

添付資料-7: 中間レビュー調査協議議事録



MINUTES OF MEETINGS  
 BETWEEN  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 AND  
 AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
 THE ARAB REPUBLIC OF EGYPT  
 FOR  
 THE PROJECT FOR IMPROVEMENT  
 OF MANAGEMENT CAPACITY OF OPERATION  
 AND MAINTENANCE FOR WATER SUPPLY FACILITIES  
 IN NILE DELTA AREA

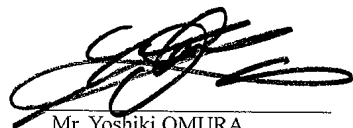
(Attached Document)

The Japanese Mid-term Review Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yoshiki OMURA, visited the Arab Republic of Egypt (hereinafter referred to as "Egypt") from 10th to 27th November, 2012. The purposes of the visit were to monitor the activities and review the achievements made so far in the Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area (hereinafter referred to as "the Project").

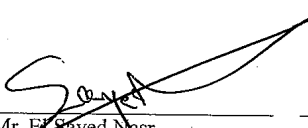
During its stay, the Team had a series of discussions and exchanged views on the Project with Holding Company for Water and Wastewater (hereinafter referred to as "HCWW"), Sharkiya Potable Water and Sanitation Company (hereinafter referred to as "SHAPWASCO"), Gharbia Potable Water and Sanitation Company (hereinafter referred to as "GHAPWASCO"), and Minufia Company for Water and Wastewater (hereinafter referred to as "MCWW"). And the Joint Coordinating Committee (hereinafter referred to as "the JCC") was held on 26<sup>th</sup> November, 2012.

As a result of the discussions, the Team submitted the mid-term review report as attached hereto and Egyptian side agreed upon the description of the report.

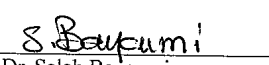
Cairo, 26<sup>th</sup> November, 2012



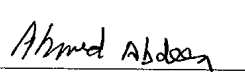
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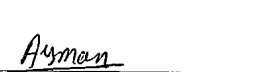
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JOINT REPORT ON THE MID-TERM REVIEW  
 ON  
 THE PROJECT  
 FOR  
 IMPROVEMENT OF MANAGEMENT CAPACITY OF OPERATION  
 AND MAINTENANCE FOR WATER SUPPLY FACILITIES  
 IN NILE DELTA AREA

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**LIST OF ABBREVIATION AND ACRONYM**

APO	Annual Plan of Operations
C/P	Counterpart Personnel
DMA	District Meter Area
Experts	Japanese experts
GHAPWASCO	Gharbia Potable Water and Sanitation Company
HCWW	Holding Company for Water and Wastewater
IMRP	Iron/Manganese Removal Plants
IWRP	Integrated Water Resources Plan
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
MCWW	Minufia Company for Water and Wastewater
M/M	Minutes of Meetings/Man Month
MNF	Minimum Night Flow
NRW	Non-Revenue Water
NWRP	National Water Resources Plan
O & M	Operation and Maintenance
ODA	Official Development Assistance
OJT	On-the-Job Training
OVI	Objectively Verifiable Indicators
PDM	Project Design Matrix
P&ID	Piping & Instrumentation Diagram
PO	Plan of Operations
R/D	Record of Discussions
SHAPWASCO	Sharkiya Potable Water and Sanitation Company
SOP	Standard Operation Procedures
Team	Japanese Mid-Term Review Team
TOT	Training of Trainers
WTP	Water Treatment Plant

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## 1. Outline of the Mid-Term Review

### 1-1 Purpose

“The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area” (hereinafter referred to as “the Project”) was launched in May 2011. The three-year Project has reached the mid-point of its scheduled cooperation period. As agreed in the Record of Discussions (R/D) signed between Egypt and Japan International Cooperation Agency (JICA) on 19 August 2010, the Mid-Term Review was conducted from 10 to 26 November 2012.

The purposes of the Mid-Term Review are as follows:

- (1) To review the performance, achievements, and implementation process of the Project.
- (2) To conduct a comprehensive evaluation from the viewpoints of five evaluation criteria described in Chapter 1-2 below.
- (3) To draw up recommendations for further improvements of the Project during its remaining period and afterward.

### 1-2 Evaluation Criteria

The following five evaluation criteria are used to evaluate the Project in the Mid-Term Review.

- (1) **Relevance:** The Project’s relevance is assessed in terms of validity of the Project Purpose and the Overall Goal in relation to the development policy of the Government of Egypt, Japan’s ODA policy and the needs of the Project beneficiaries.
- (2) **Effectiveness:** Effectiveness is determined based on whether the Project Purpose is being achieved as expected and whether this is due to the Project’s Outputs.
- (3) **Efficiency:** An assessment of the Project’s efficiency verifies whether the Project used its resources effectively. This criterion examines to what extent the Input is converted to the Outputs in consideration of the evaluation of achievement of both Inputs and Outputs.
- (4) **Impact:** An assessment of the Project’s impact examines the degree or prospect of achievement of Overall Goal. The analysis also extends to the effects which include direct or indirect, positive or negative, and intended or unintended effects in the long run.
- (5) **Sustainability:** The project’s sustainability is assessed by focusing on the Project’s institutional, organizational, financial and technical aspects in an examination of the extent to which the Project’s achievements will be maintained or further extended by the Egyptian side after the Project completion.

### 1-3 Methodology

The Mid-Term Review was jointly conducted by both the Egyptian and the Japanese sides. Firstly, the Mid-Term Review Team collected and analyzed data and information on the objectively verifiable indicators (OVIs) defined on the Project Design Matrix version 1 (PDM<sub>1</sub>) (ANNEX 1) as well as other data and information relevant to the Project.

The following sources of information were used in the Mid-Term Review.

- (1) Documents agreed by the both sides prior to and/or during the course of the Project implementation including:
  - Record of Discussions (R/D)
  - Minutes of Meeting (M/M)

- Project Design Matrix (PDM)
  - Plan of Operations (PO)
- (2) Records of Inputs from the both sides and activities of the Project.
  - (3) Data and statistics indicating the degree of achievement of the Project Outputs and the Project Purpose.
  - (4) Interviews and Questionnaire with/from Project’s Counterpart Personnel (C/P), Experts from Japan (Experts) and other project related people.

### 1-4 Members of the Joint Evaluation

#### <Egyptian Side>

Name	Title	Organization
Dr. Salah Bayoumi	Head of Project Sector	HCWW

#### <Japanese Side>

Name	Title	Organization
Mr. Yoshiki OMURA	Leader	Senior Advisor, JICA
Mr. Satoshi HAMANO	Evaluation Planning	Global Environment Department, JICA
Mr. Nobuhisa IWASE	Evaluation Analysis	Partner, IMG Inc.

## 2. Background of the Project

### 2-1 Background

The Arab Republic of Egypt (hereinafter referred to as “Egypt”) has been striving to improve water utilization efficiency and protection of water resources in order to supply clean and safe water to the growing population. Towards achieving this goal, in 2004, the Government established the Holding Company for Water and Wastewater (HCWW) and designated 14 water-supply entities<sup>1</sup> into public corporations under HCWW.

Since the managerial responsibility for operation and maintenance (O&M) of water supply facilities was transferred to public corporations, each company was urged to improve operational efficiency and reduce Non-Revenue Water (NRW), which is potable water that cannot be billed, for example, leakage and illegal taps. Given the request by the Egyptian government, JICA carried out a technical cooperation project, “The Project for Improvement of Management Capacity of Operation and Maintenance for SHAPWASCO (Sharkiya Potable Water and Sanitation Company)” between 2006 and 2009 (hereinafter referred to as “the previous technical cooperation project”), which confirmed the effectiveness of utilizing Standard Operation Procedure (SOP) and implementing NRW reduction activities in the improvement of operational efficiency.

HCWW formulated a plan to transfer successful practices and lessons learned from the previous technical cooperation project to Nile Delta Area for improving management capacity. Given this background, the Egyptian government requested technical cooperation from the Government of Japan for promoting the transfer of technologies produced in the previous technical cooperation project to GHAPWASCO and MCWW as well as further improving the technology of SHAPWASCO.

Accordingly JICA conducted the detailed planning study from January to March 2010 and confirmed the Project contents by Record of Discussions (R/D) in 19 August 2010. The Project aims at building up and strengthening a mechanism to improve management capacity of operation and maintenance of water

<sup>1</sup> From the year 2004 to the time of Mid-Term Review, the number of Water and Wastewater companies under HCWW increased to 24.

supply facilities in Nile Delta Area.

## 2-2 Summary of the Project

### (1) Overall Goal of the Project

Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates.

### (2) Project Purpose

Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates.

### (3) Project Outputs

1. Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened.
2. Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates.
3. The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates.
4. The water distribution management capacity is improved in Sharkiya Governorate as an advanced model.
0. The project is managed and coordinated properly.

### (4) Project Period

April 2011 – March 2014 (3 years)

### (5) Implementing Agency

#### Supervisory organization

Holding Company for Water and Wastewater (HCWW)

#### Implementing Organizations

Sharkiya Potable Water and Sanitation Company (SHAPWASCO)

Gharbia Potable Water and Sanitation Company (GHAPWASCO)

Minufia Company for Water and Wastewater (MCWW)

## 3. Achievement of the Project

### 3-1 Inputs

#### <Japanese Side>

#### (1) Experts (ANNEX 2-1)

From the outset of the Project, a total of twelve Experts were assigned to the Project (May-December 2011: 29.96 M/M, January-September 2012: 19.59 M/M) mostly as planned.

#### (2) Local Experts (ANNEX 2-2)

Two local experts (each on SOP and NRW) and three Facilitators (one facilitator in SHAPWASCO, GHAPWASCO and MCWW each) were assigned to the Project.

#### (3) Provision of Machinery and Equipment (ANNEX 2-3)

Machinery and equipment including water leak detector, hammer drill, pipe locator, potable ultrasonic flow meter, and pressure data logger, amounting around LE 2.45 million, have been and will be procured. JICA is currently taking the procurement procedures of equipment for Water Distribution Management (WDM) activities.

#### (4) Counterpart Personnel (C/P) Training in Japan (ANNEX 2-4)

Fifteen (15) C/Ps have received training in Japan (4 C/Ps for management training, 7 C/Ps for SOP and NRW reduction training, and 4 C/Ps for WDM training).

#### (5) Local Cost (ANNEX 2-5)

The local cost allocated by JICA for the Project is JPN 35,157,000 from the beginning of the Project to the end of July 2012.

#### <Egyptian Side>

#### (1) C/Ps (ANNEX 2-6)

A total of 47 staff members were assigned as C/Ps from HCWW, SHAPWASCO, GHAPWASCO, and MCWW. In addition, many staff members of the model facilities/areas have participated in the Project.

	Management	SOP Team	NRW Team	WDM Team	Total*
HCWW	2	-	-	-	2
SHAPWASCO	1	9	7	5	22
GHAPWASCO	1	7	3	-	11
MCWW	2	6	6	-	14

\*Some staff members are assigned in more than one field; therefore, the total number of C/Ps differs from the added number of C/Ps from each field.

#### (2) Provision of office space and facilities for the Experts

Office space and facilities provided and organized by the Egyptian side are as follows: Office space and facilities for the Japanese experts in SHAPWASCO, GHAPWASCO and MCWW; Rooms and facilities necessary for installation and storage of the equipment; Workshop and meeting rooms for the training.

#### (3) Provision of facilities and equipment (ANNEX 2-7)

The rehabilitation of facilities for SOP activities and the construction of chambers for flow meters in GHAPWASCO and MCWW were completed with the estimated total amount of LE 1.61 million. The construction of chambers for WDM machinery and of the central monitoring room for WDM amounting to the estimated LE 1.22 million, are underway at the time of the Mid-Term Review.

#### (4) Necessary information

The Egyptian side shared existing data and reference documents with the Project members.

#### (5) Local Cost (ANNEX 2-7)

The expenses covered by the Egyptian side are the travel and accommodation costs, per diem for C/Ps, payments for lecturers, office expenses, costs associating with installation of flow meters and repairs of water pipes in model areas, and running costs regarding the organization of seminars.

### 3-2 Achievement of the Outputs

The achievement level of each OVI under five Outputs at the time of the Mid-Term Review is shown below. The detailed information is included in the attached Evaluation Grid (ANNEX 9).

Output 1: Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates in strengthened

OVI	Achievement Level												
1a. More than 3 members each of SOP/NRW teams in SHAPWASCO, GHAPWASCO and MCWW are approved as trainers by Steering Committee	<p>Prospective trainers were selected from C/Ps and have commenced SOP or NRW training. The number of prospective trainers in each organization is as follows;</p> <table border="1"> <thead> <tr> <th></th> <th>SOP trainers</th> <th>NRW trainers</th> </tr> </thead> <tbody> <tr> <td>SHAPWASCO</td> <td>5</td> <td>4</td> </tr> <tr> <td>GHAPWASCO</td> <td>5</td> <td>3</td> </tr> <tr> <td>MCWW</td> <td>7</td> <td>6</td> </tr> </tbody> </table> <p>The prospect of the selected trainers to be approved by Steering Committee is very high since they are currently conducting training and capable of effectively facilitating it.</p>		SOP trainers	NRW trainers	SHAPWASCO	5	4	GHAPWASCO	5	3	MCWW	7	6
	SOP trainers	NRW trainers											
SHAPWASCO	5	4											
GHAPWASCO	5	3											
MCWW	7	6											

1b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team	<p>The total of 13 seminars/workshops was organized by the time of the Mid-Term Review. The details are as follows;</p> <ul style="list-style-type: none"> <li>• 1 open seminar (kicking-off seminar) in September 2011</li> <li>• 3 mini-seminars in June – July 2011</li> <li>• 4 internal workshops in July – November 2011</li> <li>• 1 site tour to observe the situation of SHAPWASCO in October 2011</li> <li>• 1 mini-seminar (3 days) for Piping and Instrumentation Diagram (P&amp;ID) and water quality in April 2012</li> <li>• 1 special workshop (5 days) for leak detection in September – October 2012</li> <li>• 1 study tour to visit Water Authority of Jordan (5 days) in October 2012</li> <li>• 1 workshop (1 day) at SHAPWASCO in November 2012</li> </ul>
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**Overall Assessment:**  
Prospective trainers have been selected and seminars/workshops have been successfully carried out as mostly as planned. Based on the achievement levels of above-mentioned indicators and progress in activity implementation, Output 1 has a good prospect of being achieved by the end of the Project. According to the Questionnaire/Interview Surveys of the Mid-Term Review, most Experts and C/Ps think that Output 1 will be achieved by the end of the Project period.

Output 2: Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates

OVI	Achievement Level
2a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation	A site tour of SHAPWASCO and 3 mini-seminar sessions on SOP and monitoring of well stations have been conducted for GHAPWASCO and MCWW members as of December 2011. Since the rating criteria of training comprehension have yet to be defined, it is unclear to what extent the OVI will be achieved.
2b. The model facilities are operated and maintained	The model facilities have been selected both in GHAPWASCO <sup>1</sup> and MCWW. Both GHAPWASCO and MCWW have prepared the draft

<sup>1</sup> Although the Project initially selected the original Tanta WTP as the model facility, the Project activities were not carried out as planned due to various reasons. In July 2012 the new Tanta WTP was transferred under the responsibility of GHAPWASCO for its O&M. Since the new Tanta WTP is of similar model to the total of 7 WTPs (of which, 5 are under

based on SOP	<p>SOP for water treatment plants (WTP) as well as Iron/manganese removal plants (IMRP) and started trial operations at the model facilities based on the draft SOP. OJT on improvement of operation has been carried out as well. C/Ps are collecting basic data from water level observations on well stations and planning to develop SOP on well stations from November 2012.</p> <p>In a meantime, GHAPWASCO and MCWW have been rehabilitating facilities and installing flow meters for SOP activities. In general, SOP activities are evaluated to be carried out as mostly planned.</p>
2c. Improvement of PIs for the model facilities are evaluated based on SOP	C/Ps and Expert are surveying the current situations and collecting the baseline of basic measurement data at the time of the Mid-Term Review. Since PIs for this OVI have not been determined yet, the prospect of achieving the OVI is unclear.

**Overall Assessment:**  
While there are some delays on SOP activities, the Project is gradually generating concrete achievement on the expected Output, including rehabilitating water supply facilities and installing flow meters. In particular, GHAPWASCO and MCWW started trial operations based on the draft SOP, and it is expected that the SOPs will be further modified for the improvement of O&M. Questionnaire/Interview Surveys of the Mid-Term Review revealed that most C/Ps and Experts think that Output 2 will be achieved by the end of the Project period.

When the proper OVIs are determined and monitored, and the technical transfer will continue in the systematic manner to the end of the Project, Output 2 is most likely to be achieved.

Output 3: The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates

OVI	Achievement Level
3a. More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation	NRW training including leak detection and leakage management was conducted by SHAPWASCO trainers in October 2011. SHAPWASCO's trainers shared their experiences in several mini-seminars and internal workshops for GHAPWASCO and MCWW. Since the rating criteria of training comprehension have yet to be defined, it is unclear to what extent the OVI will be achieved.
3b. Water balance analysis is conducted properly for the 3 model areas	After the preparations of GIS drawing on pipe information of model areas, the Project team has completed the first minimum night flow (MNF) survey of the 3 model areas in GHAPWASCO (9 pilot areas in total) and MCWW (7 pilot areas in total). The Project team is conducting the water balance analysis in 2 model areas of GHAPWASCO and 1 model area of MCWW at the time of the Mid-Term Review. MCWW's survey is delayed due to the unavailability of NRW team members.
3c. 100% of detected leakage is repaired at the model area	At the time of the Mid-Term Review, leak detection training is being carried out at a location in a model area of GHAPWASCO. The leakage detection training was originally intended to be conducted at the training yard of SHAPWASCO; however, the yard cannot be used for the training due to the failure of the training yard, resulting in the delay of training

construction and 2 are in operation) in the Governorate, the technology and management capacity developed at the WTP would be highly replicable in other areas. While the Project has conducted SOP activities at the new Tanta WTP and the original Tanta WTP concurrently with the suggestion and approval by the Steering Committee, it is planned that the new Tanta WTP be approved to be the model facility at the JCC held on November 26, 2012.

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implementation. To what extent (what percentage) detected leakage is repaired at the model areas are unknown at this time.

**Overall Assessment:**

Despite some delays with leak detection training, the institutional skills and experiences of SHAPWASCO for NRW reduction are steadily being transferred to GHAPWASCO and MCWW. The capacity of GHAPWASCO's and MCWW's NRW team members to conduct water flow survey and water balance analysis has been greatly improved. While NRW members have become able to conduct various surveys which can be utilized for leak detection, they need to further increase their leak detection techniques and skills to take necessary actions and preventative measures.

While the OVI 3a needs to be clarified, if the technical transfer will continue to be implemented to the end of the Project, Output 3 has a good prospect of being achieved. According to the Questionnaire/Interview Surveys, most C/Ps and Experts think that Output 3 will be achieved by the end of the Project period. Water balance analysis and leakage detection survey are scheduled to be conducted in the remaining period, which would contribute to increasing the level of the achievement of Output 3.

**Output 4:** The water distribution management capacity is improved in Sharkiya Governorate as an advanced model

OVI	Achievement Level
4a. Water distribution is managed based on SOP at the model areas	<p>The priority areas and pilot areas have been selected by the Project team based on such information as number of customers, number of customers' complaints, and water supply conditions. Establishment of District Meter Area (DMA) has been completed in the priority areas.</p> <p>The specifications of procured equipment, quantities, and locations of installation were finalized in July 2012 between the Project team and JICA. The process of determining the details of procured equipment required a longer time than planned, resulting in the delay of equipment installation.</p> <p>The Project team has been conducting preparation works for the installation of flow-meters including the construction of chambers and a monitoring room. In parallel, JICA is taking procurement procedures of equipment (flow-meters). SOP for WDM has not yet been drafted at the time of the Mid-Term Review.</p>
4b. Issues on water distribution capacity are reported to top management of SHAPWASCO	<p>C/Ps including top management have been trained on the importance of open dialogue among staff. Their awareness on reporting issues concerning water distribution is being developed. At the time of the Mid-Term Review, it is unclear to what extent issues on water distribution capacity are actually reported to top management of SHAPWASCO. However, since the importance of reporting is gradually being known among C/Ps, the OVI has a good prospect of being achieved by the end of the Project. In a meantime, it might be necessary to consider more specific criteria for this OVI such as reporting frequency and structure in order to grasp the actual communication occurrences.</p>

**Overall Assessment:**

The Project has required a longer time than the original Plan of Operations (PO) for reaching a consensus on appropriate equipment for WDM and WDM methods between the Egyptian and the Japanese sides, which caused 5-6 months delay of overall WDM activities. Despite the delay, the Project has been steadily making progress as seen in the collection of the measurement data on water

quantity, water pressure and quality of water through hydraulic surveys and the development of periodical reports.

At the time of the Mid-Term Review, while the construction of equipment chambers and a monitoring room is underway, the planning of WDM activities and hydraulic survey are being carried out before the installation of equipment. Through the process of preparing WDM activities, the capacity of WDM members to conduct surveys of water pressure, flow and quality has been improved to the level where C/Ps are able to adequately grasp conditions of given areas. According to the Questionnaire/Interview Surveys, most C/Ps and Experts think that Output 4 will be achieved by the end of the Project period.

**Output 0:** The project is managed and coordinated properly

OVI	Achievement Level
0a. Agreement on the coordination among SHAPWASCO, GHAPWASCO and MCWW is prepared	<p>SHAPWASCO, GHAPWASCO and MCWW agreed on inter-company cooperation and established the Steering Committee, which regularly monitors the Project implementation and discusses any emerging issues regarding the Project implementation.</p>
0b. Project activities are regularly monitored based on PO/APO	<p>Steering Committee meetings as well as Project Team meetings with C/Ps and Experts have been frequently held to monitor the Project progress. The PO (Annex 5) and APO (ANNEX 6) were modified by the 4th Steering Committee in July 2012.</p>

**Overall Assessment:**

According to the Questionnaire/Interview Surveys, Experts and C/P show high satisfaction toward the Project's implementation process including the Project management and coordination. In general, project management has been conducted properly with cooperation among HCWW, SHAPWASCO, GHAPWASCO, MCWW and Experts.

**3-3 Achievement of the Project Purpose**

The achievement level of OVI under the Project Purpose at the time of the Mid-Term Review is shown below. The detailed information is included in the Evaluation Grid (ANNEX 9).

**Project Purpose:** Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates.

OVI	Achievement Level
(a) PIs in the fields of management capacity of operation and maintenance are improved at the model areas/facilities	<p>At the time of the Mid-Term Review, concrete PIs have not been set as OVIs to measure the degree of achievement of the Project Purpose. C/Ps and Experts now continue discussions about the matter with surveys of the current situations and collection of the measurement data to set a baseline regarding which PIs should be set as OVIs and which figures should be set as a target for the defined PIs. Since PIs for this OVI have not been determined yet, quantifiable data is not available for this OVI.</p>

**Overall Assessment:**

At the time of the Mid-Term Review, it is difficult to foresee the prospect of the achievement of the Project Purpose from the point of view of the degree of achievement of the defined OVI on the PDM. However, it is evaluated that the overall management capacity to operate and maintain water supply facilities is improving at SHAPWASCO, GHAPWASCO and MCWW, considering the current levels and prospects of achievement on the defined four Outputs described already. According to the Questionnaire/Interview Surveys, most of C/Ps and Experts show strong confidence in the achievement of the Project Purpose by the end of the Project period. It is required that all the Project activities be properly implemented in the rest of the Project period, particularly in Outputs 4 (WDM

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capacity development) and OVIs for the achievement of the Project Purpose be properly set as soon as possible.\*

\*: Concrete items of PIs were discussed and agreed upon at the third Joint Coordinating Committee (JCC) meeting organized on November 26, 2012. The defined PIs were included on the revised PDM (PDM2, ANNEX 8) and will be measured and monitored in the remaining period of the Project.

### 3-4 Implementation Process of the Project

It is evaluated that the Project has been appropriately implemented for the most parts, based on the PO (ANNEX 5) and APO (ANNEX 6) with effective coordination, decision and guidance by the JCC and the Steering Committee.

- (1) The Project's administrative structure is well established with a clear definition of the roles and responsibilities of the people who are managing and implementing the Project (ANNEX 3).
- (2) C/Ps such as SHAPWASCO's, GHAPWASCO's and MCWW's staff members, have high level of commitment, ownership and enthusiasm in the Project implementation, and understand the Project Purpose and their roles and responsibilities.
- (3) Communication between the Egyptian C/Ps and the Japanese Experts has been frequent and appropriate, which lead to a smooth and effective collaboration under "teamwork spirit".
- (4) Various meetings such as JCC, Steering Committee and Project Team Meetings were frequently organized, which increases a level of communication, information sharing, mutual understanding and trust among the Project participants including C/Ps and Experts.
- (5) Through various capacity development activities (ANNEX 4), most of C/Ps develop their awareness on the issues to be tackled in the Project, skills on problem finding and solving, and the necessity of appropriately recording the situation of O&M and the importance of accuracy of working and teamwork.

## 4. Results of Evaluation by Five Criteria

### 4-1 Relevance

The overall relevance of the Project is very high.

The Project is in accordance with the priority of development policies of Egypt, the development needs of the target groups (i.e. Staff of SHAPWASCO, GHAPWASCO and MCWW) and Japan's Official Development Assistance (ODA) policy.

#### (1) Relevance with the Egyptian government's policies for development

Egypt sets the improvement of potable water supply system as its priority area in the Sixth Five-Year Plan, the Egyptian Millennium Development Goals, and the National Water Resources Plan for Egypt (NWRP).

- The Sixth Five-Year Plan<sup>2</sup> sets the upgrading of water and sanitation facilities as a focus area under the goal of improving public utilities for human and social development. The strategies of the focus area include minimizing water network loss and implementing cost recovery in water projects.
- The Egyptian Millennium Development Goals target the increase in the access to safe drinking water to 98.5% in urban area and 80.8% in rural area by 2015. Sustaining the access rates poses another challenge to Egypt, considering rapid population growth and worsened service coverage.
- NRWP is a comprehensive document describes approaches to achieve an integrated water management system in water sector through four key pillars: (1) developing additional water

<sup>2</sup> Egypt's Sixth Five-Year Plan (2007/08-2011/12) rests on a group of pillars including the Long-Term Socioeconomic Development Vision (2002/03-2021/22), the Millennium Development Goals (2005-2015) and the New Social Contract (2005-2015).

resources; (2) increasing water use efficiency; (3) improving water quality management; and (4) ensuring institutional and financial sustainability.

### (2) Relevance with the development needs of the target groups

SHAPWASCO, GHAPWASCO and MCWW are the three public potable water and wastewater companies among 23 that are overseen and monitored by HCWW, and they are responsible for effective operation and maintenance of water supply facilities to provide clean and safe water in each Governorate; Sharkiya, Gharbiya and Minufia, respectively. Taking into account of the current capacity level and their mandates to provide and appropriately manage water and sanitation services, they are appropriate organizations to be selected for the Project's target groups.

The JICA's previous technical cooperation project improved the management capacity of SHAPWASCO through developing capacity on NRW reduction, formulating SOPs, and conducting OJT on operation and maintenance of water supply facilities. In spite of the improvement in SHAPWASCO's operation and distribution of SHAPWASCO's SOPs to other companies, water and sanitation companies in the Nile Delta area have continued to face such issues as operation at a deficit, low fare receipts, and high NRW ratio. Management capacity of GHAPWASCO and MCWW to properly operate and maintain the facilities were insufficient, causing the quantity and quality of treated water to be unreliable. The above-mentioned situations have created a strong need for capacity development at these water supply companies. While SHAPWASCO has made continuous efforts to increase the impact of the previous technical cooperation projects by applying developed capacity to the rest of the Governorate, further capacity development in water distribution management (WDM) has remained as the next, important issue to be improved. These views were confirmed by the Questionnaire/Interview Surveys with C/Ps and Experts at the Mid-Term Review.

### (3) Relevance with Japan's ODA policy

The Project is in line with the Japanese Government's assistance policies for Egypt, as described below.

- Japan's Country Assistance Program for Egypt sets "poverty reduction and improvement of living standard" as one of the three assistance program goals, aiming for the transformation of Egypt into a competitive and stable economy and society.
- One of the three priority sector goals is "enhancement and improvement of public services," which includes water supply and sewage development.
- Japan's Country Assistance Program for Egypt discusses the need for extension and development of water supply in the Nile Delta area.

### (4) Relevance with Japanese experiences and expertise

JICA has supported the potable water sector in many countries including Egypt. In Egypt JICA undertook two Grant Aid between 2003 and 2009. In 2006-2009, JICA implemented the Project for Improvement of Management Capacity of Operation and Maintenance for Sharkiya Potable Water and Sanitation Company, which entailed the formulation of SOPs for facilities and implementation of a program for addressing NRW. The approach of capacity development in O&M using SOP was proved effective and HCWW developed a plan to transfer the successful practices and lessons learned accumulated in the previous technical cooperation project throughout the Nile Delta area. In addition to diverse experiences of assisting Egypt in the water sector, Japan has technological and empirical advantages in O&M of water supply facilities based on SOP, management of water quality, leakage detection technology and so forth.

### 4-2 Effectiveness

The overall effectiveness of the Project is evaluated as medium. Despite some delays on the Project's progress, C/Ps' management capacity to operate and maintain water supply facilities is being improved by the Project. The prospect of the achievement of the Project Purpose and the factors that have contributed and hindered the effectiveness are outlined below.

### (1) Prospects of achieving the Project Purpose

As stated in "3-3 Achievement of the Project Purpose," it is difficult to foresee the prospect of the achievement of the Project Purpose from the point of view of the degree of achievement of the defined OVI on the PDM. However, it is evaluated that the overall management capacity to operate and maintain water supply facilities has improved at SHAPWASCO, GHAPWASCO and MCWW, considering the current levels and prospects of achievement of the defined four Outputs described already. According to the Questionnaire/Interview Surveys, most of C/Ps and Experts show strong confidence in the achievement of the Project Purpose by the end of the Project period. It is required that all the Project activities be properly implemented in the rest of the Project period, particularly in Outputs 4 (WDM capacity development), and OVIs for the achievement of the Project Purpose be properly monitored and encouraged to be improved. Given these observations, the prospect of achieving the Project Purpose is evaluated to be relatively high.

### (2) Contributing factors for achieving the Project Purpose

The followings were revealed as contributing factors for achieving the Project Outputs and the Project Purpose. These are also confirmed by the Interview/Questionnaire Surveys from both C/Ps and Experts.

#### (1) Capacity development by utilizing various resources and methods

Capacity development of C/Ps in the Project is being effectively implemented by utilizing various resources available to cover diverse technical fields and a number of C/Ps' needs. A variety of capacity development methods were adopted appropriately: mini seminars for SOP and NRW reduction activities, On-the-Job Training (OJT), Training of Trainers (TOT), and training in Japan.

#### (2) Frequent and effective communication, information sharing and interaction

The Project team maintains a close and friendly communication and interaction among each other through Steering Committee meetings, frequent Project Team meetings and daily collaborative works. High level of mutual understanding among the Project team members as well as of enthusiasm in participating in the Project by C/Ps has been bringing about increasing to share information and discuss any issues regarding the Project implementation.

#### (3) Existence of the Egyptian facilitators

Expert Team has employed 3 Egyptian facilitators, as an input from JICA, to support information exchange between C/Ps and Experts and to offer advice on issues regarding the Project activities based on local understandings. By including both Japanese and Egyptian members in the Expert Team, the Project is able to ensure effective capacity development.

#### (4) Successful achievements by the previous technical cooperation project

The achievements and experiences on SOP and NRW activities from the previous technical cooperation project are the good basis and foundation for the success in the Project. SHAPWASCO has continued its own efforts to disseminate successful achievement by the previous project to cover whole area of the Governorate, and according to the Chairman, SHAPWASCO now applies SOP and NRW activities in around 60-70% of its facilities all over the Governorate. Good practices and experiences in SHAPWASCO have been shared among many other water supply companies in Nile Delta Area, which brought about high expectation for the Project in GHAPWASCO and MCWW from the beginning. Capacity on SOP and NRW measures are being transferred to GHAPWASCO and MCWW by SHAPWASCO members, whose skills and knowledge are further strengthened through the Project. Workshops and OJTs facilitated by SHAPWASCO members have been well received by training participants for their practical insights and technical advice on the Project implementation. At the same time, effective communication and information sharing among the three water supply companies has been promoted under the Project, which has brought about a good balance between "collaboration and competition" among the C/Ps. Furthermore, strong sense of ownership and commitment to the Project by top leaders (Project Director and Project Managers) and all the level of C/Ps has contributed to generating the expected Outputs.

### (3) Hindering factors to the achievement of the Project Purpose

The following aspects in relation to the water supply facilities, particularly of the selected model facilities/areas, are evaluated to be hindering factors to the achievement of the Project Purpose both in terms of the effectiveness and efficiency of the Project implementation.

- (1) Original design of the facilities was often inappropriate, which was difficult to understand for both C/Ps and Experts from the viewpoint of effective facility design. The Project was obliged to spend more time on repair and replacement of inappropriate facilities in order to implement the expected capacity development for SOP formulation and its application.
- (2) In most cases there were no facility-related diagrams, manuals and equipment descriptions, which made the Project have to start with preparing necessary diagrams and documents from the scratch.
- (3) Even the minimum level of training in facility operation and maintenance was not conducted to the staff of the water supply companies during the period of one year for trial operation under the responsibility of the facility construction company.

### 4-3 Efficiency

**The overall efficiency is relatively high. In general, the Project has efficiently converted the Inputs to generate Outputs with a relatively limited amount of resources to cover a wide area of the three Governorates, particularly in several model facilities/areas. Although there was a delay in WDM activities, appropriate conversion from the planned Inputs to the achievement of the Project Outputs and the Project Purpose are expected with appropriate implementation of Project in the remaining period.**

From the outset of the Project, a total of twelve Experts were assigned to the Project, while a total of 47 C/Ps were assigned from HCWW, SHAPWASCO, GHAPWASCO and MCWW to the Project. According to the Questionnaire/Interview Surveys, Experts' expertise and capability were highly appropriate while the durations of their assignment period and timing of dispatch were deemed slightly inappropriate. Both Experts and C/Ps commented that they could not spend enough time with each other to fully teach/learn new technical skills partly due to that Experts' activities were temporarily suspended because of the presidential election and also that the Project covers several different areas and model facilities.

Three Egyptian facilitators and two local experts were assigned to provide support for Experts and C/Ps in communication and translation work as well as to resolve emerging issues caused by intercultural misunderstanding. Egyptian facilitators and experts contributed to increasing the Project's efficiency by offering advice based on local understanding of various situations and acting as a bridge between Experts and C/Ps.

Overall, it is evaluated that appropriate inputs of equipment are being efficiently converted to generate expected Outputs until now. However, there were some delays in actual installations of equipment for WDM activities due to the different views on equipment selection between the Egyptian and Japanese sides. Equipment for WDM activities (e.g., telemetering flow meters, pressure gauges with telemetering, etc.) and chambers that can be utilized for operating a real-time monitoring system are being procured and installed by the Project. Responsibilities regarding inputs by the Egyptian and Japanese sides in WDM activities were clearly defined and confirmed by both sides as agreed in the M/M on 5 July 2012.

### 4-4 Impact

**At the time of the Mid-Term Review, it is difficult to foresee the potentiality and scale of expected impact of the Project. However, it should be said that the Project has a good potential to bring about a relatively large scale of Impact in the future.**

#### (1) Prospect of the achievement of the Overall Goal

Although most C/Ps and Experts express a certain level of confidence, it is difficult to foresee the

potentiality and scale of expected impact of the Project at the Mid-Term Review. Even if the Project succeeds in achieving the Project Purpose by the end of the Project period, the achievement of the Overall Goal is mainly dependent upon how effectively and efficiently the internal capacity development efforts will continuously be implemented within and among the three companies.

The Project has succeeded in developing several core technical staff of SHAPWASCO, GHAPWASCO and MCWW as trainers for other technical staff of WTPs, IMRPs and well stations in each of the three Governorates. An internal training system designed and partially implemented by the Project is expected to become a basis for further preparation and implementation of a sustainable capacity development for many technical staff in other areas (districts) of the three Governorates other than the model areas targeted by the Project. Taking into account of the fact that SHAPWASCO has almost successfully increased the impact of the previous technical cooperation project by disseminating the improved capacity to other areas of Sharkiya Governorate and of the ongoing achievement of the Project's Outputs, the prospect of generating a large scale of Impact by the Project is evaluated to be relatively high.

## (2) Organizational Impact

The Project increased effective communication and collaboration among technical staff in different departments in each of the 3 companies. "Team working" on such issues as SOP, NRW and WDM brought a new style of effective working in each company. This may lead to promote a much effective organizational behavior and to increase both impact and sustainability of the Project.

The Project also provided C/Ps with opportunities to interact with technical staff of other water supply companies, which enabled them to understand their conditions and challenges in daily operation and management in different Governorates, and to discuss and share ideas for much effective operation and maintenance of the water supply companies. Through the Project, C/Ps increased communication and mutual understanding and developed professional network with staff of other Governorates, which was never realized before the implementation of the Project.

The Project has sensitized not only the targeted three companies but also other water supply companies in Nile Delta Area. Open seminars and special workshops provided opportunities for relevant stakeholders in Nile Delta Area to increase awareness and importance on SOP, NRW reduction activities as well as leak detection technique, in which experiences and knowledge on the collaboration among SHAPWASCO, GHAPWASCO and MCWW were disseminated.

With an initiative by C/Ps in GHAPWASCO, Egyptian private company in leakage detection survey business provided financial assistance for "Nile Delta Area Joint NRW Workshop" that was organized in September 2012. It is evaluated that the Project's NRW activities bears good ripple effects in increasing private companies' interests and even can bring about a larger scale of impact in terms of developing the capacity in effective operation and maintenance activities by the private sector.

## 4-5 Sustainability

The prospect of achieving sustainability is evaluated to be relatively high at this point of time since the Project shows some signs of building a foundation to ensure lasting effects of the Project achievement. However, it largely depends on the progress of the Project activities in the remaining period as well as on the strong commitment and concrete actions by the Egyptian side.

### (1) Institutional Aspects

Under the Project, training seminars/workshops and OJT provided technical staff in headquarters and model facilities in three Governorates with opportunities for promoting cooperation and collaboration and for better understanding actual situations and issues to be solved. Thus, an institutional mechanism for promoting communication and cooperation among water supply companies has been established to a certain extent until now and is expected to be further strengthened in the remaining period of the Project.

HCWW has been responsible for making effective information sharing and promoting collaboration among the water supply companies. Given the achievements by the Project, it is expected for HCWW to accelerate its initiative for establishing a concrete institutional mechanism for doing so.

### (2) Organizational Aspects

With an assistance of Experts, SHAPWASCO staff members are currently carrying out OJT for GHAPWASCO and MCWW to apply SOPs in O&M of model facilities as well as to take measures on NRW reduction. This begins to provide a good cycle of training implementation by use of internal resources, motivating C/Ps with their higher confidence about their knowledge and experiences, and promoting C/Ps' ownership on the Project implementation. Some C/Ps in GHAPWASCO and MCWW show strong willingness and confidence to become trainers for SOP and NRW issues inside the organization and even for dissemination of capacity to other water supply companies.

After the completion of the previous technical cooperation project, SHAPWASCO established departments specialized in SOP and NRW, and is implementing activities through each specialized department; therefore, the organizational sustainability of the previous technical cooperation project is evaluated to be high. Under the Project, GHAPWASCO and MCWW have already established informal taskforce teams specialized in SOP and NRW inside the company, and they are expected to become official ones that have members fully dedicating their time of those issues in the future.

Most of the C/Ps of the Project are relatively young and recently recruited. Judging from the C/Ps' commitment and enthusiasm to the Project, a good cycle of developing a sufficient number of technical staff who has capacity in effective operation and maintenance can be established as long as all the three companies recruit a certain number of technical staff every year. Although it depends on the policy and the size of the budget, it is evaluated that the prospect of securing a sufficient number of staff to develop their management capacity of operation and maintenance of water supply facilities is relatively high.

Therefore, a prospect of an organizational mechanism being built is evaluated to be relatively high.

### (3) Financial Aspects

According to the Questionnaire/Interview Surveys, some C/Ps and Experts express concern over discontinuance of a subsidy from the central government and unpromising prospect of securing budget to cover wide areas of water supply services in each Governorate. For the three water supply companies it is expected to strengthen their financial performances in order to secure budget to take continuous actions on SOP application, NRW reduction and WDM. If the Project Purpose is fully achieved, their annual financial performance are expected to gradually improve as a result of NRW reduction and improved management capacity of water facilities' O&M, which could increase their financial potential to reinvest for capacity development activities by themselves.

### (4) Technical Aspects

A total of 13 training seminars/workshops has been held for 41 staff members of SHAPWASCO, GHAPWASCO and MCWW. Workshops and OJTs facilitated by SHAPWASCO members have been well received by training participants for their practical insights and technical advice on the Project implementation. Since prospective trainers have started SOP or NRW training, the technical transfer system and trainers' capacity are likely to be maintained even after the Project.

Formulation of specific action plans for technical transfer to the rest of the water supply facilities in three Governorates will contribute to increasing the level of sustainability since action plans will clarify actions needed to be taken to continue the effects of the Project.

According to the Questionnaire/Interview Surveys, both C/Ps and Experts show a relatively high confidence for C/Ps to maintain and upgrade or replace the equipment installed by the Project.

## 5. Conclusion and Recommendations

### 5-1 Conclusion of the Evaluation

The Project has made a steadfast progress in strengthening the capacity in operation and maintenance of water supply facilities despite some delays in implementation of the Project activities.

The relevance of the Project is evaluated as very high since it is in line with the Egyptian Government's development policies and Japanese Government's aid policies while meeting the needs of the target groups. The effectiveness of the Project is evaluated as medium, because the overall capacity to operate and maintain water supply facilities is significantly improving, although some OVIs to measure the degree of the achievement of the Project Outputs and Project Purpose have not yet been defined and monitored. The efficiency of the Project is evaluated as relatively high since overall inputs have been converted to build a basis to generate expected Outputs up to this point despite delays in some of the Project activities. At the time of the Mid-Term Review, it is difficult to foresee the potentiality and scale of expected impact of the Project, although basic foundations for their continuous efforts to enhance effective operation and maintenance of water supply facilities are being established. Lastly, the prospect of achieving sustainability is evaluated to be relatively high, considering the Project progress on organizational and technical aspects at this stage.

Although the Project has been a challenging one, which aims at building up effective O&M procedures in a systematic manner from the situation that almost no standard procedures for O&M was implemented, it is evaluated that the Project has been bringing about reasonable achievements thus far. Ownership, enthusiasm and commitment by the Egyptian C/Ps are very high and they are ready to implement the Project with their high interests in the remaining period. In order to surely achieve the Project Purpose, more activities are needed in the rest of the Project period with continuous collaboration among C/Ps and Experts, which will lead to the increases in the impact and the sustainability of the Project.

### 5-2 Recommendations

Taking the above analysis into consideration, the followings are recommended in order to ensure the achievement of the Project Purpose by the end of the Project period and to increase the impact and the sustainability of the Project:

#### (1) Setting Targets of Performance Indicators

Although items of performance indicator were approved as OVI of the Project Purpose on the PDM by the Joint Coordinating Committee on 26<sup>th</sup> November, 2012, the Project members should set the targets as soon as possible to assess the achievement in terminal evaluation that will be held in October 2013.

#### (2) Establishment of Full-Time Work Project Units in GHAPWASCO and MCWW

C/Ps for NRW and SOP in GHAPWASCO and MCWW is assigned to implement the Project activities. However, they have other routine tasks and cannot concentrate on the Project activities. In addition, there are not enough vehicles for Project activities and lack of vehicle has prevented from implementing the Project activities smoothly. To implement the Project activities effectively and efficiently, GHAPWASCO and MCWW are strongly requested to establish full-time work project Units officially.

#### (3) Feedback and Handover system between NOPWASD and Water and Sanitation Companies

As described above, water supply companies have been handed over facilities from contractors of NOPWASD without enough training how to operate and maintenance, and related documents<sup>3</sup>. Moreover, there is no feedback system from operation side to planning/design and construction

<sup>3</sup> such as Operation and Maintenance manuals and as-built drawings.

side. The Team suggests the strengthening of relationship between NOPWASD and Water supply companies, and concretely introduction of Feedback and Handover system between NOPWASD and water supply companies, which would have accelerated SOP activities' efficiency and effectiveness in the Project and will improve the facilities design.

#### (4) Formulation of Roadmap to disseminate the project effects by HCWW

As described as Super Goal in PDM, both the Egyptian and the Japanese sides have agreed that the Project aims to improve the capacity of operation and maintenance of water supply facilities in Nile Delta Area. To disseminate the knowledge transferred by the Project to whole Nile Delta Area after the Project's completion, HCWW is required to formulate the Roadmap with implementation schedule and following issues:

##### I. Institutional System for dissemination

Water supply companies have shared their experience each other for dissemination so far, and it has been depended on self-help-effort of each companies and support of development partners. To disseminate steadily and efficiently to whole Nile Delta Area after the Project's completion, it is required to establish an institutional system to disseminate to whole Nile Delta Area.

##### II. Budget and resource

To disseminate and implement SOP and NRW activities, it is necessary that water supply companies procure equipment and rehabilitate facilities. Therefore, it is required to secure budget and resource to implement dissemination in accordance with implementation schedule.

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**ANNEX 1. Project Design Matrix (PDM1)**

**Project Design Matrix (PDM1)**

Dated September 27, 2011

**Project Name** : The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area

**Duration** : FY2011-FY2013

**Project Site** : Sharkiya Governorate, Gharbia Governorate, Minufia Governorate (Nile Delta Area)

**Target Group** : Staff of SHAPWASCO, GHAPWASCO, MCWW

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<b>[Super Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area	Performance Indicators (PIs) in the fields of management capacity of operation and maintenance are improved in Nile Delta Area	Quarterly Reports of all water supply companies in Nile Delta Area submitted to HCWW	
<b>[Overall Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates	PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	Central and local government budget for development of water supply facilities is allocated appropriately
<b>[Project Purpose]</b> Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates	PIs in the fields of management capacity of operation and maintenance are improved at the model areas/facilities	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	Governmental policy on water supply sector does not change significantly
<b>[Output]</b> 1) Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened	a. More than 3 members each of SOP/NRW teams in SHAPWASCO · GHAPWASCO · MCWW are approved as trainers by Steering Committee b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team	a. Certification of Training b. Reports of workshops	Employees who received trainings by the Project will continuously work for SHAPWASCO, GHAPWASCO, MCWW  Personnel transfer of executive management will not affect the implementation of the Project
2) Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates	a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation b. The model facilities are operated and maintained based on SOP c. Improvement of PIs for the model facilities are evaluated based on SOP	a, b, c. Project Progress Reports	
3) The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates	a. More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation b. Water balance analysis is conducted properly for the 3 model areas c. 100% of detected leakage is repaired at the model area	a, b, c. Project Progress Reports	
4) The water distribution management capacity is improved in Sharkiya Governorate as an advanced model	a. Water distribution is managed based on SOP at the model areas b. Issues on water distribution capacity are reported to top management of SHAPWASCO	a, b. Project Progress Reports	
0) The project is managed and coordinated properly	a. Agreement on the coordination among SHAPWASCO · GHAPWASCO · MCWW is prepared b. Project activities are regularly monitored based on PO/APO	a. Agreement Document b. Project Progress Reports	

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**ANNEX 1. Project Design Matrix (PDM1)**

Activities	Inputs	Important Assumption	
1-1 Conduct management training for the top management 1-2 Conduct Training of Trainers (TOT) for developing SOP 1-3 Conduct TOT for NRW reduction 1-4 Disseminate the contents, the manners and the results of the collaboration among SHAPWASCO, GHAPWASCO and MCWW to the water supply companies in Nile Delta Area through reports and workshops	<b>Japanese side</b> 1) Japanese Experts · Chief advisor/water supply planning · NRW reduction management · Leakage detection · Water Treatment · Water quality · Electrical equipment · Mechanical equipment · Distribution network · Others (if necessary)	Budget for the Project is allocated as planned by HCWW, SHAPWASCO, GHAPWASCO, and MCWW	
2-1 Survey the current conditions of water supply facilities in Gharbia and Minufia Governorates 2-2 Select 3 model facilities in Gharbia and Minufia Governorates each 2-3 Organize SOP teams 2-4 Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate 2-5 Revise SOPs of Sharkiya Governorate, if necessary 2-6 Develop SOPs for model facilities in Gharbia and Minufia Governorates based on SOPs for SHAPWASCO 2-7 Conduct On-the-Job Training for GHAPWASCO and MCWW to apply SOPs in operation and maintenance 2-8 Monitor the progress of SOP activities 2-9 Draft the policy/plan for disseminating SOP to the other Marakazes	2) Local Expert 3) Equipment 4) Training in Japan 5) Local Cost		
3-1 Analyze the current situation on NRW in Gharbia and Minufia Governorates 3-2 Select 3 model areas for NRW reduction in Gharbia and Minufia Governorates each 3-3 Organize NRW reduction teams 3-4 Formulate an action plan for NRW reduction activities based on the action plan for SHAPWASCO 3-5 Conduct training on general practice of NRW reduction 3-6 Conduct training at the training yard in Sharkiya Governorate 3-7 Conduct training at model areas for water distribution management in Sharkiya Governorate 3-8 Prepare GIS drawing for model areas in Gharbia and Minufia Governorates 3-9 Make water balance analysis at model areas 3-10 Conduct leakage detection survey at model areas 3-11 Make water balance analysis after repair works 3-12 Draft policy/plan for disseminating NRW reduction activities to the other Marakazes	<b>Egyptian side</b> 1) Counterpart Personnel · Project Director: Chairman, HCWW · Project Manager: Chairman, SHAPWASCO · Co-Project Manager: Chairman, GHAPWASCO · Chairman, MCWW · SOP Team · NRW Team		
4-1 Discuss methods and conduct survey for water distribution management 4-2 Conduct training for water distribution management 4-3 Formulate a plan for water distribution management 4-4 Install the equipment for water distribution management at the model area 4-5 Operate the system 4-6 Develop SOP for water distribution management 4-7 Evaluate the operation and SOP for water distribution management	2) Office space and facilities for the experts 3) Equipment 4) Necessary Information 5) Local Cost		<b>[Pre-condition]</b> Budget for HRD is allocated properly to SHAPWASCO, GHAPWASCO and MCWW by HCWW
0-1 Establish Steering Committee, consisting of representative of HCWW, SHAPWASCO, GHAPWASCO and MCWW 0-2 Discuss the contents, the manners for the cooperation among SHAPWASCO, GHAPWASCO and MCWW through the Steering Committee 0-3 Organize JCC at least once a year 0-4 Finalize the Indicators of the Project Design Matrix (PDM) for approval of the first Joint Coordination Committee (JCC) 0-5 Prepare a draft Annual Plan of Operations (APO) based on the Plan of Operations (PO) for approval of the first JCC 0-6 Monitor the progress of PO/APO and achievement of the Indicators of the PDM			

ANNEX 2-1. List of Dispatched Experts

NO.	Field	Name	Assignment Period (No. of days)	M/M
1	Chief Advisor/Water Supply Planning	Katsumi FUJII	2011.05.14-2011.06.23 (41 days)	1.36
			20011.09.03-2011.10.01 (29)	0.97
			2012.02.21-2012.04.03 (43)	1.43
			2012.06.25-2012.07.24 (30)	1.00
			2012.10.08-2012.12.01 (55)	1.84
			Domestic working period	
2	Deputy Chief Advisor/NRW Reduction Management	Mitsuhiro OMORI	2011.05.09-2011.05.13 (5)	0.17
			2011.06.03-2011.07.02 (30)	1.00
			2011.09.03-2011.11.01 (60)	2.00
			2011.12.11-2011.12.26 (16)	0.53
			2012.03.16-2012.05.20 (66)	2.20
			2012.07.02-2012.07.31 (30)	1.00
3	Leakage Detection	Hiroki NIIMURA	2012.08.26-2012.09.24 (30)	1.00
			2011.09.05-2011.11.08 (65)	2.17
			2012.02.10-2012.03.30 (50)	1.66
			2012.08.26-2012.12.13 (110)	3.67
4	Water Treatment System	Tomohiro SHIMIZU	2011.05.14-2011.06.12 (30)	1.00
			2011.10.02-2011.11.15 (45)	1.50
			2012.03.16-2012.05.04 (50)	1.67
			2012.06.25-2012.07.24 (30)	1.00
			2012.09.11-2012.10.01 (30)	1.00
			Domestic working period	
5	Mechanical Equipment	Ryoji NAGAO	2011.05.10-2011.05.13 (4)	0.13
			2011.06.03-2011.07.17 (45)	1.50
			2011.10.23-2011.12.01 (40)	1.33
			2012.02.14-2012.03.30 (46)	1.53
6	Electrical Equipment	Sayed Osman Madbouly	2012.10.02-2012.11.29 (60)	2.00
			2011.07.01-2011.07.30 (30)	1.00
			2011.09.05-2011.09.14 (10)	0.33
			2011.09.16-2011.09.24 (9)	0.30
			2011.09.26-2011.09.29 (4)	0.13
			2011.10.03-2011.10.05 (3)	0.10
			2011.10.08-2011.10.08 (1)	0.04
			2011.10.19-2011.10.19 (1)	0.04
			2011.10.26-2011.10.27 (2)	0.06
			2012.02.12-2012.03.02 (20)	0.67
			2012.06.02-2012.06.11 (10)	0.33
			2012.06.28-2012.07.17 (20)	0.67
			2012.09.27-2012.10.11 (15)	0.50
			7	Hydraulic Analysis for Network
2012.11.14-2013.02.11 (90)	3.00			

NO.	Field	Name	Assignment Period (No. of days)	M/M
8	Distribution Network(1)	Masahiro TAKEUCHI	2011.05.14-2011.05.28 (15)	0.50
			2011.09.03-2011.09.24 (22)	0.73
			2011.11.19-2011.12.18 (30)	1.00
			2012.11.05-2012.12.12 (38)	1.27
			Domestic working period	
9	Distribution Network(2)	Kiyoshi KIYAMA	2011.05.09-2011.05.13 (5)	0.17
			2011.06.27-2011.08.04 (39)	1.30
			2011.09.03-2011.11.07 (66)	2.20
			2012.03.16-2012.04.14 (30)	1.00
			2012.09.18-2012.10.17 (30)	1.00
10	Well Monitoring	Nobuyuki IJIMA	Domestic working period	
			2011.11.08-2011.11.22 (15)	0.50
			2012.02.10-2012.03.10 (30)	1.00
11	Water Quality	Kazuhiro UMEKI	2011.06.20-2011.08.04 (46)	1.53
			2011.11.13-2011.12.26 (44)	1.47
			2012.11.14-2012.12.28 (45)	1.5
12	Coordinator/Assistant for NRW Reduction Management	Atsushi KATO	2011.10.07-2011.11.4(29)	0.97
			2011.11.08-2011.11.29(22)	0.73
			2011.12.07-2011.12.12 (6)	0.20
			2012.03.29-2012.04.27 (30)	1.00
12	Coordinator/Assistant for NRW Reduction Management	Atsushi KATO	2011.05.14-2011.06.12 (30)	1.00
			2012.11.04-2012.12.13 (40)	1.33

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ANNEX 2-2. List of Local Experts (Input by Japan)

NO.	Field	Name	Assignment Period
1	Facilitator 1 (SHAPWASCO)	Mohamed Nagi Gaber	2011.05.15-2011.12.25
			20012.02.11-up to now
2	Facilitator 2 (GHAPWASCO)	Mohamed Abdel Kader Abouzekry	2011.05.17-2011.12.25
			20012.02.11-up to now
3	Facilitator 3 (MCWW)	Mohammed Abd El-kader Abd El-Ghany	2011.06.05-2011.12.25
			20012.02.11-up to now
4-1	Interpreter1 (SOP)	Ahmed Ragab Hamed	2011.06.05-2011.12.25
			20012.02.11-2012.07.05
4-2	Interpreter1 (SOP)	Ahmed Rasmy	2012.07.01-up to now
5	Interpreter2 (NRW)	Ahmed Atef	2011.06.05-2011.12.25
			20012.02.11-up to now
6	Local Expert (Water distribution facilities)	Mostafa Moawed Mostafa	2011.06.05-2011.12.25
			20012.02.11-up to now
7-1	Local Expert (Water treatment facilities)	Ahmed El-Baz	2011.06.05-2011.12.25
			20012.02.11-2012.10.1
7-2	Local Expert (Water treatment facilities)	Mahmoud Abo Khalaf	2012.10.2- up to now

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ANNEX 2-3. List of Equipment Provided by Japan

Equipment for SOP and NRW Reduction Activities (procured in 2011/04 - 2011/12)

No.	Name of Equipment	Quantity			JET	JICA	Location
		SHAP	GHAP	MCWW			
1	Water leak detector	-	3	3	✓		JPN
2	Digital sound detector	-	2	2	✓		JPN
3	Acoustic rod (1.5m)	-	4	4	✓		JPN
4	Pressure data logger	-	3	3	✓		JPN
5	Pipe and cable locator	-	2	2	✓		JPN
6	Metal pipe locator	-	1	1	✓		JPN
7	Magnetic locator	-	1	1	✓		JPN
8	Non metallic pipe vibrator	-	2	2	✓		JPN
9	Hammer drill	-	2	2	✓		JPN
10	Drill bid	-	8	8	✓		JPN
11	Boring bar (1m)	-	2	2	✓		JPN
12	Generator	-	2	2	✓		EGT
13	Water level indicator	-	3	3	✓		JPN
14	Leak sound detector	-	2	2		✓	JPN
15	Portable ultrasonic flow meter (For large diameters)	-	3	3		✓	JPN
16	Portable ultrasonic flow meter (For normal diameters)	-	2	2		✓	JPN
17	Pickup	-	1	1		✓	EGT
18	Personal computer (Desk top)	-	1	1		✓	EGT
19	Personal computer (Notebook)	-	2	2		✓	EGT
20	Copy and Fax machine	-	1	1		✓	EGT

Note ; SHAP:SHAPWASCO, GHAP: GHAPWASCO, JET: Japanese Experts' Team

Equipment for SOP and WDM Activities (procured in 2012/01 - 2012/12)

No.	Name of Equipment	Quantity			JET	JICA	Location
		SHAP	GHAP	MCWW			
1	Water CAD (It was procured by budget for 2011/04-2011/12.)	-	1	1		✓	EGT
2	Ultrasonic flow meter	-	1	1	✓		JPN
3	Ultrasonic flow meter (For small dia. Chamber type)	6 (estimate)	-	-		✓	JPN
4	Ultrasonic flow meter (For large dia. Chamber type)	1 (estimate)	-	-		✓	JPN
5	Ultrasonic flow meter (For small dia. indoor type)	7 (estimate)	-	-		✓	JPN
6	Water pressure gauge (For WTP)	2 (estimate)	-	-		✓	JPN
7	Water pressure gauge (For indoor type)	10 (estimate)	-	-		✓	JPN
8	Telemeter (For outdoor type)	17 (estimate)	-	-		✓	JPN
9	Telemeter (For indoor type)	7 (estimate)	-	-		✓	JPN
10	Central monitoring system	1 (estimate)	-	-		✓	JPN

Note ; SHAP:SHAPWASCO, GHAP: GHAPWASCO, JET: Japanese Experts' Team

ANNEX 2-4. List of C/P Training in Japan

1. Management Training in Japan

(1) Purpose

The purpose of the training in Japan is to learn the experience for water supply service management in Japan and utilize it in the water supply service management of GHAPWASCO, MCWW, SHAPWASCO and other water companies in Egypt.

(2) Attendance List

Attendants were as follows:

- Dr. Salah Bayoumi, Head of Project Sector of HCWW
- Mr. Ayman Abd El Kader, Chairman of GHAPWASCO
- Mr. Mohamed Abu El Khair, Chairman of MCWW
- Mr. Ahmed Abdeen, Chairman of SHAPWASCO

(3) Training Schedule in Japan

C/P training has been conducted in Japan from 3<sup>rd</sup> to 12<sup>th</sup> October 2011. The project manager (Head of Project Sector, HCWW) and project co-manager (chairman of GHAPWASCO, MCWW and SHAPWASCO) attended following course.

Training Schedule for Management Training in Japan

Date	Activity	Location
1-Oct	Departure from Cairo.	
2-Oct	Arrival at Tokyo.	
3-Oct	Orientation by JICA. Courtesy call to JICA headquarters	JICA/TIC JICA
4-Oct	Trend and development of water management in the world (Workshop to be held by IWA-ASPIRE).	Tokyo International Forum
5-Oct	Introduction of national policy and governing organization for water supply. Opinion exchange with the Japanese officials. Introduction of Japan Water Works Association and system for information/technology transfer among water supply service providers. Opinion exchange for technology development.	Ministry of Health, Labor and Welfare Japan Water Works Association
6-Oct	Opinion exchange for service and human resources development with a water supply service provider. Practice of inter-agency cooperation for technical education and O&M.	Yokohama city Yokohama city
7-Oct	Policy and practice of NRW reduction. Practice to promote efficiency (power reduction, tariff collection, water distribution management)	Yokohama city Yokohama city
8-Oct	Holiday	
9-Oct	Holiday	
10-Oct	Water Museum in Yokohama (observation of example for publicity) Miyagase dam (observation of example for publicity)	Yokohama city Miyagase dam
11-Oct	Observation of solar power facility in the water treatment plant (Nishiya WTP) Site observation of a water treatment plant as well as SOP practices (Kawai WTP)	Yokohama city Yokohama city
12-Oct	Closing ceremony and opinion exchanges with JICA.	JICA/TIC
13-Oct	Departure from Tokyo.	
14-Oct	Arrival at Cairo.	

2. SOP and NRW reduction Training in JAPAN

(1) Purpose

The purpose of the training in Japan is to learn the experience for SOP and NRW reduction in Japan and utilize it in the water supply service management of GHAPWASCO, MCWW, SHAPWASCO and other companies in Egypt.

(2) Attendance List

Attendants were as follows:

- Mr. Wesam Abd El-Fattah, Operation and Maintenance Dep. of HCWW
- Mr. Nagi Yousri, Technical Support of GHAPWASCO
- Mr. Ahmed Elsayed Rabi, Water Supply Sector of GHAPWASCO
- Mr. Mohamed Fathy Gaber, Operation and Maintenance Dep. of MCWW
- Mr. Mohamed Mostafa El Shafie, Operation and Maintenance Dep. of MCWW
- Mr. Saeed Mohamed Attia, Non-revenue water (NRW) Dep. of SHAPWASCO
- Mr. Ahmed Saeed, Standard Operation Procedures Dep. of SHAPWASCO

(3) Training Schedule in Japan

C/P training has been conducted in Japan from 5<sup>th</sup> to 16<sup>th</sup> December 2011. Total 7 trainees attended following course.

Training Schedule for SOP and NRW Reduction Training in Japan

Date	NRW		SOP	
	Activity	Place	Activity	Place
3-Dec	Departure from Cairo			
4-Dec	Arrival at Tokyo			
5-Dec	JICA Briefing	JICA/TIC	Same as NRW	Same as NRW
	Orientation	JICA/TIC	Same as NRW	Same as NRW
6-Dec	Outline of Yokohama City Water	Yokohama City	Same as NRW	Same as NRW
	Risk management of Yokohama	Yokohama City	Same as NRW	Same as NRW
	Public relations of Yokohama	Yokohama City	Same as NRW	Same as NRW
7-Dec	Practical training course for tariff collection	Yokohama City	Outline of Integrated monitoring system	Yokohama City
	Water distribution network management for streets monitoring equipment	Yokohama City	Same as NRW	Same as NRW
	Observation of streets monitoring equipment	Yokohama City	Same as NRW	Same as NRW
8-Dec	Overview of Non Revenue Water	Yokohama City	Work safety and efficient operation of power-chemical quantity	Yokohama City
	Organization for leakage inspection and pipeline maintenance	Yokohama City	Operation and maintenance of water treatment plant	Yokohama City
9-Dec	Management of water supply block system, Replacement of aged pipes	Yokohama City	Data management of O&M and manual WTP O&M	Yokohama City
	Outline of pipeline mapping system	Yokohama City	Introduction of standard operation procedures in Japan	Yokohama City
10-Dec	Holiday			
11-Dec	Holiday			



Date		NRW		SOP	
		Activity	Place	Activity	Place
12-Dec	Mon	Outline of leak detection training	FUJI TECOM	Outline of Saitama City Water	Saitama City
		Training of leak detection-1, 2	FUJI TECOM	Replacement of well plan	Saitama City
13-Dec	Tue	Outline of steel pipes detector, metal pipe detector, correlation detector	FUJI TECOM	Replacement of electric facility and water quality monitoring	Saitama City
		Training of leak detection-3, 4	FUJI TECOM	Observation of well facility.	Saitama City
14-Dec	Wed	Method of training leak detection	FUJI TECOM	Operation and maintenance of water treatment plant and well	Saitama City
		Training leak detection facility and equipment. Implement for training leak detection	FUJI TECOM	Observation of East WTP and Groundwater WTP	Saitama City
15-Dec	Thu	Ending Ceremony	JICA/TIC	Same as NRW	Same as NRW
16-Dec	Fri	Departure from Tokyo			
17-Dec	Sat	Arrival at Cairo			

### 3. WDM Training in JAPAN

#### (1) Purpose

The purpose of the training in Japan is to learn the experience for WDM in Japan and utilize it in the water supply service management of SHAPWASCO in Egypt.

#### (2) Attendance List

Attendants were as follows:

- Mr. Elsayed Moustafa Ibrahim Attia, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Ali Mohamed Atef Abde Ihamid, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Bhnsawy Ahmed Maher Elsayed, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Ahmed AbdElRaheem Mohamed AbdElRaheem, Engineer / Water Distribution Management Department of SHAPWASCO

#### (3) Training Schedule in Japan

C/P training has been conducted in Japan from 28<sup>th</sup> October 2012 to 9<sup>th</sup> November 2012. Total 4 trainees attended following course.

Training Schedule for WDM Training in Japan

Date		Activities	Place
27-Oct	Sat	Departure from Cairo	
28-Oct	Sun	Arrival at Yokohama	JICA Yokohama
29-Oct	Mon	Briefing	JICA Yokohama
		Orientation	JICA Yokohama
30-Oct	Tue	Outline of Yokohama water supply system	Yokohama Waterworks Bureau
		Equipment management of water facilities (Outline water supply maintenance)1	Yokohama Waterworks Bureau

Date		Activities	Place
31-Oct	Wed	Equipment management of water facilities (Outline water supply maintenance)1	Yokohama Waterworks Bureau
		Drawing management of water facilities	Yokohama Waterworks Bureau
1-Nov	Thu	Mechanical and electrical equipment maintenance work in the water facility	Yokohama Waterworks Bureau
		Equipment outline water treatment plant which is the main water supply facility	Yokohama Waterworks Bureau
		Site observation on equipment outline water treatment plant which is the main water supply facility	
2-Nov	Fri	Electrical equipment maintenance work in the water facility1	Yokohama Waterworks Bureau
		Electrical equipment maintenance work in the water facility2	
3-Nov	Sat	Holiday	
4-Nov	Sun	Holiday	
5-Nov	Mon	Water operational plan and Water supply operation total management system	Yokohama Waterworks Bureau
		Installation management of measuring equipment on the street, and a maintenance	
		Site observation on measuring equipment on the street, and a maintenance	Yokohama Waterworks Bureau
6-Nov	Tue	Operation of water (water supply management), management, maintenance and operation of the well	Saitama City Waterworks Bureau
		Site observation on tobu distribution facility, groundwater water treatment facilities	Saitama City Waterworks Bureau
7-Nov	Wed	SCADA for water supply 1	Yokogawa Electric Corporation
		SCADA for water supply 2	Yokogawa Electric Corporation
		Leakage management	
		Demonstration room, Global Response Center	
8-Nov	Thu	Results presentation	JICA Yokohama
		Evaluation meeting/closing ceremony	
9-Nov	Fri	Departure from Tokyo / Yokohama	
10-Nov	Sat	Arrival at Cairo	

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ANNEX 2-5. Operational Expenses by Japan

As of Nov. 15, 2012

Unit=Yen

Major Budget Item		JFY2011 (May.2011 - Jan.2012)	JFY2012 (Feb.2012 - Jul.2012)	Total
1	General Cost	9,728,000	8,412,000	18,140,166
1.1	Staff Cost	6,888,754	5,846,000	12,734,754
1.2	Equipment Maintenance Cost	0	14,000	14,000
1.3	Consumable Cost	145,311	10,000	155,311
1.4	Travel Expense	0	0	0
1.5	Communication Cost	69,640	0	69,640
1.6	Document Preparation Cost	275,144	0	275,144
1.7	Rental Cost	2,349,317	2,542,000	4,891,317
1.8	Light, Fuel and Water Cost	0	0	0
1.9	Staff Training Cost	0	0	0
1.10	Facility Maintenance Cost	0	0	0
1.11	Field Training Cost	0	0	0
1.12	Domestic Activity Cost	0	0	0
1.13	Domestic Consultant Cost	0	0	0
1.14	Miscellaneous Cost	0	0	0
2	Equipment Cost (JICA Expert's Equipment)	11,689,000	1,296,000	12,985,000
3	Equipment Shipping Cost (JICA Expert's Equipment)	254,000	47,668	301,668
4	Equipment Cost (Carry Equipment)	0	0	0
5	Equipment Shipping Cost (Carry Equipment)	0	0	0
6	Equipment Cost (Other Equipment)	0	0	0
7	Equipment Shipping Cost (Other Equipment)	38,000	0	38,000
8	Report Preparation Cost (Printing and Binding)	11,000	0	11,000
9	Report Preparation Cost (Exclude Printing and Binding)	19,000	0	19,000
10	Local Consultant Cost	666,000	0	666,000
11	Local NGO Cost	0	0	0
12	Construction Cost	0	0	0
13	Meeting Cost	0	0	0
14	Insurance Cost	0	0	0
15	C/P Training in Japan Cost	1,837,000	1,159,905	2,996,905
Total in Japanese Yen		24,242,000	10,915,000	35,157,000

FX rate (Avg.) at 11E. =

12.940000

12.850000

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ANNEX 2-6. List of Egyptian C/Ps

1. List of SHAPWASCO C/Ps

C/P Name	Title	Field	Working Period	Note
Ahmed Abdeen	Chairman	Management	2011.5~up to now	
<b>WDM Team in Headquarters (HQ)</b>				
Alae El Din Mohamed	Head of C/P Team/ Headquarters (HQ)	Management	2011.5~up to now	
Ahmed Maher	Assistant for head of WDM team/HQ	Engineer	2011.5~up to now	
Abd El Rahim Mohamed	Assistant for head of WDM team/HQ	Engineer	2011.5~up to now	
Mohamed Atef	Assistant for head of WDM team/HQ	Engineer	2011.5~up to now	
Mostafa Ibrahim	Assistant for head of WDM team/HQ	Engineer	2011.5~up to now	

2. List of GHAPWASCO C/Ps

C/P Name	Title	Field	Working Period	Note
Ayman Abd El Kader	Chairman/HQ	Management	2006.11~up to now	
Abdullah El Letty	Head of C/P team	Management	2011.6~up to 2012.5	Retired
Adel Attia	Head of C/P team	Head of C/P team	2012.6~up to now	
<b>SOP Team in Headquarters (HQ)</b>				
Ahmed El Maleh	SOP team leader/HQ	Engineer	2011.6~up to now	
Rizk El Fiky	SOP member/HQ	Engineer	2011.9~up to now	
Nagy youssry	SOP member/HQ	Engineer	2011.9~up to 2012.6	Left Company
Mohamed Masood	SOP member/HQ	Engineer	2012.7~up to now	
Mahmoud Badr	Electricity SOP member/HQ	Engineer	2011.7~up to now	
Mekawy Mekawy	WQMSOP member/HQ	Chemist	2011.11~up to now	
<b>SOP Team in Branches</b>				
Moataz Riyadh Hassan	Station manager / Melahia	Engineer	2012.7~up to now	
Mahmoud El Sayed Sarhan	Vice manager/ Melahia	Engineer	2012.7~up to now	
Hemat Fathy Hozayfa	Laboratory manager/ Melahia	Chemist	2012.7~up to now	
Goerge Naguib Abdo	Senior technician/ Melahia	Technician	2012.7~up to now	
Saeed Eid Kombar	Senior technician/ Melahia	Technician	2012.7~up to now	
Ramy Mostafa El Feky	Technician/ Melahia	Technician	2012.7~up to now	
Mahrous Mohamed El Zayat	Technician/ Melahia	Technician	2012.7~up to now	S.B

C/P Name	Title	Field	Working Period	Note
Amir El Safty	Technician/ Melahia	Technician	2012.7~up to now	
Mohamed Aly Saber	Technician/ Melahia	Technician	2012.7~up to now	
Mohamed Ahmed Balat	Technician/ Melahia	Technician	2012.7~up to now	
Huessein Youssef Shahin	Station manager / Mahalet Marhoum	Technician	2012.9~up to now	
El Mohamady Mekawy	Senior Technician / Mahalet Marhoum	Technician	2012.9~up to now	
Mahmoud Abou El Anein	Technician / Mahalet Marhoum	Technician	2012.9~up to now	
Ahmed El Maraghy	Technician / Mahalet Marhoum	Technician	2012.9~up to now	
<b>NRW Team in Headquarters (HQ)</b>				
Ahmed Rabee'	NRW team leader/HQ	Engineer	2011.6~up to now	
Omar Salah El Din	NRW member/HQ	Engineer	2011.6~up to now	
Ahmed Ramadan El Bakary	NRW member/HQ	Engineer	2011.6~up to 2012.3	Moved to another department
Mohamed Masood	NRW member/HQ	Engineer	2012.3~up to 2012.6	Moved to SOP
Gad Abdel Monsef Gad	NRW member/HQ	Engineer	2012.3~up to 2012.6	Moved to another department
Salah Mohamed El Sawahly	NRW member/HQ	Technician	2012.3~up to now	
<b>NRW Team in Branches</b>				
Abdel Azim Gouda	Water Manager/Zefta	Engineer	2012.3~up to now	
Abdel Ghafar Mohamed	Network Manager/Zefta	Technician	2012.3~up to now	
Mohamed Hasouna	Meter Reader/Zefta	Technician	2012.3~up to now	
Adel Othman	Meter Reader/Zefta	Technician	2012.3~up to now	
Ibrahim shehata	Worker/Zefta	Worker	2012.3~up to now	
Abdel Azim El Beheiry	Worker/Zefta	Worker	2012.3~up to now	
Ibrahim Abdel Mallak	Branch Manager/Tanta	Engineer	2012.3~up to now	
Mostafa Abdel Aal	Nawag area network manager/Tanta	Technician	2012.3~up to now	
Ahmed Hemeida	Network Technician/Tanta	Technician	2012.3~up to now	
Atef El Borlosy	Network Technician/Tanta	Technician	2012.3~up to now	
Samy Abdel Gawad	Network manager/Tanta	Technician	2012.3~up to now	
Saied Shahin	Follow up/Tanta	Technician	2012.3~up to now	
Hany Sallam	Worker/Tanta	Worker	2012.3~up to now	
El Dessouky Mohamed	Worker/Tanta	Worker	2012.3~up to now	

C/P Name	Title	Field	Working Period	Note
Fahmy Moussa	Water Manager/Mahala	Engineer	2012.3~up to now	
Ahmed Suliman	Network technician/Mahala	Technician	2012.3~up to now	
Mohamed El Sheshtawy	Network head/Mahala	Technician	2012.3~up to now	
Hany Abdel Wahab	Worker/Mahala	Worker	2012.3~up to now	
Sobhy Farahat	Meter Reader/Mahala	Technician	2012.3~up to now	
Mohamed Hegazy	Meter Reader/Mahala	Technician	2012.3~up to now	

### 3. List of MCWW C/Ps

C/P Name	Title	Field	Working Period	Note
Mohamed Abo El Khier	Chairman/HQ	Management	2006.11~2012.09	Retired
Ezzat Elsayad	Chairman/HQ	Management	2012.09~up to now	
Samir Abdel Moneom Suliman	Head of C/P team	Management	2006.11~2012.01	Retired
<b>SOP Team in Headquarters (HQ)</b>				
Ayman Bassyouni	Head of SOP Team/HQ	Engineer	2006.11~up to now	
Mohamed Fawzy Awad	Assistant for head of SOP team/HQ	Engineer	2010.6~up to now	
Mohamed Fathy	Assistant for head of SOP team/HQ	Engineer	2010.1~up to now	
Khaled Kazamel	Assistant for head of SOP team/HQ	Engineer	2009~up to now	
Saeed Abdelfattah	Assistant for head of SOP team/HQ	Engineer	2006.11~up to now	
Mostafa Lotfy	Assistant for head of SOP team/HQ	Engineer	2012.03~up to now	
Adel Ibraheem	Assistant for head of SOP team/HQ	Chemist	2008~up to now	
<b>SOP Team in Branches</b>				
Ahmed Sameer Elkawas	Mahatet El Sadat El Satheya (SWTP)	Engineer, Plant Manager	2012.03~up to now	
Mohamed Abdallah Abdelrehem	Mahatet El Sadat El Satheya (SWTP)	Engineer, Operation Manager	2012.03~up to now	
Ahmed Fathy Said Ahmed	Mahatet El Sadat El Satheya (SWTP)	Chemist	2012.03~up to now	
Mahmod Abdelzaher Elsaid	Mahatet El Sadat El Satheya (SWTP)	Chemist	2012.03~up to now	
Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya (SWTP)	Technician (generator)	2012.03~up to now	S-B
Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya (SWTP)	Technician (mech. maintenance)	2012.03~up to now	

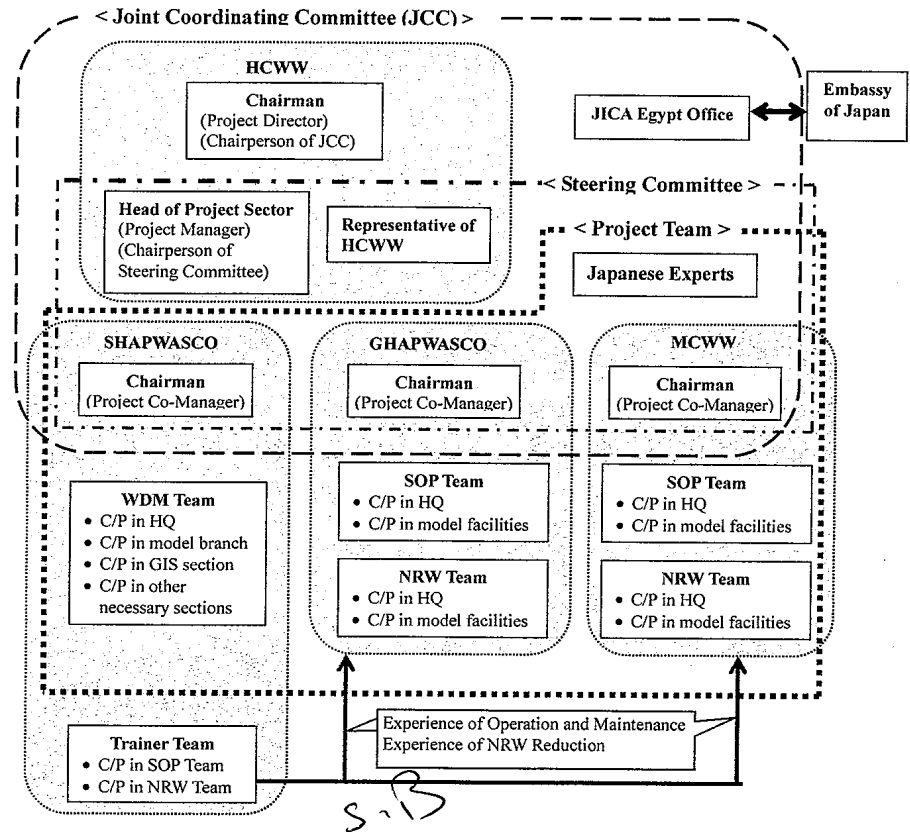
C/P Name	Title	Field	Working Period	Note
Haitthem Ahmed omar	Mahatet El Sadat El Satheya (SWTP)	Technician (mech. maintenance)	2012.03~up to now	
Mohamed Foad Soltan	Mahatet El Sadat El Satheya (SWTP)	Technician (elec. maintenance)	2012.03~up to now	
Mohamed Ashraf Arafa	Mahatet El Sadat El Satheya (SWTP)	Technician (elec. maintenance)	2012.03~up to now	
Haitthem Ahmed omar	Mahatet El Sadat El Satheya (SWTP)	Technician (sedimentation facility)	2012.03~up to now	
Ahmed Bahnasy Mohamed	Mahatet El Sadat El Satheya (SWTP)	Technician (filtration facility)	2012.03~up to now	
Mohamed sabry Abdelazeem	Mahatet El Sadat El Satheya (SWTP)	Technician (sludge facility)	2012.03~up to now	
Ahmed Abd Elsalam Belal	Mahatet El Sadat El Satheya (SWTP)	Technician (pump room)	2012.03~up to now	
Ahmed Samy Saleh	Mahatet El Sadat El Satheya (SWTP)	Technician (Cl room)	2012.03~up to now	
Amin Gamal Mahroos	Mahatet El Sadat El Satheya (SWTP)	Technician (Al room)	2012.03~up to now	
Ahmed Ebrahim Gobara	Gezy (IMRP)	Technician, Plant Manager O&M	2012.03~up to now	
Elsaid Reyad	Gezy (IMRP)	Technician (elec. maintenance)	2012.03~up to now	
Abdelhakeem Abdelrasheed	Gezy (IMRP)	Technician (cooling system)	2012.03~up to now	
Mahmood Ali Ateem	Gezy (IMRP)	Technician (operation)	2012.03~up to now	
Ibrahim Maher Abdelglel	Gezy (IMRP)	Technician (operation)	2012.03~up to now	
Shaker Ibrahim Abdelgel	Gezy (IMRP)	Labor	2012.03~up to now	
Dr. M. Nagi	Gezy (Chemist)	Technician (mech. maintenance)	2012.03~up to now	
Wala'a	Gezy (Manager)	Engineer	2012.03~up to now	
<b>NRW Team in Headquarters (HQ)</b>				
Belal Galal Khalaf	Head of NRW Team/HQ	Management	2006.11~2012.01	
	Head of C/P and Leader of NRW Team/HQ	Management	2012.01~up to now	
Mohamed El Shafey	Assistant for head of NRW team/HQ	Engineer	2007.10~up to now	
Mohamed Fawzy Bader	Assistant for head of NRW team/HQ	Engineer	2007.10~up to now	

C/P Name	Title	Field	Working Period	Note
Ahmed Radwan	Assistant for head of NRW team/HQ	Engineer	2008.4~2009.5	Moved to another department To I.T. May 2009
Ahmed El Showny	Assistant for head of NRW team/HQ	Engineer	2008.4~2008.12	turnover
Ahmed Shalaby	Assistant for head of NRW team/HQ	Engineer	2009.5~up to now	Moved to another department
Gamal Rizk	NRW Team member	Technician	2012.8~up to now	
Mohammed Gaber	NRW Team member	Technician	2012.8~up to now	
<b>NRW Team in Branches</b>				
Monir Mohamed	Engineer/Quesna	Distribution management	2012.03~up to now	
Anwar Ibrahim	Engineer/ Quesna	Distribution management	2012.03~up to now	
Abdelsattar Hossin	Technician/ Quesna	Distribution management	2012.03~up to now	
Nagi Nikola	Technician/ Quesna	Distribution management	2012.03~up to now	
Mohamed Sobhy	Technician/ Quesna	Distribution management	2012.03~up to now	
Mohamed Ibrahim	Plumper/ Quesna	Distribution management	2012.03~up to now	
Abdelmalek Mohamed	Worker/ Quesna	Distribution management	2012.03~up to now	
Mansour Mohamed	Worker/ Quesna	Distribution management	2012.03~up to now	
Ayman Abdrabo	Engineer/Berket El Sab'	Distribution management	2012.03~up to now	
Ahmed Shawky	Technician/Berket El Sab'	Distribution management	2012.03~up to now	
Bakry Mohamed	Plumper/Berket El Sab'	Distribution management	2012.03~up to now	
Hamed Ali	Network Manager/Shebin	Distribution management	2012.03~up to now	
Hassan Ismael	Supervisor/Shebin	Distribution management	2012.03~up to now	
Gamal Eldemerdash	Technician/Shebin	Distribution management	2012.03~up to now	
Abdelmonsif Mohamed	Worker/Shebin	Distribution management	2012.03~up to now	S.B
Hitham Mohamed	Worker/Shebin ;	Distribution management	2012.03~up to now	

ANNEX 2-7. Facility, Equipment and Operational Expenses Provided by Egypt

Company Activity	Item	No. of units	Price in Egyptian pound	
<b>SHAPWASCO</b>				
WDM	Chamber construction for installation of WDM equipment	13	265,100.00	
	Construction of SCADA Room	1	950,000.00	
<b>Total</b>			<b>1,215,100.00</b>	
<b>GHAPWASCO</b>				
SOP	Auma Control valves	10	166,500.00	
	Adjustments for Auma valves (water level indicator and control panels)	10	140,000.00	
	Water flow meters Calibration	11	8,250.00	
	Chlorine Cylinder balance	1	13,000.00	
	Air Scouring flow meter	2	82,000.00	
	Flow meter Chamber in Tanta WTP	1	17,000.00	
	Residual Chlorine indicator meter	1	23,000.00	
	Chlorine leakage detection system	1	14,000.00	
	Chlorine Dosing flow meter for IMRF	2	3,000.00	
	Chemical dosage indicator utility bags (Chlorine and Manganese)	2	2,000.00	
	Computers for Model facilities	2	11,000.00	
	Vacuum pump for back wash in Tanta WTP	1	22,000.00	
	Alum dosage totalizer	1	13,000.00	
	Ultrasonic flowmeters for Tanta WTP	4	96,000.00	
	NRW	Chamber construction for installation of NRW equipment	8	136,000.00
Other	Approximate expenses for the Project by company such as office and JICA Car fuel and maintenance, workshops, etc ...	—	10,000.00	
<b>Total</b>			<b>756,750.00</b>	
<b>MCWW</b>				
SOP	Calibration Works			
	1st Gezay IMRF:			
	Electromagnetic F.M	4	2,800.00	
	Ultrasonic level transmitter	6	3,600.00	
	(pH) measurement level	2	1,200.00	
	(NTU) measurement level	2	1,200.00	
	(IT) portcel for Residual Chlorine	1	700.00	
	Electronic pressure switch	2	1,200.00	
	2nd Elsadat SWTP:			
	Raw water Ultrasonic F.M	1	700.00	
	Treated water Ultrasonic F.M	1	700.00	
	Ultrasonic F.M for filtered water	14/16	9,800.00	
	Ultrasonic level measurement	15/16	9,000.00	
	Ultrasonic level transmitter	6	3,600.00	
	Level meter controller	15/16	9,000.00	
	Electronic level switch (Intak)	1	600.00	
	Raw water F.M (Intak)	1	700.00	
	Analyzer for residual Chlorine	1	700.00	
	Chlorine dosin controller (touch)	1	900.00	
	Purchasing & Installation works			
	Purchasing & Installation Ultrasonic F.M for filter back wash water	1	54,595.00	
	purchasing & Installing Air F.M for Elsadat 8"	2	79,780.00	
	purchasing & Installing Ultrasonic level controller	3	59,700.00	
	purchasing & Installing 1Ton Table balance for Chlorine cylcnder	3	51,000.00	
	purchasing & Installing Air F.M for Gezay 2"	1	41,000.00	
	purchasing & Installing Air F.M for Gezay 3"	1	41,500.00	
	purchasing & Installing bermenganat potasum glass indicator(Gezay)	1	4,100.00	
	purchasing & Installing electromagnetic F.M	1	27,500.00	
	Purchasing Only			
	purchasing pressure gauge (-) 0 to -10 mvs	4	2,600.00	
	purchasing Chlorine sylinder Hok balance	2	26,400.00	
	purchasing electromagnetic F.M	1	27,500.00	
	purchasing pressure gauges different types	42	23,520.00	
	purchasing pressure gauges different types	30	18,300.00	
	purchasing submersible pump 25L/s.-60 m head	1	42,500.00	
	purchasing injection pump for bermenganat potasum	1	7,500.00	
	purchasing injection pump for Alum	3	180,000.00	
	purchasing normal 1/2" valves	40	1,800.00	
	purchasing router balance for hoked Chlorine cylcnder 1Ton.	1	2,550.00	
	purchasing Alum line screen net 50mm.	3	6,000.00	
	NRW	Chamber construction for installation of NRW equipment	9	95,247.00
	Other	Approximate expenses for the Project by company such as office and JICA Car fuel and maintenance, workshops, etc ...		15,000.00
	<b>Total</b>			<b>854,492.00</b>
	<b>Grand Total</b>			<b>2,826,342.00</b>

ANNEX 3. Organizational Structure of the Project Implementation



**ANNEX 4. List of Seminars, Workshops and Training (for all of SOP, NRW and WDM activities)**

Date	Title	Program	Attendance	Trainer
<b>April 2011 – December 2011</b>				
8-9 June 2011, 10:00-13:00	1st Mini Seminar for SOP Activity	<ul style="list-style-type: none"> <li>- Introduce the SOP activity of SHAPWASCO Project (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager, Project co-manager</li> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
18-19 June 2011, 10:00-13:00	2nd Mini Seminar for NRW reduction Activity	<ul style="list-style-type: none"> <li>- Introduce the NRW reduction activity of SHAPWASCO Project (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
2-3 July 2011, 10:00-14:30	3rd Mini Seminar on Selection Criteria for SOP and NRW	<ul style="list-style-type: none"> <li>- Discussion of selection criteria for Model Facility and Pilot Area (Presented by C/P Team of SHAPWASCO)</li> <li>- Difference between NRW and UFW (Presented by C/P Team of SHAPWASCO)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
13 July 2011, 10:30-12:30	Internal Workshop for Well Monitoring Activity	<ul style="list-style-type: none"> <li>- Method, contents and importance of the well monitoring and experience of implementation of well monitoring (Presented by C/P Team SHAPWASCO)</li> <li>- Usage of the result of well monitoring (ditto)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
21 September 2011, 9:30-12:30	Internal Workshop for Water Distribution Management (WDM)	<ul style="list-style-type: none"> <li>- Explanation of the Project in General (Presented by JICA Expert Team)</li> <li>- General Idea and Policy for WDM Activity in the Project (Presented by JICA Expert Team)</li> <li>- Outline of Action Plan for WDM (Presented by JICA Expert Team)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of SHAPWASCO</li> <li>• Engineers and operators in SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO

ANNEX 4 - 1/5

Date	Title	Program	Attendance	Trainer
		<ul style="list-style-type: none"> <li>- Activities done so far and Selection of Pilot Area for WDM Activity by WDM Team of SHAPWASCO (Presented by C/P Team of SHAPWASCO)</li> </ul>		
27 September 2011, 12:00-13:50	Kicking Off Seminar	<ul style="list-style-type: none"> <li>- Current JICA Project and background of Seminar (Presented by Head of Sector, HCWW)</li> <li>- Experience and Plan of SOP activities (Presented by C/P Team of GHAPWASCO, MCWW and SHAPWASCO)</li> <li>- Experience and Plan of NRW reduction activities (Presented by C/P Team of GHAPWASCO, MCWW and SHAPWASCO)</li> <li>- Plan of Water Distribution Management (WDM) activities (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Water companies under HCWW</li> <li>• Authorities related to water supply services in Egypt</li> <li>• Foreign aid organizations involved in water sectors in Egypt</li> <li>• Project manager, Project co-manager</li> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	Representative of SHAPWASCO, GHAPWASCO and MCWW
2-5 October 2011, 10:00-14:30	Training of Trainers (TOT)	<ul style="list-style-type: none"> <li>- Differentiate between training and facilitations.</li> <li>- Identify theories and techniques of adult learning.</li> <li>- Identify training methods and techniques.</li> <li>- Prepare lectures.</li> <li>- Make speech.</li> <li>- Prepare and conduct presentation.</li> <li>- Use Audiovisual Aids effectively.</li> <li>- Work in Group</li> </ul>	<p>[SHAPWASCO]</p> <ul style="list-style-type: none"> <li>Mr. Alaa El Din Talib</li> <li>Mr. Saeed Mohamed Attia</li> <li>Ms. Walaa Mohamed</li> <li>Ms. Walaa Hamdy</li> <li>Mr. Tamer Wael</li> <li>Mr. Salama Mohamed</li> <li>Mr. El Sayed Mostafa</li> <li>Mr. Gamal Abd El Hameed</li> <li>Mr. Abd El Shafee Abd Al Aziz</li> <li>Ms. Heba Mahmoud</li> <li>Mr. Ahmed Saeed</li> <li>Mr. Ahmed Maher</li> <li>Mr. Mostafa Ibrahim</li> <li>Mr. Mohamed Atef</li> <li>Mr. Abd El Raheem Mohamed</li> <li>Mr. Mohamed Salah El Din</li> <li>Ms. Aliaa El Sayed Hameed</li> <li>Ms. Marwa Mahmoud Khater</li> <li>Ms. Nancy Metwaly Taha</li> <li>JICA Expert Team</li> </ul>	Local Consultant Integrated Solutions for Consultations Training

ANNEX 4 - 2/5  
2017-20

Date	Title	Program	Attendance	Trainer
10 October 2011, 10:00-14:30	Site Tour for SOP and NRW Reduction Activity in SHAPWASCO	<ul style="list-style-type: none"> <li>- Briefing of site tour (Presented by C/P Team of SHAPWASCO)</li> <li>- Site tour in Zagaizig WTP (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour for existing chamber for minimum night flow survey (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour in Hehya Training Yard (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour in Hehya WTP (Arranged by C/P Team of SHAPWASCO)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
19-20 & 22-23, October 2011, 10:00-14:30  S-2	Conducting of Training for NRW Reduction	<ul style="list-style-type: none"> <li>- Class room training</li> <li>- Learning principle of flow measurement, method of minimum night flow survey, etc.</li> <li>- Field training</li> <li>- Learning usage of flow meter and water leak detector, acoustic rod.</li> <li>- Class room training</li> <li>- Learning method of data transfer from flow meter to computer.</li> <li>- Field training</li> <li>- Learning usage of flow meter and water leak detector, acoustic rod.</li> </ul>	<p>[GHAPWASCO]</p> <ul style="list-style-type: none"> <li>Mr. Ahmed El Said Rabea</li> <li>Mr. Omar Mohamed Salah El Din</li> <li>Mr. Abdel Aal Ali</li> <li>Mr. Hamdy Yasin Reraz</li> <li>Mr. Samy Mohamed Abdel Gawad</li> <li>Mr. Nasr El Din Mohamed</li> <li>Mr. Ahmed Abdel Salam Hemedra</li> <li>Mr. Abdel Azim Goda Abo Khimar</li> <li>Mr. Ali Ibrahim Maary</li> <li>Mr. Mohamed Hamid Abdo</li> <li>Mr. Arafa Mostafa El Bahnasy</li> <li>Mr. Mosaad El Shiekh</li> </ul> <p>[MCWW]</p> <ul style="list-style-type: none"> <li>Mr. Mr. Ahmed Radwan</li> <li>Mr. Mohamed Shaf'ey</li> <li>Mr. Mohamed Fawzy</li> <li>Mr. Metwally Elsayed</li> <li>Mr. Ragab Youssif Hegazi</li> <li>Mr. Amin Abdelhakim</li> <li>Mr. Mohamed Sobhi</li> <li>Mr. Sadek Abdelati</li> <li>Mr. Abdelsattar Hossin</li> <li>Mr. Mohamed Eldib</li> <li>Mr. Mohamed Nagib</li> </ul> <p>JICA Expert Team</p>	<p>[SHAPWASCO]</p> <ul style="list-style-type: none"> <li>Mr. Alae El Din Mohamed</li> <li>Mr. Saaied Mohamed Mohamed Atia</li> <li>Mr. Walaa Mohamed Ali</li> <li>Mr. Walla Hamdy Maahmoud</li> <li>Mr. Tamer Wael Abdel Hady</li> </ul>
26-30 October 2011, 10:00-12:30	3ACs Workshop for Action Plan NRW reduction Activity	<ul style="list-style-type: none"> <li>- Purpose and Output of the Project (Presented by JICA Expert Team)</li> <li>- Project Period (Presented by JICA Expert Team)</li> <li>- Contents of Action Plan (Presented by JICA Expert Team)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> </ul>	SHAPWASCO

ANNEX 4 - 3/5

Date	Title	Program	Attendance	Trainer
		<ul style="list-style-type: none"> <li>- Flow Chart of Each Action (Presented by JICA Expert Team)</li> <li>- Model Markaz and Pilot Area (Presented by C/P Team of GHAPWASCO, MCWW)</li> <li>- Next Step (Explanation of Each Action) (Presented by C/P Team of GHAPWASCO, MCWW)</li> <li>- Schedule of NRW Activity (Presented by C/P Team of GHAPWASCO, MCWW)</li> <li>- NRW reduction Approach (Presented by JICA Expert Team)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	
20 November 2011, 10:00-12:00	3ACs Workshop for Water Quality Management Activity	<ul style="list-style-type: none"> <li>- What is Water Quality Management (Presented by C/P Team SHAPWASCO)</li> <li>- Case Study of Water Quality Management in SHAPWASCO (Presented by C/P Team SHAPWASCO)</li> <li>- Relationship between SOP and ISO (Presented by C/P Team GHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
<b>January 2012 – December 2012</b>				
7 March 2012, 12:00-15:00	3ACs Workshop for NRW reduction Activity in SHAPWASCO	<p><b>Minimum Night Flow (MNF) Determining</b></p> <ul style="list-style-type: none"> <li>- Data logging and collect by Pressure logger</li> <li>- Data logging and collect by Flow meter logger</li> </ul> <p><b>Leak Detection Survey</b></p> <ul style="list-style-type: none"> <li>- Valve Acoustic Survey</li> <li>- Ground Surface Acoustic Survey</li> <li>- Leak Noise Correlation Survey</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• JICA Expert Team</li> </ul>	JICA Expert Team and each other of participants
25 March 2012, 12:00-15:00	Internal Workshop for NRW reduction Activity in GHAPWASCO	<ul style="list-style-type: none"> <li>- Presentation on Meter Reading Survey (JICA Expert Team)</li> <li>- Site tour in Tanta</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	JICA Expert Team
27 March 2012, 12:00-15:00	Internal Workshop for NRW reduction Activity in MCWW	<ul style="list-style-type: none"> <li>- Presentation on Meter Reading Survey (JICA Expert Team)</li> <li>- Site tour in Shebin</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of MCWW</li> <li>• JICA Expert Team</li> </ul>	JICA Expert Team
22-24 April 2012, 10:00-14:30	3ACs Workshop for SOP Activity	<ul style="list-style-type: none"> <li>- Presentation on Operation Records (Presented by C/P Team of GHAPWASCO, MCWW)</li> <li>- Presentation on Utilization &amp; Management Methods of Operation Records (Presented by C/P Team of SHAPWASCO)</li> <li>- Presentation on Water Quality Management Method</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> </ul>	SHAPWASCO

ANNEX 4 - 4/5  
2011/7-21

The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area  
Plan of Operation (PO-1)

Form	Year 1				Year 2				Year 3				Person in Charge	Major Input	Remarks
	1	2	3	4	1	2	3	4	1	2	3	4			
1. Human Resource Development through collaboration among water supply companies in Shariya, Ghazala and Matruh Governemnts is implemented															
1-1. Provide an opportunity for the top management training for the top management															
1-2. Conduct Training of Trainers (TOT) for developing local experts															
1-3. Conduct TOT for NRW reduction															
1-4. Disseminate the contents, the measures and the supply companies in Nile Delta Area through the project															
2. Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Ghazala and Matruh Governemnts															
2-1. Survey the current conditions of water supply facilities in Ghazala and Matruh Governemnts															
2-2. Select 3 model areas in Ghazala and Matruh Governemnts each															
2-3. Organize SOP teams															
2-4. Conduct trainings for developing and applying SOPs at the facilities of Shariya Governemnt, if necessary															
2-5. Revise SOPs of Shariya Governemnt, if necessary															
2-6. Disseminate the contents, the measures and the supply companies based on SOPs in SHAPWASCO, GHAPWASCO and MHPWASCO															
2-7. Monitor the progress of SOP activities															
2-8. Carry out the activities for maintaining SOP to the other Manufacturers															
3. The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Ghazala and Matruh Governemnts															
3-1. Apply the institutional skills on NRW in Ghazala and Matruh Governemnts															
3-2. Select 3 model areas in Ghazala and Matruh Governemnts each															
3-3. Organize NRW reduction teams															
3-4. Formulate an action plan for NRW reduction in the model areas															
3-5. Conduct training on general practice of NRW reduction															
3-6. Conduct training at the training yard in Shariya															
3-7. Conduct training at model areas for water distribution management in Shariya Governemnt and Matruh Governemnts															
3-8. Prepare GIS drawings for model areas in Ghazala and Matruh Governemnts															
3-9. Make water balance analysis at model area															
3-10. Conduct leakage detection survey at model area															
3-11. Make water balance analysis after repair works															
3-12. The activities for maintaining NRW reduction in the model areas															
4. The water distribution management capacity is improved in Shariya Governemnts as an advanced model															
4-1. Discuss methods and conduct survey for water distribution management															
4-2. Conduct training for water distribution management															
4-3. Formulate a plan for water distribution management															
4-4. Install the equipment for water distribution management at the model area															
4-5. Operate the system															
4-6. Develop SOP for water distribution management															
4-7. Evaluate the operation and SOP for water distribution management															
5. The project for advanced model is completed properly															
5-1. Disseminate the contents, the measures and the supply companies based on the project to SHAPWASCO, GHAPWASCO and MHPWASCO															
5-2. Disseminate the contents, the measures and the supply companies based on the project to SHAPWASCO, GHAPWASCO and MHPWASCO through the Shariya Governemnt															
5-3. Lead Coordination Committee (CCC) meeting at least once a year															
5-4. Evaluate the indicators of the Project Design Matrix (PDM) for approval of the final JICA ACD															
5-5. Carry out the activities for maintaining the project in the model areas															
5-6. Monitor the progress of PDM and achievement of the indicators of the PDM															



ANNEX 6-1. Phase-2: Annual Plan of Operation (General Activity) Ver.2

Items	2012												2013		
	Phase-2														
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
<b>Output-1</b>	The project is managed and coordinated properly														
0-2	Coordinate among SHAPWASCO, GHAPWASCO and MCWW through the Steering Committee														
0-3	Organize the Joint Coordinating Committee (JCC) meeting at least once a year														
0-5	Final Annual Plan of Operations (APO) based on the Plan of Operations (PO) for approval to the JCC														
0-6	Monitor the progress of POAPO and achievement of the indicators of the PDM														
<b>Output-2</b>	Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened														
1-2	Conduct Training of Trainers (TOT) for developing SOP														
1-2-1	TOT for training														
1-3	Conduct TOT for NRW reduction														
1-3-1	TOT for training														
1-4	Disseminate the contents, the matters and the results of the collaboration among SHAPWASCO, GHAPWASCO and MCWW to the water supply companies in Nile Delta Area through reports and workshops														
1-4-1	Seminars / workshops to be conducted by SHAPWASCO														
1-4-2	Training on water leakage survey and water leakage detection equipments at the training yard in Sharkiya Governorate														
1-4-3	Open activities														
1-5	Collect information for public awareness promotion to prepare improvement plan of approaches and tools for publicity														
1-5-1	Workshop to understand current situation deeply and to exchange experiences among SHAPWASCO, GHAPWASCO and MCWW														
1-5-2	Presentation of examples on the approaches and tools in Japan														
1-5-3	Preparation of improvement plan for activities to promote public awareness														
<b>&lt;Equipment Plan&gt;</b>															
Equipment Procurement (JICA Expert)	Original	Procurement													
	Amendment	Procurement													
Equipment Procurement (JICA)	Original	Procurement (Water CAD)													
	Amendment	Procurement (Water CAD)													
<b>&lt;Training in Japan&gt;</b>															
WDM	Original	Procurement (WDM)													
	Amendment	Procurement (WDM)													

ANNEX 6-2. Phase-2: Annual Plan of Operation (Development of SOP) Ver.2

Items	2012												2013		
	Phase-2														
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
<b>Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates</b>															
Action-1	Survey the current conditions of water supply facilities in Gharbia and Minufia Governorates														
Action-2	Select 3 model facilities in Gharbia and Minufia Governorates each														
Action-3	Organize SOP teams														
Action-4	Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate														
4-1	Assessment of the effectiveness of SOPs in Sharkiya Governorate														
4-2	Extraction of the problematic point														
Action-5	Revise SOPs of Sharkiya Governorate, if necessary														
5-1	Revision of SOPs of Sharkiya Governorate														
Action-6	Develop SOPs for model facilities in Gharbia and Minufia Governorates based on SOPs for SHAPWASCO														
6-1	Examination for the site condition (C/P organization control, Cooperative framework of trainer etc.)														
6-2	Preparation of basic system drawings (P&ID, Single line diagram)														
6-3	Preparation of draft SOPs for O&M with site training														
6-4	Preparation of unified forms of O&M records and reports														
6-5	Examination of water quality management														
6-6	Preparation of draft SOPs for water quality management														
Action-7	Conduct On-the-Job Training for GHAPWASCO and MCWW to apply SOPs in operation and maintenance														
7-1	Applying of SOP on On-the-Job Training														
Action-8	Monitor the progress of SOP activities														
8-1	Monitoring of activity condition on On-the-Job Training														



**ANNEX 7. Project Design Matrix (PDM2)**

**Project Design Matrix (PDM2)**

Dated November 26, 2012

Project Name : The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area

Duration : FY2011-FY2013

Project Site : Sharkiya Governorate, Gharbia Governorate, Minufia Governorate (Nile Delta Area)

Target Group : Staff of SHAPWASCO, GHAPWASCO, MCWW

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<b>[Super Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area	Performance Indicators (PIs) in the fields of management capacity of operation and maintenance are improved in Nile Delta Area	Quarterly Reports of all water supply companies in Nile Delta Area submitted to HCWW	
<b>[Overall Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates	PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	Central and local government budget for development of water supply facilities is allocated appropriately
<b>[Project Purpose]</b> Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates	PIs (*1) in the fields of management capacity of operation and maintenance are improved at the model areas/facilities	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	<del>Governmental policy on water supply sector does not change significantly</del>
<b>[Output]</b> 1) Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened	a. More than 3 members each of SOP/NRW teams in SHAPWASCO · GHAPWASCO · MCWW are approved as trainers by Steering Committee b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team	a. Certification of Training b. Reports of workshops	Employees who received trainings by the Project will continuously work for SHAPWASCO, GHAPWASCO, MCWW  Personnel transfer of executive management will not affect the implementation of the Project
2) Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates	a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation b. The model facilities are operated and maintained based on SOP c. Improvement of PIs(*1) for the model facilities are evaluated based on SOP	a, b, c. Project Progress Reports	
3) The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates	a. More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation b. Water balance analysis is conducted properly for the 3 model areas c. 100% of detected leakage is repaired at the model area	a, b, c. Project Progress Reports	
4) The water distribution management capacity is improved in Sharkiya Governorate as an advanced model	a. Water distribution is managed based on SOP at the model areas b. Issues on water distribution capacity are reported to top management of SHAPWASCO	a, b. Project Progress Reports	
0) The project is managed and coordinated properly	a. Agreement on the coordination among SHAPWASCO · GHAPWASCO · MCWW is prepared b. Project activities are regularly monitored based on PO/APO	a. Agreement Document b. Project Progress Reports	

- \*1 PIs  
 SOP: a. Energy consumption per m<sup>3</sup> of water production (kWh/m<sup>3</sup>) b. Unit consumption of alum sulfate/ chlorine / potassium permanganate used per m<sup>3</sup> of water production (g/m<sup>3</sup>)  
 c. Ratio of effective utilization of raw water (%)  
 NRW: a. NRW ratio (%) b. Reduction ratio of NRW (%)  
 WDM: a. Number of complaints per 1000 connections on water suspension and low pressure b. Ratio of low service pressure (%)

**ANNEX 7. Project Design Matrix (PDM2)**

Activities	Inputs	Important Assumption
1-1 Conduct management training for the top management 1-2 Conduct Training of Trainers (TOT) for developing SOP 1-3 Conduct TOT for NRW reduction 1-4 Disseminate the contents, the manners and the results of the collaboration among SHAPWASCO, GHAPWASCO and MCWW to the water supply companies in Nile Delta Area through reports and workshops	<b>Japanese side</b> 1) Japanese Experts • Chief advisor/water supply planning • NRW reduction management • Leakage detection • Water Treatment • Water quality • Electrical equipment • Mechanical equipment • Distribution network • Others (if necessary)  2) Local Expert 3) Equipment 4) Training in Japan 5) Local Cost	Budget for the Project is allocated as planned by HCWW, SHAPWASCO, GHAPWASCO, and MCWW
2-1 Survey the current conditions of water supply facilities in Gharbia and Minufia Governorates 2-2 Select 3 model facilities in Gharbia and Minufia Governorates each 2-3 Organize SOP teams 2-4 Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate 2-5 Revise SOPs of Sharkiya Governorate, if necessary 2-6 Develop SOPs for model facilities in Gharbia and Minufia Governorates based on SOPs for SHAPWASCO 2-7 Conduct On-the-Job Training for GHAPWASCO and MCWW to apply SOPs in operation and maintenance 2-8 Monitor the progress of SOP activities 2-9 Draft the policy/plan for disseminating SOP to the other Marakazes	<b>Egyptian side</b> 1) Counterpart Personnel • Project Director: Chairman, HCWW • Project Manager: Chairman, SHAPWASCO • Co-Project Manager: Chairman, GHAPWASCO • SOP Team • NRW Team	[Pre-condition]
3-1 Analyze the current situation on NRW in Gharbia and Minufia Governorates 3-2 Select 3 model areas for NRW reduction in Gharbia and Minufia Governorates each 3-3 Organize NRW reduction teams 3-4 Formulate an action plan for NRW reduction activities based on the action plan for SHAPWASCO 3-5 Conduct training on general practice of NRW reduction 3-6 Conduct training at the training yard in Sharkiya Governorate 3-7 Conduct training at model areas for water distribution management in Sharkiya Governorate 3-8 Prepare GIS drawing for model areas in Gharbia and Minufia Governorates 3-9 Make water balance analysis at model areas 3-10 Conduct leakage detection survey at model areas 3-11 Make water balance analysis after repair works 3-12 Draft policy/plan for disseminating NRW reduction activities to the other Marakazes	2) Office space and facilities for the experts 3) Equipment 4) Necessary Information 5) Local Cost	Budget for HRD is allocated properly to SHAPWASCO, GHAPWASCO and MCWW by HCWW
4-1 Discuss methods and conduct survey for water distribution management 4-2 Conduct training for water distribution management 4-3 Formulate a plan for water distribution management 4-4 Install the equipment for water distribution management at the model area 4-5 Operate the system 4-6 Develop SOP for water distribution management 4-7 Evaluate the operation and SOP for water distribution management		
0-1 Establish Steering Committee, consisting of representative of HCWW, SHAPWASCO, GHAPWASCO and MCWW 0-2 Discuss the contents, the manners for the cooperation among SHAPWASCO, GHAPWASCO and MCWW through the Steering Committee 0-3 Organize JCC at least once a year 0-4 Finalize the Indicators of the Project Design Matrix (PDM) for approval of the first Joint Coordination Committee (JCC) 0-5 Prepare a draft Annual Plan of Operations (APO) based on the Plan of Operations (PO) for approval of the first JCC 0-6 Monitor the progress of PO/APO and achievement of the Indicators of the PDM		

Items	Year 1				Year 2				Year 3				Persons in Charge	Major Input	Remarks	
	1	2	3	4	1	2	3	4	1	2	3	4				
1. Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened																
1-1. Conduct management training for the top management														HC, SH, G.M	JICA Experts	
1-2. Conduct Training (TOT) for developing SOP	*													SH, G.M	JICA Experts	Year 1: Mainly for SH Year 2: Mainly for G.M
1-3. Conduct TOT for NRW reduction	*													SH, G.M	JICA Experts	
1-4. Disseminate the contents, the materials and the manuals to the staff of SHAPWASCO, GHAPWASCO and MCWW in the Nile Delta Area through reports and workshops														HC, SH, G.M	JICA Experts	
2. Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates																
2-1. Survey the current conditions of water supply facilities in Gharbia and Minufia Governorates														G.M	JICA Experts	SH
2-2. Select 3 model facilities in Gharbia and Minufia Governorates each														G.M	JICA Experts	SH
2-3. Organize SOP teams														G.M	JICA Experts	SH
2-4. Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate														G.M	JICA Experts	SH
2-5. Revise SOPs of Sharkiya Governorate, if necessary														G.M	JICA Experts	SH
2-6. Develop SOPs for model facilities in Gharbia and Minufia Governorates based on SOPs for SHAPWASCO														G.M	JICA Experts	SH
2-7. Conduct on-the-job training for GHAPWASCO and MCWW to apply SOPs in operation and maintenance														G.M	JICA Experts	SH
2-8. Monitor the progress of SOP activities														G.M	JICA Experts	SH
2-9. Draft the policy plan for disseminating SOP to the other Manufaa														G.M	JICA Experts	SH
3. The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates																
3-1. Analyze the current situation on NRW in Gharbia and Minufia Governorates														G.M	JICA Experts	SH
3-2. Select 3 model areas in Gharbia and Minufia Governorates each														G.M	JICA Experts	SH
3-3. Organize NRW reduction teams														G.M	JICA Experts	SH
3-4. Formulate an action plan for NRW reduction activities based on the action plan for SHAPWASCO														G.M	JICA Experts	SH
3-5. Conduct training on general practice of NRW reduction														G.M	JICA Experts	SH
3-6. Conduct training at the training yard in Sharkiya Governorate														G.M	JICA Experts	SH
3-7. Conduct training at model areas for water distribution management in Sharkiya Governorate														G.M	JICA Experts	SH
3-8. Prepare GIS drawings for model areas in Gharbia and Minufia Governorates														G.M	JICA Experts	SH
3-9. Make water balance analysis at model areas														G.M	JICA Experts	SH
3-10. Conduct leakage detection survey at model areas														G.M	JICA Experts	SH
3-11. Make water balance analysis after repair works														G.M	JICA Experts	SH
3-12. Draft policy plan for disseminating NRW reduction activities to the other Manufaa														G.M	JICA Experts	SH
4. The water distribution management capacity is improved in Sharkiya governorate as an advanced model																
4-1. Discuss methods and conduct survey for water distribution management														SH	JICA Experts	
4-2. Conduct training for water distribution management														SH	JICA Experts	
4-3. Formulate a plan for water distribution management														SH	JICA Experts	
4-4. Conduct training for water distribution management at the model area														SH	JICA Experts	
4-5. Operate the system														SH	JICA Experts	
4-6. Develop SOP for water distribution management														SH	JICA Experts	
4-7. Establish SOP for water distribution management														SH	JICA Experts	
5. The project is managed and coordinated properly																
5-1. Establish Steering Committee, consisting of representatives of NRW, SHAPWASCO, GHAPWASCO and MCWW through the Steering Committee meeting at least once a year														HC, SH, G.M	JICA Experts	
5-2. Prepare the indicators of the Project Design Matrix (PDM) for approval of the first JCC														HC, SH, G.M	JICA Experts	
5-3. Operate the Joint Coordination Committee (JCC) meeting at least once a year														HC, SH, G.M	JICA Experts	
5-4. Prepare the indicators of the Project Design Matrix (PDM) for approval of the first JCC														HC, SH, G.M	JICA Experts	
5-5. Prepare the Annual Plan of Operations (APO) based on the Plan of Operations (PO) for approval of the JCC														HC, SH, G.M	JICA Experts	
5-6. Monitor the progress of PDM and achievement of the indicators of the PDM														HC, SH, G.M	JICA Experts	● Mid-Term Review ▲ Final Evaluation

Annex 9. Evaluation Grid (Results of the Evaluation)  
 Mid-term Review of the "Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area"

November 26, 2012

Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Relevance	1. Relevance with the Government policy of Egypt	1-1. Is the Project in line with the priority of development policies of the Government of Egypt?  <u>Overall Goal:</u> Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates.	Egypt sets the improvement of potable water supply system as its priority area in the Sixth Five-Year Plan (2007/08-2011/12), the Egyptian Millennium Development Goals (MDG, 2005-2015), the National Water Resources Plan for Egypt (NWRP) (2003-2017), and the Integrated Water Resources Plan (IWRP) (2005-2020).  <ul style="list-style-type: none"> <li>The Sixth Five-Year Plan sets the upgrading of water and sanitation facilities as a focus area under the goal of improving public utilities for human and social development. The strategies under the focus area include minimizing water network loss and implementing cost recovery in water projects.</li> <li>The Egyptian MDG aims at increasing the access to safe drinking water to 98.5% in urban area and 80.8% in rural area by 2015. Sustaining the access rates poses a continuous challenge to Egypt, considering rapid population growth and insufficient service coverage.</li> <li>NWRP sets comprehensive strategies by describing approaches to achieve an integrated water management system in water sector through four key pillars: (1) developing additional water resources; (2) increasing water use efficiency; (3) improving water quality management; and (4) ensuring institutional and financial sustainability.</li> </ul>
	2. Relevance with the needs of beneficiaries	2-1. Is the target groups appropriately selected?  <u>Target Groups</u> Staff of SHAPWASCO, GHAPWASCO, MCWW	SHAPWASCO, GHAPWASCO and MCWW are the true public potable water and wastewater companies among 24 that are overseen and monitored by HCWW, and they are responsible for effective operation and maintenance of water supply facilities to provide clean and safe water in each Governorate; Sharkiya, Gharbiya and Minufia, respectively. Taking into account of the current capacity level and their mandates to provide and appropriately manage water and sanitation services, they are appropriate organizations to be selected for the Project's target groups.
		2-2. Is the Project Purpose in line with the needs of the target group? Are the needs of the target groups high?  <u>Project Purpose:</u> Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates.	SHAPWASCO, GHAPWASCO and MCWW were established as public corporations of water supply services in 2004 aiming to achieve higher level of efficiency and better service delivery. The JICA's previous technical cooperation project improved the management capacity of SHAPWASCO through developing capacity on NRW reduction, formulating SOPs, and conducting OJT on operation and maintenance of water supply facilities. In spite of the improvement in SHAPWASCO's operation and distribution of SHAPWASCO's SOPs to other companies, water and sanitation companies in the Nile Delta area have continued to face such issues as operation at a deficit, low fare receipts, and high NRW ratio. Management capacity of GHAPWASCO and MCWW to properly operate and maintain the facilities were insufficient, causing the quantity and quality of treated water to be unreliable. The above-mentioned situations have created a strong need for capacity development at these water supply companies. While SHAPWASCO has made continuous efforts to increase the impact of the previous technical cooperation projects by applying developed capacity to the rest of the Governorate, further capacity development in water distribution management (WDM) has remained as the next, important issue to be improved. These views were confirmed by the Questionnaire/Interview Surveys with C/Ps and Experts at the Mid-Term Review.

Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Relevance	2. Relevance with the needs of beneficiaries	2-3. Is the Project in line with the needs of the end beneficiaries, i.e. Egyptian people living in the model areas of Sharkiya, Gharbia and Minufia Governorates?	While potable water is supplied for 24 hours, water supply quantity is often insufficient in the Gharbia and Minufia Governorates. All three companies receive many complaints, including water leakage, water outage and pipe breakage, from customers. In SHAPWASCO, GHAPWASCO and MCWW, properly conducting water distribution management including the confirmation of supply water quantity, water pressure and quality is in line with the needs of the end beneficiaries. This view was verified by the Questionnaire/Interview Surveys with C/Ps and Experts.
	3. Relevance with the Japan's ODA** Policy	3-1. Is the Project in line with the Japanese Government's assistance policies for Egypt?	The Project is in line with the Japanese Government's assistance policies for Egypt because, as described below. <ul style="list-style-type: none"> <li>- Japan's Country Assistance Program for Egypt sets "poverty reduction and improvement of living standard" as one of the three assistance program goals, aiming for the transformation of Egypt into a competitive and stable economy and society.</li> <li>- One of the three priority sector goals is "enhancement and improvement of public services," which includes water supply and sewage development.</li> <li>- Japan's Country Assistance Program for Egypt discusses the need for extension and development of water supply in the Nile Delta area.</li> </ul>
	4. Comparative empirical and technological advantage of Japan's cooperation	4-1. Does Japan have technological and empirical advantages in operation and maintenance of water supply facilities?	JICA has supported the potable water sector in many countries including Egypt. In Egypt, JICA undertook the Project for Water Supply Development in Northwestern Part of Sharkiya Governorate (2003-2007, Grant Aid) and the Project for Upgrading of El Mahala El Kobra Water Treatment Plant (2006-2009, Grant Aid). In 2006-2009, JICA implemented the Project for Improvement of Management Capacity of Operation and Maintenance for Sharkiya Potable Water and Sanitation Company (Technical Cooperation Project), which entailed the formulation of SOPs for facilities and implementation of a program for addressing NRW. The approach of capacity development in O&M using SOP was proved effective and HCWW developed a plan to transfer the successful practices and lessons learned accumulated in the previous technical cooperation project throughout the Nile Delta area. In addition to diverse experiences of assisting Egypt in the water sector, Japan has technological and empirical advantages in O&M of water supply facilities based on SOP, management of water quality, leakage detection technology and so forth. This view was also endorsed by the Questionnaire/Interview Surveys with C/Ps and Experts at the Mid-Term Review.
Effectiveness	1. Achievement of the Project Purpose <u>Project Purpose:</u> Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates.	1-1. To what degree, is the Project Purpose's Objectively Verifiable Indicator (OVI) being achieved?  <u>OVI:</u> (a) PIs in the fields of management capacity of operation and maintenance are improved at the model areas/facilities.  S-B	At the time of the Mid-Term Review, concrete PIs have not been set as OVIs to measure the degree of achievement of the Project Purpose. C/Ps and Experts now continue discussions about the matter with surveys of the current situations and collection of the measurement data to set a baseline regarding which PIs should be set as OVIs and which figures should be set as target for the defined PIs. Since PIs for this OVI have not been determined yet, quantitative data is not available for this OVI.*  *: Concrete items of PIs were discussed and agreed upon at the third Joint Coordinating Committee (JCC) meeting organized on November 26, 2012. The defined PIs were included on the revised PDM (PDM <sub>2</sub> , ANNEX 8) and will be measured and monitored in the remaining period of the Project.

Evaluation Criteria	Evaluation Questions		Results											
	Main Questions	Sub Questions												
Effectiveness	1. Achievement of the Project Purpose	1-2. What is the prospect of achieving the Project Purpose?	From the viewpoint of the degree of achievement of the defined OVI on the PDM, it is difficult to foresee the prospect of the achievement of the Project Purpose, as described above. However, it is evaluated that the overall management capacity to operate and maintain water supply facilities has improved at SHAPWASCO, GHAPWASCO and MCWW, considering the current levels and prospects of achievement of the defined four Outputs described below. According to the Questionnaire/Interview Surveys, most of C/Ps and Experts show strong confidence in the achievement of the Project Purpose by the end of the Project period. It is required that all the Project activities be properly implemented in the rest of the Project period, particularly in Outputs 4 (WDM capacity development), and OVIs for the achievement of the Project Purpose be properly monitored and encouraged to be improved.											
		1-3. To what degree, is the achievement of the Project Purpose attributable to the successful achievement of the Outputs?	The four Outputs cover all the focused areas for the capacity development of SHAPWASCO, GHAPWASCO and MCWW for O&M of water supply facilities. It is evaluated that the achievements of the Outputs are strongly linked to the achievements of the Project Purpose, since the OVIs for the Project Purpose (improvement of PIs in the model areas/facilities) cannot be achieved without achieving all the 4 Outputs.											
		1-4. Has (Will) the Important Assumption for achieving the Project Purpose been fulfilled?  <u>Important Assumption:</u> • Governmental policy on water supply sector does not change significantly.	No critical information to indicate the significant change of government policy on water supply sector has been reported until the time of the Mid-Term Review.  In September 2012, the new Egyptian Government established the Ministry of Water Resources and Wastewater Utilities, which indicates a continuous commitment of the central government to solve and improve the issues in the potable water sector.											
2. Factors that contributed to the achievement of the Project Purpose (Achievement Levels of the Outputs)	2-1. To what degree, is Human Resource Development strengthened through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates?  (Achievement level of Output 1) <u>OVI:</u> 1a. More than 3 members of each SOP/NRW team in SHAPWASCO, GHAPWASCO, MCWW are approved as trainers by Steering Committee. 1b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team.	The achievement levels of the Output 1's OVIs confirmed by the Mid-Term Review are as follows:  1a. Prospective trainers were selected from C/Ps and have commenced SOP or NRW training. The number of prospective trainers in each organization is as follows: <table border="1"> <thead> <tr> <th></th> <th>SOP trainers</th> <th>NRW trainers</th> </tr> </thead> <tbody> <tr> <td>SHAPWASCO</td> <td>5</td> <td>4</td> </tr> <tr> <td>GHAPWASCO</td> <td>5</td> <td>3</td> </tr> <tr> <td>MCWW</td> <td>7</td> <td>6</td> </tr> </tbody> </table> The prospect of the selected trainers to be approved by Steering Committee is high since they have become capable of effectively facilitating training.  1b. The total of 13 seminars/workshops was organized by the time of the Mid-Term Review. Seminars and workshops have been successfully carried out mostly as planned. TOT trained 18 SHAPWASCO staff members in conducting lecture and/or OJT on SOP, NRW, and WDM activities.  Based on the achievement levels of the above-mentioned indicators and progress in activity implementation, Output 1 has a good prospect of being achieved by the end of the Project. According to the Questionnaire/Interview Surveys, most of C/Ps and Experts are confident that Output 1 will be achieved by the end of the Project period.		SOP trainers	NRW trainers	SHAPWASCO	5	4	GHAPWASCO	5	3	MCWW	7	6
	SOP trainers	NRW trainers												
SHAPWASCO	5	4												
GHAPWASCO	5	3												
MCWW	7	6												

4

Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Effectiveness	2. Factors that contributed to the achievement of the Project Purpose (Achievement Levels of the Outputs)	<p>2-2. To what degree, are Standard Operational Procedures (SOPs) being developed and utilized based on the experiences of SHAPWASCO at the model facilities in Gharbia and Minufia Governorates?</p> <p>(Achievement level of Output 2)</p> <p><u>OVI:</u></p> <p>2a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation.</p> <p>2b. The model facilities are operated and maintained based on SOP.</p> <p>2c. Improvement of PIs for the model facilities are evaluated based on SOP.</p>	<p>The achievement levels of the Output 2's OVIs confirmed by the Mid-Term Review are as follows:</p> <p>2a. A site tour of SHAPWASCO and 3 mini-seminar sessions on SOP and monitoring of well stations were conducted for GHAPWASCO and MCWW members as of December 2011. Since the rating criteria of training comprehension have yet to be defined, it is unclear to what extent the OVI will be achieved.</p> <p>2b. The model facilities have been selected both in GHAPWASCO and MCWW. Both GHAPWASCO and MCWW have prepared the draft SOP for water treatment plants (WTP) as well as Iron/manganese removal plants (IMRP) and started trial operations at the model facilities based on the draft SOP. OJT on improvement of operation has been carried out as well. C/Ps have been collecting basic data from water level observations on well stations and planning to develop SOP on well stations since November 2012. In a meantime, GHAPWASCO and MCWW have been rehabilitating facilities and installing flow meters for SOP activities. In general, SOP activities are evaluated to be carried out as mostly planned.</p> <p>2c. C/Ps and Expert are surveying the current situations and collecting measurement data to set a baseline at the time of the Mid-Term Review. Since PIs for this OVI have not been determined yet, the prospect of achieving the OVI is unclear.</p> <p>While there are some delays, the overall SOP activities including rehabilitating water supply facilities and installing flow meters have made a significant progress by the Project. In particular, GHAPWASCO and MCWW started trial operations based on the drafted SOP, and it is expected that the SOPs will be further modified for the improvement of O&amp;M. Questionnaire/Interview Surveys show that most C/Ps and Experts think that Output 2 will be achieved by the end of the Project period.</p>
		<p>2-3. To what degree, are the institutional skills and experiences of SHAPWASCO for Non-Revenue Water (NRW) reduction being transferred to NRW teams at the model areas in Gharbia and Minufia Governorates?</p> <p>(Achievement level of Output 3)</p> <p><u>OVI:</u></p> <p>3a. More than 80% of NRW team members rates understanding of trainings more than 3 on the 5-scale evaluation.</p> <p>3b. Water balance analysis is conducted properly for the 3 model areas.</p> <p>3c. 100% of detected leakage is repaired at the model area.</p>	<p>The achievement levels of the Output 3's OVIs confirmed by the Mid-Term Review are as follows:</p> <p>3a. NRW training including issues of leak detection and leakage management was conducted by SHAPWASCO trainers in October 2011. SHAPWASCO's trainers shared their experiences in several mini-seminars and internal workshops for GHAPWASCO and MCWW. Since the rating criteria of training comprehension have yet to be defined, it is unclear to what extent the OVI will be achieved.</p> <p>3b. After the preparations of GIS drawing on pipe information of model areas, the Project team completed the first minimum night flow (MNF) survey of the 3 model areas in GHAPWASCO (9 pilot areas in total) and MCWW (7 pilot areas in total). The Project team conducted the water balance analysis in 2 model areas of GHAPWASCO and 1 model area of MCWW in October 2012. MCWW's survey is delayed due to the unavailability of NRW team members.</p> <p>3c. At the time of the Mid-Term Review, leak detection training is being carried out at a location in a model area of GHAPWASCO. The leakage detection training was originally intended to be conducted at the training yard of SHAPWASCO; however, the yard could not be used for the training due to the failure of the training yard, resulting in the delay of training implementation. To what extent (what percentage) detected leakage is repaired at the model areas are unknown at this time.</p>

4

Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Effectiveness	2. Factors that contributed to the achievement of the Project Purpose (Achievement Levels of the Outputs)	<p>2-4. To what degree, are the institutional skills and experiences of SHAPWASCO for Non-Revenue Water (NRW) reduction being transferred to NRW teams at the model areas in Gharbia and Minufia Governorates?</p> <p>(Achievement level of Output 3)</p>	<p>Despite some delays with leak detection training, the institutional skills and experiences of SHAPWASCO for NRW reduction are steadily being transferred to GHAPWASCO and MCWW. The capacity of GHAPWASCO's and MCWW's NRW team members to conduct water flow survey and water balance analysis has been greatly improved. While NRW members have become able to conduct various surveys which can be utilized for leak detection, they need to further increase their leak detection techniques and skills to take necessary actions and preventative measures.</p> <p>While the OVI 3a needs to be clarified, if the technical transfer will continue to be implemented in the rest of the Project period, Output 3 has a good prospect of being achieved. According to the Questionnaire/Interview Surveys, most C/Ps and Experts think that Output 3 will be achieved by the end of the Project period. Water balance analysis and leakage detection survey are scheduled to be conducted in the remaining period, which would contribute to increasing the level of the achievement of Output 3.</p>
		<p>2-5. To what degree, is the water distribution management capacity being improved in Sharkiya Governorate as an advanced model?</p> <p>(Achievement level of Output 4)</p> <p><u>OVI:</u></p> <p>4a. Water distribution is managed based on SOP at the model areas.</p> <p>4b. Issues on water distribution capacity are reported to top management of SHAPWASCO.</p>	<p>The achievement levels of the Output 4's OVIs confirmed by the Mid-Term Review are as follows:</p> <p>4a. The priority areas and pilot areas were selected by the Project team based on such information as number of customers, number of customers' complaints, and water supply conditions. Establishment of District Meter Area (DMA) was completed in the priority areas. The specifications of procured equipment, quantities, and locations of installation were finalized in July 2012 between the Project team and JICA. The process of determining the details of procured equipment required a longer time than planned, resulting in the delay of equipment installation. The Project team has been conducting preparation works for the installation of flow-meters including the construction of chambers and monitoring room. In parallel, JICA is taking procurement procedures of equipment (flow-meters). SOP for WDM has not yet been drafted as at the time of the Mid-Term Review.</p> <p>4b. C/Ps including top management have been trained on the importance of open dialogue among staff. Their awareness on reporting issues concerning water distribution have been developed. At the time of the Mid-Term Review, it is unclear to what extent issues on water distribution capacity are actually reported to top management of SHAPWASCO. Since the importance of reporting is gradually being known among C/Ps, the OVI has a good prospect of being achieved by the end of the Project. In a meantime, it might be necessary to consider more specific criteria of this OVI such as reporting frequency and structure.</p> <p>The Project has required a longer time for reviewing a variety of WDM methods including the consideration of appropriate equipment than that defined on the original Plan of Operations (PO), which caused 5-6 months delay of overall WDM activities. Despite the delay, the Project has been conducting hydraulic survey entailing the collection of the measurement data on water quantity, water pressure and quality of water as well as recording them in periodical reports. According to the Questionnaire/Interview Surveys, most C/Ps and Experts are confident that Output 4 will be achieved by the end of the Project period.</p>

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Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Effectiveness	2. Factors that contributed to the achievement of the Project Purpose (Achievement Levels of the Outputs)	2-6. To what degree, is the project being managed and coordinated properly? (Achievement level of Output 0) OVIs: 0a. Agreement on the coordination among SHAPWASCO, GHAPWASCO, MCWW is prepared. 0b. Project activities are regularly monitored based on PO/APO***.	The achievement levels of the Output 0's OVIs confirmed by the Mid-Term Review are as follows: 0a. SHAPWASCO, GHAPWASCO and MCWW agreed on inter-company cooperation and established the Steering Committee, which regularly monitors the Project implementation and discusses any emerging issues regarding the Project implementation. 0b. Steering Committee meetings as well as Project Team meetings with C/Ps and the Experts have been frequently held to monitor the Project progress. The PO (Annex 5) and APO (ANNEX 6) were modified by the 4th Steering Committee in July 2012.  According to the Questionnaire/Interview Surveys, C/Ps and Experts show high satisfaction toward the Project's implementation process including the Project management and coordination. In general, project management has been conducted properly with cooperation among HCWW, SHAPWASCO, GHAPWASCO, MCWW and Experts.
		2-7. Are there any other factors that contributed to the achievement of the Project Purpose?	The following conditions developed during the Project seem to be contributing to the achievement of the Project Purpose, which were confirmed by the Questionnaire/Interviews at the Mid-Term Review: <ul style="list-style-type: none"> <li>Capacity development of C/Ps in the Project is being effectively implemented by utilizing various resources available to cover diverse technical fields and a number of C/Ps' needs. A variety of capacity development methods were adopted appropriately: mini seminars for SOP and NRW reduction activities, On-the-Job Training (OJT), TOT, and training in Japan.</li> <li>The Project team maintains a close and friendly communication and interaction among each other through Steering Committee meetings, frequent Project Team meetings and daily collaborative works. High level of mutual understanding among the Project team members as well as of enthusiasm in participating in the Project by C/Ps has been bringing about increasing to share information and discuss any issues regarding the Project implementation.</li> <li>Expert Team has employed 3 Egyptian facilitators, as an input from JICA, to support information exchange between C/Ps and Experts and to offer advice on issues regarding the Project activities based on local understandings. By including both Japanese and Egyptian members in the Expert Team, the Project is able to ensure effective capacity development.</li> <li>The achievements and experiences on SOP and NRW activities from the previous technical cooperation project are the good basis and foundation for the success in the Project. SHAPWASCO has continued its own efforts to disseminate successful achievement by the previous project to cover whole area of the Governorate, and according to the Chairman, SHAPWASCO now applies SOP and NRW activities in around 60-70% of its facilities all over the Governorate. Good practices and experiences in SHAPWASCO have been shared among many other water supply companies in Nile Delta Area, which brought about high expectation for the Project in GHAPWASCO and MCWW from the beginning. Capacity on SOP and NRW measures are being transferred to GHAPWASCO and MCWW by SHAPWASCO members, whose skills and knowledge are further strengthened through the Project. Workshops and OJTs facilitated by SHAPWASCO members have been well received by training participants for their practical insights and technical advice on the Project implementation. At the same time, effective communication and information sharing among the three water supply companies has been promoted under the Project, which has brought about a good balance between "collaboration and competition" among the C/Ps. Furthermore, strong sense of ownership and commitment to the Project by top leaders (Project Director and Project Managers) and all the level of C/Ps has contributed to generating the expected Outputs.</li> </ul>

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Evaluation Criteria	Evaluation Questions		Results																														
	Main Questions	Sub Questions																															
Effectiveness	3. Factors that impeded the achievement of the Project Purpose	3-1. Are there any other factors that impeded the achievement of the Project Purpose (e.g., insufficient budgets, demonstration, etc.)?	The following aspects in relation to the water supply facilities, particularly of the selected model facilities/areas, are evaluated to be hindering factors to the achievement of the Project Purpose. (1) Original design of the facilities was often inappropriate, which was difficult to understand for both C/Ps and Experts from the viewpoint of effective facility design. The Project was obliged to spend more time on repair and replacement of inappropriate facilities in order to implement the expected capacity development for SOP formulation and its application. (2) In most cases there were no facility-related diagrams, manuals and equipment descriptions, which made the Project have to start with preparing necessary diagrams and documents from the scratch. (3) Even the minimum level of training in facility operation and maintenance was not conducted to the staff of the water supply companies during the period of one year for trial operation under the responsibility of the facility construction company.																														
Efficiency	1. Appropriateness of Inputs by Japan	1-1. How appropriate is the assignment of Experts in terms of the number of experts, their expertise and capabilities, and the dispatched periods and timings?	From the outset of the Project, a total of twelve Experts were assigned to the Project (May–December 2011: 29.96 M/M, January–September 2012: 19.95 M/M). According to the Questionnaire/Interview Surveys, Experts' expertise and capability were highly appropriate while the durations of their assignment period and timing of dispatch were deemed slightly inappropriate. Both C/Ps and Experts commented that they could not spend enough time with each other to fully teach/learn new technical skills, partly because the Experts' activities were temporarily suspended due to the presidential election. (ANNEX 2-1)																														
		1-2. How appropriate is C/P training in Japan in terms of the number of participants, training contents, and the dispatched period and its timing?	Fifteen (15) C/Ps have received training in Japan (4 C/Ps for management training, 7 C/Ps for SOP and NRW reduction training, and 4 C/Ps for WDM training) (ANNEX 2-4). Most of C/Ps trained in Japan have actively participated in the Project activities and functioned as core members for leading the Project.																														
		1-3. How appropriate is the provision of equipment by the Japanese side in terms of its quality, quantity and timing?	Overall, it is evaluated that appropriate inputs of equipment are being efficiently converted to generate expected Outputs. However, there were some delays in installations of equipment for WDM activities due to the different views on equipment selection between the Egyptian and Japanese sides. Equipment for WDM activities (e.g., telemetering flow meters, pressure gauges with telemetering, etc.) and chambers that can be utilized for operating a real-time monitoring system are to be soon procured and installed by the Project. Responsibilities regarding inputs by the Egyptian and Japanese sides in WDM activities were clearly defined and confirmed by the both sides as agreed in the M/M dated on 5 July 2012. (ANNEX 2-3)																														
	2. Appropriateness of Inputs by Egypt	2-1. How appropriate is the assignment of C/Ps in terms of the number, placement (i.e., balance between their regular tasks and Project activities) ownership and level of participation?	A total of 47 staff members were assigned as C/Ps from HCWW, SHAPWASCO, GHAPWASCO and MCWW. (ANNEX 2-6)																														
			<table border="1"> <thead> <tr> <th></th> <th>Management</th> <th>SOP Team</th> <th>NRW Team</th> <th>WDM Team</th> <th>Total*</th> </tr> </thead> <tbody> <tr> <td>HCWW</td> <td>2</td> <td>-</td> <td>-</td> <td>-</td> <td>2</td> </tr> <tr> <td>SHAPWASCO</td> <td>1</td> <td>9</td> <td>7</td> <td>5</td> <td>22</td> </tr> <tr> <td>GHAPWASCO</td> <td>1</td> <td>7</td> <td>3</td> <td>-</td> <td>11</td> </tr> <tr> <td>MCWW</td> <td>2</td> <td>6</td> <td>6</td> <td>-</td> <td>14</td> </tr> </tbody> </table> <p>*Some staff members are assigned in more than one field; therefore, the total number of C/Ps differs from the added number of C/Ps from each field.</p>		Management	SOP Team	NRW Team	WDM Team	Total*	HCWW	2	-	-	-	2	SHAPWASCO	1	9	7	5	22	GHAPWASCO	1	7	3	-	11	MCWW	2	6	6	-	14
	Management	SOP Team	NRW Team	WDM Team	Total*																												
HCWW	2	-	-	-	2																												
SHAPWASCO	1	9	7	5	22																												
GHAPWASCO	1	7	3	-	11																												
MCWW	2	6	6	-	14																												

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Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Efficiency	2. Appropriateness of Inputs by Egypt	2-2. How appropriate is the provision of facilities and equipment by the Egyptian side?	The rehabilitation of facilities for SOP activities and the construction of chambers for flow meters in GHAPWASCO and MCWW were completed with the estimated total amount of LE 1.61 million. The construction of chambers for WDM machinery and of the central monitoring room for WDM, amounting to the estimated LE 1.22 million, are underway at the time of the Mid-Term Review. Since facilities and equipment provided by the Egyptian side were selected based on discussions with and consultations by Experts, facilities and equipment are evaluated to be appropriate. (ANNEX 2-7)
		2-3. Is the Egyptian budget for the Project appropriate in scale?	The Egyptian budget allocated for the Project is evaluated to be appropriate. (ANNEX 2-7)
	3. Appropriateness of project management and implementation	3-1. Are the Joint Coordination Committee (JCC) and the Steering Committee functioning appropriately?	At the time of the Mid-Term Review, 3 JCCs (including the one on November 26, 2012) and 5 Steering Committee meetings were held to develop a mutual understanding of the Project's progress between the Egyptian and Japanese sides.
		3-2. Is an internal mechanism to communicate and share information between C/Ps and Experts, including Project Team Meeting, functioning appropriately?	Project Team Meetings have been held on a monthly basis to share the progress on SOP and NRW activities. Overall, an internal mechanism of communication and information sharing between C/Ps and Experts is functioning appropriately.
	4. Cooperation with other organizations/projects	4-1. Is there any effective cooperation with other organizations or projects that increased the efficiency of the Project?	The Improved Water and Wastewater Services Program (IWSP) Phase 1 (2009-2012) is being funded and implemented jointly by German Development Bank (KfW), EU's Neighbourhood Investment Facility (NIF), French Development Agency (AFD), and European Investment Bank (EIB). Targeting four Governorates including Sharkiya and Gharbia, IWSP focuses on increasing organizational management of HCWW and target water supply companies, introducing a performance indicator system, and improving wastewater management. The Project and IWSP have been coordinating activities and focus of assistance to avoid overlaps of project activities and to efficiently provide inputs.  Under the Project, Egyptian C/Ps carried out exchanges of information with the Water Authority of Jordan that implemented a JICA technical cooperation project on NRW reduction. C/Ps visited water supply companies in Jordan in October 2012 to learn Jordan's approaches to NRW reduction activities, especially training and licensing system for local contractors of service connection installation.
5. Factors that increased or decreased the efficiency of the Project	5-1. Are there any other factors that increased or decreased the efficiency of the Project?  S B	The Project has ensured smooth communication between the Egyptian and Japanese sides by employing three Egyptian facilitators, who offer advice and resolve emerging issues based on local understanding of various situations. The role of facilitators has been contributing to establish a close communication and information sharing mechanism.  Difficulties in political situation and transition period to the new government between 2011 to June 2012 forced the Project to suspend some activities scheduled on the original PO and APO. However, the negative impact is evaluated to be minimal, while the Project is trying to accelerate Project activities that were forced to have some delays in the rest of the Project period.	

Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Impact	1. Prospects of achieving the Overall Goal  Overall Goal: Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates.	1-1. Will the Overall Goal be achieved in 3 to 5 years after the completion of the Project? <u>OVI</u> : 1. PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates.	Although most C/Ps and Experts express a certain level of confidence, it is difficult to foresee the potentiality and scale of expected impact of the Project at the Mid-Term Review. Even if the Project succeeds in achieving the Project Purpose by the end of the Project period, the achievement of the Overall Goal is mainly dependent upon how effectively and efficiently the internal capacity development efforts will continuously be implemented within and among the 3 companies.  The Project has succeeded in developing several core technical staff of SHAPWASCO, GHAPWASCO and MCWW as trainers for other technical staff of WTPs, IMRPs and well stations in each of the three Governorates. An internal training system designed and partially implemented by the Project is expected to become a basis for further preparation and implementation of a sustainable capacity development for many technical staff in other areas (districts) of the 3 Governorates other than the model areas targeted by the Project. Taking into account of the fact that SHAPWASCO has almost successfully increased the impact of the previous technical cooperation project by disseminating the improved capacity to other areas of Sharkiya Governorate and of the ongoing achievement of the Project's Outputs, the prospect of generating a large scale of Impact by the Project is evaluated to be relatively high.
		1-2. Will the Important Assumption for achieving the Overall Goal be fulfilled? <u>Important Assumption</u> : • Central and local government budget for development of water supply facilities is allocated appropriately.	Although it is reported that there has been an overall reduction of government spending to all the sectors due to a recent transition of political and administrative system, there is no critical information to indicate the significant reduction in central and local government budget for development of water supply sector at the time of the Mid-Term Review. In September 2012, the new Egyptian Government established the Ministry of Water Resources and Wastewater Utilities, which indicates a continuous commitment of the central government to solve and improve the issues in the potable water sector.
	2. Other aspects  S B	2-1. Are there any unexpected positive and negative impacts (e.g., impacts to Egypt's human resources development policies, to potable water management policies, and to the private sector)?	<ul style="list-style-type: none"> <li>The Project increased effective communication and collaboration among technical staff in different departments in each of the 3 companies. "Team working" on such issues as SOP, NRW and WDM brought a new style of effective working in each company. This may lead to promote a much effective organizational behavior and to increase both impact and sustainability of the Project.</li> <li>The Project also provided C/Ps with opportunities to interact with technical staff of other water utility companies, which enabled them to understand their conditions and challenges in daily operation and management in different Governorates, and to discuss and share ideas for much effective operation and maintenance of the water utility companies. Through the Project, C/Ps increased communication and mutual understanding and developed professional network with staff of other Governorates, which was never realized before the implementation of the Project.</li> <li>The Project has sensitized not only the targeted 3 companies but also other water supply companies in Nile Delta Area. Open seminars and special workshops provided opportunities for relevant stakeholders in Nile Delta Area to increase awareness and importance on SOP, NRW reduction activities as well as leak detection technique, in which experiences and knowledge on the collaboration among SHAPWASCO, GHAPWASCO and MCWW were disseminated.</li> <li>With an initiative by C/Ps in GHAPWASCO, Egyptian private company in leakage detection survey business provided financial assistance for "Nile Delta Area Joint NRW Workshop" that was organized in September 2012. It is evaluated that the Project's NRW activities bears good ripple effects in increasing private companies' interests and even can bring about a larger scale of impact in terms of developing the capacity in effective operation and maintenance activities by the private sector.</li> </ul>



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Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Sustainability	1. Institutional aspect	Is an institutional mechanism for promoting cooperation and collaboration among water supply companies established? (Is it going to be established?)	<ul style="list-style-type: none"> <li>Under the Project, training seminars/workshops and OJT provided technical staff in headquarters and model facilities in 3 Governorates with opportunities for promoting cooperation and collaboration and for better understanding actual situations and issues to be solved. Thus, an institutional mechanism for promoting communication and cooperation among water supply companies has been established to a certain extent until now and is expected to be further strengthened in the remaining period of the Project.</li> <li>HCWW has been responsible for making effective information sharing and promoting collaboration among the water supply companies. Given the achievements by the Project, it is expected for HCWW to accelerate its initiative for establishing a concrete institutional mechanism for doing so.</li> </ul>
	2. Organizational aspect	Is an organizational mechanism for continuous strengthening of its operational and managerial capacity being built in SHAPWASCO, GHAPWASCO and MCWW? (Will be built?)	<ul style="list-style-type: none"> <li>With an assistance of Experts, SHAPWASCO staff members are currently carrying out OJT for GHAPWASCO and MCWW to apply SOPs in O&amp;M of model facilities as well as to take measures on NRW reduction. This begins to provide a good cycle of training implementation by use of internal resources, motivating C/Ps with their higher confidence about their knowledge and experiences, and promoting C/Ps' ownership on the Project implementation. Some C/Ps in GHAPWASCO and MCWW show strong willingness and confidence to become trainers for SOP and NRW issues inside the organization and even for dissemination of capacity to other water supply companies.</li> <li>After the completion of the previous technical cooperation project, SHAPWASCO established departments specialized in SOP and NRW, and is implementing activities through each specialized department; therefore, the organizational sustainability of the previous technical cooperation project is evaluated to be high. Under the Project, GHAPWASCO and MCWW have already established informal taskforce teams specialized in SOP and NRW inside the company, and they are expected to become official ones that have members fully dedicating their time on those issues in the future. Therefore, a prospect of an organizational mechanism being built is evaluated to be relatively high.</li> </ul>
		Will SHAPWASCO, GHAPWASCO and MCWW be able to secure a sufficient number of staff to develop their management capacity of operation and maintenance of water supply facilities after the completion of the Project? (Is there a prospect?)	Most of the C/Ps of the Project are relatively young and recently recruited. Judging from the C/Ps' commitment and enthusiasm to the Project, a good cycle of developing a sufficient number of technical staff who has capacity in effective operation and maintenance can be established as long as all the three companies recruit a certain number of technical staff every year. Although it depends on the policy and the size of the budget, it is evaluated that the prospect of securing a sufficient number of staff to develop their management capacity of operation and maintenance of water supply facilities is relatively high.
	3. Financial aspect	Will SHAPWASCO, GHAPWASCO and MCWW be able to secure sufficient budgets to develop their management capacity of operation and maintenance of water supply facilities after the completion of the Project? (Is there a prospect?)	According to the Questionnaire/Interview Surveys, some C/Ps and Experts express concern over discontinuance of a subsidy from the central government and unpromising prospect of securing budget to cover wide areas of water supply services in each Governorate. For the three water supply companies it is expected to strengthen their financial performances in order to secure budget to take continuous actions on SOP application, NRW reduction and WDM. If the Project Purpose is fully achieved, their annual financial performance are expected to gradually improve as a result of NRW reduction and improved management capacity of water facilities' O&M, which could increase their financial potential to reinvest for capacity development activities by themselves.

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Evaluation Criteria	Evaluation Questions		Results
	Main Questions	Sub Questions	
Sustainability	4. Technical aspect	Are core staffs being trained sufficiently in quantity and quality for SHAPWASCO, GHAPWASCO and MCWW to effectively manage operation and maintenance of water supply facilities? Will they be able to maintain their capacity and to transfer the knowledge to others? (Will they?)	<p>A total of 13 training seminars/workshops has been held for 41 staff members of SHAPWASCO, GHAPWASCO and MCWW. Workshops and OJTs facilitated by SHAPWASCO members have been well received by training participants for their practical insights and technical advice on the Project implementation. Since prospective trainers have started SOP or NRW training, the technical transfer system and trainers' capacity are likely to be maintained even after the Project.</p> <p>Formulation of specific action plans for technical transfer to the rest of the water supply facilities in three Governorates will contribute to increasing the level of sustainability since action plans will clarify actions needed to be taken to continue the effects of the Project.</p>
		Are core staffs of SHAPWASCO, GHAPWASCO and MCWW able to maintain and upgrade or replace the equipment installed by the Project when necessary? (Will they?)	According to the Questionnaire/Interview Surveys, both C/Ps and Experts show a relatively high confidence for C/Ps to maintain and upgrade or replace the equipment installed by the Project.

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Note: C/Ps include the members of the Project's working groups of Holding Company for Water and Wastewater (HCWW), Shariya Potable Water and Sanitary Company (SHAPWASCO), Gharbia Potable Water and Sanitary Company (GHAPWASCO), and Minufia Company for Water and Wastewater (MCWW).

\*\*ODA: Official Development Assistance

\*\*\*PO/APO: Plan of Operation/Annual Plan of Operation

5.



添付資料-8: 終了時評価調査協議議事録



**MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE ARAB REPUBLIC OF EGYPT  
FOR  
THE PROJECT FOR IMPROVEMENT  
OF MANAGEMENT CAPACITY OF OPERATION  
AND MAINTENANCE FOR WATER SUPPLY FACILITIES  
IN NILE DELTA AREA**

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yoshiki OMURA, visited the Arab Republic of Egypt (hereinafter referred to as "Egypt") from 13<sup>rd</sup> February to 3<sup>rd</sup> March, 2014 for purposes of conducting a terminal evaluation of "Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area (hereinafter referred to as "the Project").

During its stay, the Team had a series of discussions and exchanged views on the Project with Holding Company for Water and Wastewater (hereinafter referred to as "HCWW"), Sharkiya Potable Water and Sanitation Company (hereinafter referred to as "SHAPWASCO"), Gharbia Potable Water and Sanitation Company (hereinafter referred to as "GHAPWASCO"), and Minufia Company for Water and Wastewater (hereinafter referred to as "MCWW"). And the Joint Coordinating Committee (hereinafter referred to as "the JCC") was held on 2<sup>nd</sup> March, 2014.

As a result of the discussions, the Team submitted terminal evaluation report as attached hereto and Egyptian side agreed upon the description of the report.

Cairo, 2<sup>nd</sup> March, 2014



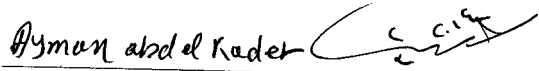
Mr. Yoshiki OMURA  
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Cooperation Agency,  
Japan



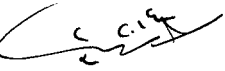
Mr. Mamdouh Rashed  
Project Director,  
Chairman,  
Holding Company for  
Water and Wastewater,  
The Arab Republic of Egypt



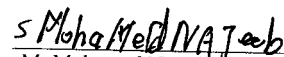

Dr. Salah Bayoumi  
Project Manager,  
Vice Chairman  
Holding Company for Water  
and Wastewater,  
The Arab Republic of Egypt



Mr. Ayman Abd El Kader  
Project Co-Manager,  
Chairman,  
Sharkiya Potable Water and  
Sanitation Company,  
The Arab Republic of Egypt



Mr. Mahmoud Zaki  
Project Co-Manager,  
Chairman,  
Gharbia Potable Water and  
Sanitation Company,  
The Arab Republic of Egypt



Mr. Mohamed Naguib  
Project Co-Manager,  
Chairman,  
Minufia Company for Water  
and Wastewater,  
The Arab Republic of Egypt

THE ATTACHED DOCUMENT

1. Both the Egyptian and Japanese sides agreed on the contents of Joint Terminal Evaluation Report.
2. Both the Egyptian and Japanese sides confirmed that the Egyptian side will continue to disseminate the project effect to not only within Sharkiya, Gharbia, and Minufia Governorates but also to the whole Nile Delta Area. The water companies of Sharkiya, Gharbia, and Minufia Governorates will submit to HCWW the business plan including dissemination plan for within their own and other Governorates, and allocate budget to activities related to the plans, while HCWW will support and facilitate the dissemination activities. HCWW chairman explained that a fund of approximately EGP 50 million was made available through the EU financing, for some activities including capacity development of water companies.
3. The Japanese side strongly recommended that HCWW establish a communication channel between water companies and NOPWASD, to reflect findings at operational level of water facilities into planning and design phases for better planning and detailed design works. The Egyptian side agreed to involve operational sections of water companies into a design stage.



添付8-1

THE PROJECT FOR  
IMPROVEMENT OF MANAGEMENT CAPACITY OF  
OPERATION AND MAINTENANCE FOR WATER SUPPLY FACILITIES  
IN NILE DELTA AREA

TERMINAL EVALUATION REPORT



2<sup>nd</sup> of March, 2014

Holding Company for Water and Wastewater/  
Japan International Cooperation Agency

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## ANNEX

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Annex 2: Plan of Operation (PO)

Annex 3: Schedule of Terminal Evaluation

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7-7 Facilities, Equipment, and Operational Expenses provided by Egyptian side

Annex 8: Evaluation Grid

Annex 9: List of Key People Met



## ACRONYMS AND ABBREVIATIONS

AC	Affiliated Companies of the HCWW
APO	Annual Plan of Operations
C/P	Counterpart Personnel
GHAPWASCO	Gharbia Potable Water and Sanitation Company
HCWW	Holding Company for Water and Wastewater
IMRP	Iron/Manganese Removal Plants
IWSP	Improved Water and Wastewater Services Programme
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
MDG	Millennium Development Goals
MCWW	Minufia Company for Water and Wastewater
M/M	Minutes of Meeting
NOPWASD	National Organization for Potable Water and Sanitary Drainage
NRW	Non-revenue Water
OECD-DAC	Development Assistance Committee of the Organization for Economic Cooperation and Development
O&M	Operation and Maintenance
PDM	Project Design Matrix
P&ID	Piping & Instrumentation Diagram
PO	Plan of Operations
SC	The Steering Committee of the Project
SHAPWASCO	Sharkiya Potable Water and Sanitation Company
SOP	Standard Operation Procedure
WDM	Water Distribution Management
WTP	Water Treatment Plant



## 1. INTRODUCTION

"The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area(hereafter the Project)", is a bilateral technical cooperation project implemented by Government of the Arab Republic of Egypt, with support from the Japan International Cooperation Agency (JICA). The objective of this Project is to improve management capacity of operation and maintenance of water supply facilities at the model areas/facilities in Nile Delta Area, over the cooperation period of 3 years.

### 1.1 Outline of Terminal Evaluation

#### 1.1.1 Purpose of Evaluation

The prime objective of JICA's project-level evaluation is to 1) improve the project management, and to 2) fulfil accountability to the stakeholders of this Project and to the general public. The objectives of this particular evaluation mission are as follows.

- (1) Review and assess the progress and performance made by the Project, based on the agreed Project Design Matrix (PDM)(Version 3, revised in October 2013)(ANNEX 1);
- (2) Evaluate the confirmed performance against 5 criteria proposed by Development Assistance Committee of Organization for Economic Cooperation and Development (OECD-DAC);
- (3) Draw lessons learned and recommendations for the Project stakeholders;
- (4) Summarize the above findings in a Terminal Evaluation Report;
- (5) Agree and sign the Minutes of Meeting (M/M), with the Terminal Evaluation Report and relevant documents attached;
- (6) Discuss and resolve any concerns that stakeholders have on the project implementation.

#### 1.1.2 Evaluation Schedule:

15<sup>th</sup> of February – 2<sup>nd</sup> of March, 2014 (see Evaluation Schedule in ANNEX 1)

#### 1.1.3 Evaluation Members

In accordance with the Article V("Joint Evaluation") of the Record of Discussions (R/D) signed between the Egyptian and Japanese side in August 2010, this evaluation was jointly conducted by the Egyptian and Japanese evaluation members. The names of each member are as follows:

##### (1) Egyptian Evaluation Member

**Dr.Rifaat Abdel Wahaab**

Professor of Environmental Science and; Head, Research & Development (R & D) Sector Holding Company for Water & Wastewater (HCWW)



##### (2) Japanese Evaluation Members

**Mr. Yoshiaki OMURA**, Team Leader/Senior Advisor for Water Resources Management, Global Environment Department, JICA

**Ms. Momo FUKUSHIMA**, Water Resources Management Division 1,

Water Resources and Disaster Management Group, Global Environment Department –JICA

**Ms. Emi YOSHINAGA**, Evaluation Specialist, Japan Development Service Co. Ltd

#### 1.1.4 Evaluation Methodology

- (1) This evaluation was conducted within the framework of "JICA Project Evaluation Guidelines (June 2010)", which describes JICA's standard project-level evaluation as follows:
  - The assessment of the project performance, to confirm to what extent the target indicators shown in the PDM (Appendix 1) are attained;
  - The value judgment on (= the evaluation of) the project, using Five Evaluation Criteria proposed by OECD-DAC (see 1.1.5 for detail);
  - Recommendations and the drawing of the lessons learned from the evaluation, to feed them into future projects.
- (2) The methods of data collection used for this evaluation are as follows:
  - Desk review: including project reports, the record of training and of the use of budget, Egypt's national strategies, and the reports from other similar JICA/donor projects.
  - Interviews: individual and group interviews were held in Egypt from 15-27th of February 2014. The key interviewees are shown in ANNEX 9.
  - Questionnaire survey: a questionnaire survey was undertaken in January 2014, for the evaluation team to identify key issues faced by the C/Ps prior to its visit to Egypt. The respondents include the Project Manager and Co-managers, Japanese experts, and Project Facilitators.
  - Direct observation: Site visits were conducted by the Evaluation Team members to directly observe the Project's outcomes and the equipment provided. The sites visited are shown in the evaluation schedule in ANNEX 2.

#### 1.1.5 Evaluation Criteria

The progress and performance confirmed against the PDM was then evaluated from five different points of view – "Relevance", "Effectiveness", "Efficiency", "Impact", and "Sustainability". The five viewpoints are the criteria laid out in the "Principles for Evaluation of Development Assistance" by OECD-DAC in 1991. For each criterion, the evaluation is given on the four-point rating scale of "high", "relatively high", "moderate", or "low". The details of each criterion are the following:





**Table 1: Evaluation Criteria based on OECD-DAC Principles**

1. RELEVANCE	<ul style="list-style-type: none"> <li>• Relevance of Project's focus with Egypt's national/sector policies, with the strategic objectives of Holding Companies for Water and Wastewater(HCWW), and with Japan's assistance policy for Egypt;</li> <li>• Relevance of the Project's approach to the need of beneficiaries;</li> <li>• Japan's comparative advantage in providing this assistance.</li> </ul>
2. EFFECTIVENESS	The extent to which the Project Purpose and its indicators (see 2.2) is attained. The factors that contributed to the efforts toward attaining the Project Purpose will be also analysed in this section, as well as the challenges.
3. EFFICIENCY	<ul style="list-style-type: none"> <li>• Whether activities/inputs were delivered on time and were appropriate in terms of quality and volume</li> <li>• Whether four PDM Output Indicators are attained as a result of these activities</li> <li>• Whether efforts were made to exploit other available resources (eg. donor resources, utilization of existing knowledge base etc)</li> </ul>
4. IMPACT	<ul style="list-style-type: none"> <li>• Prospect of achieving Overall Goal of this Project</li> <li>• Other noteworthy impacts and spill-over effects</li> </ul>
5. SUSTAINABILITY	<ul style="list-style-type: none"> <li>• Whether the national/sector policies and strategies will continue to be favourable to SOP/NRW/WDM activities in the future</li> <li>• Whether the organizational structure is in place to continue the Project activities</li> <li>• Whether the skills of the trained Affiliated Company staff are sufficient to take leadership in future activities</li> <li>• Whether sufficient budget for future activities are likely to be allocated</li> </ul>



## 1.2 Outline of the Project

### 1.2.1 Background<sup>1</sup>

Egypt has strived to improve water utilization efficiency and protection of water resources, in order to supply clean and safe water to the growing population. Towards achieving this goal, in 2004, the Government established the Holding Company for Water and Wastewater (HCWW) and transformed 23<sup>2</sup> water-supply entities into the affiliated companies of HCWW (ACs).

Since the managerial responsibility for operation and maintenance (O&M) of water supply facilities was transferred to public corporations, each company was urged to improve operational efficiency and reduce Non-Revenue Water (NRW), which is potable water that cannot be billed such as leakage and illegal taps. While HCWW have introduced a series of measures to help and urge the ACs for better performance, the limited capacity of the ACs to deal with these challenges hindered the progress.

Upon the request from Government of Egypt to address this situation, JICA carried out "The Project for Improvement of Management Capacity of Operation and Maintenance for SHAPWASCO (Sharkiya Potable Water and Sanitation Company)" between 2006 and 2009 (hereafter "the previous project"), which confirmed the effectiveness of utilizing Standard Operation Procedure (SOP) and implementing NRW reduction activities in the improvement of operational efficiency.

The proven effectiveness of SOP and NRW activities forwarded HCWW to formulate a plan to transfer successful practices and lessons learned from the previous project to the Nile Delta Area. Accordingly, the Egyptian government requested technical cooperation from the Government of Japan, to promote the transfer of technologies produced in the previous project to GHAPWASCO and MCWW, and to further improve the capacity of SHAPWASCO. The implementation of this Project was formally agreed through R/D in August 2010, for the cooperation period of 3 years. The basic information on this Project is shown in 1.2.2 below.



<sup>1</sup> Information based on the Mid-term Review of this Project in November 2012.

<sup>2</sup> As of 2004. The number currently increased to 25.

1.2.2 Basic Project Information (see also ANNEX1 for PMD indicators)

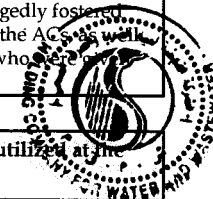
<b>Title:</b>	"The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area"
<b>Period</b>	April 2011 - August 2014 (3 years)
<b>Counterpart organizations</b>	<u>Supervisory organization</u> Holding Company for Water and Wastewater (HCWW)
	<u>Implementing Organizations</u>
	<ul style="list-style-type: none"> <li>• Sharkiya Potable Water and Sanitation Company (SHAPWASCO)</li> <li>• Gharbia Potable Water and Sanitation Company (GHAPWASCO)</li> <li>• Minufia Company for Water and Wastewater (MCWW)</li> </ul>
<b>Super Goal</b>	Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area.
<b>Overall Goal</b>	Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates.
	PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates
<b>Project Purpose</b>	Management capacity of operation and maintenance of water supply facilities is improved at the model areas/ facilities in Sharkiya, Gharbia and Minufia Governorates.
<b>Outputs</b>	<ol style="list-style-type: none"> <li>1. Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened.</li> <li>2. Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates</li> <li>3. The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates.</li> <li>4. The water distribution management capacity is improved in Sharkiya Governorate as an advanced model.</li> <li>0. The project is managed and coordinated properly.</li> </ol>



2. ASSESSMENT OF PROJECT PERFORMANCE

2.1 Progress on Achieving Output Indicators

<b>Output 1: "Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened"</b>														
1.a	<p>"More than 3 members each of SOP/NRW teams in SHAPWASCO·GHAPWASCO·MCWW are approved as trainers by Steering Committee"</p> <p style="text-align: center;"><u>EXPECTED TO BE ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>• The selection of prospective trainers from each of SOP/NRW teams in SHAPWASCO, GHAPWASCO, MCWW is complete by June 2011. More than 3 members were designated from each team (see below) by the Steering Committee (SC) represented by the 4 participating organizations (HCWW and its 3 affiliated companies (ACs)).</li> <li>• The prospective trainers of GHAPWASCO and MCWW are to be certified as trainers by June 2014, after completing the OJT with the Japanese experts. The SHAPWASCO teams are already active as trainers in practice, yet their formal trainer certificate is to be issued at the same time as for the other AC teams.</li> </ul> <p style="text-align: center;"><b>Table 2-1: Number of Prospective SOP/NRW Trainers</b></p> <table border="1"> <thead> <tr> <th></th> <th>SOP</th> <th>NRW</th> </tr> </thead> <tbody> <tr> <td>SHAPWASCO</td> <td>5</td> <td>4</td> </tr> <tr> <td>GHAPWASCO</td> <td>5</td> <td>3</td> </tr> <tr> <td>MCWW</td> <td>7</td> <td>6</td> </tr> </tbody> </table>		SOP	NRW	SHAPWASCO	5	4	GHAPWASCO	5	3	MCWW	7	6
	SOP	NRW												
SHAPWASCO	5	4												
GHAPWASCO	5	3												
MCWW	7	6												
1.b	<p>"More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team"</p> <p style="text-align: center;"><u>ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>• Total 20 joint activities were organized by the Project by December 2013, through the inter-company cooperation among participating ACs(ANNEX 4). These include 17 thematic training in Egypt, a visit to Jordan for exchange of opinions with the water company in Jordan, and two open seminars to disseminate the Project's experiences to other governorates. The third seminar is tentatively planned in March 2014.</li> <li>• The questionnaire survey and the interviews during the evaluation mission found that the seminars and workshops organized under this indicator had certain positive effects on the realisation of Output 1 ("human resource development through collaboration among ACs"). They allegedly fostered positive cooperation and competitions among the ACs as well as the confidence and ownership of the C/Ps who were given opportunities to present their efforts.</li> </ul>												



<b>Output 2: Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates</b>		
2.a	<p>"More than 80% of SOP team members rates understanding of trainings more than 3</p>	<ul style="list-style-type: none"> <li>• Evaluation result on the understanding of the training was not available at the time of this evaluation. The assessment on this indicator was therefore conducted by confirming the members' understanding through interviews, which found their knowledge is sufficient for the implementation and future dissemination of Project activities. The formal assessment by</li> </ul>

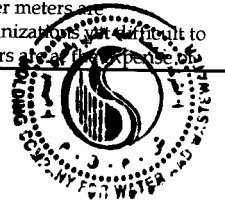
	<p>on the 5-scale evaluation”</p> <p><u>EXPECTED TO BE ACHIEVED</u></p>	<p>the Project is to take place in June 2014, through a written and practical performance test given by the Japanese expert.</p> <ul style="list-style-type: none"> <li>The factors that improved the C/P's skills and understanding may include: 1) the survey on the design and conditions of the model facilities, as well as the formulation of Piping and Instrumentation Diagram (P&amp;ID), for the first time for the C/Ps; and 2) the visualisation of efficiency- and resource losses through the introduction of measurable PIs. The introduction of the PIs fostered a habit among the C/Ps to analyse the reasons why certain indicators are difficult to improve; the knowledge acquired through 1) above enabled them to assess the facility design from the operators' viewpoint and suggest improvements. These activities most likely had an effect on the C/P's understanding and ownership (see also 3.2 for more analysis on the PIs).</li> </ul>																								
<p>2.b</p>	<p>The model facilities are operated and maintained based on SOP</p> <p><u>ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>The model facilities are being operated and maintained based on SOP since late 2012. The names of model facilities are shown in Table 2-2 below.</li> <li>The preparation of draft SOP was completed at 6 model facilities in Gharbia and Minufia governorates end 2012, by modifying the SOP document used at SHAPWASCO. The implementation of O&amp;M based on this draft is ongoing ever since, and the experiences from the implementation were fed into the final SOP to be ready by February 2014.</li> </ul> <p style="text-align: center;"><b>Table 2-2: Model facilities for SOP activities</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Ghabiya</th> <th colspan="2" style="text-align: center;">Minufia</th> </tr> <tr> <th style="width: 5%;">No.</th> <th style="width: 20%;">Name</th> <th style="width: 15%;">Type</th> <th style="width: 20%;">Name</th> <th style="width: 10%;">Type</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Tanta El Melahia</td> <td>Water Treatment Plan(WTP)</td> <td>Mahatet El Sadat El Sathaya</td> <td>WTP</td> </tr> <tr> <td>2</td> <td>Mahalet Marhoom</td> <td>Iron and Manganese Removal Plant(IMRP)</td> <td>Gezy</td> <td>IMRP</td> </tr> <tr> <td>3</td> <td>Severbay Well Station</td> <td>Well</td> <td>Ashama Well Station</td> <td>Well</td> </tr> </tbody> </table>	Ghabiya		Minufia		No.	Name	Type	Name	Type	1	Tanta El Melahia	Water Treatment Plan(WTP)	Mahatet El Sadat El Sathaya	WTP	2	Mahalet Marhoom	Iron and Manganese Removal Plant(IMRP)	Gezy	IMRP	3	Severbay Well Station	Well	Ashama Well Station	Well
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<p>2.c</p>	<p>Improvement of PIs for the model facilities are evaluated based on SOP</p> <p><u>ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>The improvements of the PIs for model facilities are being evaluated based on SOP, since late 2012.</li> <li>The purpose of this indicator is to regularly monitor and assess the progress of SOP-based O&amp;M, through four PIs (shown below) that measure the efficiency in the facility operations. The activities for this indicator include the selection of baseline and target values for 4 of total 6 model facilities (i.e. 2 out of 3 in each governorate excluding well stations). The evaluation of the improvement is being conducted through the collection of monthly data for each PIs. The current progress on the SOP-related PIs will be shown in "2.2 Progress on Attaining Project Purpose Indicator" and in ANNEX 6.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><u>PIs for SOP</u></p> <ol style="list-style-type: none"> <li>1) Effective water utilisation ratio (%)</li> <li>2)-3) Two types of unit consumption of chemicals(g/ m3), such as: <ul style="list-style-type: none"> <li>• Gaseous Chlorine                      • Aluminium Sulfate</li> <li>• Potassium Permanganate          • Calcium Hypochlorite</li> </ul> </li> <li>4) Energy consumption (kWh/m3)<sup>3</sup></li> </ol> </div>
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<p><b>Output 3: The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates.</b></p>		
<p>3.a</p>	<p>More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation</p> <p><u>ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>This indicator was achieved, as a result of a 5-scale evaluation to test the understanding of total 7 members (2 from GHAPWASCO and 5 from MCWW) conducted in June 2013. The average evaluation score was 4.6.</li> <li>The training on the NRW by Japanese experts are complete by mid-2013, and the evaluation combining the written- and practical performance tests were given by a Japanese NRW expert in June 2013.</li> </ul>
<p>3.b</p>	<p>Water balance analysis is conducted properly for the 3 model areas</p> <p><u>ACHIEVED</u></p>	<ul style="list-style-type: none"> <li>Water balance analysis is completed for total 6 model areas in two governorates by June 2013. The list of NRW model areas is shown in Table 2-3.</li> <li>The result of water balance analysis in 6 areas found the primary component of NRW as the leaks at the house connections, followed by the meter inaccuracies (see ANNEX 5). These results support the relevance of the assistance focusing on the physical loss of water through leak detections and repairs, and remind the need for measures against commercial loss of water arising from (say) meter inaccuracy. The aging and inaccuracy of customer meters are well-recognised among the C/P organizations, but difficult to solve, as the replacement of the meters at a high expense of</li> </ul>

<sup>3</sup> Consumption of energy/ total supply of water at the facility



		water users.																																													
		<p><b>Table 2-3: Model Areas for NRW activities</b></p> <table border="1"> <thead> <tr> <th>Areas</th> <th>Markaz</th> <th># of connections</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;"><b>Gharbia</b></td> </tr> <tr> <td>Mohamed Farid</td> <td>Tanta</td> <td>408</td> </tr> <tr> <td>Omar ebn Abd El Aziz</td> <td>El Mahalla El Kobra</td> <td>376</td> </tr> <tr> <td>El Masraf</td> <td>Zefta</td> <td>242</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Minufia</b></td> </tr> <tr> <th>Areas</th> <th>Markaz</th> <th># of connections</th> </tr> <tr> <td>Abo Agwa</td> <td>Shebeen</td> <td>495</td> </tr> <tr> <td>Mahakama</td> <td>Quesna</td> <td>761</td> </tr> <tr> <td>Abdel Salam Aref</td> <td>Barket El Sab'a</td> <td>883</td> </tr> </tbody> </table>	Areas	Markaz	# of connections	<b>Gharbia</b>			Mohamed Farid	Tanta	408	Omar ebn Abd El Aziz	El Mahalla El Kobra	376	El Masraf	Zefta	242	<b>Minufia</b>			Areas	Markaz	# of connections	Abo Agwa	Shebeen	495	Mahakama	Quesna	761	Abdel Salam Aref	Barket El Sab'a	883															
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3.c	100% of detected leakage is repaired at the model area	<p><b>ACHIEVED</b></p> <ul style="list-style-type: none"> <li>The leaks detected in model areas during the Project are so far repaired 100%. The number of leaks detected and repaired as shown in Table 2-3 below. The detailed analysis on the rate of NRW will also be shown in "2.1.2 Progress on Attaining Project Purpose Indicator".</li> <li>Previous custom in model areas was to repair the leaks when they were reported. Current operation is for GHAPWASCO and MCWW headquarters to actively look for leaks, in cooperation with the NRW teams established at Markaz branches and according to the schedule of Five-year Plan for Non-revenue Reduction Activities(version 1 (June 2013).</li> </ul> <p><b>Table 2-4: The effects of NRW activities in model areas</b></p> <table border="1"> <thead> <tr> <th colspan="5" style="text-align: center;"><b>Gharbia</b></th> </tr> <tr> <th>Model areas</th> <th>Before project</th> <th>Targets</th> <th>After project</th> <th>Leaks detected</th> </tr> </thead> <tbody> <tr> <td>Tanta</td> <td>40.1%</td> <td>28.0%</td> <td>24.7%</td> <td>4</td> </tr> <tr> <td>El Mahalla El Kobra</td> <td>27.1%</td> <td>20.3%</td> <td>22.0%</td> <td>2</td> </tr> <tr> <td>Zefta</td> <td>21.2%</td> <td>15.9%</td> <td>21.0%</td> <td>1</td> </tr> <tr> <th colspan="5" style="text-align: center;"><b>Minufia</b></th> </tr> <tr> <td>Shebeen</td> <td>19.6%</td> <td>14.7%</td> <td>16.5%</td> <td>1</td> </tr> <tr> <td>Quesna</td> <td>29.8%</td> <td>22.3%</td> <td>22.5%</td> <td>3</td> </tr> <tr> <td>Barket El Sab'a</td> <td>27.1%</td> <td>20.3%</td> <td>20.2%</td> <td>4</td> </tr> </tbody> </table>	<b>Gharbia</b>					Model areas	Before project	Targets	After project	Leaks detected	Tanta	40.1%	28.0%	24.7%	4	El Mahalla El Kobra	27.1%	20.3%	22.0%	2	Zefta	21.2%	15.9%	21.0%	1	<b>Minufia</b>					Shebeen	19.6%	14.7%	16.5%	1	Quesna	29.8%	22.3%	22.5%	3	Barket El Sab'a	27.1%	20.3%	20.2%	4
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<b>Output 4 : The water distribution management capacity is improved in Sharkiya Governorate as an advanced model</b>	
4.a	<p>Water distribution is managed based on SOP at the model areas</p> <p style="text-align: center;"><b>(Activities on-going)</b></p> <ul style="list-style-type: none"> <li>The activities for this indicator are still on-going at the time of this evaluation. The attainment of the indicator is not likely within the Project period.</li> <li>It was not until January 2014 that the WDM activities properly started. The delay in the procurement of remote monitoring system, as well as the technical errors in the software of the system, slowed the overall progress. The preparation of the SOP for WDM, which would have been initiated right after the procurement of the equipment, is now expected in June 2014. This leaves only limited time for the actual implementation of the SOP-based WDM activities, making the monitoring of the PIs for WDM hard to complete within Project period. The detailed explanation on the delays are as follows:             <ol style="list-style-type: none"> <li>The elaboration of the scope of activities (such as the selection of model areas or the specification of equipment) necessitated more time than planned, causing a delay of about half a year in the timing of procurement and installation of the equipment. The procured equipment here includes the soft- and hardware for the remote monitoring of water distribution networks.</li> <li>After installation, the system then experienced technical errors (such as in the transfer of data). The errors could not be fixed for some time, due to the political instability in Egypt that withheld the Japanese experts from visiting the country from July to October 2013. The same technical problem still exists as of this Terminal Evaluation.</li> </ol> </li> </ul>
4.b	<p>Issues on water distribution capacity are reported to top management of SHAPWASCO</p> <p style="text-align: center;"><b>(Evaluation too early)</b></p> <p>To realise this indicator, the remote monitoring of water distribution network should start first. The evaluation on this indicator appears more appropriate after the completion of planned activities and some monitoring.</p> <p>That said, there are also other issues that the Project can report to top management without waiting for the remote monitoring system to be fully operational. Examples of such reports is the presentation of any concerns relating to the infrastructure or the sectoralisation of distribution network, together with the data collected through the activities. The issues for reporting are to be listed up by the Project and informed to the top management by the end of the project period.</p>

**Output 0 : The project is managed and coordinated properly**



0.a	Agreement on the coordination among SHAPWASCO·GHAPWASCO·MCWW is prepared	A written agreement was prepared and signed by project stakeholders in the form of Minute of Meeting (M/M), at the time of approving the Inception Report submitted by the Japanese experts at the start of this Project. The agreement assured that a Steering Committee (SC) be established and the SC members cooperate for the implementation of this Project.
<u>ACHIEVED</u>		
0.b	Project activities are regularly monitored based on PO/APO	Annual Plans of Operation (APO) are approved and monitored at the Joint Coordination Committee (JCC) on a regular basis.
<u>ACHIEVED</u>		



添付8-9

## 2.2 Progress on Attaining Project Purpose Indicator

**Project Purpose:** "Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates"

**Indicator:** "Performance Indicators (PIs) (\*1) in the fields of management capacity of operation and maintenance are improved at the model areas/facilities"

### 1) PIs for SOP

<p><b>Evaluation Results:</b></p> <p style="text-align: center;"><u>SATISFACTORY</u></p> <p>(See ANNEX 6 for result of data analysis)</p>	<p><b>(*1) PI monitoring Indicators:</b></p> <p>1) Effective water utilisation ratio (%)</p> <p>2)-3) Two types of unit consumption of chemicals(g/ m3), such as:</p> <ul style="list-style-type: none"> <li>• Gaseous Chlorine</li> <li>• Potassium Permanganate</li> <li>• Aluminium Sulfate</li> <li>• Calcium Hypochlorite</li> </ul> <p>4) Energy consumption (kWh/m3)</p>
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The level of attainment on the SOP-related PIs was found satisfactory.

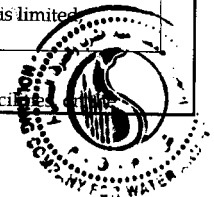
In evaluating the performance of each model facilities using the PIs, the Evaluation Team took into consideration not only the quantitative achievement of the targets, but also the qualitative assessment on the efforts and improvements by these facilities which the monitoring data cannot always capture. The reasons for the Team to apply both quantitative and qualitative evaluations are the following:

- (1) The prime objective of this Project is not to achieve the target value itself, but to disseminate the skills and culture to operate the facilities based on standardized procedures.
- (2) The monitoring results for four indicators (effective water utilization, and the consumption of chemicals and energy) are highly subject to exogenous factors, such as raw water quality and fluctuating demand.
- (3) The targets for some indicators are intentionally high to urge for sustained effort by model facilities, and are not readily achievable within a limited time period.
- (4) Method of data collection at the model facilities are still being developed, and the monitoring results at early stage may not always represent real value.

This evaluation therefore examined whether any of the following 3 criteria are satisfied for each PI:

- (1) "**Achievement of Target**": whether the target is attained for more than 25% of all monitoring period;
- (2) "**Level of Improvement**": even when targets are not reached, whether improvements are observed in comparison with baseline or the previous monitoring results;
- (3) "**Relevance of Justification for Limited Improvement**": if improvement is limited whether the justification is clear and reasonable.

- On the "**Achievement of Target**", the results depend highly on the types of facilities



**Table 2.5 Progress on attaining Performance Indicators (PIs)  
for Non-revenue Water(NRW) Activities**

⊙ = sufficient ○ = satisfactory

1. Gharbia						
Pilot areas	Before Project	Targets	After project	Level of achievements on target	Level of Improvement as compared to before Project	Justification for Limited Progress
Tanta	40.1%	28.0%	24.7%	⊙		
El Mahalla El Kobra	27.1%	20.3%	22.0%	—	○	
Zefta	21.2%	15.9%	21.0%	—	—	○ <ul style="list-style-type: none"> <li>No major leak was detected in this area, thus little effect on the % of NRW.</li> <li>The network in Zefta is relatively new compared to other pilot areas, with less number of connections (242) and less leaks. Zefta was nevertheless selected as a pilot area, following the stakeholders' conclusion that the first pilot area is preferably small in size.</li> </ul>
2. Minufia						
Shebeen	19.6%	14.7%	16.5%	—	○	
Quesna	29.8%	22.3%	22.5%	—	⊙	
Barket El Sab'a	27.1%	20.3%	20.2%	○	—	
<b>Overall assessment:</b> The performance is generally satisfactory, if not up to initial expectation. The number of pilot areas that achieved the target was limited to two; however, overall improvement has been observed in 5 out of 6 areas. The justification for the limited progress in Zefta was found appropriate.						



<p>indicators and on the level of target-setting (see ANNEX 6 for detailed monitoring data). However, a glance over the average shows that GHAPWASCO's water treatment plant (WTP) reached the target for average 27% of all monitoring period, and the iron and manganese removal plant (IMRP), 52%; the result is 30% for MCWW's WTP, and 35% for its IMRP. This means, in average 1/3 of all the monitoring period, the model facilities achieved the targets for their PIs. For this result, the Evaluation Team concluded that the overall level of achieving targets as satisfactory.</p> <ul style="list-style-type: none"> <li>On the "Level of Improvement" of each indicator that did not reach the target, overall improvement was observed when comparing the results for 2013 with the same months of 2012.</li> <li>On the "Justification for limited improvement", the reason for indicators that had limited progress likely relates to the design of existing facilities, allowing limited room for (say) energy consumption to decrease. There have also been efforts by model facilities to overcome such constraints. In the case of Gezy, the model facility conducted cost-benefit analysis by themselves and plans to replace the pumps that had an overcapacity with high level of energy consumption.</li> </ul>
<p><b>2) PIs for NRW</b></p> <p><b>SATISFACTORY</b></p> <p>(See "Table 2.5" for the result)</p> <p><b>PI monitoring Indicators:</b></p> <ol style="list-style-type: none"> <li>1) NRW ratio (%)</li> <li>2) Reduction ratio of NRW</li> </ol> <ul style="list-style-type: none"> <li>The level of attainment on the NRW-related PIs was also found <i>satisfactory</i>. In undertaking this evaluation, the 3 screening criteria of "Attainment of Target", "Level of Improvement", and "Justification for Limited Progress" was applied to the NRW, for the same reason as described in the SOP section.</li> <li>On the "Attainment of Target", the number of model areas that reached their targets was limited to two; however, overall improvement has been observed in 4 out of 6 areas, satisfying the criteria for "Level of Improvement". The "Justification for the limited progress" in Zefta was found relevant (see Table 2.5 on page 18).</li> </ul>
<p><b>3) PIs for WDM</b></p> <p>Evaluation too early to undertake</p> <p><b>PI monitoring Indicators:</b></p> <ol style="list-style-type: none"> <li>1) Customer complaints per 1,000 connections</li> <li>2) Ratio of Low Service Pressure(%)</li> </ol> <p>The evaluation of the PIs for WDM could not be undertaken at the time of this Terminal Evaluation, because the monitoring of the PIs is not started due to the delay in the activities.</p> <ul style="list-style-type: none"> <li>On the PI 1) (customer complaints), although the baseline and target was already selected, the improvement cannot be evaluated without monitoring activities.</li> <li>On the PI 2), there is still a need to select baseline and target value, before any monitoring activities started.</li> </ul>



## 2.3 Provision of Inputs

### 2.3.1 Inputs by Japanese side (in the order of the planned inputs shown in PDM)

The inputs by the Japanese side have been provided mostly on time and as planned, except for some delays in the procurement of WDM equipment. The summary of inputs from the Japanese side are summarised as follows. The details of each input are shown in ANNEX 6.

#### 1. Japanese Experts (Annex 7-1)

Total 12 experts have been assigned for this Project. According to the questionnaire and interview surveys, the C/Ps are so far satisfied with the overall quality of guidance and advice from the Japanese experts, although some expressed their period of assignment as being too short. Names of experts and their period of assignments are shown in Annex 7-1.

	# of experts sent	Description
(1) Chief advisor/water supply planning	1	
(2) NRW reduction management	2	1) Deputy Chief Advisor 2) Assistant for NRW Reduction Management
(3) Leakage detection	1	
(4) Water Treatment	1	
(5) Water quality	1	
(6) Electrical equipment	1	
(7) Mechanical equipment	1	
(8) Distribution network	2	
(9) Others (if necessary)	2	1) Hydraulic Analysis for Network 2) Well Monitoring

Total input 12

#### 2. Local Expert (Annex 7-2)

- Local Experts for SOP and NRW: Egyptian experts have been assigned to provide advice to the C/Ps from the point of view of a Egyptian working in the same field.
- Facilitators: the Project employed facilitators to coordinate the work with each 3 ACs. The utilization of the Facilitators is a unique characteristic of this Project, which has contributed to the efficiency of activity implementation.

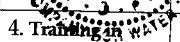
#### 3. Equipment (Annex 7-3)

The equipment in the amount of about 6 million Egyptian Pounds, or 81 million Japanese yen, was provided from the Japanese side. The major equipment provided is shown below. The full list including the quantity and amount is found in Annex 7-3.

- Inputs for Charbia and Mirufia: Ultrasonic flow meters(both portable/non-portable)/ water leak detectors/ water-level indicators/ pipe and cable locaters/ acoustic rods/ drills, etc

Inputs for Sharkiya: Central monitoring system, telemeters, water pressure gauges, ultrasonic flow meters

Others: Pick-up type vehicle, personal computers, fax & copy machines.



#### 4. Training in Japan (Annex 7-4)

Training in Japan was provided 3 times, inviting C/P members working on different assignment at different levels. The detailed visit schedule and names of participants are shown in Annex 7-4.

- Management Training, participated by 4 top management C/P members, from 3rd to 12th of October 2011;
- SOP and NRW reduction Training, participated by 7 members, from 5th to 16th

	December 2011; <ul style="list-style-type: none"> <li>WDM Training, participated by 4 members, from 28th of October 2012 to 9th of November 2012.</li> </ul>
5. Local Cost (Annex 7-5)	Total about 65.5 million JPY, or 4.96 million LE, was made available for the administration of operations. The cost includes, among others, the employment of local experts and staff, office rental and equipment, equipment for Japanese experts, and the C/P training in Japan mentioned in Item 4. Above. The full list of items under Local Cost is shown in in Annex 7-5.

### 2.3.2 Inputs by Egyptian side

The inputs from the Egyptian counterparts were provided on time and in an appropriate manner and quantity. The contributions from each ACs, both at the headquarters and facility level, was significant in preparing for the SOP activities at the model facilities and in the implementation of NRW activities.

#### 1. Counterpart Personnel (Annex 7-6)

- Project Director, Project Manager and Co-Managers, and the SOP/NRW/WDM teams were designated for this Project from the Egyptian side, according to the input plan shown in the PDM. The names of previous participants and the members at branch/facilities are shown in Annex 7-6.
- The number of the counterparts currently engaged in this Project at the headquarters level is shown below.

	Management	SOP Team	NRW Team	WDM Team	Total
HCWW	2	-	-	-	2
SHAPWASCO	2	5	4	4	15
GHAPWASCO	2	6	3	-	11
MCWW	1	6	6	-	13

#### 2. Office space for Experts

Office rooms are provided at GHAPWASCO, at MCWW and SHAPWASCO.

#### 3. Facilities, Equipment, and Operational Expenses (Annex 7-7)

Total 3 million LE were provided by SHAPWASCO, GHAPWASCO, and MCWW to facilitate the project implementation. These include:

- Construction costs to accommodate WDM-related equipment, and the communication and transportation cost borne by SHAPWASCO(1.27 million LE)
- Devices used for SOP and NRW activities, and construction of chambers to install flow meters borne by GHAPWASCO( 789,000LE)
- Cost relating to calibration, purchase and installation of equipment for SOP/NRW, construction of chambers to install flow meters etc, borne by MCWW (947,000 LE).

The details of these costs are shown in Annex 7-7.

#### 4. Necessary Information

Existing data and reference documents have been provided by the Egyptian side, when requested by the Project.



## 2.4 Implementation Process

This section examines various factors which are hardly captured by the PDM indicators, but are likely to have affected the project implementation. This includes the project management structure, communication and ownership, coordination with other stakeholders, and political/economic situation that has affected Egypt.

As mentioned earlier, the progress of activities are generally sound, and it is likely that this results owe to the efficiency in the implementation process. The activities for Output 1, 2, 3 and 0 are by and large on schedule, the necessary inputs are procured at appropriate timing, and the indicators for these Outputs are achieved or expected to be achieved within Project period. While Output 4 (WDM) is experiencing a delay, this attributes rather to technical problem with the equipment, than the weak commitment or lack of management structure.

The Evaluation Team found that the project implementation structure is generally well-functioning, and the key decisions and information on the Project are shared among the C/Ps. Each C/P staff, both at management level and operational level, participates well to the Project, while the level of participation somewhat depends on respective members. The political situation in Egypt had some impacts on the progress of Output 4 (WDM activities), yet the direct cause of the delay was a technical problem with the equipment, and the political situation only delayed the response to this problem.

### (1) Project Team Composition (See the Annex 7 for Project participants)

The Project is participated by 1) 41 Egyptian counterparts from HCWW, GHAPWASCO, MCWW, and SHAPWASCO (see ANNEX 7-6 for complete list of Egyptian counterparts) as well as the staff from 6 Markaz branches in NRW pilot areas and 4 SOP model facilities; 2) total 12 short-term Japanese experts who provide technical assistance services on an intermittent basis; 3) 2 local experts for SOP and NRW respectively who also work on intermittent basis, and 4) 3 Project Facilitators and interpreters who facilitate the communication between the Egyptian C/Ps and Japanese experts.

(2) Roles and Responsibilities: key beneficiaries and implementing agencies of this Project are GHAPWASCO and MCWW, who undertake the SOP and NRW activities under the guidance of Japanese and Egyptian experts. The role of SHAPWASCO who already experienced the SOP/NRW activities under previous project, is to 1) share their experiences with GHAPWASCO and MCWW, and to 2) implement WDM activities under the guidance of Japanese experts. HCWW, as a supervisory body of the 25 ACs in Egypt, ensures overall project management and monitors the performance of the 3 ACs. The main providers of technical assistance are the Japanese experts, while Egyptian experts provide advice in the context of the ACs' work. According to the questionnaire survey, the roles and responsibilities for this Project are generally clear to the Project participants who feel the current Project implementation structure as appropriate.

(3) Decision-making: The Steering Committee (SC) and the Joint Coordinating Committee (JCC) are two formal decision-making frameworks for this Project. The SC, comprising of the representatives of 4 counterpart organizations and Japanese experts, discusses and resolve key issues that affect overall operations. The JCC, participated by the Chairman of the HCWW and by the staff of JICA Egypt office in addition to the members of the SC, provides a more formal opportunity than SC to confirm the progress to date and approve key decisions and plans. The decisions relating to respective Project activities are made by each ACs on the side of Egypt, or by the Japanese experts on the side of Japan.

(4) Ownership: The ownership of the top management as generally strong and the decisions made at the JCC/SC are well-shared and implemented at operational level. Such commitment is shown (say) in the provision of NRW equipment and renovation of model facilities by GHAPWASCO and MCWW. The counterpart members are motivated in implementing the Project activities, although the level of commitment and participation depends somewhat on members. Some WTP and

Markaz branches were found hard to cooperate at the beginning of this Project, for which GHAPWASCO once had to change the selection of model facility. Related to ownership, some stakeholders feel that a more active involvement of Markaz branches in the Project would have strengthened the sustainability of NRW activities that are to be implemented by these branches.

(5) Information-sharing and communication: The information on the progress of activities are centralised at the Japanese expert team, who regularly visit 3 target governorates and monitor the progress. The communication between Japanese experts and Egyptian C/Ps are facilitated by Project Facilitators, who serve both as interpreters, coordinators, and in part as local experts. The utilisation of Project Facilitators in addition to interpreters is a unique characteristic of this Project, and has likely to have contributed to efficient project management. According to the questionnaire survey, both the project counterparts and Japanese experts feel that the communication among and within participating organization as sufficient.

### (6) Partnership and Coordination with donors:

• Improved Water and Wastewater Services Programme (IWSP): IWSP is a multi-donor programme of 300 billion Euros funded by the European Union, providing an investment and technical assistance for HCWW and ACs in the governorates of Sharkiya, Gharbia, Damietta and Behira. The focus of the IWSP assistance includes the investment for the construction/renovation of WTP, and technical assistance in NRW and SOP. According to the interview with IWSP team manager in Cairo, the focus of the programme's NRW activities is the formulation of NRW strategy at each ACs, the customer needs assessment training in pilot areas, and the measures against commercial loss of NRW in Sharkiya. Due to the difference in the level of work (IWSP on policy side and JICA more on the ground) and to the delay of the IWSP implementation, there was neither visible duplication nor active coordination between the two. As part of this assistance, the IWSP provided several equipment for NRW activities such as acoustic sticks, which were able to be utilised for the implementation of this Project. On the SOP, the IWSP created a sample SOP for Damietta governorate for the replication by other participating governorate, which needs some follow-up in the future.

• GIZ: German technical corporation (Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) provides 10-year assistance to Egypt's water and wastewater sector through "Water and Wastewater Management Programme (WWMP)". It focuses on four components including the capacity building of HWCC, water sector reform working with Ministry of Housing, Utilities and Urban Development, human resource management at ACs, and a specialised assistance to Quena governorate. According to the GIZ office in Cairo, the WWMP is currently in the process of working on the sector reform as well as of identifying the needs of the ACs, to which JICA's experiences could be utilised.

(7) Political situation in Egypt: while the coup d'Etat in Egypt in July 2014 slowed the progress of Output 4 activities, its impact on overall project implementation was less than initially predicted. As shown in the explanation on PDM indicator 4.b in "2.1 Progress on Achieving Output Indicators", the incident withheld the Japanese experts from visiting the country till October 2013. While this delayed the response by the Japanese experts to the existing software problem with the remote monitoring system, it was not a direct cause of the limited progress on WDM.





### 3. EVALUATION RESULTS

In this chapter, the project performance confirmed in earlier sections will be evaluated from five evaluation criteria suggested by OECD-DAC - "Relevance", "Effectiveness", "Efficiency", "Impact", and "Sustainability". The evaluation for each criterion will be presented on the four-point rating scale of "high", "relatively high", "moderate", or "low".

#### 3.1 Relevance: **HIGH**

The assessment at this evaluation accords with that of Mid-term Review, which found the relevance of this Project as very high.

The basis of the Team's conclusion is as follows. The Project's objectives are in agreement with the international- and Egypt's national development objectives, with Japan's assistance policies, and rightly address the capacity needs of the beneficiary organizations. The justifications for Japan to provide assistance in the areas of operation and maintenance and NRW were found also relevant.

- (1) **Consistency with policies:** As a signatory of the United Nations (UN), Egypt is committed to achieving the UN Millennium Development Goals (MDGs). In doing so, Egypt targets the increase in the access to safe drinking water to 98.5% in urban area and 80.8% in rural area by 2015. Securing the quality and quantity of water supply for its growing population is therefore a national priority for Egypt. The expansion of water supply through efficient O&M, NRW, WDM through this Project directly contribute to this national effort.
- (2) While the country's focus specifically on O&M, NRW, and WDM is not always explicit in official documents available in English, these documents do indicate the Egyptian government's emphasis on these activities. Egypt's previous development plan of "Sixth Five-Year Plan (2007/08-2011/12)", for example, set the upgrading of water and sanitation facilities as a focus area under the goal of improving public utilities for human and social development, through minimizing water network loss and implementing cost recovery in water projects; the current Annual Development Plan (2013-2014), issued by Ministry of Planning, also recognizes a more efficient O&M in water/waste water to cover its operation expenses as a priority target for Egypt's utilities sector<sup>4</sup>.
- (3) **Relevance to the beneficiaries' need:** rationalization of water use and sound handling of wastewater collection systems is recognized as national demand to which the state pays great attention<sup>5</sup>. The HCWW and its ACs, who are the key C/Ps of this Project, are the very organizations who assume the responsibility to meet this demand. Given the traditionally low water price in Egypt however, the low rate of cost recovery have posed a significant challenge for the ACs who are tasked to cover the cost of their operations. The limited management capacity of the ACs to deal with this challenge has hindered them from overcoming their traditional deficit. The demand for increasing the capacity for operational efficiency is such, the focus of this Project on the O&M and NRW is deemed highly appropriate as a response to these challenges. For Sharkiya governorate who suffers from the low water pressure in spite of the abundant underground water, the technical assistance in the field of water distribution management is assessed as relevant to secure sufficient water for its 6 million population, the forth-largest of 27 governorates in Egypt. For SHAPWASCO who have already acquired the skills for SOP-based O&M and NRW in the previous project, this Project is also

<sup>4</sup> Literally translation from the Arabic could be: the improvement of the financial efficiencies of Operation and maintenance of water supply projects in Water and Wastewater sector, to cover its expenses from gradual income gain, and in consideration of service quality without burdening the Citizens with extra load". See [http://www.mop.gov.eg/MopRep/part5\\_2013.pdf](http://www.mop.gov.eg/MopRep/part5_2013.pdf).

<sup>5</sup> A quote from HCWW on the company's role, shown in its webpage <http://www.hcww.com.eg/en/Content.aspx?ID=2>



a relevant next step and helps ensure the sustainability of the outcome of the previous project.

- (4) **Relevance to Japan's policy and comparative advantage:** Japan recognizes the infrastructure and capacity building in water- and wastewater as key component of its Country Assistance Policy for Egypt<sup>6</sup>, and has sufficient experiences with the waste-related assistance in the target governorates. Examples of Japan's past assistance include the grant aid for establishing a WTP in north-west of Sharkiya (2003-2007) and for upgrading of El Mahala El Kobra WTP in Gharbia (2006-2009), and the previous technical assistance in Sharkiya. Many of the C/Ps involved in these projects are also involved in this Project, allowing this Project to utilize the existing knowledge base and strengthening JICA's comparative advantage in continuing the assistance in this sector.

#### 3.2 Effectiveness: **RELATIVELY HIGH**

The Effectiveness of this Project was assessed as "relatively high".

This conclusion was derived from the Project's performance in achieving the Project Purpose, measured by the agreed Performance Indicators (PIs). As described in the "2.2 Progress on Attaining Project Purpose Indicator", targets for four SOP indicators were attained in average 1/3 of all the monitoring period. For NRW, although the number of model areas that reached their targets was limited to two out of 6 model areas, overall improvement has been observed in other 4 areas. For these results, the Evaluation Team concluded that the level of achieving targets as by and large satisfactory (see "2.2 Progress on Attaining Project Purpose" for the details of the PI evaluation).

During the evaluation, the Team recognised several factors that are likely to have contributed to the progress toward achieving the Project Purpose, as well as the key challenges to improving the PIs.

##### (1) **The factors that contributed to achieving the Project Purpose:**

- **Introduction of measurable performance indicators.** The visualisation of efficiency- and resource losses through the introduction of measurable PIs fostered a habit among the C/Ps to analyse the reasons why certain indicators are difficult to improve, and to seek for better performance. The performance management through measurable indicators also in agreement with the management approach adopted by HCWW, which monitors the ACs' operations through their report on the monthly progress on 64 indicators.
- **The Project activities.** Through the survey on the conditions of the model facilities and the formulation of P&ID for the first time, the C/Ps gained ability to assess the facility design from the operators' viewpoint and analyse how better to utilise the existing facilities for improving efficiency. For NRW, the leak detection survey in 6 model facilities helped the collection of basic data on the areas and succeeded in discovering illegal connections that had previously been unaccounted for, contributing to the reduction of NRW ratio.
- **Positive cooperation and competitions among ACs.** The participation of multiple Governorates in the same project on one hand promoted experience-sharing among the ACs, while also driving positive competition among them for better performance.

##### (2) **Challenges for Achieving the Project Purpose and PIs**

<sup>6</sup> The strategy focuses on 3 main assistance areas of 1) Sustainable Economic Growth and Creation of Employment, 2) Poverty Reduction and Improvement of Quality of Life, and 3) Promotion of Regional Stability. The assistance in wastewater is placed as a key assistance under 2).



- **Meter inaccuracies.** The large number of old and inaccurate customer meters installed at the households posed a significant challenge to NRW teams in ensuring the credibility of data. The aging and inaccuracy of the meters has long been recognised in Egypt, yet the pace of their renewal has been slow primarily due to such reasons as the unwillingness of the water users to bear the cost for replacement.
- **Difficulty in PI-based evaluation:** the monitoring of the performance through measurable indicators is found effective and important on one hand, on the other hand, the proper collection, interpretation and analysis of the data are difficult without knowing the real situation on-site and without a well-thought out evaluation standard. Because the results shown in numbers and figures are easy for stakeholders to understand, they easily “walk around” without appropriate qualitative explanations on the quality of data or what the background behind the limited performance. As a result, there is a danger for supervisors and evaluators to consider only the seeming performance that does not always reflect the real situation. Introduction of PIs are easy; yet their treatment should be done with great care and sensitivity.

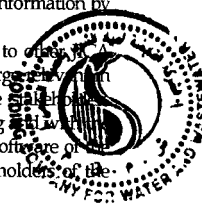
### 3.3 Efficiency: RELATIVELY HIGH

The Efficiency of this Project was evaluated as relatively high. The assessment against each criterion for Efficiency is as follows.

(1) **The Progress of activities and achievement of Outputs:** the process of implementing activities is assessed as relatively efficient. As mentioned in previous sections, activities for Output 1(training delivery through collaboration among ACs), 2 (SOP activities), 3(NRW) and 0 (appropriate project management) have generally followed the schedule and the necessary inputs are procured at appropriate timing. As a result, the indicators for these Outputs are achieved or expected to be achieved with good results. Some factors that reduced the efficiency of specific activities are:

- **Delay in WDM activities:** the activities for Output 4 (WDM in Sharkiya) is experiencing significant delay, due mainly to 1) the delay in deciding the scope of activities and the specification for the remote network monitoring system provided by the Japanese side, and 2) the technical problems with the same monitoring system in transferring from the flow meters (see 2.2 and 2.4.2 for further details). While most of the technical issues have been solved by February 2014 and the planned activities are expected to be complete by the end of the Project in August 2014, the cooperation period is too short to include the monitoring of WDM-related PIs in its activities.
- **Facility design/lack of information on the design:** according to the ACs and the operators of water supply facilities, the facility design that integrates the feedbacks from the operators could have saved time and cost for the ACs to renovate the facilities and replace the equipment. Likewise, the transfer of basic facility information (diagrams, equipment descriptions, manuals etc) from National Organization for Potable Water and Sanitary Drainage (NOPWASD), Egypt's public corporation responsible for investment in water and sewage water facilities, would have reduced the Project's time spent for surveying and recovering the information by themselves.

(2) **The volume and quality of inputs:** the volume of the Project inputs is equivalent to other project with similar design and cooperation period, and is so far found as by and large sufficient in meeting basic demands for equipment to implement the activities. Most of the stakeholders interviewed during the evaluation showed satisfaction with the quality of the training and the skills of Japanese/local experts. On the quality of inputs, the technical errors in the software of the provided remote monitoring system remain a major concern, reminding the stakeholders of the



importance of improving procurement process.

(3) **Other factors/efforts that increased efficiencies:** Efforts were made by both the Egyptian and Japanese side to increase the efficiency of the Project implementation, by utilising resources other than or in addition to the inputs from the Project. The following are the noteworthy examples of such efforts:

- **Additional inputs from GHAPWASCO and MCWW,** such as acoustic rods for the dissemination of NRW at branches, and the renovation of facilities to ensure efficient SOP implementation;
- **Building on the existing knowledge-base from previous project in Sharkiya,** where the counterparts of the previous project served as trainers and mentors of this Project and helped the GAPWASCO and MCWW better place the Project activities in the context of their work;
- **Utilization of local experts and Project Facilitators:** there was a good complementarity between the Japanese and local experts, where the Japanese experts offer the knowledge from advanced countries and the local experts help integrate such knowledge into practice in Egypt. The existence of Project Facilitators with language skills and knowledge in water sector was found vital to facilitate the overall communication between the Japanese and Egyptian side;
- **Equipment provision from the IWSP in Gharbia:** IWSP, a multi-donor programme funded by the European Union(see 2.4 for details), provided several equipment for NRW activities in Gharbia such as acoustic rods, which were utilised for the implementation of this Project.

### 3.4 Impacts: HIGH

The Impact of this Project was evaluated as “high”, because 1) the Overall Goal7 of “Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates” is likely to be achieved, as a result of the achievements made during this Project, and on 2) the other impacts/spill over effects that influenced the people outside of this Project. The detailed description on the assessment is as follows:

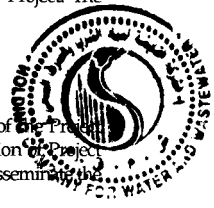
#### 3.4.1 Prospect for achieving Overall Goal

The Overall Goal of this Project is already being realised, as a result of the achievement of the Project Purpose and owing to the well-thought project design which incorporated the dissemination of Project outputs into the current project activities. The table below shows the plans for each AC to disseminate the activities within and outside of their Governorates.

Plans for Dissemination of Project Activities by 3 ACs

		GHAPWASCO	MCWW
NRW	Within Governorate	<ul style="list-style-type: none"> <li>• Activities already started in 4 of 8 <u>Markez</u>, including the creation of 5-year activity plan, the designation of two NRW staff, and the implementation of leak detection at branch level, twice a week. Preparation of activities in other 4 <u>Markez</u> is also underway.</li> </ul>	<ul style="list-style-type: none"> <li>• Activities already started in 8 of 10 <u>Markez</u>, including the creation of 5-year plan, designation of an engineer, and the regular implementation of leak detection at branch level.</li> <li>• To gain better results, MCWW provided total 10 acoustic rods to be distributed to 8 branches.</li> </ul>

7 A goal which is expected to be achieved within 3-5 years after the Project completion



		<ul style="list-style-type: none"> <li>To gain better results, GHAPWASCO provided 20 acoustic rods to all branches.</li> </ul>	
	Outside governorate	No specific plan for dissemination yet, while it wishes to cooperate with HCWW to invite trainees from other Governorates.	No specific plan for dissemination yet, while it wishes to accept the trainees in their Governorates in the future.
SOP	Within Governorate	Application of SOP already started in one of 7 newly-established WTP, whose design is similar to the model facilities of El Melahia. Dissemination activities for the remaining 6 new facilities are to follow.	SOP was introduced to 5 WTP in the governorates, where 3 are already implementing OJT and other two reviewing the condition of the facilities in preparation for SOP implementation.
	Outside Governorate	Discussions are initiated to apply the GHAPWASCO experiences in the nearby governorates of Kafr El Sheikh and Dakahlia.	Discussion is underway to invite the staff of Qalubiya governorate to be trained in MCWW.
<b>SHAPWASCO</b>			
WDM		Within governorate: After the completion of activities in Zagazig, the monitoring system will be extended to cover the whole governorate. Its extension to the North part of the governorate is recognised by SHAPWASCO as most urgent task.	Outside governorate: No specific plan for dissemination yet, while it wishes to accept the trainees in their Governorates in the future.

### 3.4.2 Other impacts and spill over effects

- Application of SOP to newly-established WTP:** GHAPWASCO is currently constructing a new WTP which has a design similar to the Project's model facility of Tanta El Teraa El Melahia. GHAPWASCO has recently started a dissemination of SOP activities to one of the seven, and the remaining six are also expected to benefit from the lessons and experiences from the El Melahia. The effectiveness of introducing SOP to the WTPs at the early stage of their operations was also mentioned by the C/P.
- GHAPWASCO's initiative to spread NRW activities nation-wide:** GHAPWASCO has taken its own initiative to disseminate the NRW activities nation-wide, through hosting a Special Workshop for NRW Reduction Activity for Nationwide Dissemination in September 2012. The workshop is a good example of cooperation between an AC such as GHAPWASCO and the private companies who co-hosted it, where GHAPWASCO could present their outcomes from this Project and the private companies, their NRW equipment.
- Dissemination of knowledge to Technical Water School in Minufia:** the dissemination of knowledge of this Project is taking place not only among the current AC staff, but also among the prospective staff currently studying at the Technical Water School (TWS) in Minufia. TWS is a specialised vocational school located in the governorates of Cairo, Beheira, Beni Suef, and Minufia to train the candidates of professionals to work in water and wastewater management. At the TWS in Minufia, the MCWW's NRW team serves as a lecturer on the leak detection where the knowledge and equipment from the Project have been utilised for demonstration. The evaluation team counts this effort as an impacts on human development outside of the Project.

### 3.5 Sustainability: RELATIVELY HIGH

The sustainability of this Project is evaluated as relatively high.

Sustainability was assessed against 1) whether the national/sector policy framework is in favour of SOP/NRW/WDM activities in the future, 2) whether the organizational structure is in place to continue the Project activities, 3) whether the skills of the trained AC staff are sufficient to take leadership in future activities, and 4) whether sufficient budget for future activities are likely to be allocated.

- Favourable national/sector policies:** the national policies framework to support the future activities appears solid. Given the Egypt's pledge for UN MDG, the importance given to ensuring the quality and quantity of water supply in Egypt is uncontested (see "Relevance" section); while still a draft, the country's the next 10-year plan of "Strategic Framework for Economic and Social Development plan Until year 2022" provides policy support for the improvement of water use efficiency and the water use rationalization, as part of its Natural Resource Management Strategy. The role of HCWW and its ACs as a main water supplier to implement these national water policies will remain unchanged for the foreseeable future.
- Organizational structure for future activities:** the organizational structure at each ACs is already in place to continue future activities. There are SOP and NRW units under General Department for Water and Technical Support Sector at GHAPWASCO, departments for SOP and NRW at MCWW, and WDM unit under the Information Center and Decision Strengthen Sector at SHAPWASCO. The activities of the Project is an integral part of the work of these departments as well as for other staff involved in this Project, and basic activities are expected to continue. At branch level, both GHAPWASCO and MCWW assigned staff to implement 5-year Plan for NRW activities, which are already being realised. To what extent the future activities will actually be implemented under this framework, depends highly on the commitment of each organization as well as the availability of finance (see also below for discussion on finance). Some stakeholders feel that more inclusion of branch managers could have ensured their understanding and cooperation for the efficient implementation of the 5-year plan for NRW.
- Skills of the AC staff:** on the NRW and SOP activities, the skills of the trained AC staff are deemed sufficient, on the basis of the evaluation by the Japanese and local experts (see the achievement of Output Indicators 2.a and 3.a). The fact that the C/Ps are already initiating these activities by their own in the areas/facilities outside of this Project, also supports their observation. The capacity for SHAPWASCO to undertake the WDM activities is yet to be evaluated, for which some more monitoring time is required.
- Finance:** The prospect for the Project activities to gain sufficient future financing is somewhat uncertain. On one hand, all three ACs suffers from low cost recovery and resultant budget deficit. On the other hand, the experience of the Project indicates that the budget for the investment in certain infrastructure (such as the equipment for NRW and the renovation of SWTP/IMRP to prepare for SOP activities) can be made available, as long as there is a commitment from the management. According to the interviews with the Project stakeholders, funding for renovation of facilities can be made available from either each governorate or NOPWASD on ad-hoc basis. There are also donor financing available for SOP and NRW activities (see "2.4. Implementation Process").



Key challenge for sustainability will be therefore to ensure that these organizational framework, skills and available finance are utilised to continue the activities, for which the commitment from the ACs and branch-level management is crucial. To extract such commitment, there is a need for HCWW to strengthen the supervision to and cooperation with ACs and relevant authorities, and for the Project to present the effect of their activities to raise stakeholders' awareness. See "4.4 Recommendations" for suggested actions to address these issues.



#### 4. RECOMMENDATIONS

##### 4.1 Recommendations for the actions to be taken before the end of the Project

- (1) To ensure the achievement of Output 4(WDM), JICA will start necessary preparation to extend the project period;
- (2) The Project will summarise, in its Final Report, the economic effect of the NRW/SOP activities undertaken during this Project, and share the results with the Egyptian counterparts;
- (3) The Project will highlight in its Final Report the findings on the design of the facilities from the viewpoint of facility operators.

##### 4.2 Recommendations for the actions to be taken after the Project

- (1) HCWW will share the summary of the findings on the facility design mentioned in 1.(3), with the NOPWASD stakeholders in charge of design and construction supervision of these facilities. HCWW will also make its utmost efforts to promote increased information-sharing between the contractors and the operators, through such actions as hosting an opportunity for the NOPWASD stakeholders to visit the facilities that participated in this Project.
- (2) To sustain and disseminate the outcome of this Project, GHAPWASCO and MCWW undertake the following:
  - 1) For NRW, ensure that the "5-year Plan for Non-revenue Water Reduction" formulated in this Project will be implemented. The two ACs will also undertake the following measures to facilitate the NRW activities.
    - Maintain the current staff allocation and implementation arrangement for NRW(both at HQ and at Markaz branches), and increase the collaboration with each branch;
    - Provide to the NRW teams the vehicle(s) and equipment necessary for NRW activities.
  - 2) For SOP, ensure the implementation of SOP dissemination plans created in this Project. The two ACs also regularly undertake the following actions to facilitate the implementation of the plans.
    - Purchase of spare parts necessary for the O&M at WTP and IMRP;
    - Calibration of instrumentation devices.
- (3) To achieve the Super Goal of this Project, GHAPWASCO, MCWW, and SHAPWASCO will extend the project activities also to other Governorates, upon the completion of the dissemination within their Governorates.



# ANNEX 1: Project Design Matrix (PDM3)

**Project Name** : The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities, in Nile Delta Area  
**Project Site** : Sharkiya Governorate, Gharbia Governorate, Minufia Governorate (Nile Delta Area)



Dated October 30, 2013

**Duration** : FY2011-FY2014

Staff of SHAPWASCO, GHAPWASCO, MCWW

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<b>[Super Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area	Performance Indicators (PIs) in the fields of management capacity of operation and maintenance are improved in Nile Delta Area	Quarterly Reports of all water supply companies in Nile Delta Area submitted to HCWW	
<b>[Overall Goal]</b> Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates	PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	Central and local government budget for development of water supply facilities is allocated appropriately
<b>[Project Purpose]</b> Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates	PIs (*1) in the fields of management capacity of operation and maintenance are improved at the model areas/facilities	Quarterly reports of SHAPWASCO, GHAPWASCO, MCWW	
<b>[Output]</b> 1) Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened	a. More than 3 members each of SOP/NRW teams in SHAPWASCO · GHAPWASCO · MCWW are approved as trainers by Steering Committee b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team	a. Certification of Training b. Reports of workshops	Employees who received trainings by the Project will continuously work for SHAPWASCO, GHAPWASCO, MCWW  Personnel transfer of executive management will not affect the implementation of the Project
2) Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates	a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation b. The model facilities are operated and maintained based on SOP c. Improvement of PIs for the model facilities are evaluated based on SOP	a, b, c. Project Progress Reports	
3) The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates	a. More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation b. Water balance analysis is conducted properly for the 3 model areas c. 100% of detected leakage is repaired at the model area	a, b, c. Project Progress Reports	
4) The water distribution management capacity is improved in Sharkiya Governorate as an advanced model	a. Water distribution is managed based on SOP at the model areas b. Issues on water distribution capacity are reported to top management of SHAPWASCO	a, b. Project Progress Reports	
0) The project is managed and coordinated properly	a. Agreement on the coordination among SHAPWASCO · GHAPWASCO · MCWW is prepared b. Project activities are regularly monitored based on PO/APO	a. Agreement Document b. Project Progress Reports	

\*1 PIs  
 SOP: a. Energy consumption per m<sup>3</sup> of water production (kWh/m<sup>3</sup>) b. Amount of alum sulfate/ chlorine / potassium permanganate used per m<sup>3</sup> of water production (g/m<sup>3</sup>)  
 c. Ratio of effective utilization of raw water (%)  
 NRW: a. NRW ratio (%) b. Reduction ratio of NRW (%)  
 WDM: a. Number of complaints per 1000 connections on water suspension and low pressure b. Ratio of inappropriate pressure of water distribution (%) c. Ratio of public opinion mentioning enough pressure (%)

- (4) To sustain the skills and motivation of the staff involved in this Project, the GHAPWASCO and MCWW will take initiatives to promote the sharing of experiences and outputs of this Project. An example of possible actions they could take is to utilize the network fostered in this Project to organize joint seminars, where the operational-level staff will be given opportunities to share their experiences with other ACs.
- (5) To ensure correct data collection and improve the water fee collection rate, HCWW, GHAPWASCO, MCWW, and SHAPWASCO will make utmost efforts to sensitize the water users on the need for regular replacement of customer water meters. The four organizations also discuss concrete measures to promote the replacement of the meters by the users. HCWW should consider the house connections (including the meters) to be the property of the ACs instead of the customers, to ensure the maintenance and replacement of these meters.
- (6) After confirming the effects of Output 4 activities, SHAPWASCO will apply the WDM activities to other water distribution facilities within Sharkiya governorate which were not covered in this Project. In so doing, SHAPWASCO will ensure not only the dissemination of the remote monitoring system, but also of the water distribution management capacity to address the issues identified through the monitoring. With precise data acquired through monitoring, SHAPWASCO is recommended to analyse the present conditions of water distribution in Zagazig, and establish countermeasures to solve the problems such as low service pressure and intermittent water supply.
- (7) SHAPWASCO will ensure the proper maintenance and management of the remote monitoring system provided by the Project. In so doing, SHAPWASCO will establish a maintenance agreement with the approval firm familiar with this system, to address any problem that may arise with the software, and undertake upgrading of the software in cooperation with the supplier. SHAPWASCO will also secure the budget to address any problem relating to the system that cannot be covered by the supplier.





**ANNEX 4. List of Seminars, Workshops and Training**

Date	Title	Program	Attendance	Trainer
April 2011 – December 2011				
8-9 June 2011, 10:00-13:00	1st Mini Seminar for SOP Activity	<ul style="list-style-type: none"> <li>- Introduce the SOP activity of SHAPWASCO Project (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager, Project co-manager</li> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
18-19 June 2011, 10:00-13:00	2nd Mini Seminar for NRW reduction Activity	<ul style="list-style-type: none"> <li>- Introduce the NRW reduction activity of SHAPWASCO Project (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
2-3 July 2011, 10:00-14:30	3rd Mini Seminar on Selection Criteria for SOP and NRW	<ul style="list-style-type: none"> <li>- Discussion of selection criteria for Model Facility and Pilot Area (Presented by C/P Team of SHAPWASCO)</li> <li>- Difference between NRW and UFW (Presented by C/P Team of SHAPWASCO)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
13 July 2011, 10:30-12:30	Internal Workshop for Well Monitoring Activity	<ul style="list-style-type: none"> <li>- Method, contents and importance of the well monitoring and experience of implementation of well monitoring (Presented by C/P Team SHAPWASCO)</li> <li>- Usage of the result of well monitoring (ditto)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
21 September 2011, 9:30-12:30	Internal Workshop for Water Distribution Management (WDM)	<ul style="list-style-type: none"> <li>- Explanation of the Project in General (Presented by JICA Expert Team)</li> <li>- General Idea and Policy for WDM Activity in the Project (Presented by JICA Expert Team)</li> <li>- Outline of Action Plan for WDM (Presented by JICA Expert Team)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of SHAPWASCO</li> <li>• Engineers and operators in SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO

ANNEX 4 - 1/5

ANNEX 3: Schedule of Terminal Evaluation

Date	Evaluation Consultant		Team Leader/Cooperation Planning	
	Activity	Stay	Activity	Stay
1 12-Feb	Dept from Tokyo			
2 13-Feb	AM: Arrival at Cairo PM: 14:00-15:00 Meeting in JICA Office Move to Tanta	Tanta		
3 14-Feb	Documentation	Tanta		
4 15-Feb	AM: 10:00-13:00 Visit GHAPWASCO SOP site (Samanoud) and Meeting with SOP site members PM: 14:00-16:00 Meeting with Experts and Facilitators	Tanta		
5 16-Feb	AM: 9:00-11:30 Visit GHAPWASCO NRW site (Santa) and meeting with NRW C/P members PM: 13:00-13:30 Meeting with IWSP 14:30-15:30 Meeting with GHAPWASCO Chairman C/P (SOP & NRW) members PM: 12:30-14:00 Visit SOP site (Shebin)	Tanta		
6 17-Feb	AM: 9:30-12:30 Meeting with MCWW Chairman and then with C/P (SOP & NRW) members PM: 12:30-14:00 Visit SOP site (Shebin)	Tanta		
7 18-Feb	AM: 10:00-13:00 Meeting with SHAPWASCO Chairman and then with C/P (WDM) members PM: 13:00-15:00 Visit WDM sites	Tanta		
8 19-Feb	AM: 10:00-13:00 Visit GHAPWASCO SOP site (Mahalet Merhoom) and MCWW NRW site (Barket El Sab'a) PM: Move to Cairo	Cairo		
9 20-Feb	Documentation	Cairo		
10 21-Feb	Documentation	Cairo	Dept from Tokyo	
11 22-Feb	AM: 15:00-17:00 Internal team meeting at Cairo	Cairo	AM: Arrival at Cairo PM: Internal team meeting	Cairo
12 23-Feb	AM: 9:00-11:00 Courtesy call to HCWW and Meeting in HCWW PM: 13:00-14:00 Meeting in JICA Office 15:00-16:00 Meeting with GIZ	Cairo	Same as left	Cairo
13 24-Feb	AM: 10:00-15:00 Progress confirmation for WDM with SHAPWASCO Chairman and WDM members Documentation and Internal team meeting at Cairo	Cairo	Same as left	Cairo
14 25-Feb	Documentation and Internal team meeting at Cairo	Cairo	Same as left	Cairo
15 26-Feb	AM: Documentation PM: 16:30-18:30 Meeting in HCWW	Cairo	Same as left	Cairo
16 27-Feb	Spare day for site visit	Cairo	Same as left	Cairo
17 28-Feb	Documentation	Cairo	Same as left	Cairo
18 1-Mar	11:00-12:30 Visit MCWW SOP site (Sadat) and meeting with SOP site members 13:00-14:00 Visit MCWW SOP site (Gezy) and meeting with SOP site members	Cairo	Same as left	Cairo
19 2-Mar	AM: 11:00-14:00 JCC PM: 16:00-17:00 Meeting in JICA Office if necessary	Cairo	Same as left	Cairo
20 3-Mar	AM: 10:00-11:00 Meeting in JICA Office PM: 14:00-15:00 Meeting in Embassy of Japan Dept from Cairo	Cairo	Same as left	Cairo
21 4-Mar	PM: Arrival at Tokyo		Same as left	

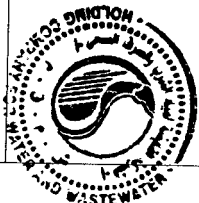
添付8-19

Date	Title	Program	Attendance	Trainer
10 October 2011, 10:00-14:30	Site Tour for SOP and NRW Reduction Activity in SHAPWASCO	<ul style="list-style-type: none"> <li>- Briefing of site tour (Presented by C/P Team of SHAPWASCO)</li> <li>- Site tour in Zagaizig WTP (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour for existing chamber for minimum night flow survey (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour in Hehya Training Yard (Arranged by C/P Team of SHAPWASCO)</li> <li>- Site tour in Hehya WTP (Arranged by C/P Team of SHAPWASCO)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	SHAPWASCO
19-20 & 22-23, October 2011, 10:00-14:30	Conducting of Training for NRW Reduction	<ul style="list-style-type: none"> <li>- Class room training</li> <li>- Learning principle of flow measurement, method of minimum night flow survey, etc.</li> <li>- Field training</li> <li>- Learning usage of flow meter and water leak detector, acoustic rod.</li> <li>- Class room training</li> <li>- Learning method of data transfer from flow meter to computer.</li> <li>- Field training</li> <li>- Learning usage of flow meter and water leak detector, acoustic rod.</li> </ul>	<p>[GHAPWASCO]</p> <p>Mr. Ahmed El Said Rabea Mr. Omar Mohamed Salah El Din Mr. Abdel Aal Ali Mr. Hamdy Yasin Reraz Mr. Samy Mohamed Abdel Gawad Mr. Nasr El Din Mohamed Mr. Ahmed Abdel Salam Hemeda Mr. Abdel Azim Goda Abo Khimar Mr. Ali Ibrahim Maary Mr. Mohamed Hamid Abdo Mr. Arafah Mostafa El Bahnasy Mr. Mosaad El Shiekh</p> <p>[MCWW]</p> <p>Mr. Mr. Ahmed Radwan Mr. Mohamed Sha'ey Mr. Mohamed Fawzy Mr. Metwaly Elsayed Mr. Ragab Youssif Hegazi Mr. Amin Abdelhakim Mr. Mohamed Sobhi Mr. Sadek Abdelati Mr. Abdelsattar Hossin Mr. Mohamed Eldib Mr. Mohamed Nagib</p> <p>JICA Expert Team</p>	<p>[SHAPWASCO]</p> <p>Mr. Alaa El Din Mohamed Mr. Saaied Mohamed Mohamed Atia Mr. Walaa Mohamed Ali Mr. Walla Hamdy Maahmoud Mr. Tamer Wael Abdel Hady</p>
26-30 October 2011, 10:00-12:30	SAUC Workshop for Action Plan NRW reduction Activity	<ul style="list-style-type: none"> <li>- Purpose and Output of the Project (Presented by JICA Expert Team)</li> <li>- Project Period (Presented by JICA Expert Team)</li> <li>- Contents of Action Plan (Presented by JICA Expert Team)</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> </ul>	SHAPWASCO



ANNEX 4 - 3/5

Date	Title	Program	Attendance	Trainer
		<ul style="list-style-type: none"> <li>- Activities done so far and Selection of Pilot Area for WDM Activity by WDM Team of SHAPWASCO (Presented by C/P Team of SHAPWASCO)</li> </ul>		
27 September 2011, 12:00-13:50	Kicking Off Seminar	<ul style="list-style-type: none"> <li>- Current JICA Project and background of Seminar (Presented by Head of Sector, HCWW)</li> <li>- Experience and Plan of SOP activities (Presented by C/P Team of GHAPWASCO, MCWW and SHAPWASCO)</li> <li>- Experience and Plan of NRW reduction activities (Presented by C/P Team of GHAPWASCO, MCWW and SHAPWASCO)</li> <li>- Plan of Water Distribution Management (WDM) activities (Presented by C/P Team of SHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Water companies under HCWW</li> <li>• Authorities related to water supply services in Egypt</li> <li>• Foreign aid organizations involved in water sectors in Egypt</li> <li>• Project manager, Project co-manager</li> <li>• C/P team of GHAPWASCO</li> <li>• Engineers and operators in GHAPWASCO</li> <li>• C/P team of MCWW</li> <li>• Engineers and operators in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA Expert Team</li> </ul>	Representative of SHAPWASCO, GHAPWASCO and MCWW
2-5 October 2011, 10:00-14:30	Training of Trainers (TOT)	<ul style="list-style-type: none"> <li>- Differentiate between training and facilitations.</li> <li>- Identify theories and techniques of adult learning.</li> <li>- Identify training methods and techniques.</li> <li>- Prepare lectures.</li> <li>- Make speech.</li> <li>- Prepare and conduct presentation.</li> <li>- Use Audiovisual Aids effectively.</li> <li>- Work in Group</li> </ul>	<p>[SHAPWASCO]</p> <p>Mr. Alaa El Din Talib Mr. Saeed Mohamed Attia Ms. Walaa Mohamed Ms. Walaa Hamdy Mr. Tamer Wael Mr. Salama Mohamed Mr. El Sayed Mostafa Mr. Gamal Abd El Hameed Mr. Abd El Shafee Abd Al Aziz Ms. Heba Mahmoud Mr. Ahmed Saeed Mr. Ahmed Maher Mr. Mostafa Ibrahim Mr. Mohamed Atef Mr. Abd El Raheem Mohamed Mr. Mohamed Salah El Din Ms. Aliaa El Sayed Hameed Ms. Marwa Mahmoud Khater Ms. Nancy Metwaly Taha</p> <p>JICA Expert Team</p>	Local Consultant Integrated Solutions for Consultations Training



ANNEX 4 - 2/5  
添付8-20



Date	Title	Program	Attendance	Trainer
		(Presented by C/P Team of GHAPWASCO, MCWW and SHAPWASCO) - Discussion - Comments by SHAPWASCO	• JICA Expert Team	
2 September 2012, 10:00-12:30	Internal Workshop for NRW reduction Activity in GHAPWASCO	- Presentation on Progress MNF Survey (Presented by C/P Team of GHAPWASCO, MCWW) - Discussion	• Authorities related to water supply services in Gharbia • C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • JICA Expert Team	JICA Expert Team
27 September 2012, 10:00-14:30	Site Tour for SOP Activity in MCWW	- Briefing of site tour (Presented by C/P Team of MCWW) - Site tour in Sadat WTP (Presented by C/P Team of MCWW) - Discussion	• C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • C/P team of MCWW • Engineers and operators in MCWW • JICA Expert Team	Each other by participants
30 September 2012, 10:00-12:30	Special Workshop for NRW Reduction Activity in GHAPWASCO	- Introduce the NRW reduction Activity (Presented by C/P Team of GHAPWASCO) - Discussion	• Authorities related to water supply services in Egypt • C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • JICA Expert Team • Utility & Positioning Systems Ltd. (Private Company)	GHAPWASCO
14-18 October 2012	Special Workshop (High rank exchange of opinion with Water Authority of Jordan)	- Presentation of NRW reduction activities in Jordan as well as achievement of JICA technical assistance - Presentation of SOP and NRW reduction activities in Egypt as well as achievement of JICA technical assistance - Site observation in Jordan - Opinion exchange	• Dr. Salah Bayoumi, Head of Project Sector, HCWW • Mr. Shaker Abdelfattah, Head of Project Sector, SHAPWASCO • Mr. Adel Attia, Head of O&M Sector • Mr. Ayman Bassuni, Head of O&M Sector	Training each other by the participants, including the Jordanian side
14 November 2012, 11:00-14:00	3ACs Workshop in SHAPWASCO for SOP and NRW Reduction Activity	- Progress of NRW reduction Activity (Presented by C/P Team of GHAPWASCO, MCWW) - Progress of SOP Activity (Presented by C/P Team of GHAPWASCO, MCWW) - Discussion - Comments by SHAPWASCO	• C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • C/P team of MCWW • Engineers and operators in MCWW • C/P team of SHAPWASCO • JICA Expert Team	SHAPWASCO



ANNEX 4 - 5/5

Date	Title	Program	Attendance	Trainer
		- Flow Chart of Each Action (Presented by JICA Expert Team) - Model Markaz and Pilot Area (Presented by C/P Team of GHAPWASCO, MCWW) - Next Step (Explanation of Each Action) (Presented by C/P Team of GHAPWASCO, MCWW) - Schedule of NRW Activity (Presented by C/P Team of GHAPWASCO, MCWW) - NRW reduction Approach (Presented by JICA Expert Team)	• C/P team of SHAPWASCO • JICA Expert Team	
20 November 2011, 10:00-12:00	3ACs Workshop for Water Quality Management Activity	- What is Water Quality Management (Presented by C/P Team SHAPWASCO) - Case Study of Water Quality Management in SHAPWASCO (Presented by C/P Team SHAPWASCO) - Relationship between SOP and ISO (Presented by C/P Team GHAPWASCO) - Discussion	• C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • C/P team of MCWW • Engineers and operators in MCWW • C/P team of SHAPWASCO • JICA Expert Team	SHAPWASCO
<b>January 2012 – December 2012</b>				
7 March 2012, 12:00-15:00	3ACs Workshop for NRW reduction Activity in SHAPWASCO	<b>Minimum Night Flow (MNF) Determining</b> - Data logging and collect by Pressure logger - Data logging and collect by Flow meter logger <b>Leak Detection Survey</b> - Valve Acoustic Survey - Ground Surface Acoustic Survey - Leak Noise Correlation Survey	• C/P team of GHAPWASCO • C/P team of MCWW • JICA Expert Team	JICA Expert Team and each other of participants
25 March 2012, 12:00-15:00	Internal Workshop for NRW reduction Activity in GHAPWASCO	- Presentation on Meter Reading Survey (JICA Expert Team) - Site tour in Tanta - Discussion	• C/P team of GHAPWASCO • JICA Expert Team	JICA Expert Team
27 March 2012, 12:00-15:00	Internal Workshop for NRW reduction Activity in MCWW	- Presentation on Meter Reading Survey (JICA Expert Team) - Site tour in Shebin - Discussion	• C/P team of MCWW • JICA Expert Team	JICA Expert Team
22-24 April 2012, 10:00-14:30	3ACs Workshop for SOP Activity	- Presentation on Operation Records (Presented by C/P Team of GHAPWASCO, MCWW) - Presentation on Utilization & Management Methods of Operation Records (Presented by C/P Team of SHAPWASCO) - Presentation on Water Quality Management Method	• C/P team of GHAPWASCO • Engineers and operators in GHAPWASCO • C/P team of MCWW • Engineers and operators in MCWW • C/P team of SHAPWASCO	SHAPWASCO

ANNEX 4 - 4/5  
添付8-21

Date	Title	Program	Attendance	Trainer
30 September 2013, 10:00-14:00	Workshop for Five Year Plan for NRW Reduction Activity in GHAPWASCO	<ul style="list-style-type: none"> <li>- Progress of Five Year Plan for NRW reduction Activity (Presented by C/P Team of GHAPWASCO)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• NRW team of GHAPWASCO</li> <li>• NRW team of branches from GHAPWASCO</li> </ul>	GHAPWASCO
24 November 2013, 10:00-12:30	2 <sup>nd</sup> Workshop for Five Year Plan for NRW Reduction Activity in MCWW	<ul style="list-style-type: none"> <li>- Progress of Five Year Plan for NRW reduction Activity (Presented by C/P Team of MCWW)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• NRW team of MCWW</li> <li>• NRW team of branches from CWW</li> </ul>	MCWW



ANNEX 4 - 7/5

Date	Title	Program	Attendance	Trainer
22 November 2012, 10:00-15:00	Open Seminar	<ul style="list-style-type: none"> <li>- Current JICA Project and background of Seminar (Presented by Head of Sector, HCWW, HCWW and Chief Advisor, JICA expert team)</li> <li>- Interim results and Plan of SOP activities (presented by C/P team of GHAPWASCO and MCWW)</li> <li>- Interim results and plan of NRW reduction activities (presented by C/P team of GHAPWASCO and MCWW)</li> <li>- Interim results and plan of WDM activities (presented by C/P team of SHAPWASCO)</li> <li>- Motivational words by the Minister and Chairman of HCWW for the sustainability and dissemination to other companies.</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Minister of Water and Wastewater Utilities</li> <li>• Water companies in Nile Delta area under HCWW</li> <li>• Directors / Managers of HCWW</li> <li>• SHAPWASCO, GHAPWASCO and MCWW</li> <li>• Foreign aid organizations involved in water sectors in Egypt</li> <li>• JICA and JICA expert team</li> </ul>	Representative of SHAPWASCO, GHAPWASCO and MCWW
9 December 2012, 10:00-14:30	3ACs Workshop for SOP Activity (Water Quality)	<ul style="list-style-type: none"> <li>- Experiments of duplicate samples in SHAPWASCO laboratory.</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• C/P team in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA expert team</li> </ul>	SHAPWASCO
15 January 2013, 11:00-15:00	Leak Detection Training in SHAPWASCO	<ul style="list-style-type: none"> <li>- Leak detection survey using acoustic rod, ground microphone, and leak noise correlator (training by C/P members of GHAPWASCO and SHAPWASCO).</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• NRW team of GHAPWASCO</li> <li>• NRW team of branches from GHAPWASCO</li> <li>• NRW team of SHAPWASCO</li> <li>• JICA expert team</li> </ul>	SHAPWASCO
13 February 2013, 11:00-15:00	Leak Detection Training in SHAPWASCO	<ul style="list-style-type: none"> <li>- Leak detection survey using acoustic rod, ground microphone, and leak noise correlator (training by C/P members of MCWW and SHAPWASCO).</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• NRW team of MCWW</li> <li>• NRW team of branches from MCWW</li> <li>• NRW team of SHAPWASCO</li> <li>• JICA expert team</li> <li>• Staff members of Qalubya Water and Wastewater Company for observation and trial</li> </ul>	SHAPWASCO
2 June 2013, 10:00-14:00	3ACs Workshop for SOP Activity in MCWW	<ul style="list-style-type: none"> <li>- Interim results and Plan of SOP Activities (presented by C/P team of GHAPWASCO and MCWW)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• C/P team of GHAPWASCO</li> <li>• C/P team in MCWW</li> <li>• C/P team of SHAPWASCO</li> <li>• JICA expert team</li> </ul>	Representative of SHAPWASCO, GHAPWASCO and MCWW
	1 <sup>st</sup> Workshop for Five Year Plan for NRW Reduction Activity in MCWW	<ul style="list-style-type: none"> <li>- Progress of Five Year Plan for NRW reduction Activity (Presented by C/P Team of MCWW)</li> <li>- Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• NRW team of MCWW</li> <li>• NRW team of branches from CWW</li> </ul>	MCWW



ANNEX 4 - 6/5  
添付8-22

ANNEX 5:  
Results of Water Balance  
Analysis

Barket El Saba before

Water Distribution Volume	Authorized Consumption (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day)	Billed Metered Consumption (m <sup>3</sup> /day)	306.25	Sold Water	Revenue Water (RW) (m <sup>3</sup> /day)	Non Revenue Water (NRW) (m <sup>3</sup> /day)
			Metering Error (over registration) (m <sup>3</sup> /day)	-85.816		429.081 (72.9%)	
			Billed Unmetered Consumption (m <sup>3</sup> /day)	208.64		429.081 (72.9%)	
588.656 (m <sup>3</sup> /day) (100%)	Water Losses (m <sup>3</sup> /day)	Apparent Losses (m <sup>3</sup> /day)	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day)	Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0
			Unauthorized Consumption (m <sup>3</sup> /day)	0		15.361 (2.6%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	15.36		15.361 (2.6%)	
159.575 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day)	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day)	Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	144.214
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		144.214 (24.5%)	
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	144.21		144.214 (27.1%)	

Quesna before

Water Distribution Volume	Authorized Consumption (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day)	Billed Metered Consumption (m <sup>3</sup> /day)	300.59	Sold Water	Revenue Water (RW) (m <sup>3</sup> /day)	Non Revenue Water (NRW) (m <sup>3</sup> /day)
			Metering Error (over registration) (m <sup>3</sup> /day)	-109.64		348.073 (70.2%)	
			Billed Unmetered Consumption (m <sup>3</sup> /day)	157.13		348.073 (70.2%)	
495.838 (m <sup>3</sup> /day) (100%)	Water Losses (m <sup>3</sup> /day)	Apparent Losses (m <sup>3</sup> /day)	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day)	Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0
			Unauthorized Consumption (m <sup>3</sup> /day)	0		12.026 (2.4%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	12.03		12.026 (2.4%)	
147.764 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day)	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day)	Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	135.74
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		135.738 (27.4%)	
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	135.74		135.738 (29.8%)	

Barket El Saba after

Water Distribution Volume	Authorized Consumption (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day)	Billed Metered Consumption (m <sup>3</sup> /day)	351.07	Sold Water	Revenue Water (RW) (m <sup>3</sup> /day)	Non Revenue Water (NRW) (m <sup>3</sup> /day)
			Metering Error (over registration) (m <sup>3</sup> /day)	-104.26		522.651 (79.9%)	
			Billed Unmetered Consumption (m <sup>3</sup> /day)	275.84		522.651 (79.9%)	
654.360 (m <sup>3</sup> /day) (100%)	Water Losses (m <sup>3</sup> /day)	Apparent Losses (m <sup>3</sup> /day)	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day)	Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0
			Unauthorized Consumption (m <sup>3</sup> /day)	0		15.361 (2.3%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	15.36		15.361 (2.3%)	
131.709 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day)	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day)	Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	116.35
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		116.348 (17.8%)	
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	116.35		116.348 (17.8%)	

Quesna after

Water Distribution Volume	Authorized Consumption (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day)	Billed Metered Consumption (m <sup>3</sup> /day)	259.12	Sold Water	Revenue Water (RW) (m <sup>3</sup> /day)	Non Revenue Water (NRW) (m <sup>3</sup> /day)
			Metering Error (over registration) (m <sup>3</sup> /day)	-108.45		344.277 (77.5%)	
			Billed Unmetered Consumption (m <sup>3</sup> /day)	193.60		344.277 (77.5%)	
444.100 (m <sup>3</sup> /day) (100%)	Water Losses (m <sup>3</sup> /day)	Apparent Losses (m <sup>3</sup> /day)	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day)	Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0
			Unauthorized Consumption (m <sup>3</sup> /day)	0		12.026 (2.7%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	12.03		12.026 (2.7%)	
99.823 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day)	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day)	Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	87.80
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		87.797 (19.8%)	
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	87.80		87.797 (19.8%)	

Shebeen before


Water Distribution Volume (m <sup>3</sup> /day) 347.149 (100%)	Authorized Consumption (m <sup>3</sup> /day) 278.999	Billed Authorized Consumption (m <sup>3</sup> /day) 278.999	Billed Metered Consumption (m <sup>3</sup> /day)	288.04	Sold Water (m <sup>3</sup> /day) 278.999 (80.4%)	Revenue Water (RW) (m <sup>3</sup> /day) 278.999 (80.4%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-87.885		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	78.85		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day) 15.361 (4.4%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 68.150 (19.6%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
	Water Losses (m <sup>3</sup> /day) 68.150	Apparent Losses (m <sup>3</sup> /day) 15.361	Unauthorized Consumption (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day) 52.789 (15.2%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	15.361		
		Real Losses (m <sup>3</sup> /day) 52.789	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0	52.789 (15.2%)	
	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)		0			
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	52.789		

Zefta before

Water Distribution Volume (m <sup>3</sup> /day) 198.646 (100%)	Authorized Consumption (m <sup>3</sup> /day) 156.585	Billed Authorized Consumption (m <sup>3</sup> /day) 156.585	Billed Metered Consumption (m <sup>3</sup> /day)	188.89	Sold Water (m <sup>3</sup> /day) 156.585 (78.8%)	Revenue Water (RW) (m <sup>3</sup> /day) 156.585 (78.8%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-38.26		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	5.96		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day) 7.405 (3.7%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 42.061 (21.2%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
	Water Losses (m <sup>3</sup> /day) 42.061	Apparent Losses (m <sup>3</sup> /day) 7.405	Unauthorized Consumption (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day) 34.656 (17.4%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	7.41		
		Real Losses (m <sup>3</sup> /day) 34.656	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0	34.656 (17.4%)	
	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)		0			
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	34.66		


添付8-24

Shebeen after



Water Distribution Volume (m <sup>3</sup> /day) 356.90 (100%)	Authorized Consumption (m <sup>3</sup> /day) 298.06	Billed Authorized Consumption (m <sup>3</sup> /day) 298.06	Billed Metered Consumption (m <sup>3</sup> /day)	293.1	Sold Water (m <sup>3</sup> /day) 298.06 (83.5%)	Revenue Water (RW) (m <sup>3</sup> /day) 298.06 (83.5%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-93.888		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	98.85		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day) 15.361 (4.3%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 58.85 (16.5%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
	Water Losses (m <sup>3</sup> /day) 58.85	Apparent Losses (m <sup>3</sup> /day) 15.361	Unauthorized Consumption (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day) 43.49 (12.2%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	15.361		
		Real Losses (m <sup>3</sup> /day) 43.49	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0	43.49 (12.2%)	
	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)		0			
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	43.485		

Zefta after



Water Distribution Volume (m <sup>3</sup> /day) 212.315 (100%)	Authorized Consumption (m <sup>3</sup> /day) 167.694	Billed Authorized Consumption (m <sup>3</sup> /day) 167.694	Billed Metered Consumption (m <sup>3</sup> /day)	185.62	Sold Water (m <sup>3</sup> /day) 167.694 (79.0%)	Revenue Water (RW) (m <sup>3</sup> /day) 167.694 (79.0%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-19.609		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	1.68		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss (m <sup>3</sup> /day) 7.405 (3.5%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 44.621 (21.0%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
	Water Losses (m <sup>3</sup> /day) 44.621	Apparent Losses (m <sup>3</sup> /day) 7.405	Unauthorized Consumption (m <sup>3</sup> /day)	0	Physical Loss (m <sup>3</sup> /day) 37.216 (17.5%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	7.41		
		Real Losses (m <sup>3</sup> /day) 37.216	Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0	37.216 (17.5%)	
	Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)		0			
			Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	37.22		

Mahala before


Water Distribution Volume 354.544 (m <sup>3</sup> /day) (100%)	Authorized Consumption 258.370 (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day) 258.370	Billed Metered Consumption (m <sup>3</sup> /day)	218.50	Sold Water 258.370 (m <sup>3</sup> /day) (72.9%)	Revenue Water (RW) (m <sup>3</sup> /day) 258.370 (72.9%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-85.26		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	125.13		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss 6.946 (m <sup>3</sup> /day) (2.0%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 96.174 (27.1%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
		Apparent Losses (m <sup>3</sup> /day)	6.946			
	Water Losses 96.174 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day) 89.228	Unauthorized Consumption (m <sup>3</sup> /day)	0	Physical Loss 89.228 (m <sup>3</sup> /day) (25.2%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	6.95		
			Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0		
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		
		Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	89.23			

Tanta Before

Water Distribution Volume 359.474 (m <sup>3</sup> /day) (100%)	Authorized Consumption 215.237 (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day) 215.237	Billed Metered Consumption (m <sup>3</sup> /day)	150.67	Sold Water 215.2371429 (m <sup>3</sup> /day) (59.9%)	Revenue Water (RW) (m <sup>3</sup> /day) 215.237 (59.9%)
			Metering Error (over registration) (m <sup>3</sup> /day)	0		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	64.571		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss 15.54803896 (m <sup>3</sup> /day) (4.3%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 144.237 (40.1%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
		Apparent Losses (m <sup>3</sup> /day)	8.48			
	Water Losses 144.237 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day) 128.689	Unauthorized Consumption (m <sup>3</sup> /day)	8.48	Physical Loss 128.6888182 (m <sup>3</sup> /day) (35.8%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	7.07		
			Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0		
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		
		Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	128.69			


添付8-25

Mahala after



Water Distribution Volume 337.304 (m <sup>3</sup> /day) (100%)	Authorized Consumption 263.030 (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day) 263.030	Billed Metered Consumption (m <sup>3</sup> /day)	209.34	Sold Water 263.030 (m <sup>3</sup> /day) (78.0%)	Revenue Water (RW) (m <sup>3</sup> /day) 263.030 (78.0%)
			Metering Error (over registration) (m <sup>3</sup> /day)	-86.80		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	140.49		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss 10.607 (m <sup>3</sup> /day) (3.1%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 74.274 (22.0%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
		Apparent Losses (m <sup>3</sup> /day)	3.72			
	Water Losses 74.274 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day) 63.667	Unauthorized Consumption (m <sup>3</sup> /day)	3.72	Physical Loss 63.667 (m <sup>3</sup> /day) (18.9%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	6.89		
			Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0		
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		
		Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	63.67			

Tanta after

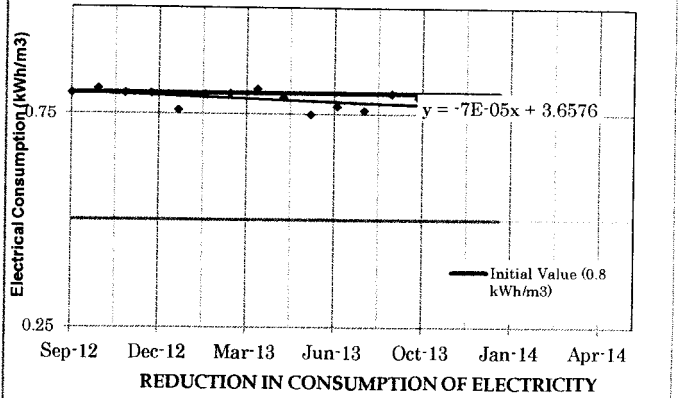
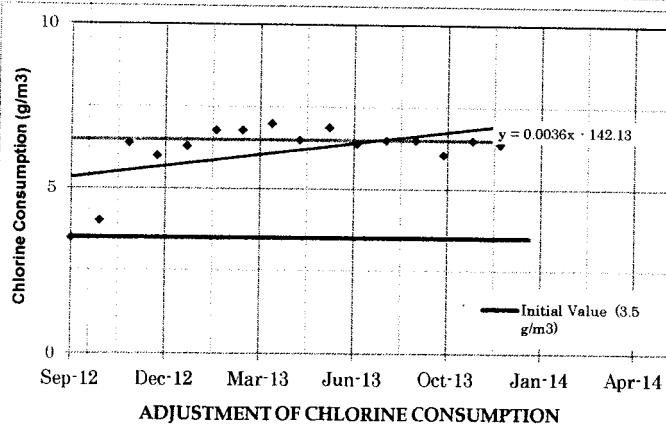
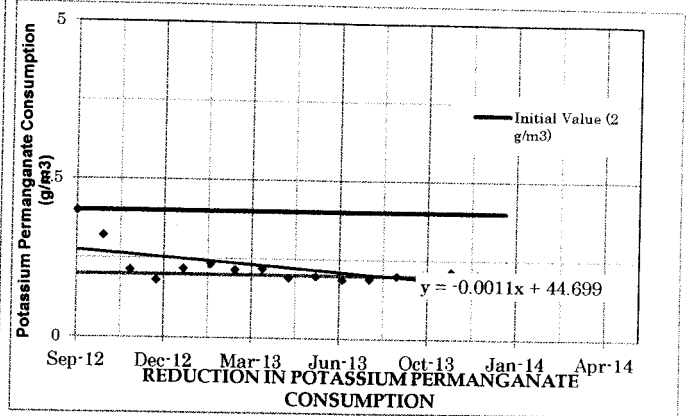
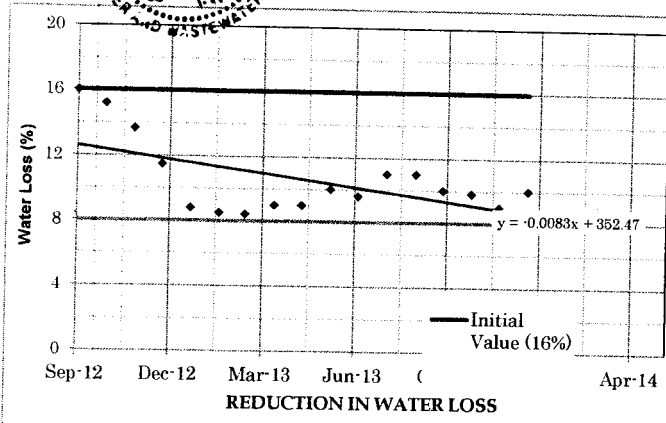


Water Distribution Volume 280.102 (m <sup>3</sup> /day) (100%)	Authorized Consumption 210.810 (m <sup>3</sup> /day)	Billed Authorized Consumption (m <sup>3</sup> /day) 210.810	Billed Metered Consumption (m <sup>3</sup> /day)	147.57	Sold Water 210.810 (m <sup>3</sup> /day) (75.3%)	Revenue Water (RW) (m <sup>3</sup> /day) 210.810 (75.3%)
			Metering Error (over registration) (m <sup>3</sup> /day)	0		
			Billed Unmetered Consumption (m <sup>3</sup> /day)	63.24		
	Unbilled Authorized Consumption (m <sup>3</sup> /day) 0	Unbilled Metered Consumption (m <sup>3</sup> /day)	0	Commercial Loss 10.2631 (m <sup>3</sup> /day) (3.7%)	Non Revenue Water (NRW) (m <sup>3</sup> /day) 69.292 (24.7%)	
		Unbilled Unmetered Consumption (m <sup>3</sup> /day)	0			
		Apparent Losses (m <sup>3</sup> /day)	3.19			
	Water Losses 69.292 (m <sup>3</sup> /day)	Real Losses (m <sup>3</sup> /day) 59.029	Unauthorized Consumption (m <sup>3</sup> /day)	3.19	Physical Loss 59.029 (m <sup>3</sup> /day) (21.1%)	
			Metering Inaccuracies (m <sup>3</sup> /day)	7.07		
			Leakage on Transmission and/or Distribution Mains (m <sup>3</sup> /day)	0		
			Leakage and Overflows at Utility's Storage Tanks (m <sup>3</sup> /day)	0		
		Leakage on Service Connections up to point of Customer metering (m <sup>3</sup> /day)	59.03			



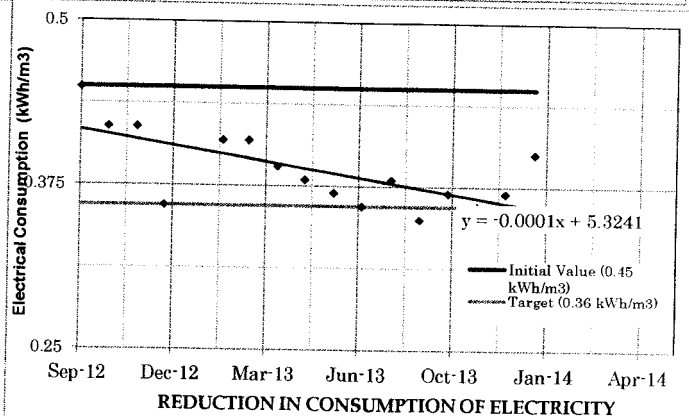
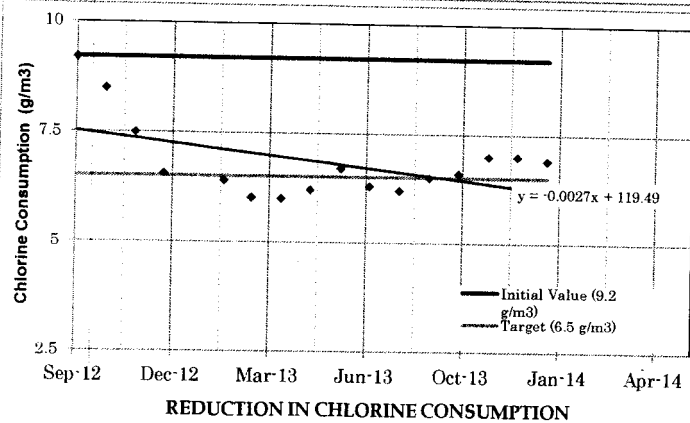
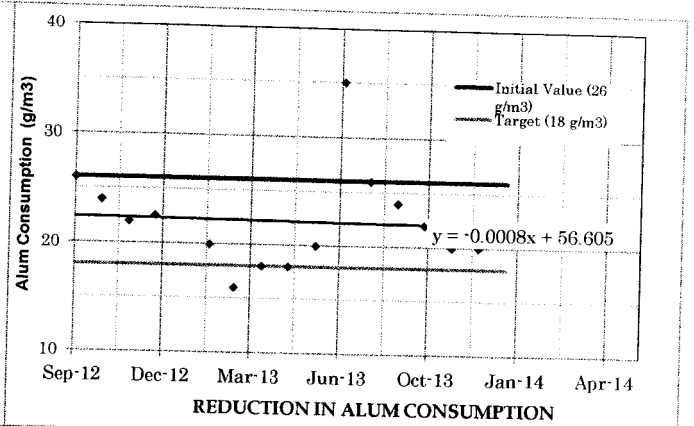
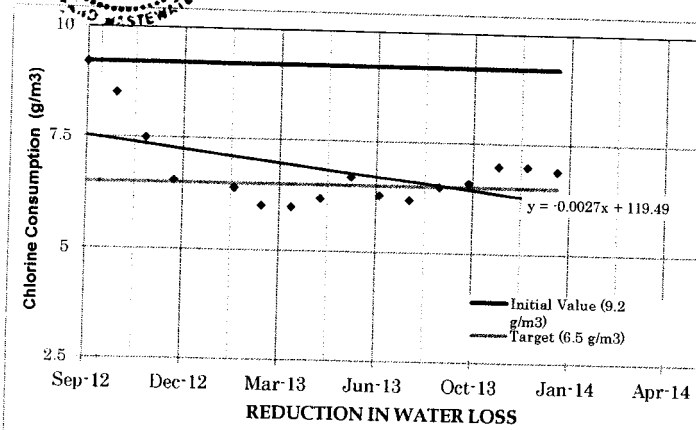
ANNEX 6-1: Progress in Attaining PIs for SOP

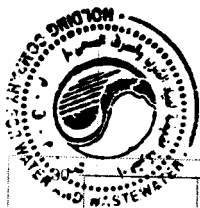
(2) Gezy - MCWW



ANNEX 6-1: Progress in Attaining PIs for SOP

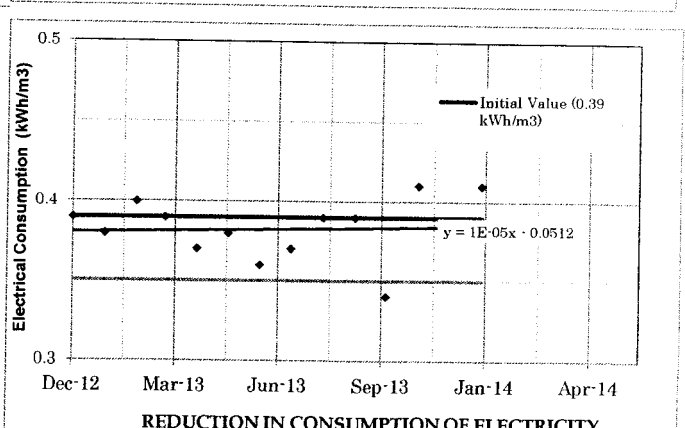
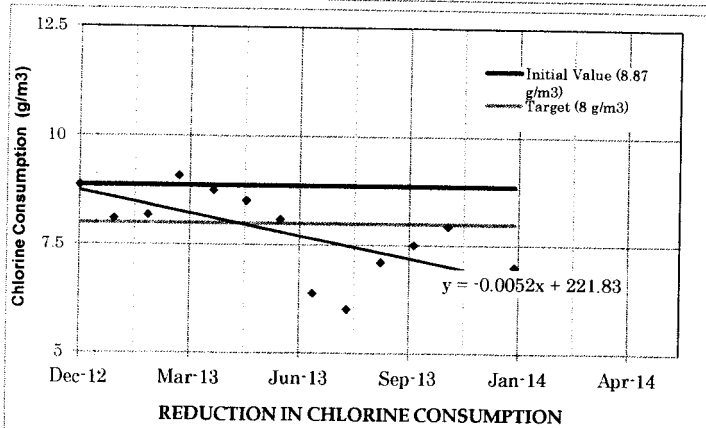
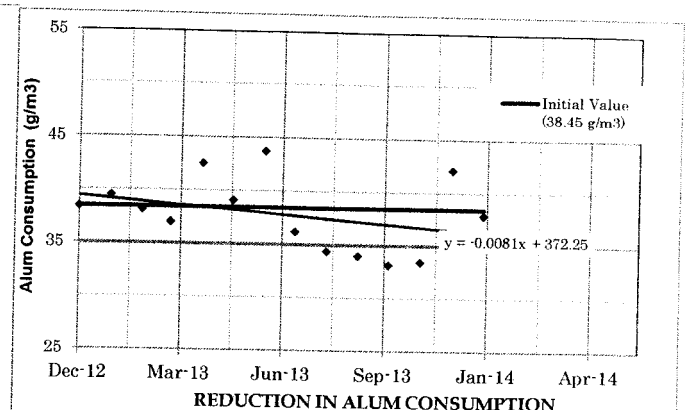
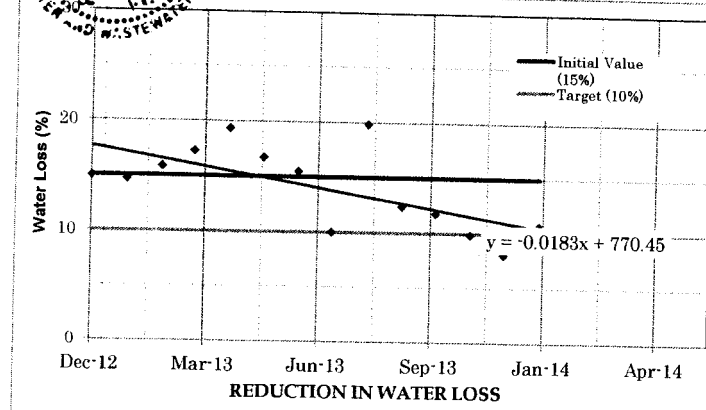
(1) El Sadat - MCWW





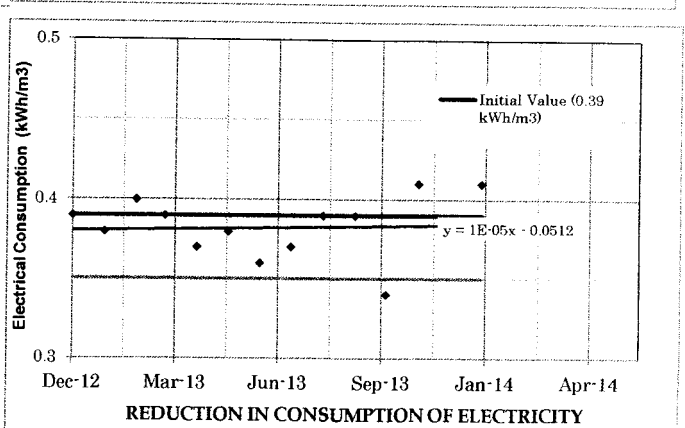
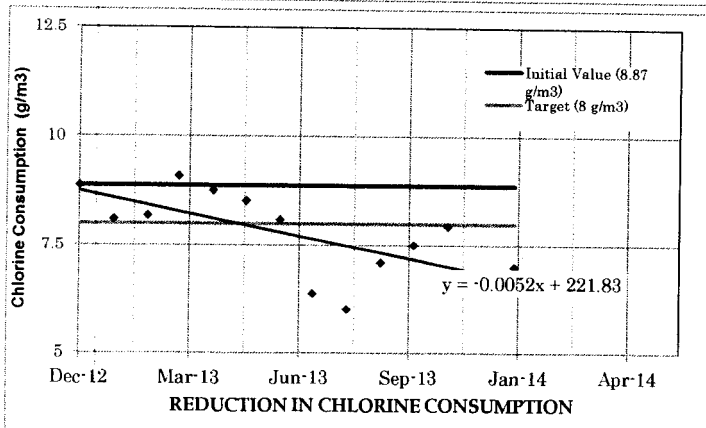
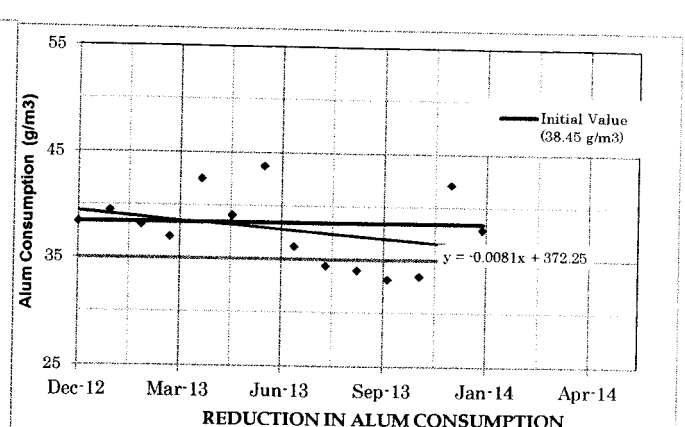
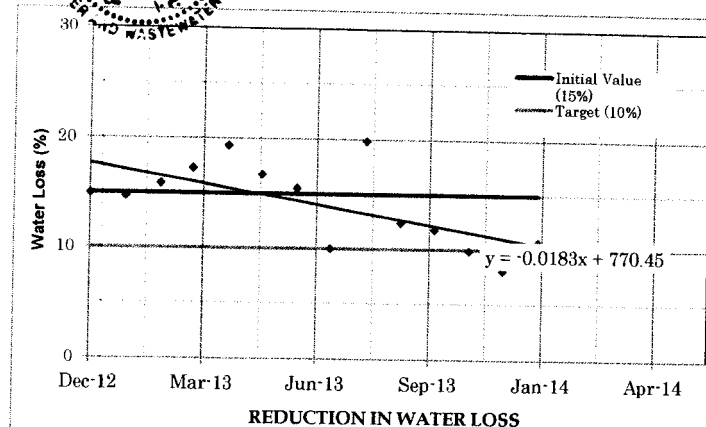
ANNEX 6-1: Progress in Attaining PIs for SOP

(4) Mahalet Marhoom - GHAPWASCO



ANNEX 5-1: Progress in Attaining PIs for SOP

(3) El Melahia - GHAPWASCO



ANNEX6-2 Targets and Actual Performance on Agreed Performance Indicators(Pis)  
GHAPWASCO Model facility (1): El Melahia WTP

1. Performance Targets					
	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Liquid Aluminum Sulfate (g/m <sup>3</sup> )	
Baseline	85	15	8.87	38.45	0.39 kWh/m <sup>3</sup>
Targets	90	10	8	35	0.35

2-1 Actual Performance (raw data by month) (Months that achieved targets marked in yellow)

Month	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Liquid Aluminum Sulfate (g/m <sup>3</sup> )	
Dec-12	85	15	8.87	38.45	0.39
Jan-13	85.3	14.7	8.11	39.47	0.38
Feb-13	84.1	15.9	8.19	38.14	0.4
Mar-13	82.7	17.3	9.09	37	0.39
Apr-13	80.6	19.4	8.76	42.56	0.37
May-13	83.2	16.8	8.53	39.08	0.38
Jun-13	84.5	15.5	8.1	43.74	0.36
Jul-13	90	10	6.38	36.18	0.37
Aug-13	80.1	19.9	6.01	34.42	0.39
Sep-13	87.6	12.4	7.1	34	0.39
Oct-13	88.2	11.8	7.51	33.14	0.34
Nov-13	90.1	9.9	7.95	33.43	0.41
Dec-13	91.9	8.1	6.62	42.14	0.38
Jan-14	89.3	10.7	7	37.9	0.41

(# of months that attained targets/ # of months monitored)

3/14

7/14

4/14

1/14

2-2. Level of Improvement (comparison of 2-month average performance in 2012 and 2013)

2 month average (Dec 2012-Jan 2013)	85.15	14.85	8.49	38.96	0.385
2 month average (Dec 2013-Jan 2014)	90.6	9.4	6.81	40.02	0.395



Improved

Progress steady

Progress steady

ANNEX6-2 Targets and Actual Performance on Agreed Performance Indicators(Pis)  
GHAPWASCO Model facility (2): Mahalet Marhoom IMRP

1. Performance Targets					
	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Calcium Hypochlorite (g/m <sup>3</sup> )	Potassium Permanganate (g/m <sup>3</sup> )	
Baseline	NA*		7.05	3.04	0.76
Targets	96	4	6	2	0.6

\* Baseline could not be obtained due to the technical problem with facilities

2-1 Actual Performance (raw data by month) (Months that achieved targets marked in yellow)

Month	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		ium Hypochlorite(g/	Potassium Permanganate (g/m <sup>3</sup> )	
Dec-12	N/A	N/A	7.05	3.04	0.76
Jan-13	N/A	N/A	6.59	2.38	0.66
Feb-13	N/A	N/A	7.42	2.12	0.6
Mar-13	86.7	13.3	4.29	2.15	0.68
Apr-13	89.8	10.2	5.63	2.05	0.64
May-13	94.3	5.7	4.92	1.79	0.54
Jun-13	96.7	3.3	4.14	1.5	0.5
Jul-13	93.5	6.5	2.64	1.5	0.56
Aug-13	98.5	1.5	3.37	1.68	0.59
Sep-13	93.9	6.1	3.98	1.6	0.59
Oct-13	91.3	8.7	2.54	1.7	0.56
Nov-13	91.2	8.8	3.45	1.97	0.6
Dec-13	91.6	8.4	3.06	2.04	0.6
Jan-14	92.5	7.5	2.88	1.92	0.66

(# of months that attained targets/ # of months monitored)

2/14

11/14

8/14

8/14

2-2. Level of Improvement ( Comparison of 2-month average in 2012 and 2013)

2 month average (Dec 2012-Jan 2013)	NA	NA	6.82	2.71	0.71
2 month average (Dec 2013-Jan 2014)	92.05	7.95	2.97	1.98	0.63

Assessment not possible



Improved

Improved

Improved



ANNEX6-2 Targets and Actual Performance on Agreed Performance Indicators(PIs)

MCWW Model facility (1): El Sadat WTP

1. Performance Targets					
	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Permanganate Sulfate (g/m <sup>3</sup> )	
Baseline	88	12	9.2	26	0.45
Target	92	8	6.5	18	0.36

2-1 Actual Performance(raw data by month) (Months that achieved targets marked in yellow)					
Month	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Permanganate Sulfate (g/m <sup>3</sup> )	
Sep-12	88	12	9.2	26	0.45
Oct-12	90	10	8.5	24	0.42
Nov-12	90	10	7.5	22	0.42
Dec-12	88.6	11.4	6.56	22.6	0.36
Jan-13	91.2	8.8	6	18	0.39
Feb-13	90.41	9.6	6.41	20	0.41
Mar-13	92.46	7.5	6.02	16	0.41
Apr-13	91.2	8.8	6	18	0.39
May-13	91	9	6.2	18	0.38
Jun-13	91	9	6.7	20	0.37
Jul-13	90.5	9.5	6.3	35	0.36
Aug-13	92	8	6.2	26	0.38
Sep-13	93	7	6.5	24	0.35
Oct-13	92	8	6.6	22	0.37
Nov-13	92	8	7	20	0.36
Dec-13	91	9	7	20	0.37
Jan-14	91	9	6.9	22	0.4

(# of months that attained targets/# of months monitored) 5/16 7/16 3/16 4/16

2-2. Level of Improvement ( Comparison of quarterly average in 2012 and 2013)					
Average in 4th quarter 2012	89.15	10.85	7.94	23.65	0.41
Average in 4th quarter 2013	92	8	6.78	21.5	0.36

improved Improved Improved Improved



ANNEX6-2 Targets and Actual Performance on Agreed Performance Indicators(PIs)

MCWW Model facility (2): Gezy IMRP

1. Performance Targets					
	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Permanganate Sulfate (g/m <sup>3</sup> )	
Baseline	84	16	3.5	2	0.8
Targets	92	8	6.5	1	0.5

2-1 Actual Performance(raw data by month) (Months that achieved targets marked in yellow)					
Month	Effective utilization Ratio of Water (%)		Unit consumption of Chemicals		Energy Consumption (kWh/m <sup>3</sup> )
	Water Loss (%)		Gaseous Chlorine (g/m <sup>3</sup> )	Permanganate Sulfate (g/m <sup>3</sup> )	
Sep-12	84	16	3.5	2	0.8
Oct-12	84.8	15.2	4.03	1.61	0.81
Nov-12	86.3	13.7	6.4	1.07	0.8
Dec-12	88.5	11.5	6	0.91	0.8
Jan-13	91.2	8.8	6.3	1.09	0.76
Feb-13	91.5	8.5	6.8	1.17	0.797
Mar-13	91.6	8.4	6.8	1.08	0.8
Apr-13	91	9	7	1.1	0.81
May-13	91	9	6.5	0.96	0.79
Jun-13	90	10	6.9	0.99	0.75
Jul-13	90.4	9.6	6.4	0.94	0.77
Aug-13	89	11	6.5	0.95	0.76
Sep-13	89	11	6.5	1	0.8
Oct-13	90	10	6.06	1.02	0.79
Nov-13	90.2	9.8	6.5	1.07	0.76
Dec-13	91	9	6.4	1.03	0.75
Jan-14	90	10	7	0.98	0.79

(# of months that attained targets/# of months monitored) 0/14 13/16 7/16 0/16

2-2. Level of Improvement ( Comparison of quarterly average in 2012 and 2013)					
Average of 4th quarter 2012	85.90	14.10	4.98	1.40	0.80
Average of 4th quarter 2013	90.05	9.95	6.37	1.03	0.78

Improved Improved Improved Slightly improved



ANNEX 7-1. List of Dispatched Experts

NO.	Field	Name	Assignment Period (No. of days)	M/M		
1	Chief Advisor/Water Supply Planning	Katsumi FUJII	2011.05.14-2011.06.23 (41 days)	1.36		
			2011.09.03-2011.10.01 (29)	0.97		
			2012.02.21-2012.04.03 (43)	1.43		
			2012.06.25-2012.07.24 (30)	1.00		
			2012.10.08-2012.12.01 (55)	1.84		
			2013.01.15-2013.02.28 (45)	1.50		
			2013.05.24-2013.06.22 (30)	1.00		
			2013.10.20-2013.11.08 (20)	0.67		
			2014.01.28-2014.03.13 (45)	1.50		
			Domestic working period			
			2011.05.09-2011.05.13 (5)	0.17		
2	Deputy Chief Advisor/NRW Reduction Management	Mitsuhiro OMORI	2011.06.03-2011.07.02 (30)	1.00		
			2011.09.03-2011.11.01 (60)	2.00		
			2011.12.11-2011.12.26 (16)	0.53		
			2012.03.16-2012.05.20 (66)	2.20		
			2012.07.02-2012.07.31 (30)	1.00		
			2012.08.26-2012.09.24 (30)	1.00		
			2012.11.27-2013.02.03 (69)	2.30		
			2013.05.24-2013.07.07 (45)	1.50		
			2013.11.15-2013.11.29 (15)	0.50		
			2014.02.07-2014.03.08 (30)	1.00		
			Domestic working period			
2011.09.05-2011.11.08 (65)	2.17					
3	Leakage Detection	Hiroki NIIMURA	2012.02.10-2012.03.30 (50)	1.66		
			2012.08.26-2012.12.13 (110)	3.67		
			2013.01.15-2013.02.28 (45)	1.50		
			2013.05.06-2013.07.04 (60)	2.00		
			2014.02.07-2014.03.08 (30)	1.00		
4	Water Treatment System	Tomohiro SHIMIZU	2011.05.14-2011.06.12 (30)	1.00		
			2011.10.02-2011.11.15 (45)	1.50		
			2012.03.16-2012.05.04 (50)	1.67		
			2012.06.25-2012.07.24 (30)	1.00		
			2012.09.11-2012.10.10 (30)	1.00		
			2013.01.15-2013.02.28 (45)	1.50		
			2013.04.16-2013.06.14 (60)	2.00		
			2014.02.12-2014.03.13 (30)	1.00		
			Domestic working period			
			2011.05.10-2011.05.13 (4)	0.13		
			5	Mechanical Equipment	Ryoji NAGAO	2011.06.03-2011.07.17 (45)
2011.10.23-2011.12.01 (40)	1.33					
2012.02.14-2012.03.30 (46)	1.53					
2012.10.02-2012.11.29 (60)	2.00					
6	Electrical Equipment	Sayed Osman Madbouly	2011.07.01-2011.07.30 (30)	1.00		
			2011.09.05-2011.09.14 (10)	0.33		
			2011.09.16-2011.09.24 (9)	0.30		
			2011.09.26-2011.09.29 (4)	0.13		
			2011.10.03-2011.10.05 (3)	0.10		

NO.	Field	Name	Assignment Period (No. of days)	M/M		
			2011.10.08-2011.10.08 (1)	0.04		
			2011.10.19-2011.10.19 (1)	0.04		
			2011.10.26-2011.10.27 (2)	0.06		
			2012.02.12-2012.03.02 (20)	0.67		
			2012.06.02-2012.06.11 (10)	0.33		
			2012.06.28-2012.07.17 (20)	0.67		
			2012.09.27-2012.10.11 (15)	0.50		
			2013.01.17-2013.02.10 (25)	0.83		
			2011.09.03-2011.11.01 (60)	2.00		
			2012.11.14-2013.02.11 (90)	3.00		
7	Hydraulic Analysis for Network	Kenji YAMADA	2013.06.01-2013.06.28 (28)	0.93		
			Domestic working period			
			2013.07.01-2013.07.02 (2)	0.07		
8	Distribution Network(1)	Masahiro TAKEUCHI	2011.05.14-2011.05.28 (15)	0.50		
			2011.09.03-2011.09.24 (22)	0.73		
			2011.11.19-2011.12.18 (30)	1.00		
			2012.11.05-2012.12.12 (38)	1.27		
			Domestic working period			
			2011.05.09-2011.05.13 (5)	0.17		
9	Distribution Network(2)	Kiyoshi KIYAMA	2011.06.27-2011.08.04 (39)	1.30		
			2011.09.03-2011.11.07 (66)	2.20		
			2012.03.16-2012.04.14 (30)	1.00		
			2012.09.18-2012.10.17 (30)	1.00		
			2013.01.30-2013.02.18 (20)	0.67		
			2013.04.16-2013.06.04 (50)	1.67		
			Domestic working period			
			2011.11.08-2011.11.22 (15)	0.50		
			2012.02.10-2012.03.10 (30)	1.00		
			10	Well Monitoring	Nobuyuki IJIMA	2011.06.20-2011.08.04 (46)
2011.11.13-2011.12.26 (44)	1.47					
2012.11.14-2012.12.28 (45)	1.5					
2013.06.01-2013.06.28 (28)	0.93					
Domestic working period						
2013.07.01-2013.07.02 (2)	0.07					
2011.10.07-2011.11.4(29)	0.97					
11	Water Quality	Kazuhiro UMEKI	2011.11.08-2011.11.29(22)	0.73		
			2011.12.07-2011.12.12 (6)	0.20		
			2012.03.29-2012.04.27 (30)	1.00		
			2012.12.04-2013.01.17 (45)	1.50		
			2011.05.14-2011.06.12 (30)	1.00		
12	Coordinator / Assistant for NRW Reduction Management	Atsushi KATO	2012.11.04-2012.12.13 (40)	1.33		
			2013.01.30-2013.02.28 (30)	1.00		
			2014.02.07-2014.03.13 (35)	1.16		

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ANNEX 7-2. List of Local Experts (Input by Japan)

NO.	Field	Name	Assignment Period
1	Facilitator 1 (SHAPWASCO)	Mohamed Nagi Gaber	2011.05.15-2011.12.25
			2012.02.11-2013.02.27
			2013.04.17-up to now
2	Facilitator 2 (GHAPWASCO)	Mohamed Abdel Kader Abouzekry	2011.05.17-2011.12.25
			2012.02.11-2013.02.27
			2013.04.17-up to now
3	Facilitator 3 (MCWW)	Mohammed Abd El-kader Abd El-Ghany	2011.06.05-2011.12.25
			2012.02.11-2013.02.27
			2013.04.17-up to now
4-1	Interpreter (SOP)	Ahmed Ragab Hamed	2011.06.05-2011.12.25 2012.02.11-2012.07.05
4-2	Interpreter (SOP)	Ahmed Rasmy	2012.07.01-2013.02.27
4-3	Interpreter (SOP)	Amr Salah Abd-elaal	2012.12.10-2013.02.27 2013.04.17-up to now
4-4	Interpreter (SOP)	Ahmed Tahoun	2013.05.01-up to now
5	Interpreter (NRW)	Ahmed Atef	2011.06.05-2011.12.25
			2012.02.11-2013.02.27
			2013.04.17-up to now
6	Local Expert (Water distribution facilities)	Mostafa Moawed Mostafa	2011.06.05-2011.12.25
			2012.02.11-2013.02.27
			2013.04.17-up to now
7-1	Local Expert (Water treatment facilities)	Ahmed El-Baz	2011.06.05-2011.12.25
			2012.02.11-2012.10.1
7-2	Local Expert (Water treatment facilities)	Mahmoud Abo Khalaf	2012.10.2- 2013.01.31
7-3	Local Expert (Water treatment facilities)	Mahmoud Mohamed Abdelkader	2013.05.22-up to now



ANNEX 7-3 List of Equipment Provided by the Japanese side

JFY	No.	Item	Qty.	Price in YEN	Price in L.E.	Responsible Agencies	Delivery date
2011	1	Water leak detector	6	2,412,000	187,704.28	GHAPWASCO,MCWW	20-Oct-11
	2	Digital sound detector	4	256,000	19,922.18	GHAPWASCO,MCWW	20-Oct-11
	3	Acoustic rod (1.5m)	8	160,000	12,451.36	GHAPWASCO,MCWW	20-Oct-11
	4	Pressure data logger	3	1,350,000	105,058.37	GHAPWASCO,MCWW	20-Oct-11
	5	Pipe and cable locator	4	2,668,000	207,626.46	GHAPWASCO,MCWW	20-Oct-11
	6	Metal pipe locator	2	300,000	23,346.30	GHAPWASCO,MCWW	20-Oct-11
	7	Magnetic locator	2	560,000	43,579.77	GHAPWASCO,MCWW	20-Oct-11
	8	Non metallic pipe vibrator	4	348,000	27,081.71	GHAPWASCO,MCWW	20-Oct-11
	9	Hammer drill	4	272,000	21,167.32	GHAPWASCO,MCWW	20-Oct-11
	10	Drill bit	16	208,000	16,186.77	GHAPWASCO,MCWW	20-Oct-11
	11	Boring bar (1m)	4	108,000	8,404.67	GHAPWASCO,MCWW	20-Oct-11
	12	Generator	4	282,700	22,000.00	GHAPWASCO,MCWW	19-Dec-11
	13	Water level indicator	6	2,760,000	214,783.99	GHAPWASCO,MCWW	20-Oct-11
	14	Leak sound detector	4	5,780,000	412,856.00	GHAPWASCO,MCWW	21-Feb-12
	15	Portable ultrasonic flow meter (For large diameters)	6	3,612,000	257,982.00	GHAPWASCO,MCWW	21-Feb-12
	16	Portable ultrasonic flow meter (For normal diameters)	4	1,968,000	140,560.00	GHAPWASCO,MCWW	21-Feb-12
2012	17	Pickup	2	3,366,700	262,000.00	GHAPWASCO,MCWW	26-Jul-12
	18	Personal computer (Desk top)	2	178,148	13863.63	GHAPWASCO,MCWW	26-Jul-12
	19	Personal computer (Notebook)	4	323,586	25181.8	GHAPWASCO,MCWW	26-Jul-12
	20	Copy and Fax machine	2	809,550	63,000.00	GHAPWASCO,MCWW	26-Jul-12
	21	Water CAD	2	2,929,800	228,000.00	GHAPWASCO,MCWW	22-Mar-12
	22	Ultrasonic flow meter (For large and normal dia.)	2	1,296,000	140,560.00	GHAPWASCO,MCWW	2-Jul-12
	23	Ultrasonic flow meter (For small dia. Chamber type)	6			SHAPWASCO	4-May-13
	24	Ultrasonic flow meter (For large dia. Chamber type)	1			SHAPWASCO	4-May-13
	25	Ultrasonic flow meter (For small dia. indoor type)	7			SHAPWASCO	4-May-13
	26	Water pressure gauge (For WTP)	2			SHAPWASCO	4-May-13
	27	Water pressure gauge (For indoor type)	10			SHAPWASCO	4-May-13
	28	Telemeter (For outdoor type)	17			SHAPWASCO	4-May-13
	29	Telemeter (For indoor type)	7			SHAPWASCO	4-May-13
	30	Central monitoring system	1	47,390,000	3,325,614.04	SHAPWASCO	4-May-13
2013	31	Water leak detector	4	1,968,000	138,105.26	GHAPWASCO,MCWW	26-Jun-13
Total				81,306,484	5,917,037.91		

JICA exchange rate: 1US\$=JP76.63 , 1L.E.=12.85 (Nov.2012)  
 JICA exchange rate: 1US\$=JP97.84 , 1L.E.=14.25 (May.2013)



ANNEX 7-4. List of C/P Training in Japan

1. Management Training in Japan

(1) Purpose

The purpose of the training in Japan is to learn the experience for water supply service management in Japan and utilize it in the water supply service management of GHAPWASCO, MCWW, SHAPWASCO and other water companies in Egypt.

(2) Attendance List

Attendants were as follows:

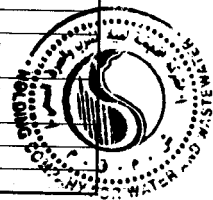
- Dr. Salah Bayoumi, Head of Project Sector of HCWW
- Mr. Ayman Abd El Kader, Chairman of GHAPWASCO
- Mr. Mohamed Abu El Khair, Chairman of MCWW
- Mr. Ahmed Abdeen, Chairman of SHAPWASCO

(3) Training Schedule in Japan

C/P training has been conducted in Japan from 3<sup>rd</sup> to 12<sup>th</sup> October 2011. The project manager (Head of Project Sector, HCWW) and project co-manager (chairman of GHAPWASCO, MCWW and SHAPWASCO) attended following course.

Training Schedule for Management Training in Japan

Date	Activity	Location
1-Oct	Departure from Cairo.	
2-Oct	Arrival at Tokyo.	
3-Oct	Orientation by JICA.	JICA/TIC
	Courtesy call to JICA headquarters	JICA
4-Oct	Trend and development of water management in the world (Workshop to be held by IWA-ASPIRE).	Tokyo International Forum
5-Oct	Introduction of national policy and governing organization for water supply. Opinion exchange with the Japanese officials.	Ministry of Health, Labor and Welfare
	Introduction of Japan Water Works Association and system for information/technology transfer among water supply service providers. Opinion exchange for technology development.	Japan Water Works Association
6-Oct	Opinion exchange for service and human resources development with a water supply service provider.	Yokohama city
	Practice of inter-agency cooperation for technical education and O&M.	Yokohama city
7-Oct	Policy and practice of NRW reduction.	Yokohama city
	Practice to promote efficiency (power reduction, tariff collection, water distribution management)	Yokohama city
8-Oct	Holiday	
9-Oct	Holiday	
10-Oct	Water Museum in Yokohama (observation of example for publicity)	Yokohama city
	Miyagase dam (observation of example for publicity)	Miyagase dam
11-Oct	Observation of solar power facility in the water treatment plant (Nishiya WTP)	Yokohama city
	Site observation of a water treatment plant as well as SOP practices (Kawai WTP)	Yokohama city
12-Oct	Closing ceremony and opinion exchanges with JICA.	JICA/TIC
13-Oct	Departure from Tokyo.	
14-Oct	Arrival at Cairo.	



2. SOP and NRW reduction Training in JAPAN

(1) Purpose

The purpose of the training in Japan is to learn the experience for SOP and NRW reduction in Japan and utilize it in the water supply service management of GHAPWASCO, MCWW, SHAPWASCO and other companies in Egypt.

(2) Attendance List

Attendants were as follows:

- Mr. Wesam Abd El-Fattah, Operation and Maintenance Dep. of HCWW
- Mr. Nagi Yousri, Technical Support of GHAPWASCO
- Mr. Ahmed Elsayed Rabi, Water Supply Sector of GHAPWASCO
- Mr. Mohamed Fathy Gaber, Operation and Maintenance Dep. of MCWW
- Mr. Mohamed Mostafa El Shafie, Operation and Maintenance Dep. of MCWW
- Mr. Saeed Mohamed Attia, Non-revenue water (NRW) Dep. of SHAPWASCO
- Mr. Ahmed Saeed, Standard Operation Procedures Dep. of SHAPWASCO

(3) Training Schedule in Japan

C/P training has been conducted in Japan from 5<sup>th</sup> to 16<sup>th</sup> December 2011. Total 7 trainees attended following course.

Training Schedule for SOP and NRW Reduction Training in Japan

Date	NRW		SOP	
	Activity	Place	Activity	Place
3-Dec	Departure from Cairo			
4-Dec	Arrival at Tokyo			
5-Dec	JICA Briefing	JICA/TIC	Same as NRW	Same as NRW
	Orientation	JICA/TIC	Same as NRW	Same as NRW
6-Dec	Outline of Yokohama City Water	Yokohama City	Same as NRW	Same as NRW
	Risk management of Yokohama	Yokohama City	Same as NRW	Same as NRW
	Public relations of Yokohama	Yokohama City	Same as NRW	Same as NRW
7-Dec	Practical training course for tariff collection	Yokohama City	Outline of Integrated monitoring system	Yokohama City
	Water distribution network management for streets monitoring equipment	Yokohama City	Same as NRW	Same as NRW
	Observation of streets monitoring equipment	Yokohama City	Same as NRW	Same as NRW
8-Dec	Overview of Non Revenue Water	Yokohama City	Work safety and efficient operation of power-chemical quantity	Yokohama City
	Organization for leakage inspection and pipeline maintenance	Yokohama City	Operation and maintenance of water treatment plant	Yokohama City
9-Dec	Management of water supply block system, Replacement of aged pipes	Yokohama City	Data management of O&M and manual WTP O&M	Yokohama City
	Outline of pipeline mapping system	Yokohama City	Introduction of standard operation procedures in Japan	Yokohama City
10-Dec	Holiday			
11-Dec	Holiday			



Date		NRW		SOP	
		Activity	Place	Activity	Place
12-Dec	Mon	Outline of leak detection training	FUJI TECOM	Outline of Saitama City Water	Saitama City
		Training of leak detection-1, 2	FUJI TECOM	Replacement of well plan	Saitama City
13-Dec	Tue	Outline of steel pipes detector, metal pipe detector, correlation detector	FUJI TECOM	Replacement of electric facility and water quality monitoring	Saitama City
		Training of leak detection-3, 4	FUJI TECOM	Observation of well facility.	Saitama City
14-Dec	Wed	Method of training leak detection	FUJI TECOM	Operation and maintenance of water treatment plant and well	Saitama City
		Training leak detection facility and equipment, Implement for training leak detection	FUJI TECOM	Observation of East WTP and Groundwater WTP	Saitama City
15-Dec	Thu	Ending Ceremony	JICA/TIC	Same as NRW	Same as NRW
16-Dec	Fri	Departure from Tokyo			
17-Dec	Sat	Arrival at Cairo			

### 3. WDM Training in JAPAN

#### (1) Purpose

The purpose of the training in Japan is to learn the experience for WDM in Japan and utilize it in the water supply service management of SHAPWASCO in Egypt.

#### (2) Attendance List

Attendants were as follows:

- Mr. Elsayed Moustafa Ibrahim Attia, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Ali Mohamed Atef Abde Ihamid, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Bhnsawy Ahmed Maher Elsayed, Engineer / Water Distribution Management Department of SHAPWASCO
- Mr. Ahmed AbdElRaheem Mohamed AbdElRaheem, Engineer / Water Distribution Management Department of SHAPWASCO

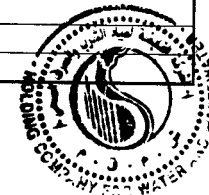
#### (3) Training Schedule in Japan

C/P training has been conducted in Japan from 28<sup>th</sup> October 2012 to 9<sup>th</sup> November 2012. Total 4 trainees attended following course.

Training Schedule for WDM Training in Japan

Date	Activities	Place
27-Oct	Departure from Cairo	
28-Oct	Arrival at Yokohama	JICA Yokohama
29-Oct	Briefing	JICA Yokohama
	Orientation	JICA Yokohama
30-Oct	Outline of Yokohama water supply system	Yokohama Waterworks Bureau
	Equipment management of water facilities (Outline water supply maintenance)1	Yokohama Waterworks Bureau

Date		Activities	Place
31-Oct	Wed	Equipment management of water facilities (Outline water supply maintenance)1	Yokohama Waterworks Bureau
		Drawing management of water facilities	Yokohama Waterworks Bureau
1-Nov	Thu	Mechanical and electrical equipment maintenance work in the water facility	Yokohama Waterworks Bureau
		Equipment outline water treatment plant which is the main water supply facility	Yokohama Waterworks Bureau
		Site observation on equipment outline water treatment plant which is the main water supply facility	
2-Nov	Fri	Electrical equipment maintenance work in the water facility1	Yokohama Waterworks Bureau
		Electrical equipment maintenance work in the water facility2	
3-Nov	Sat	Holiday	
4-Nov	Sun	Holiday	
5-Nov	Mon	Water operational plan and Water supply operation total management system	Yokohama Waterworks Bureau
		Installation management of measuring equipment on the street, and a maintenance	
		Site observation on measuring equipment on the street, and a maintenance	Yokohama Waterworks Bureau
6-Nov	Tue	Operation of water (water supply management), management, maintenance and operation of the well	Saitama City Waterworks Bureau
		Site observation on tobu distribution facility, groundwater water treatment facilities	Saitama City Waterworks Bureau
7-Nov	Wed	SCADA for water supply 1	Yokogawa Electric Corporation
		SCADA for water supply 2	Yokogawa Electric Corporation
		Leakage management	
		Demonstration room, Global Response Center	
8-Nov	Thu	Results presentation	JICA Yokohama
		Evaluation meeting/closing ceremony	
9-Nov	Fri	Departure from Tokyo / Yokohama	
10-Nov	Sat	Arrival at Cairo	

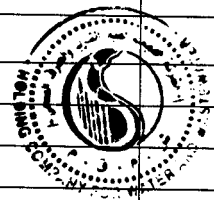


ANNEX 7-5. Operational Expenses by Japan

As of Dec. 31, 2013

Unit=Yen

Major Budget Item		JFY2011 (May.2011 - Jan.2012)	JFY2012 (Feb.2012 - Mar.2013)	JFY2013 (Apr.2013 - Dec.2013)	Total
1	General Cost	9,728,000	21,677,813	15,311,524	46,717,503
1.1	Staff Cost	6,888,754	13,964,285	11,364,282	32,217,321
1.2	Equipment Maintenance Cost	0	0		0
1.3	Consumable Cost	145,311	583,554	20,227	749,092
1.4	Travel Expense	0	0		0
1.5	Communication Cost	69,640	116,862	56,786	243,288
1.6	Document Preparation Cost	275,144	9,095		284,239
1.7	Rental Cost	2,349,317	7,004,017	3,870,229	13,223,563
1.8	Light, Fuel and Water Cost	0	0		0
1.9	Staff Training Cost	0	0		0
1.10	Facility Maintenance Cost	0	0		0
1.11	Field Training Cost	0	0		0
1.12	Domestic Activity Cost	0	0		0
1.13	Domestic Consultant Cost	0	0		0
1.14	Miscellaneous Cost	0	0		0
2	Equipment Cost (JICA Expert's Equipment)	11,689,000	1,296,000	1,968,000	14,953,000
3	Equipment Shipping Cost (JICA Expert's Equipment)	254,000	49,000	38,565	341,565
4	Equipment Cost (Carry Equipment)	0	0		0
5	Equipment Shipping Cost (Carry Equipment)	0	0		0
6	Equipment Cost (Other Equipment)	0	0		0
7	Equipment Shipping Cost (Other Equipment)	38,000	0		38,000
8	Report Preparation Cost (Printing and Binding)	11,000	11,000		22,000
9	Report Preparation Cost (Exclude Printing and Binding)	19,000	19,000		38,000
10	Local Consultant Cost	666,000	0		666,000
11	Local NGO Cost	0	0	0	0
12	Construction Cost	0	0	0	0
13	Meeting Cost	0	0	0	0
14	Insurance Cost	0	0	0	0
15	C/P Training in Japan Cost	1,837,000	896,000	0	2,733,000
<b>Total in Japanese Yen</b>		<b>24,242,000</b>	<b>23,948,000</b>	<b>17,318,000</b>	<b>65,508,000</b>



Total in LE: 4,959,817.73

FX rate (Avg.) at 1LE = 12.940000 12.850000 14.163222

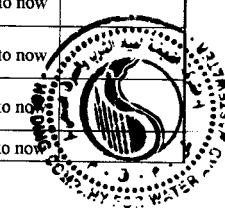
ANNEX 7-6. List of Egyptian C/Ps

1. List of SHAPWASCO C/Ps

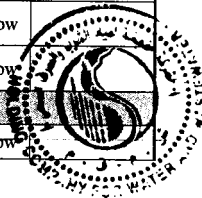
C/P Name	Title / Field	Qualification	Working Period	Note
Ahmed Abdeen	Chairman	Management	2011.05~2014.01	
Ayman Abd El Kader	Chairman	Management	2014.01~up to now	
<b>WDM Team in Headquarters (HQ)</b>				
Alae El Din Mohamed	Head of C/P team/ Headquarters (HQ)	Management	2011.05~up to now	
Ahmed Maher	Assistant for head of WDM team/HQ	Engineer	2011.05~up to now	
Abd El Rahim Mohamed	Assistant for head of WDM team/HQ	Engineer	2011.05~2013.12	On leave
Mohamed Atef	Assistant for head of WDM team/HQ	Engineer	2011.05~up to now	
Mostafa Ibrahim	Assistant for head of WDM team/HQ	Engineer	2011.05~up to now	
Tamer Kamel Hussein	Assistant for head of WDM team/HQ	Engineer	2014.2~up to now	

2. List of GHAPWASCO C/Ps

C/P Name	Title / Field	Qualification	Working Period	Note
Ayman Abd El Kader	Chairman	Management	2011.05~2014.01	
Mahmoud Zaki	Chairman	Management	2014.01~up to now	
Abdullah El Letty	Head of C/P team	Management	2011.06~2012.05	Retired
Adel Attia	Head of C/P team	Head of C/P team	2012.06~up to now	
<b>SOP Team in Headquarters (HQ)</b>				
Ahmed El Maleh	SOP team leader/HQ	Engineer	2011.06~up to now	
Rizk El Fiky	SOP member/HQ	Engineer	2011.09~up to now	
Nagy Youssry	SOP member/HQ	Engineer	2011.09~2012.06	Left Company
Mohamed Masood	SOP member/HQ	Engineer	2012.07~up to now	
Mahmoud Badr	Electricity SOP member/HQ	Engineer	2011.07~up to now	
Mekawy Mekawy	WQMSOP member/HQ	Chemist	2011.11~up to now	
Gad Abdel Monsef Gad	SOP member/HQ	Engineer	2013.8~up to now	
<b>SOP Team in Branches</b>				
Moataz Riyad Hassan	Station manager / Melahia SWTP	Engineer	2012.07~up to now	
Mahmoud El Sayed Sarhan	Vice manager/ Melahia SWTP	Engineer	2012.07~up to now	
Hemat Fathy Hozayfa	Laboratory manager/ Melahia SWTP	Chemist	2012.07~up to now	
Goerge Naguib Abdo	Senior technician/	Technician	2012.07~up to now	



C/P Name	Title / Field	Qualification	Working Period	Note
	Melahia SWTP			
Saeed Eid Kombar	Senior technician/ Melahia SWTP	Technician	2012.07~up to now	
Ramy Mostafa El Feky	Technician/ Melahia SWTP	Technician	2012.07~up to now	
Mahrous Mohamed El Zayat	Technician/ Melahia SWTP	Technician	2012.07~up to now	
Amir El Safty	Technician/ Melahia SWTP	Technician	2012.07~up to now	
Mohamed Aly Saber	Technician/ Melahia SWTP	Technician	2012.07~up to now	
Mohamed Ahmed Balat	Technician/ Melahia SWTP	Technician	2012.07~up to now	
Huessein Youssef Shahin	Station manager / Mahalet Marhoum IMRP	Technician	2012.09~up to now	
El Mohamady Mekawy	Senior technician / Mahalet Marhoum IMRP	Technician	2012.09~up to now	
Mahmoud Abou El Anein	Technician / Mahalet Marhoum IMRP	Technician	2012.09~up to now	
Ahmed El Maraghy	Technician / Mahalet Marhoum IMRP	Technician	2012.09~up to now	
Ahmed Shoieb	Samanoud SWTP	Engineer and facility manager	2013.12~up to now	
Ahmed El Shimy	Samanoud SWTP	Engineer	2013.12~up to now	
Malek Abo El Fadl	Samanoud SWTP	Chemist	2013.12~up to now	
Hamdy El Sayed Ramadan	Samanoud SWTP	Chemist	2013.12~up to now	
Ahmed Mahmoud	Samanoud SWTP	Chemist	2013.12~up to now	
Magdy Sherif	Samanoud SWTP	Technician	2013.12~up to now	
Abdel Aty Galal	El Ramlia IMRF	Manager/techni cian	2013.12~up to now	
Sayed Bayoumy Sharaf	El Ramlia IMRF	Technician	2013.12~up to now	
Fath El Bab Saber	El Ramlia IMRF	Technician	2013.12~up to now	
Reda bdel Hady Zaki	El Ramlia IMRF	Technician	2013.12~up to now	
Ahmed Fath El Bab	El Ramlia IMRF	Technician	2013.12~up to now	
Mohamed Ali El Meliegy	Shobrabeel WPS	Manager/techni cian	2013.12~up to now	
Mohamed Saad Gouda	Shobrabeel WPS	Technician	2013.12~up to now	
Saeed Khaled Ibrahim	Shobrabeel WPS	Technician	2013.12~up to now	
Suliman El Sayed Suliman	Shobrabeel WPS	Technician	2013.12~up to now	
Ibrahim Ahmed Shehata	Shobrabeel WPS	Technician	2013.12~up to now	
El Hussein El Sayed Sengaf	Shobrabeel WPS	Technician	2013.12~up to now	
<b>NRW Team in Headquarters (HQ)</b>				
Ahmed Rabee	NRW team leader/HQ	Engineer	2011.06~up to now	



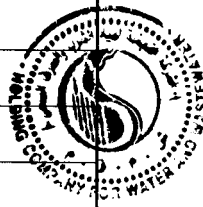
C/P Name	Title / Field	Qualification	Working Period	Note
Omar Salah El Din	NRW member/HQ	Engineer	2011.06~up to now	
Ahmed Ramadan El Bakary	NRW member/HQ	Engineer	2011.06~2012.03	Moved to another department
Mohamed Masood	NRW member/HQ	Engineer	2012.03~2012.06	Moved to SOP
Gad Abdel Monsef Gad	NRW member/HQ	Engineer	2012.03~2012.06	Moved to another department
Salah Mohamed El Sawahly	NRW member/HQ	Technician	2012.03~up to now	
<b>NRW Team in Branches</b>				
Abdel Azim Gouda	Water manager/Zefta	Engineer	2012.03~up to now	
Abdel Ghafar Mohamed	Network manager/Zefta	Technician	2012.03~up to now	
Mohamed Hasouna	Meter reader/Zefta	Technician	2012.03~up to now	
Adel Othman	Meter reader/Zefta	Technician	2012.03~up to now	
Ibrahim Shehata	Worker/Zefta	Worker	2012.03~up to now	
Abdel Azim El Beheiry	Worker/Zefta	Worker	2012.03~up to now	
Waleed El Sayed Bekheit	Surveyor /Zefta	Technician	2013.09~up to now	
Tamer Nassef	Surveyor /Zefta	Technician	2013.09~up to now	
Ibrahim Abdel Mallak	Branch manager/Tanta	Engineer	2012.03~up to now	
Mostafa Abdel Aal	Nawag area network manager/Tanta	Technician	2012.03~up to now	
Ahmed Hemeida	Network technician/Tanta	Technician	2012.03~up to now	
Atef El Borlosy	Network technician/Tanta	Technician	2012.03~up to now	
Samy Abdel Gawad	Network manager/Tanta	Technician	2012.03~up to now	
Saied Shahin	Follow up/Tanta	Technician	2012.03~up to now	
Hany Sallam	Worker/Tanta	Worker	2012.03~up to now	
El Dessouky Mohamed	Worker/Tanta	Worker	2012.03~up to now	
Ahmed Abdel Rabo Aallam	Network/Tanta	Engineer	2013.09~up to now	
Mohamed Ibrahim El Sheikh	Network /Tanta	Engineer	2013.09~up to now	
Samy Mores Bekheet	Water manager/Mahala	Engineer	2013.09~up to now	
Refaii Abdel El Rahman Badawy	Network technician/Mahala	Technician	2013.09~up to now	
Rashed Mohamed Abo Hargal	Technician/Mahala	Technician	2013.09~up to now	
Fahmy Moussa	Branch manager/Mahala	Engineer	2012.03~up to now	
Ahmed Suliman	Network	Technician	2012.03~up to now	



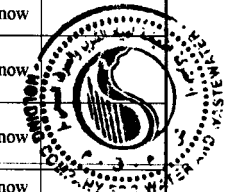
C/P Name	Title / Field	Qualification	Working Period	Note
	technician/Mahala			
Mohamed El Sheshtawy	Network head/Mahala	Technician	2012.03 ~ up to now	
Hany Abdel Wahab	Worker/Mahala	Worker	2012.03 ~ up to now	
Sobhy Farahat	Meter reader/Mahala	Technician	2012.03 ~ up to now	
Mohamed Hegazy	Meter reader/Mahala	Technician	2012.03 ~ up to now	
Ahmed El Sayed Morsi	Bassyoun	Engineer	2013.09 ~ up to now	
Zakaria Kandil	Bassyoun	Technician	2013.09 ~ up to now	
Saad Kotb Rezg	Bassyoun	Technician	2013.09 ~ up to now	
Abdel Hamid Sherif	Bassyoun	Technician	2013.09 ~ up to now	
Nashaat Eissa	Kotour	Technician	2013.09 ~ up to now	
Mohamed Ismail Attia	Kotour	Technician	2013.09 ~ up to now	
Saeed Abou Ali	Santa	Engineer	2013.09 ~ up to now	
Abdel Hameed Ahmed Omar	Santa	Technician	2013.09 ~ up to now	
Abdel Hady Saeed El Hebeishy	Santa	Technician	2013.09 ~ up to now	
Mosaad El Sheikh	Samanoud	Technician	2013.09 ~ up to now	
Mahmoud El Mahalawy	Samanoud	Technician	2013.09 ~ up to now	
Mohamed Khalil	Samanoud	Technician	2013.09 ~ up to now	
Aly El Hassawy	Kafr El Zayat	Technician	2013.09 ~ up to now	
Ragab El Nagar	Kafr El Zayat	Technician	2013.09 ~ up to now	
Ramadan El Araby Abdel Aziz	Kafr El Zayat	Technician	2014.01 ~ up to now	

3. List of MCWW C/Ps

C/P Name	Title / Field	Qualification	Working Period	Note
Mohamed Abo El Khier	Chairman	Management	2011.05 ~ 2012.09	Retired
Ezzat Elsayad	Chairman	Management	2012.09 ~ 2014.01	
Mohamed Naguib	Chairman	Management	2014.01 ~ up to now	
Samir Abdel Moncom Suliman	Head of C/P team	Management	2011.05 ~ 2012.01	Retired
SOP Team in Headquarters (HQ)				
Ayman Bassyouni	Head of SOP team/HQ	Engineer	2011.06 ~ up to now	
Mohamed Fawzy Awad	Assistant for head of SOP team/HQ	Engineer	2011.07 ~ up to now	
Mohamed Fathy	Assistant for head of SOP team/HQ	Engineer	2011.07 ~ up to now	
Khaled Kazamel	Assistant for head of SOP team/HQ	Engineer	2011.07 ~ up to now	
Saeed Abdelfattah	Assistant for head of SOP team/HQ	Engineer	2011.07 ~ up to now	
Mostafa Lotfy	Assistant for head of	Engineer	2012.03 ~ 2012.10	Moved to another



C/P Name	Title / Field	Qualification	Working Period	Note
	SOP team/HQ			department
Adel Ibraheem	Assistant for head of SOP team/HQ	Chemist	2011.06 ~ up to now	
SOP Team in Branches				
Ahmed Sameer Elkawas	Mahatet El Sadat El Satheya SWTP	Engineer, Plant manager	2011.12 ~ up to now	
Mohamed Abdallah Abdelrehem	Mahatet El Sadat El Satheya SWTP	Engineer, Operation manager	2011.12 ~ up to now	
Ahmed Fathy Said Ahmed	Mahatet El Sadat El Satheya SWTP	Chemist	2011.12 ~ up to now	
Mahmoud Abdelzاهر Elsaid	Mahatet El Sadat El Satheya SWTP	Chemist	2011.12 ~ up to now	
Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya SWTP	Technician (Generator)	2011.12 ~ up to now	
Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya SWTP	Technician (Mech. maintenance)	2011.12 ~ up to now	
Haithem Ahmed Omar	Mahatet El Sadat El Satheya SWTP	Technician (Mech. maintenance)	2011.12 ~ up to now	
Mohamed Foad Soltan	Mahatet El Sadat El Satheya SWTP	Technician (Elec. maintenance)	2011.12 ~ up to now	
Mohamed Ashraf Arafa	Mahatet El Sadat El Satheya SWTP	Technician (Elec. maintenance)	2011.12 ~ up to now	
Haithem Ahmed Omar	Mahatet El Sadat El Satheya SWTP	Technician (Sedimentation facility)	2011.12 ~ up to now	
Ahmed Bahnasy Mohamed	Mahatet El Sadat El Satheya SWTP	Technician (Filtration facility)	2011.12 ~ up to now	
Mohamed Sabry Abdelazeem	Mahatet El Sadat El Satheya SWTP	Technician (Sludge facility)	2011.12 ~ up to now	
Ahmed Abd Elsalam Belal	Mahatet El Sadat El Satheya SWTP	Technician (Pump room)	2011.12 ~ up to now	
Ahmed Samy Saleh	Mahatet El Sadat El Satheya SWTP	Technician (CI room)	2011.12 ~ up to now	
Amin Gamal Mahroos	Mahatet El Sadat El Satheya SWTP	Technician (AI room)	2011.12 ~ up to now	
Ahmed Ebrahim Gobara	Gezy IMRP	Technician, O&M	2011.12 ~ up to now	
Elsaid Reyad	Gezy IMRP	Technician (Elec. maintenance)	2011.12 ~ up to now	
Abdelhakeem Abdelrasheed	Gezy IMRP	Technician (Cooling system)	2011.12 ~ up to now	
Mahmoud Ali Ateem	Gezy IMRP	Technician	2011.12 ~ up to now	





C/P Name	Title / Field	Qualification	Working Period	Note
Ibrahim Maher Abdelglel	Gezy IMRP	(Operation) Technician (Operation)	2011.12 ~ up to now	
Shaker Ibrahim Abdelglel	Gezy IMRP	Labor	2011.12 ~ up to now	
Dr. M. Nagi	Gezy IMRP (Chemist)	Technician (Mech. maintenance)	2012.03 ~ up to now	
Wala'a Elaskary	Gezy IMRP (Manager)	Engineer	2011.12 ~ up to now	
Salah M. Kabeel	Ashama WPS	Technician, Plant manager.	2012.03 ~ up to now	
Yosri William	Ashama WPS	Technician	2012.03 ~ 2013. 08	Moved to another plant
Hassan Mohamed	Ashama WPS	Technician	2013.08 ~ up to now	
Zaki Abdelazim	Ashama WPS	Technician	2012.03 ~ up to now	
Mohamed Abdelfatah	Ashama WPS	Technician	2012.03 ~ up to now	
Abdelrahman Abdullah	Ashama WPS	Technician	2012.03 ~ up to now	
Abdellatif Ammar	Ashama WPS	Technician	2012.03 ~ 2013, 08	Moved to another plant
Abdullah Abu Omar	Ashama WPS	Technician	2013, 08 ~ up to now	
Helal Khedr	Shebin SWTP Manager	Engineer	2013.10 ~ up to now	
Bassem Mahmoud	Shebin SWTP lab manager	Chemist	2013.10 ~ up to now	
Radwa Hassan	Shebin SWTP SCADA system	Engineer	2013.10 ~ up to now	
Ali Amer	Shebin SWTP	Technician	2013.10 ~ up to now	
Mostafa Mohammed	Shebin SWTP	Technician	2013.10 ~ up to now	
Baha'a Elserwy	Shebin SWTP Lab.	Chemist	2013.10 ~ up to now	
Hala Bukr	Shebin SWTP Lab.	Chemist	2013.10 ~ up to now	
Yassmin Gaber	Shebin SWTP Lab.	Chemist	2013.10 ~ up to now	
Mahmoud Elhadary	Minouf SWTP Manager	Engineer	2013.10 ~ up to now	
Mahmoud Sallam	Minouf SWTP Chemist	Chemist	2013.10 ~ up to now	
Mohammed Abdeldaim	Minouf SWTP	Technician	2013.10 ~ up to now	
Mohammed Khalifa	Minouf SWTP	Technician	2013.10 ~ up to now	
Ashraf Elshahed	Minouf SWTP	Technician	2013.10 ~ up to now	
Ali Kamuna	Minouf SWTP	Technician	2013.10 ~ up to now	
Salah Elbatanony	Kafr Elbatanon IMRF Manager	Engineer	2013.10 ~ 2013.12	Retired
Mohammed Khattab	Kafr Elbatanon IMRF Lab. manager.	Chemist	2013.10 ~ up to now	
Mohammed Eid	Kafr Elbatanon IMRF Electrical(Plant manager)	Technician	2013.10 ~ up to now	
Ahlam Sadek	Kafr Elbatanon IMRF	Technician	2013.10 ~ up to now	
Mohammed Ghaly	Kafr Elbatanon IMRF	Technician	2013.10 ~ up to now	
Shawky M. Elmeshad	Elbatanon WPS Manager	Technician	2013.10 ~ up to now	
Kamel Abdelsaid	Elbatanon WPS	Technician	2013.10 ~ up to now	
Mohamed Abdelaziz	Elbatanon WPS	Technician	2013.10 ~ up to now	
Samy Azer	Elbatanon WPS	Technician	2013.10 ~ up to now	
Adel Abellatif	Elbatanon WPS	Technician	2013.10 ~ up to now	
Saeed Sha'aban	Elbatanon WPS	Technician	2013.10 ~ up to now	
<b>NRW Team in Headquarters (HQ)</b>				
Belal-Galal Khalaf	Head of NRW team/HQ	Management	2011.05 ~ 2013.12	

C/P Name	Title / Field	Qualification	Working Period	Note
Mohamed El Shafey	Assistant for head of NRW team/HQ	Engineer	2011,07 ~ up to now	
Mohamed Fawzy Bader	Assistant for head of NRW team/HQ	Engineer	2011,07 ~ up to now	
Ahmed Radwan	Assistant for head of NRW team/HQ	Engineer	2011,07 ~ 2012,12	Left C/P due to health condition
Ahmed El Showny	Assistant for head of NRW team/HQ	Engineer	2012,02 ~ up to now	
Ahmed Shalaby	Assistant for head of NRW team/HQ	Engineer	2012,02 ~ 2012,10	Moved to another company
Gamal Rizk	NRW team member	Technician	2012.08 ~ 2013,08	Army service
Mohammed Gaber	NRW team member	Technician	2012.08 ~ 2013,08	Army service
<b>NRW Team in Branches</b>				
Monir Mohamed	Qesna	Engineer	2012.03 ~ up to now	
Anwar Ibrahim	Qesna	Engineer	2012.03 ~ up to now	
Abdelsattar Hossin	Qesna	Technician	2012.03 ~ up to now	
Nagi Nikola	Qesna	Technician	2012.03 ~ up to now	
Mohamed Sobhy	Qesna	Technician	2012.03 ~ up to now	
Mohamed Ibrahim	Qesna	Plumper	2012.03 ~ up to now	
Abdelmalek Mohamed	Qesna	Worker	2012.03 ~ up to now	
Mansour Mohamed	Qesna	Worker	2012.03 ~ up to now	
Ayman Abdrabo	Berket El Saba'a	Engineer	2012.03 ~ up to now	
Ahmed Shawky	Berket El Saba'a	Technician	2012.03 ~ up to now	
Bakry Mohamed	Berket El Saba'a	Plumper	2012.03 ~ up to now	
Hamed Ali	Shebin	Network manager	2012.03 ~ up to now	
Hassan Ismael	Shebin	Supervisor	2012.03 ~ up to now	
Gamal Eldemerdash	Shebin	Technician	2012.03 ~ up to now	
Abdelmonsif Mohamed	Shebin	Worker	2012.03 ~ up to now	
Hitham Mohamed	Shebin	Worker	2012.03 ~ up to now	
Ahmed Elshamy	Shebin Surveyor	Technician	2013.08 ~ up to now	
Sobhy Yossif	Berket El Saba'a Surveyor	Technician	2013.08 ~ up to now	
Mostafa Marzok	Minouf Surveyor	Technician	2013.08 ~ up to now	
Mahmoud Faramawy	Elbagour Surveyor	Technician	2013.08 ~ up to now	
Ali Ahmed Reyad	Ashaman Surveyor	Technician	2013.08 ~ up to now	
Abdelsattar Hossin	Qesna Surveyor	Technician	2013.08 ~ up to now	
Mohamed Ibrahim	Qesna Surveyor	Technician	2013.08 ~ up to now	
Mohamed Sobhy	Elshohada Surveyor	Technician	2013.08 ~ up to now	
Mohamed Elsha'ar	Minouf Surveyor	Technician	2013.08 ~ up to now	
Mahmoud Shafik	Tala Surveyor	Technician	2013.08 ~ up to now	

ANNEX 8: Evaluation Design Matrix (1)


(1) Progress and Process of Project Implementation


Evaluation Questions		Information/data for verification	Data source	Data collection method
Project Implementation	Key questions			
Progress on producing expected Outputs	Has the <b>Output 1(*)</b> been produced?  (*) Output 1: "human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates in strengthened"	Whether Output Indicator "a. More than 3 members from each of SOP/NRW teams in SHAPWASCO-GHAPWASCO-MCWW are approved as trainers by Steering Committee" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
		Whether Output Indicator "b. More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team" has been achieved	Project reports, C/P, and Japanese experts	Desk review and interviews
		The effect that the Output 1 activities has brought about on the collaboration and capacity building of 3 water supply companies.	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
	Has the <b>Output 2(*)</b> been produced?  * Output 2: "based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates"	Whether the indicator "a. More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation" has been met (as well as whether the criteria for rating, which was unclear at the time of Mid-term Evaluation, has been selected)	Project reports, C/P, and Japanese experts	Desk review and interviews
		Whether the Indicator "b. The model facilities are operated and maintained based on SOP" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
		Whether the Indicator "c. Improvement of PIs for the model facilities are evaluated based on SOP" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
	Has the <b>Output 3(*)</b> been produced?  *Output 3: "the institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates"	Whether the Indicator "a. More than 80% of NRW team members rates understanding of trainings more than 3 on the 5-scale evaluation" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
		Whether the Indicator "b. Water balance analysis is conducted properly for the 3 model areas" has been achieved (as well as whether the criteria for rating, which was unclear at the time of Mid-term Evaluation, has been selected yet)	The results of water-balance analysis, Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews




ANNEX 7-7. Facility, Equipment and Operational Expenses Provided by Egypt

Company Activity	Item	No. of units	Price in Egyptian Pound	
SHAPWASCO	Chamber construction for installation of WDM equipment	13	265,100.00	
	Construction of SCADA Room	1	950,000.00	
	Electricity for Installation	25	33,750.00	
	Electricity for Equipment	1	4,500.00	
	Materials for Equipment Installation	1	5,000.00	
	Transport cost for Equipment	1	2,000.00	
	<b>Total</b>		<b>1,265,350.00</b>	
	GHAPWASCO	Actra Control valves	10	166,500.00
		Adjustments for Actra valves (water level indicator and control panels)	10	140,000.00
		Water flow meters Calibration	11	8,250.00
Chlorine Cylinder balance		1	13,000.00	
Air Scouring flow meter		2	82,000.00	
Flow meter Chamber in Tanta WTP		1	17,000.00	
Residual Chlorine indicator meter		1	23,000.00	
Chlorine dosage detection system		1	3,000.00	
Chlorine Dosing flow meter for IMRF		3	3,000.00	
Chemical dosage indicator unity bags (Chlorine and Manganese)		2	2,000.00	
Computers for Model facilities	2	11,000.00		
Vacuum pump for back wash in Tanta WTP	1	22,000.00		
Ultrasonic flow meters for Tanta WTP	4	13,000.00		
Chamber construction for installation of NRW equipment	4	96,000.00		
Acoustic Road for leak detection	8	136,000.00		
Approximate expenses for the Project by company such as office and JICA Car fuel and maintenance, workshops, etc.	20	32,000.00		
<b>Total</b>		<b>788,750.00</b>		
MCWW	Collaboration Works			
	1st Gezy IMRF	4	2,800.00	
	Electronic meter F.M	6	3,600.00	
	Ultrasonic level transmitter	2	1,200.00	
	(GH) measurement level	2	1,800.00	
	(NTI) measurement level	2	1,800.00	
	(TFT) pointed for Residual Chlorine	2	700.00	
	Electronic pressure switch	2	1,200.00	
	2nd Elsadat SWTP	1	700.00	
	Raw water Ultrasonic F.M	1	700.00	
Treated water Ultrasonic F.M	1	700.00		
Ultrasonic F.M for filtered water	14/16	9,800.00		
Ultrasonic level measurement	15/16	3,600.00		
Ultrasonic level transmitter	6	3,600.00		
Level meter controller	15/16	9,000.00		
Flow sensor for switch (intake)	1	600.00		
Analyzer for residual Cl <sub>2</sub>	1	700.00		
Chlorine dosing controller (tanks)	1	700.00		
Purchasing & installation works	1	900.00		
Purchasing & installation Ultrasonic F.M for filter back wash water	1	51,595.00		
purchasing & installing Air F.M for Elsadat 2 <sup>nd</sup>	1	97,800.00		
purchasing & installing Ultrasonic level controller	3	37,000.00		
purchasing & installing 1 Ton Table balance for Chlorine cylinder	1	41,000.00		
purchasing & installing Air F.M for Gezy 2 <sup>nd</sup>	1	41,500.00		
purchasing & installing Air F.M for Gezy 3 <sup>rd</sup>	1	4,100.00		
purchasing & installing permanganate potassium glass indicator (Gezy)	1	27,500.00		
purchasing & installing ultrasonic F.M (Elasadat-Elshim-Vimout)	3	66,600.00		
purchasing & installing pressure gauge (Kom Abader)	2	1,000.00		
purchasing & installing pipes & valves (to change Chlorine point)	3	6,000.00		
purchasing & installing stainless plate for Gezy)	1	1,000.00		
purchasing & installing filter sand (Gezy 3 <sup>rd</sup> )	5	1,800.00		
purchasing pressure gauge (3/10 to 10 axes)	4	2,600.00		
purchasing Chlorine cylinder H2O2-balance	2	36,400.00		
purchasing electromagnetic F.M	4	27,500.00		
purchasing pressure gauges different types	12	33,320.00		
purchasing pressure gauges different types	10	18,500.00		
purchasing submersible pump 231.5-60 m head	1	15,000.00		
purchasing injection pump for permanganate potassium	1	9,500.00		
purchasing injection pump for Alum	3	180,000.00		
purchasing normal 1/2" valves	10	1,800.00		
purchasing rater balance for hooded Chlorine cylinder 1 Ton	1	2,500.00		
purchasing Alum line screen net 50mm	3	6,000.00		
Print out the necessary records for all model/extension facilities	50	500.00		
Print out the necessary records for all model/extension facilities	100	500.00		
Chamber construction for installation of NRW equipment	9	98,247.00		
Acoustic Road for leak detection	10	15,000.00		
Approximate expenses for the Project by company such as office and JICA Car fuel and maintenance, workshops, etc.		15,000.00		
<b>Total</b>		<b>946,892.00</b>		
<b>Grand Total</b>		<b>3,006,992.00</b>		

Evaluation Questions		Information/data for verification	Data source	Data collection method	
	Key questions				
		<ul style="list-style-type: none"> <li>• Project Manager (Vice Chairman, HCWW)</li> <li>• Co-project managers (Chairman of SHAPWASCO, GHAPWASCO, MCWASCO)</li> <li>• SOP Team</li> <li>• NRW Team</li> </ul>	Project reports, C/P, and Japanese experts	Desk review and interviews	
		2) Office space and facilities for the experts	Project reports, C/P, and Japanese experts	Desk review and interviews	
		3) Equipment	Project reports, C/P, and Japanese experts	Desk review, interviews, and direct observation	
		4) Provision of information necessary for the Project implementation	Project reports, C/P, and Japanese experts	Desk review and interviews	
		5) Local Cost	Project reports and Japanese experts	Desk review and interviews	
		Have the planned inputs been provided by Japanese partners?	1) Japanese experts <ul style="list-style-type: none"> <li>• Chief advisor/water supply planning</li> <li>• NRW reduction management</li> <li>• Leakage detection</li> <li>• Water Treatment</li> <li>• Water quality</li> <li>• Electrical equipment</li> <li>• Mechanical equipment</li> <li>• Distribution network</li> <li>• Others (if necessary)</li> </ul>	Project reports, C/P, and Japanese experts	Desk review and interviews
			2) Local Expert	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
			3) Equipment	Project reports, C/P, and Japanese experts	Desk review, direct observation and interviews
			4) Training in Japan	Project reports, C/P, and Japanese experts	Desk review and interviews
			5) Local Cost	Project reports, C/P, and Japanese experts	Desk review and interviews

Evaluation Questions		Information/data for verification	Data source	Data collection method	
	Key questions				
		Whether the Indicator "c. 100% of detected leakage is repaired at the model area" has been achieved, and how this % improved in comparison with the past.	Project reports, C/P, Japanese experts, customer centers at each C/P agencies	Desk review, questionnaire, and interviews	
		Has the <b>Output4(*)</b> been produced?	Whether the Indicator "a. Water distribution is managed based on SOP at the model areas" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
		*Output 4: "the water distribution management capacity is improved in Sharkiya Governorate as an advanced model"	The progress on the procurement of equipment necessary for Output 4 activities	Project reports, C/P, and Japanese experts	Desk review and interviews
			Whether the Indicator "b. Issues on water distribution capacity are reported to top management of SHAPWASCO" has been achieved, and the example of the effects that the attainment of this Indicator has brought about.	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
		Has the <b>Output0(*)</b> been produced?	Whether the Indicator "a. Agreement on the coordination among SHAPWASCO, GHAPWASCO, MCWW is prepared" has been achieved.	Project reports, C/P, and Japanese experts	Desk review and interviews
		*Output 0: "the project is managed and coordinated properly"	Whether the Indicator "b. Project activities are regularly monitored based on PO/APO" has been achieved.	Project reports, C/P, Japanese experts, monitoring reports	Desk review and interviews
	Progress on attaining Project Purpose	Has the <b>Project Purpose(*)</b> been or is likely to be achieved?	Whether the Indicator "Performance Indicators(Pis) in the fields of management capacity of operation and maintenance are improved at the model areas/facilities" in 3 target provinces has been achieved.	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
	Prospect of realising Overall Goal	Is the <b>Overall Goal(*)</b> of this Project likely to be attained?	Whether the Indicator "PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates" has been achieved.	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
Provision of Inputs	Have the planned inputs been provided by Egyptian partners?	1) Assignment of counterpart personnel <ul style="list-style-type: none"> <li>• Project Director (Chairman, HCWW)</li> </ul>			

Evaluation Questions		Information/data for verification	Data source	Data collection method
	Key questions			
	To what extent have the recommendations from the Mid-term Review been followed up?	Status of implementing the recommendations from the Mid-term Review	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
	Any other issues affecting the project implementation and management?	Whether the assumptions in the PDM has been satisfied Changes in the policies and the organizational structures of the Egyptian government Other factors outside of the Project's activities or jurisdiction, such as political or economic situation or natural disasters (The effects of ) measures taken to deal with the negative external factors	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews


HCWW: Holding Company for Water and Wastewater

SHAPWACO: Sharkiya Potable Water and Sanitation Company

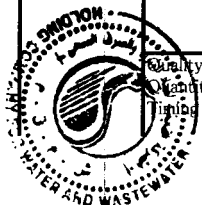
GHAPWASCO: Gharbia Potable Water and Sanitation Company

MCWW: Minufia Company for Water and Wastewater

C/P: Counterparts

Evaluation Questions		Information/data for verification	Data source	Data collection method	
	Key questions				
	Overall progress of the Project activities	Have the activities since the Mid-term Review been implemented on time and as planned?	Whether any gap is observed between the planned and actual implementation schedule	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews
	Project Management	Is the project management appropriate and functioning?	Whether the roles, responsibilities, and information flow are clear to the stakeholders To what extent the monitoring and information-sharing system is defined and functioning	Documents showing the implementation arrangements, C/P, Japanese experts, and JICA office	Desk review, questionnaire, and interviews
		Do project participants maintain amicable and regular communication?	Communication between the Japanese(*) and Egyptian partners (*including both Japanese experts and JICA office)	Project reports, C/P, Japanese experts, JICA office	Desk review, questionnaire, and interviews
			Communication among Egyptian stakeholders (HCWW • SHAPWASCO • GHAPWASCO • MCWW)	Project reports, C/P, Japanese experts, JICA office	Desk review, questionnaire, and interviews
			Communication among Japanese stakeholders including JICA headquarters, its office in Egypt, and Project experts	Project reports, JICA office, and Japanese experts	Desk review and interviews
	How strongly do the Project participants recognize and feel the sense of ownership of the Project?	Progress on project activities and provision of inputs by the Egyptian partners Cooperation gained from Egyptian partners for the smooth implementation of the Project	Project reports, JICA office, Japanese experts, and the progress on implementing project activities and provision of	Desk review and interviews	
	Participants' expertise, and roles and responsibilities	Are the skills and the scope of responsibilities of the Japanese experts appropriate and sufficient?	Expertise of the Japanese experts, their role and responsibilities, and the level of their commitment to the Project	C/P and JICA office	Questionnaire and interviews
		Were their method of skills transfer relevant?	The relevance of the design and of the method of training and lectures	Project reports and C/P	Desk review, questionnaire, and interviews
Are the expertise and the scope of responsibilities of the Egyptian partners appropriate and sufficient?		Expertise of Egyptian partners, their roles and responsibilities, and the level of participation	Project reports, JICA office, and Japanese experts	Desk review, questionnaire, and interviews	
Other issues affecting the implementation process	Has the PDM been revised during the Project? If so, did it contribute to improving the project management / implementation?	• The changes made to the PDM • Progress on the activities after the revision	Project reports, C/P, and Japanese experts	Desk review, questionnaire, and interviews	

Evaluation Questions		Information/data for verification	Data source	Data collection method	
	Key Questions				
	What factors or activities particularly contributed to the progress toward attaining Project Purpose?	Level of attainment of performance indicators, the results of stakeholder interviews	Project reports, C/P, and Japanese experts	Desk review and interviews, and questionnaire survey	
	Contributions of Project Outputs to the Achievement of Project Purpose	Were the level of Outputs sufficient to achieve the Project Purpose?	Level of attainment of performance indicators	-----	
		If the Project Purpose has not been achieved, what were the impediments?	Political and economic factors as well as the occurrence of natural disasters	Project reports, C/P, and Japanese experts	Desk review and interviews, and questionnaire survey
Efficiency	Progress on generating expected Outputs	Did the schedule of the Project implementation follow the agreed Plan of Operation?	Comparison of planned and actual implementation schedule	Level of attainment of performance indicators, PO, Project reports, Mid-term Evaluation Report, C/P, Japanese experts	Desk review and interviews, and questionnaire survey
		Were there any activities or factors that particularly contributed - or threw an impediment - to producing Outputs?	Level of attainment of performance indicators, implementation process, and the results of stakeholder interviews	Project reports, C/P, Japanese experts, Mid-term Evaluation Report	Desk review and interviews, and questionnaire survey
	Contributions of Project Activities to the generation of expected Outputs	Was the scope of Project Activities adequate to producing all expected Outputs?	Level of attainment of performance indicators, results of stakeholder interviews	The level of attainment of performance indicators, examination of implementation process, project documents, C/P, Japanese experts, and JICA Office	Desk review and interviews, and questionnaire survey
		Were there external factors that affected the achievement of Output?	Factors that affected the project implementation (such as natural disasters and policy change)	The level of attainment of performance indicators, examination of implementation process, project documents, C/P, Japanese experts	Desk review and interviews, and questionnaire survey
	Quality, Quantity, and Timing of inputs	Were the inputs from Japanese partners adequate in terms of quantity, quality and the timing?	Inputs provided and its effect on the efficiency of activities; evaluation of implementation process	C/P, the level of attainment of project indicators, Project reports	Desk review and interviews, and questionnaire survey



ANNEX 8: Evaluation Design Matrix (2)

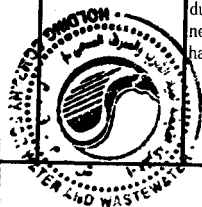
(2) Evaluation of Performance by Organization for Economic Cooperation and Development's Evaluation Criteria

Evaluation Questions		Information/data for verification	Data source	Data collection method	
	Key Questions				
Relevance	Relevance to the Priority	Is the Project focus consistent with the current development policy of Egypt? Is there any policy change since the Mid-Term Review?	Consistency of the Project focus with Egypt's development plan/sector strategy	Policy documents, C/P, Japanese experts, Mid-term Evaluation Reports, and other donors	Desk review and interviews
		Is the objective/focus of the Project consistent with Japan's/JICA's assistance policy? Are Japan's assistance policies confirmed in the Mid-Term Review still valid?	Priority given to water- and waste water management within Japan's aid policy	Ministry of Foreign Affairs' homepage, JICA's assistance policy, Mid-term Evaluation report	Desk review and interviews
		Is the Project Purpose consistent with the technical assistance needs of the target groups?	Consistency with the technical assistance needs of C/P organizations (HCWW-SHAPWASCO-GHAPWASCO-MCWW)	Project reports, C/P, Japanese experts, Mid-term Evaluation Report	Desk review, interviews, and questionnaire
	Relevance to the Needs	Was the selection of target groups appropriate?	The roles that the C/P organizations (SHAPWASCO-GHAPWASCO-MCWW) play in water- and waste-water management in Egypt.	Project reports, C/P, Japanese experts, Mid-term Evaluation Report	Desk review and interviews
			The roles that project participants play within their organizations		
Relevance of the Project Design/Approach	Is the Project design appropriate as a solution to the issues faced by the C/P organizations?	The design of the PDM, progress on producing Outputs, implementation process, and the opinions of stakeholders	Project reports, C/P, Japanese experts, Mid-term Evaluation Report	Desk review, interviews, and questionnaire	
	Does Japan have comparative advantages in the field of assistance it provides through this Project?	Stakeholder consultations on Japan's comparative advantage in water- and waste-water management.	C/P, Japanese Experts, JICA Office, and other donors	Desk review and interviews	
Effectiveness / Efficacy	Level of Attainment of the Project Purpose	How likely is it for the Project to achieve its purpose of "management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates"?	Level of attainment of performance indicators, results of stakeholder interviews	Level of attainment of performance indicators	-----

Evaluation Questions					
	Key Questions		Information/data for verification	Data source	Data collection method
Sustainability	Policy and institutional framework that supports sustainability	Is there a long-term policy framework in place to promote the activities that this Project has supported?	Whether the government policies or initiatives are in favour of further improvement of water- and wastewater management in Nile Delta	Egypt's water- and wastewater management strategy, C/P, Japanese experts, and JICA office	Desk review and interviews, and questionnaire survey
		How concrete is a plan to continue the Project activities and disseminate the outcome of this Project?	Whether a plan is in place to utilise the output of this Project	Project documents, Japanese experts and C/P	Desk review and interviews, and questionnaire survey
	Organizational and financial arrangements	Do C/P organizations have willingness and plan to sustain and disseminate the outputs of this Project?	Whether C/P organizations have plans on future activities and human resources allocation necessary for these activities	Project documents, Japanese experts and C/P	Desk review and interviews, and questionnaire survey
		Is the budget necessary for future activities secured?	Whether any budget plan is in place to carry out the future activities	Project documents, Japanese experts and C/P	Desk review and interviews, and questionnaire survey
	Sustainability of skills	Are the skills that the C/Ps gained through Output 1-4 activities likely to remain and be utilised by the C/P organizations?	The extent to which the activities at the model facilities are consistent with the SOP The level of attainment of the PI by each C/P organization Results of stakeholder interviews	The level of attainment of performance indicators, examination of implementation process, C/P, and Japanese experts	Desk review and interviews, and questionnaire survey
		Are the equipment provided by the Project likely to be managed and utilised?	The extent to which the equipment is utilised/ the existence of future management plan	C/P and Japanese experts	Desk review and interviews, questionnaire survey, and direct observation
	Other factors contributing or hindering Sustainability	Are there other activities than this Project that contribute to the sustainability of this Project?	The existence of other related projects by Egyptian government organizations, JICA, and other donors	C/P, Japanese experts and JICA office	Desk review and interviews, and questionnaire survey
		Are there any other concerns that potentially affect the Project's sustainability?	Political situation, the results of stakeholder interviews etc	Project documents, Japanese experts, C/P and JICA office	Desk review and interviews

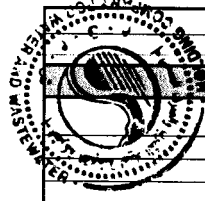


Evaluation Questions					
	Key Questions		Information/data for verification	Data source	Data collection method
	Factors contributing to Efficiency	Were the inputs from Egyptian partners adequate in terms of quantity, quality and the timing?	Inputs provided and its effect on the efficiency of activities, and the evaluation of implementation process	Level of attainment of the Performance Indicator, Project reports, Japanese expert, and JICA office	Desk review and interviews, and questionnaire survey
		Were the assumptions for this Project envisaged in the PDM satisfied?	Whether the assumptions in the PDM were satisfied	Project reports, Mid-term Review Report, C/P, and Japanese experts	Desk review and interviews, and questionnaire survey
		Has any effort been made to increase efficiency? Were the resources other than that of the Project explored and utilised?	Records of cooperation with other JICA schemes and with other donors	Project reports, Mid-term Evaluation Report, C/P, Japanese experts, and JICA office	Desk review and interviews, and questionnaire survey
Impact	Prospect on realising Overall Goal	How likely is the Overall Goal of "management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates" to be achieved?	Level of attainment of performance indicators The extent to which the activities at the model facilities are consistent with the SOP The results of stakeholder interviews	Project document, C/P, Japanese experts, JICA office, Mid-term Evaluation report	Desk review and interviews, and questionnaire survey
	Spillover effects	Has any spillover effect been observed during the Project implementation? For negative effects, what countermeasures have been taken?	The positive/negative influence observed in the model areas or in the workplaces of the project participants Impacts on environment Impacts on other government policies and institutions Impacts on gender, human rights, social equity, and culture In the case negative impacts are observed, countermeasures that were taken against these measures	Project reports, Japanese experts, C/P	Desk review and interviews, and questionnaire survey



ANNEX 9. List of Key People Met

HCWW	
Mr. Mamdouh Kaslan	Chairman/ Project Director
Dr. Salah Bayoumi	Vice Chairman/Project Manager
Dr. Rihaat Abdel Wahab	Head, Research & Development Sector
SHAPVASCO	
Ayman Abd El Kader	Chairman/Project Co-Manager
Alaa El Dln Mohamed	Head of C/P team/Headquarters (HQ)
Mohamed Atef	Assistant for head of WDM team/HQ
Mostafa Ibrahim	Assistant for head of WDM team/HQ
Tamer Kamel Hussein	Assistant for head of WDM team/HQ
GHAPVASCO	
Mahmoud Zaki	Chairman /Project Co-Manager
Adel Attia	Head of C/P team
Ahmed El Maleh	SOP team leader/HQ
Rizk El Firky	SOP member/HQ
Mohamed Masood	SOP member/HQ
Gad Abdel Monsef Gad	SOP member/HQ
Hussein Rousset Shahn	Station manager / Mahalet Marhoum IMRP
El Mohamadny Mckawy	Senior technician / Mahalet Marhoum IMRP
Ahmed Shoteb	Samanoud WTP
Ahmed Rabee	NRW team leader/HQ
Omar Salah El Dln	NRW member/HQ
Salah Mohamed El Sawahly	NRW member/HQ
Saeed Abou Ali	Santa WTP
Abdel Hameed Ahmed Omar	Santa WTP
Abdel Hady Saeed El Heberisy	Santa WTP
MCWW	
Mohamed Naguib	Chairman/ Project Co-Manager
Ayman Bassyouni	Head of SOP team/HQ
Mohamed Fawzy Awad	Assistant for head of SOP team/HQ
Mohamed Fahy	Assistant for head of SOP team/HQ
Khaled Kamanel	Assistant for head of SOP team/HQ
Saeed AbdelFattah	Assistant for head of SOP team/HQ
Adel Ibraheem	Assistant for head of SOP team/HQ
Mohamed El Shatey	Assistant for head of NRW team/HQ
Mohamed Fawzy Bader	Assistant for head of NRW team/HQ
Ahmed El Showny	Assistant for head of NRW team/HQ
Donors	
Tony De Seta	Team Leader, Improved Water and Wastewater Programme
Ernst Doering	Water and Wastewater Management Programme Coordinator
Project Office	
Katsumi FUJII	Japanese Expert/Team Leader
Mitsuhiro OMORI	Japanese Expert
Tomohiro SHIMIZU	Japanese Expert
Atsushi KATO	Japanese Expert
Mohamed Nagi Gaber	Project Facilitator (SHAPVASCO)
Mohamed Abdel Kader Abouzekry	Project Facilitator (GHAPVASCO)
Mohammed Abd El-Kader Abd El-Ghanv	Project Facilitator (MCWW)
JICA Egypt Office	
Shiro NAKASONE	Senior Representative
Koichi MIZUKUSA	Representative







添付資料-9: 終了時評価調査（延長期間）協議議事録



**MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE ARAB REPUBLIC OF EGYPT  
FOR  
THE PROJECT FOR IMPROVEMENT  
OF MANAGEMENT CAPACITY OF OPERATION  
AND MAINTENANCE FOR WATER SUPPLY FACILITIES  
IN NILE DELTA AREA**

THE ATTACHED DOCUMENT

1. Both the Egyptian and Japanese sides agreed on the contents of summary of terminal evaluation for the extended term as Appendix.


Appendix: Summary of Terminal Evaluation for the extended term

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yoshiki OMURA, visited the Arab Republic of Egypt (hereinafter referred to as "Egypt") from 28<sup>th</sup> March to 2<sup>nd</sup> April, 2015 for the purpose of conducting a terminal evaluation of "the Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area" (hereinafter referred to as "the Project").

During its stay, the Team had a series of discussions and exchanged views on the Project with Holding Company for Water and Wastewater (hereinafter referred to as "HCWW") and Sharkiya Potable Water and Sanitation Company (hereinafter referred to as "SHAPWASCO"). And the Joint Coordinating Committee (hereinafter referred to as "the JCC") was held on 1<sup>st</sup> April, 2015.

As a result of the discussions, the Team submitted Summary of Terminal Evaluation for the extended term as attached hereto and Egyptian side agreed upon the description of the report.

Cairo, 1<sup>st</sup> April, 2015



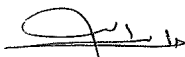
Mr. Yoshiki OMURA  
Leader,  
The Terminal Evaluation Team,  
Japan International  
Cooperation Agency,  
Japan



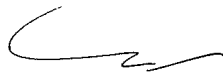
Mr. Mamdouh Raslan  
Project Director,  
Chairman,  
Holding Company for Water  
and Wastewater,  
The Arab Republic of Egypt



Dr. Salah Bayoumi  
Project Manager,  
Vice Chairman  
Holding Company for Water  
and Wastewater,  
The Arab Republic of Egypt



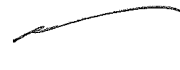
Mr. Ayman Abd El Kader  
Project Co-Manager,  
Chairman,  
Sharkiya Potable Water and  
Sanitation Company,  
The Arab Republic of Egypt



Mr. Mahmoud Zaki  
Project Co-Manager,  
Chairman,  
Gharbia Potable Water and  
Sanitation Company,  
The Arab Republic of Egypt

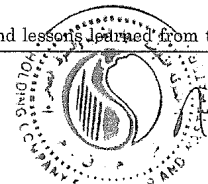


Mr. Mohamed Naguib  
Project Co-Manager,  
Chairman,  
Minufia Company for Water  
and Wastewater,  
The Arab Republic of Egypt

## Summary of terminal evaluation for the extended term

<b>1. Project Overview</b>		
<u>Country:</u> Egypt		<u>Project Title:</u> "The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area"
<u>Issue/Sector:</u> Water resource management		<u>Cooperation scheme :</u> Technical Cooperation
<u>Issue/Sector:</u> Water Resources and Disaster Management Group, Global Environment Department		Total cost (as of March 2014) : 430 million JPY
<u>Cooperation period:</u>	(R/D): April 2011 – March 2014	<u>Partner Country's Implementing Organization :</u> Holding Company for Water and Wastewater (HCWW), Sharkiya Potable Water and Sanitation Company (SHAPWASCO), Gharbia Potable Water and Sanitation Company (GHAPWASCO), Minufia Company for Water and Wastewater (MCWW)
	(After Extension): April 2011 – April 2015	
	<u>Supporting Organization in Japan :</u> Yachiyo Engineering Co., LTD.	
	<u>Related Cooperation :</u> "The Project for Improvement of Management Capacity of Operation and Maintenance for SHAPWASCO"	
<b>1-1. Background of the Project</b>		
<p>The Arab Republic of Egypt (hereinafter referred to as "Egypt") has strived to improve water utilization efficiency and protection of water resources in order to supply clean and safe water to the growing population. Towards achieving this goal, in 2004, the Government established the Holding Company for Water and Wastewater (HCWW) and designated water-supply entities into public corporations under HCWW.</p> <p>Given the managerial responsibility for operation and maintenance (O&amp;M) of water supply facilities, each public corporation was urged to improve operational efficiency and reduce Non-Revenue Water (NRW). Based on the request by the Egyptian government, JICA carried out a technical cooperation project, "The Project for Improvement of Management Capacity of Operation and Maintenance for SHAPWASCO (Sharkiya Potable Water and Sanitation Company)" between 2006 and 2009 (hereinafter referred to as "the previous technical cooperation project"), which confirmed the effectiveness of Standard Operation Procedure (SOP) and NRW reduction activities in the improvement of operational efficiency.</p> <p>HCWW formulated a plan to transfer successful practices and lessons learned from the previous</p>		



technical cooperation project to Nile Delta Area for improving management capacity and requested technical cooperation from the Government of Japan for promoting the transfer of technologies produced in the previous technical cooperation project to GHAPWASCO and MCWW as well as further improving the capacity of SHAPWASCO.

In this background, "The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area" commenced in 2011 for 3 years, which has been extended for 13 months considering delay in water distribution management activities due to the equipment/software failure and travel restriction.

### 1-2. Project Overview

(1) Super Goal:

Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area.

(2) Overall Goal of the Project:

Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates.

(3) Project Purpose:

Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates.

(4) Outputs

- 1) Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened.
- 2) Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates.
- 3) The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates.
- 4) The water distribution management (WDM) capacity is improved in Sharkiya Governorate as an advanced model.
- 0) The project is managed and coordinated properly.

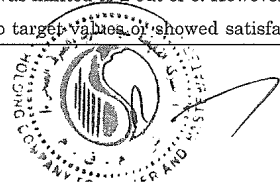
(5) Inputs (as of Terminal Evaluation (February-march 2014)

<Inputs by the Japanese side>

Long-term Expert	0 expert	Equipment	81 million Yen
Short-term Expert	12 experts	Local cost	65 million Yen
Trainees received	15 trainees		



<Inputs by the Egypt side>		
Counterpart 41 persons		
Equipment 1.44 million Egyptian Pounds (LE)		
Local Cost 1.56 million Egyptian Pounds (LE)		
Office rooms or space are secured for Japanese and local experts at GHAPWASCO, MCWW, SHAPWASCO, respectively.		
<b>2. Evaluation Team</b>		
Members of Evaluation Team	(1) Mr. Yoshiki OMURA, Team Leader/Senior Advisor for Water Resources Management, Global Environment Department, JICA	
	(2) Ms. Tomoko KASHIHARA, Water Resources Management Team 1, Water Resources and Disaster Management Group, Global Environment Department, JICA	
Period of Evaluation	28 <sup>th</sup> March, 2015 - 2 <sup>nd</sup> April, 2015	Type of Evaluation: Terminal Evaluation in the Extension Term
<b>3. Results of Evaluation</b>		
<b>3-1. Project Performance</b>		
<b>Project Purpose: "Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates "</b>		
<b>SATISFACTORY</b>		
The overall level of attainment of the Project Purpose Indicator of "Performance Indicators (PIs) in the fields of management capacity of operation and maintenance are improved at the model areas/facilities" was by and large achieved, and was evaluated as satisfactory.		
*PIs		
SOP	<ul style="list-style-type: none"> <li>Effective water utilization ratio (%)</li> <li>Unit consumption of chemicals(g/ m3), such as Gaseous Chlorine, Aluminium Sulfate, Potassium Permanganate, Calcium Hypochlorite</li> <li>Energy consumption (kWh/m3)</li> </ul>	
NRW	<ul style="list-style-type: none"> <li>NRW ratio (%)</li> <li>Reduction ratio of NRW</li> </ul>	
WDM	<ul style="list-style-type: none"> <li>Customer complaints per 1,000 connections</li> <li>Ratio of low service pressure (%)</li> </ul>	
(1) Regarding the PIs related to SOP, the target value was achieved for 39.6% of the total monitoring period as average at 4 model facilities. It is observed that some PIs did not improve compared to the same months of the previous year due to the over lifting of well pumps and break down of flow meters. Since 25% is set as evaluation criteria for achievement, the attainment of PIs for SOP was evaluated as satisfactory.		
(2) Regarding the PIs for NRW, at the time of the previous terminal evaluation, the number of model areas that strictly achieved the PI target figures was limited to 2 out of 6. However, the monitoring results for 3 other model areas were close to target values, showed satisfactory		



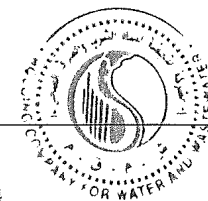
improvements. For the remaining 1 model area whose progress was limited, relevant reasons and justifications were recognized. For these reasons, the attainment of PIs for NRW was evaluated as satisfactory. At the time of this evaluation, PIs for NRW is not able to be measured in the model areas due to limitation of distribution data, however, following leakage reduction is observed through the leakage reduction activities.

		Model Areas	Whole Prefecture
GHAPWASCO	Amount of leakage (m <sup>3</sup> /d)	95	6,140
	Number of fixed sites	7	347
	Average amount of leakage per site (m <sup>3</sup> /d)	13.6	17.7
	Period of activities (months)	13 (2012.9-2013.9)	16 (2013.11-2015.2)
MCWW	Amount of leakage (m <sup>3</sup> /d)	85	7,450
	Number of fixed site	8	747
	Average amount of leakage per site (m <sup>3</sup> /d)	10.6	9.6
	Period of activities (months)	13 (2012.9-2013.9)	5 (2014.9-2015.1)

- (3) Regarding the PIs for WDM, target on the Ratio of Low Service Pressure (%) is achieved. On the other hand, customer complaints per 1,000 Connections was not improved compared to the baseline (refer to the following table). During the activity period, Sharkiya Area experienced frequent power outage and subsequently distribution pumping had to be discontinued. It is observed that such background contributed the increase of the complaints.

> Ratio of Low Service Pressure (%)

	Baseline (2014.3)	Targets	At the time of evaluation (2015.3)
Zagazig	8%	7%	4%
A-4 (model area)	1.4%	1.3%	0.3%



➤ **Customer Complaints per 1,000 Connections**

	Baseline (2011.7-2012.6)	Targets	At the time of evaluation (2014.3-2014.12) (calculated into 12 months)
Zagazig	13.92	11.13	42.67*
A-4 (model area)	13.52	9.46	28.06*

\*Increase is considered to be due to frequent power outage in Sharkiya like other governorates in Egypt.

➤ **Number of power outages**

	2011.7-2012.6	2013.7-2014.6	2014.7-2014.12
Zagazig	16	163	91
A-4 (model area)	6	84	34

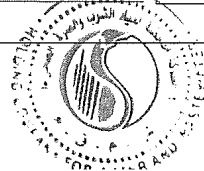
**Output 1: "Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened" [ACHIEVED]**

- (1) Indicator 1.a "More than 3 members each of SOP/NRW teams in SHAPWASCO, GHAPWASCO and MCWW are approved as trainers by Steering Committee" is achieved. Total 26 staff were approved as trainers by the Steering Committee in August 2014.
- (2) Indicator 1.b "More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team" has been achieved. A total of 23 seminars and workshops was achieved in coordination with the 3 affiliated companies participating in the Project.

**Output 2: "Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates" [ACHIEVED]**

- (1) Indicator 2.a "More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation" is already achieved. The examination on 12 SOP members resulted in the average rating of 4.8.
- (2) Indicator 2.b "The model facilities are operated and maintained based on SOP" has already been achieved. The operation and maintenance based on the SOP has been practiced at model facilities since late 2012.
- (3) Indicator 2.c "Improvement of PIs for the model facilities are evaluated based on SOP" is already achieved. The monitoring and evaluation of the PI improvements are on-going since late 2012.

**Output 3: The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates" [ACHIEVED]**



- (1) Indicator 3.a "More than 80% of NRW team members rate understanding of trainings more than 3 on the 5-scale evaluation" is already achieved. The examination for 7 NRW members resulted in the average rating of 4.6.
- (2) Indicator 3.b "Water balance analysis is conducted properly for the 3 model areas" is achieved with the completion of analysis in all 6 model facilities by June 2013.
- (3) Indicator 3.c "100% of detected leakage is repaired at the model area" is achieved.

**Output 4: "The water distribution management capacity is improved in Sharkiya Governorate as an advanced model" [ACHIEVED]**

- (1) Indicator 4.a "Water distribution is managed based on SOP at the model areas" is achieved. SOP was drafted in April 2014 and trial operation of distribution network monitoring system started based on the SOP. Along with the OJT of WDM, the SOP was updated and finalized in December 2014. It is found that WDM is being conducted by 2 engineers based on the SOP.
- (2) Indicator 4.b "Issues on water distribution capacity are reported to top management of SHAPWASCO" is also achieved. C/Ps analyzed the data obtained from the monitoring system such as water supply amount and water pressure, and identified problems of water distribution. Issues and countermeasures are also reported to the management of SHAPWASCO and HCWW every 2 months, and some of the proposed countermeasures have been taken, such as rehabilitation of WTPs and wells.

**Output 0: "The project is managed and coordinated properly" [ACHIEVED]**

- (1) Indicator 0.a "Agreement on the coordination among SHAPWASCO, GHAPWASCO and MCWW is prepared" was achieved. A Minutes of Meeting (M/M), signed at the beginning of the Project agreed the establishment of Steering Committee mentioned in Output 1, and the coordination among the 3 companies for the implementation of the Project.
- (2) Indicator 0.b "Project activities are regularly monitored based on PO/APO" is already achieved. The approval of the Annual Plan of Operation (APO) prepared by the Project and the monitoring of the activities has been conducted at regular Joint Coordination Committee (JCC) meetings.

**3-2. Evaluation Results**

(1) **Relevance** : High

- i. **Relevance to Egypt's policies**: The objective of this Project directly contributes to the Egyptian government's efforts toward achieving the United Nations (UN) Millennium Development Goals (MDGs), by assisting the expansion of water supply through efficient O&M of WTPs, NRW reduction, and the WDM. The Project is also relevant to the recent and current Egypt's

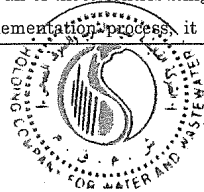


national development strategies, such as the "Sixth Five-Year Plan (2007/08-2011/12)", and the current Annual Development Plan formulated by Ministry of Planning. The Sixth five-year Plan focused on improving the public utilities for human and social development through minimizing water network loss and implementing cost recovery in water project, and the current Annual Development Plan recognizes the efficient O&M of water and wastewater plants and the cost recovery as a priority of Egypt's public utilities.

- ii. **Relevance to beneficiaries' need**: Given the traditionally low water price in Egypt, the low rate of cost recovery has posed a significant challenge for the ACs who are tasked to cover the cost of their operations. The demand for increasing the capability for operational efficiency is such, the capacity development in efficient O&M and NRW reduction is deemed highly appropriate as a response to these challenges. For SHAPWASCO who have already experienced the SOP-based O&M and NRW in the previous project, the focus of this Project is a relevant next step to address low water pressure in the governorate. The introduction of distribution network management system aim to improve facilities and make plans of water distribution management. Objective data from distribution network management system is persuasive enough to fulfill purpose.
- iii. **Relevance to Japan's policy and comparative advantage**: Japan's Country Assistance Policy for Egypt recognizes this Project as contributing to its priority assistance area of "Poverty Reduction and Improvement of Quality of Life". Japan also possesses hands-on experiences in the assistance to target governorates, giving Japan a comparative advantage in providing further assistance in this field. Such experiences includes the construction of a water treatment plant (WTP) in North-west of Sharkiya (2003-2007) as well as a renovation in El Mahala El Kobra in Gharbia (2006-2009), and the previous technical cooperation project Sharkiya. The focus of this Project is therefore considered as consistent with Japan's policy and comparative advantages.

(2) **Effectiveness: Relatively High**

- i. As stated in 3.1, the Project Purpose is by and large attained, through the satisfactory achievement of PIs for SOP and NRW. This achievement is likely to have been realized through the following factors: 1) the visualization of the outcomes and issues of the activities through the introduction of the PIs and the distribution network management system. Therefore, C/Ps realized that their activities led to improve the condition of water supply and solved the problems. ; 2) the gains from the surveys conducted during the Project, such as the skills to analyze the facility design that causes inefficiency, and the opportunity to discover the illegal connections; and 3) the cooperation and positive competitions among the different agencies participating in this Project. Since all of these contributing factors are the results produced from the project design and implementation process, it appears fair to

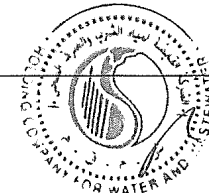


conclude that that the achievement of the Project Purpose was made possible by the activities and outcomes of this Project.

- ii. In achieving the Project Purpose, there were also challenges. These challenges include: 1) the existence of large number of aged and inaccurate meters which at times made the acquisition of correct data difficult; 2) the difficulty in evaluating the performance through the PIs. The introduction of measurable indicators, such as the PIs of this Project, is highly effective on one hand; on the other hand, if the PI evaluation should be based only the quantitative data without consideration to the situation in the field or without a well thought-out evaluation standard, there is a risk for the evaluation results to fail to capture the real performance; 3) the difficulty in improving operation. Although operator can find problems of water supply, they have little choice but to continue present operation because of the physical limitation such as unstable electricity and aging facilities.

(3) **Efficiency: Moderate**

- i. On the Output 0, 1, 2, and 3, the activities are complete and their indicators are attained. However, the implementation of the activity 4 was rescheduled due to the equipment/software failure and travel restriction, which resulted in unexpected extension of the Project term.
- ii. NOPWASD has handed over water supply facilities to ACs without related material, such as manuals and designs, and training on operation and maintenance by the contractor of NOPWASD. The evaluation also found that the time and cost spent by the Project for facility renovation and for the replacement of equipment would have been saved if the feedbacks from the facility operators were reflected on the initial design of the model WTP facilities. Likewise, if the information related to the facility design was passed on to its operators from the NOPWASD, more time would have been saved for the Project who had to recover this information through surveys.
- iii. Input from Egypt and Japanese side are generally appropriate, and the counterparts (C/P) have expressed satisfaction with the expertise of the Japanese and local experts. Procurement of remote water distribution management system delayed, however, activities were implemented based on the revised plan with sufficient monitoring period.
- iv. There are multiple efforts to increase the efficiency made by the Project. To facilitate the implementation of SOP and NRW reduction activities, for example, the Project received support from GHAPWASCO who purchased additional acoustic rods, and from MCWW who undertook the renovation of model facilities. The Project also utilised local experts and project facilitators, which appears to have facilitated the skills transfers from the Japanese experts to a great extent.

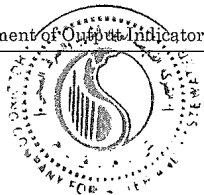


**(4) Impact : High**

- i. Owing to a well-thought project design that integrates the dissemination of outputs in model areas/facilities into the current project activities, the activities for Overall Goal is already being realized simply through the implementation of this Project. That is, activity dissemination strategies were created as part of the Project activities, and the SOP and NRW activities have been disseminated within the two governorates based on these strategies. Therefore Overall Goal of "Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates" is expected to be achieved. SHAPWASCO has already commenced preparations to expand the data monitoring points in Zagazig and 4 WTPs in Sharkiya area, although there is no documented plan for dissemination related to WDM. In addition, Red Sea Affiliated Company visited SHAPWASCO to learn and transfer the knowledge of WDM activities. At the time of Terminal Evaluation, documented plans were yet to be prepared to reach the Super Goal of "Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area" and extend the activities outside of the target governorates. However, ad-hoc, individual initiatives for dissemination are being initiated, and the need for such extension activities was also reconfirmed at the JCC meeting during the Terminal Evaluation.
- ii. As a result of this Project, several positive impacts were produced that influenced the people/sectors outside of the Project. GHAPWASCO, for example, has taken its own initiative to disseminate the NRW activities nation-wide, through hosting a Special Workshop for NRW Reduction Activity for Nationwide Dissemination in September 2012. This workshop was evaluated as a good example of cooperation with the private sector in the field of NRW. Another example is the dissemination of project's knowledge to the Technical Water School, where the NRW team members from MCWW serve as lecturers on the leak detection. This effort was recognised by the Terminal Evaluation Team as an impact on human development outside of the Project.

**(5) Sustainability: Relatively High**

- i. The national policies framework to support the future activities appears solid, given the Egypt's pledge for the UN-MDGs, and in light of the country's next 10-year plan of "Strategic Framework for Economic and Social Development plan Until year 2022".
- ii. The organizational structure to implement future activities is also in place. GAPWASCO, MCWW, SHAPWASCO already established the specialized departments or units for SOP, NRW, and WDM, and these departments/units are already implementing the project activities as part of their routine work.
- iii. In the process of confirming the level of attainment of Output Indicators, technical skills of the



C/Ps for SOP, NRW and WDM were confirmed as sufficient to sustain the future activities. SHAPWASCO entered into a support agreement to address any problem that may arise with equipment/software. Therefore, water distribution network monitoring system is likely to be continuously used, provided that necessary budget and human resource is continued to be secured by SHAPWASCO.

- iv. On the finance, the experience of the Project indicates that the budget for the investment in certain infrastructure can be made available. The funding for renovation of facilities can allegedly be made available from either each governorate or NOPWASD on ad-hoc basis, as well as the financing from the European Union to the HCWW. Therefore, the budget is generally secured for the operations of HCWW and its ACs. It is expected to allocate adequately this budget to related activities of the project.

**3-3. Factors that contributed to achievements of goals****(1) Factors relating to Project Design**

- i. The introduction of the quantitatively measurable PIs and the distribution monitoring system helped visualize the efficiency and resource losses, which brought the change in the awareness and attitudes of the C/Ps.
- ii. The activities of the Project were effective in achieving the Project Purpose. The surveys of model facilities and the preparation of diagrams helped the C/Ps to understand the design of the facilities, and rendered them the ability to identify ways to improve the efficiency on recognition of the facility design problems. For NRW, the leak detection survey in model areas contributed to the discovery of illegal connections, which was highly effective for the improvement of the PIs.
- iii. The cooperation and positive competitions among the ACs was effective in strengthening the commitments to the Project by participating ACs.
- iv. The advice from SHAPWASCO staff who worked in the previous project facilitated the transfer of skills to GHAPWASCO and MCWW, and at the same time ensured the sustainability of the previous projects.
- v. The design of the Project that incorporated the dissemination of Project Outputs into the project activities. Such project design enabled the achievement of the Overall Goal.

**(2) Factors relating to Implementation Process**

- i. The great effort of GHAPWASCO and MCWW in the project implementation, such as additional purchase of equipment and the renovation of the facilities by its own budget. The commitments gained from the management of these ACs contributed to promote the implementation.
- ii. As the central monitoring room is located in Zagazig WTP, information was smoothly





exchanged between Water Distribution Management Unit and WTP, which reflected on operation. In addition, SHAPWASCO provided mobile phones to the well operators with its own budget which enables WDM team to instruct well operators timely.

- iii. The utilization of Egyptian experts, whose expertise produced synergy with that of Japanese experts; the existence of Project Facilitators also enhanced the communication between Japanese experts and Egyptian C/Ps. In sum, the utilization of this existing in-country knowledge base produced an effect in promoting the understanding by the C/Ps during the training and OJT by the Japanese experts.

#### 3-4. Issues/factors that caused the issues

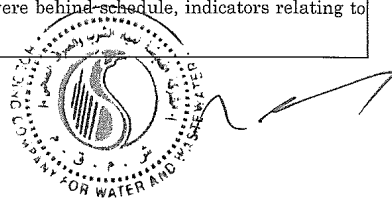
(1) Factors relating to Project Design: NA

(2) Factors relating to Implementation Process:

- i. Delay in the implementation of Output 4 activities resulted in the extension of the Project term.
- ii. The large number of aged and inaccurate customer meters, posing a challenge for NRW team to ensure the credibility of the NRW data.
- iii. Electrical/mechanical facilities in WTP and/or wells are generally old and frequently broken. Distribution capacity is not sufficient especially in summer season. When power supply stopped, pumps didn't work, which lead to low pressure. In addition, it was difficult to withdraw adequate water while canal as water source was in maintenance.
- iv. The facility design that lacks the consideration to the actual facility operations required the Project to spend time and cost for the facility renovation and the replacement of the equipment. The lack of communication and information on the facilities from NOPWASD likewise required the Project to recover the information through project activities. There would have been more efficiency gain if they were solved before the beginning of the Project.

#### 3-5. Conclusion

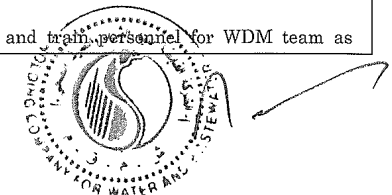
"The Project for Improvement of Management Capacity of Operation and Maintenance for Water Supply Facilities in Nile Delta Area" provided the skills for the SOP-based operations, the reduction of NRW, and the WDM, with a view to improving the operations and maintenance at the water treatment plants in 3 target governorates. The C/Ps are all committed to the project activities, and efforts have been observed to increase the implementation efficiency through the utilization of existing knowledgebase in the country. Although WDM activities were behind schedule, indicators relating to WDM have been sufficiently achieved as well.



In light of the information above, the evaluation for the Project is as follows: the relevance is "high", for the Project's consistency with the Egypt's national policy and capacity needs, as well as with Japan's assistance policy and comparative advantages. Effectiveness is "relatively high", for its satisfactory achievement of the PIs for SOP, NRW and WDM. Efficiency is "moderate", because the indicators for 4 Output (0,1,2 and 3) out of total 5 Outputs were achieved with noteworthy efforts, however, efficiency is affected due to the delay in the WDM activities which resulted in the extension of project period. Impact is "high", because the Overall Goal is likely to be achieved owing to the well-thought project design that integrates the dissemination of outputs in the current project outputs, and because other impacts and spillover effects have been observed outside of the Project. Sustainability was evaluated as "relatively high". Existing policy framework, organizational structure, and technical skills in SOP, NRW and WDM are likely to support the sustainability of the Project outputs and there is some uncertainty as to whether the available finance will be utilized for the operations on-site. Overall, the Project has produced satisfactory results.

#### 4. Recommendations

- (1) To sustain and disseminate the outcome of this Project relating to NRW, it is recommended for GHAPWASCO and MCWW to implement "5-year Plan for Non-Revenue Water Reduction" formulated in the Project. For the smooth implementation of the plan, it is reminded for both ACs to maintain the current staff allocation and implementation arrangement for NRW at both at and Markaz branches, provide the NRW teams with the vehicle(s) and equipment necessary for NRW activities, and enhance collaboration with each branch.
- (2) To sustain and disseminate the outcome of this Project relating to SOP, it is recommended for GHAPWASCO and MCWW to implement dissemination plans of SOP formulated in the Project. It is also recommended for both ACs to solve related facility problems for better operation of the facilities based on the SOPs. For the smooth implementation of the plan, it is reminded for both ACs to purchase spare parts necessary for O&M at WTP and IMRP, to calibrate instrumentation devices, and to maintain assignment of personnel
- (3) To sustain and disseminate the outcome of the Project relating to WDM, it is recommended for SHAPWASCO to undertake the following:
  - i. Ensuring proper maintenance of the remote monitoring system provided by the Project: It is recommended for SHAPWASCO to continue an operational support agreement with a firm familiar with this system to consult on any problem that may arise with the software. It is also recommended that the necessary budget should be secured to upgrade the software and procure necessary spare parts as well.
  - ii. Ensuring necessary human resources for WDM: It is recommended for SHAPWASCO to recruit and train personnel for WDM team as



planned. Current effort on the training and timely instruction for well operators for proper operation should be continued.

iii. Improving water distribution based on the WDM:

It is recommended for SHAPWASCO to continue regular reporting to the management of SHAPWASCO and HCWW about issues on water distribution. With precise data acquired through monitoring, SHAPWASCO is recommended to analyze the present conditions of water distribution in Zagazig, and continue its effort to solve the problems such as low service pressure and intermittent water supply.

iv. Expanding the WDM activities to other water distribution facilities within Sharkiya governorate which were not covered in the Project:

It is recommended for SHAPWASCO to ensure not only the dissemination of the remote monitoring system, but also of the capacity of water distribution management

(4) To achieve the Super Goal of the Project, following shall be considered:

i. HCWW shall expand the project activities to other Governorates in collaboration with GHAPWASCO, MCWW, and SHAPWASCO.

ii. HCWW shall promote sharing experiences and outputs of the Project in collaboration with GHAPWASCO, MCWW, and SHAPWASCO in view of sustaining the skills and motivation of the staff involved in the Project. (An example of possible actions is to utilize the network fostered in the Project to organize joint seminars, where the operational-level staff will be given opportunities to share their experiences with other ACs.)

(5) To ensure correct data collection and improve the water fee collection rate, it is recommended for HCWW, GHAPWASCO, MCWW, and SHAPWASCO to make utmost efforts to sensitize the water users on the need for regular replacement of customer water meters and discuss concrete measures to promote the replacement of the meters by the users. It is also recommended for HCWW to consider the house connections (including the meters) to be the property of the ACs instead of the customers, to ensure the maintenance and replacement of these meters.

(6) To improve water supply service further, it is recommended for HCWW to share the view of the facility design from the aspect of O&M of WTPs with NOPWASD. It is also recommended for HCWW to make its utmost efforts to promote information-sharing between the contractors and the operators, through such actions as hosting an opportunity for NOPWASD staff to visit model facilities of the Project.

(END)

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