Country Name	Capacity Development of Water Environment Conservation in the Metropolitan Area of Guatemala
Republic of Guatemala	

I. Project Outline

Background	The Guatemala metropolitan area is the socioeconomic center of the country. The discharges of untreated sewage, industrial and agricultural wastewater deteriorated water pollutions of the Motagua River basin in the northern area (flowing into the Pacific Ocean) and the Maria Linda River basin in the south (flowing into the Pacific Ocean through Amatitilán Lake). Improvement and conservation of water environment has been prioritized against the serious water pollution in the metropolitan area. The Ministry of Environment and Natural Resources (MARN), which is established in 2000, had responsibility and function of policy making and execution for water environment management. However, a comprehensive administrative function is necessary for pollutant control to prevent and improve water pollution, so that MARN needed to its capacity and institutional strengthening.		
Objectives of the Project	1. Overall Goal: Public and regulation on water environment conservation in the metropolitan area is strengthened. 2. Project Purpose: MARN's implementation capacity of public policy and regulations for water environment conservation in the metropolitan area is reinforced. 3. Logical flow of how the project responses to development issues: The project develops manuals, guidelines and training materials for the four areas of water environment management administration (note 1) as well as a database, and implements a model of Incentive for Improvement of Performance in Integrated Management of Industrial Wastewater in the Metropolitan Area. By promoting specific policies for wastewater regulations by MARN, the project aims at compliance of the wastewater regulations by the stakeholders and attainment of the target of reduction. (note 1) The four areas of strategy formulation and implementation, pollutant control/wastewater regulations, water quality monitoring, and environment education.		
Project Information	1. Project site: 9 local governments in the metropolitan area (Guatemala, Mixco, Villa Nueva, Villa Canales, Santa Catarina Pinula, Amatitilán, San Pedro Ayampuc, Chinautla and San Miguel Petapa) 2. Main activities: Trainings for policy making for water environment conservation, implementation of wastewater monitoring, development of manuals for wastewater regulations, establishment of water environment database, environmental education and public awareness for wastewater regulations, and so on. 3. Inputs: Japanese Side 1) Experts: 7 experts 2) Trainees received: 19 persons 3) Equipment: water analyzer, vehicle, office appliance, test reagent, etc.. Guatemalan Side 1) Staff allocated: 17 persons 2) Land and facilities: project office 3) Local cost: fuel cost, cost of electricity of the project office, etc.		
Project Period	March, 2006 – December, 2009	Project Cost	309 million yen
Implementing Agency	Ministry of Environment and Natural Resource (MARN: Ministerio de Ambiente y Recursos Naturales), Ministry of Public Health and Social Assistance (MSPAS: Ministerio de Salud Pública y Asistencia Social)		
Cooperation Agency in Japan	Ministry of the Environment, Ministry of Land, Infrastructure, Transport and Tourism, Division of Environment of Aichi Prefecture, CTI Engineering International Co., Ltd.		
Related Projects	None		

II. Result of the Evaluation

1 Relevance
This project has been highly consistent with the Guatemala's development policy, such as conservation and improvement of water environment specified under "Vamos Guatemala Program (2004-2008)" and "the National Plan of Water Supply and Sewerage Service for Human Development", and development needs to enhance administration function for water quality management and recovery of sources of water, as well as Japan's ODA policy prioritizing support for sustainable economic development including conservation of environment. Therefore, relevance of this project is high.
2 Effectiveness/Impact
The project aimed at enhancement of capacity of MARN to implement wastewater regulations for conservation of water environment as well as reinforcement of administration capacity for conservation of water environment in the metropolitan area. At the project completion, the capacity of MARN for wastewater regulations, including the increase in the number of staff, and its recognition improved at a certain level. Also, the agreements for water environment education, wastewater analysis, and water quality were concluded between

MARN and the related organizations. After the project completion, no capacity assessment of MARN for wastewater regulations was conducted. However, although the number of staff of MARN increased from 19 persons in December, 2009 to 22 persons in August, 2013, the capacity of MARN is not sufficient to manage water environment administration nationwide. While the strategy for effective implementation of water regulations which was elaborated by the project has been disseminated and the social participation strategy for dissemination of water environment education has been implemented in the Water Resource Unit, the number of the agreements between MARN and local government for improvement of water environment has not changed.

As for the Overall Goal, in terms of wastewater regulations targeting factories, the technical assessments for the registered factories were conducted. 44% of them, which accounted 80% of the target value of 50%, attained the reduction target of wastewater regulations, including acidity, total nitrogen, total phosphorus, hazardous substances (arsenic, cadmium, mercury, etc.). For the local government, the wastewater regulations have been less prioritized since the target year was set in 2015. Out of the nine local governments targeted by the project, only City of Santa Catarina Pinula attained the reduction target for the first stage at the time of ex-post evaluation. While the revised wastewater regulations have not been approved yet because of the change of the central government, the legislative guidelines developed by the project have been utilized. In addition, the reinforcement of the water environment administration, such as the elaboration of water regulations for Amatitilan Lake as the agreement in MARN, mandatory submission of technical assessment report for application of construction permission in Santa Catarina Pinula, has been promoted.

As for other impacts, MARN has been continuing environment monitoring jointly with the laboratory of MSPAS. After the project completion, the laboratory obtained the general requirements for capacity of ISO17025 laboratory and organization and certification as an accredited wastewater laboratory by the US Environmental Protection Agency. In addition, according to the agreement between MARN and the Ministry of Education, the environment education was incorporated in curriculums of primary and secondary schools and have been implemented nationwide as a result that the counterpart staff who participated in the training in Japan collaborated with the Ministry of Education and implemented the environment education. On the other hand, the activities of wastewater regulations targeting municipal governments and factories have not been implemented due to the luck of human resources and budget. In Santa Catarina Pinula, however, the activities of wastewater regulations involving local residents, such as consensus building before construction of sewage treatment plant and establishment of the wastewater committee according to the public hearing about the water environment conservation, have been promoted.

Therefore, effectiveness/impact of the project is fair.

Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) Strengthening of capacity of MARN to implement wastewater regulations	The results of capacity assessment about wastewater regulations are improved from 1.08 points in November, 2006 to 3.5 points in September, 2009.	Terminal Evaluation: Achieved. 3.67 points in November, 2009 Ex-post Evaluation: No capacity assessment was conducted.
	Evaluation of MARN is improved: a) Evaluation of MARN by related organizations for wastewater regulations is improved from the base line determined in May-June, 2008 to September 2009. b) Recognition of MARN by general public is increased to 50% in September, 2009 according to the telephone interview survey.	Terminal Evaluation: Achieved. a) According to the questionnaire survey for the related organizations, improved 9.96 points in August, 2008 to 12.08 points in May-August, 2009. b) 64.5% of general public recognized MARN according to the telephone interviews in November, 2009. Ex-post Evaluation: Survey and interview were not conducted.
	The number of staff of Water Resource Unit of MARN is increased from 8 persons in July, 2006 to 16 persons in September, 2009.	Terminal Evaluation: Achieved. Increased to 18 persons in July, 2009 and 19 persons in December, 2009. Ex-post Evaluation: 22 persons.
	After 2008, agreements between MARN and local governments, or other actors are concluded.	Terminal Evaluation: Achieved. 3 agreements were concluded by February, 2009. Ex-post Evaluation: The number of agreements is the same as the terminal evaluation.
(Overall goal) Strengthening of water environment administration in the metropolitan area	50% of selected factories (at least 200) and 5 municipalities achieve the target of reduction at the first stage by 2015 for municipalities and 2011 for factories.	Ex-post Evaluation: Partially achieved. Only one municipality (City of Santa Catarina) achieved by 2011. Out of 400 factories, 176 (44%) achieved the target. .

Source：Project Completion Report and the interviews with CPs.

3 Efficiency

While the inputs were appropriate for producing the outputs of the project, the project period slightly exceeded the plan (ratio against the plan: 105%) since the experts were not able to be dispatched due to the epidemic of the new bird flu in 2009 and the situation needed extension of the project period, and the project cost also exceeded the plan (ratio against the plan: 161%) due to the increases in the inputs for dispatch of additional experts, equipment (intensifier of server for database) and training in Japan. Therefore, efficiency of the project is fair.

4 Sustainability

In the policy aspect, the activities related to the project have been endorsed by the national and local policies. The MARN Institutional Strategic Plan (2013-2017) (Plan Estratégico Institucional de Ministerio de Medio Ambiente y Recurusos Naturales) sets forth a goal for improvement of wastewater treatment in the country. Also, according to the order of wastewater 236-2006 and 105-2011, "the order of wastewater discharge in the Amatitilan Lake" basin was formulated and the local governments in the metropolitan area are required to comply with the wastewater regulations since 2015. In terms of the implementation structure, the Unit of Water Resource is now under the Unit of Environment Management due to the organizational reform of MARN. Despite of the increase in the number of staff of the Unit of Water Resource, there is difficulty to manage the water environment monitoring by the current number of the staff since the target of the monitoring expanded from the nine local governments in the metropolitan area to the entire country. In addition, establishment of collaboration between MARN and the local governments has not been progressed. Also, there is no progress in establishment of collaboration between MARN and the industries despite of efforts for dissemination of the wastewater regulations for the industries. The laboratory of MSPAS has conducted 300 water quality analyses per year. However, the capacity of the laboratory has difficulty to conduct more analyses and constrained further expansion of the water quality monitoring. The water environment database developed by the project was not maintained because the volume of the database exceeded the capacity of the server of MARN. Hence, the other system of the Unity of Water Resource has been utilized for the database. As for the technical aspect, the manuals and guidelines for wastewater regulations developed by the project have been utilized by the Unit of Water Resource. In terms of water quality analysis, the laboratory of MSPAS obtained ISO17025 and enhanced its capacity through continuous trainings for the staff. In terms of the financial aspect, while the budget of MARN increased from 98 million quetzal in 2009 to 191 million quetzal in 2012, the budget of the Unit of Environment Management have been 1.5 million quetzal in 2011 and 1.9 million quetzal in 2012. The budget for activities of the Unit of Water Resource has been allocated from the budget of the Unit of Environment Management. As compared to the budget of the Unit of Water Resource of 1.87 million quetzal in 2010, it was a considerable decrease which constrained the activities for wastewater regulations. In the light above, some problems have been observed in the institutional and financial aspects. Therefore, sustainability of this project effect is fair.

5 Summary of the Evaluation

This project has partially achieved the project purpose to enhance the implementation capacity of MARN for the wastewater regulations by the increase in the number of staff and the dissemination of the strategic plan for execution of the wastewater regulations which was developed by the project, as well as promotion of the environment education. On the other hand, a part of the factories made efforts to attain the reduction target of wastewater but that was not sufficient. Also, no other local government than Santa Catarina Pinula implemented the wastewater regulations in an active way. Although MARN has been working with the local governments around the five main lakes in Guatemala, including Lake Amatitlan, the monitoring activities for wastewater have not been necessarily sufficient. As for sustainability, despite that all the local government will be obliged to execute the wastewater regulations since 2015, there are some problems in the institutional and financial aspects due to the luck of human resources and assessment capacity for water quality monitoring nationwide and the constraints caused by the significant reduction of the budget for the Unit of Water Resource. As for efficiency, the project period exceeded the plan due to the delay of the dispatch of the experts by the epidemic of new-type flue and the project cost exceeded the plan due to the additional inputs for dispatch of experts, procurement of equipment and the training in Japan. In the light above, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is preferable to conclude agreements between MARN and the local governments in order to facilitate technical assistance from MARN to the local governments, including confirmation of wastewater regulations, wastewater monitoring as well as technical assessment reports.
- Under the cooperation with the Local Promotion Agency, an organization to provide technical assistance for rural water supply and sewage treatment, MARN needs to proactively participate meetings of the local governments organized by the National Federation of Municipal Governments (ANAM) covering 334 municipalities in the country, and to disseminate the wastewater regulations.
- Since the water environment database of MARN, which was installed in 2008, has not been utilized due to the overcapacity of the database against the capacity of the server in 2011, MARN needs to improve the environment to utilize the server, including ensuring the sufficient capacity of the server.

Lessons learned for JICA:

- The collaboration between MARN and other organizations such as MSPAS, the Ministry of Education was developed by the project and has been maintained by the time of ex-post evaluation. For sustaining the established collaboration even after the project completion, it is essential to design the project in order to conclude cooperation agreements among the stakeholders during the project and to implement it based on the agreements. In addition, in the case that a model case such as the case of Santa Catarina Pinula to promote wastewater regulations is confirmed, it is reasonable to include dissemination of the model to other neighboring municipalities under the initiative of the implementing agency from the viewpoints to disseminate of project effects.
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Discussions at the Village Development Committee for wastewater discharge control activities attended by the municipal officer of Santa Catarina Pinula	Explanation about sampling of wastewater and analysis at the laboratory of MSPAS