects in all. A list of the model projects below shows whether they are in operation at the time of the ex-post evaluation. Tracking their individual status indicates more projects are ongoing than stagnated or terminated.

Table 4 List of Model Projects

Area	Model Projects	Ongoing	Stagnated or Terminated
Pliva	Development and diversification of nature tourism products	✔	
	Conservation and utilization of fortress	✔	
	Country lodging and related tourism product development	✔	
	Regional development through eco-tourism promoted by umbrella associations	✔	
	Development of local specialty products in Jezero		✔
	Eco house consignment sale business revitalization		✔
	Subtotal	4	2
Velez	Diversification of recreation tourism	✔	
	Nature observation tourism (wild fauna and flora)		✔
	Exploring tour into the Buna river source grotto	✔	
	International folklore festival	✔	
	Eco and historical trail	✔	
	Eco Farm		✔
	Country lodging and related tourism product development	✔	
	Development of local specialty products in Velez		✔
	Subtotal	5	3
Total		9	5

Source: Results of hearing in the ex-post evaluation study

Though it mostly achieved the target indicator, the project has not fully obtained its objective, as strengthening of organizations has not met the expected level of output.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Overall Goal

The institutional systems organized by the project continue to be managed jointly by administrative agencies and the people concerned.

At the time of the ex-post evaluation, the achievement status of the Overall Goal was partially low.

For about three years in its post-project period, Eco Pliva has continued its operation. It works on regional development through coordination with the EU's "Sipovo Eco-Zone" project and local eco-tourism promotion funded by USAID and Oxfam. Although the support of drafting financial proposals to donors is less frequent than during the project period, the ex-post evaluation confirmed Eco Pliva has somehow maintained its functions as an umbrella association.

Table 5 Post-project Activities of Eco Pliva

Type of activity	Output
Promotion materials	Reprinted 1,000 copies of pamphlets and 3,000 copies of fliers, both financed by USAID Distributed the reprinted materials at the eco-tourism exhibition and other occasions.
Website	Renewal in May, 2013
Promotion activities	Participated in a tourism exhibition in the Netherlands in 2010 (supported by USAID) Participated in a tourism exhibition in Italy in 2011 (supported by Oxfam) Participated in a tourism exhibition in Serbia in 2011 (supported by Oxfam) Participated in a tourism exhibition in Italy in 2012 (supported by Oxfam) Participated in a tourism exhibition in Germany in 2013 (supported by the EU Sipovo Eco-Zone Project)
Support for writing financial proposals	2009: Assisted writing of proposal document to request financial aid for a model project of farmer lodging, which successfully obtained funding from MOTT of RS

After the project completion, until May 2013, three municipal offices suspended their financial support for Eco Pliva. Eco Velez has mostly suspended its operation, as two related municipalities also cut off their support for the association. Therefore, though Eco Pliva somehow continues to operate, its weak relationship with the municipalities suggests the project has not fully achieved the Overall Goal of "joint management by administrative agencies and the people concerned." The same can be said of Eco Velez.

It should be noted, however, this is a situation observed during the ex-post evaluation study in June, 2013. In the coming September, Eco Pliva will complete the EU project mentioned above, and resume its own plan of activities that the project had intended to implement. This was enabled by an MOU signed in May, 2013 for which three municipalities concerned will

provide financial support to Eco Pliva. Given the limited outputs of the project, the ex-post evaluation should conclude the achievement of its Overall Goal is lower than expected. Nonetheless, it turned out that Eco Pliva still has a good chance to practice “joint management with administrative agencies” in the near future. As for Eco Velez, there is also a possibility to resume its operation, though so far it is failing to ensure its organizational sustainability (Refer to the section on Sustainability.)

The indicator to verify the achievement of the Overall Goal is almost the same as the Goal itself, which provides that “the cooperation system among administrative agencies, relevant organizations and residents continues to function and some activities are actually carried out.” Thus, assessment of the achievement of the target indicator is the same as provided in 3.2.2.1 above.

3.2.2.2 Other Impacts

(1) Impact on the natural environment

From the viewpoint of eco-tourism development, the model project areas surely have promoted tourism along with conservation of the surrounding natural environment. However, the ex-post evaluation was unable to obtain verifiable data on a positive impact on natural environment.

The project had no relocation of local residents or land acquisition. The ex-post evaluation observed no negative impact brought about by this project.

(2) Indirect impact

The results of a beneficiary survey conducted in the ex-post evaluation study indicated the following impact of the project.

The beneficiary survey targeted organizations listed below. The respondents are those who have had some kind of experience in project activities. The survey respondents were limited to those people related to existing model projects because there are no post-project organizations created by umbrella associations.

Table 6 List of Organizations for a Beneficiary Survey

Area	Project Name	Implementing Organizations	No of responses
Pliva	Development and diversification of nature tourism products	Pliva Sports Association (PSA)	20
	Conservation and utilization of fortress	Agency for heritage and development of tourism potentials in Jajce	2
	Country lodging and related tourism product development	Country Lodging Association	33
	Subtotal		55
Velez	Diversification of recreation tourism	Nevesinje Youth Initiative (NYI)	6
		Fishing Association	8
	Nature observation tourism (wild fauna and flora)	Hunting Association	10
	Exploring tour into the Buna river source grotto	STK Blagaj, City Sports Tourist Club	10
	International folklore festival	KPD Blagaj	15
	Eco farm	Bio Product, KRUG Blagaj	5
	Country lodging and related tourism product development	Country Lodging	6
	Subtotal		60
Total			115

(1) Impact on employment and income

As indicated in the Table below, more than a half of the people involved in model projects think the project has brought about a positive impact on their job opportunities and changes in income.

Table 7 Positive Impact of the Project on Employment (Number of responses)

	Very large	Fairly large	Yes and no	Not very large	None	Don't know	N/A*
Pliva	24	30	0	0	0	0	1
Velez	15	15	5	5	1	0	19
Total	39	45	5	5	1	0	20
%	34	39	4	4	1	0	17

Source: Results of surveys of beneficiaries
*Some of the questions in this survey do not necessarily correspond to organizations' activities, and such cases are indicated in "N/A" (as is the case with other questions).

Table 8 Increase of Project-related Income (Number of responses)

	Largely increased	Generally increased	Yes and no	Not largely changed	Not changed at all	Don't know	N/A
Pliva	12	28	4	1	1	9	0
Velez	4	12	6	15	2	18	3
Total	16	40	10	16	3	27	3
%	14	35	9	14	3	23	3

Source: Results of surveys of beneficiaries

(2) Impact on skills and knowledge

The Table below indicates to what extent various training programs and seminars provided by the project have improved the trainees' skills and knowledge.

Table 9 Recognition of Enhancement of Skills and Knowledge (Number of responses)

	Largely enhanced	Fairly enhanced	Yes and no	Not largely changed	Not changed at all	Don't know	N/A
Pliva	23	31	1	0	0	0	0
Velez	9	20	3	7	1	0	20
Total	32	51	4	7	1	0	20
%	28	44	3	6	1	0	17

Source: Results of surveys of beneficiaries

About 70 percent of the total respondents state they have developed their skills and knowledge through training provided by the project. Obtained skills are practical and applied to their work (such as customer service, bed-making and traditional cuisine cooking at country lodging as well as guidance in fly-fishing as a promotion activity for diversifying nature tourism products).

(3) Impact on ethnic relations

A general framework of the Constitution in Bosnia Herzegovina is underpinned by the Dayton Peace Agreement signed in 1995. It secures equal rights for each of the major three ethnic groups, allowing two entity governments to govern, as virtual rulers of the people in their respective jurisdictions (including the Federation of Bosnia and Herzegovina primarily composed of the Bosnian Muslims and Croatians and the Republic of Srpska dominated by the Serbs). Such governance has been retained for about 20 years since the end of the civil war, unable to achieve a national unification of the two entities until today.

Under such circumstances, the project, covering areas in both entities, was intended to promote eco-tourism as an instrument for regional development, which would ultimately contribute to creating closer ethnic relations. .

The beneficiary survey indicates many respondents believe the project has improved to a certain extent the relations between the two ethnic groups. Sixty percent of the total respondents indicated that the positive impact of the project on this aspect was "very large" or "fairly large."

In an interview during the ex-post evaluation study, people involved in the project stated they had more opportunities for inter-municipal consultations beyond entity boundaries, which had hardly happened prior to its implementation. This suggests the project has served as the impetuous for facilitating dialogues between the entities.

In the PDM of this project, ethnic cooperation is not included as its objective or target

output. However, stakeholders of the project, both in Japan and BiH, strongly expected it would strengthen closer ties among different ethnic groups in the latter country. Though not stated in the PDM, ethnic cooperation was thought to be an essential part of the objective that the project was trying to achieve. It is thus worth noting the project has virtually met such stakeholders' common expectations.

Table 10 Recognition of an Impact on Ethnic Cooperation (Number of responses)

	Very large	Fairly large	Yes and no	Not very large	No impact at all	Don't know	N/A
Pliva	8	29	14	4	0	0	0
Velez	13	19	23	4	0	0	1
Total	21	48	37	8	0	0	1
%	18	42	32	7	0	0	1

Source: Results of surveys of beneficiaries

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Table 11 Project Inputs

Inputs	Plan	Actual Performance
Input from Japan		
Project Cost	Approximately 340 million yen	Approximately 412 million yen ※inclusive of costs related to sending study teams (17,811 thousand yen)
Cooperation period	January 2007-December 2009 (36 months)	January 2007-December 2009 (36 months)
Experts	Short term : 68M/M Experts (from private sector) ・Tourism development planning ・Organization analysis ・Tourism promotion ・Marketing strategy ・Historical and cultural heritage conversation ・Natural environment protection ・Financial planning ・Human resource development, etc.	Short term: 72.33M/M Experts (from private sector) ・Team leader/tourism development planning ・Project deputy team leader/organization analysis/development ・Tourism promotion ・Marketing strategy ・Historical and cultural heritage conversation ・Natural environment protection and eco-tourism ・Financial planning ・Human resource development ・Model project management
Trainees received	No record on the number of trainees	8
Equipment	No record	189 of 34 different kinds
Local Cost	Expense for the project support (50 million yen)	123 million yen

Inputs from the Recipient Country		
Counterpart position	Counterpart staff: ・Project directors (one director to be appointed from a post equivalent to a senior vice minister of MOFTER, FBiH-Ministry of Physical Planning (MOPP), RS-MOPPCEE, FBiH-MOET, RS-MOTT, respectively) ・Project managers (one manager to be appointed from MOFTER, FBiH-MOPP, RS-MOPPCEE, FBiH-MOET, RS-MOTT, respectively) ・Staff (one director per implementing organizations in the north and south, and several members including project coordinators)(to be appointed at the launch of the project)	Although R/D required BiH to appoint project directors and managers as implementing counterparts, these posts were not officially assigned.
Facilities	Project office, conference room, venue for seminars	Project office for umbrella associations
Local cost	—	Expenses for activities of counterpart agencies and umbrella associations (including salaries of umbrella associations paid by municipal offices)

Source: Documentation provide by JICA

3.3.1.1 Elements of Inputs

An in-country training program was provided in Japan to offer an opportunity to learn Japanese eco-tourism. This was a valuable experience for trainees. Back in their home country, they reflected what was learned in policy recommendation and strategic planning to promote eco-tourism.

The project had also assigned a variety of Japanese experts required to promote eco-tourism in BiH. To ensure the quality of training programs and seminars in the target areas, local experts were also employed (in BiH and neighboring countries), as necessary, who had good knowledge of localities. Overall, the project had appropriately used available human resources.

On the other hand, BiH failed to appoint the personnel as planned. While Japanese experts helped information sharing among related agencies, project directors and managers, despite BiH's initial agreement, were not assigned by BiH throughout the project. This resulted in severely limiting occasions to assemble all the agencies concerned to discuss issues to be addressed in the project. This affected smooth communication as well as implementation of the project.

3.3.1.2 Project Cost

The project cost exceeded the planned amount. Local administration resulted in a higher cost than expected.

3.3.1.3 Period of Cooperation

The project, implemented from January 2007 to December 2009, was completed as planned.

In light of the above, the project was implemented within the planned period, but its cost slightly exceeded the plan. Therefore, efficiency of the project is fair.

3.4 Sustainability (Rating:②)

3.4.1 Related Policy towards the Project

As presented in the "Tourism Development Strategy of the Federation of Bosnia and Herzegovina 2008-2018," and the "Tourism Development Strategy of the Republic of Srpska 2011-2020," the Government of BiH and the entity governments emphasize the importance of developing eco-tourism as well as the tourism sector. Such policy framework provides a supportive foundation to cooperate in strengthening this sector. It should be noted, although the said Tourism Development Strategy of FBiH is not yet authorized by the Parliament, an approval process will be presumably underway which supports eco-tourism promotion. The Tourism Development Strategy of RS also highlights eco-tourism as well as rural tourism, among other tour destinations, as playing a key role in attracting more tourists in and out of its entity.

In addition, the umbrella associations of Eco Pliva and Eco Velez work as authorized NGOs, allowed to operate across both entities.

In light of the above, sustainability of the policy aspect is high.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

In Eco Pliva, administrative staff of the secretary office have handled all the day-to-day operations. However, additional staff will work from September 2013 (the Jajce municipality has agreed to take charge of the appointment).[7] This will enable more efficient operation. Also, according to the agreement with Jajce, the association will obtain an additional office in the municipality.[8]

As for Eco Velez, on the other hand, its organizational sustainability is uncertain, in terms of its functions as "an inter-entity umbrella association." This is because Mostar and Nevesinje have not reached an agreement to jointly operate Eco Velez. If it remains defined as an umbrella association, the association is unlikely to achieve stability in its operations.

Nonetheless, Eco Velez, despite having almost completely suspended its post-project operation, is somehow trying to regain its functions. Nevesinje has decided to pay for their

[7] Eco Pliva will complete its EU project in September, 2013. It is planning to employ new staff then (which may be a volunteer post for the time being). This was enabled by an MOU signed by three related municipalities, which mandates their financial contributions to Eco Pliva's operation. For this development, refer to 3.2.2.1 "Achievement of Overall Goal" and 3.4.4 "Financial Aspects of the Implementing Agency."

[8] The office which had been used during the project implementation will be provided again.

secretarial staff, while also providing it with an office (as of June 2013). This implies there is a possibility it will resume activities. The first and former members of the secretary office who had left Nevesinje during the project have returned to the municipality, willing to support the association's activities as necessary. These factors have been gradually improving the insufficient personnel numbers of Eco Velez. However, unlike the project's initial expectation, it will work only for Nevesinje, which will no longer function as "an inter-entity umbrella association."

In light of the above, sustainability of the implementing agencies is high for Eco Pliva and low for Eco Velez. The latter, however, will somehow sustain an operational basis to work for the local communities, though dismissing itself from inter-entity activities.

3.4.3 Technical Aspects of the Implementing Agency

Eco Pliva is technically sustainable, as it contributes support, though less frequently, for its member organizations in writing financial application for funding from the government and donors. The association will also be able to provide skills to newly appointed staff upon arrival at his/her post.

As mentioned above, a former member of the secretarial staff at Eco Velez who had joined the latter half of the project will be reassigned. Moreover, the person who had worked for its office in the first half is willing to provide assistance when necessary. Particularly, given that the said former member of the secretarial staff has voluntarily learned tourism at a university after the project, such staff along with well-organized expertise will contribute to the technical sustainability of the organization.

3.4.4 Financial Aspects of the Implementing Agency

In May, 2013, three related municipalities (Jajce, Sipovo and Jezero) signed an MOU to provide Eco Pliva with financial support. To renew the contract on a yearly basis, they will require a review of the association's performance. Recognizing the importance of Eco Pliva's effort, respective mayors have orally agreed to continue their support. During their mayoralty, financial sustainability will be ensured to a certain extent (The next election will be held in October 2016).

The Mayor of Nevesinje shares a similar understanding on Eco Velez, which will help enhance its financial sustainability. Mostar, on the other hand, is not expecting to finance the association at the time of the ex-post evaluation.

In light of the above, Eco Pliva has more financial sustainability than Eco Velez where a mutual contribution of related municipalities has not been granted.

The overall sustainability of Eco Pliva is high. Eco Velez, on the other hand, is less likely to keep its functions at this point as an inter-entity umbrella association. Integrating its

operation in Nevesinje, Eco Velez may at least continue its eco-tourism promotion.

In light of the above, while the ex-post evaluation identified some problems in the counterpart agencies' operational stabilities, capabilities and financial conditions, they are coping with those risk factors so as to reinforce their organizational foundation. Therefore, sustainability of the project impact is considered to be fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was intended to develop human resources and organizational/institutional capacities to facilitate regional development through eco-tourism in the Pliva and Velez areas in Bosnia and Herzegovina (hereinafter referred to as "BiH"). From its planning stage to completion, the objectives of the project have been highly relevant with BiH's national development policies as well as the development needs of the target areas.

The project has established umbrella associations called Eco Pliva and Eco Velez for which public and private sectors work in partnership for eco-tourism promotion. However, they were unable to obtain organizational stability before project completion. Nonetheless, through a series of trainings and seminars carried out by the project, related administrators and stakeholders of model projects have developed their knowledge and skills required for the eco-tourism business. Furthermore, the project has made a positive impact on ethnic relations and employment opportunities for local people. Given these outcomes, the effectiveness and impact of this project are evaluated to be fair. As for the project period, it was within the plan, however the project cost was exceeded, and therefore efficiency of the project is also considered to be fair.

The project has a certain degree of sustainability, given that related municipalities have signed a Memorandum of Understanding (MOU) to provide financial support to Eco Pliva, one of the umbrella associations. Moreover, Eco Pliva will appoint new staff, which will presumably increase the project's sustainability. Eco Velez, on the other hand, has not yet obtained a commitment agreement between the two supporting municipalities. Consequently, this will most likely result in continued activities in only one of the target municipalities. Therefore, the overall sustainability remains fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

・Financial contribution to Eco Velez

Eco Velez needs the financial commitment from Mostar to ensure its operation. Nevesinje has been working to rebuild its administrative foundation to a certain extent through

provision of its office and staff. The ex-post evaluation suggested that by starting with consultations, these municipalities should make collective efforts to develop their local communities, including both Nevesinje and Mostar.

・Inter-entity consultation and the coordination

A potential coordinating body for such inter-entity consultation is the Ministry of Foreign Trade and Economic Relations (MOFTER) in the central government of BiH.[9] The ex-post evaluation suggests entity governments and municipal agencies have a meeting to coordinate an inter-entity consultation process. Based on the outcomes, these relevant organizations need to redefine their respective commitment to Eco Velez.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

During the project period, an MOU signed by the related municipalities had mandated their financial contributions to umbrella associations. However, they suspended their assistance shortly after the project completion. Since the project's stakeholders of BiH and Japan had recognized such risks well in advance, they should have taken a preliminary measure to ensure policy commitment or a new MOU that would stipulate municipalities' post-project financial assistance.

To ensure financial sustainability of the government agencies with limited budgets, projects need to take into account their potential weaknesses in earmarking local project costs. Exchanging an MOU at its planning stage may assure their financial commitment. The implementation stage also requires safeguarding against such risk. At the time of the project's completion, a concrete plan for financing should be provided, including the signing of a new memorandum, if necessary.

[9] MOFTER is one of the central government's ministries, and had served as a chair of the Joint Coordinating Committee (JCC) during the project implementation, comprising of entity governments and related agencies.

Republic of Guinea

Project of Improvement of Drinking Water Supply in Conakry/
Project for Improvement of Drinking Water Supply in the Capital[1]

External Evaluator: Machi KANEKO, Earth and Human Corporation

0. Summary

The purposes of the Project were to increase water production at the Yessoulou Water Treatment Plant and to improve water flow of raw water (untreated) and treated water pipelines through such works as construction of a raw water pipeline from the Grandes Chutes Dam to the Yessoulou Water Treatment Plant, extension of the Yessoulou Water Treatment Plant and construction of a treated water pipeline from the Yessoulou Water Treatment Plant to the city of Conakry. As these purpose are relevant to the development policy of Guinea to increase water supply pervasion in the capital city of Conakry and contribute to the urgent task to increase water production in Conakry, the relevance is high.

Concerning effectiveness, the original target for water production volume at the Yessoulou Water Treatment Plant has been achieved. As for the flow rate of treated water pipes, it is believed that the entire treated water pipeline has achieved the expected level of flow rate as a result of increasing the flow rate of the existing 700 mm pipes from the plan. On the other hand, as the flow volume of the 1,100 mm pipes connected to the treated water pipeline developed in the Project is lower than the planned value after the outlet of the water treatment plant, the flow volume is considered to be restricted.

As for impact, while the served population and the water supply volume per person have exceeded the target values set in the original plan partly because of other donors' support, breakage of water pipes has caused water outage in part of the city and damaged houses and properties of the residents. Moreover, unexpected incidents have caused economic losses including compensation payments to residents and repair costs. Judging comprehensively from the above, the implementation of the Project has produced some impact; therefore the effectiveness and impact of the Project is fair.

The period of the Project had to be extended due to deterioration of public security and instability of political situation including a coup d'etat in the country. However, as there were other reasons for the extension of the project period, such as replacement of defective

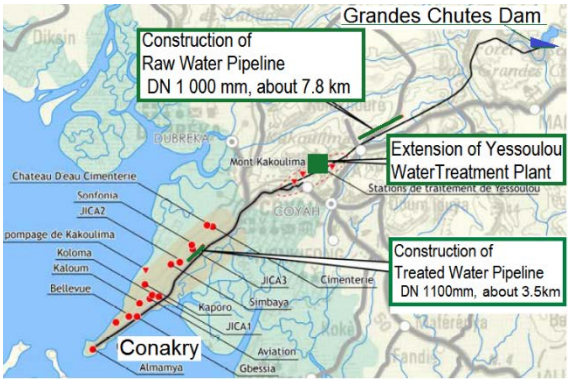
[1] The second phase construction of the Project of Improvement of Drinking Water Supply in Conakry was discontinued in 2007 due to security deterioration in Guinea. Therefore, it was brought forward after a verbal note for extension of E/N was exchanged, and the second phase was completed with some services related to D/D and bidding alone. Later, when security regained stability, recommencement of the suspended construction was requested. To avoid confusion in the future, E/N was signed under a new project name, the Project for Improvement of Drinking Water Supply in the Capital, and the construction was recommenced.

products and extension of a construction period for treated water pipes, the efficiency of the Project is considered fair. Compared with the planned amount of 1,503 million yen, the actual project cost was 835 million yen for Phase I of the Project of Improvement of Drinking Water Supply in Conakry, 30 million yen for Phase II and 700 million yen for the Project for Improvement of Drinking Water Supply in the Capital.

As for sustainability, while the Water Company of Guinea (SEG: Société des Eaux de Guinée) has no issue with its operation and maintenance structure or with operation and maintenance of the Yessoulou Water Treatment Plant and terminal water facilities, it has minor financial issues. On the other hand, the treated water pipes developed in the Project have repeatedly been broken and SEG is not able to prevent recurrence at this point, when causes for breakage are being investigated, though the pipes are operated at a lower pressure. Therefore, SEG considers it appropriate to replace fiberglass reinforced plastic mortar pipes (FRPM pipes) with ductile cast iron pipes. Based on the above, the sustainability of the impacts generated by the project is low.

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

1. Project Description



Project Locations
(Grandes Chutes Dam, Yessoulou Water Treatment Plant and City of Conakry)

3rd Water Treatment Plant in Yessoulou
(Rapid filter)

1.1 Background

In Conakry, the capital city of the Republic of Guinea (hereinafter called Guinea), the World Bank carried out the Conakry Water Supply and Sanitation Project I (1978-1985) and developed a complete series of water supply system from water source development to the connection of water supply pipes. In the subsequent project, the Conakry Water Supply and Sanitation Project II (1989-1997), further water system development was carried out with support from such donors as the World Bank and Japan. In 1989, in response to the recommendation of the World Bank, the government of Guinea established the former Guinea

National Water Company (SONEG: Société Nationale des Eaux de Guinée) for facilities management in the water service sector and the Guinea Water Supply Operation Company (SEEG: Société d'Exploitation des Eaux de Guinée) for the operation of urban water supply services. With the participation of a consortium of foreign companies, SEEG received attention as the first privatized water business unit in West Africa. Privatization of the water company did improve its business management system in terms of capital increase and improvement of technical capabilities. However, when the company tried to increase its revenue by stopping water supply to non-paying users and raising water rates, illegal water connections increased and the situation of water supply got worse. Moreover, at the time of the first contract renewal in the 10th year after the privatization, SONEG did not approve the revision of water rates requested by SEEG and the joint venture with the private sector collapsed with large amounts of debts in 2000.

As a result, in 2000, the government of Guinea consolidated SONEG and SEEG into the Water Company of Guinea (SEG), a public corporation that the government had 100% ownership of, and announced the policy to stop privatization of water services for the time being till the outlook of financial reconstruction became clear. The World Bank, who was implementing the Conakry Water Supply and Sanitation Project III (1997-2004), decided not to provide the planned loans for the construction of raw water(untreated)/treated water pipelines and the extension of the Yessoulou Water Treatment Plant because the privatization of water services was suspended.

Under such circumstances, the Guinean government requested the Japanese government to provide a grant aid to improve water supply in Conakry and it was decided to implement the Project of Improvement of Drinking Water Supply in Conakry with the following contents.

① Construction of a raw water pipeline from the Grandes Chutes Dam to the Yessoulou Water Treatment Plant
② Extension of the Yessoulou Water Treatment Plant (construction of the 3rd plant)
③ Construction of treated water pipeline from the Yessoulou Water Treatment Plant to the city of Conakry
④ Procurement of equipment and materials to detect and repair water leakage

1.2 Project Outline

The Project aims to increase water production through such measures as development of raw water/treated water pipelines and extension of a water treatment plant for the purpose of supplying safe drinking water in a stable manner to the residents of Conakry, where water supply is not catching up with the increasing water demand caused by the population growth.

Grant Limit / Actual Grant Amount		- Project of Improvement of Drinking Water Supply in Conakry Phase I: 860 million yen (Phase II: 675 million yen) - Project for Improvement of Drinking Water Supply in the Capital 745 million yen
Exchange of Notes Date		- Project of Improvement of Drinking Water Supply in Conakry Phase I: June 2005 (Phase II: July 2005 [Verbal note for extension exchanged in March 2007]) - Project for Improvement of Drinking Water Supply in the Capital November 2007
Implementing Organization		Water Company of Guinea (SEG) under the Ministry of Energy and Water Resources
Project Completion Date		October 2009
Practitioners	Main Contractor	- Project of Improvement of Drinking Water Supply in Conakry (Phase I): Kitano Construction Corp. - Project for Improvement of Drinking Water Supply in the Capital: Tone Engineering Corporation (Former Urban Tone)
	Main Consultants	[Basic Design] Pacific Consultants International Co., Ltd. [Implementation review study and project works] Tokyo Engineering Consultants Co., Ltd.
Basic Design		- Basic design study Oct 2004 – Mar 2005 - Implementation review study Aug 2005 – Dec 2005 - 2nd implementation review study Jun 2007 – Nov 2007
Related Projects		[Grant Aid] - Project for the Improvement of Water Supply Facilities in the Eastern Part of Conakry (1990) - Project for Drinking Water Supply in the Eastern Part of Conakry (1993-1995) The above-listed two grand aid projects were implemented within the framework of the 3rd Water Supply Project. [Other donors] Based on the Conakry Water Supply Master Plan (1997), formulated by the World Bank in the Conakry Water Supply and Sanitation Project II (1989-1997), the World Bank and France provided aids as major donors for the development of water supply facilities.

2. Outline of the Evaluation Study

2.1 External Evaluator

Machi KANEKO, Earth and Human Corporation

2.2 Duration of Evaluation Study

The External Evaluator performed an evaluation study as follows in the course of this ex-post evaluation:

Duration of the Study: September 2012 - February 2014

Local survey: January 24 – February 5, 2013

2.3 Constraints during the Evaluation Study

The second local survey was not conducted as originally planned because it overlapped with the consultant's survey concerning breakage of water pipes. Therefore, the evaluation of the operation and maintenance status of the facilities constructed in the Project is based on the information provided by the Guinean side and the result of on-site inspection during the above survey period.

3. Results of the Evaluation (Overall Rating: D[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance to the Development Plan of Guinea

The national development plans of Guinea at the time of the planning stage of the Project were the Vision 2010, which defined social and economic development strategies till 2010, and the Guinea Poverty Reduction Strategy Paper (PRSP) 2002, which was developed in 2002 under the Vision 2010. The PRSP 2002 positioned the water supply, education and health sectors as priority areas for basic social services and set numerical targets for the water supply sector of raising the drinking water access rate (rate of population with access to water supply) to 90% at the national level and 95% in Conakry by 2010. Another numerical target was to increase the water supply per person from 47 liters/day in 2000 to 63 liters/day in 2010.

The targets of PRST 2002 were not achieved in the target year of 2010 because of the lack of funding for water supply development caused by the worsening domestic situation from 2007 to 2010. Therefore, in the Poverty Reduction Strategy Paper developed in 2011 (PRSP 2011-12), the Guinean government positioned the improvement of access to basic social services (health and hygiene, education, drinking water, sewage and electricity) as one of the priority tasks and gave priority especially to the increase of the access rate to drinking water

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

[3] ③: High, ②: Fair, ①: Low

and the water supply volume in Conakry.

The numerical target was to increase the access rate in Conakry to 86% (water supply per person: 63 liters/day) in the new target year of 2015, extended from 2010.

The purposes of the Project are to increase water production at a treatment plant and to construct treated water pipes that convey water produced at the plant to the water conveyance and distribution system in the city for the purpose of supplying safe drinking water in a stable manner to the residents of Conakry. Therefore, the Project is relevant to the development policy of Guinea.

3.1.2 Relevance to the Development Needs of Guinea

Guinea has such a high precipitation that it is called a “water tower of West Africa (le château d’eau de l’Afrique de l’Ouest)”. However, facilities for stable supply of safe drinking water are not well developed and water shortage is hindering economic growth especially in urban areas where the population is intensely increasing.

The water system in the capital city of Conakry takes water from the Grandes Chutes Dam, spring water at the foot of Mt. Kakoulima and groundwater in the city. Raw water from the Grandes Chutes Dam is treated at the Yessoulou Water Treatment Plant and distributed to the city of Conakry.

Accounting for 85% of all the water distributed in the city at the time of the ex-ante evaluation of the Project, water production at the Yessoulou Water Treatment Plant played an important role as drinking water for the residents of Conakry. Although the water supply pervasion was about 82%, the quantity of water supply was not enough to meet the increasing demand caused by the population concentration in the capital and the water supply was imbalanced. There was only a limited number of areas where water was supplied 24 hours and there were still many areas where water was supplied only for a few hours a day or was not supplied at all although the distribution pipeline had been developed. Thus increase of water production including development of new water sources was urgently required.

Although the total water production was said to be 96,000 m^3/day, the billable water quantity, i.e., accounted-for water, was only around 36,000 m^3/day. With about 26,000 m^3/day unbillable due to lack of meters and water theft and another about 34,000 m^3/day lost due to leakage, the rate of unaccounted-for water was very high.

Under such circumstances, the World Bank established the Conakry Water Supply Master Plan (1997) in the Conakry Water Supply Project II, which started in 1989. The master plan set the goal to raise the water supply pervasion in Conakry from 65% in 1996 to 80% by 2005 and presented a development plan for the “urgent phase” for 1997-2007 and the “2nd phase” up to 2005.

7 projects were planned for the “urgent phase” and 4 of them were carried out as the Conakry Water Supply Project III with loans from the World Bank. However, the privatization of water services proposed by the World Bank failed and the Guinean government decided to suspend privatization till the outlook of financial reconstruction became clear (2000). The World Bank cancelled the planned loans for the remaining 3 projects due to the discontinuation of water service privatization.

In light of the above, as the situation where water supply did not catch up with the increasing water demand did not improve, the Guinean government requested the Japanese government to provide a grant aid for the 3 remaining projects out of the 7 projects for the urgent phase. In response to the request, the Japanese government carried out basic design study and decided that, in order to supply safe water to the residents of Conakry, it would be necessary to increase water supply by developing raw water/treated water pipelines and extending water treatment facilities through the 3 projects. The following table shows the contents and schedule of the urgent phase projects.

Table 1 Summary of “Urgent Phase” Projects included in the World Bank’s Master Plan

	Project contents	Construction cost* (K USD)	Implementing body
1	Construction of raw water pipelines (100 m and 8 km)	4,710	Not implemented with funds from the World Bank, carried out by the Japanese government upon request
2	Construction of the 3rd Yessoulou Water Treatment Plant Water treatment capacity 1,050 L/sec → 1,500 L/sec	2,800	
3	Construction of treated water pipelines (1,100 m and 3.5 km)	2,112	
4	Construction of storage reservoirs and an elevated water tank Sonfonia distributing reservoir (3,000 m^3) Cimenterie distributing reservoir (3,000 m^3) + elevated water tank (1,000 m^3)	4,012	Carried out in the Conakry Water Supply and Sanitation Project III with funds from the World Bank
5	Development of treated water pipelines Sonfonia (17.35 km) Cimenterie (1.20 km)	5,515	
6	Development of a water distribution network 2nd piping: 107 km 3rd piping: 290 km No. of households to be connected: 33,000 Common faucet: 64 locations	9,671	
7	Water leakage investigation and repair campaign Effective water ratio 60% → 70% by 2000	1,600	

* Construction cost is based on the estimation in the Master Plan (1996). Design administration cost, inflation and foreign exchange fluctuations are not included.
Ref: 2nd Implementation Review Study Report (2007)

When we checked the progress of the Conakry Water Supply Master Plan in this ex-post evaluation, we found that, while the development works for the urgent phase had been completed with the cooperation of Japan and the World Bank, the second phase[4] had not been implemented at all for such reasons as the worsened domestic situation. However, the Conakry Water Supply Master Plan would still be effective till 2010 and was considered as an effective plan at the time of planning and completion of the Project.

The current plan for Conakry water supply development is the Plan for the Enhancement of Capabilities for the Production, Conveyance, Treatment and Storage of Drinking Water in Conakry (2013-2016), which is considered as the Conakry Water Supply Project IV and supported by the World Bank and other donors[5]. Its numerical goals are 100% access to drinking water in Conakry and 70 liters of water supply per person per day in the final target year of 2030. However, the target area for these goals is from PK0 to PK50, larger than the original plan of the Project. In the planning stage of the Project, the area for water supply was from PK0 to PK30, according to the administrative division of the city of Conakry. Later, as population increased and urbanization and industrialization progressed rapidly in the boom neighboring prefectures of Dubréka and Coyah from around 2007, the target area for the water supply project in Conakry was expanded to PK0-PK50, including these two prefectures.

Table 2 below shows the administrative division of the city of Conakry (PK0-PK30) and Table 3 shows population, served population and access rate to drinking water in the current water supply area (PK0-PK50). These tables show that the access rate of the target area set at the time of the project planning reached 80% by the time of the ex-post evaluation. However, the access rate of the current water supply area including two neighboring cities is 46%. It is important to further increase water production.

[4] Summary of the second phase projects: improvement of a water tank and pipes in Kagbelen District, improvement of the 2nd reservoir in Simbaya, installation of 16,000 intake pipes, development of common water faucets in 32 locations, etc., the total project cost 27,679,000 USD

[5] The World Bank plans to implement the Plan for the Improvement of Treated Water Conveyance to Conakry and Water Distribution in the Districts of Cimenterie and Kobaya-Plateau in 2014-2015 in the eastern zone of Conakry from PK26 to PK50 with a budget of 20,000,000 USD.

Table 2 Water Supply Area according to the Administrative Division of Conakry (PK0 – PK30)

Year	Total population (PK0-PK30)	Served population	Access rate to drinking water
2007	1,729,706	1,245,389	72
2008	1,781,597	1,318,382	74
2009	1,835,000	1,431,300	78
2010	1,890,050	1,493,140	79
2011	1,946,752	1,615,804	83
2012	2,005,155	1,604,124	80

Table 3 Current Water Supply Area (PK0 – PK50)

Year	Total population (PK0-PK50)	Served population	Access rate to drinking water
2007	3,298,092	1,353,389	41
2008	3,397,035	1,430,702	42
2009	3,498,946	1,553,387	44
2010	3,603,914	1,653,597	46
2011	3,712,036	1,777,804	48
2012	3,823,393	1,776,924	46

Ref: Data from SEG

As stated above, the Project was to contribute to the increase of water production in Conakry, which was urgently required at the time of the project planning. Therefore, it was relevant to the development needs of Guinea. As for the situation of water supply in Conakry, considering population concentration in urban areas and rapidly-progressing urbanization and industrialization in the city and its neighboring cities, increase of water production is still relevant to the development needs of Guinea at the time of ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

At the time of the project planning, Japan set a policy to provide aids mainly in the field of basic living for the purpose of supporting Guinea's efforts for democratization and economic reform. In line with the policy, Japan provided grant aids mainly in the fields of basic living including food, water supply and education as well as loan assistance in the field of transportation etc.

In Tokyo International Conference on African Development (TICAD) III of 2003, the water supply sector in Africa was taken up as a priority area for support to Africa and the Project was considered as part of this support.

Thus the Project supported the water supply sector in Guinea and therefore was relevant to the Japanese aid policy.

In light of the above, this Project has been highly relevant to the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness[6] (Rating: ②)

The purposes of the Project were to "increase water production at a treatment plant and to construct treated water pipelines that convey water produced at the plant to the water conveyance and distribution system in the city for the purpose of supplying safe drinking water in a stable manner to the residents of Conakry". Therefore, for the evaluation of effectiveness and impact, the quantity of water produced at the Yessoulou Water Treatment Plant and the water flow rate of the water pipes should be examined and the access to safe water for the residents downstream of the water pipes developed in the Project should also be taken into consideration.

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Water Production at the Yessoulou Water Treatment Plant

Thanks to the third plant developed in the Project, the quantity of water produced at the Yessoulou Water Treatment Plant has reached the target, 123,000 m^3/day as shown in the following table.

As the existing first plant (constructed in 1964 with the support of KfW) is getting old, repair work is being planned with loans from the Islamic Development Bank. The second plant (constructed in 1994 with the support of the World Bank) is in operation without problem.

Table 4 Water Production at Yessoulou Water Treatment Plant

Indicator	Target (2009)	Actual production (2012)
Water production at Yessoulou Water Treatment Plant	1st plant: 49,000m^3/day 2nd plant: 37,000m^3/day 3rd plant: 37,000m^3/day Total: 123,000m^3/day	1st plant: 49,000m^3/day 2nd plant: 37,000m^3/day 3rd plant: 37,000m^3/day Total: 123,000m^3/day

Note: The quantity of water treated at the Yessoulou Water Treatment Plant is 1.50 m^3/sec, out of which, the portion increased after the extension work of the Project is 0.45 m^3/sec.

Ref: Data from SEG

The following Table 5 shows the total quantity of water produced by SEG for the city of Conakry, and the actual production in 2012 was 164,000 m^3/day. As the water quantity required for the expanded water supply area (PK0-PK50) is calculated as 286,000 m^3/day, there is still a shortage of 122,000 m^3/day. However, compared with the total water production at the time of the project planning, 97,300 m^3/day, the water production has increased by 169%. SEG continues measures to increase water production after the completion of the Project in order to meet the rapidly increasing water demand in Conakry and it is highly

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

appreciated.

Table 5 Water Production by SEG for Conakry and Calculation of Water Shortage

Water source	Water production in 2012
Grandes Chutes Dam (Yessoulou Water Treatment Plant)*	123,000 m^3/day
Lake Sonfonia (Sonfonia Water Treatment Plant)**	10,000 m^3/day
Kakoulima Spring	5,700 m^3/day
Groundwater	25,300 m^3/day
(1) Maximum water production by SEG	164,000 m^3/day
(2) Required water quantity (PK0-PK50)	286,000 m^3/day
(3) Shortage (1)-(2)	▲122,000 m^3/day

Ref: Data from SEG

Notes:

* Raw water from the Grandes Chutes Dam is conveyed to the Yessoulou Water Treatment Plant through a water pipeline (about 45 km). The water pipeline consists of two systems – an old system of 800 mm diameter and a new system of 1,000 mm diameter. The Project constructed the unfinished portion (7.8 km) of the new system.

** The Sonfonia Water Treatment Plant was built by Israel company (Global CST) with the fund of Guinea government.

(2) Water Flow of Raw Water/Treated Water Pipes

In the Implementation Review Study Report of the Project (2005), in addition to the increase of water production at the Yessoulou Water Treatment Plant (increased by 450 liters/sec through the Project) described in the previous section, improvement of the water flow rate from 1.05 m^3/second[7] to 1.50 m^3/second[8] was also expected based on the result of hydraulic analysis as a positive impact of the Project through the development of a dual water pipe system for both raw water and treated water. At the time of the planning of the Project, in some areas including Sonfonia, Cimenterie, there was no water distribution due to shortage of water supply although there was a water distribution network. Another expected positive impact of the Project was distribution of the additional portion of water in these areas via the raw water/ treated water pipelines developed in the Project.

According to the result of defect inspection conducted from September to October 2010, the 3rd Yessoulou Water Treatment Plant and raw water/treated water pipelines constructed in

[7] According to the Basic Design Report of the Project (2005), the raw water pipeline was partially designed as a single line and the planned flow rate was 1.05 m^3/sec.

[8] According to the Basic Design Report of the Project (2005), the result of hydraulic analysis confirmed that, after the Project developed the 7.8 km unfinished section of the raw water pipeline from the Grandes Chutes Dam to the Yessoulou Water Treatment Plant, the flow rate of the entire pipeline would be 1.50 m^3/sec. Moreover, the result of hydraulic analysis based on 1.50 m^3/sec water flow from the 3rd water treatment plant showed that the flow rate of the entire pipeline would be 1.50 m^3/sec if water pipes of 1,100 mm diameter were used for new construction.

the Project, including attached equipment, were properly operated and managed. It was also confirmed that no problematic defect was found. However, when we checked with SEG about the actual water flow of the raw water/treated water pipelines, they replied that the water flow rate of the treated water pipelines (about 3.5 km, 1,100 mm in diameter) developed in the Project was lower than the target rate while the flow rate of the raw water pipelines had achieved the original target of 1.50 m^3/sec.

Table 6 Water Flow Rate of Raw Water/Treated Water Pipelines in the Target Section of the Project

Indicator	Actual water flow at the time of project planning (2005)	Target (2009)	Actual (2012)
Water flow rate of the raw water pipeline in the target section *1 (Checked in Feb. 2013)	1.05 m^3/sec	1.50 m^3/sec	1.50 m^3/sec
Water flow rate of the treated water pipeline around the outlet of the water treatment plant *2 (Checked in Feb. 2013)	Total: 1.05 m^3/sec (Breakdown) 700mm pipe: 0.245m^3/sec 1,100mm pipe: 0.805m^3/sec	Total: 1.50 m^3/sec (Breakdown) 700mm pipe: 0.350m^3/sec 1,100mm pipe: 1.150m^3/sec	Exact measurements unknown

Ref: Data from SEG

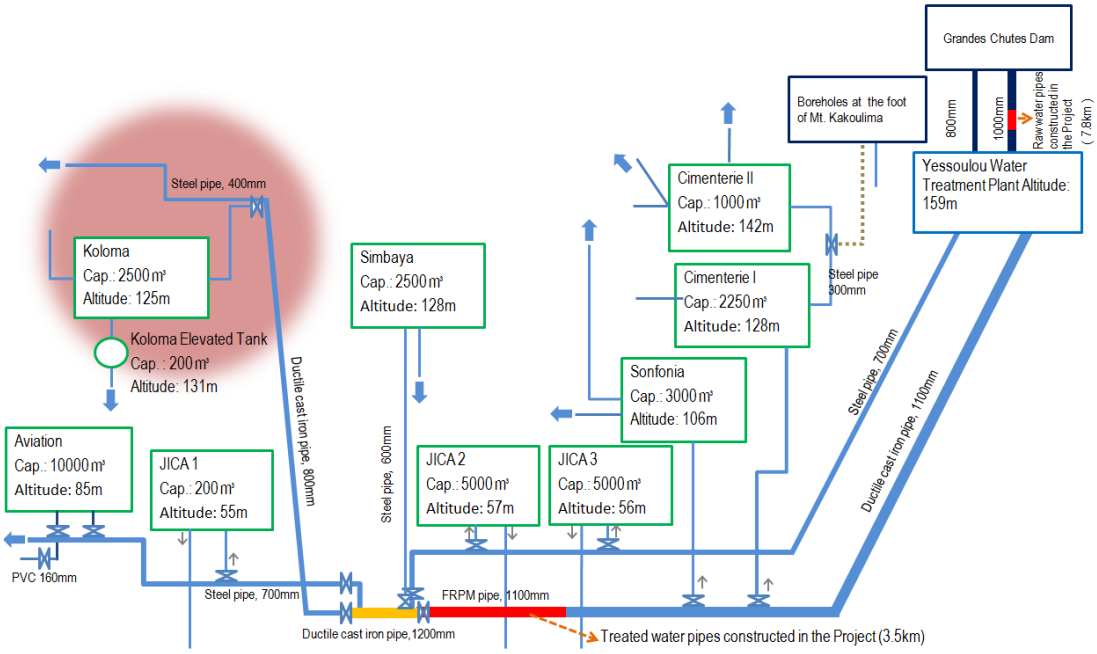
Note 1: Raw water pipes are used to convey raw water. The Project aimed at improving the raw water flow rate by developing the 7.8 km unfinished section of the raw water pipeline from the Grandes Chutes Dam to the Yessoulou Water Treatment Plant.

Note 2: Treated water pipes are used to send treated water from a water treatment plant to a water distribution station. The Project aimed at improving the treated water (=safe drinking water) flow rate by developing the 3.5 km unfinished section of the treated water pipeline from the Yessoulou Water Treatment Plant to the water conveyance/distribution system in Conakry.

According to the explanation of SEG, because the treated water pipes developed in the Project was broken four times after the defect inspection of September and October 2010 till July 2012, the flow rate has been restricted as a means to prevent recurrence. When the treated water pipeline had breakage, they also installed gate valves of 1,000 mm diameter at the both ends of the pipeline to prevent breakage and water leakage of the pipeline and make it easy to conduct repair works.

Moreover, because of the restricted water flow of the treated water pipes, water supply has to be restricted in the areas where flow can be easily restricted, including Koloma, where a distribution basin is located downstream of the water pipes developed by the Project. (See Figure 1 below.) SEG also takes a measure to increase the flow of the existing treated water pipes (DN 700 mm, steel, constructed in 1964) parallel to the treated water pipes developed in the Project, but this is not a fundamental measure against the increase of water outage time

as the water pipes are old and may leak if the flow rate becomes too high.



Ref: SEG Water Pipelines (2009)

Figure 1 Schematic Drawing of Raw Water Pipes, Treated Water Pipes and Distribution Basins (a portion)

When we asked SEG for information to check the latest status in November 2013, they replied that the current production rate (water production volume/raw water volume) at the Yessoulou Water Treatment Plant is 95% and the measurements at the outlet of a water treatment plant show that the flow rate for the entire pipeline is 1.42 m^3/sec (breakdown: 0.57 m^3/sec for 700 mm pipes, 0.85 m^3/sec for 1,100 mm pipes). Based on the information above, the flow rate of the entire pipeline seems to be maintained at 1.42 m^3/sec by setting the flow rate of the 700 mm pipes higher than the planned rate of 0.35 m^3/sec at the outlet of a treatment plant. On the other hand, the flow rate of the 1,100 pipes connected to the treated water pipeline developed by the Project is lower than the planned rate of 1.15 m^3/sec at the outlet of the water treatment plant.

3.2.2 Qualitative Effects

As the leakage detectors provided by the Project are kept at SEG's Aviation Branch and various sensors and flow meters are used for daily check of the pipelines and leakage detection, SEG's capabilities for leakage detection seem to have improved. However, portable sonic flow meters are not used because the batteries are not chargeable any more.

3.3 Impact

3.3.1 Intended Impacts

In addition to the urgent phase improvement projects carried out according to the World Bank's Conakry Water Supply Master Plan, other donors including France and USA also provided support for water service development in Conakry. Therefore, for the evaluation of the achievement of each indicator that was expected to generate impact, we noted that the Project was not the only contributor to the impacts and checked the status of assistance from other donors as much as possible. The result of the beneficiary survey of the residents who had contract with SEG was also used for the analysis to check the current status of water supply service although we were not able to single out the impacts of the Project.

(1) Water Distribution to the Areas Where It Used to Be Difficult

In the Basic Design Report (2004) and the Implementation Review Report (2005) of the Project, one of the expected impacts of the Project was water distribution to Sonfonia, Cimenterie and other areas where there was a water distribution network but there was little water distribution due to shortage of water supply.

Table 7 below is SEG's water supply plan for each water distribution area of Conakry, showing disparities within the city – 24-hour water supply in 4 areas, 10-hour water supply in 3 areas and no water supply in 2 areas[9]. The results of a site inspection and a beneficiary survey (to be described) indicate that even the 4 areas with 24-hour water supply experience water outage and water supply restriction and there are disparities within the same area. Such situation was caused by severe shortage of water production volume in addition to unexpected population increase in Conakry and surrounding cities as shown in Table 2 and Table 3. (Water deficit: 122,000 m^3/day)

Kagbelen do not have water supply as there are no storage reservoirs and water pipes. In the remaining 3 areas where 10-hour water supply is planned, water is supplied 1-3 times a week although there is restriction in number of days and time of water supply. However, according to SEG, in Koloma, located in the north, water outage increased after the completion of the Project due to restriction of water flow volume of the pipes installed in the Project. About 65% of the customers who responded to the beneficiary survey in Koloma replied that there was no water supply. It was confirmed that appropriate water supply service is not provided to the customers.

[9] Areas with no water supply due to lack of water supply quantity and underdevelopment of water pipes, storage tanks, etc. Residents in the areas get drinking water from wells and common faucets in other areas.

Table 7　Water Supply Plan in Each Water Distribution Area of Conakry (January 2013)

Water distribution area	Average number of hours of water supply per day	Number of days of water supply per year
1. Kaloum	10	156
2. Koloma	10	156
3. Simbaya	10	156
4. Sonfonia	24	364
5. Kagbelen	0	0
6. Aviation	24	364
7. Belle-vue	24	364
8. JICA (1, 2, 3)	24	364
9. Cimenterie	0	0

Ref: Data from SEG

Note 1: The table shows a water supply plan, not the actual result.

Note 2: “8. JICA (1, 2, 3)” in the table are the storage tanks developed with the grant aid of the Project for the Improvement of Water Supply Facilities in the Eastern Part of Conakry (FY1990) and the grand aid of the Project for Drinking Water Supply in the Eastern Part of Conakry (FY1993-1995), and they are called JICA 1, JICA 2 and JICA 3.

Note 3: There are no storage reservoirs and water pipes in Kagbelen.

Note 4: At the time of January 2013, water supply service wasn't yet begun though there were water storage reservoirs and water pipes in Cimenterie (the source of water is the boreholes at the foot of Mt. Kakoulima). However, according to SEG, watering service to Cimenterie is begun since August 15th, 2013.

Note 5: Operation is stopped once a year (for a day) for inspection and cleaning of water storage tanks.

The water supply status in Sonfonia, where 24-hour water supply is planned, has improved according to the beneficiary survey mostly because the Sonfonia Water Treatment Plant was constructed with the support of Israel. For Cimenterie, where currently there is no water service, there is a plan to develop 12 wells near Mt. Kakoulima to increase water production and water supply is expected to start by the end of 2013. This project is funded by the Guinean government (about 7 million euros) and SEG covers part of the budget (200,000 euros for installation of electric cables).

In ex-post evaluation, a beneficiary survey was conducted in the 5 areas (25 households in each area, a total of 125 households) of Koloma, Simbaya, Sonfonia, Aviation and JICA, selected from the water distribution areas listed in Table 7. As shown in Table 8, 37% were very or somewhat satisfied and 50% were somewhat or very unsatisfied. There were more unsatisfied respondents than satisfied ones. This trend varies in different areas. While Koloma and Simbaya have more dissatisfied respondents, Sonfonia and JICA have more satisfied respondents. In Aviation, it seems that the water distribution status is different in different locations within the area.

Table 8 Water Distribution Areas and Level of Satisfaction with the Hours of Water Supply

(Unit: No. of households)

Level of satisfaction / Water distribution area	Very satisfied	Somewhat satisfied	Neither satisfied nor dissatisfied	Somewhat dissatisfied	Very dissatisfied	Total
2 Koloma	0	2	0	**5**	**18**	25
3 Simbaya	0	0	3	**3**	**19**	25
4 Sonfonia	**3**	**17**	4	1	0	25
6 Aviation	2	6	4	6	7	25
8 JICA (1,2, 3)	**9**	**7**	6	2	1	25
Total	14 (11.2%)	32 (25.6%)	17 (13.6%)	17 (13.6%)	45 (36.0%)	125 (100.0%)

Ref: Data from the beneficiary survey

The Table 9 below shows the number of water service hours before the start of the Project and at the present time. The percentage of the households who found the service hours decreased is very high in Koloma. When we checked with SEG for the reason, they said that the number of service hours decreased because water supply is restricted in the northern region after the end of the treated water pipeline as a means of reducing pressure of the pipeline developed by the Project. On the other hand, in Sonfonia and JICA areas, the number of service hours has increased and the water supply status has improved. However, such improvement in Sonfonia is mostly because of the construction of the Sonfonia Water Treatment Plant.

Table 9 Water Distribution Areas and Changes in the Number of Water Service Hours

(Unit: No. of households)

Change / Water distribution area	Significantly increased	Somewhat increased	Neither increased or decreased	Somewhat decreased	Significantly decreased	Total
2 Koloma	1	3	3	**16**	**2**	25
3 Simbaya	4	4	8	**2**	**7**	25
4 Sonfonia	0	**16**	8	1	0	25
6 Aviation	1	3	9	9	3	25
8 JICA(1,2, 3)	**13**	0	6	5	1	25
Total	19 (15.2%)	26 (20.8%)	34 (27.2%)	33 (26.4%)	13 (10.4%)	125 (100.0%)

Ref: Data from the beneficiary survey

(2) Served Population, Water Supply Pervasion and Amount of Water Supply per Person

In the 2nd Implementation Review Study Report of the Project (2007), the population of the service areas of 2009 (target year) was estimated at 1,835,000, based on the census data from the Ministry of Planning. As for the water supply pervasion, as the distribution network

was not aggressively expanded in the situation where there was not enough water supply, the pervasion was not expected to increase in 2009 and the target was set at 82%, which was the actual pervasion of 2007. As for the amount of water supply per person, it was considered realistic to set the water usage basic unit of 2009 at the same level as the 2003 target defined in PRSP2002.

As shown in Table 2, at the time of ex-post evaluation, the served population in the target area of the original plan was 1.604 million, the pervasion was 80% and the amount of water supply per person was 62 liters/day. As shown in Table 10 below, the actual served population and the actual amount of water supply per person exceeded the targets.

Table 10 Target Achievement Status for Served Population, Water Supply Pervasion and Amount of Water Supply per Person

Item \ Target year	Target (2009)	Actual result (2012) (PK0 – PK30)
Population of the areas	1,835,000	2,005,000
Served population	1,505,000	1,604,000
Water supply pervasion	82%	80%
Amount of water supply per person	52 liters/day	62 liters/day

Ref: Data from SEG

Thanks to the increase of water production by 37,000 m^3/day through the implementation of the Project as well as the positive impact of the World Bank's emergency phase projects and other donors' support (development of water distribution facilities, water treatment plants, etc.), the numbers have generally improved although not all the indicators have reached the target level.

(3) Amount and Rate of Unaccounted-for Water

As described in the section of relevance, when the Project was planned, out of the total water production (96,000 m^3/day), the amount of accounted-for water for which water bills could be issued was around 36,000 m^3/day and the percentage of unaccounted-for water caused by lack of meters, water theft, water leak, etc. was as high as over 60%.

In such situation, the Project aimed at reducing unaccounted-for water through the provision of leak investigation devices and technical guidance. As shown in Table 11 below, the rate of unaccounted water in 2009 was 29% (44,226 m^3/day), much lower than the target rate of 40%, showing significant improvement from the planning stage of the Project. Behind this was aggressive support of other donors based on the Plan for Improvement of Technical Efficiency and Commercial Sales (PACT: Projet d'Amélioration des Critères Technico-Commerciaux). Specifically, from 2005 to 2011, the Investment in France Agency (AFD: Agence Française de Développement) and the U.S. Agency for International Development

(USAID) supported PACT activities and carried out activities to enlighten residents and raise awareness among consumers for the purpose of getting rid of illegal connections and nonpayment. AFD still supports PACT activities.

Table 11 Changes in Rate and Amount of Unaccounted-for Water

Item \ Year	2009	2010	2011	2012
Rate of unaccounted-for water	46%	31%	29%	29%
Amount of unaccounted-for water (m^3/day)	64,032	45,539	44,051	44,266
Annual water production (1,000 m^3)	n/a	52,973	53,778	53,673
Unaccounted-for water production included in the above (1,000 m^3)	n/a	36,787	38,090	37,853
Collection rate	n/a	69%	71%	71%

Ref: Data from SEG

The leak investigation devices provided through the Project are still used by SEG's leak detection team. Under the department established to promote PACT activities, the team carries out activities to reduce the unaccounted-for water rate together with technicians and sales personnel for leak investigation devices, meter checkers, etc.

On the other hand, water that is not distributed to the downstream northern region due to reducing pressure of the treated water pipeline is instead distributed to other areas and generates revenue. However, SEG says that an increasing number of residents are dissatisfied with the degraded service because water outage has increased and there is a concern that nonpayment might increase the amount of unaccounted-for water.

(4) Water Quality

As shown in Table 12 below, coliform bacterium contained in raw water are properly treated in water treatment plants and the target of 0 MPN/100 ml (after water treatment) has been achieved. During an inspection visit to the lab in the Yessoulou Water Treatment Plant, chemicals and devices were properly managed and consumables such as medical substances were stocked. According to the person in charge of the lab, they conduct inspection three times a day in a dry season and five times a day in a rainy season when turbidity is higher.

When we checked increase and decrease in waterborne disease in households through the beneficiary survey, 74% respondents said it decreased. As a result of a simple water quality test at water faucets in end beneficiaries' houses, no coliform bacterium were found.

Table 12 Result of Water Quality Test at the Yessoulou Water Treatment Plant

	Coliform bacterium (MPN/100 ml)	
	Raw water	Treated water
1st Water Treatment Plant		
Average	36	0
Highest	81	0
Lowest	5	0
2nd Water Treatment Plant		
Average	36	0
Highest	81	0
Lowest	5	0
3rd Water Treatment Plant		
Average	36	0
Highest	81	0
Lowest	5	0

Ref: Data from SEG
Note: Test result of December 2012

3.3.2 Other Positive and Negative Impacts

(1) Impact on the natural environment

As a result of checking with the documents provided by JICA and the concerned personnel of the Guinean side, no impact on the natural environment was found.

(2) Land Acquisition and Resettlement

At the time of the Basic Design Study (2004), it was decided that the treated water pipeline would go around the section of about 400 meters near the Anta Market that was illegally occupied by nearby residents on the planned route. However, three years later, when the construction started in November 2007, eviction had been completed. Therefore, the detour plan was changed and the distance of the treated water pipeline was reduced. During this local survey, we checked the eviction status and found an illegal building in the construction area where no residents had existed for the pipeline at the time of construction commencement. Therefore, the governments of the City of Conakry, Matoto Commune and Enta District[10] cooperatively negotiated with the owner of the building for eviction. As a result, the owner collected materials he needed and removed and disposed of the remaining items.

[10] Conakry Special City consists of 5 communes – Matoto, Ratoma, Dixinn, Kaloum and Matam. Each commune consists of multiple quartiers (districts). Conakry has about 100 quartiers.

(3) Negative Impact

The treated water pipeline constructed in the Project experienced breakage 7 times from June 20, 2011 to the end of May 2013. According to SEG, the breakage caused water outage in some areas in Conakry. In about a year from April 2012 to May 2013, the total period of water outage was equivalent to about a month. SEG also paid compensation to residents for damage on houses, shops and properties and also covered the cost for a total of seven remedial works. Table 13 shows the details of the seven breakage cases.

Table 13 Breakage of the Treated Water Pipeline Constructed in the Project

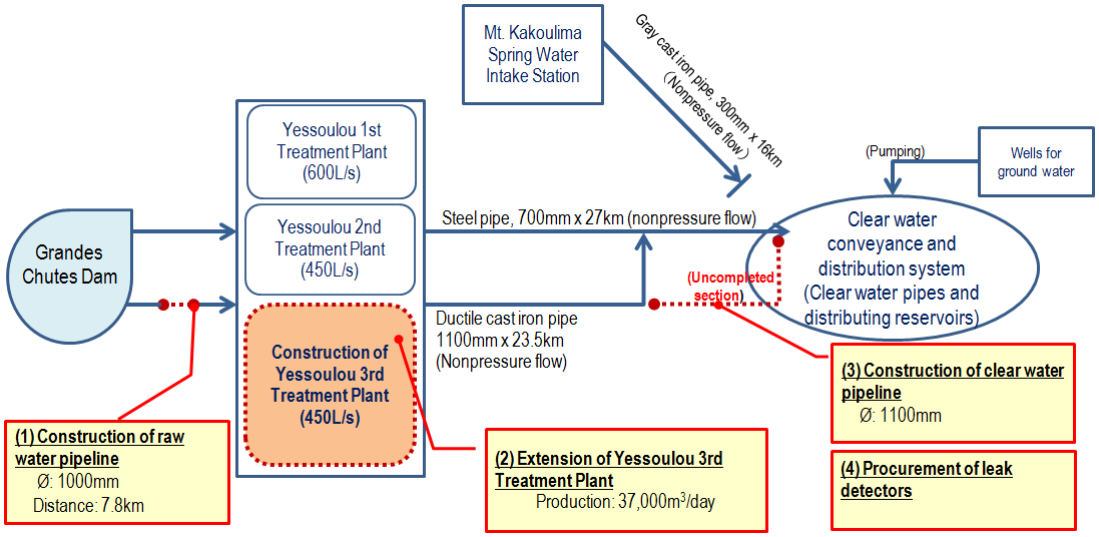
Location	Date	Damage by breakage
(1) KISSOSSO	June 20, 2011	Water spewed around and a woman was injured.
(2) SANGOYA	June 24, 2011	Part of the pipeline rose up.
(3) SANGOYA	May 21, 2012	Breakage occurred in the same area as (2). 6-meter FRPM pipes were replaced with ductile pipes to prevent recurrence. Gate valves were installed at the starting and ending points of the treated water pipeline to make it easier to reduce pressure of or stop water conveyance.
(4) SANGOYA	May 30, 2012	Water flew into houses.
(5) KISSOSSO	December 25, 2012	As the breakage occurred near the Kissosso Market, shops, merchandise, properties of residents, etc. were damaged.
(6) KISSOSSO/ENTA	May 4, 2013	Houses and Supports of 700 mm pipes were damaged.
(7) KISSOSSO	May 30, 2013	Houses were damaged. According to information from SEG, a woman was injured when hit by a rock carried by water and an infant held by the woman was killed.
The total amount of compensation for damage on residents' houses, shops and properties caused by the breakage cases from (1) to (4) was about 391,000,000 GNF, and the cost for remedial works covered by SEG was about 499,000,000 GNF.		

Ref: Date from interviews with SEG, and information from JICA

Concerning the effectiveness, the target for water production at the Yessoulou Water Treatment Plant defined in the original plan has been achieved. It is also believed that the flow rate of the entire pipelines is at the expected level because the flow rate of the 700 mm pipe has been increased from the plan. On the other hand, as the flow volume of the 1,100 mm pipes connected to the treated water pipelines developed in the Project is lower than the plan from the outlet of water treatment plants, the flow volume seems to be restricted. As for impact, while the served population and the water supply volume per person have exceeded the target values set in the original plan partly because of other donors' support, breakage of water pipes has caused water outage in part of the city and damaged houses and properties of the residents. Moreover, unexpected incidents have caused economic losses including compensation payments to residents and repair costs. Judging comprehensively from the above, this project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs



Note: shows the contents of the support provided by the Project.

Figure 2 Conceptual Diagram of the Raw Water/Treated Water Pipelines and Contents of Support Provided by the Project

As shown in Figure 2 above, the outputs from the Japanese sides are (1) construction of a raw water pipeline, (2) extension of the 3rd Yessoulou Water Treatment Plant, (3) construction of a treated water pipeline and (4) procurement of leak investigation devices. Table 14 shows the comparison between the plan and the actual result. Despite such changes as a) change of the type of pipes for the treated water pipeline (buried part, from ductile cast iron pipe to fiberglass reinforced plastic mortar pipes (FRPM pipes)), b) reduction of distance of the treated water pipeline, c) change of the number of bridge piers and length of a conduit bridge, etc., and d) change of numbers of locations with air choke valve chambers and sludge valves, etc., it is believed that there was no change in the scale of the support.

Change	Reason for change
a) Change of the type of pipes for the treated water pipeline	The Basic Design Study Report (2005) stated that the material of pipes would basically be ductile cast iron because the existing treated water pipelines consisted of ductile cast iron pipes. However, for the following reasons, the type of the pipes was changed to fiberglass reinforced plastic mortar pipe (FRPM pipe). (Reasons) As the currency exchange rate changed from 144.81 yen/euro at the time of detailed design (September 2006) to 154.64 yen/euro as of November of the year, it created a loss of about 37 million yen and affected the cost estimation of the bidders. Also, the construction period had to be shortened due to the timeframe of E/N. Therefore, it was considered to change the type of treated water pipes from ductile cast iron to fiberglass reinforced plastic mortar (FRPM),

	which has superior workability for pipeline construction and is also less expensive than ductile cast iron, and the Guinean side and the Japanese side finally agreed on the change.
b) Reduction of distance of the treated water pipeline	Concerning the section of about 400 meters near the Anta Market illegally occupied by nearby residents at the time of the basic design, the original plan was to go around the area. However, as eviction was completed, the distance of the treated water pipeline was reduced.
c) Increase of the number of bridge piers and the length of a conduit bridge and change of the treated water pipeline	When the plain view was created and more detailed line shape of a conduit bridge was determined at the time of detailed design, changes were made to the number of bridge piers and the length of the conduit bridge. With these changes, the length of the treated water pipeline was also changed.
d) Change of numbers of locations with air choke valve chambers and sludge valves and change of area of pavement restoration	With change of banking height in the section along Route 1, changes were made to the number of locations with air choke valve chambers and sludge valves and also the area of pavement restoration.

Table 15 shows the outputs from the Guinean side. It is believed that the scale of support has not been changed from the original plan.

Table 14 Outputs from the Japanese Side

Item	Plan	Actual
(1) Raw water pipe (diameter 1,000 mm)		
・ Ductile cast iron pipe (buried, partially above ground)	7.0km	7.0km
・ Steel pipe		
(Water pipe bridge)	7 bridges (0.8km)	7 bridges (0.8km)
(No. of bridge piers)	(44)	**(33)**
・ Attached equipment (air choke valves, sludge valves, etc.)	1 set	1 set
(2) 3rd Yessoulou Water Treatment Plant (Water treatment capacity: 37,000 m^3/day, 450 liters/sec)		
・ Chemical mixing chamber (Rectangular, concrete, capacity: 40 m^3)	1	1
・ Rapid filter (Rectangular, concrete, gravity rapid filter, 26.6 m^2/bed) (Filtration rate: 162 m/day; filtering area: 240 m^2; filtration flow control: natural balance system; filter: anthracite (45 cm), filter sand (25 cm), gravel stratum (30 cm); underdrain system: strainer type; cleaning system: reverse cleaning only; operation system: on-site manual operation),	9	9
・ Piping for chemicals (Piping from existing chemical injector to chemical mixing chamber (3 lines) and attached equipment)	1 set	1 set
・ Piping in the facility (Raw water pipes, treated water pipes and attached equipment)	1 set	1 set

Item	Plan	Actual
・ Exterior construction (Drainage, in-plant roads, etc.)	1 set	1 set
(3) Treated water pipe (diameter: 1,100 mm)		
・ Buried part	3,558m	**3,364m**
Type	Ductile cast iron pipe	**Fiberglass reinforced plastic mortar pipes (FRPM pipes)**
・ Water pipe bridge	1	1
Type	Steel pipe for water	Steel pipe for water
Diameter	1,100mm	1,100mm
Length of bridge	72m	**82m**
No. of bridge piers	5	**4**
・ Attached equipment		
Air choke valve	(8 locations)	**(7 locations)**
Sludge valve	(9 locations)	**(7 locations)**
Paving restoration	(878 m^2)	**(1148 m^2)**
(4) Leak investigation devices		
・ Cross correlation leak detector	1 set	1 set
・ Listening rod (1.5m)	4 sets	4 sets
・ Leak detector	4 sets	4 sets
・ Portable sonic flow meter	2 sets	2 sets
・ Metal detector	1 set	1 set
・ Metal pipeline detector	1 set	1 set
・ Nonmetal pipeline detector	1 set	1 set
・ Hydraulic gauge	2 sets	2 sets
・ Boring bar	2 sets	2 sets

Note: Changes from the original plan are shown in bold.

Table 15 Outputs from the Guinean Side

Item	Plan	Actual
(1) Securement of Temporary site (land owned by SEG next to the water treatment plant, premises of the Simbaya Office)	original plan	completion
(2) Securement of land for facilities (including land for construction and access roads)	original plan	completion
(3) Improvement of unevenness of the access road to the water treatment plant	original plan	completion
(4) Relocation of fences around the treatment plant	0.03 million yen	640,000 GNF (0.01 million yen)
(5) Provision of information about underground objects and attendance for drilling	original plan	completion
(6) Cooperation for connection of existing pipes and new pipes (Attendance at construction and communication of water outage)	original plan	completion
(7) Provision of water for flushing and hydraulic pressure test	original plan	completion
(8) Cooperation for chlorine sterilization work	original plan	completion
(9) Repair of existing equipment attached to the treatment plant (prechlorination and lime injection equipment)	original plan	completion

Item	Plan	Actual
(10) Removal of illegal houses, farm land, plantations, etc. from the planned construction sites for pipelines	original plan	completion
(11) Securement of land for equipment storage and facilities where the equipment will be installed	original plan	completion

Exchange rate: 1 GNF = 0.0181 yen, October 2009

3.4.2 Project Inputs

3.4.2.1 Project Cost

Compared with the planned project cost of 1,503 million yen, the actual cost was 835 million yen for the Project of Improvement of Drinking Water Supply in Conakry Phase I, 30 million yen for Phase II, and 700 million yen for the Project for Improvement of Drinking Water Supply in the Capital.

The Guinean government contributed about 73 million yen, which is within the planned amount (85%) of about 86 million yen, as shown in Table 15.

3.4.2.2 Project Period

The project period was extended for unavoidable reasons such as deterioration of public security and a coup d'tat. However, other reasons also caused delay in construction, and the period of the activities carried out by the Japanese side was longer than the plan (132% of the plan).

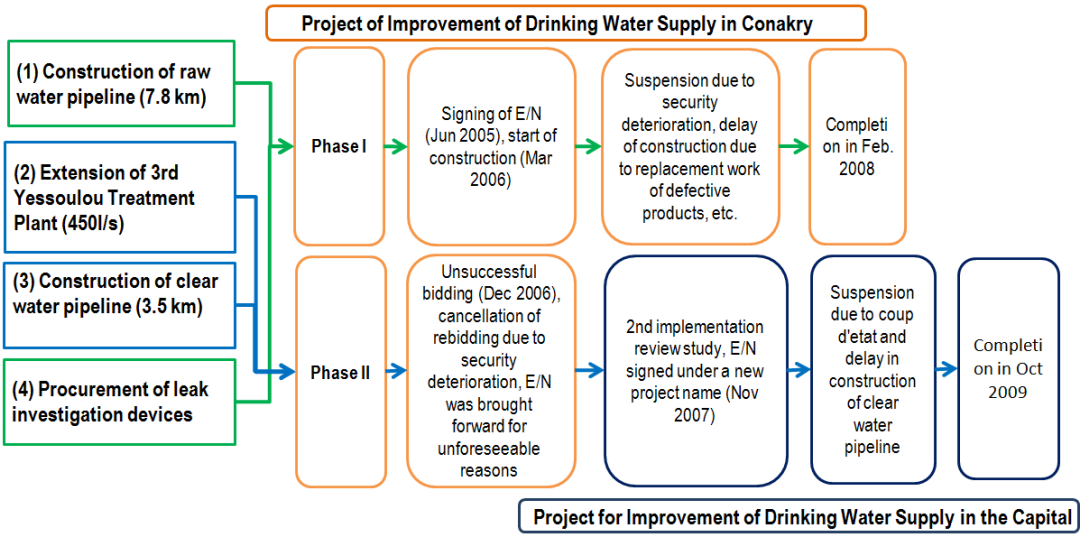


Figure 3 Aid Components and Processes of the Project

As shown in Figure 3 above, Phase I of the Project of Improvement of Drinking Water Supply in Conakry was significantly extended for deterioration of public security and delay in construction, and in Phase II, E/N was brought forward for unforeseeable reasons of unsuccessful bidding and unstable political situation. Later, when security is restored and the Guinean government requested the implementation of Phase II, the Project was recommenced as the Project for Improvement of Drinking Water Supply in the Capital and all aid components were completed as originally planned. The period from the signing of E/N for Phase I (June 2005) to the completion of the Project for Improvement of Drinking Water Supply in the Capital (October 2009) was 4 years and 5 months (53 months), including 6.5-month extension of the contract period caused by security deterioration. The total period of actual construction without this extended period was 46.5 months.

Below is the difference between the planned period and the actual period of each phase.

Project of Improvement of Drinking Water Supply in Conakry

Phase I:

June 2005 (signing of E/N) – February 2008 (2 years and 9 months, 33 months, including 4-month extension of the contract period due to security deterioration (end of March – end of July 2007). The actual implementation period is to be 29 months (132% of the plan).)

Phase II:

E/N was signed in July 2006. The general strike that occurred in Guinea in January 2007 made it difficult to secure a necessary construction period and the phase was terminated.

Project for Improvement of Drinking Water Supply in the Capital

November 2007 (signing of E/N) – October 2009 (1 year and 11 months, 23 months, including 2.5-month extension of the contract period due to security deterioration (mid March – end of May 2009). Considering the period of security deterioration, the actual implementation period is to be 20.5 months (132% of the plan).)

In light of the above, as the Project period exceeded the plan, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ①)

3.5.1 Institutional Aspects of Operation and Maintenance

The Water Company of Guinea (SEG), under the Ministry of Energy & Water Resources, is in charge of operation and maintenance for each facility developed in the Project. The

organization is run in the form of a public corporation and there is no privatization plan.

SEG currently has a total of 730 personnel (190 executives, 201 middle management personnel and 339 staff members) and the organization has become larger than in the planning stage. SEG has increased the number of sales offices in Conakry and also have established branches in 24 prefectures out of 33 across the country to meet the demand for urban water supply in inland areas.

Table 16 Personnel at the Yessoulou Water Treatment Plant

Position	No. of persons
Plant manager	1
Water treatment engineer	2
Driver	9
Total	12

Ref: Data from SEG

As Table 16 shows on the right, a total of 12 personnel including the plant manager works at the Yessoulou Water Treatment Plant, working on three shifts for operation and maintenance of all the facilities including the 3rd treatment plant extended in the Project. There are no issues in personnel or operation.

SEG's water clarification and conveyance division inspects raw and treated water pipes on a daily basis. Breakage of treated water pipes is responded by all SEG engineers under the leadership of the Simbaya Office, located in the area where treated water pipelines have been laid.

As described above, with increasing needs for urban water supply, SEG, who is in charge of operation and maintenance of the facilities developed in the Project, has increased the size of the organization to expand its service to inland areas as well as in the city of Conakry. As for the operation and maintenance of the Yessoulou Water Treatment Plant and SEG branches, there is a sufficient number of personnel assigned and there is a sufficient structure for the operation and maintenance of each facility developed in the Project.

3.5.2 Technical Aspects of Operation and Maintenance

As for the operation and maintenance of the Yessoulou Water Treatment Plant, as water analysis for water quality management, flocculation experiment for operation management, etc. are conducted on a regular basis, it is believed that the personnel has proper skills.

As described in the section of effectiveness, there were as many as seven cases of breakage of the treated water pipes laid in the Project in about three years after the completion of the construction. Each time, SNG conducted repair of FRPM pipes using engineers of its branch offices or vendors. They say that they conduct repair with careful attention to the manuals received from the pipe suppliers at the time of construction in the Project, especially when they bury FRPM pipes back, e.g., conducting elaborative tamping work with a tamping rod or by watering so that a sufficient amount of sand will go under the pipes.

On the other hand, the treated water pipes developed in the Project have repeatedly been

broken and SEG is not able to prevent recurrence at this point, when causes for breakage are being investigated, though the pipes are operated at a lower pressure. As described in Section 3.4.1 “Output”, unlike the pipes installed in the Project (3.5 km), all existing pipes (23.5 km) are ductile cast iron pipes.

In this situation, SEG judges that it is appropriate to replace FRPM pipes with ductile cast iron pipes for treated water pipelines.

In light of the above, it is believed that SEG does not have all the skills necessary for operation and maintenance.

3.5.3 Financial Aspects of Operation and Maintenance

Table 17 shows the production cost, amount of revenue collected and gross profit of the Water Service in Conakry, part of SEG’s business operation. The gross profit is negative.

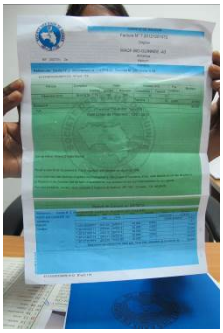
Table 17 Production Cost, Amount of Revenue Collected and Gross Profit of the Water Service in Conakry

(Unit: 100 million GNF)

Item \ Year	2010	2011	2012
(1) Production cost	1071.32	1121.12	1488.93
1-1 Labor cost	101.30	96.15	149.36
1-2 Maintenance	861.91	926.48	1199.15
1-2-1 Electricity	7.08	5.20	3.37
1-2-2 Fuel (diesel)	51.59	64.24	102.23
1-2-3 Chemicals	13.95	19.35	16.26
1-2-4 Repair cost	39.40	39.10	96.80
1-2-5Others	749.90	798.60	980.49
1-3 Depreciation	108.11	98.48	140.42
(2) Revenue collected	445.07	520.73	455.58
(3) Gross profit ((1)-(2))	▲626.25	▲600.39	▲1033.35

Ref: Data from SEG

However, as shown in Table 18 below, considering that the collection rate has recovered to 71% and the number of customers has been steadily increasing, it is believed that efforts toward sound management including rate revision (Table 19 and Table 20) have been made. The total business of SEG is in the black with subsidies from the government, etc. and it compensates loss from the Conakry business (Table 21 and Table 22).



Bill issued by SEG

Water bill payments are made in cash (small customers), by check (most large customers) and through bank transfer

(government offices). To increase the collection, they have increased branch offices, giving consideration especially to the convenience of small customers. They have also taken actions to improve payment methods such as allowing some branches (in administrative districts) to deal with bills issued by other branch offices through closer collaboration between branches.

Table 18 Collection Rate in Conakry

Item \ Year	2010	2011	2012
Annual water production (1,000 m^3)	52,973	53,778	53,673
Amount of accounted-for water included in the above (1,000 m^3)	36,787	38,090	37,853
Collection rate	69%	71%	71%

Ref: Data from SEG

Table 19 Number of Customers in Conakry Contracted with SEG

(Unit: Number of contracts)

	2008	2009	2010	2011	2012
No. of customers	76,139	82,898	86,456	93,605	96,436

Ref: Data from SEG

Table 20 SEG Water Rates in Conakry (per m^3)

(Unit: GNF)

Rate zone	2008	2009	2010	2011	2012	2013
1st rate zone	680	680	680	680	680	750
2nd rate zone	1,250	2,000	2,000	2,000	2,000	2,650
3rd rate zone	1,500	2,400	2,400	2,400	2,400	4,080

Data from SEG

Note 1: 1st rate zone – up to first 7 m^3/month

Note 2: 2nd rate zone – over 7 m^3/month to 30 m^3/month

Note 3: 3rd rate zone – large customers, business owners, government offices, etc.

Table 21 Government Subsidies for SEG

(Unit: 100 million GNF)

	2008	2009	2010	2011	2012
Amount of government subsidies	0	350	980	130.51	142.1

Ref: Data from SEG

Table 22 SEG's Financial Situation

(Unit: 100 GNF)

Item	2009	2010	2011
1. Total sales and general administrative expenses	1114.89	1880.07	1964.09
2. Total revenue	1297.61	1934.64	2114.47
3. Profit	182.72	54.57	150.39

Ref: Data from SEG

As described above, the rough profit from the water service business for Conakry is negative despite various efforts toward sound management such as increase of collection rate and number of customers, rate revision and changes of payment methods. Therefore, it is considered that there are issues with some part of the business operation.

3.5.4 Current Status of Operation and Maintenance

The Yessoulou Water Treatment Plant is an important facility that produced about 75% of the total amount of water supplied in Conakry at the time of ex-post evaluation. Each equipment of the plant is properly maintained and inspected and records of operation, water quality test, etc., do not indicate any issues with its operation.

The Plan for Improvement of Technical Efficiency and Commercial Sales (PACT) and the Plan for Reactivation of Terminated Contracts (PRR: Projet de Réactivation des Résiliés), which were carried out in the planning phase of the Project, have been consolidated and all activities are now carried out based on PACT. As stated earlier, USAID and AFD aggressively support PACT activities using NGOs, etc. Specifically, activities to enlighten residents and to improve consumers' awareness were carried out through NGOs in 5 communes from 2005 to 2011 for the purpose of getting rid of illegal connections and nonpayment. The cost was covered by USAID, AFD and SEG.

Moreover, SEG has established a PACT team for PACT activities in each water distribution area. Each team consists of the following members.

(1) Engineer (chief)
(2) Salespersons (in charge of the area)
(3) Inspectors (water meter for each house)
(4) Investigators (legal responses)
(5) Plumbers (to cut illegal bypass connection for water theft, etc.)

Now that the pipes and intake valves in Kaloum, Matam and Dixinn Communes have met the standards through the above-described PACT activities, activities for standards conformance will be started in Simbaya District of Matoto Commune in 2013 with financial aid from AFD as shown below. However, PCAT activities are not carried out in the other remaining areas due to financial issues.

Donor	Investment in France Agency (AFD: Agence Française de Développement)
Project	Project for Improvement of SEG's Skills and Sales Capacity in Simbaya
Period	2013-2014
Budget	1,200,000 euros
Target area	Simbaya District of Matoto Commune, Conakry
Numerical target	Improve production efficiency to 55-75% and bill collection rate to 70-90%
Contents of the project	Water leak repair, installation of intake pipes and standards conformity of intake pipes in the target area

As stated above, operation and maintenance of the Yessoulou Water Treatment Plant and terminal water supply facilities are properly conducted. Also, SEG has paid compensation to the residents affected by breakage of treated water pipes. However, considering frequency of breakage, increasing amount of compensation and remedial work cost, and safety reasons, the Ministry of Energy & Water Resources and SEG have decided that it would be appropriate to replace the current FRPM pipes with ductile cast iron pipes PN16. On the other hand, JICA plans to start follow-up support for the Project in December 2013, creating manuals for recurrence prevention and procurement of equipment for remedial works. Based on the causes for breakage, radical measures[11] should immediately be carried out.

As described above, there are minor financial issues with operation and maintenance of the Project. Breakage of the treated water pipes have repeatedly occurred and SEG has not been capable of preventing recurrence at this point, when causes for breakage are being investigated, though the pipes are operated at a lower pressure. Therefore, SEG considers it appropriate to replace FRPM pipes with ductile cast iron pipes. Based on such situation, the sustainability of the Project effect is low.

[11] As of November 2013, causes for breakage of treated water pipes are being investigated so that next steps can be considered.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The purposes of the Project were to increase water production at the Yessoulou Water Treatment Plant and to improve water flow of raw water and treated water pipelines through such works as construction of a raw water pipeline from the Grandes Chutes Dam to the Yessoulou Water Treatment Plant, extension of the Yessoulou Water Treatment Plant and construction of a treated water pipeline from the Yessoulou Water Treatment Plant to the city of Conakry. As these purpose are relevant to the development policy of Guinea to increase water supply pervasion in the capital city of Conakry and contribute to the urgent task to increase water production in Conakry, the relevance is high.

Concerning effectiveness, the original target for water production volume at the Yessoulou Water Treatment Plant has been achieved. As for the flow rate of treated water pipes, it is believed that the entire treated water pipeline has achieved the expected level of flow rate as a result of increasing the flow rate of the existing 700 mm pipes from the plan. On the other hand, as the flow volume of the 1,100 mm pipes connected to the treated water pipeline developed in the Project is lower than the planned value after the outlet of the water treatment plant, the flow volume is considered to be restricted.

As for impact, while the served population and the water supply volume per person have exceeded the target values set in the original plan partly because of other donors' support, breakage of water pipes has caused water outage in part of the city and damaged houses and properties of the residents. Moreover, unexpected incidents have caused economic losses including compensation payments to residents and repair costs. Judging comprehensively from the above, the implementation of the Project has produced some impact; therefore the effectiveness and impact of the Project is fair.

The period of the Project had to be extended due to deterioration of public security and instability of political situation including a coup d'etat in the country. However, as there were other reasons for the extension of the project period, such as replacement of defective products and extension of a construction period for treated water pipes, the efficiency of the Project is considered fair. Compared with the planned amount of 1,503 million yen, the actual project cost was 835 million yen for Phase I of the Project of Improvement of Drinking Water Supply in Conakry, 30 million yen for Phase II and 700 million yen for the Project for Improvement of Drinking Water Supply in the Capital.

As for sustainability, while SEG has no issue with its operation and maintenance structure or with operation and maintenance of the Yessoulou Water Treatment Plant and terminal water facilities, it has minor financial issues. On the other hand, the treated water pipes developed in the Project have repeatedly been broken and SEG is not able to prevent recurrence at this point, when causes for breakage are being investigated, though the pipes are operated at a

lower pressure. Therefore, SEG considers it appropriate to replace fiberglass reinforced plastic mortar pipes (FRPM pipes) with ductile cast iron pipes. Based on the above, the sustainability of the impacts generated by the project is low.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

- ✓ The treated water pipes constructed in the Project experienced multiple cases of breakage in a short period of time, which affected residents. Therefore, measures to be presented in accordance with the result of cause investigation should be carried out immediately.
- ✓ Operation of urban water supply requires the establishment of foundation for bill collection and revenue and expenditure management. For the Project, the status of bill collection has improved with positive efforts for resident enlightenment, billing, etc. However, concerning revenue and expenditure management, the water supply business in Conakry alone is making loss and efforts to increase revenue should be made through improvement of water supply service, etc. To expand urban water supply to inland areas in the future, financial analysis and study on measures should be conducted for long-term operation and maintenance of water supply facilities in the whole city of Conakry.
- ✓ There are disparities in water usage among water distribution areas and even within an area and people are frustrated because they do not think the quality of the water supply service is worth the price. Although, with the current production volume, it is not possible to provide 24-hour water service in all the areas, it is necessary to take measures to reduce complaints, e.g., communication of water supply hours and reasons to the residents in advance.

4.2.2 Recommendations to JICA

The Ministry of Energy & Water Resources and SEG hope that Japan will provide further support to respond to leakage in the water supply network in Conakry as well as to meet the increasing demand for water supply in the city. We understand that cause investigation and study of measures are underway in Japan, but it is expected that responses to the request, including measures to prevent recurrence of leakage, will be promptly taken.

4.3 Lessons Learned

For the treated water pipelines developed in the Project, a new material was selected to reduce the estimated cost although it had never been used in similar projects in the country. For future design change, careful consideration should be given to the possible impacts on

other aspects than price (e.g. durability of equipment and safety).

In case JICA should learn that facilities and equipment developed in a project had incidents after defect inspection, JICA should investigate causes and promptly present measures to prevent recurrence when necessary as soon as it learns about the issue, although it is basically the owner who has to respond to such situation. For this, it is also necessary to establish a structure for quick investigation of the causes.

Islamic Republic of Mauritania

Le Projet D'aménagement des Centres D'examen Hygiénique de Produits Maritimes
(The Project for Improvement of Hygienic Examination Facilities
for Fishery Products in Nouakchott)

External Evaluator: Machi KANEKO, Earth and Human Corporation

0. Summary

The primary objective of this project was, by rehabilitating Nouakchott Fish Market (Marché aux Poissons de Nouakchott: MPN) and constructing a Nouakchott Inspection Laboratory (Laboratoire d'Inspection de Nouakchott: LIN)[1], to enforce proper handling of fishery products landed in MPN pursuant to hygiene standards of Mauritania (hereinafter referred to as "hygiene standards") and carry out hygiene inspection of those products exported to Europe. This objective has been consistent with Mauritania's development policies as well as urgent needs in Nouakchott area to strengthen the quality control system in response to an increasing fishery export. Therefore, the relevance of the project was high both at the time of the planning stage and the ex-post evaluation.

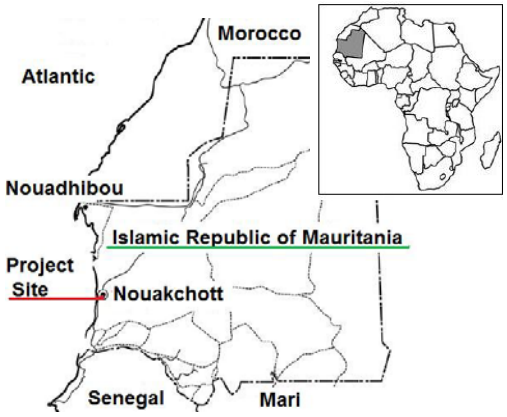
The project has enabled MPN's proper handling of fishery products in compliance with the hygiene standards of Mauritania. The export volumes for European Union (EU), which the project's indicator to assess its effectiveness, reached 3,762 tons in 2007, exceeding a target annual amount of 3,000 tons. LIN is also properly operated in issuing sanitary certificates of exportable fishery products and accrediting fish processing factories. In 2009, the laboratory undertook more than 4,000 cases of testing and inspections of fishery products, exceeding the project's target value. Not only contributed to the local economy of Nouakchott, an increase in the fishery exports has benefited small-scale fishers, dealers and retailers, making a positive impact on living conditions of these end beneficiaries. Therefore, the effectiveness and impact of the project are high.

The project cost and period are both within planned values, therefore its efficiency is also high. As for its sustainability, while LIN properly operates and maintains its facilities, MPN has some problems in facility maintenance, including a technician's ability in checkup and repair of equipment. Thus, the sustainability of the project effect is fair.

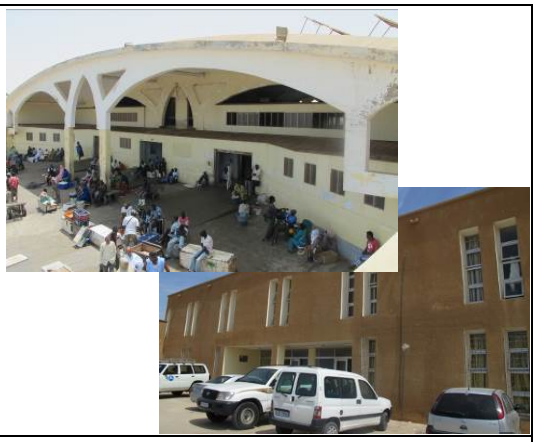
In light of the above, this project is evaluated to be highly satisfactory.

[1] "Laboratoire d'inspection à Nouakchott (LIN)" (Nouakchott Inspection Laboratory): LIN officially changed its name in the following year of which the project was completed. In 2007, with establishment of the National Office of Sanitary Inspection of Fishery Products and Aquaculture (National d'Inspection Sanitaire des Produits de la Pêche et de l'Aquaculture: ONISPA), LIN was regrouped as the "Nouakchott branch of ONISPA," which is currently called in French "Antenne ONISPA de Nouakchott." For the convenience in understanding, however, this report uses LIN, which is the term commonly used in the Basic Design Study Report (2004) of this project.

1. Project Description



Project location
(Nouakchott)



Upper left: Nouakchott Fish Market
(after rehabilitation)
Lower right: Nouakchott Inspection Laboratory
(new construction)

1.1 Background

Islamic Republic of Mauritania (hereinafter referred to as "Mauritania") has abundant commercial fishery products such as pelagic fish[2], porgy, soles, and octopus. Traditionally, not much of Mauritania's fish production is consumed within the country. Majority of the catches are exported to Europe, Japan and its neighboring countries. Fisheries developed in Nouadhibou in the northern coast of Mauritania have expanded down to the south endowed with untapped rich marine resources. Accordingly, the country has promoted to develop fisheries around Nouakchott. In the coastal areas of Nouakchott, major exportable fishery products are brought into the market by small-scale fishers operating pirogues. Thus, an increased catches in Nouakchott area directly fosters local small-scale fisheries.

Fishery is considered to be one of Mauritania's key industries to promote its national development, as a means of not only earning foreign exchange, but also creating employment opportunities for local people. Ministry of Fisheries and Marine Economy of Mauritania (Ministère des Pêches et de l'Economie Maritime: MPEM) has placed its highest priority on hygiene management of fishery products exported to EU. To achieve this, MPEM formulated the hygiene standards of exportable fishery products of Mauritania (1996) and granted the National Center of Oceanographic Research and Fisheries (Centre National de Recherches Océanographiques et de Pêches: CNROP) with institute status to become the Mauritanian Institute of Oceanographic Research and Fisheries (Institut Mauritanien de Recherches Océanographiques et des Pêches: IMROP). A primary factor behind these actions was more

[2] Pelagic fish: In general, fishes living in the sea are categorized in pelagic fish or bottom fish. The former migrate in great numbers below the surface of the sea, including herring, sardine, anchovy, decapterus, skipjack, and tuna.

rigorous hygiene regulations imposed on fishery products exported to EU, particularly in 1990s awaiting its economic integration.

While IMROP, located in Nouadhibou, had expanded facilities of the Inspection Laboratory of Nouadhibou, Nouakchott had no counterpart laboratory to carry out hygiene inspection of increasing exportable fishery products caught in that area. About 40% of the fishery products in Nouakchott had been exported to Europe via Nouakchott Fish Market (Marché aux Poissons de Nouakchott: MPN), which was constructed with the Japanese grant aid in 1996. Although, at that time, MPN was built as an ordinary market facility, it subsequently needed rehabilitation in order to comply with the hygiene standards in the country.

Given this background, the government of Mauritania had designed the Project for Improvement of Hygienic Examination Facilities for Fishery Products in Nouakchott to pursue better hygiene management of MPN, developing proper inspection of exportable fishery products handled in the area. The government had then requested Japan to support implementation of this project through provision of a grant aid.

1.2 Project Outline

In Nouakchott where the fishery exports to Europe are increasing, this project was intended to renovate MPN facilities, provide essential handling equipment, and construct a new inspection laboratory in Nouakchott while also providing inspection equipment. This would enable proper handling and inspection of fishery products unloaded in MPN in conformance with the hygiene standards, which is required for the export to Europe.

Grant Limit / Actual Grant Amount		1,018 million yen / 1,015 million yen
Exchange of Notes Date		September 2004
Implementing Organizations		Bureau of Small-Scale and Coastal Fisheries , Ministry of Fisheries and Marine Economy of Mauritania [La Direction de la Pêche Artisanale et Côtière: (DPAC), Ministère des Pêches et de l'Economie Maritime: (MPEM)]
Project Completion Date		March 2006
Practitioners	Main Contractors	Constructor: Chizaki Kogyo Ltd. Procurement: Moriya Shokai Ltd.
	Main Consultant	OAFIC Ltd. (Ex-Overseas Agro-Fisheries Consultants Co. Ltd.)
Basic Design		July 2004
Related Projects (if any)		[Technical Cooperation] A long-term expert "Fisheries Administration Advisor" (2001-2003, 2010-2013) [Grant Aid]

	"Nouakchott Fish Market Construction Project" (1994) "Follow-up Study on the Project for Improvement of the Sanitary Conditions and the Hygiene of Fishery Product (Construction)" (2011) [Other Aid Agencies] EU, UNIDO, World Bank, etc.

2. Outline of the Evaluation Study

2.1 External Evaluator

Machi KANEKO, Earth and Human Corporation

2.2 Duration of Evaluation Study

The External Evaluator performed an evaluation study as follows in the course of this ex-post evaluation:

Duration of the Study: September 2012 - February 2014

Duration of the Field Study: February 6-16, 2013 and June 20-July 6, 2013

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

3.1 Relevance (Rating: ③[4])

3.1.1 Relevance with the Development Plan of Mauritania

At the time of the project planning, Mauritania had been implementing a Public Investment Plan (1998-2001) as a part of its national development policy. Its objectives sought for (1) 5.5% of annual GDP growth rate, (2) 3% of inflation rate, and (3) reduction of a fiscal deficit. To achieve them, the country had highlighted key issues to be addressed in (1) promoting the private sector and the sustainable economic growth and (2) increasing investment in long-term human resource development. For Mauritania, moreover, export of fishery products expected to play a vital role in its national development through earning foreign exchange and creating employment opportunities. Thereby MPEM formulated the Fishery Sector Development Strategy (1998-2004), highlighting (1) promotion of value-added small-scale coastal fisheries and (2) development of hygiene inspection system required for fishery export to Europe.

The major actions associated with the Strategy included:

(1) Restoration of small-scale coastal fisheries zone (limiting areas of commercial trawling)

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

[4] ③: High, ②: Fair, ①: Low

(2) Integration of landing points to improve a distribution chain in the fisheries sector (seashores in Nouakchott area and those along the Imraguen village)
(3) Conservation of bottom fish resources, and systematization of data collection
(4) Formulation of the hygiene standards of exportable fishery products of Mauritania
(5) Granting the National Center of Oceanographic Research and Fisheries (CNROP), which was the inspection laboratory for exportable fish products, with institute status to become the Mauritanian Institute of Oceanographic Research and Fisheries (IMROP)

The ex-post evaluation study identified Mauritania's fisheries remains a key industry that earns more than half of its total foreign exchange. It is also expected to play an important role in poverty reduction and social development of the country. The ongoing Poverty Reduction Strategy Paper (PRSP III, 2011-2015) underscores a policy priority of economic growth for the poor people who engage in fisheries and other sectors.

Furthermore, a fisheries sector strategy known as the "Strategic Framework for Sector Management in Fisheries and Aquaculture" (2008-2012) has sought for the sustainability of marine resources and economic integration of fisheries into the national account. The four primary objectives include:

(1) Appropriate fisheries management and optimization of the fisheries income
(2) Economic integration of fisheries into the national account so as to support the overall socio-economic development of the country
(3) Management of marine resources, environment conservation and habitat protection for coastal fish
(4) Proposition to enact laws and regulations which mandate efficient realization of three objectives above

The said Framework points out "MPN has urgent needs of facility development in order to expand export of fishery products to Europe." It continues, "MPN should serve as a primary landing point that meets international hygiene standards as well as an auction site observing the Islamic principles." In addition, the Framework seeks for sanitary operation of small-scale fishers' pirogues[5] (use of ice boxes) and compliance of the hygiene standards on various facilities to handle fishery products (an auction market, processing factories, landing sites, ports, bridges and seashores).

Given these circumstances, the project to support fishery export to Europe was relevant with Mauritania's policies at its planning stage. Also at the time of the ex-post evaluation, the

[5]Pirogues are wooden canoes with outboard motors, mostly operated by small-scale fishers. In Mauritania, fishers use pirogues for regular fishing, and fishing with octopus pots and gill nets.

project has relevance with the ongoing policies that encourage infrastructure development of MPN and hygiene control of marine resources.

3.1.2 Relevance with the Development Needs of Mauritania

With about 750 km of the Atlantic coastline, Mauritania is endowed with rich marine resources as a result of which the Canary Current from the north and the Guinea Current from the south meet. Also, the country has long engaged in fisheries, as neighboring Canary Island and Senegal have vigorously expanded their fishing operations. The Mauritanian, however, have limited consumption of fish products, and the most of the catches are brought into the export market. In Nouadhibou, foreign fishing fleet and joint venture vessels have been leading commercial fisheries on the northern coast of the country. In the southern coasts of Nouakchott, on the other hand, a number of small-scale fishers operate their pirogues to catch octopus, soles, blue drums and other kinds of fish that are exported to Europe.

In Europe, in response to trade liberalization associated with its economic integration, EU Directive 91/493/CE was issued in 1991 to enforce hygiene standards for fish and fishery products distributed in the regional market. They are standard operating procedures and proper processing standards prerequisite for implementing HACCP-based[6] (Hazard Analysis Critical Control Point) system in seafood processing. Given this new policy, importing countries of fish and fishery products in EU came to enforce hygiene requirements on processing factories and factory ships, inspection laboratories, and the management system.

In light of this policy development in Europe, in March 1994, the government of Mauritania issued a "Government Ordinance on Hygiene Standards and Inspection Requirements for Production and Distribution of Fishery Products." With this, the government had taken a step to develop the hygiene standards in accordance with EU Directive 91/493/CE so that fish and fishery products caught and processed in the country meet inspection requirements of importing countries. Accordingly, IMROP launched rehabilitation of Nouadhibou Inspection Laboratory in January 1996, to improve its poor analytical capabilities in approving processing factories, conducting hygiene inspection and issuing sanitary certificates of exportable fishery products.

Subsequently, as a result of its on-site survey in Mauritania in March 1996, EU placed a total ban on the import of fishery products due to its inadequate inspection procedures and processes. The decision further required Mauritania to accept EU's reassessment in July of the same year, regarding to what extent Mauritania improved by then its hygiene control of fishery products. This monitoring included a review of the situation of Nouadhibou Inspection Laboratory.

[6] HACCP (Hazard Analysis Critical Control Point) refers to monitoring procedures to prevent any hazards of foods at each stage of receiving, processing and marketing.

To complete its most pressing task, the government of Mauritania formulated the hygiene standards in June 1996. As a competent authority, IMROP was then empowered to implement inspection standards, accredit processing factories and issue sanitary certificates of exportable fishery products that are rigorously required by developed countries.

However, IMROP at that time had an inspection laboratory only in Nouadhibou where its headquarters were located. In Nouakchott, there was virtually no counterpart facility to inspect increasing exportable fishery products. In addition, MPN, provided with the Japanese grant aid in 1996, was built as an ordinary market facility. It subsequently needed a rehabilitation so as to meet the hygiene standards of the country.

As mentioned above, Mauritania had to accelerate the implementation of the hygiene regulations, particularly for fishery export to EU. The project was intended to support the country to address specific issues associated with such requirements, and therefore it was highly relevant with Mauritania's development needs at the planning stage.

At the time of the ex-post evaluation, Mauritania is still endowed with rich aquatic habitats, especially with those marine resources of commercially valuable bottom fish such as octopus (totaling 70 different kinds of export fish products). As indicated in Table 1, the total fish exports have largely increased, more than doubled during five years since 2006. For Mauritania, fishery products continue to be a primary source of foreign exchange earnings, followed by industrial products. The major importers of the country's fishery products are EU, and an increasing volume of fish exports from Mauritania to these countries meet the hygiene requirements pursuant to the HACCP-based system (See Table 2).

It is notable Japan imports the bulk of octopus caught in Mauritania, amounting to approximately 20,000 tons of the 32,000 tons fished in 2011.

Table 1: Total Export Values, Total Export Values of Fishery Products, and the Total Export Volumes of Fishery Products

	2006	2007	2008	2009	2010	2011
Total export values (million UM)	367,200	364,600	431,700	357,400	571,800	n.a.
Total export values of fishery products (million UM)	45,993	64,092	66,510	83,953	91,372	122,774
Total export volumes of fishery products** (million UM)	106.8	143.1	171.4	156.4	193.2	286.7*

Source: MPEM

*The export volume in 2011 indicates aggregation of 7-month period, instead of the annual volume.

**The export volumes are indicated in product weight instead of net fish weight.

When the project completed the construction of Nouakchott Inspection Laboratory (Laboratoire d'Inspection de Nouakchott: LIN) in March 2006, the facility started its

operation as one of IMROP's subordinate organizations. In 2007, the government of Mauritania established the National Office of Sanitary Inspection of Fishery products and Aquaculture (National d'Inspection Sanitaire des Produits de la Pêche et de l'Aquaculture: ONISPA) as an autonomous agency under MPEM to expand the fish exports for EU. LIN and Nouadhibou Inspection Laboratory were then separated from IMROP, and LIN was regrouped as a Nouakchott branch of ONISPA (consisting of Nouakchott Laboratory (Laboratoire de Nouakchott) and Southern Inspection Service (Service d'Inspection Sud)). Currently, ONISPA consolidates development and enforcement of hygiene regulations for fishery products, with a particular focus on quality assurance management. It serves as a competent authority to accredit processing factories of exportable fishery products and issue sanitary certificates in compliance with the hygiene standards.

EU undertakes an on-site inspection every three years to examine whether the hygiene standards are properly enforced in Mauritania. It requires immediate improvement of any unsatisfactory practices identified. To cope with this, the country has revised laws and regulations in accordance with changes in international trade policies, particularly in EU's regulatory frameworks. Furthermore, processing factories must accept an inspection survey conducted in compliance with a "Manual for Inspection and Procedures of the Quality Control of Fishery products in Mauritania." This manual is also revised regularly to reflect major policy changes.

Again, the project was intended to strengthen the hygiene control of exportable fishery products by constructing LIN and renovating MPN. It has been relevant with Mauritania's development needs both at the time of its planning and the ex-post evaluation study.

3.1.3 Relevance with Japan's ODA Policy

At the planning stage of this project, the government of Japan did not have a country-specific assistance strategy for Mauritania. However, its ODA White Paper of 2004 states that the bilateral assistance for Mauritania should be directed at democratization and political stability, poverty reduction for socially and economically vulnerable people, and reform of the weak economic structure against external conditions. It points out these efforts would contribute to alleviate poverty and promote sustainable economic growth, which are the primary focus of Japan's development assistance addressed in its ODA Charter. Given the fact that Mauritania is under the Enhanced Heavily Indebted Poor Countries Initiative (HIPC), the ODA policy for the country has a relatively limited scope of the bilateral aid in which yen loans are suspended for the time being. Nonetheless, the government of Japan, as the Paper indicates, would help poverty reduction and economic reform of Mauritania through provision of grant aid and technical cooperation in meeting basic human needs of the people

and developing the fisheries sector.

As described above, through its grant aid, Japan has provided continuous support for Mauritania's fishery sector development. The project was a part of such effort, and therefore has been consistent with the development policy of Japan toward Mauritania.

In light of the above, this project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness[7] (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) The volume of exportable fishery products shipped from MPN in compliance with the hygiene standards

As indicated in Table 2, the volume of the fish exports for Europe reached 3,762 tons in 2007, exceeding a target amount of 3,000 tons per year. Subsequently, it was gradually increasing, amounting to about 7,000 tons in 2012.

As indicated in Table 3, whereas the volume of fishery products handled in MPN was 7,740 tons in 2007, it more than doubled to 17,416 tons in 2012. This demonstrates the renovated fish market facilities are fully utilized.

Table 2: Volumes of Exportable Fishery products Shipped from MPN to Europe

(unit: ton)

Target Value	**Actual values**					
2007	2007	2008	2009	2010	2011	2012
3,000 tons per year	3,762	4,082	5,483	5,108	5,354	6,926

Source: MPEM

Table 3: Changes in Volumes of Fishery Products Handled in MPN

(unit: ton)

	2007	2008	2009	2010	2011	2012
Pelagic fish	n.a.	n.a.	2,252	3,563	3,359	5,459
Bottom fish caught by "day-boats" fishing[8]	n.a.	n.a.	9,176	9,200	8,553	11,956
Total	7,740	9,155	11,428	12,763	11,912	17,416

Source: MPEM

Note: Cephalopod such as octopus and squid are included in bottom fish.

[7] Effectiveness should be judged in consideration of impact to determine a rating.

[8] Bottom fish: Fishes living on, in or near the bottom of the sea, such as porgy, flatfish, soles, flathead, and redwing searobin.

(2) The number of hygiene inspections conducted on fishery products exported from Nouakchott

Table 4 shows a record of LIN's inspection performance. The number of its inspections was 1,568 in 2007, and it increased to 3,625 in 2008. It indicates 90% of the target value (4,000) has been achieved. In 2009, the number of LIN's inspections exceeded the target value, and continued to increase until 2012 in proportion to growing volumes of fishery products.

Table 4: Number of the Hygiene Inspections Conducted by LIN

(unit: inspection)

Type of analysis		Target Value	Actual values					
		2007	2007	2008	2009	2010	2011	2012
Sensory evaluation	Laboratory		n.a.	n.a.	14	34	11	25
	Factory		n.a.	1,653	1,735	1,200	2,200	2,620
Bacteria			n.a.	503	494	702	434	465
Physical and chemical analysis			n.a.	515	828	512	460	326
Water quality (chemical)			n.a.	528	1,218	676	1,296	1,171
Water contamination (bacteria)			n.a.	426	307	864	1,341	1,000
Total		4,000	1,568	3,625	4,596	3,988	5,742	5,607

Source: ONISPA
Note: For sensory evaluation, an inspector visits processing factories to examine their fish samples. It is a rare case samples are brought into the laboratory for inspection.

As described in the section of the project's relevance, LIN was once a subordinating body of a research institute known as IMROP. It was then regrouped as "ONISPA's Branch in Nouakchott." ONISPA was established by the government of Mauritania in 2007 for the purpose of strengthening the hygiene management of fishery products. While requiring some time to develop its organizational functions, ONISPA obtained a budget from the government in 2008. This enabled ONISPA and its affiliated agencies to launch their general operation. For this reason, the number of inspections conducted in 2007 and 2008 was below the target values. Since 2009, however, LIN has engaged in normal operation.

As a part of ONISPA's accreditation process, LIN undertakes a compliance assessment of processing factories operating in Nouakchott. Based on the test results, ONISPA approves food safety of processing factories and issues heath certificates of their fishery products in accordance with the detailed guideline of the HACCP-based system provided by EU. It also reviews HACCP manuals developed by each factory (see the picture shown in the next page)

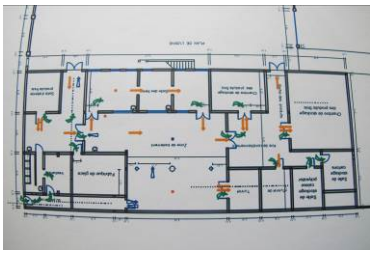
and approves conformance with the guideline. Mauritania has 44 HACCP-approved factories [9] exporting fishery products to EU, and of these, 9 factories are operating in Nouakchott.

Table 5 below shows the total number of ONISPA-accredited processing factories in Mauritania. At present, 21 factories are operating in Nouakchott. ONISPA conducts an annual inspection for all of these factories to ensure quality of their seafood processing. Any violations of the regulations and guidelines result in improvement orders given to the processors concerned. If not complied, ONISPA issues a warning, and subsequently suspends operation of the violating factories. In the worst case, it may revoke the factories' accreditation.

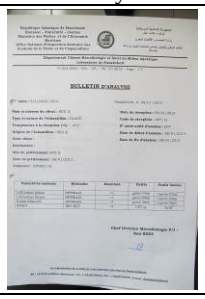
Table 6 indicates a record of ONISPA's inspections including unannounced random check on processing factories in Nouakchott.

In addition to the aforementioned on-site inspection, ONISPA is responsible for issuing sanitary certificates of fishery products required by each export lot and exporter. These are indispensable to clear the customs of European countries and other destinations. The number of certificates issued in each year is shown in Table 7. In 2012, ONISPA issued about 5,000 certificates.

An HACCP manual provided by a processing factory known as ETS SIDI K.
ONISPA approved this finalized manual in 2012 after reviewing the draft several times.



A part of the aforementioned HACCP manual showing a detailed flow diagram in the factory



Analysis report by ONISPA

Table 5: Number of Processing Factories Meeting the Hygiene Standards of Mauritania

(unit: factory)

Area	2007	2008	2009	2010	2011	2012
Nouadhibou	34	35	39	41	44	48
Nouakchott	19	13	15	19	18	21
Total	53	48	54	60	62	69

Source: ONISPA

[9] (Reference) In general, it requires significant efforts to obtain HACCP accreditation of exportable fishery products for EU. Whereas Mauritania has 44 HACCP-accredited processing factories (ranked in 26th place worldwide), Japan has 25 factories (33rd place) as of 2011. The country with the largest number of HACCP-accredited factories (947) is U.S. As for Mauritania's neighboring countries, Morocco has 358 factories (5th place) and Senegal, 61 (22nd place).

Table 6: Number of On-site Inspections on ONISPA-Accredited Processing Factories

(Unit: inspection)

Area	2007	2008	2009	2010	2011	2012
Nouakchott	31	26	50	86	57	67

Source: ONISPA

Note: In 2010, ONISPA conducted inspections more frequently in order to enforce hygiene management of the processing factories.

Table 7: Number of Sanitary Certificates of Fishery products Issued by ONISPA

(unit: certificate)

Area	2007	2008	2009	2010	2011	2012
Nouakchott	3,353	4,203	4,795	3,793	5,426	5,499

Source: ONISPA

Note: The sanitary certificates are issued on an export-lot basis, and therefore do not necessarily correspond to the export volume.

3.2.2 Qualitative Effects

At the time of the project planning, several indicators were provided to assess some qualitative effects of the project, looking into NMF's operation pursuant to the hygiene standards and LIN's inspection management. Also, through seminars and training programs, the project was intended to enhance understanding of people related to quality control of fishery products.

As for MPN, compared with its overall operation prior to the project, it has developed managerial capabilities in response to the increase of exportable fishery products. LIN has also enforced its quality control of fishery products shipped from each processing factory so as to meet the hygiene requirements. Specifically, the laboratory imposes on-site assessment and sanitary certificates upon the factories to allow their seafood export.

In addition, inspectors of LIN, and managers and processors of the accredited factories have participated in seminars funded by EU, the United Nations Industrial Development Organization (UNIDO) and other aid agencies. They have learned more about HACCP-based system than prior to the project implementation.

3.3 Impact

3.3.1 Intended Impacts

(1) Indirect Impacts

The project expected to have indirect impacts to be verified with the following two indicators.

Indicator 1 An improvement of the trade balance associated with an increase in fishery exports of Nouakchott, and an increase in employment in the export fisheries sector

Indicator 2 An improvement of living standards of small-scale pirogue fishers, processing factory workers, dealers and retailers.

As discussed in the section of the project's relevance, the overall fish exports of Mauritania have been increasing, thereby indicating the growing trade profit. Although fishery products exported from Nouakchott remains approximately 10 to 15% of the total fishery export volume of the country, it is increasing annually. Nouakchott now exports larger volume of fresh fish than Nouadhibou, which are particularly favored by European countries, (see Table 9). Given such upward export trend, the project has a positive impact on Mauritania's trade balance and employment in the fishery sector.

As for the indicator 2, MPEM's source indicates the number of pirogues operated by small-scale fishers in the coastal area of Nouakchott was 3,059 in 2012. It is a fivefold increase compared with 633 in 1998, according to the data revealed prior to the project planning. Table 8 shows the number of commercial fishing vessels and pirogues operating in Mauritania's sea areas. The small-scale fishers' pirogues are increasing annually, with half of them fishing in Nouakchott area. The project has helped provide landing points for small-scale pirogue fishers.

Table 8: Changes in the Number of Commercial Fishing Vessels and Pirogues

(unit: vessel)

Type of fishing vessels		2006	2007	2008	2009	2010	2011	2012
Commercial vessels	Domestic boats	143	116	122	112	101	91	75
	Foreign boats	197	137	149	134	142	155	n.a.
Pirogues		3,116	3,116	4,022	4,479	6,079	6,468	6,950

Source: MPEM

*Pirogues require operation license, and their catches should be landed in the designated points.

Table 9 below indicates the changes in the volumes of different kinds of fishes exported from Nouadhibou and Nouakchott to Europe and others. Nouadhibou exports mainly cephalopoda (octopus and squid) and pelagic fish suitable for froze fish products. In Nouakchott, on the other hand, export volumes of fresh fish products are larger than Nouadhibou, which are mostly bottom fish such as orgy and soles caught by pirogues. Compared with Nouadhibou where large commercial vessels are predominant,

A landing site of pirogues in front of MPN

Nouakchott provides fishing spots to small-scale fishers. With a rehabilitation of MPN, the project appears to have contributed to improve livelihoods of such pirogue fishers.

Table 9: Export Volumes by Fishery Product Type
(for Europe Countries of Destination)

(unit: ton)

Site	Product type	2007	2008	2009	2010	2011	2012
Nouadhibou	Frozen fish	16,992	8,006	24,108	13,480	13,337	13,567
	Fresh fish	2,370	779	2,921	2,025	2,526	2,426
	Total	19,362	8,784	27,029	15,505	15,863	15,993
Nouakchott	Frozen fish	n.a.	1,858	3,796	2,282	2,137	3,824
	Fresh fish	n.a.	2,225	1,688	2,826	3,217	3,102
	Total	3,762	4,082	5,483	5,108	5,354	6,926

Source: MPEM

To assess the project impacts, the ex-post evaluation study conducted a beneficiary survey and interviews with different groups of stakeholders. They included processing factories of exportable fish landed in Nouakchott (one of 12 factories interviewed was a foreign-affiliated plant), dealers in MPN who grade fish caught by small-scale fishers, and women retailers and small-scale fishers. Generally speaking, the last two groups of people are poor in the overall fishery sector of Mauritania. Table 10 shows major findings. The degree of the project effects varies among the sample groups, depending on what part of MPN facilities they use. It is notable 85% of the processing factories were working for their business expansion, anticipating an increase of fishery exports from Nouakchott.

Women retailers of fish and fishery products

Also, 78% of the fish dealers said their incomes had increased. However, partly because an ice machine in MPN has been out of operation, some of them pointed out MPN should improve its services. Although 85% of the women retailers said they gained more income than before, 90% of them recognized a decrease in buyers of their fish products. The primary reason appears to be that the government provides fish to the low-income households free of charge. In addition, MPN has more strict access control to strengthen a security. This suggests MPN needs to ensure that women subsisting on the fish market can be equally benefited from the development of the fishery sector. As for the project effect on small-scale fishers, their catches are now traded at higher unit prices than before, mostly because they are better handled in terms of the hygiene. The rehabilitation of MPN has thus contributed to an improvement of these fishers' livelihoods.

Table 10: Outcomes of the Beneficiary Survey and Interviews with Processing Factories, Dealers, Small-scale Fishers and Women Retailers

	Summary
Processing Factories of Exportable Fishery Products	Among twenty-one processing factories operating in Nouakchott, the survey obtained responses from thirteen plants. They have been operating before the project was started. Major buyers of their fishery products are Italy, France, Spain and Japan. Processing a variety of fish, most of them export whole or sliced fish fresh or frozen. Semi-prepared fish products are provided by one of these factories. Managers in charge of hygiene control at the respective factories are required to lay out their own HACCP plans. Nine factories among the thirteen have LIN-approved guidelines, and the rest are working on the revision under the laboratory's supervision. In the past, all of the factories required some kinds of operational improvement in response to LIN's on-site inspections. (Violation of the requirements will result in a revoke of accreditation.) Profit from the fish exports fluctuates depending on economic trends in the importing countries, particularly in Europe. Seven factories indicated their sales have increased compared with the level attained before the project implementation. Eleven factories were planning to expand their business, which represents their intention to increase investment in the fish export. It was noted, however, the factories were unable to treat an increasing volume of waste water discharged from their seafood processing, and that some kinds of measures should be provided for the entire factory sites.
Dealers	Dealers of fish and fishery products are essential users of MPN. Not only they are contributors to the market operation by paying their booth rental fees and shipping charges (required in shipment from the market to processing factories), but also they have an important role in grading fishes caught by small-scale fishers. Among 18 dealers who rent booths in the market, 14 dealers said their incomes had increased compared with before the project implementation. On the other hand, 14 dealers equally indicated they have to trade with more competitive prices than before. Each dealer buys fish from specific pirogue fishers, representing their fixed trading relationships with certain fishers. These dealers wholesale fish to processing factories, retailers and restaurants. Dealers pointed out some of the problems in MPN, saying, for instance, an ice machine was not working. According to the Cooperative Corporation of MPN (Société Marché aux Poissons de Nouakchott: SMPN) responsible for the facility operation, it is working for improvement of the services. It appears to be necessary for the Corporation and the dealers to have more communication to obtain mutual understanding on this matter.
Small-scale fishers	Half of the twenty sample small-scale fishers unloading their catch at Nouakchott landing points said their incomes had increased compared with before the project implementation. The rest indicated no change. On the other hand, 19 fishers stated fish prices indicated by dealers were higher than five years ago. They have become more aware that proper handling of fish increases the value of the products marketed (equally 19 fishers practice some kinds of preservation such as use of ice on the pirogues and prevention of sand from attaching on fish during landing). Fifteen fishers indicated their families had better livelihoods than before. They have several buyers of their catch such as dealers (15), processing factories (13), retailers and restaurants (7), and direct sales (20) (the numbers in parentheses indicate responses of fishers with multiple answers).

	Summary
Women retailers	Among 20 women retailers and merchants in MPN, 17 women said their cash incomes had increased compared with before the project implementation. Sales prices have also increased, 15 women said, and 11 women indicated their families have better livelihoods than before. On the other hand, 18 women experienced a decreased number of buyers in the market, making them concerned about their future business. The primary reason of such a decrease is more strict access control imposed on those who enter the market. It has been applied to regulate black-market trading and increase security in and around MPN (including prevention of stealing).

Source: The beneficiary survey and interviews conducted in the ex-post evaluation study

3.3.2 Other Impacts

(1) Impacts on the Natural Environment

When the project was planned, the seashore of Nouakchott including the MPN site had been designated area for the environmental conservation since 2005. Accordingly, with supports from international aid agencies, Mauritania has promoted coastline afforestation through implementation of “the Project for Dune Rehabilitation” and “the Greenbelt Project.”

At present, treatment of waste water discharged from MPN and those emissions from LIN into air meets the environmental requirements of Mauritania. Any negative impact on the natural environment has not been reported so far. Nonetheless, many processing factories are concerned with waste water increasing year after year. Expected increase in fish exports will possibly worsen the problem in the stretch of the Nouakchott seashore. Environmental protection measures including waste water treatment system need to be provided in the future.

(2) Land Acquisition and Resettlement

Land acquisition for LIN was processed smoothly, as the government of Mauritania provided part of its national land. Resettlement of local people was not undertaken.

In light of the above, this project has largely achieved its objectives, therefore its effectiveness and impact is high.

3.4 Efficiency (Rating: ③)

3.4.1 Project Outputs

Table 11 is a list of the project outputs planned and provided by Japan. They were required for (1) rehabilitation of MPN facilities to handle exportable fishery products (the fish market and temporary carry-in sites for pelagic fish), (2) construction of LIN, and (3) provision of equipment for inspection and handling of fishery products. Majority of the outputs were supplied as planned, except for minor changes in specifications and quantities of some equipment.

The outputs provided by Mauritania are shown in Table 12. While garbage trucks and

incoming telephone lines were cancelled, the overall outputs were provided with planned values.

Table 11: List of Outputs Provided by Japan

*The number in parentheses indicates the quantity.

Item	Plan	Actual
(1) Nouakchott Fish Market (Marché aux Poissons de Nouakchott: MPN) (rehabilitation of the existing facilities)		
Fish market building (rehabilitation of the existing facilities)	Fish market hall Booths for dealers (20) Administration office, office room in the fish market section Toilet facilities, a shower room, and storage facilities Partially two-storied reinforced concrete structure Partial installation of interior roofing with refractory cement (steel truss) Partial installation of exterior walls (wooden framework) paneling with refractory cement	No change
Temporary carry-in sites for pelagic fish	Temporary carry-in points, drainage ditches, sand prevention partitions, A single-story, reinforced concrete structure	No change
Facilities	Ice machines with a production capacity of 5 tons/day (2) Ice tanks with a storage capacity of 10 tons (built-in ice tanks of the ice machines) (2) Refrigerators with a flat storage capacity of 10 fish boxes of 80 kg (2) Receiving tank, elevated water tank Purification tank with aeration system (a purifying capacity of 15 m^3/day)	Refrigerants of the ice machines and refrigerators were changed from R22 to R134a. (Reason) The R22 refrigerants (alternative CFC) were generally replaced with the new R134a system released in the market.
(2) Nouakchott Inspection Laboratory (Laboratoire d'Inspection de Nouakchott: LIN) (New construction with site area of 4,420 m^2)		
Laboratory	Laboratory rooms, inspector offices, seminar rooms, reference room, information processing room, office of certification, administration office, toilets, etc. Partially two-storied reinforced concrete structure	Shower rooms were provided in men's and women's toilets respectively. (Reason) For a sanitation purpose
Electric room	Incoming transfer room, panel room, emergency power generation room A single-story, reinforced-concrete structure	No change
Facilities	Electric facilities: Emergency generator (1) (1000KVA), Incoming and cabinet panel, voltage stabilizer (1) (100KVA), air conditioner, etc. Water supplying system and drainage facilities: Receiving tank, elevated water tank,	No change

Item	Plan	Actual
	purification tank, waste-water treatment facilities, etc. Other facilities: laboratory tables, gas pipes, particular gas pipes, ventilation facilities Emission treatment facilities, anti-disaster facilities, LAN cable, etc.	
Exterior facilities	Access road and pavement: concrete pavement	No change
(3) Equipment for analysis and handling of fishery products		
Handling equipment	High-pressure washing machines (2) Fish boxes for storage (20) Carry-in fish boxes (100)	No change
Materials for instruction and information gathering	LCD projector (1), video camera (1), copying machine (1), desk-top PC (6), color printer (1), LAN cable (1 set), etc.	No change
Equipment for sensory evaluation	Freezers (2), refrigerators (2) Defrost machine (1) Parasite inspection equipment (4) Desktop projector (1) Stereoscopic microscopes (2) Digital balances (measuring range: medium-heavy) (4) Water purifying apparatus (1), etc.	Two stereoscopic microscopes were replaced with an inverted microscope. (Reason) An inverted microscope was considered to be more useful in LIN's inspection process. The quantity was reduced as it turned out to be less frequently used.
Equipment for bacteriological examination	Autoclaves (2) Media dispensers (2) Water purifying apparatus (1) Clean benches (2) Incubators (6) Biological microscopes (2) Dry sterilizer (1), etc.	No change
Equipment for physical and chemical analysis	BOD analyzer (1) TOC analyzer (1) Ultrapure water system (1) Gas chromatograph (1) High performance liquid chromatography (1) Atomic absorption spectrophotometer (1) Fluorescence spectrophotometer (1) Kjeldahl distillation apparatus (1) Cleansing equipment, glassware, etc.	For glassware, volumes of beakers and measuring cylinders were changed as follows: 1. Beaker: 500 ml x (6) → 1,000 ml x (3) 2. Measuring cylinders: 25 ml x (5)→ (2) 50 ml x (5)→ (2) 100 ml x (5)→ (2) 250 ml x (5)→ (2) In addition, two 500-ml cylinders and two 1,000-ml cylinders were provided. (Reason) Nouadhibou Inspection Laboratory had used these volumes of glassware more frequently.

Source: The Basic Design Study Report, and the Defect Inspection Report

Table 12: List of Outputs Provided by Mauritania

Item	Plan	Actual Output
(1) MPN (rehabilitation of the existing facilities)		
1. Installation of outer fence and gates around the market, and a guardian's room	35,800,000 UM	27,000,000 UM (implemented as planned)
2. General office equipment and furniture	20,000,000 UM	10,000,000 UM (implemented as planned)
3. Garbage trucks	25,000,000 UM	Procurement of garbage trucks was cancelled since MPN decided to contract out waste disposal to a private service provider in Nouakchott.
(2) LIN (New construction)		
1. Installation of primary service wires and water supply pipes	6,900,000 UM	14,000,000 UM (implemented as planned)
2. Installation of telephone lines	4,500,000 UM	The installation was cancelled as mobile phones and wireless Internet access were to be provided.
3. Installation of outer fence and gates around the laboratory	15,000,000 UM	16,190,000 UM (completed in November 2006 due to a problem in the budget execution. LIN has proved no problem in its operation associated with this delay.)
4. Banking materials for soil preparation	17,000,000 UM	17,000,000 UM (implemented as planed)
5. General office equipment, telephones, furniture and expendable items such as reagent	85,800,000 UM	85,000,000 UM (implemented as planned)
Total	210,000,000 UM (About 86 million yen)	169,190,000 UM (About 73 million yen)

Note: The exchange rate applied to the actual outputs is as of March 2006 (1 UM =0.43 yen).

3.4.2 Project Inputs

3.4.2.1 Project Cost

As for the cost provided by the Japanese government for the project, the E/N limit was 1,018 million yen while the actual cost amounted to 1,015 million yen. Therefore, the cost expended by the Japanese side was lower than planned (99%).

As indicated in Table 12, whereas the cost estimated by the government of Mauritania was 210,000,000 UM (about 86 million yen), the actual cost was 169,190,000 UM (73 million yen).[10] Therefore, the project cost provided by the counterpart government was lower than planned (85%).

[10] 1 UM＝0.43 yen as of March 2006

3.4.2.2 Project Period

The planned project period was 17 months, and the project was implemented within a given period of time from October 2004 to April 2006.

Both project cost and project period were within the plan. Therefore the efficiency of the project is high.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

1) MPN

Constructed with the Japanese grant aid in 1996, MPN has been operated under the Cooperative Corporation of MPN (Société Marché aux Poissons de Nouakchott: SMPN). MPEM, which is the supervising authorities, is trying to replace the personnel of SMPN in response to changing needs of the fish market. It reduced the number of directors from 9 to 8 to save on the personnel cost, and assigned a new fish market manager in 2008 who has management know-how.

As shown in Table 13, compared with the initial 20 workers, MPN currently has 86 counterparts, increasing employees at general service division. This increase is associated with an expansion of MPN facilities funded by the government of Mauritania and the World Bank (such as a warehouse building, temporary carry-in sites, office of fisheries, streets, toilets and concrete paving).

Table 13: Organizational Components of MPN

(unit: person)

Position/Division		Number of staff
Director		1
Fish market manager		1
Secretary		1
Fish market deputy manager		1
Inspection division	Inspection section	4
Administration division	Personnel section	0
	General affairs section	14
	Accounting section	0
General service division	Sales section	16
	Cleaning section	47
Ice production division	Freezing machinery section	1
	Total	86

Source: SMPN

The on-site survey of the ex-post evaluation revealed the ice machine provided by the project has been out of operation. The study contacted with SMPN, MPEM and the Japanese

design consulting firm to find out what had caused such suspension. Their responses are provided as below respectively. The study also asked fish dealers in MPN about the current supply of ice, which requires a large amount of ice in preserving landed fishery products.

It should be noted, however, the survey was unable to fully understand the major reason for the aforementioned suspension. Considering a durability of the ice machine is about 8 years, the facility might have required a renewal at the time of the ex-post evaluation. Moreover, the key persons were retired, such as the former director and maintenance technician of MPN working at the time of the ice machine's suspension, and it is difficult to verify the reason. .

Actors concerned	Explanation
SMPN	・In the post-project period, approximately since 2006, the private ice makers started to supply their ice at lower prices on the shore. ・The ice machine in MPN entailed higher maintenance cost as it was frequently broken down. MPN suspended its operation in 2008. ・In 2009, the government provided an ice compartment next to the fish market building, and operated only when the demand for ice was high so as not to affect the private ice makers. ・Given the high demand for ice, it is desirable to replace the existing ice machine.
MPEM	・It is difficult to maintain machineries in such harsh environmental conditions as Nouakchott seacoast. ・While MPN attempted to repair the ice machine, the frequent breakdown might have been caused by the technician's insufficient repair techniques. ・While MPEM continues to contract out ice production to the private suppliers, MPN should remain a stable provider of ice because the demand varies seasonally.
Japanese design consulting firm	・The ice machines had been in operation without any problem until the defection inspection was carried out. ・If properly maintained, the ice machine could have been operating more than ten years even in such harsh natural environment as Nouakchott.
Dealers	・The volumes of catch (in particular pelagic fish) are increasing. ・Preservation of fish now requires a large amount of ice in order to keep ice boxes cool. Depending of the season, ice production of the private suppliers is not sufficient to cover the landed catch. ・To increase convenience of the service, ice should be produced within MPN.

Among various possible factors resulted in the ice machine's suspension, some are related to inadequate maintenance system including insufficient technical skills of the technician at that time. However, due to the growing imbalance between supply and demand of ice, MPN has an intention to renew the ice machine. To do so, with this experience as a lesson, it is critical to develop maintenance system and human resources that are more responsible to meet the facility needs.

2) Nouakchott Inspection Laboratory (Laboratoire d'Inspection de Nouakchott: LIN)

Constructed in March 2006, LIN had been operated as one of the IMROP agencies. As discussed before, the government of Mauritania established ONISPA under MPEM in 2007. Subsequently, the Government Ordinance of 2008 separated LIN and Nouadhibou Inspection Laboratory from IMROP to regroup them under ONISPA. At present, ONISPA has 100 staff members, including 19 executive officers and 22 senior engineers. LIN employs a total of 40 workers as shown in Table 14. The number of inspectors in respective divisions increased from 7 at the project completion to 17 in a process of ONISPA's operational formation as shown in Table 15.

Table 14: Number of Current Employees at LIN

(unit: person)

Administration division	18
Physical and chemical analysis laboratory	7
Bacteriological examination laboratory	6
Sensory evaluation room	9
Total	40

Source: ONISPA

Table 15: Inspectors Assigned at LIN

(unit: person)

		At the time of the project completion	Current
Physical and chemical analysis division/Sensory evaluation division			
	Ph.D	2	4
	Diploma	3	6
Bacteriological analysis division			
	Ph.D	0	0
	Diploma	1	3
High-school graduate engineer		1	4
Total		7	17

Source: ONISPA

By allocating highly qualified personnel, MPEM has worked for developing analysis abilities of LIN to strengthen quality control of fishery products in Nouakchott. As a result, in January 2013, LIN obtained ISO/IEC 17025(2005) for first time in the West African countries. More about this achievement will be reported in the following section. With support of EU, LIN is seeking further enhancement of its technical capacities. It demonstrates LIN has necessary operational set-up to continue a variety of inspection in the future.

3.5.2 Technical Aspects of Operation and Maintenance

1) MPN

Operation and maintenance of the fish market hall is mostly satisfactory. Fishers and dealers use this hall for sorting and grading fish, and accordingly SMPN provides a dairy cleaning. For a purification tank with aeration system provided by the project, a technician gives a dairy checkup and water quality control.

On the other hand, the aforementioned ice machine is out of operation. Given the harsh environment in Nouakchott, a technician requires a dairy checkup and immediate repairs as necessary. The current method of maintenance needs a review to respond to the situation. The technician's skills and know-how should be developed at the same time.

2) LIN

In the defection inspection conducted one year after the project completion, some concerns were reported. One was the technical level of the inspectors assigned in LIN, and another was training of newly employed inspectors. However, their know-how and operation of equipment have mostly attained the practical level. As described below, this was realized as a part of LIN's effort to obtain ISO/IEC 17025(2005). The Follow-up Study of this project (from September to November 2011) partly made up for LIN's lack of practical experience. The Study also revealed LIN had some operational weakness in calibration in chromatographic analysis and provision of a set of conditions. A technical demonstration of some equipment was given by the study team to LIN analysts.

Analysis is being carried out in one of the laboratory rooms at LIN

Atomic absorption spectrophotometer provided in LIN

ISO/IEC17025 (2005) Certificate ⇒

Accreditation Certificate
N°1-0044

As initially planned, SOMEDIB provides maintenance service for inspection equipment so as to ensure accuracy of the analysis. SOMEDIB-managed facilities are mostly in good conditions.

Behind the effort of MPEM and ONISPA to obtain ISO/IEC 17025(2005) accreditation was their strategic intent on making Mauritanian fishery products more competitive in the international market by which a third-party accreditation agency confirms impartiality and reliability of LIN-issued heath certificates. For this end, it was essential for LIN to develop higher analytical competence that meets the international quality standards.

With support of UNIDO from 2010 to 2012, ONISPA implemented concrete actions to obtain ISO/IEC 17025(2005), focusing on quality improvement of analysis and testing for LIN. In November 2012, a Tunisian accreditation body member (TUNAC) made conformity assessment of LIN. In January 2013, its bacteriological examination laboratory as well as physical and chemical analysis counterpart obtained ISO/IEC 17025(2005) accreditation. It is valid for four years, and requires two regular assessments within that period (once within a two-year period).

Testing and calibrations[11] undertaken by ISO17025-accredited laboratories are assured of

[11] Calibration refers to "a set of operations that establish the relationship between values indicated by a measuring instrument or measuring system, or values represented by material measure and the corresponding values of the measure."

the analytical quality among WTO member countries in accordance with the Agreement on Technical Barriers to Trade (WTO/TBT). In addition, those accredited laboratories are provided certificates that indicate the technical competence of their testing and calibration. They may use ISO17025 logo not only their testing and calibration reports, but also on an advertisement, and so forth. The logo thus serves to represent the laboratories' consistent quality control activities. ONISPA expects that obtained ISO/IEC 17025 will enhance recognition that Mauritanian fishery products are safe and reliable.

The process of which ONISPA pursued ISO/IEC 17025(2005) demonstrates LIN inspectors properly used various equipment provided by the project. Moreover, to prove LIN's higher analytical competencies, renewed efforts of ONISPA are being made to obtain the 2012 edition of ISO/IEC17020. With support of EU, ONISPA will organize internal and external training programs for two years from 2013.

3.5.3 Financial Aspects of Operation and Maintenance

Table 16 shows a balance of payment of MPN. Data is available only for the past three years, and MPN had been in deficit operation until 2011, receiving the government subsidies. Since 2012, it remains in surplus, operating on its own. SMPN seeks to keep the financial independence, so as not to depend on the government subsidies. To develop MPN facilities, the World Bank and China have been actively providing their financial support.

Table 16: Revenue and Expenditure of MPN

(unit: UM)

	2010	2011	2012
A Revenue	82,006,003	102,340,286	119,271,718
B Expenditure*	145,960,422	120,980,180	95,034,776
A-B	-63,954,419	-18,639,894	24,236,942
Government subsidies	90,000,000	30,000,000	0

Source: SMPN

*Decline of the expenditure was caused by reduction of executive salaries (decreased from 9 directors to one) and by decreased water rates associated with development of water supply facilities in Nouakchott.

Table 17 shows details of the revenue of MPN. It is leasing all the booths to dealers, recovering leasing fees without default (a large booth charges 70,000 UM (21,700 yen) /month and a small one, 45,000 UM (13,950 yen)/month.[12]

[12] 1 UM = 0.31 yen (the exchange rate is as of January 2013.)

Table 17: Detailed Revenues of MPF

(unit: UM)

	2010	2011	2012
Ice sales	27,605,550	10,196,300	7,384,300
Charge for refrigeration	288,340	29,002	0
Leasing fee for dealers	10,894,779	13,190,806	14,210,866
Storage fee for fishers	12,212,000	10,452,300	12,151,493
Rental fee of a retail market hall	3,371,124	1,386,000	2,348,898
Rental fee of the commodity building	12,769,026	12,014,239	13,201,041
Other rental fees of facility usage	3,493,219	39,613,588	41,176,480
Revenue from electricity charges	4,169,465	5,036,951	12,482,434
Toll and parking fee	7,202,500	10,421,100	16,316,206
Total	82,006,003	102,340,286	119,271,718

Source: SMPN

Note 1) The primary source of MPN's revenues is a variety of fees charged on the rental and usage of the facilities. MPN has enforced a rule-based facility operation so as to obtain consistent revenues from its users. For instance, as a rule, an access to and parking in the market by vehicles is charged, with a main gate closed for every passage. In the past this was not practiced.

Note 2) Charge for refrigeration in 2012 indicates no revenue for the reason that recently all of the landed catches are shipped on the same day. Thus the refrigerator in MPN has been suspended.

2) LIN

ONISPA's budget consists of the government allocation and its own profits gained (such as inspection fees obtained from processing factories). Since the government of Mauritania does not allocate separate budget to LIN, the administration costs of LIN are provided from ONISPA's overall budget. Table 18 shows the details of ONISPA's budget. The costs specific to LIN's administration are indicated in Table 19.

In 2007 when ONISPA was first established, its initial budget was no more than 100,000 UM. The government of Mauritania approved the budgetary allocation in 2008. This enabled ONISPA to launch its operation in 2009.

Table 18: Total Budget of ONISPA

(unit: 1,000 UM)

	2007	2008	2009	2010	2011	2012
General expendable items	19,700	71,398	103,433	124,433	58,244	n.a.
Administrational cost	10,250	66,802	96,796	79,392	99,610	n.a.
Communication and transport cost	9,560	38,090	35,851	29,091	31,950	n.a.
Other cost	1,650	3,794	16,411	7,964	4,800	n.a.
Salary	9,185	123,714	171,640	180,026	212,100	n.a.
Vehicles and office furniture	49,655	82,663	204,738	110,259	95,000	n.a.
Total	100,000	386,463	628,871	531,166	501,704	581,410

Source: ONISPA
Reference: 1 UM = 0.31 yen as of January 2013

Table 19: Administrational Costs of LIN

(unit: 1,000 UM)

	2010	2011	2012
Salary	155,170	126,357	155,776
Utilities	11,893	11,163	18,829
Communication	6,739	4,595	8,155
Facility maintenance	47,168	28,511	68,989
Repairs of inspection equipment	56,376	14,637	28,938
Expendable items of inspection equipment	22,078	7,906	26,750
General expendable items	3,368	2,847	3,629
Seminars and workshops	80,310	15,158	30,347
Other	155,170	96,357	185,776
Total	383,102	211,175	341,415

Source: ONISPA
Reference: 1 UM = 0.31 yen as of January 2013

The ex-post evaluation study inquired the Director of ONISPA about the budgetary allocation if it has been sufficient to maintain equipment and facilities of LIN. According to the Director, the quality control of the country's fishery products is currently a primary concern of the government. This helps explain ONISPA has financial stability that allows procurement of necessary expendables and replacement parts. In the past, Nouadhibou Inspection Laboratory obtained more budget than LIN because large commercial fishing ventures in that area need hygiene inspection of their fishery products. Now the government finances the equal amount to LIN. Furthermore, the Strategic Framework of the Fishery and Agricultural Sector Management (2008-2012) places an emphasis on development of hygiene control system to increase exportable fishery products for Europe. This implies the fishery sector continues to be important for the country, and thereby the government will provide sufficient financial resources to LIN.

In addition, EU has funded LIN to strengthen a sensory evaluation of fishery products imported from Mauritania.

In light of the above, LIN anticipates no particular financial problem in its future operation.

3.5.4 Current Status of Operation and Maintenance

1) MPN

MPN, first constructed with the Japanese grand aid in 1996, completed its rehabilitation through this project in March 2006. Although the overall facilities have some deterioration over years, the renovated fish handling sections (the fish market hall), as well as washable floors, walls and ceiling are mostly well maintained. This has enabled immediate and hygiene handling and shipping of landed marine products.

Marine products unloaded from pirogues

Fish sorting and grading in a dealer's booth

Fish cleaned and packed in a processing factory

On the other hand, an ice machine provided in dealers' booth area is not properly operating. Users are unsatisfied with the situation in which they are required to pay for their booths that provide inadequate services. In addition, temporary carry-in sites of pelagic fish need extension to receive increasing daily catch. Storage facilities for fishing gear of small-scale fishers (provided with the Japanese grant aid in1996) are also in shortage. This is associated with a growing number of pirogues landing the catches in MPN.

The ex-post evaluation study identified some unsanitary conditions in the surrounding areas of MPN (including seashore and retail stores), though they were not part of the project site. Some kinds of instruction should be provided to make market users more aware that common areas in and around MPN need to be kept in a clean and sanitary condition. Also, in the beneficiary survey, many processing factories indicated urgent needs of a treatment facility and sewerage system to deal with waste water discharged from their daily operation. Currently, they must transport reserved waste water to designated disposal sites (desert areas distant from the urban districts). In the survey, majority of the factories made a strong request for a practical solution to this problem.

2) LIN

The field study of the ex-post evaluation revealed LIN has generally good maintenance of laboratory equipment provided by the project, and sufficiently supplies expendable items and replacement parts. It suggests the laboratory can sustainably operate its hygiene inspection of fishery products, water quality analysis, and assessment of hygiene management of processing factories.

From September to November 2011, the Follow-up Study of this project was carried out to monitor the conditions of LIN facilities. Based on its findings, the following supplemental equipment and repair works have been provided. All the necessary repair works will be completed by the end of FY2013 (with a total estimate cost of 36,398 thousand yen).

(1) Name of equipment
Biological microscope
Phase-contrast microscope
Ice machine
TOC analyzer
Gas chromatograph
High performance liquid chromatography
Post-column ion chromatography
Atomic absorption spectrophotometer
Ultraviolet and visible spectrophotometer
(2) Repairs
Adjustment of natural lighting system
Replacement of air conditioners
Repair of water leakage in an extraction laboratory
Replacement of fans of draft chambers

Considering the overall circumstances mentioned above, the ex-post evaluation concludes LIN has no significant problem in its management, skills and finance with respect to facility maintenance. In MPN, however, some problems have been observed in its maintenance management including the technician's skills and know-how in checkup and repair of its facilities. Therefore, the sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The primary objective of this project was, by rehabilitating Nouakchott Fish Market (MPN) and constructing a Nouakchott Inspection Laboratory (LIN), to enforce proper handling of fishery products landed in MPN pursuant to hygiene standards of Mauritania and carry out hygiene inspection of those products exported to Europe. This objective has been consistent with Mauritania's development policies as well as urgent needs in Nouakchott area to

strengthen the quality control system in response to an increasing fishery export. Therefore, the relevance of the project was high both at the time of the planning stage and the ex-post evaluation.

The project has enabled MPN's proper handling of fishery products in compliance with the hygiene standards of Mauritania. The export volumes for European Union (EU), which the project's indicator to assess its effectiveness, reached 3,762 tons in 2007, exceeding a target annual amount of 3,000 tons. LIN is also properly operated in issuing sanitary certificates of exportable fishery products and accrediting fish processing factories. In 2009, the laboratory undertook more than 4,000 cases of testing and inspections of fishery products, exceeding the project's target value. Not only contributed to the local economy of Nouakchott, an increase in the fishery exports has benefited small-scale fishers, dealers and retailers, making a positive impact on living conditions of these end beneficiaries. Therefore, the effectiveness and impact of the project are high.

The project cost and period are both within planned values, therefore its efficiency is also high. As for its sustainability, while LIN properly operates and maintains its facilities, MPN has some problems in facility maintenance, including a technician's ability in checkup and repair of equipment. Thus, the sustainability of the project effect is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- The ice machine in MPN is not functioning properly. According to fish dealers and users of the market, ice production is not sufficient to meet the demands, though the private ice suppliers are providing the service. Moreover, they feel various rental fees of the market facilities rather expensive considering less good quality of services provided by the MPN than before. There is no simple way to remedy every difficulty pointed out, but then MPN should at least seek for more communication with its users to work on better service provisions. In replacing the aforementioned ice machine with a new facility, the technician requires relevant training to improve his maintenance skills.
- Processing factories expressed their desire to have a waste water treatment plant. With a growing fish exports, the waste water discharges are actually increasing. For sanitary reasons, MPEM[13] needs to address this problem.
- MPN serves to sustain livelihoods of socially vulnerable people, such as small-scale fishers, women retailers and repairers of pirogues. MPEM should enable these key stakeholders to participate in the development process of the local fishery.

[13] Inland areas located within 200 m from the coastline are under MPEM's jurisdiction, and thus it is responsible for taking countermeasures against the waste water problem.

4.2.2 Recommendations to JICA

MPEM and SMPN are planning to replace MPN's ice machine provided by the project eight years ago. This calls for JICA to share with these agencies about how they dismantle the existing machine and associated apparatus.

4.3 Lessons Learned

The project was intended to improve hygiene management of MPN serving as a critical fish handling point as well as to develop analytical capacities of LIN which plays a leading role in fish inspection. These facilities are of vital importance to give Mauritania's exportable fishery products quality assurance pursuant to the hygiene standards of the country. The project has facilitated LIN's fishery product inspection and accreditation of fish processing factories with rule-based criteria. Currently, Nouakchott exports to EU an increasing volume of fishery products that meet the hygiene standards.

In response to such fishery export increase, LIN obtained ISO/IEC 17025(2005) in January 2013. This was achieved as a result of its effort to improve the quality of inspection through a UNIDO's program implemented since 2010. The certification is valid for four years, and another assessment will be subsequently given once within a two-year period. Renewal of the accreditation will require LIN to demonstrate its consistent practices for high quality analysis. This is serving as an incentive for the laboratory to continuously develop its management system and the inspectors' technical capacities. To increase sustainability of institutions and technical operations in other similar projects, their design phase may incorporate efforts to meet international standards of products and services, which requires periodical assessment undertaken by third-party organizations.

As mentioned above, on the other hand, more processing factories are concerned with a waste water problem. Many of them indicated pressing needs of sewerage system that covers the entire coastal areas in which MPN, LIN and processing factories are operating. In other projects intended for the fishery sector, waste water from seafood processing can be a common problem associated with an increase in global fish exports. Therefore, while focusing on value chains of local and export fishery markets, of equal importance is considering and conserving the natural environment in which they are operated.

-End-

The United Mexican States

Ex-post Evaluation of Japanese ODA Technical Cooperation Project

Project to Support the Women's Empowerment in the Mayan Region

in the State of Quintana Roo

External Evaluator: Jun TOTSUKAWA, Sano Planning Co., Ltd.

0. Summary

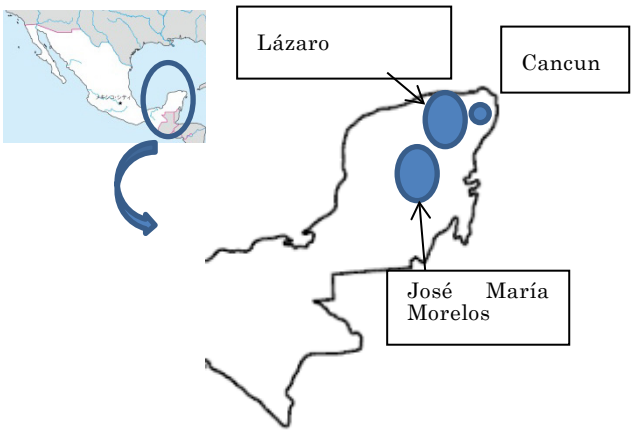
The Project aimed for the Institute of the Women in the State of Quintana Roo (hereafter referred to as IQM), Department of Training and Economic Development to strengthen its institutional capacity, then, to establish a supporting program for women's groups. The objective was to meet the needs of the IQM which sought more effective and efficient means of supporting women's groups. In addition, the Project sought to support the Mayan region which has been facing difficult economic times, with a particular focus on supporting women in regions where a large number of husbands are absent due to migrant work etc. This focus is relevant to the needs of the target area and the development policies of the central and state government. On the other hand, it was observed in the Project design that involvement of necessary related organizations outside of the IQM was limited, and moreover, there were insufficient verification opportunities of the Program implementation. From these points, the relevance of the Project is considered to be fair.

The series of the activities of the Project were implemented as planned and the Project period was within schedule. However, since the Project cost exceeded the plan, the efficiency was fair. In regards to the effectiveness, the Project purpose "Support Program for women's groups" was created during the Project period and the outputs and indicators were mostly achieved. However, following Project completion, ongoing manifestation of the effects of these outputs has been limited. In addition, although income growth, part of the overall goal, can be seen in about 30-40% of women's groups, the handicraft brand supported by the Project currently remains mostly incomplete and there is a state of relapse in which old handicrafts are still being produced and sold. From the above, the effectiveness and impact achievement is low.

Regarding sustainability in the future, the IQM's limited budget and shortage of manpower will possibly become constraints on support activities which require regular follow ups. For this reason, the sustainability at the time of ex-post evaluation is low.

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

1. Project Description



(Project Location)

(Women supporting group)

1.1 Background of the Project

The Mexican state of Quintana Roo, located in the Yucatan Peninsula, faces onto the Caribbean Sea and has many international tourist spots such as Cancun, Riviera Maya, and Playa del Carmen. These destinations attract up to 10 million tourists per year and thus economic development associated with the expansion of the tourism industry here is significant. On the other hand, there are Mayan region in inner Quintana Roo where the poverty level is significantly higher than other areas in the region.

In the Mayan region, residents cultivate corn for self-subsistence primarily through slash-and-burn agriculture. However, almost the entire region is karst with low soil fertility and recently the productivity of agriculture in the Mayan region is very low which is about 1/10 of the unit yield in northern Sinaloa where is adopting modernized agriculture. In addition, in recent years there have been repeated droughts and hurricanes which frequently damage crops. These act as large geographical constraints on achieving revenue improvement through agriculture. Therefore, residents are dependent on revenue from migrant work and government subsidies in order to attain adequate monetary incomes.

The IQM was established in 1998 for the purpose of empowering the women of Quintana Roo. It aims to improve the economic participation and living standards of women and provides support for the women in the state, including those residing in the Mayan region. Support of handicrafts creation is one form of IQM's tasks. However, the handicrafts created through the support are of a low quality/design and there is little that can be sold at the market in the state's tourist areas. Since the self-sufficient form of agricultural production, that was the foundation of life for so many years, is no longer adequate, residents in the prime working ages between 20-40 work as hotel employees or manual labor at construction sites for tourist locations and mainly have to leave their villages to be engaged in employment. With such

changes, the cultural and traditional life of the Maya is becoming gradually obsolete.

Under such circumstances, the Quintana Roo state government requested a technical cooperation project to Japan which aimed to increase the sales and income-generation of handicrafts produced by women's groups in the Mayan region as one method of poverty reduction for the Maya. To achieve this, the Project's aim was for institutional strengthening of the IQM and improvement in the quality of handicrafts through establishing a system for development support of new product design and continued product improvement. The Japan International Cooperation Agency (JICA) decided to start the technical cooperation project scheduled for about three years starting from March 2007 with the IQM as the implementing agency.

1.2 Project Outline

Overall Goal		Income of the members of women's groups who have received support through the Program of the Production Development of the Female Artisans (thereafter referred to as "the Support Program") is increased
Project Purpose		The Support Program for women's groups by the Department of Training and Economic Development of IQM is established.
Outputs	Output 1	Enhancement of investigative function: Necessary information is collected and organized to understand the actual situation of the communities and to conduct activities.
	Output 2	Enhancement of administrative operation and management function: Capacity of administrative operation and management of the Department of Training and Economic Development of IQM is improved by elaborating the operation manual for applying the Support Program.
	Output 3	Enhancement of coordinating and cooperation function: System to coordinate and cooperate between the Department of Training and Economic Development of IQM and other relevant institutions is established for implementation of the Support Program.
	Output 4	Elaboration of the Support Program: The training guide for development of handicrafts is elaborated through the results of the pilot project for the targeted women's groups by the Department of Training and Economic Development of IQM and the branches.
	Output 5	Enhancement of information management: Information about the operation to support women's groups is properly managed and utilized.
Inputs		Japanese side: 1. Dispatch of Experts: 12 Short-term experts only 2. Acceptance of Trainees: 0 3. Trainees for Third Country training programs: 4 4. Provision of Equipment: 94 types 5. Local cost: 32 million yen Mexico side: 1. Counterpart (CP) allocation 2. Provision of land and facilities, project office, electricity and water fees. 3. Local costs, counterpart salaries, car insurance, vehicle maintenance costs

Project Cost	290 million yen
Cooperation period	March 2007 - March 2010
Implementing Agency	Institute for the Women of the State of Quintana Roo (IQM)
Cooperation Agencies in Japan	None
Related Project	None

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

At terminal evaluation, it was determined that "the achievement of Overall Goal is expected in near future." Due to the fact that during the Project period the indicators of the Overall Goal, i.e. the numbers of newly developed products, their sales and the resultant incomes have all increased respectively, the outlook is that it will be achieved.

In addition, members of women's groups expressed improvements in their own assertiveness as a positive impact and this demonstrates a real impact on empowerment.

1.3.2 Achievement of Project Purpose

It was evaluated that the Project Purpose "is likely to be achieved by the end of Project period". However, the evaluation also stated that "More close cooperation with relevant organizations is necessary in order that various training courses and projects are implemented based on the Support Program established by the Project ".

1.3.3 Recommendations

At terminal evaluation, recommendations were made with respect to the two points: "establishment of the Program of the Production Development/Improvement of the Female Artisans (= the Support Program) " and "ensuring the sustainability of targeted women's groups' activities."

As for the first point of "establishment of the Support Program", it was recommended that in the future, the Project's outputs such as the Support Program and operation manual should be carefully examined through individual consultation with relevant organizations while examining the amount of feasible cooperation for Production Development. In addition to this, it was also recommended that information sharing seminars and presentations be held concerning these outputs of the Project.

As for the "sustainability of targeted women's' groups," the terminal evaluation stated that it was important to ensure the implementation of incomplete union applications from targeted women's groups, and to continue local training for these groups.

2. Outline of the Evaluation Study

2.1 External Evaluator

Jun TOTSUKAWA, Sano Planning Co., Ltd.

2.2 Period of Evaluation Study

The External Evaluator performed an evaluation study as follows in the course of this ex-post evaluation:

Period of the Study: September 2012 - February 2014

Period of the Field Study: November 7–22, 2012 and April 11–19, 2013

3. Results of the Evaluation (Overall Rating: D[1])

3.1 Relevance (Rating: ②[2])

3.1.1 Relevance to the Development Plan of Mexico

(1) At Project start

The National Development Plan of Mexico (2001-2006) places great importance to overcoming poverty and reducing disparities. It regards overcoming poverty in the South and South Eastern states, which have particularly high degrees of poverty, as the most important task. Therefore, this plan calls for expanding opportunities for creating and implementing production projects that directly benefit indigenous communities that are in need of comprehensive development and have historically been marginalized from the benefits of such development.

The development plan of the State of Quintana Roo (2005- 2011) expressed the importance of gender equality, the welfare of indigenous people, and the promotion of overall human development. Specific strategies to achieve this include the involvement of women in production activities, combatting the poverty and alienation of women, promoting indigenous people's participation in production activities, reducing indigenous poverty and capacity building.

It can be said from the above points that the support activities for women in the Mayan region of this Project are relevant to the policy objectives of the country.

(2) At Project completion

The National Development Plan of Mexico (2007-2012) places a great deal of importance on poverty reduction in the south and southeast regions. This includes the target area and calls for the development of capacities that contribute to poverty reduction, promotion of employment opportunities and support for production activities. Also, as support for

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

[2] ③: High, ②: Fair, ①: Low

indigenous residents was set as one important challenge, it stated the need to implement capacity building to support socio-economic development that also protects indigenous culture.

In addition, the development plan of the State of Quintana Roo (2011-2016) was updated after Project completion and laid out four development concepts. These include “promotion of understanding and cooperation” which outlined the importance of support for indigenous people and the promotion of gender equality. As a strategy of support for indigenous residents, assistance for socio-economic development in poverty regions, while protecting their environment and indigenous culture was emphasized. More specifically, it intends to carry out training and entrepreneurial support for capacity building and livelihood improvement of indigenous people. The plan emphasizes the participation of women in promoting production and economic activities as well.

From the above points, the support for indigenous Mayan that this Project aims for is relevant to the policy objectives of Mexico and the target state not only at the time of the Project completion but also at the time of ex-post evaluation.

3.1.2 Relevance to the Development Needs of Mexico

Regarding the category of “relevance to development needs,” the Project has numerous aspects to be verified, therefore, this category is divided into smaller items and evaluated separately.

(1) The existence of needs and the consistency with needs

a. Needs on support Mayan

From the time of the Project start until the present ex-post evaluation, the poverty situation in the Mayan regions has been continuing and the need for support is still high. The human development index of region is 15% lower than in non-indigenous areas of Quintana Roo (2010). Apart from the economic conditions, the general living conditions also require assistance. In addition, it is observed that there are still many households where husbands do migrant work and there is a wide range of expected roles for women in the home, including the securing of additional income. It can be said from the above that the Mayan women's needs for assistance were high from the start of the Project right through to the present ex-post evaluation and that the direction of the Project's aims has met with these needs.

b. Needs for institutional strengthening of the IQM

From Project planning, the IQM was looking for more effective and efficient ways for supporting women. In particular, it sought to strengthen relationships with federal and state government organizations who are involved in supporting women. Also, research capacity

building in order to grasp the current situation, and improved communication within the organization were mentioned as specific needs for institutional strengthening. From the above, the contents of this Project were relevant to the needs of the IQM.

(2) Selection of the target areas

The target area of the Project, Quintana Roo, is the state with the second highest number of Mayan residents in the nation and evidence of its high poverty index can be seen throughout the state. One characteristic of this state is, as the global tourist spot of Cancun is located there, the state's GDP tends to be very high and thus the poverty in the region outside Cancun is readily hidden. As a result, while external support can be seen in similar Mayan areas in Campeche and Yucatan, very little assistance from outside donors was received in Quintana Roo. It is believed that in light of the circumstances described above, the selection of Quintana Roo and the focus on areas with a high poverty index was appropriate.

(3) Appropriateness of the Project Design

a. Selection and involvement of counterpart organizations and other players

As the goal of the Project was strengthening capacity of the IQM, selecting the IQM as the counterpart was the most appropriate course of actions.

The principal roles of the IQM and its Department of Training and Economic Development are as follows.

IQM:

The primary mission of the organization is monitoring to ensure that women's rights and gender equality are reflected in the policies and programs of the state government. This is done through 1) responding to domestic violence, 2) providing legal protection for women, 3) offering women educational and health sector support, and 4) supporting women’s economic development.

With a mission like this, the institutional character of IQM is rather a coordinating agency. For activities 3) and 4) in particular, the IQM does not have internal field experts and so has adopted a system of working with other professional organizations in order to provide support for women in these areas.

Department of Training and Economic Development of IQM:

The department is in charge of 4), economic development. This department works together with support programs of the federal and state governments to coordinate technical training and equipment provision support (the organizations which perform technical training and equipment provision are other organizations). For example, if a certain organization that

sponsors support programs requests candidate selection of a participant group to the IQM, then, the IQM will find and specify the group. After the participants are selected, it coordinates the training for the group (the dispatch of trainers and its budget is assumed by the host organization, not IQM) and will perform required follow-ups after training finished.

In view of the above functions and mission of the IQM, along with the fact that the Project's pilot project focused on handicraft production, in order to carry out more effective and efficient support for their activities, it was necessary for the Department of Economic Development of the State of Quintana Roo (SEDE), which has extensive experiences in handicraft support, to work closely as a counterpart or as a working group.

During the Project period, the handicrafts produced by women's groups (the PRODEMAYA brand) achieved generally favorable sales outputs due to marketing activities implemented by Japanese experts and others. After Project completion, however, the IQM was not able to sufficiently provide follow up guidance from a sales perspective, and then sales activities saw a rapid downturn. This has resulted in a considerable negative impact on the overall goal of ongoing activities and the degree of income growth for women's groups. If there had been involvement of SEDE, it is assumed that more effective follow up activities had been possible both during the Project period as well as after Project completion (SEDE governs market research and handicraft development support in the state and has achieved significant results through measures such as carrying out marketing activities on its own website and organizing trade fairs). Furthermore these cooperative activities could have become an opportunity for the IQM to learn a great deal in terms of business promotion etc.

From the above, it is believed there was room for improvement regarding ways in which to involve organizations other than the counterpart who can serve as key players.

b. Lack of validation for the implementation of the Support Program

The goal of the Project was that "the Support Program for women's groups is established." However, although the Support Program itself was completed within the Project period, as described above, there is the fact that handicraft sales have experienced a rapid downturn after the Project ended. Therefore, the Project design cannot be said to have secured the "establishment of the Program" which would continue beyond Project completion and sustain the Program's effects. Due to the fact that the Support Program was completed just before Project completion, there was not adequate time to verify the Program's effectiveness. It is believed that to truly complete establishing the Program, it was necessary to utilize it at least once. By utilizing hands-on experience like this, it is believed that improvements and adjustments can be made to create a more precise program while at the same time create an opportunity for technology transfer from Japanese experts to the counterpart to take root.

Thus, a flaw within the project design is that the Project did not provide an opportunity to verify the effectiveness of the Support Program.

This section will give an overview of the Support Program.

"The Support Program for women's groups," establishment of which is the aim of the Project, broadly consists of: 1) an overview of the action steps required by the IQM, as well as the necessary interrelations with relevant organizations needed to support women's groups; 2) a "training guide" organized as a training component module; and 3) an operation manual which indicates the procedures for program implementation.

Of these, 2), the training guide contains a list of the various trainings required for the development of the target handicrafts, the implementation method for each training, the required time (number of classes), as well as other considerations. In other words it acts as a teaching guide and description of the curriculum. On the other hand, 3) the manual covers a range of information on tasks, such as product development, manufacture and sales, to business evaluation and so on, necessary for implementing support.

c. Relevance of the Project Design Matrix (PDM)

The PDM was significantly altered (once) following mid-term review. As described above, at the time of Project planning, institutional strengthening of the IQM should have been a primary goal and the relevant parties were supposedly aware of this. However, in the process of creating the first PDM, institutional strengthening was left as just one of the outputs and "Production Development of the Female Artisans" became the Project Purpose. In addition, other issues such as "improvement of vocational training" and "handicraft design and product rights protection activities," which are not included as roles for the IQM, were raised as outputs. For these reasons, not only was there a deviation in the original needs and PDM, the configuration of the PDM ultimately became an inappropriate framework. Under this framework the IQM, an organization which does not have the technical support functions necessary for handicraft creation (in other words an organization which does not have the means to achieve the goals) could not cope with the tasks. Thus there was the contradiction of assigning the task to an organization that does not have the means to achieve the goals.

Even though the PDM contents were modified in the mid-term review, until that point there was confusion amongst Japanese experts and the counterpart as to what directions the Project should be aimed at. Moreover, a substantial amount of time and effort was spent on discussing the PDM modifications. This point had an effect on the efficiency of the Project activities in the first half of the Project period.

3.1.3 Relevance to Japan's ODA Policy

Poverty reduction has been described as a key issue in the Official Development Assistance Charter for Japan's ODA policy. Also at the start of the Project, the Country Assistance Strategy to Mexico by JICA advocated measures of poverty reduction that utilize culture, technology and resources unique to the region. Therefore, the Project is relevant to the ODA policy of Japan.

There were some negative factors regarding the appropriateness of the Project design, including issues such as a lack of involvement from the necessary players and a lack of verification for the Support Program. However, the Project's initiatives were still relevant to Mexico's development policy and the support needs of the Mayans. It can be said from the above points that the relevance of the Project is fair.

3.2 Effectiveness and Impact[3] (Rating: ①)

3.2.1 Effectiveness

3.2.1.1 Project Output

1) Output 1

"Enhancement of investigative function: Necessary information is collected and organized to understand the actual situation of the communities and to conduct activities".

Information gathering and organizing for understanding the current situation has been made for the handicrafts market, support schemes, women's groups' needs etc. The indicators prescribed in the PDM were fulfilled, therefore, Output 1 is considered to have been achieved at the time of Project completion. The achievement status of each indicator is as follows.

Table 1: Achievement of Output 1 indicators

Indicator details	Achievement
1-1. Surveys on the status of the handicrafts market in Quintana Roo are conducted and the information is summarized in a report and then updated	A market survey was conducted in 2007 and 2008, followed by a supplemental survey and the results were compiled in the "Handicrafts Market Survey Report". During the Project, information updates were made by use of the IQM website.
1-2. Surveys on the current status of villages in the Project area are conducted and the information is summarized in a report and updated	Training for Rapid Rural Appraisal (RRA) was conducted for the Department of Training and Economic Development of IQM and the staff of three target area pilot activity branches. After this six field surveys were conducted, the findings were compiled in a report. In addition, the C/P alone conducted additional investigations on two villages in 2008 and 2009 respectively, and updated the information.

[3] Effectiveness should be judged in consideration of impact to determine a rating.

As for the handicrafts market surveys, the IQM itself did not take a role in their implementation but rather they were mainly carried out by experts and others[4]. In addition, information updates were compiled by experts utilizing market information provided by women's groups.

2) Output 2

"Enhancement of administrative operational function: Capacity of administrative operation of the Department of Training and Economic Development of IQM is improved by elaborating the operation manual for applying the Support Program."

While formulating the operation matrix and basic strategy of the Department of Training and Economic Development of IQM, an operation manual for the Support Program was created. In addition, along with training in the PCM method, technology transfer related to methods of Project management was carried out. The indicators in the PDM were fulfilled, therefore, Output 2 is considered to have been achieved at the time of Project completion.

Table 2: Achievement of Output 2 indicators

Indicator details	Achievement
2-1. Operating procedures manual for the Department of Training and Economic Development is created	In order to clarify the duties of the IQM's Department of Training and Economic Development, an operation matrix on its duties was compiled based on discussions at workshops. Following this, after a review of state IQM regulations and internal conditions, a business flow diagram and operating procedure manual was created.
2-2. Operation manual and assistance program is created	After receiving feedback from relevant organizations, an operation manual for the effective implementation of the Support Program was completed by the final stage of the Project in 2010.

3) Output 3

"Enhancement of coordinating and cooperation function: System to coordinate and cooperate between the Department of Training and Economic Development of IQM and other relevant institutions is established for implementation of the Support Program".

Meetings with related organizations such as the Joint Coordinating Committee (JCC) and Technical Committee (TC) were held on a regular basis. In addition, events that connect the handicrafts dealers and handicrafts production groups were held on a regular basis as well. Thus, cooperation and coordination with the relevant organizations became strengthened. The indicators in the PDM were fulfilled, therefore, Output 3 is considered to have been achieved at the time of Project completion.

[4] SEDE is responsible for works related to market information. Since these activities were already being implemented before the PDM modification, it was left as an indicator for measuring the activity results even after modification of PDM.

Table 3: Achievement of Output 3 indicators

Indicator details	Achievement
3-1. An assistance scheme utilization guide (consultation window, event flyers etc.) proposal is created	Information on the support scheme was collected, and a support scheme utilization guide was completed (by electronic version). A brochure on the support scheme was also created and distributed to women's groups.
3-2. Meetings are held with relevant organizations that have support schemes for women's groups creating handicrafts.	Meetings with organizations providing support schemes were carried out through two modes: bilateral (IQM had meetings with relevant agencies individually) and general conferences (meetings where all relevant organizations including IQM participated). The former was carried out in the form of individual visit meetings, where information exchange was carried out on activities and issues shared between the target organization and IQM. The latter general conferences were carried out four times during the Project time in the form of TC and JCC. In this way, meetings with outside organizations providing support schemes had continued.
3-3. Opportunities to match collaborators / handicrafts dealers with crafts producers (such as product fairs or introduction events) were created more than twice a year	Matching events were conducted by a total of eight times; twice in the second year, five times in the third year, and once in the fourth year.

4) Output 4

"Elaboration of the Support Program: The training guide for development of handicrafts is elaborated through the results of the pilot project for the targeted women's groups by the Department of Training and Economic Development of IQM".

Pilot projects for the target women's groups were carried out and a training guide for handicrafts production was created based on lessons learned and experiences gained. The indicators in the PDM were fulfilled, therefore, output 4 is considered to have been achieved at the time of Project completion.

Table 4: Achievement of Output 4 indicators

Indicator details	Achievement
4-1. The types of improved and developed handicrafts increase	At the end of the Project, a 42 type product line-up was shown. If consideration includes the different sizes and colors of the products, more than 164 products have been developed, and thus, the types of handicrafts have greatly increased.
4-2. The evaluation of the quality of improved and developed handicrafts is enhanced	The point that determines the level of the quality is whether the dealer will buy or not. With this assumption in mind, as there were more than 10 stores continuing transactions up until the Project completion, it is said that the quality of the handicrafts were highly evaluated.
4-3. The sales of improved and developed handicrafts are increased	Sales of handicrafts improved and developed through the support of the Project increased and reached about 250 thousand pesos (about 1.8 million yen).

4-4. The capabilities of women's groups supported through the Projects are improved (awareness, knowledge, etc.)	A self-assessment survey was conducted by target women's groups through the Project. In this survey, they recognized that their handicrafts production capabilities (production techniques and design), organizational capabilities, production management capacity, as well as distribution capabilities were greatly improved compared to before the Project. Amongst the members of these groups, more than a few developed skills to a level where they were recognized as instructors. Three of these individuals have already provided guidance to other groups.
4-5. A Training guide for handicrafts production is created	A training guide for handicrafts production was created and distributed to the interested parties at the TC meetings.

5) Output 5

"Enhancement of information management: Information about the operation to support women's groups is properly managed and utilized".

A new mechanism for the Project information management was introduced and utilized for the purpose of information sharing between the parties. Compared to before the Project, major advances were observed but the initial planned transfer of information systems to IQM's server was not completed during the Project period. Therefore, because some indicators were not met, achievement of output 5 is fair.

Table 5: Achievement of Output 5 indicators

Indicator details	Achievement
5-1. Mechanism of the Project information management is established	A mechanism of information management was created through an information sharing tool, "base camp," and began operation in 2008. Utilizing this system, information on training and the current status of the handicrafts development at the pilot projects was shared between the relevant parties.
5-2. C / P staff are updating useful information using the information system	Since the introduction of the "base camp," information updates by experts on a weekly or theme basis have continued. Use of the system has been increased gradually by the C / P throughout the Project period. In addition, information updates were carried out by the staff of the Department of Training and Economic Development.
5-3. The information system utilized in the Project is introduced into the IQM's information systems	Transfer of the website and information system to the IQM server was approved by the Director General of IQM. However, the transfer of the website and information system to IQM's server was not finished by the Project completion.

3.2.1.2 Achievement of Project Objectives

The Project purpose:

"The Support Program for women's groups by the Department of Training and Economic Development of IQM is established".

"The Support Program for women's groups", which is the Project purpose's major output,

shows the necessary operations, processes and approaches that IQM should take for supporting women's groups. The details are contained in the “operation manual for applying the Program” and the “training guide for handicrafts products.” The operation manual and training guide were created during the Project based on the experiences gained in the pilot project. As described below each indicator in the PDM was fulfilled, and it can be evaluated that the Project purpose was achieved by the time of Project completion.

1) Indicator 1: A support program is created.
(Achievement)

A conceptual diagram organizing the basic components of the program was compiled in 2009. Based on the conceptual diagram, experts along with the head of the Department of Training and Economic Development conducted presentations to the Director General of IQM and received consent for each direction the program took. After this the Support Program was created through the production of the operation manual and the training guide.

2) Indicator 2: A training guide for handicrafts production is created through activities conducted in the target communities
(Achievement)

Revision and editing of the Support Program training guide was carried out while demonstration activities were undertaken based on the training guide for handicrafts production. The guide was completed in January 2010 and distributed to interested parties through the Technical Committee.

3) Indicator 3: An operation manual is created for implementation of the Support Program.
(Achievement)

The operation manual was created based on the activities at pilot project and focused on four areas: 1) basic definitions and procedures outlined in the program conceptual diagram, 2) a scenario based on experiences in the field, 3) realistic business processes reflecting this scenario, and 4) presentations on the challenges confronted during activities, their solutions and success stories.

3.2.2 Impact

3.2.2.1 Continuity of Outputs until the ex-post evaluation

The Project aimed for multi-faceted capacity development in the organization of the Department of Training and Economic Development of IQM. As mentioned above, at the time of Project completion there was a generally high level of achievement, however, the sustainability of the output results are described in the following Impact section.

Table 6: sustainability of output effects

Outputs	Evaluation at the Project completion	Continuation following Project completion
Output 1 : Enhancement of investigative function	Achieved	⇒ Sustainability of the effects is limited During the Project period, the methods for village surveys and ascertaining of the needs of women's groups were implemented by the IQM itself and can be said to have been acquired. However, after the Project completion, the village survey methods which were the subject of the Project's technology transfer have not been adopted (Stakeholders meetings etc. for understanding needs have been held, however, the kinds of village surveys and workshops that were carried out during the Project period have not been implemented). As market research for handicrafts was originally the role of SEDE, following Project completion the IQM has not been involved.
Output 2: Enhancement of administrative operation and management function	Achieved	⇒ Sustainability of the effects is limited The PDM method was introduced and its technology transferred in order to contribute to enhancement of the administrative operational function. However, following the Project completion it has not been underutilized within the organization. Utilization of the operation manual was limited. Although there arose a need to revise the manual due to a few changes in the internal regulations of the IQM after the Project completion, necessary revisions had not been made at the time of the ex-post evaluation.
Output 3: Enhancement of coordination and cooperation function	Achieved	⇒ Sustainability of the effects is limited The Project had strived for establishment of the Technical Committee (TC), and proposed its continuation even after the Project completion. However, any meeting of TC has not been held since the Project completion and is judged to be essentially dissolved. In regards to mechanisms of coordination and cooperation with other institutions, some parts are being maintained through individual networks and annual gender meeting. However, it has to be said that sustainability of the effects brought about by the Project is limited (gender conferences were being held since before the Project).
Output 4: Elaboration of the Support Program	Achieved	By the time of the Project completion a training guide had been established. However, after the Project completion, utilization of the Support Program that includes the training guide by stakeholders has remained at a limited level.
Output 5: Enhancement of information management function	Fair	At the time of the ex-post evaluation, tools to share information on day-to-day operations, such as summaries of and the state of progress in individual operations like training and seminars etc., were already introduced. Also, the personnel from the Project period have almost entirely been renewed. Therefore, despite the fact that from the viewpoint of sustaining the Project's effects relations are a little insufficient, it can be judged that the information management capacity of the organization itself has been enhanced by a new personnel structure.

In this way, the desired output indicators have been achieved in the Project period. However, verifying the effects of various outputs at the time of the ex-post evaluation, limited sustainability is observed.

3.2.2.2 Achievement of the Overall Goal

The Overall Goal:

"Income of the women's groups who receive supports through the Program* of the Production Development of the Female Artisans is increased."

* The Support Program for women's groups

The situation of the women's groups that has been confirmed at the time of the ex-post evaluation is as follows.

Positive points

1) Through the intervention of the Project, organizational unity was established within women's groups, and some groups have continued group activities even after the Project completion.

2) New products are being developed through spontaneous activities devised by the groups themselves.

3) Some groups have seen a revenue increase due to unexpected opportunities such as student visits for community eco-tourism and orders related to election campaigns.

4) Through the technical guidance of the Project, sewing techniques have improved significantly and the quality of products currently being produced has improved.

Negative points

1) In regions which have not been blessed with the kinds of opportunities described above in 3), although the groups themselves still exist, their economic activity has stagnated. Basically, as groups cannot carry out marketing activities independently, the majority are in a situation where they rely on incidental opportunities.

2) Although IQM branches are continuing personal exchanges with women's groups, it is still not completely capable of providing enough supports for market activities and sales promotion.

3) The Project adopted a marketing strategy to focus on luxury/high-quality market for selling the products of target groups. The Project pinpointed the sales venue at luxury hotels and boutiques etc., while sustaining the PRODEMAYA brand's value and stability. However, because the frequency and volume of the sales are not so brisk as long as on this strategy's character, the momentum of the groups has begun to wane and activities have stagnated following completion of the Project.

Therefore, the majority of products that continue to be made by women's groups are not those of the PRODEMAYA brand but rather products created through their own ideas or those that they had been accustomed to making even prior to the Project's implementation.

The achievement of the overall goal indicators is analyzed based on the situation of women's groups confirmed above.

1) Indicator 1: Income of women who received support by the Project increases.

The increase or decrease in income of women's groups in each community in the Project is shown in the table below. As described above, there exist both groups who have shown an increase and groups that have shown a decrease in income.

Table 7: The increase/decrease in women's group's incomes after the Project

(number of responses)

Municipality	Community	Increase	About the same	Slight decrease	Significant decrease	Don't know	Total
José María Morelos	Huay Max	10					10
	Sacalaca	2	5				7
	San Felipe	3	6				9
	Tabasco	1				14	15
	La Presumida	2	4				6
	Adolfo López Mateos	2	5	5			12
Lázaro Cárdenas	Nuevo Durango	11					11
	Ignacio Zaragoza	10					10
	San Francisco			6			6
	Nuevo Valladolid			6	3	1	10
	Agua Azul			7		2	9
Total		41	20	24	3	17	105
		39%	19%	23%	3%	16%	100%

Source: Results of beneficiaries surveys

The number of respondents who are still producing the PRODEMAYA brand through the Project was 14 (out of 105). On the other hand, the number of respondents who are making

handicrafts other than those of PRODEMAYA was 93 (out of 105). From this, it can be assumed that presently there are many cases where handicrafts other than those of PRODEMAYA are contributing to income increase.

The primary reason for no longer manufacturing the PRODEMAYA brand was that "selling was difficult/the brand wouldn't really sell". The respondents as such reached 55 respondents, more than 60% of all the respondents. In addition, other corresponding answers are essentially related to sales issues, i.e. "promotional activities are not being carried out" and "there is still leftover stock". On the other hand, reasons such as domestic opposition or difficulties in obtaining raw materials were hardly seen.

Conversely, the reasons given for continuing the production of Non PRODEMAYA products were: 1) They were individually producing the handicrafts themselves even prior to the Project's implementation, 2) through the Project they found advantage to work as a group, and 3) many of such products are essentially inexpensive, therefore, sales frequency has been maintained to some extent. From these reasons it can be considered easy to sustain the motivation for making handicrafts.

2) Indicator 2: The types of improved and developed handicrafts increase through the program

In Ignacio Zaragoza, women's groups created new bag designs based on ideas of their own and, if small variations are included, about 5 new types were newly created. In addition, in Nuevo Durango there was one addition to the types of woodwork products.

It should be noted that these products are not being sold as part of the PRODEMAYA brand.

3) Indicator 3: The number of women's groups applied the program increases

There are no women's groups that can be said to have started receiving support through the Support Program.

4) Indicator 4: The number of handicrafts delivered to luxury boutiques and handicrafts stores increases

The luxury hotels and boutiques that received deliveries during the Project period are no longer stocking PRODEMAYA products and continuous delivery is not being performed. The communities have already lost communication with the persons responsible for being sales representatives and for handling a range of sales activities.

In regards to the overall goal of "income increase", around 40% of respondents reported that they had an increase. When viewed as communities, there were only three communities out of 11 where more than half of respondents reported an increased income. In addition, creation of the PRODEMAYA, the focus of the Project, had stagnated at the time of the ex-post evaluation. Although there have been some positive impacts stated previously, from the above points, the overall goal is evaluated to be low as of the ex-post evaluation.

3.2.2.3 Other Impacts

1) Improvements in technical capabilities

The majority of targeted women recognized that their technical capabilities in sewing etc. have improved through the guidance of experts in the Project. Even now, these improved capabilities have become a great asset in the production of handicrafts, even if those handicrafts are different from those created during the Project.

Table 8: Recognition of technical capability improvements for handicrafts

	Improved	Slightly improved	Worsened	Can't compare	Don't know	Total
No of responses	74	1	0	12	18	105

Source: Results of beneficiaries surveys

2) Improved business capacity

Trainings were carried out in areas such methods for keeping account books along with technical training in the Project. Of the 105 respondents, 81 stated that they had learned how to keep an account book which had enabled them to keep track of their profit and loss. With 1) stated above, it has become an important intellectual asset in supporting their current activities.

3) Other effects

Other effects recognized through the Project were: improvements in Spanish ability (61 people), an increased understanding of the merits of organizational activity (53 people), and the enabling of active participation in the other groups' activities (34 people). These kinds of group activities can be said to have created the effects of raising women's awareness and empowerment.

Regarding the sustainability of the products developed by the Project, it has not proceeded as expected due to misreading of the marketing strategy (the difficulties encountered in selling under luxurious/high quality products marketing strategy; the decline in motivation

due to limited sales frequency etc.). However, as described above, the advantages of group activities have been realized and there are now multiple groups still continuing group activities, which can be sited as a positive impact produced through the Project.

Looking at the effectiveness and impact of the Project on the whole, the effectiveness at the time of the Project completion was high, and positive impacts can be seen here and there in targeted women's groups as well. However, it is pointed out that the capacity development of IQM has been limited. Also, with regard to the overall goal, as the PRODEMAYA brand supported by the Project is currently being stagnated, its achievement level is evaluated low at the time of the ex-post evaluation.

From the above, the Project has achieved its objectives at a limited level, therefore its effectiveness and impact is low.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Table 9: Project Inputs

Inputs	Plan	Actual Performance (as of the end)
(1) Experts	Short-term: About 5 / year · Organization strengthening ·Handicrafts improvement and development ·Market research ·Research methods (Rapid Rural Appraisal, etc.)	Short-term: 12 people (total) · Organization strengthening · Handicrafts improvement and development · Market research · Research methods / organization of women · Work coordination
(2) Trainees received	4 people / year * 3 years	-
(3) Third-Country Training Programs	-	4 people (total) · 2 people * twice (New York)
(4) Equipment	2 vehicles, other necessary equipment (sewing machines, simple equipment sets, silk screens, office equipment, etc.)	The 94 types shown on the left
Total Project cost	Total 198 million yen	Total 290 million yen
Recipient government's input amount	Total 12 million yen	Total 12 million yen

3.3.1.1 Elements of Inputs

The introduction of facilities and equipment was carried out as planned and it was evaluated a relevant input for achieving the Projects expected outputs. The majority of the

materials and equipment were vehicles and tools necessary for women's groups support activities and they had been used effectively throughout the Project period.

In regards to trainees, training was not carried out in Japan, but rather was carried out as third-country training through visits to the United States. There they observed the current status of handicrafts markets and visited handicraft producing sites. It was an effective opportunity to provide the trainees with ideas on how to broaden support activities for women's groups.

In relation to the input of experts, the inputs were based on each item outcome and the dispatch periods and human input fields were relevant.

3.3.1.2 Project Cost

The Project cost was higher than the planned amount (146% of the plan).

The difference between the actual amount and the planned amount is due to the expenses required for the dispatch of experts.

3.3.1.3 Period of Cooperation

The Project was carried out from March 2007 until March 2010 and was completed as planned.

From the above, the cooperation period of this Project was as planned.

The inputs were appropriate for producing outputs and achieving the project objective. Although the period of cooperation was within the plan, the project cost was beyond the plan, therefore efficiency of the project is fair.

3.4 Sustainability (Rating: ①)

3.4.1 Related Policy towards the Project

The current Quintana Roo development plan (2011-2016) places an importance on supporting the indigenous Maya and has focused closely on the previous development plan. It is believed that Quintana Roo which has the second largest Mayan resident population in Mexico is highly likely to continue supporting the Maya in the future.

At the same time, one major support theme of Mayan assistance is livelihood improvement. However, in the current situation there are still many cases where men are performing migrant work and therefore livelihood support through production activities for women is particularly important.

It is believed from these points that support activities for Mayan women's groups is consistent with the state's policies and thus will be fully able to receive support from a policy viewpoint in the future.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

The framework of the Department of Training and Economic Development of IQM consists of the Director, under which there is one person in the Training Section, two people in the Economic Development Section and one person who serves in both divisions. This framework of 5 people is responsible for a wide range of activities such as coordinating operations with other organizations, arranging training, and specifying the women's groups to be targeted for assistance. Considering this large workload, it is believed that the personnel numbers are fewer than necessary[5].

On the other hand, the IQM's framework composed of IQM branches in each city is a huge advantage. In Quintana Roo, there are very few organizations apart from IQM which have branches in every city, owing to its branches, the IQM is able to quickly respond to on site needs. Looking at personnel, a branch head, training and economic development representatives, and Mayan interpreters etc. have been placed and the framework of the branches themselves has no particular problems. However, although these placements and personnel frameworks are retained, performance of the branches have been restricted due to financial constraints as will be described below, and have not been able to take full advantage these frameworks yet.

Overall, it cannot be said that the IQM's framework is under sustainable circumstances.

3.4.3 Technical Aspects of the Implementing Agency

The technical aspects necessary for effectively supporting Mayan women are: investigative capacity, operation and management capacity, coordination and cooperation capacity, information management capacity, all of which were raised as the Project outputs. The sustainability of each capacity is examined as follows.

1) Investigative capacity

In regards to investigative capacity, during the Project period the CP learned techniques through the implementation of activities such as village surveys, thus, a certain degree of sustainability can be confirmed. However, the investigative methods that are currently being used differ from the techniques transferred through the Project, taking on a simplified version. In order to maintain the capacity to implement these techniques within the organization in the future, it is necessary to carry out technical transfer within the organization itself with the leading role by staff who mastered the techniques during the Project.

[5] It was pointed out by both the Department of Training and Economic development as well as other organizations that the workload was significantly large in comparison with the number of staff available. One typical example for the consideration was the fact that the "the IQM did not have enough staff to effectively monitor", the State Employment and Labor Training Bureau pointed out in its own ex-post evaluation survey regarding the training program, which was conducted cooperatively with the IQM.

On the other hand, as SEDE is responsible for collecting market information, there is no need for the IQM itself to be involved in market surveys. Rather it is the responsibility of the IQM to maintain constant contact with SEDE in order to get the appropriate information.

2) Operation and management capacity

Due to the fact that there is currently still a need for improvements in administrative operational capabilities for implementing the Support Program created in the Project, it cannot be said that sustainability is secured. This current situation can be determined from the fact that follow-ups for activities such as support group monitoring and training have been inadequate and that the operation manual has not been utilized to the extent initially expected.

3) Coordination and cooperation capacity

While coordination and cooperation capacities are currently functioning, this largely depends on personal networks of individuals such as the Director of the Department of Training and Economic Development. If the Director was to be reassigned it is assumed that maintaining these networks would be difficult within the organization and thus the sustainability is low (However, as the successor would have their own personal networks, it is probable that networks with other organizations would continue). In addition, use of the coordination and cooperation structure attempted in the Project (associations of numerous organizations and technical committees etc.) is expected to be difficult due to the fact that, as mentioned previously, the structure has been effectively dissolved.

4) Information management capacity

Regarding information management capacity, individuals have been employed from external private companies who have experiences in the field of information management, and therefore, the technical level has rather improved. These newly hired staff can respond adequately to the unique characteristics of the information field (IT field) and so from a technical standpoint there are no problems in terms of sustainability.

Technical capacities by each field were verified as abovementioned. With the exception of the area of information management, in general it can be said that these capacities and expertise have halted at the individual level and have not yet spread throughout the entire organization. If this point remains unresolved, there is the concern that personnel changes would result in the above technical knowledge being instantly lost.

3.4.4 Financial Aspects of the Implementing Agency

The budget of the IQM is shown in the following table. A similar budget has been secured over the past 4 years.

Table 10: IQM budget (Thousand pesos)

Year	2009	2010	2011	2012
Budget	34,240	36,400	36,240	35,336

Source: IQM

However, approximately 90% of the budget consists of labor costs with the remaining 10% mostly being made up of office rent, utility costs etc. Whatever remains of this is assigned to travelling expenses for monitoring visits etc. within the State. In other words, the fact is that in the current situation a budget for implementing the appropriate and necessary on-site advice and follow ups has not been promised.

In addition, for trips within the state, unless approval is attained from the administrative department beforehand, expenditure for gasoline is not permitted for business trips. Therefore, from a procedural viewpoint this may hamper flexibility of movement in proper timing. In reality, although it varies from year to year, the amount of times the IQM makes trips to various places within the state is severely restricted from the financial aspect and only occurs around 3-5 times a year.

Even for branches close to sites, the amount of gasoline secured is about 3,200-3,800 pesos per month, which makes it a tight budget for carrying out frequent field visits. With this small allocation each branch needs to make trips to a large number of communities and urban areas within their jurisdiction to carry out public services. From interviews it was understood that site visits by branch staff were limited to a maximum of 5 times a month (it should be noted that the Jose Maria Morelos branch supports 50 communities while the Lazaro Cardenas branch supports 34 communities).

The role of the IQM is to provide support through the flow of selecting women's groups, arranging training, providing the subsequent monitoring and then, as necessary, follow ups. It is important for the IQM itself to have the flexibility to visit sites (the IQM essentially does not have projects implementation expenses). For this reason, the most important issue to address in regards to financial sustainability is whether a budget can be secured which allows flexible site visits or not.

With thin point in mind, it must be said that at the present time the financial sustainability of the IQM is uncertain.

Major problems have been observed in the structural, technical and financial aspects of the executing agency, therefore, sustainability of the project effects is low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project aimed for the Institute of the Women in the State of Quintana Roo (hereafter referred to as IQM), Department of Training and Economic Development to strengthen its institutional capacity, then, to establish a supporting Program for women's groups. The objective was to meet the needs of the IQM which sought more effective and efficient means of supporting women's groups. In addition, the Project sought to support the Mayan region which has been facing difficult economic times, with a particular focus on supporting women in regions where a large number of husbands are absent due to migrant work etc. This focus is relevant to the needs of the target area and the development policies of the central and state government. On the other hand, it was observed in the Project design that involvement of necessary related organizations outside of the IQM was limited, and moreover, there were insufficient verification opportunities of the Program implementation. From these points, the relevance of the Project is considered to be fair.

The series of the activities of the Project were implemented as planned and the Project period was within schedule. However, since the Project cost exceeded the plan, the efficiency was fair. In regards to the effectiveness, the Project purpose "Support Program for women's groups" was created during the Project period and the outputs and indicators were mostly achieved. However, following Project completion, ongoing manifestation of the effects of these outputs has been limited. In addition, although income growth, part of the overall goal, can be seen in about 30-40% of women's groups, the handicraft brand supported by the Project currently remains mostly incomplete and there is a state of relapse in which old handicrafts are still being produced and sold. From the above, the effectiveness and impact achievement is low.

Regarding sustainability in the future, the IQM's limited budget and shortage of manpower will possibly become constraints on support activities which require regular follow ups. For this reason, the sustainability at the time of ex-post evaluation is low.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- Strengthening cooperation with SEDE is essential. In so doing, it would be possible to re-vitalize the PRODEMAYA brand created through Project. Specifically, it is proposed that SEDE could add the PRODEMAYA brand to their own sales channels as well as list it on the Department's website. It is also recommended that a re-examination of the PRODEMAYA brand's pricing be carried out in conjunction with SEDE.
- In addition, it is noted that 6 of the Project's targeted women's groups took part in a sales

fair hosted by SEDE from February to March 2013. These newly tackled such effort for cooperation is highly evaluated. It is recommended that the IQM further strengthen cooperation with SEDE and provide support for other groups who could not take part in this sales fair.

- So far, the technical expertise and technology transferred in the Project has only permeated to a few individuals within the counterparts. If there was to be a personnel change, it is highly likely that this knowledge would be promptly forgotten. It is necessary to implement technical transfer of the Project's outputs within the organization. Moreover, efforts to further disseminate these outputs, such as creating a digest version of the manual etc. are required.
- The operation manual and training guide has not permeated into the internal workings of the IQM. Currently, the people who are knowledgeable about their contents are limited and it is necessary for the essence of this knowledge to be shared with other concerned parties. In addition, there is a necessity for revisions in certain parts of the guide due to changes made to the internal regulations of the IQM.

  Furthermore, it is important to encourage active use of the training guide not just by the IQM but also by SEDE and other related organizations.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

- From a technical perspective and so on, it is occasionally very difficult for coordinating organizations such as the IQM to proactively carry out field work support. It is necessary to consider collaboration with implementing agencies which have field experts. At the moment, even if not as an equal counterpart based on the relationships with target counterpart organization, it is possible to create a system of participation in the form of working groups where they participate accordingly.
- When planning the Project's contents and activities, rather than focusing solely on the needs of the counterpart, it is necessary to carefully examine in advance whether there is an adequate personal structure in place capable of implementing activities based on these needs. It is also necessary to assess whether these activities transcend the mandate of the organization. From this point of view, at the stage of the Project planning, it was necessary to investigate in more detail the IQM's organizational structure, number of personnel and budget (ie. a budget that can be allocated to the actual activities). Furthermore, it was also necessary to investigate the program contents of other relevant organizations and the way in which they related to the IQM.

- For projects like this which aim to build programs and models targeting certain issues, it is necessary for the project design to provide adequate opportunities for verifying the validity of these programs and models. This verification, by going through a process of utilization, can be expected to enhance the effectiveness of the programs and models.
- Through the experiences of the Project it has been adequately proven that technical capabilities in handicraft manufacture can be improved through continued technical instructions. However, it also showed that, due to the fact that there are a large range of choices in the areas of marketing and sales strategies, that achieving this is not always straightforward. At the time, in view of the current situation in which inexpensive souvenirs are being produced in China and neighboring countries, it was decided that the Project would focus on producing luxury/high quality goods. While that judgment can be said to have had a degree of logic, as time passed it was ascertained that, in this approach had a high degree of difficulty terms of sustainability. To begin with, it should have been realized that it was unrealistic to expect Mayan women living in poor regions to be able to continue delivering products to luxury hotels. This is true even if there had been an approach of training union representatives. The current state of women's groups in the Project demonstrates the fact that rather than aiming for one time large profits with low sales frequency, the approach of ongoing sales activities for even small profits is much more appropriate for stimulating organizational vitalization.