

Summary of the Mid-term Review

1. Outline of the Project	
Country: Republic of Cuba	Project Title: The Project for Capacity Enhancement of Groundwater and Seawater Intrusion Management
Issue Sector : Water Resources Management	Cooperation Scheme: Technical cooperation project
Division in Charge: Global Environment Department	Total Cost : 210 million yen
Period of Cooperation (R/D): Signature of R/D on 28 th September 2012 January 2013 – December 2016 (4 years)	Partner Country's Responsible Organization : INRH
	Partner Country's Responsible Organization : GEIPI, GEARH, EIPH Habana, EAH Mayabeque, EAH Artemisa
Supporting Organization in Japan : N/A	
1-1. Background of the Project	
<p>The Republic of Cuba is an archipelago country consisting of 1,600 small islands spread over the Caribbean Sea with an area of 110,000 km² and a population of about 11 million 240 thousand. The annual water demand of Havana city, the capital city (about 2 million 200 thousand population) is estimated at 600 million m³ / year, but the actual volume of supply is limited about 60%, and it seriously causes inadequacy water supply.</p> <p>In the south groundwater source area, located in the southern coastal area of an area of 300 km², in the provinces of Mayabeque and Artemisa, a large amount of groundwater is extracted as one of the main sources of supply to Havana city. The groundwater area annually supplies 17.3% of the total volume of water supplied to the Cuban capital. In addition, the water is also utilized for agriculture in both provinces and the groundwater is significantly important water source.</p> <p>However, according to the research by the Cuban government, the production of groundwater in the south groundwater source area has decreased by almost half, from 105 million m³ / year in 2000 to 55 million m³ / year in 2010, mainly due to reduced annual rainfall and rising sea levels, presumably because of the effects of global climate change. The average sea level also has risen by 0.05 m. in the last five years. According to this elevation, it is also reported progression of the seawater intrusion. In general, it is considered that if the level of salinity exceeding 1.0 g / L, the salt density begins to affect the agricultural crop. It has now been confirmed that some wells in the Province of Artemisa with a depth of 40 m exceeds this value. The use of groundwater nationwide occupies 33.3% (GEARH) of total use. Without the proper management of groundwater, there is a forecast to occur problems such as insured water supplies nationwide caused by the progression of seawater intrusion in coastal areas throughout Cuba. However, the administrative institutions for water resources of the Cuban government, led by the National Institute of Water Resources (INRH) did not have the technology or the trained human resources to carry out an evaluation study on the influence of saltwater intrusion to ground water area, salinization simulation and future forecast using a groundwater mode and studying effective measures. Therefore, implementing sustainable measures regarding the management and exploitation of groundwater is considered as the most urgent needs.</p> <p>To cope with the above conditions, the Cuban government presented to Japan a request for technical cooperation project. In response to this request, JICA held a series of meetings with Cuban authorities to define</p>	

the contents of the project, as reflected in the Record of Discussions and Minutes of Discussion signed.

1-2. Project Overview

(1) Overall Goal

Groundwater in the selected area of the South Coast of Mayabeque and Artemisa Provinces managed properly with taking into account the influences of climate change.

(2) Project Purpose

Improving the capacities of institutions participating in the Project on the development and management of groundwater in the target area including control of seawater intrusion.

(3) Outputs

- 1) Implementation of adequate monitoring of groundwater in the target area.
- 2) Development of models of groundwater in the target area.
- 3) Studies on different techniques recharge of groundwater and control of seawater intrusion.
- 4) Start the experimental implementation of the management plan of groundwater in the target area, according to the guidelines and operating manuals.

(4) Inputs

1) Japanese side:

Japanese Experts: nine persons (44.36M/M)

Equipment: Submersible pump, electric generator, geophysical prospecting equipment, electrical resistivity equipment, vehicles automatic water level meter, software, computers, office equipment etc. (JY33 million)

Training in Japan : 5 persons

Operational cost: JY23.54million

2) Cuba side:

Counterparts: 57 persons in total

Facility and utilities provided: Project office in Habana and Quivicán

Operational cost: Borne as agreed in R/D

2. Evaluation Team

Members of Japanese side			
Evaluation Team	Team Leader	Mr. Yukihiro EJIRI	Senior Assistant Director, Water Resources and Disaster Management Group, Global Environment Department, JICA
	Technical advisor	Mr. Yousuke SASAKI	Sowa Consultant Inc.
	Evaluation Planning	Mr. Yuto YANAGAWA	Water Resource Management Team 2, Global Environment Department,

		JICA
Evaluation Analysis	Mr. Satoshi NAGASHIMA	ICONS Inc.
Interpreter	Ms. Sachiyo SAKURAI	JICE
Benin side		
Member	Ms. Yenissett Figueredo	Coordinator for Cooperation, INRH
Member	Mr. Argelio Fernández	Principal Specialist, INRH
Member	Mr. Carlos A. Luaces	Deputy director of Development, DPRH Havana
Member	Ms. María A. García	Planning Specialist, INRH
Period of Evaluation	11 th January 2015 – 31 st January 2015	Type of Evaluation : Mid-term review

3. Results of Evaluation

3-1 Verification of Achievement

(1) Level of the achievement of Outputs

Output 1: Implementation of adequate monitoring of groundwater in the target area.

In the stage of the mid-term review, it is expected that Output 1 will be achieved the goal before the end of the Project. If continuous progress in the development and training for the database, establishment of a mechanism for monitoring (data collection), data arrangement and data analysis, it is expected that the indicator will be achieved the goal before the end of project, and implementation of adequate monitoring of groundwater in the target area will be conducted.

Output 2: Development of models of groundwater in the target area.

In the stage of the mid-term review, it is expected that Output 2 will be achieved the goal before the end of the Project. It can be said that if sharing database between EIPH Havana under the GEIPI and the EAH Mayabeque and EAH Artemisa under the GEARH is achieved, the model of groundwater in the target area would be established, and calibration would be carried out in every year.

Output 3: Studies on different techniques recharge of groundwater and control of seawater intrusion.

In the stage of the mid-term review, it is expected that Output 3 will be achieved the goal before the end of the Project. However, in the course of project implementation, it has been confirmed that it is not appropriate for physical measures in the target area to address groundwater recharge and control of seawater intrusion due to the geological condition, and it will be taken measures control of seawater intrusion at the long term view point. Therefore it is necessary to redefine related indicators and part of the activities of PDM.

Output 4: Start the experimental implementation of the management plan of groundwater in the target area, according to the guidelines and operating manuals.

In the stage of the mid-term review, it is expected that Output 4 will be achieved the goal before the end of the Project. It is expected that the finalization of the latest version of the Operating Manual (Guidelines and

Manuals) will be prepared by the end of the project, and it seems to start the experimental implementation of the management plan of groundwater in the target area.

(2) Level of the achievement of Project Purpose

Improving the capacities of institutions participating in the Project on the development and management of groundwater in the target area including control of seawater intrusion.

At the level of achievement to the target Output, it is expected that the capabilities of the organizations involved in the project are improved in the exploration and management of groundwater in the target area including some measures against seawater intrusion. However, it is difficult to judge the level of achievement of the Project Purpose by using the current indicators.

3-2 Summary of Evaluation Results

(1) Relevance

Relevance is high as following reasons.

The project is consistent with the policy in Cuba, needs in target area and target socioeconomic situation, and the aid policy in Japan etc.

(2) Effectiveness

Effectiveness is high as following reasons.

During the mid-term review, it was confirmed that indicators for Outputs are expected to be achieved by the end of the Project. Therefore, the probability of achieving the Project Purpose is high. However, two (2) indicators currently set for the Project Purpose have problems to check the outputs of the Project properly, and it is required to redefine.

(3) Efficiency

Efficiency is relatively high as following reasons.

Outputs are expected to be achieved largely, although the delay observed in some activities.

There were some problems on dispatch of Japanese experts and procurement of equipment. Input from Cuban side was generally no problem.

(4) Impact

It is too early to evaluate the impact.

At the time of mid-term review, hydraulic condition of target aquifer in the indicator is undefined. For this reason, it is considered that it is too early to predict the likelihood of achieving the Overall Goal.

In EAH Mayabeque and EAH Artemisa as project target organizations have the internal mechanism to share the techniques transferred from C/P trained to staff who are not trained. Therefore the technical benefits transferred by the Project improved capacity not only to the C/Ps of the Project but also the whole staff both EAH Mayabeque and EAH Artemisa and it also contributes to raise their motivation.

(5) Sustainability

Sustainability is relatively high as following reasons.

1) Policy and institutional aspects

Sustainability on policy is high. At this stage of the mid-term review, the mechanism to support the further spread of the activities of the Project to other area is not observed.

2) Organizational aspects

The sustainability of organizational aspect has some issues to be resolved.

Many Cubans technical C/Ps in the Project are in the range between 55 and 59 years old. It is important to not only the succession of the skills acquired in the project but also for the succession of experiences of veterans to younger technicians.

The C/P organizations are now seeking technical improvement of staff such as involving young technicians in the Project and preparing the annual training plan.

3) Financial aspects

According to the interview survey, the priority of the Project is high and it was confirmed that the budget allocation based on the depreciation of equipment for operation and maintenance of procured equipment in economic plan and it would continue even after the period of the Project

4) Technical aspects

The C/P maintained transferred techniques in the Project with high probability. Transferred techniques in the target area are diffusible to other areas. The mechanism of disseminating techniques to other areas is integrated into the Project.

3-3 Contributing Factors to Realize the Effects

(1) On the contents of the Plan

N/A

(2) On the implementing process

1) Basic capacity of Cuban C/Ps is high.

2) In Cuba, the importance of groundwater resources is high, and therefore the interest in the Project is also high not only from concerned organizations but also the related organizations such as the Ministry of Agriculture, Ministry of Science, Technology and Environment, etc. Therefore it relatively easy to establish coordination between institutions.

3) Many of the stakeholders from both sides who participated in the past “Capacity Development on Groundwater Development and Management for Climate Change Adaptation” are in this Project. This facilitates the implementation of the Project in terms of the continuity of the organizational framework for implementing and utilizing lessons learned from the previous project.

3-4 Inhibiting Factors to Cause the Problem

(1) On the contents of the Plan

N/A

(2) On the implementing process

N/A

3-5 Conclusion

In Cuba, the importance of water is extremely high and there is great interest in the Project. The project is consistent with the policy of Cuba and Japan, and the relevance is high.

In the initial stage of the Project, some problem were observed in the effectiveness of the Project due to the difficulty in obtaining necessary data, late arrival of the equipment and the low participation of provincial executing organizations for workshops held in Havana due to no means of transport. However, these problems mentioned have been already solved or taken the measures to find solutions and it is considered that such problems may not greatly affect the progress of the Project in the future.

Therefore, in the stage of mid-term review, it is expected that each Output can achieve the goal in general before the end of the Project. By achieving the Outputs, it is expected to achieve the Project Purpose with high possibility before the end of the Project. However, for proper measuring of the outputs of the Project, it is necessary to redefine the indicators.

As for the sustainability of the Project, no problem is observed in the aspect of political or technical.

Regarding the organizational aspect, there is a little problem that the average age of the C/P is relatively high. However, executing organizations are trying to counteract actively such as training for junior staff and organizing internal technical transfer system. On the financial side, it is scheduled to allocate budget.

3-6 Recommendation

- (1) Review of Activities and Indicators for PDM ver. 1.2
- (2) Institutionalization of the development of the groundwater management plan utilizing outputs of the Project
- (3) Ensuring execution of the project budget by Cuban side