

**THE REPUBLIC OF ZAMBIA
MINISTRY OF WATER DEVELOPMENT, SANITATION
AND ENVIRONMENTAL PROTECTION (MWDSEP)
NATIONAL WATER SUPPLY AND SANITATION
COUNCIL (NWasCO)**

**THE PROJECT FOR STRENGTHENING
CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE**

IN

THE REPUBLIC OF ZAMBIA

PROJECT FINAL REPORT

MARCH 2019

JAPAN INTERNATIONAL COOPERATION AGENCY

**YACHIYO ENGINEERING CO., LTD.
YOKOHAMA WATER CO., LTD.**

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Project Site Map

Photographs



Kick-Off Meeting (Mar. 2017)



Meeting with MLGH (Mar. 2017)



Meeting with Wasaza Task Force (Apr. 2017)



Meeting with MWDSEP (Dec. 2017)



3rd JCC Meeting (Dec. 2017)



Meeting with MCC (Apr. 2018)



3rd Workshop (Jul. 2018)



4th JCC Meeting (Jul. 2018)

Photographs



Training for NWASCO (Jul. 2018)



Meeting with LWSC (July. 2018)



Distribution Plant WWSC (Oct.2018)



Site Survey on WWSC (Oct. 2018)



Meeting with LpWSC (Nov. 2018)



Site Survey on KWSC (Dec. 2018)



Final JCC Meeting (Jan. 2019)



Final JCC Meeting (Jan. 2019)

**THE PROJECT FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY INFRASTRUCTURE
IN THE REPUBLIC OF ZAMBIA**

Project Final Report

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ABBREVIATION

AfDB	African Development Bank
AusAID	Australian Agency for International Development
CA	Capacity Assessment
ChWSC	Chanbeshi Water and Sewerage Company
C/P	Counterpart
CU	Commercial Utilities
DANIDA	Danish International Development Agency
DHID	Department of Housing and Infrastructure Development
DWSS	Department of Water Supply and Sanitation
F/R	Final Report
GIS	Geographic Information Systems
GIZ	German International Cooperation Agency
HR	Human Resource
HRA	Human Resource and Administration
HRDP	Human Resource Development Plan
IBNET	International Benchmarking Network
ICR	Inception Report
ISO	International Organization for Standardization
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
KWSC	Kafubu Water and Sewerage Company
LA	Local Authorities
LgWSC	Lukanga Water and Sewerage Company
LpWSC	Luapula Water and Sewerage Company
LWSC	Lusaka Water and Sewerage Company
MBP	Midterm Business Plan
MCC	Millennium Challenge Corporation
MD	Managing Director
M&E	Monitoring and Evaluation
MIS	Management Information System
MLGH	Ministry of Local Government
MLGH	Ministry of Local Government and Housing
MWDSEP	Ministry of Local Government and Housing
M/M	Minute of Meeting
M/P	Master Plan
MS	Monitoring Sheet
NRW	Non-Revenue Water
NUWSSP	National Urban Water Supply and Sanitation Program
NWASCO	National Water Supply and Sanitation Council
O&M	Operation and Maintenance
PD	Project Director
PDM	Project Design Matrix

PI	Performance Indicator
PM	Project Manager
PO	Plan of Operation
PR	Public Relations
RD	Record of Discussion
SOMAP	Sustainable Operation and Maintenance Project
ToT	Training of Trainers
UNICEF	United Nations Children's Fund
USD	United States Dollar
WB	World Bank
WS	Workshop
WSC	Water and Sewerage Company
WSP	Water and Sanitation Program
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant
WWSC	Western Water and Sewerage Company

SUMMARY

1. Objectives of the Project and Main Activities

The Project is to establish appropriate operation system of Commercial Utilities (CUs) and to improve appropriate technology. Activities of the Projects are composed of three components such as preparation of Evaluation Manual (EM), Evaluation of CUs at organization & individual level and formulation of Mid-term Business Plan (MBP) & Human Resource Development Plan (HRDP). The Project was implemented February 2017 through February 2019.

2. Outlines of the Project

Overall goal, purpose, outputs and activities of the Project are summarized as below.

Table S-1 Summary of Overall Goal, Output and Activities in the Project

Overall Goal	Urban water supply infrastructure is managed in a sustainable way by each CU.
	[Indicator] Urban water supply infrastructure is managed based on the Strategic Paper and/or HRDP.
Project Purpose	The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.
	[Indicator] MBP and HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.
Outputs	[Output1] Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.
	[Indicator1] The EM for evaluating CUs is approved by Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) and National Water Supply and Sanitation Council (NWASCO).
	[Indicator2] The way to utilize the evaluation manual is understood by MWDSEP, NWASCO and CUs staff in charge of urban water supply
	[Output2] Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.
	[Indicator] Challenges of each CU are clarified.
	[Output3] MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC

Source: PDM

3. Achievement Levels for the Project

3.1 Achievement Levels based on PDM

Achievement Levels are summarized as follows:

Table S-2 Achievement Levels for the Project

Objectively Verifiable Indicators	Achievement
[Project Purpose] The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.	
1. MBP and HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.	MBP and HRDP of the four CUs such as LWSC, WWSC, LpWSC and KWSC were prepared by the Project Team and finally approved by the board members of each CU.
[Outputs1] Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.	
1-1 EM for evaluating CUs is approved by MWDSEP and NWASCO.	Component and evaluation items, etc. shown in the EM for the CUs were approved by MWDSEP and NWASCO as a draft through the 2 nd JCC on the 9 th August 2017. Through conducting the evaluation, the challenges on the EM were identified, and these were reflected to the revision of the EM (see Appendix-11) at the 5 th JCC on the 30 th January 2019.
1-2 The way to utilize the evaluation manual is understood by MWDSEP, NWASCO and CUs staff in charge of urban water supply	NWASCO and MWDSEP are responsible for evaluation of the CUs. In the training session after the 2 nd JCC, the way to utilize the Evaluation Manual for the four CUs was introduced by NWASCO as well as MWDSEP. According to answers to questionnaires prepared by JICA Expert Team as shown in Appendix-9, about 71% and about 57% of staff targeted for assessment in the four CUs was able to understand

Objectively Verifiable Indicators	Achievement
	purpose of the EM and contents & composition respectively.
[Outputs2] Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.	
2-1 Challenges of each CU are clarified.	Through Activity 2-1 to 2-4 by using the EM, the challenges of each CU were identified. The challenges and gaps of each CU between status-quo and optimum status were shared with MWDSEP, NWASCO and the targeted four CUs in the workshop on 12 th December 2017 as per Activity 3-1.
[Outputs3] MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC	
3-1 MBP and HRDP are logically prepared in a manner consistent with target figure of key performance indicator.	Output 3 has been achieved in Activity 3-1 to 3-9 that is scheduled to take place from December 2017 to October 2018. The Project Team clarified challenges as Output 2 and formulated MBP and HRDP based on challenges. Especially, the Project Team made an effort to form composition of MBP and HRDP so that CUs can formulate them systematically and easily.

Source: JICA Expert Team

3.2 Overall Achievement of the Project

(1) Capacity Strengthening of each CU

The four CUs were able to identified challenges on water supply service by themselves under common condition among the CUs by using the EM for evaluation. Afterwards, about 60% of the staff targeted in the four CUs were also able to understand a series of process; setting-up of the objective & the verifiable indicators, the contents of activities and calculating approximate cost of activities. Furthermore, receiving the trail exercise of a series of activities, it is likely that understanding of the four CUs' staff increased.

(2) MWDSEP as supervisory Ministry and NWASCO

MWDSEP which supervises NWASCO and the CUs relies on NWASCO to direct the CUs to evaluate their own capacity by using the EM and formulate MBP and HRDP. On the other hand, JICA Expert Team lectured NWASCO with guideline (see Appendix-12) on a series of process so that it seemed that NWASCO was able to understand capacity assessment, identifying challenges, prioritizing challenges, setting-up objectives & verifiable indicators, the contents of activities and calculating approximate cost of activities. However, it is so difficult for JICA Expert Team to observe NWASCO's intelligibility on the above process, because activities of NWASCO were not monitored by JICA Expert Team after termination of the Project.

(3) Achievement through Five Evaluation Items (DAC)

JICA Expert Team evaluated the Project based on DAC's evaluation items such as Relevance, Effectiveness, Efficiency, Impact and Sustainability. The results of the evaluation is as follows:

- Relevance: Evaluated as "High" because the project purpose corresponds with the development goal and the needs of the CUs and orientation of Japanese assistance.
- Effectiveness: Evaluated as "Relatively High" because MBP and HRDP were approved by the boards of the CUs and the project purpose was achieved.
- Efficiency: Evaluated as "Relatively High" because activities' process and outputs were achieved and original budget was disbursed for the Project as planned.
- Impact: Evaluated as "High", because NWASCO decided to go-on the activities as same as those of the Project even after termination of the Project.
- Sustainability: Evaluated as "High", as a result of analysis that if the Project contributes to the future development in the National Policy and development policy by sector, if the organization is established properly in order to make effect of the Project, if CUs' staff trained in the Project are capable to lead other staff and if enough budget is allocated.

(4) Perspective from Aspect of Financial Analysis

In this Project, the activities were not conducted directly to contribute to financial improvement. On the other hand, reduction from the current NRW ratio to the NRW ratio setup in the MBP through NRW reduction activities further contributes to increase of tariff income to improve water supply management. Historically, as it is likely that IWA water balance has not been conducted properly in the four CUs, it is expected that visibility of water tariff income by using Profit and Loss sheet promotes acceleration of NRW reduction activities positively for the CUs.

4. Main Results of the Activities

4.1 Main Result on Output -1

The Project Team prepared EM which is composed of three types of capacity such as PIs, Management Capacity at organization level and Communication & Negotiation at individual level. There are 21 PIs, 19 parameters of Management Capacity and six parameters of Communication & Negotiation Capacity.

Each CU was able to identify challenges based on basis under the evaluation standard due to preparation of the EM. In addition, the CUs deepened intelligibility on evaluation of capacity through workshop and trial exercise so that the CUs enable to evaluate by themselves.

4.2 Main Result on Output -2

The Project Team analyzed the result of evaluation.

The capacity level is composed of five (5) categories; 'Very Serious', 'Serious', 'Not Good Enough', 'Good', and 'Very Good'. The percentages of 'Very Serious' and 'Serious' challenges on PIs and parameters of Management Capacity are as shown in the following table.

Table S-3 Percentage of "Very Serious" and "Serious" on PIs and Management Capacity

CU	PI	Management Capacity
LWSC	19.0%	10.6%
WWSC	57.1%	47.4%
LpWSC	38.1%	31.6%
KWSC	42.8%	36.9%
Average	39.3%	31.6%

Source: JICA Expert Team

Meanwhile, capacity level is composed of five (5) categories, the same as that at an organization level. The ranges by categories of Communication & Negotiation Capacity are as shown in the following table. "Very Serious" was not observed in the four CUs. Capacity level varies widely among the four CUs. The large scale CUs like LWSC and KWSC have not faced serious situation on communication and negotiation capacity, because it is envisaged that most probably they have an opportunity to communicate with lots of customers than that in small scale CUs in urban areas.

Table S-3 Composition of the Evaluation Results on Communication & Negotiation Capacity

CU	'Serious'	'Not Good Enough'	'Good'	Total
LWSC	0.0%	50.0%	50.0%	100%
WWSC	50.0%	50.0%	0.0%	100%
LpWSC	83.3%	26.7%	0.0%	100%
KWSC	0.0%	100.0%	0.0%	100%
Average	33.3%	56.7%	12.5%	

Source: JICA Expert Team

4.3 Main Result on Output -3

The Project Team started preparation of the draft MBP and HRDP for each CU according to the 1st consultative formulation meeting for the MBP and HRDP on 17th April 2018, and updated the draft MBP and HRDP based on the result of the 2nd consultative formulation meeting on 24th July 2018. The

Project Team also shared the draft MBP and HRDP with all the relevant members such as MWDSEP, NWASCO and 11 CUs at the 3rd workshop held on 25th July 2018. The final MBP and HRDP were submitted to their boards and approved by their board members.

For the purpose of formulation of the MBP and HRDP, the four CUs evaluated their own capacity by using the EM, identified and prioritized challenges, set-up goal, project contents and estimated approximate cost for the next five years. This kinds of activities contributed to establishment of system required for formulation of further accurate and appropriate annual action plan and budget arrangement.

5. Lesson learnt through the Project

5.1 Sharing information with other projects

Each projects on water supply sectors which are carried out by other organizations across Zambia should be shared among the CUs and relevant donors. Sharing information will create synergy effects as LgWSC introduced in the workshop of the Project.

5.2 Period of the Project

The processes of NWASCO's inspection and feedback to each CU couldn't be confirmed in this Project. It is necessary for JICA Experts to confirm these processes for conducting CUs' capacity evaluation and formulating the MBP and HRDP after the Project's termination. In order for JICA Expert to monitor all cycle from evaluation of CUs to formulation of the MBP and HRDP after transferring the process to CUs, further time is required for monitoring CUs' activities.

5.3 Assisting the four CUs in materializing projects following NRW reduction as example

MWDSEP and NWASCO were able to understand contents of projects to be carried out and scale of project cost for the next five years with the MBP and HRDP. However, it was likely to be a bit difficult for the four CUs to proceed to the annual action plan. Therefore, in order to implement projects based on the MBP and HRDP appropriately, Japanese side decided to assist the four CUs in materialize projects as a next step. Actually, JICA Experts flexibly followed-up surveying current status of NRW which is one of common challenges among the four CUs, and prepared specific programs which will be referred to their own annual action plan. It is confident that four CUs will be able to conduct a series of process such as evaluation of capacity, formulation of the MBP and HRDP, preparing program and more accurate annual action plans. Accordingly, the measure programs even other than that of NRW reduction as fundamental documents of annual action plan must be prepared in future.

6. Recommendation to the Zambia Side

The four CUs make it possible to request budget with basis such as challenges which were selected based on EM systematically, so that MWDSEP enable to verify and approve their request on annual budget.

From the aspects of the above points, it is significant that all the CUs assess their own capacity at organization and individual level and feedback the result of assessment to the MBP and HRDP in order for MWDSEP to approve practical budget based on particular basis. Actually, there is no incentive for all the CUs to utilize EM for their evaluation, therefore, it is recommended that MWDSEP determines one of regulations that MWDSEP cannot accept request of annual budget without the results based on EM, the MBP and HRDP.

In order to conduct activities of capacity assessment and formulation of the MBP and HRDP sustainably, JICA Experts suggested the following two types of measures:

■ Actions at CUs' Level

- a) Performance Basis-1: Introducing remuneration system in the CUs in terms of annual goal of each staff, work performance such as process and outputs.
- b) Performance Basis-2: Introducing promotion or demotion system in the CUs in terms of annual goal of each staff, work performance such as process and outputs.

■ Actions at other Levels apart from CUs

- a) Regulating capacity assessment by using the EM as pre-condition: Any project implementation of CUs are subsidized by the Government.
- b) Regulating capacity assessment as pre-condition: CU's annual budget is approved.

7. Future Prospect

7.1 Scaling-up capacity assessment by NWASCO

NWASCO determined to scale up utilization of outputs as below:

(1) Four targeted CUs

1) Request of Capacity Assessment

NWASCO will request the CUs to conduct capacity assessment at organizational and individual level in July or August every year.

2) Formulation or review of MBP and HRDP

NWASCO will conduct monitoring of progress in reviews and implementation of the MBP and HRDP every year.

3) Approval of MBP and HRDP

MBP and HRDP will be approved by each board of CU in December every year.

4) Inspection of MBP and HRDP

NWASCO will inspect each MBP and HRDP in January and February. After the inspection, NWASCO will feed back the result to each CU.

(2) All the CUs

1) Workshop

In order to scale up capacity assessment to the remaining seven CUs, NWASCO will invite them to attend the workshop in October 2019, and will explain capacity assessment to the remaining seven CUs.

2) Commencement of Scale-up

NWASCO will request the remaining seven CUs to conduct capacity assessment based on the EM in January 2020. All the eleven CUs will also follow the same process as the four targeted CUs as shown in the "7.1 (1)" above.

It seems that scaling-up of capacity assessment to all the 11 CUs will be achieved by NWASCO based on the followings:

- MWDSEP issued the letter for NWASCO to indicate to scale up capacity assessment utilizing the EM to all the 11 CUs.
- It is easy for NWASCO to inspect the MBP and the HRDP as a result of capacity assessment systematically and adequately using the EM.
- There is no budget shortfall for NWASCO because NWASCO implements the scaling-up activities at the same time of NWASCO's benchmarking activities.
- It is easy for NWASCO to introduce the EM, because some indicators of the EM correspond to the indicators of NWASCO's benchmark.

7.2 Taking over Assistance on Water Supply Sector by Other Donors

GIZ and AfDB have been planning financial and technical assistance on water supply sector for WWSC and LpWSC. GIZ has plans on strengthening of MWDSEP's management capacity, while, AfDB has been designing scope of the project through the preliminary survey. In connection with assistance of AfDB, AfDB mentioned that it will finalize specification and scope of their project based on the EM and the NRW reduction program which was prepared by JICA Expert Team. Specifically, AFDB will focus on installation of water meters which were proposed in the program. On the other

hand, GIZ is also interested in the EM and the NRW reduction program and decided to utilize these documents.

CHAPTER 1 INTRODUCTION

1.1 Overview of the Project

1.1.1 Background of the Project

Republic of Zambia which has population of about 15 million (as of 2014, World Bank) commenced the water supply services for the people working in copper-bearing ores industries between 1964 and 1970. Assisted by international donors based on National Development Plans, urban & rural water supply system has been developed since commencement of water supply services. However due to the deteriorated water supply facilities and illegal connections, according to World Bank Data, ratio of Non-Revenue Water (hereinafter referred to as “NRW”) of the urban water supply service is high at about 48% across Republic of Zambia as of the year 2014.

The Government of Republic of Zambia requested the implementation of the Project on capacity development of Operation & Maintenance (hereinafter referred to as “O&M”) of water supply system to Japan under the abovementioned circumstance. It was agreed between the Zambian side and the Japanese side to conduct the technical assistance on human resource development through the training for 11 Commercial Utilities (hereinafter referred to as “CUs”) in March 2015. However CUs didn’t have the comprehensive Human Resource Development Plan to conduct the training, and the Ministry of Local Government and Housing (hereinafter referred to as MLGH)¹ didn’t have a tool to evaluate the implementation structure of CUs. Therefore, based on Record of Discussion (hereinafter referred to as “R/D”) on the Project, the Ministry of Water Development, Sanitation and Environmental Protection (hereinafter referred to as “MWDSEP”) and JICA signed on 30th August 2016. The contents of the Project are to formulate the Evaluation Manual (hereinafter referred to as “EM”), Midterm Business Plan (hereinafter referred to as “MBP”) and Human Resource Development Plan (hereinafter referred to as “HRDP”).

The Project was implemented from February 2017 to February 2019.

1.2 Objectives of the Project

The Project is to establish an appropriate operation system of CUs and to improve appropriate technology.

1.2.1 Outlines of the Project

Overall goal, purpose, outputs and activities of the Project are summarized as shown in Table 1.2-1.

Table 1.2-1 Summary of Overall Goal, Output and Activities in the Project

Overall Goal	Urban water supply infrastructure is managed in a sustainable way by each CU.
	[Indicator] Urban water supply infrastructure is managed based on the Strategic Paper and/or HRDP.
Project Purpose	The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.
	[Indicator] MBP and HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.
Outputs	[Output1] Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.
	[Indicator1] EM for evaluating CUs is approved by MWDSEP and NWASCO.
	[Indicator2] The way to utilize EM is understood by MWDSEP, NWASCO and CUs staff in charge of urban water supply
	[Output2] Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.
	[Indicator] Challenges of each CU are clarified.
	[Output3] MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC
[Indicator] MBP and HRDP are logically prepared in a manner consistent with target figure of key performance indicator.	

Source: Project Team

¹ Water sector was transferred from MLGH to Ministry of Water Development, Sanitation and Environmental Protection (hereinafter referred to as “MWDSEP”) from February 2017.

1.3 Project Areas

- Headquarters: Lusaka
- CUs targeted in the Project: As shown in Table 1.3-1.

Table 1.3-1 CUs targeted in the Project

CUs	Abbrevia tion	Commencement of Operation	Region	Target Area
Lusaka Water and Sewerage Company	LWSC	1989	Lusaka	Lusaka
Luapula Water and Sewerage Company	LpWSC	2009	Luapula	Mansa
Western Water and Sewerage Company	WWSC	2000	Western	Mongu
Kafubu Water and Sewerage Company	KWSC	2000	Copper Belt	Ndola

Source: NWASCO

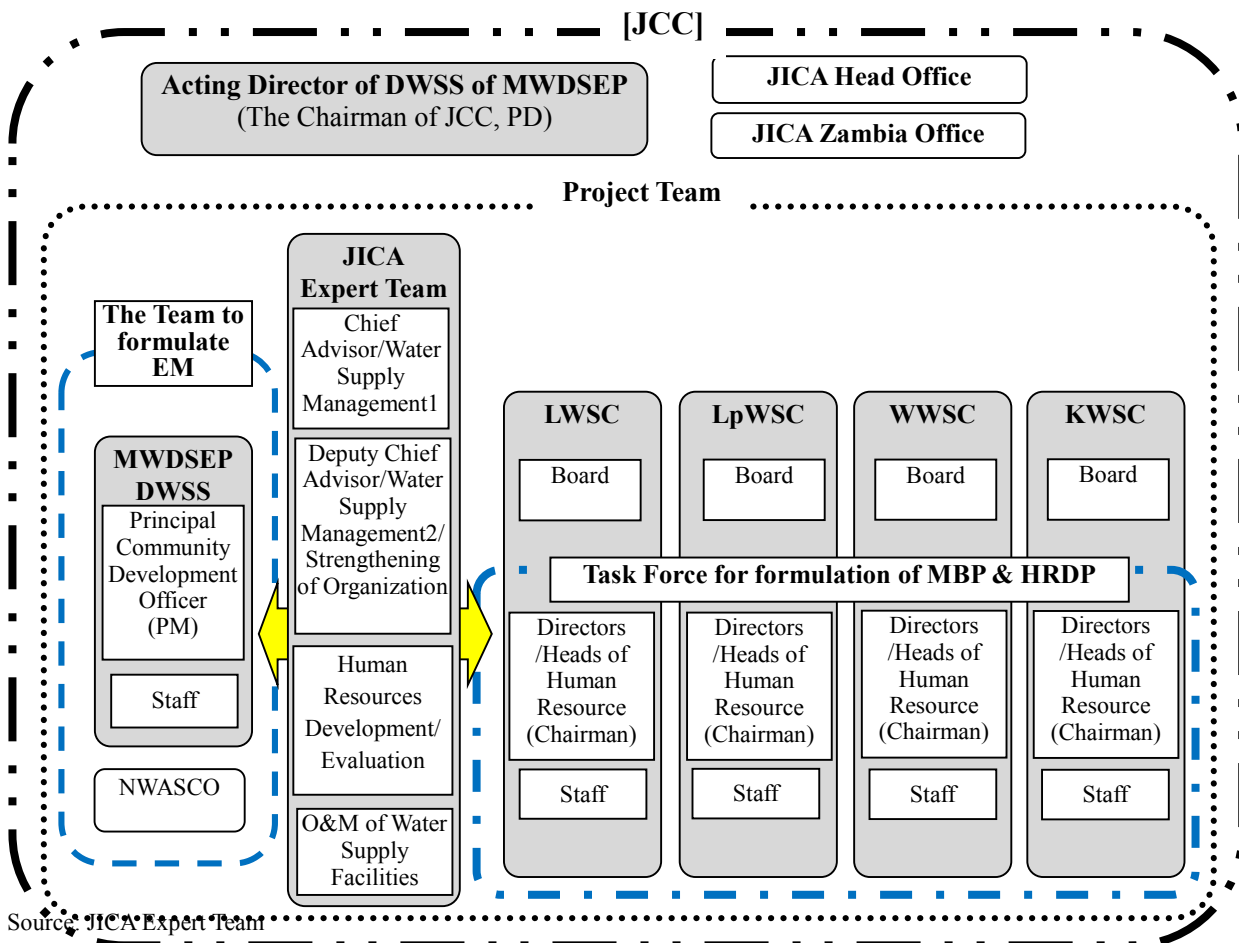
1.4 Structure for the Project Implementation

1.4.1 Formation for the Project Implementation

MWDSEP and National Water Supply and Sanitation Council (hereinafter referred to as “NWASCO”), and 11 CUs is in charge of “Supervision” and “Implementation” of water supply services in Zambia respectively under National Water Policy

- Implementation Body of the Project: MWDSEP and NWASCO
- Bodies targeted in the Project: CUs

Project implementation structure which is composed of Department of Water Supply and Sanitation (hereinafter referred to as “DWSS”) of MWDSEP, JICA and the Project Team is shown in Figure 1.4-1.



Source: JICA Expert Team

Figure 1.4-1 Implementation Structure of the Project

1.5 Coordination with Other Development Partners

Deutsche Gesellschaft für Internationale Zusammenarbeit (hereinafter referred to as “GIZ”) has activities for capacity development and regulatory reform in water and sanitation. In addition, GIZ supported the MWDSEP to carry out a feasibility study to develop a sustainable institutional model for the delivery of training and capacity building to Commercial Utilities and other service providers in Water Supply and Sanitation (hereinafter referred to as “WSS”) sub sector. On the other hand, JICA Expert Team confirmed GIZ’s orientation of their future assistance. According to GIZ, GIZ focuses on large impact with small scale fund and a synergy effect with other cooperating partners. GIZ procured smart phones for contributing to development of the digital meter reading (hereinafter referred to as “DMR”) system in LgWSC. DMR system is to reduce the reading errors for the customer meters, which contribute to the NRW reduction. GIZ dispatched the appraisal mission in January 2019, and targeted MWDSEP and LpWSC which is one of the targeted CUs of the Project. GIZ is interested in the EM and the NRW reduction program and decided to utilize these documents.

LWSC under the Lusaka Sanitation Project funded by World Bank (hereinafter referred to as “WB”) has an action plan of institutional capacity development at LWSC to improve the organizational behavior, structure, capability, tools and influence until January 2022.

African Development Bank (hereinafter referred to as “AfDB”) targets NWASCO as an implementing organization of the project for the Performance Recovery Program in WWSC, LpWSC and Chambeshi Water and Sewerage Company (hereinafter referred to as “ChWSC”). NWASCO follows-up the benchmarking for these CUs every three months. This program mainly covered the development of pipe networks in WWSC and LpWSC. AfDB interested in the EM, the MBP & HRDP and the NRW reduction program, shared them to AfDB’s consultants. JICA Expert Team explained the importance of installation of bulk meters at the outlet of the reservoirs to calculate the NRW. As of February 2019, these bulk meters were being designed by AfDB’s consultants.

CHAPTER 2 RESULT OF THE PROJECT

2.1 Contents of the Project

2.1.1 Inputs of the Zambian Side

(1) Project Personnel

Project members appointed are as shown below;

- Project Director (hereinafter referred to as “PD”): Acting Director of DWSS, MWDSEP: Eng. Oswell Katooka
- Project Manager (hereinafter referred to as “PM”): Principal Community Development Officer, DWSS, MWDSEP: Ms. Selenia M. Matimelo
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Kalapa B. Charles*¹
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Michael Mwamba Museba*²
- Chief Inspector, NWASCO: Mr. Peter Mutale
- Senior Inspector, NWASCO: Ms. Chola Mbilima
- Senior Inspector, NWASCO: Mr. Hara Kasenga
- Managing Director (hereinafter referred to as “MD”), LWSC until the middle of July 2017: Dr. Sylvester Mashamba*³
- MD, LWSC from the middle of July 2017: Eng. Jonathan Kampata*⁴
- MD, WWSC: Eng. Wamuwi Changani
- MD, LpWSC: Eng. Kenneth Chense
- MD, KWSC: Eng. Athanasius K. Mwaba
- Acting Human Resource and Administration (hereinafter referred to as “HRA”) Director, LWSC: Mr. Christopher Walimuntu
- Human Resources (hereinafter referred to as “HR”) Manager, WWSC: Ms. Pauline Sakala
- HR Manager, LpWSC: Mr. Barnard Chama
- HR Director, KWSC: Mr. Portipher Phiri*⁵
- Acting HRA Manager. KWSC: Mr. Brian Ng’onga*⁶

Note: *1: On study leave from the middle of September 2017

*2: Assigned at the end of September 2017

*3: No longer at LWSC as at the middle of July 2017

*4: Assigned at the middle of July 2017

*5: No longer at KWSC as at end of August, 2017

*6: Assigned at the beginning of September, 2017

(2) Land, Building and Facilities

Office spaces for the Project were secured as shown below.

- Office space in Ministry of Local Government (hereinafter referred to as “MLG”) until the 21st July 2017
- Office space in LWSC from the 24th July 2017

2.1.2 Inputs of the Japanese Side

Chief Advisor and three other experts were engaged in the Project in Zambia for 23.06 Man-Months and in Japan for 0.10 Man-Months in total from February 2017 to February 2019 as shown in the following table.

In order for four CUs to understand how to promote projects, JICA Zambia Office modified the contract agreement with JICA Expert Team in November 2018 for delay of the approval of the MBP and the HRDP by each board and purpose of further detail survey on current status in terms of NRW for four CUs. The Project period was revised in the contract agreement from November 2018 to February 2019. This survey contributes to four CUs to be able to conduct a series of process such as evaluation of capacity, formulation of the MBP and HRDP, preparing program and more accurate annual action plans.

Table 2.1-1 JICA Expert Team Members

Member	Position	Manning	
		In Japan	In Zambia
IGARASHI Hideyuki (Mr.)	Chief Advisor/Water Supply Management1	0.05MM	6.23MM
FUJIYAMA Taketoshi (Mr.)	Deputy Chief Advisor/Water Supply Management2/ Strengthening of Organization	0.05MM	5.80MM
WADA Yoshiharu (Mr.)	Human Resources Development/ Evaluation	0.0MM	5.50MM
MIWA Shinji (Mr.) until June, 2018	O&M of Water Supply Facilities	0.0MM	5.53MM
TAMOTSU Kimiko (Ms.) from July 2018			
Total MM		0.10MM	23.06MM

Source: JICA Expert Team

2.1.3 Activities

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Activity 1-1. To collect policy, strategy and information related to CUs in Zambia.

This Project commenced in accordance with the overall plan as contained in the National Water Supply and Sanitation Capacity Development Strategy (2015- 2020). The Strategy states that the following objectives at organization and individual level are related to the capacity development of the MLGH (water and sanitation function of Department of Housing Infrastructure and Development (hereinafter referred to as “DHID” in the MLGH. The strategy is now implemented by the MWDSEP following the creation of the Ministry in 2016.

(1) Organization Level:

- To strengthen the Capacity of MWDSEP*7 to guide the sector
- To develop the Capacities of CUs to manage their operations sustainably within the conditions of resource constraints.
- To develop the Capacities of Local Authorities (LAs) in resource mobilization, resource allocation prioritization, resource utilization and shareholder responsibilities for sustainable WSS service delivery.
- To strengthen the Capacity of NWASCO to optimize the utility of its database and to upscale its coverage.

Note: *7: According to the statement stated in the National Water Supply and Sanitation Capacity Development Strategy (2015-2020), “MLGH” is described in the sentence.

(2) Individual Level:

- To enhance the HR performance in the WSS sector.
- To recruit and retain both male and female staff in the sector.

MWDSEP and NWASCO are responsible for evaluation of CUs’ organizational and individual capacity. In this Project, local CU counterparts comprise LWSC, WWSC, LpWSC and KWSC.

The Project Team had interviews with four CUs in order to identify various challenges on water supply service and examine evaluation indicators.

Activity 1-2. To decide target parameters covered by the Evaluation Manual

Through interviews with the four CUs and field visits, the following challenges were observed and contributed to the selection of Performance Indicators (PIs), which the EM consists of.

(1) LWSC

Table 2.1-2 Challenges and their Causes (LWSC)

Challenges	Causes
a) Number of PI <ul style="list-style-type: none"> Few PIs (e.g.nine PIs). 	<ul style="list-style-type: none"> Using PIs as the benchmarking of NWASCO.
b) Geological Information System (GIS) Database <ul style="list-style-type: none"> Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> No linkage with the other Databases. Limited human resources.
c) Pipe Location <ul style="list-style-type: none"> Uncertainty over exact location of the existing pipeline. 	<ul style="list-style-type: none"> Imprecise database of pipeline location.
d) Non-Revenue Water (NRW) Management <ul style="list-style-type: none"> High NRW ratio (46%^{*8}). 	<ul style="list-style-type: none"> Difficulties in reduction of apparent and real loss due to deteriorated water meters, deterioration of pipes and lack of leak detectors. Lots of illegal connections due to easiness of illegal connections. Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters.

Note: *8: Source “Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016”, NWASCO.
Source: Project Team

(2) WWSC

Table 2.1-3 Challenges and their Causes (WWSC)

Challenges	Causes
a) GIS Database <ul style="list-style-type: none"> Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> Limited human resources.
b) WTP Treatment Process <ul style="list-style-type: none"> Metal odor from tap water. 	<ul style="list-style-type: none"> Inappropriate treatment process.
c) NRW Management <ul style="list-style-type: none"> High NRW ratio (54%^{*8}). 	<ul style="list-style-type: none"> Lots of illegal connections due to easiness of illegal connections. Non-implementation of NRW reduction due to inadequacy of skilled staff for detecting leaks and inadequacy of leak detectors. Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters in addition to inadequacy of skilled staff who can calibrate the water meters. Inadequacy of plumbers to repair leakage.

Note: *8: Source “Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016”, NWASCO.
Source: Project Team

(3) LpWSC

Table 2.1-4 Challenges and their Causes (LpWSC)

Challenges	Causes
a) GIS Database <ul style="list-style-type: none"> Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> Limited human resources.
b) Operation and Maintenance (O&M) at Mansa Water Treatment Plant (WTP) <ul style="list-style-type: none"> Difficulties in the response to sudden change of 	<ul style="list-style-type: none"> Inappropriate water treatment management due

Challenges	Causes
raw water quality.	to inadequacy of skilled staff for maintaining water supply facilities.
● Inadequacy of management of service reservoir.	● Inadequacy of skilled staff for maintaining water supply facilities.
c) NRW Management	
● High NRW ratio (70%*8).	● Non-implementation of NRW reduction due to difficulties in identifying illegal connections and inadequacy of staff to patrol illegal connections.
● Unreliable NRW ratio.	● Inadequacy of bulk meters at service reservoirs due to no plan to install the bulk meters.
d) Leakage Management	
● Wide spread leakage.	● No visual leakage patrols <u>due to no a dedicated leakage management section.</u>
	● No leakage report system by customers <u>due to no a dedicated leakage management section.</u>
	● Non-implementation leakage reduction <u>due to no a dedicated leakage management section.</u>
e) Arrear of Water Tariff	
● Arrear of water tariff from large consumers.	● Difficulties in collecting from large water tariff customers such as government organizations and institutions due to insufficient training programs for staff to raise awareness on tariff collection.
f) Construction Management	
● Inadequacy of construction management.	● No construction supervisors in the CU.

Note: *8: Source “Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016”, NWASCO.

Source: Project Team

The Project Team supposed some of causes underlined in ‘(3) d)’ from the aspect of evaluation result by using the EM, because of no information available.

(4) KWSC

Table 2.1-5 Challenges and their Causes (KWSC)

Challenges	Causes
a) O&M at ITAWA WTP	
● Deterioration of the concrete structure at ITAWA WTP.	● Constructed in 1955.
	● Insufficient maintenance due to inadequacy of skilled staff to maintain facilities appropriately.
● Malfunction of the filter control panel.	● Deterioration of equipment due to inadequacy of skilled staff to maintain various equipment.
	● Inadequacy of equipment replacement due to inadequacy of skilled staff to maintain equipment.
● Filtration by manual operation at filter basin on operator’s experience.	● Insufficient intelligibility of staff concerning the importance of control panel.
b) Distribution Management	
● Existence of asbestos pipes.	● Buried according to original design.
	● Non-implementation of asbestos pipe replacement due to inadequacy of training concerning hazardous materials.
● Deterioration of distribution pipes.	● Non-implementation of distribution pipe replacement due to no plans to replace distribution pipe.
c) O&M	
● Malfunctioning flow meter.	● Insufficient intelligibility of some staff concerning water distribution management.
	● Inadequate O&M for the flow meter due to

Challenges	Causes
	inadequacy of understanding of the necessity of flow meters.
d) Procurement of parts <ul style="list-style-type: none"> ● Delay of repairing leakage. 	<ul style="list-style-type: none"> ● No repair tools and materials to be procured promptly.
e) NRW Management <ul style="list-style-type: none"> ● High NRW ratio (54%*9) 	<ul style="list-style-type: none"> ● Various reasons such as leakage, lots of illegal connections due to social aspects, meter inaccuracies due to no replacement of malfunctioning water meters.

Note: *9: Source KWSC at the 2nd JCC
Source: Project Team

Activity 1-3. To formulate the Evaluation Manual

In principle, each CU evaluates its own capacity at organizational and individual level by using the EM. The Project Team prepared the EM in light of evaluation to be standardized, so that CUs evaluate the capacity quantitatively in the constant rule.

The EM is composed of three categories; PIs for water supply service, Evaluation Items for Management Capacity and Evaluation Items for Communication & Negotiation Capacity. Each sheet in the Evaluation Manual consists of the following subjects.

(1) PIs for water supply service

- Definition
- Purpose
- Interviewee
- Background and Concept
- Evaluation Criteria
- Causes
- Points to be considered (if necessary)
- Evaluation example (if necessary)

(2) Evaluation Items for Management Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

(3) Evaluation Items for Communication & Negotiation Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

Activity 1-4. To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CUs.

Kick-off Meeting and the 1st Joint Coordination Committee (JCC) of the Project took place on the 2nd and the 17th March 2017 respectively. MWDSEP and Japanese Experts (The Project Team) shared the purpose of the Evaluation Manual with MWDSEP, NWASCO, LWSC, LpWSC, KWSC and WWSC. The Evaluation Manual consists of PIs, Management Capacity and Negotiation & Communication Capacity of CUs.

The Project Team selected 21 PIs from the Web database of The International Benchmarking Network

for Water and Sanitation Utilities (IBNET) that The Water and Sanitation Program (WSP) of the World Bank (WB) manages through the result of interviews with four CUs and examination of the INDICATORS FOR THE URBAN AND PERI-URBAN WATER SUPPLY AND SANITATION SECTOR REPORT of NWASCO.

In addition, The Project Team proposed 19 evaluation items for management capacity and six items for communication & negotiation capacity.

The components of the Evaluation Manual are as follows:

(1) PIs for the Water Supply Service:

1) Aspects to be improved mainly by Facility Investment

- P1: Continuity of supply
- P2: Overall water supply coverage
- P3: Surplus purification capacity
- P4: Transmission and distribution mains
- P5: House connections
- P6: Mechanical and electrical equipment
- P7: Rate of facility utilization

2) Aspects to be improved mainly by Capacity Development (Technical Aspect)

- P8: O&M of the facilities
- P9: Drawings of pipe facilities
- P10: NRW ratio
- P11: Customer meters
- P12: Bulk meters
- P13: Water quality parameters tested at purification plants

3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)

- P14: Cost recovery level
- P15: Collection ratio
- P16: Number of staff working especially for water (Number/'000 water connections)
- P17: Implementation of training
- P18: Complaint handling
- P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

4) Aspects to be improved mainly by Program Approach

- P20: Sewerage coverage (including On-site Facilities)

5) General Aspect

- P21: Year of work experience on water supply service

The PIs underlined above are added to the PIs which NWASCO has as evaluation of the benchmark. The following are the reasons for the addition to the NWASCO's PIs.

Table 2.1-6 PIs and Reasons for Additional PIs

Added PIs	Reasons for additional PIs
P4: Transmission and distribution mains	To determine a plan that the deteriorated pipelines should be replaced with new ones and to make an annual budget arrangement.
P6: Mechanical and electrical equipment	To maintain the existing mechanical & electrical equipment to optimize their operation.
P7: Rate of facility utilization	To revise the scale of the existing water supply facilities and/or examine their rehabilitation.
P8: O&M of the facilities	To operate water supply facilities appropriately and sustainably.

Added PIs	Reasons for additional PIs
P9: Drawings of pipe facilities	To maintain the existing pipelines and formulate a plan of pipe replacement considering the deterioration of pipelines and a flow capacity of pipelines.
P12: Bulk meters	To figure out NRW ratio and the rate of facility utilizations.
P13: Water quality parameters tested at purification plants	To ensure supply of safe water.
P17: Implementation of training	To strengthen and develop the capacity of CUs sustainability.
P18: Complaint handling	To improve water supply service based on complaints from customers.
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	To improve the financial situation of water supply service through awareness-raising on NRW reduction, water conservation and water tariff collection.
P21: Years of work experience on water supply service	To sustain water supply service in future.

Source: Project Team

(2) Evaluation Items for Management Capacity:

1) Internal Policy and Planning

M1: Review on Short, Middle and Long Term Plan
M2: Evaluation Method to achieve Goal

2) Finance

M3: Analysis on Annual Financial Status
M4: Financial Improvement Status towards achievement of Goal
M5: Status of Metered Rate
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection

3) Governance, Management and Human Resources

M8: Average Length of Service with CUs or Other Water Authority
M9: Record of Working Time
M10: System to evaluate Work Performance Capacity towards Goal
M11: Allocation and Input of Staff according to the Work Load
M12: Self-evaluation System at Individual Level
M13: Self-learning Support System
M14: Evaluation of Trainee's Efforts

4) Customer Relation

M15: Development of Customer's Information
M16: Time to deal with Customer's Complaint
M17: Record for dealing with Customer's Complaints
M18: Customer's Survey
M19: Promotion of Customer's Awareness

(3) Evaluation Items for Communication & Negotiation Capacity:

1) Leadership

C1: Executive: Capacity to achieve goal and to raise the standards of the leadership
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department

2) Human Development

C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description

3) Negotiation and Coordination

C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions

4) Data Collection and Utilization

C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service

5) Communication with Customers

C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service

Components of the Evaluation Manual were shared with MWDSEP, NWASCO and LWSC, LpWSC, KWSC and WWSC in July 2017.

Activity 1-5. To conduct training for MWDSEP, NWASCO and CU staff on how to utilize the Evaluation Manual.

NWASCO trained MWDSEP and CUs how to utilize the Evaluation Manual in support of JICA Expert Team. The training took place on 9th August 2017 in Lusaka.

According to answers to questionnaires prepared by JICA Expert Team as shown in Clause 2.4.1, about 71% and about 57% of staff targeted for assessment in the four CUs was able to understand purpose of the EM and contents & composition respectively.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

After the training as well as the 2nd JCC on 9th August 2017, the Project Team evaluated four CUs, and identified challenges and gaps between the current situation and the ideal situation of the four CUs.

Activity 2-1. To conduct evaluation based on the Evaluation Manual.

The Project Team together with NWASCO staff evaluated LWSC, WWSC, LpWSC and KWSC in terms of PIs, Management Capacity and Communication & Negotiation Capacity. Actual evaluation for level 1 i.e. departmental heads (directors for LWSC and KWSC and managers for WWSC and LpWSC), were evaluated by their respective managing directors. Evaluation for Level 2 i.e. managers for LWSC and KWSC and supervisors for WWSC and LpWSC were done by respective Level 1 such as directors for LWSC and KWSC and managers for WWSC and LpWSC. Evaluation for Level 3 i.e. general officers were done by Level 2. Moreover, The Project Team verified whether CUs assessed their capacity properly on the basis of calculation especially in terms of PIs.

Through conducting the evaluation, the defects on the EM were identified as follows. These were reflected to the revision of the EM was completed as a final version during the project, but if CUs needs to revise the EM through the evaluation activities in future, the EM must be revised periodically.

- The causes which were not contained in the Evaluation Manual were mentioned.
- In case that the evaluation criteria were selected as “Good”, some causes were not mentioned.
- It was difficult for CUs to evaluate because they were not familiar with some PIs *apart from* the indicators on the benchmarking by NWASCO.

Activity 2-2. To analyze the result of evaluation taken place in Activity 2-1.

The Project Team analyzed the result of evaluation and sorted out CUs’ challenges by items which were mentioned in Activity 1-2.

The four CUs evaluated 21 PIs and 19 parameters of Management Capacity at an organization level. The capacity level is composed of five (5) categories; 'Very Serious', 'Serious', 'Not Good Enough', 'Good', and 'Very Good'. The percentages of 'Very Serious' and 'Serious' challenges on PIs and parameters of Management Capacity are as shown in the following table.

Table 2.1-7 Percentage of "Very Serious" and "Serious" on PIs and Management Capacity

CU	PI	Management Capacity
LWSC	19.0%	10.6%
WWSC	57.1%	47.4%
LpWSC	38.1%	31.6%
KWSC	42.8%	36.9%
Average	39.3%	31.6%

Source: Project Team

Meanwhile, the CUs evaluated six (6) parameters of Communication & Negotiation Capacity as an individual level. Capacity level is composed of five (5) categories, the same as that at an organization level. The ranges by categories of Communication & Negotiation Capacity are as shown in the following table. "Very Serious" was not observed in the four CUs. Capacity level varies widely among the four CUs. The large scale CUs like LWSC and KWSC have not faced serious situation on communication and negotiation capacity, because it is envisaged that most probably they have an opportunity to communicate with lots of customers than that in small scale CUs in urban areas.

Table 2.1-8 Composition of the Evaluation Results on Communication & Negotiation Capacity

CU	'Serious'	'Not Good Enough'	'Good'	Total
LWSC	0.0%	50.0%	50.0%	100%
WWSC	50.0%	50.0%	0.0%	100%
LpWSC	83.3%	26.7%	0.0%	100%
KWSC	0.0%	100.0%	0.0%	100%
Average	33.3%	56.7%	12.5%	-

Source: Project Team

Activity 2-3. To grasp and clarify current situation of 4CUs based on data analysis and prepare the report.

The Project Team prepared the report on evaluation results in accordance with the following contents.

<p>Report of Capacity Assessment based on Evaluation Manual - CONTENTS -</p> <ol style="list-style-type: none"> 1. Overview of CUs evaluated based on Evaluation Manual 2. Purpose of evaluating CUs (Capacity Assessment) 3. Composition of Position by CU 4. Method of Capacity Assessment <ol style="list-style-type: none"> 4.1 Organizational Level 4.2 Individual Level 4.3 Process of Evaluation 4.4 Observation and Improvement of Evaluation Manual through Evaluation of CUs 4.5 Days required for self-evaluating CU 5. Result of Capacity Assessment <ol style="list-style-type: none"> 5.1 Organizational Level <ol style="list-style-type: none"> (1) Performance Indicators (PIs) <ol style="list-style-type: none"> 1) LWSC 2) WWSC 3) LpWSC 4) KWSC (2) Management Capacity

<p>1) LWSC 2) WWSC 3) LpWSC 4) KWSC</p> <p>5.2 Individual Level</p> <p>1) LWSC 2) WWSC 3) LpWSC 4) KWSC</p> <p>6. Challenges based on the Assessment Result</p> <p>6.1 Organizational Level</p> <p>1) LWSC 2) WWSC 3) LpWSC 4) KWSC</p> <p>6.2 Individual Level</p> <p>1) LWSC 2) WWSC 3) LpWSC 4) KWSC</p> <p>Annex:</p>

Activity 2-4. To make a list of challenges of 4 CUs.

For the reference of formulation of Midterm Business Plan (MBP) and Human Resources Development Plan (HRDP) which were formulated in Output 3, the Project Team made the lists of not only challenges but also preliminary priorities in dealing with urgency and their solutions as shown in the following tables. In the table, the Project Team also supposed three types of means such as infrastructure development, technical assistance and procurement of equipment to solve challenges from the aspect of the causes observed through the capacity assessment.

The Challenges were summarized regarding the organizational level that three CUs faced P10: high NRW ratio and two CUs faced P4: the existing asbestos and old pipes, P6: malfunction of mechanical and electrical equipment and P19: inadequacy of effective awareness-raising activities as “Very Serious” for PIs. Two CUs faced M13: no self-learning system and M14: no evaluation system for trainees’ efforts as “Very Serious” for Management Capacity. Regarding Communication & Negotiation Capacity of the individual level, two CU faced C1: inadequacy of leadership, C3: inadequacy of qualification and C4: inadequacy of communication and coordination as “Serious” for the directors/managers’ level (Level 1) and C2: inadequacy of leadership and supervision and C4: inadequacy of communication and coordination as “Serious” for the managers/supervisors’ level (Level 2) of Technical Department.

(1) PIs

- LWSC

Table 2.1-9 Means to solve Challenges on PIs (LWSC)

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²
Challenges that solution is required for a certain period				
<u>P10</u> : NRW ratio is 36-50%.	Reduction of NRW		X	X
<u>P11</u> : Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
<u>P19</u> : A few effective awareness-raising	Conducting of the training		X	

Challenges	Outline of Solution	Means to solve Challenge		
		Infra. ^{*10}	Tech. ^{*11}	Pro ^{*12}
activities have been implemented.	on awareness-raising activities			
<u>P21</u> : Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

Note: *10: Infrastructure, *11: Technical Assistance, *12: Procurement of Equipment
Source: Project Team

● WWSC

Table 2.1-10 Means to solve Challenges on PIs (WWSC)

Challenges	Outline of Solution	Means to solve Challenge		
		Infra. ^{*10}	Tech. ^{*11}	Pro ^{*12}
<u>Challenges that solution is required urgently</u>				
<u>P3</u> : Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
<u>P4</u> : Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
<u>P6</u> : More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
<u>P10</u> : NRW ratio is more than 50%	Reduction of NRW		X	X
<u>P17</u> : Training is quite rare or not provided at all.	Increase of the training		X	
<u>P19</u> : No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
<u>P20</u> : Sewer coverage is zero.	Development of sewer system and or sanitation facilities	X	X	
<u>P21</u> : Average year of work that staff have experience on water supply service is zero to seven years.	Accumulation of technologies		X	
<u>Challenges that solution is required for a certain period</u>				
<u>P2</u> : Overall service coverage is 50- 69%.	Increase of service coverage	X	X	
<u>P8</u> : CU has O&M manuals which are not effective.	Preparation of O&M manuals		X	
<u>P12</u> : There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
<u>P14</u> : All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.	Reduction of O&M cost and or increase of revenue	X	X	

Source: Project Team

● LpWSC

Table 2.1-11 Means to solve Challenges on PIs (LpWSC)

Challenges	Outline of Solution	Means to solve Challenge		
		Infra. ^{*10}	Tech. ^{*11}	Pro ^{*12}
<u>Challenges that solution is required urgently</u>				
<u>P2</u> : Overall service coverage is less than 50%	Increase of service coverage	X	X	
<u>P3</u> : Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
<u>P6</u> : More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
<u>P10</u> : NRW ratio is more than 50%	Reduction of NRW		X	X

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²
<u>P14</u> : Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Reduction of O&M cost and or Increase of revenue	X	X	
Challenges that solution is required for a certain period				
<u>P4</u> : Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.	Replacement of asbestos pipes	X		
<u>P12</u> : There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
<u>P19</u> : A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	

Source: Project Team

● KWSC

Table 2.1-12 Means to solve Challenges on PIs (KWSC)

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²
Challenges that solution is required urgently				
<u>P4</u> : Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
<u>P10</u> : NRW ratio is more than 50%.	Reduction of NRW		X	X
<u>P15</u> : Collection ratio is less than 60%.	Strengthening of tariff collection system		X	
<u>P19</u> : No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
Challenges that solution is required for a certain period				
<u>P5</u> : 80-94% of house connections are more than 25 years old.	Replacement of service pipelines	X	X	
<u>P8</u> : Facilities have O&M manuals which are not effective, leading to O&M deficiency.	Preparation of O&M manuals		X	
<u>P11</u> : Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
<u>P12</u> : There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
<u>P21</u> : Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

Source: Project Team

(2) Management Capacity

● LWSC

Table 2.1-13 Means to solve Challenges on Management Capacity (LWSC)

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
Challenges that solution is required urgently			
<u>M13</u> : There is no a self-learning system.	Establishment of a self-learning system for staff	X	
Challenges that solution is required for a certain period			

<u>M16</u> : It takes a week to respond to customer's complaint.	Strengthening of customer service	X	
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Source: Project Team

● WWSC

Table 2.1-14 Means to solve Challenges on Management Capacity (WWSC)

Challenges	Outline of Solution	Means to solve Challenge	
		Tech. ^{*11}	Pro ^{*12}
<u>Challenges that solution is required urgently</u>			
<u>M8</u> : Average length of service with current CU is less than five years.	Accumulation of technologies	X	
<u>M12</u> : There is no a self-evaluation system.	Establishment of a self-evaluation system for staff	X	
<u>M13</u> : There is no a self-learning system.	Establishment of a self-learning system for staff	X	
<u>Challenges that solution is required for a certain period</u>			
<u>M2</u> : Evaluation method has not been established.	Establishment of evaluation system for staff	X	
<u>M9</u> : Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Encouragement of recording for working time	X	
<u>M10</u> : Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
<u>M16</u> : It takes a week to respond to customer's complaint.	Strengthening of customer service	X	
<u>M18</u> : Customer survey has never been conducted but the survey is under consideration.	Conducting of the training on customer survey	X	

Source: Project Team

● LpWSC

Table 2.1-15 Means to solve Challenges on Management Capacity (LpWSC)

Challenges	Outline of Solution	Means to solve Challenge	
		Tech. ^{*11}	Pro ^{*12}
<u>Challenges that solution is required urgently</u>			
<u>M14</u> : Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
<u>Challenges that solution is required for a certain period</u>			
<u>M2</u> : Evaluation method has not been established.	Establishment of evaluation system for staff	X	
<u>M8</u> : Average length of service with current CU is five to 10 years.	Accumulation of technologies	X	
<u>M10</u> : Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
<u>M12</u> : A self-evaluation system is under development.	Establishment of a self-evaluation system for staff	X	
<u>M16</u> : It takes a week to respond to customer's complaint.	Strengthening of customer service	X	

Source: Project Team

● KWSC

Table 2.1-16 Means to solve Challenges on Management Capacity (KWSC)

Challenges	Outline of Solution	Means to solve Challenge	
		Tech. ^{*11}	Pro ^{*12}
<u>Challenges that solution is required urgently</u>			

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
<u>M7</u> : There are no manual, or even if there is a manual, it has not been used at all.	Preparation of O&M manuals for meter reading, billing & tariff collection, and conducting of their training	X	
<u>M14</u> : Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
<u>M15</u> : Customers' information has not been developed at all.	Development of database on customer information	X	
<u>M16</u> : It takes at least 10 days to respond to customer's complaint.	Strengthening of customer service	X	
Challenges that solution is required for a certain period			
<u>M2</u> : Evaluation method has not been established.	Establishment of evaluation system for staff	X	
<u>M4</u> : Financial status has not been improved at all.	Conducting of the training on financial analysis	X	
<u>M10</u> : Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	

Source: Project Team

(3) Communication & Negotiation Capacity

- LWSC

No serious challenges for Communication & Negotiation Capacity.

- WWSC

Table 2.1-17 Solution of Challenges on Communication & Negotiation Capacity (WWSC)

Challenges	Outline of Solution
Managers' Level (Level 1)	
<u>C1</u> : Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
<u>C3</u> : Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification
<u>C4</u> : Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>C5</u> : Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis
Supervisors' Level (Level 2) of Human Resource and Administration Department	
<u>C2</u> : Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision
<u>C4</u> : Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
Supervisors' Level (Level 2) of Commercial Service Department	
<u>C3</u> : Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification

Source: Project Team

- LpWSC

Table 2.1-18 Solution of Challenges on Communication & Negotiation Capacity (LpWSC)

Challenges	Outline of Solution
Managers' Level (Level 1)	
<u>C1</u> : Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
<u>C3</u> : Capacity to improve qualification of staff in consideration with post and	Conducting of the training on

Challenges	Outline of Solution
job description is still insufficient in terms of standards of current post.	improvement of qualification
<u>C4</u> : Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>Supervisors' Level (Level 2) of Technical Department</u>	
<u>C2</u> : Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision
<u>C4</u> : Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>C5</u> : Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis
<u>General Officers' Level (Level 3)</u>	
<u>C6</u> : Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.	Conducting of the training on communication with customers

Source: Project Team

● **KWSC**

No serious challenges for Communication & Negotiation Capacity.

[Output 3. MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC]

Activity 3-1. To hold workshop for all target CUs to share the challenges and possible solution.

The workshop for all target CUs to share the challenges and possible solution took place in the morning of 12th December 2017.

All the four CUs mentioned budget constraint and insufficient training as the main causes for various challenges. However, the Project Team mentioned that budget constraint should not be taken as a main factor, because there were lost of factors which require budget.

The Project Team analyzed the challenges for each PI and/or parameter of management capacity, prioritized challenges to be solved and then shared the solution in the 2nd workshop on 19 April 2018. In order to efficiently formulate Midterm Business Plan and Human Resources Development Plan, some solutions for challenges were aggregated into project packages and then prioritized to be solved.

NWASCO provisionally pointed out some possible solutions based on the challenges and gaps in the Workshop. The possible solutions consist of investment in infrastructure, technical assistance and procurement of equipment.

Activity 3-2. To establish task force for each target CU to work on developing MBP and HRDP.

Task force for each Target CU to work on MBP & HRDP was established at the 1st JCC held in March 2017. According to current organization of each CU, task force member was updated at the 3rd JCC in 12th December 2017.

Activity 3-3. To prioritize challenges listed in Activity 2-4.

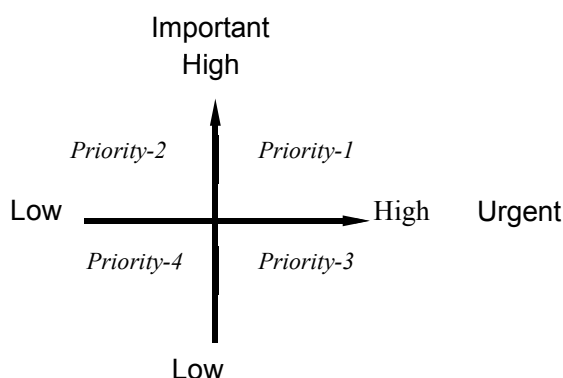
The Project Team created priority criteria of challenges as the following actions to solve challenges and their outlines are shown based on action priority matrix as indicated below.

Table 2.1-19 Prioritization of Challenges

Priority-	Action to solve challenges	Outline of Actions
1	Urgent and Important: DO	If a task is both urgent and important, take actions immediately.
2	Not Urgent, but Important: DECIDE	If a task is important, but not urgent, set a due date and take actions later.

Priority-	Action to solve challenges	Outline of Actions
3	Urgent, but not Important: DELEGATE	If a task is urgent, but not important, the best thing is to delegate it to someone else.
4	Not Urgent and Not Important: DELETE	If a task is neither important nor urgent, it should not be prioritized. Drop it or take actions when you have some extra time.

Source: Project Team



Source: Expert Team

Figure 2.1-1 Action Priority Matrix

respectively.

The challenges were prioritized based on the above instruction in terms of importance and urgency. The items and challenges that were evaluated as Priority-4 will be excluded from MBP and HRDP in accordance with the above table.

Firstly, the following tables show scoring for prioritizing challenges on PIs of four CUs.

(1) Prioritizing Challenges on PIs

[LWSC]

Since LWSC has no 'Very Serious', items were selected among challenges of 'Serious' to be prioritized for solution.

Table 2.1-20 Prioritizing Challenge on PIs (LWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P10: NRW Ratio	36 - 50%	2	1	3	1
2	P11: Customer Meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	2	1	3	1
3	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	2		2	2
4	P21: Year of Work Experience on Water Supply Service	8-15 years			0	4

Source: Project Team

[WWSC]

Items were selected among challenges of ‘Very Serious’ to be prioritized for solution.

Table 2.1-21 Prioritizing Challenge on PIs (WWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P3: Surplus Purification Capacity	Less than -30%	2		2	2
2	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P17: Implementation of Training	Training is quite rare or not provided at all.			0	4
6	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2
7	P20: Sewerage Coverage (including On-site Facilities)	0%			0	4
8	P21: Year of Work Experience on Water Supply Service	0-7 years			0	4

Source: Project Team

[LpWSC]

Items were selected among challenges of ‘Very Serious’ to be prioritized for solution.

Table 2.1-22 Prioritizing Challenge on PIs (LpWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P2: Overall Water Supply Coverage	Less than 50%	2	1	3	1
2	P3: Surplus Purification Capacity	Less than -30%	2	1	3	1
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3

No.	Items	Challenges	Importance	Urgency	Total	Priority
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P14: Cost Recovery Level	Only part of the O&M costs (excluding depreciation of water supply facilities) are covered by water tariff. 'Annual Billed Revenue for Water / Total Annual Operating Costs for Water Excluding Depreciation and Financing Tariff' < 1	2		2	2

Source: Project Team

[KWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

Table 2.1-23 Prioritizing Challenge on PIs (KWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3
2	P10: NRW Ratio	More than 50%	2	1	3	1
3	P15: Collection Ratio	Less than 60%	2		2	2
4	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2

(2) Prioritizing Challenges on Management Capacity

Secondly, the following tables show scoring for prioritizing challenges on Management Capacity of four CUs as well.

[LWSC]

Table 2.1-24 Prioritizing Challenge on Management (LWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M13: Self-learning Support System	There is no a self-learning system.	2		2	2

Source: Project Team

[WWSC]

Table 2.1-25 Prioritizing Challenge on Management (WWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years			0	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.			0	4

No.	Items	Challenges	Importance	Urgency	Total	Priority
3	M13: Self-learning Support System	There is no a self-learning system.			0	4

Source: Project Team

[LpWSC]

Table 2.1-26 Prioritizing Challenge on Management (LpWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.	2		2	2

Source: Project Team

[KWSC]

Table 2.1-27 Prioritizing Challenge on Management (KWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	2	1	3	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.			0	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	2	1	3	1
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customer's complaint.			0	4

Source: Project Team

(3) Prioritizing Challenges on Communication & Negotiation Capacity

Finally, the following tables show scoring for prioritizing challenges on Communication & Negotiation Capacity of WWSC and KWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]

Table 2.1-28 Prioritizing Challenge on Communication & Negotiation (WWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2

No.	Items	Challenges	Importance	Urgency	Total	Priority
	Opinions					
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect Data and to apply for Analysis for the Water Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
Human Resource and Administration Department						
5	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
Commercial Service Department						
7	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4

Source: Project Team

[LpWSC]

Table 2.1-29 Prioritizing Challenge on Communication & Negotiation (LpWSC)

No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2

No.	Items	Challenges	Importance	Urgency	Total	Priority
	Opinions					
Technical Department						
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
General Officer						
7	C6: General Officers: Capacity to communicate with Customers in order to provide them with high Quality Water Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2

Source: Project Team

Activity 3-4. To set up the goal(s) for each target CU. and

Activity 3-5. To set up target figure of key performance indicators, to measure achievement of goal(s).

Goals of four CUs for the year 2023 were set-up based on the status-quo of the water supply service & water supply facilities, background of the past investment and the strategic plan as shown in the following tables in terms of PIs, Management Capacity and Communication & Negotiation Capacity respectively. Verifiable indicators to evaluate achievement of goals are shown in the same table as well.

(1) Goal and Verifiable Indicator on PIs

Firstly, the following tables show goals and verifiable indicators on PIs of three CUs in terms of ‘Very Serious’ apart from LWSC. LWSC’s goal and verifiable indicators are shown in the table in terms of ‘Serious’.

[LWSC]

Table 2.1-30 Goal and Verifiable Indicators on PIs (LWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	P10: NRW ratio	NRW ratio is 36% - 50%.	NRW will be reduced from 46% (current) to 30%.	NRW Ratio: A. 30% B. 34% C. 38%	1

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
				D. More than 42%	
2	P11: Customer meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Installation ratio of customer meter will be increased from 67% (current) to 100%.	Ratio of Water Meter Installation: A. 100% B. 90% C. 80% D. Less than 70%	1
3	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	1
4	P21: Year of work experience on water supply service	Average year of work that staff have experience on water supply service is 8-15 years.	-	-	4

Note:

* Regarding "A" to "D" indicated in the Verifiable Indicators, "A" is the best indicator, while "D" is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[WWSC]

Table 2.1-31 Goal and Verifiable Indicators on PIs (WWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than -30%.	Human Resources Development Plan is prepared for engineers who can formulate plans to raise the surplus capacity to maximum design capacity less than -10% and human resources is developed.	Ratio of surplus capacity to maximum capacity and other process: A. -10% B. Less than -20% C. Planning D. Study	2
2	P4: Transmission and distribution mains	Asbestos, old cast iron and old steel pipes make up 75% of main pipelines	Ratio of deteriorated pipes will be reduced to 45%.	Ratio of deteriorated Pipelines: A. 45% B. 50% C. 60% D. More than 65%	3
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%	NRW rate will be reduced from 54% (current) to 40%.	NRW Ratio: A. 40% B. 43.5% C. 47.0% D. More than 50.5%	1

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
5	P17: Implementation of training	Training is quite rare or not provided at all	-	-	4
6	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	2
7	P20: Sewerage coverage	Sewer coverage is zero.	-	-	4
8	P21: Year of work experience on water supply service	Average year of work that staff have experience on water supply service is zero to seven years.	-	-	4

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[LpWSC]

Table 2.1-32 Goal and Verifiable Indicators on PIs (LpWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	P2: Overall water supply coverage	Overall service coverage is less than 50%.	Overall water supply coverage will be increased from 35.7% to 38.0 %.	Service Coverage Ratio: A. 38.0% B. 37.5% C. 37.0% D. Less than 36.5%	1
2	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than -30%.	Surplus capacity to maximum design capacity is more than 0%.	Ratio of surplus capacity to maximum design capacity: A. More than 0% B. More than -5% C. More than -15% D. Less than -25%	1
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%.	NRW ratio will be reduced from 70% to 63%.	NRW Ratio: A. 63.0% B. 65.0% C. 66.5% D. More than 68.0%	1
5	P14: Cost Recovery Level	Only part of the O&M costs excluding depreciation of	Water supply facilities can be well-maintained and repaired.	Number of engineers to repair water supply facilities:	2

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
		water supply facilities are covered by water tariff.		A. All the technical engineers for maintenance to enable to repair water supply facilities B. 75% of all the technical engineers for maintenance to enable to repair water supply facilities C. 50% of all the technical engineers for maintenance to enable to repair water supply facilities D. Less than 25% of all the technical engineers for maintenance to enable to repair water supply facilities	

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[KWSC]

Table 2.1-33 Goal and Verifiable Indicators on PIs (KWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	Ratio of aged pipes will be 64%.	Ratio of deteriorated Pipelines: A. 64% B. 67% C. 70% D. More than 72%	3
2	P10: NRW Ratio	More than 50%	NRW ratio will be reduced from 67% to 40%.	NRW Ratio: A. 40.0% B. 46.5% C. 52.5% D. More than 60.0%	1
3	P15: Collection Ratio	Less than 60%	Collection ratio will be increased from 55% to 80%.	Collection Ratio: A. 80.0% B. 74.0% C. 67.5% D. Less than 61.0%	2
4	P19: Awareness-raising on NRW reduction, water saving,	No or minimal effective awareness-raising activities have	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly	2

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
	collection of water charges, etc.	been implemented.		C. Biannually D. Annually or less	

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

(3) Goal and Verifiable Indicator on Management Capacity

Secondary, the following tables show goals and verifiable indicators on Management Capacity of four CUs.

[LWSC]

Table 2.1-34 Goal and Verifiable Indicators on Management (LWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	M13: Self-learning Support System	There is no a self-learning system.	Training by utilizing a self-learning system is conducted.	Status after introduction of self-learning support system: A. Utilized for directors and managers or supervisors B. Utilized for only managers or supervisors C. Only introduced but not utilized D. Not introduced	2

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[WWSC]

Table 2.1-35 Goal and Verifiable Indicators on Management (WWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years.	-	-	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.	-	-	4
3	M13: Self-learning Support System	There is no a self-learning system.	-	-	4

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[LpWSC]

Table 2.1-36 Goal and Verifiable Indicators on Management (LpWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	A system for trainees' effort is established.	Evaluation of trainees' efforts: A. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department and feed-back the result of evaluation to job description B. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department but not feed-back the result of evaluation to job description C. Established the dedicated unit to evaluate trainees' efforts D. Not established the dedicated unit to evaluate trainees' efforts	2

Note:

* Regarding "A" to "D" indicated in the Verifiable Indicators, "A" is the best indicator, while "D" is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[KWSC]

Table 2.1-37 Goal and Verifiable Indicators on Management (KWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	Necessary manuals are prepared.	Preparation of Manual: A. Prepared manual which is composed of meter reading, billing and tariff collection B. Prepared manual which is composed of meter reading and billing C. Prepared manual only for meter reading D. Not prepared	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	-	-	4
3	M15: Development	Customers' information has not	Customers' information can be developed.	Development of Customer Information:	1

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority**
	of Customer's Information	been developed at all.		A. Customer sections to enable develop customer list in terms of all the information required B. Customer sections to enable develop customer list in terms of only partial information C. Collected customer information and or data D. Conducted the training on customer information but not collected customer information and not developed yet at all	
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customers' complaint.	-	-	4

Note:

* Regarding "A" to "D" indicated in the Verifiable Indicators, "A" is the best indicator, while "D" is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

(4) Goal and Verifiable Indicator on Communication & Negotiation Capacity

Finally, the following tables show goals and verifiable indicators on Communication Capacity of WWSC and LpWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]

Table 2.1-38 Goal and Verifiable Indicators on Communication & Negotiation (WWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority*
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
3	C4: Executive Officers,	Performance is still insufficient in terms	Training to make staff understand	Frequency of the Training:	2

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority* *
	Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	of standards of current post. Therefore, staff must make an effort to work well.	the necessity of negotiation and coordination with staff and/or customers is conducted.	A. Bimonthly B. Quarterly C. Biannually D. Annually or less	
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to develop and utilize data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
Human Resources and Administration Department					
5	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Commercial Service Department					
7	C:3 Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

[LpWSC]

Table 2.1-39 Goal and Verifiable Indicators on Communication & Negotiation (LpWSC)

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority* *
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of human resource development is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Technical Department					
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort	Training to make staff understand the necessity of development and utilization of data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1

No.	Items	Challenges	Goal	Verifiable Indicators*	Priority* *
	data and to apply for analysis for the water supply service	to work well.			
General Officer					
7	C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of communication with customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

Note:

* Regarding “A” to “D” indicated in the Verifiable Indicators, “A” is the best indicator, while “D” is the worst one.

** Priority-4 is prioritized in low among four Priorities, Goal and Verifiable Indicators are not set-up.

Source: Project Team

At the end of February 2018, the four CUs checked goals and the corresponded verifiable indicators to evaluate achievement of goals. Based on the result at the 1st consultative formulation meeting for MBP & HRDP on 17th April 2018, verifiable indicators were determined by The Project Team as shown in the table above.

Activity 3-6. To hold workshop to share and review goal(s) and key performance indicator of each CU.

After prioritizing challenges, setting-up goals and their verifiable indicators of each CU as per Activity 3-3 to Activity 3-5, CUs started preparing MBP & HRDP. The information about verifiable indicators which was related to Activity 3-3 to Activity 3-5 was shared with the Project Team in the 2nd workshop on 18th April 2018.

Activity 3-7. To prepare draft MBP and HRDP of each target CU.

Preparation of the draft MBP and HRDP for each CU was started according to the 1st consultative formulation meeting for MBP and HRDP on 17th April 2018. The draft MBP and HRDP were updated based on the result of the 2nd consultative formulation meeting on 24th July 2018. The draft MBP and HRDP were shared with the Project Team at the 3rd workshop held on 25th July 2018. In addition, each CU recognizes NRW reduction is one of the most important activities which solve their challenges. However there is no opportunity of discussing the topic among CUs. NRW reduction activity of JICA’s KAIZEN project by introducing Digital Meter Reading System in Lukanga Water and Sewerage Company (hereinafter referred to as “LgWSC”) was a good practice of NRW reduction activity in Zambia. For instance, reduction of commercial loss such as errors in records, meter reading inaccuracy contributes to NRW reduction. In addition, noticeable points to introduce Digital meter Reading System are low initial cost. LgWSC introduced the activities to the 11 CUs at the 3rd workshop on 25th July 2018, and the solution & practice on work efficiency and NRW reduction were discussed by the 11 CUs. Afterward, some of the four CUs had an interview in LgWSC in order to learn further information and examine introduction of Digital Meter Reading System. This kind of activity is one of impacts apart from that of original scopes. These activities which have contributed to reduction of errors for meter reading and so on in terms of NRW reduction activities were helpful so as to finalize the MBP as NRW reduction project.

Activity 3-8. To finalize draft MBP and HRDP of each target CU. and

Activity 3-9. To approve of MBP and HRDP by board member of each target CU.

At the beginning of the project, MBP and HRDP would be submitted to the board member of each CU as stated in the PDM. However, the Project Team revised the PDM as “Approve” was changed to “Submit” considering sustainability in formulating and or reviewing MBP and HRDP periodically.

MBP and HRDP were finalized based on information which was discussed at several consultative meetings and workshops. These plans were submitted to their boards and approved by their board respectively. The date approved by each board is shown in Table 2.1-40.

Table 2.1-40 Date approved by Each Board

No.	CU	1 st Board Meeting	Date approved by Board
1	LWSC	16 th November 2018	31 st January 2019
2	KWSC	27 th December 2018	7 th March 2019
3	WWSC	17 th December 2018	17 th December 2018
4	LpWSC	24 th December 2018	24 th December 2018

Source: Project Team

In addition, NRW were common challenges among the four CUs as stated in MBP and HRDP. Therefore, JICA Expert Team conducted additional survey to learn information on current situation in terms of NRW based on MBP and HRDP (see Appendix 16 for the details).

2.2 Achievement for the Project Purpose

2.2.1 Outputs and Indicators

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Indicator 1-1: The EM for evaluating CUs is approved by MWDSEP and NWASCO.

Component and evaluation items, etc. shown in the EM for CUs were approved by MWDSEP and NWASCO as a draft through the 2nd JCC on the 9th August 2017. Through conducting the evaluation, the challenges on the EM were identified, and these were reflected to the revision of the EM at the 5th JCC on the 30th January 2019 as shown in Appendix-11.

As a result of formulating the EM, the four CUs made it possible to formulate the MBP and the HRDP based on the EM systematically although these plans were formulated without any basis before the Project. The indicators of the EM were selected in order for all the persons of the CUs to implement capacity assessment systematically and adequately in connection with further sustainable implementation. It was contrived as the CUs can evaluate easily by a multiple-choice, a clear description for definition of the indicators and for a method of calculation of the evaluation.

Indicator 1-2: The way to utilize the EM is understood by MWDSEP, NWASCO and targeted CUs staff in charge of urban water supply.

In the training session after the 2nd JCC on the 9th August 2017, the way to utilize the Evaluation Manual for four CUs was introduced by NWASCO as well as MWDSEP who is responsible for evaluation in cooperation with JICA Expert Team.

MWDSEP which supervises NWASCO and the CUs relies on NWASCO to direct the CUs to evaluate their own capacity by using the EM and formulate MBP and HRDP. On the other hand, JICA Expert Team lectured NWASCO with guideline (see Appendix-12) on a series of process so that it seemed that NWASCO was able to understand capacity assessment, identifying challenges, prioritizing challenges, setting-up objectives & verifiable indicators, the contents of activities and calculating approximate cost of activities.

It seemed that the capacity of MWDSEP and NWASCO on evaluating CUs was strengthened through the process of formulating the new EM system such as discussion, presentations and trainings, etc.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

Indicator 2-1: Challenges of each CU is clarified.

Through Activity 2-1 to 2-4, the challenges of each CU were identified. The challenges and gaps of each CU were shared with MWDSEP, NWASCO and the targeted four CUs in the workshop on 12th December 2017 as per Activity 3-1.

[Output 3. MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC.]

Indicator 3-1: MBP and HRDP are logically prepared in a manner consistent with target figure of key performance indicator.

Output 3 was achieved through Activity 3-1 to 3-9 from December 2017 to October 2018. The Project Team clarified challenges as Output 2 and formulated MBP and HRDP based on challenges. Especially, the Project Team made an effort to form composition of MBP and HRDP so that CUs can formulate them systematically and easily.

The Project Team started preparation of the draft MBP and HRDP for each CU according to the 1st consultative formulation meeting for the MBP and HRDP on 17th April 2018, and updated the draft MBP and HRDP based on the result of the 2nd consultative formulation meeting on 24th July 2018. The Project Team also shared the draft MBP and HRDP with all the relevant members such as MWDSEP, NWASCO and 11 CUs at the 3rd workshop held on 25th July 2018. The final MBP and HRDP were submitted to their boards and approved by their board members.

2.2.2 Project Purpose and Indicators

Project Purpose: The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.

Indicator: MBP and HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.

MBP and HRDP of the four CUs such as LWSC, WWSC, LpWSC and KWSC were prepared by the Project Team and finally approved by the board members of each CU.

For the purpose of formulation of the MBP and HRDP, the four CUs evaluated their own capacity by using the EM, identified and prioritized challenges, set-up goal, project contents and estimated approximate cost for the next five years. This kinds of activities contributed to establishment of system required for formulation of further accurate and appropriate annual action plan and budget arrangement.

2.3 Modification of the Project Implementation Plan

2.3.1 PO

At the 1st JCC, Plan of Operation (hereinafter referred to as “PO”) was revised in accordance with the transfer from water and sanitation function of DHID in MLGH to DWSS in MWDSEP and the change due to other reasons.

2.3.2 Other modifications on detailed implementation plan

Modification on Record of Discussion (hereinafter referred to as “R/D”) and Project Design Matrix (hereinafter referred to as “PDM”) are shown as below. The original and amendment of R/D, PDM and PO are shown in Appendix-4, 6 and 7 respectively.

Table 2.3-1 Modification of R/D and PDM

Modification Document	Contents of Modification	Date
Amendment of R/D	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of JICA Expert Team c) Deletion of Machinery and Equipment	16 th March 2017
Revision of PDM	a) Change of Assigned name of JICA Expert Team b) Deletion of Machinery and Equipment	17 th March 2017 (1 st JCC)

Modification Document	Contents of Modification	Date
Revision of PDM	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Project Personnel from Zambian Side in accordance with change of Implementation agency from MLGH to MWDSEP	9 th August 2017 (2 nd JCC)
Revision of PDM	a) Change of Project Site from Lusaka to Lusaka, Mongu, Mansa and Ndola b) Add to Objectively Verifiable Indicators for 1-1. Approval agency from MWDSEP to MWDSEP and NWASCO. c) Add the document of Output 3 from HRDP to MBP and HRDP	25 th July 2018 (3 rd JCC)
Amendment of R/D	a) Change of the duration of the Project from “1 year and 9 months after the first dispatch of experts)” to “2 years after the first dispatch of experts; this if from 26 th February, 2017 to 28 th February, 2019)” b) Change of “To Submit MBP and HRDP to board member of each target CU” to “approval of MBP and HRDP by board member of each target CU”	22 nd October 2018
Revision of PDM	a) Change of Activity 3-9 from “To Submit MBP and HRDP to board member of each target CU” to “approval of MBP and HRDP by board member of each target CU”	30 th January 2019 (5 th JCC)

Source: Project Team

2.4 Activities of the Project (apart from PDM)

2.4.1 Questionnaire on the EM and Capacity Assessment of CUs

It contributes to the development of the organization for the CUs to conduct the capacity assessment utilizing the EM and to formulate the MBP and HRDP. However, it is very important to conduct sustainable capacity assessment and formulation of the plans.

This survey was aimed at acquiring the opinions from four targeted CUs concerning improvements on the EM and sustainable capacity assessment to formulate MBPs and HRDP.

The questionnaires of the survey was distributed to the staff who participated in the 1st Workshop and the 3rd JCC held on 12th December, 2017 from four targeted CUs (LWSC: five persons, WWSC: four persons, LpWSC: six persons, KWSC: six persons, 21 persons in total). The answer sheets were collected from all the 21 persons at the end of the JCC. The questionnaire consisted of multiple-choice or description type of answers for all the 32 questions.

Almost all persons answered positive opinions to conduct the capacity assessment utilizing the EM and to formulate the MBP and HRDP sustainably in terms of the following key points.

- Bringing out key challenges under the same aspect among all the CUs.
- Standardizing evaluation of CU’s capacity for the whole CUs.
- Identifying fundamental weakness of CUs.

The detail report on this survey result is shown in Appendix-9.

2.4.2 Proactive and Preventive Measures against Cholera Outbreak

Zambian Government faced outbreak of cholera since the end of September 2017 as well as the past years. According to Ministry of Health (hereinafter referred to as “MoH”), it seemed that outbreak of cholera were mainly caused by using shallow wells which were contaminated by waste water infiltrated from pit-latrines, etc.

From the status-quo of outbreak of cholera infection in the past long year, it is essential that relevant

organizations such as CUs must focus on preventive approach apart from supportive approach as shown in the following table. The Project Team collected the fund data which is Cholera Emergency Respond Fund from MoH. According to the data of Cholera Emergency Respond Fund, the Project Team recognized that the proactive approach costs much huger than the preventive approach at the 2nd consultative formulation meeting on 24th July 2018. It is suggested that preventive approaches at CUs' level should be contained in MBP and HRDP considering the feasibility of each plan. It is necessary for the plans to supply sufficient water to rationing service areas through NRW reduction activities in order not to depend on shallow wells which might be one of the causes of cholera infection. It is significant that the project on PR activities should be formulated as shown in the following table to prevent cholera infection as well. The proposed preventive measures in Soft-component are shown in Appendix-13.

Table 2.4-1 Preventive Approach for Cholera Outbreak

Proactive Approach	Preventive Approach
<ul style="list-style-type: none"> ● Water supply by water bowsers ● PR activities (Regulate boiling water, enforce hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.) 	<ul style="list-style-type: none"> ● Extend water source and treatment plant (increase water production) ● Extend distribution network ● Repair the deteriorated and damaged pipelines ● Appropriate control of residual chlorine at distribution facilities ● PR activities (Regulate boiling water, enforce hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.)

Source: Project Team

2.4.3 Trial Exercise by LWSC, WWSC, LpWSC and KWSC on Evaluation and Formulation of MBP and HRDP

As per request of NWASCO, the JICA Expert Team held the training session focusing on sustainable implementation after the Project to NWASCO's five inspectors and Finance Director of WWSC on 27th July 2018. The JICA Expert Team presented the overall workflow between capacity assessment and formulation of MBP and HRDP, and the specific activities with Guideline to take Activities from Capacity Assessment to Formulation of the MBP and HRDP. On the other hand, The JICA Expert Team was concerned about whether the CUs could manage the series of activities associated with the whole process. The Zambian side requested the trial exercise by LWSC, WWSC, LpWSC and KWSC on the evaluation and formulation of MBP and HRDP at the 4th JCC on 25th July 2018. NWASCO then requested the implementation of trial exercise to the CUs on 3rd August 2018. NWASCO received and inspected the outputs of trial exercise by the CUs and then fed back to the CUs respectively in cooperation with JICA Expert Team. The request document including the Guideline to take Activities from Capacity Assessment to Formulation of the MBP and HRDP is shown in Appendix-12.

2.4.4 Support of Formulating Programs for Countermeasures against NRW which is common challenges for each CU

It was clarified that the countermeasures against NRW are common challenges for each CU as the result of the capacity assessment utilizing the EM. Each CU by itself has to formulate new or revised MBP and HRDP and detailed annual plans after the termination of the Project. Therefore, it is necessary for each CU to utilize the EM and to formulate the appropriate projects. The formulation of detailed NRW reduction programs was supported by the JICA Expert Team so that each CU could implement by itself as the process of formulating the MBP and HRDP.

The JICA Expert Team visited each CU from October to December 2018. Through interviews with each CU and field visits in connection with NRW, the JICA Expert Team formulated the detailed NRW reduction programs in collaboration with each CU. The principal programs or each CU are shown in Table 2.4-2. The detailed NRW Reduction operation program for each CUs is shown in Appendix-15.

It is confident that four CUs will be able to conduct a series of process such as evaluation of capacity, formulation of the MBP and HRDP, preparing program and more accurate annual action plans.

Accordingly, the measure programs even other than that of NRW reduction as fundamental documents of annual action plan must be prepared in future.

Table 2.4-2 Principal Programs for each CU

NRW Reduction Operation Program	Purpose of Operation
Install bulk flow meters, if there are no flow meters or there are defective flow meters.	Calculate NRW ratio based on accurate flow rate measured by bulk flow meters.
Establish systematical water meter reading system by using Digital Meter Reading System (DMR)	Improve accuracy of water meter reading data

Source: Project Team

2.4.5 PR Activities

At the end of February 2018, the Project Team completed a poster preparation as PR activities for this Project and delivered the posters to MWDSEP, NWASCO, four CUs and other donors (see appendix-18).

In addition, the Project Team prepared the newsletters for introducing the Project as external PR activities brought into an original newsletter of NWASCO issued in June 2018. The newsletter article for LWSC and WWSC were prepared as well, and it was issued on early August 2018. Updating Facebook pages of LWSC, LpWSC and WWSC are subject to the events. The article of the project achievement is also available on JICA homepages which were uploaded twice so far. Organizational assessment contributes to quantitative challenge abstraction and causal analysis for formulating MBP & HRDP, that is, these activities are internally shared with staff of each CU through PR activities which result in improvement of formulating MBP & HRDP.

2.4.6 Financial Impact through NRW Reduction for the targeted 4CUs

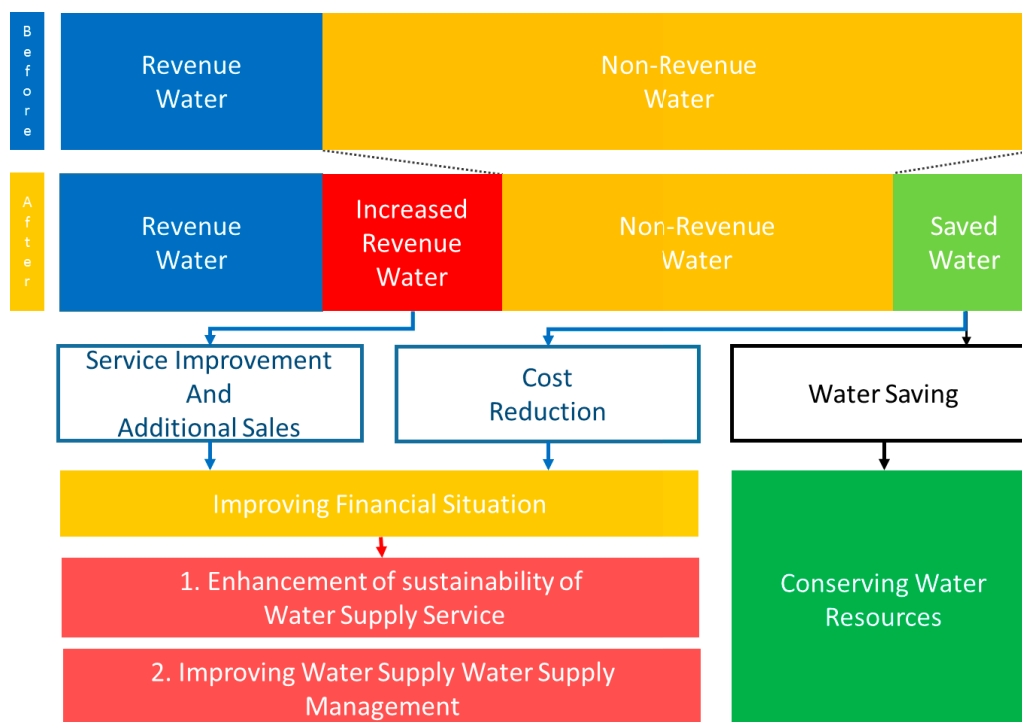
(1) Current Condition of Financial Situation

Currently, the water supply service is in deficit due to mainly high NRW ratio in all the CUs. The O&M cost per revenue water (ZMW 4.0/m³ – ZMW 5.0/m³) greatly exceeds the income per revenue water (ZMW 5.8/m³ - ZMW 10.2/m³). By reducing NRW, the income per revenue water will exceed the O&M cost in the future. However, as mentioned above, since all the CUs have been facing a deficit management, it is practically difficult for the CUs to develop their own infrastructure.

Almost the targeted CUs instead of KWSC, income and expenditure as a whole were negative which include non-project costs such as overhead sand investment. Regarding to the factors brings the CUs has difficulty to invest to new infrastructure. Although there is a difference in financial situation and technical strength among each CU, due to the reduction of NRW will be improved the profit model, It is clear from the consideration on financial situation that increasing revenue is an urgent task common to each targeted CUs.

Figure 2.4-1 shows relationship between NRW reduction and improvement of Profit and Loss model. Reduction of NRW ratio increases the revenue water and/or decreases the losses. It means an additional profit source for water companies. The increase in revenue could be used as an investment capital to promote the level of service and/or the coverage area of service. And the reduced volume of water could be available after NRW reduction as sources for the increasing demand. The reduced volume of water may conserve the water resources and hence extend the life time of the resources in particular groundwater, if not needed by the customers. In addition to water savings, immediately un-required capital investments may be generated, delaying development of new water production facilities and/or renovation and upgrading of existing ones.

The mentioned savings shall improve the financial soundness of water companies and enhance the sustainability of the water supply facilities, which leads to the improvement of the water supply management and service.



Source: Project Team

Figure 2.4-1 Benefits of Reducing NRW

(2) Estimation of the Effect from Countermeasure of NRW Reduction

The financial analysis was set based on the following conditions;

- The NRW ratio in 2023 is based on MBP.
- Expenditure of LWSC, KWSC and LpWSC is based on the financial statements of the year 2016 and 2017, and that of WWSC is based on the audit report of the year 2014 and 2015, and "Annual Report 2017" issued by NWASCO was applied for P/L Statement.
- Skeptical numerical values were found in the obtained data, but since it takes further time to verify the numerical grounds, this analysis was carried out assuming that the obtained data is acceptable.
- Replacement of pipeline is planned for reducing NRW, and depreciation expenses of equipment and materials are posted as current account balance.
- In order to settle the P / L statement in 2023, the amount of income and expense excluding income and expenditure accompanying NRW reduction will not be changed since 2017.
- The income per revenue water indicated in "Annual Report 2017" issued by NWASCO was applied for Average Water Tariff
- The total cost of pipe replacement is applied for depreciation. In addition, durability of pipes is 30 years for calculating depreciation.

I. LWSC

Table 2.4-3 shows the revenue increased through NRW reduction and the cost incurred for it. Measures to reduce NRW ratio from 58% to 30% (28.0 points decrease) is targeted for the year 2023 which were determined on the MBP. If the target is achieved, revenue will increase by about ZMW 100million per year (see Table 2.4-4). Implementing NRW reduction, it is necessary to strengthen the organizational capacity by using the HRDP which was formulated in this project.

Table 2.4-3 Revenue and Cost to be increased through NRW Reduction (LWSC)

	Basis	a.2017	b.2023	c.Differences(c=a-b)	Remarks
NRW	1)	58%	30%	28.0 points	
Quantity of NRW (m ³ /day)	2)	114,312	59,369	35,153m ³ /day	
Average Water Tariff (ZMW/m ³)	3)	5	5	-	cost per water 7.4 ZMW/m ³ (as of 2017) for reference
NRW amount (ZMW/day)	4)=2)*3)	571,560	296,847	492,406	
NRW amount (ZMW/year)	5)=2)*3)*365	208,619,400	108,349,155	100,270,245	Revenue Improvement by NRW Reduction
Annual Additional Cost for NRW Reduction	6)	0	12,866,810		30 years of depreciation by investment for NRW reduction

Source: LWSC



Source: LWSC

Figure 2.4-2 Change of NRW Ratio (LWSC)

Table 2.4-4 shows the operational revenue and expenditure of LWSC for the year 2016-2017 and those for the year of 2023. If LWSC implements the NRW reduction activities based on the MBP, the revenue will increase to about ZMW370million which includes revenue of about ZMW100million gained through NRW improvement. The expenditure will also increase to about ZMW106million which includes the depreciation cost for pipe replacement. LWSC has a positive attitude towards the soundness of financial management such as reviewing the financial situation by the auditing firm, etc. However, as profitability is getting worse, cost of sales has to be lowered, so there is concerned about maintaining quality of water supply service, water quality and appropriate O&M.

On the other hand, if new infrastructure investment is estimated as depreciation expenses, expenditure will increase by about ZMW 12.8 million in addition to current depreciation expenses.

Table 2.4-4 P/L Statement (LWSC)

			ZMW		
			Audited		Assumption
			2016	2017	2023
Operational (Inclde. Administrative Expense)	Revenue	Water Bills Raised	251,898,942	269,520,860	369,791,105
		Other Operating Income	1,082,093	976,539	976,539
		Total	252,981,035	270,497,399	370,767,644
	Expenditure	Water Production Cost	56,087,510	48,285,131	62,913,813
		Water Quality Testing	310,286	185,830	185,830
		Electricity	30,588,305	26,991,966	26,991,966
		Chemicals	6,824,259	7,339,974	7,339,974
		Administrative Expense	149,506,831	139,318,782	139,318,782
		Other Operational Expense	6,421,691	56,518,840	56,518,840
		Depreciation	14,232,086	14,628,682	27,382,082
		Total	263,970,968	293,269,205	320,651,287
Operational Profit			(10,989,933)	(22,771,806)	50,116,357

Source: LWSC

II. KWSC

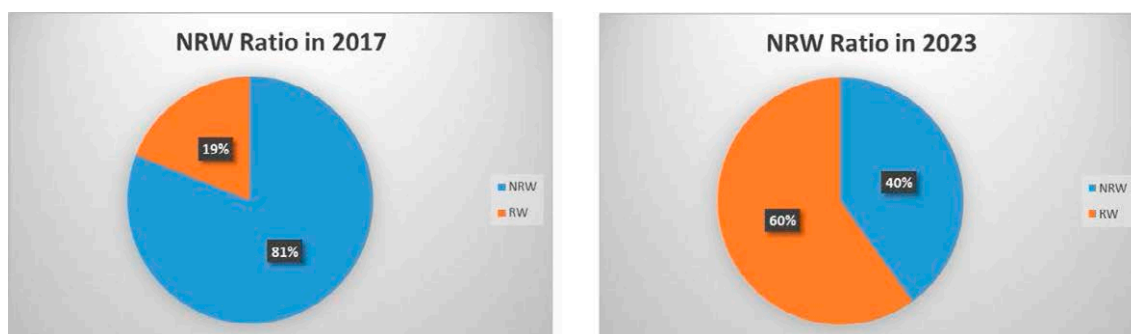
KWSC has marked the highest NRW ratio of 81% as of 2017 (see Table 2.4 5). KWSC targeted more than 40 points decrease since 2017 for the year 2023. However, it cannot be considered that the financial

environment is not much worse than the other CUs (See Table 2.4 6). KWSC needs to conduct NRW reduction activities such as leak detection on the aged pipelines.

Table 2.4-5 Revenue and Cost to be increased through NRW Reduction (KWSC)

	Basis	a.2017	b.2023	c.Differences(c=a-b)	Remarks
NRW	1)	81%	40%	41.0 points	
Quantity of NRW (m ³ /day)	2)	127,698	63,222	64,476m ³ /day	
Average Water Tariff (ZMW/m ³)	3)	4	4	-	cost per water 10.2 ZMW/m ³ (as of 2017) for reference
NRW amount (ZMW/day)	4)=2)*3)	510,792	252,888	257,904	
NRW amount (ZMW/year)	5)=2)*3)*365	186,439,080	92,304,120	94,134,960	Revenue Improvement by NRW Reduction
Annual Additional Cost for NRW Reduction	7)	0	676,833		30 years of depreciation by investment for NRW reduction

Source: KWSC



Source: KWSC

Figure 2.4-3 Change of NRW Ratio (KWSC)

According to Table 2.4-6, the revenue of KWSC for the year 2016 and 2017 is relatively low. If KWSC implements NRW reduction activities based on the MBP, the revenue will increase to about ZMW 207million which includes revenue of about ZMW94million gained through NRW improvement. The expenditure will also increase to about ZMW0.7million which includes the depreciation cost for pipe replacement as NRW reduction activity.

Table 2.4-6 P/L Statement (KWSC)

			ZMW		
			Actual		Assumption
			2016	2017	2023
Operational (Inclde. Administrative Expense)	Revenue	Water Bills Raised	109,500,639	112,812,797	206,946,917
		Total	109,500,639	112,812,797	206,946,917
	Expenditure	Watr Production Cost	50,925,238	67,727,878	66,730,216
		Administration Expense	44,650,713	39,554,955	39,554,955
		Depreciation	-	-	676,833
		Total	95,575,952	107,282,833	106,962,004
	Gross Profit			13,924,688	5,529,964

Source: KWSC

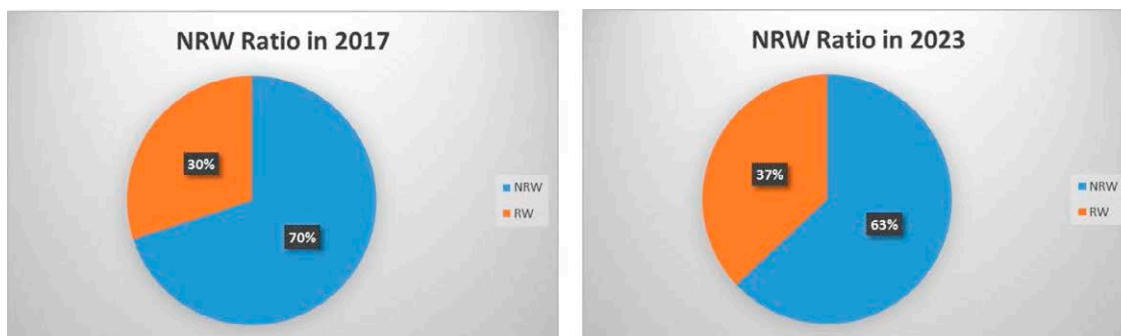
III. LpWSC

NRW ratio of LpWSC is high at 70% (see Table 2.4-7), and LpWSC targeted 63% for the year 2023 (7.0 points to be reduced since 2017). The reduction point is smaller than that of the other CUs, because it is not expected that the project is completed by the other donors as scheduled. The effect from the project supported by the other donors will be drastically influenced in the light of physical losses. In order to implement the project, LpWSC needs to strengthen their own capacity. In addition, depreciation expenses for pipe replacement are included in the cost of NRW reduction (see Table 2.4-8).

Table 2.4-7 Revenue and Cost to be increased through NRW Reduction (LpWSC)

	Basis	a 2017	b 2023	c.Differences(c=a-b)	Remarks
NRW	1)	70%	63%	7.0 points	
Quantity of NRW (m ³ /day)	2)	11,382	8,925	2,457m ³ /day	
Average Water Tariff (ZMW/m ³)	3)	5	5	-	cost per water 7.8 K/m ³ (as of 2017) for reference
NRW amount (ZMW/day)	4)=2)*3)	56,910	44,623	12,287	
NRW amount (ZMW/year)	5)=2)*3)*365	20,772,150	16,287,359	4,484,792	Revenue Improvement by NRW Reduction
Annual Additional Cost for NRW Reduction	7)	0	5,418,733		30 years of depreciation by investment for NRW reduction

Source: LpWSC



Source: LpWSC

Figure 2.4-4 Change of NRW Ratio (LpWSC)

If LpWSC implements NRW reduction activities based on the MBP, the revenue will increase to about ZMW 13 million which includes revenue of about ZMW 5.4million gained through NRW reduction. The expenditure will also increase to about ZMW 17 million which includes the depreciation cost for pipe replacement as NRW reduction. In 2023, the expenditure is still over the revenue of the year, because the expenditure is influenced by the Project. However in the light of the long-term, it is important to invest large scale infrastructure so as to solve challenges on NRW.

Table 2.4-8 P/L Statement (LpWSC)

			ZMW			
			Actual		Assumption	
			2016	2017	2018	2023
Operational (Inclde. Administrative Expense)	Revenue	Water Bills Raised	5,136,374	7,941,000	8,841,000	13,325,792
		Total	5,136,374	7,941,000	8,841,000	13,325,792
	Expenditure	Water Production Cost	10,269,000	11,063,000	11,896,000	11,896,000
		Administrative Expense	-	631,000	370,000	370,000
		Depreciation	-	-	-	5,418,733
		Total	10,269,000	11,694,000	12,266,000	17,684,733
Gross Profit			(5,132,626)	(3,753,000)	(3,425,000)	(4,358,941)

Source: LpWSC

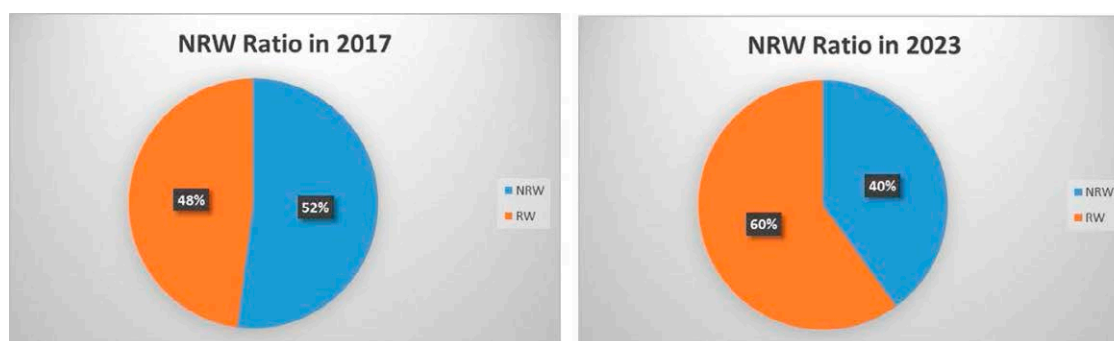
IV. WWSC

NRW ratio of WWSC is the lowest among the four CUs, and they targeted 12.0 points reduction by 2023 (see Table 2.4-9). Since the revenue has come out, it is essential that appropriate investment for infrastructure and O & M are required.

Table 2.4-9 Revenue and Cost to be increased through NRW Reduction (WWSC)

	Basis	a.2017	b.2023	c.Differences(c=a-b)	Remarks
NRW	1)	52%	40%	12.0 points	
Quantity of NRW (m ³ /day)	2)	9,769	7,555	2,214m ³ /day	
Average Water Tariff (ZMW/m ³)	3)	4	4	-	cost per water 5.8 K/m ³ (as of 2017) for reference
NRW amount (K/day)	4)=2)*3)	39,076	30,221	8,855	
Annual amount of NRW (K)	5)=2)*3)*365	14,262,740	11,030,592	3,232,148	Revenue Improvement by NRW Reduction
Annual Additional Cost for NRW Reduction	7)	0	8,660,566		30 years of depreciation by investment for NRW reduction

Source: WWSC



Source: WWSC

Figure 2.4-5 Change of NRW Ratio (WWSC)

Table 2.4-10 shows that WWSC has audited 2014 to 2015*. If WWSC implements NRW reduction activities based on the MBP, the revenue will increase to about ZMW 22million which includes revenue of about ZMW 3.2million gained through NRW improvement (see Table 2.4-10). The expenditure will also increase to about ZMW28million which includes the depreciation cost for pipe replacement as NRW reduction.

Table 2.4-10 P/L Statement (WWSC)

		ZMW					
		Actual*				Assumption	
		2014	2015	2016	2017	2023	
Operational (Inclde. Administrative Expense)	Revenue	Water Bills Raised	12,258,764	13,025,577	13,005,119	19,396,476	22,628,624
		Total	12,258,764	13,025,577	13,005,119	19,396,476	22,628,624
	Expenditure	Water Production Cost	5,395,457	7,427,098	12,368,000	16,125,000	16,125,000
		Administrative Expense	3,894,175	4,006,673	4,006,673	4,006,673	4,006,673
		Depreciation	-	-	-	-	8,660,566
		Total	9,289,632	11,433,771	16,374,673	20,131,673	28,792,239
Gross Profit			2,969,132	1,591,806	(3,369,554)	(735,197)	(6,163,615)

Source: WWSC

(3) Consideration for Finance Situation after the 2023

Table 2.4-11 summarizes the financial situation after fiscal 2023 and the annual cost of NRW reduction measures. As LWSC and KWSC, whose revenue expands by measures to reduce NRW and converts to surplus, will also increase in conjunction with operating cash flow, which is the source of investment resources, investment by own funds will be possible. As LpWSC and WWSC continue to lose money, annual investment for operating cash flow is large, it is necessary to continue to consider raising funds from outsiders such as donor and increase water tariff. However, with regard to the two CUs that continue in deficit, measures to reduce NRW will be effective investment, as the revenue obtained by measures to reduce NRW exceeds the necessary cost.

From the above, it is confirmed from the financial situation that there is a correlation between the target value for measures to reduce NRW and the incremental earnings, and that the countermeasures against NRW reduction affect the financial situation of the targeted CUs.

Table 2.4-11 Revenue and Cost of NRW Reduction after the 2023

(ZMW)

	LWSC	KWSC	LpWSC	WWSC
Revenue	369,791,105	206,946,917	13,325,792	22,628,624
Cash Flow (Revenue+Depreciation)	382,657,915	213,715,657	15,130,225	25,845,674
Investment for NRW Reduction*	77,204,000	40,610,000	32,512,400	51,963,400
Source for Implementation of NRW Reduction Activities after the 2023	Self Investment	Self Investment	Increase Water Tariff and/or External Financing	Increase Water Tariff and/or External Financing

Note: *Investment for NRW reduction cost required for fiscal 2023 and later is calculated as annual average by dividing the entire necessary cost for FY 2019 to 2023 by 5 years.

Source: Project Team based on the data of the target CUs

CHAPTER 3 RESULT OF JOINT REVIEW

3.1 Self-Review of the Project from Five Evaluation Criteria suggested by OECD-DAC

The Project performance was evaluated by the Project Team from five evaluation criteria suggested by OECD-DAC as “Relevance”, “Effectiveness”, “Efficiency”, “Impact” and “Sustainability”. The evaluation for each criterion on the four-point rating scale of “high”, “relatively high”, “moderate” or “low”.

3.1.1 Relevance: **HIGH**

The Relevance of this Project was assessed as “high”.

The basis of the Team’s conclusion is as follows. The Project objectives accord with Zambia's national development objectives and Japan's assistance policies, and indeed cope with the needs of the CUs.

(1) Development Objectives:

MLGH has been adopting the following ‘National Water Supply and Sanitation Capacity Development Strategy (2015- 2020)’ and ‘National Urban Water Supply and Sanitation Programme (2011- 2030)’. The summary of National Development Plan is to achieve supplying safe and clean water at 100% by the year 2030. In addition, it is to be fully integrated and sustainable water resource management.

(2) Relevance to the CUs’ need:

The structure for operation of water supply service is strengthened in CUs. This is recognized as national demand to which the state pays great attention. MWDSEP and NWASCO, who are the key C/Ps of this Project, are organizations who assume the responsibility of evaluating CUs. However, MWDSEP and NWASCO didn’t have a tool to evaluate the implementation structure of CUs. The demand for strengthening the operational capacity on formulating MBP and HRDP is deemed highly appropriate as a response to challenges.

(3) Relevance to Japan’s policy:

Japan focuses on the infrastructure and capacity development in water and wastewater as key components of Japan’s assistance policy for Zambia such as improving water supply and sanitation due to improve social infrastructure for sustainable economic growth.

3.1.2 Effectiveness: **RELATIVELY HIGH**

The Effectiveness of this Project was assessed as “relatively high”.

This conclusion was derived from achieving the indicator of the Project purpose of “MBP and HRDP of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board member of each CU”, was attained in February, 2019. Therefore, it was capable for CUs to implement capacity assessment systematically and adequately as a result of using the EM.

3.1.3 Efficiency: **RELATIVELY HIGH**

The efficiency of this Project was evaluated as “relatively high”. The assessment for Efficiency is as follows;

(1) Progress of activities and achievement of Outputs:

The process of implementing activities was assessed as relatively efficient. As mentioned in previous sections, activities for Output 1, 2 and 3 have generally followed the schedule timely. Therefore, these Outputs were achieved with good result.

(2) Volume and quality of input:

The Project team has timely been input in connection with the planned volume and quality.

(3) Project Cost

The Project was implemented in the original budget as planned.

3.1.4 Impact: ***HIGH***

The Impact of this Project was evaluated as “high” because it seems that the Overall Goal of “Urban water supply infrastructure is managed based on MBP and/or HRDP by each CU” will be achieved, as a result of the achievements made during this Project. It seems that NWASCO will scale up capacity assessment systematically and adequately as a result of using the EM to all the 11 CUs. The bases of the achievement are shown in Clause 3.1.5.

3.1.5 Sustainability: ***RELATIVELY HIGH***

The Sustainability of this Project was evaluated as “Relatively High”.

It seems that scaling-up of capacity assessment to all the 11 CUs will be achieved by NWASCO based on the followings:

- MWSDSEP issued the letter for NWASCO to indicate to scale up capacity assessment utilizing the EM to all the 11 CUs.
- It is easy for NWASCO to inspect the MBP and the HRDP as a result of capacity assessment systematically and adequately using the EM.
- There is no budget shortfall for NWASCO because NWASCO implements the scaling-up activities at the same time of NWASCO's benchmarking activities.
- It is easy for NWASCO to introduce the EM because some indicators of the EM correspond to the indicators of NWASCO's benchmark.

Through the discussions with the donors of developing the water sector such as GIZ and AfDB, JICA Expert Team shared the outputs of the Project. They will examine whether they utilize the outputs of the Project as shown in Article 1.6.

3.2 Key Factors that Influenced Project Implementation and Outputs

3.2.1 Preparation Stage

(1) JICA Expert Team

Since the skills transfer which the structure for operation strengthened in targeted CUs is incorporated in the Project, the experienced experts on the technical cooperation for the water sector were appointed. In addition, the expert who experienced as water supply utilities in Japan was appointed to implement the approach on the capacity development of the management for organizational operation and O&M through the Project period.

(2) Local Experts

JICA Expert Team appointed the local assistant engineer and the facilitator based on the following reasons:

- To have enough knowledge for local habitudes and practices as well as challenges, which are difficult for the Japanese to learn beforehand.
- To utilize local technology efficiently and effectively.
- To explain relations/ differences between the Japanese and local technologies.
- To maintain facilitation of the Project activities, including that during absence of JICA Expert Team.
- To communicate and implement the Project smoothly.

3.2.2 Implementation Stage

(1) Collaboration among CUs

The targeted four CUs (LWSC, WWSC, LpWSC and KWSC) implemented almost the same programs simultaneously. And the members of these CUs sometimes had opportunities to have the workshops, trainings, consultative meetings, JCC, etc. These CUs had a dialogue on their information on progress and the results in the meetings. The information exchanges promoted the awareness on the collaboration among CUs. These CUs recognized NRW reduction is one of the most important activities which solve their challenges. However there was no opportunity of discussing among CUs. NRW reduction activity of KAIZEN project in LgWSC was good practice of NRW reduction activity in Zambia. LgWSC introduced the activities to the 11 CUs at the 3rd Workshop on 25th July 2018, and the solution and practice on work efficiency and NRW reduction were discussed by all the 11 CUs. These activities of LgWSC which have contributed to reduction of errors for meter reading and so on in terms of NRW reduction activities, will be helpful so as to finalize the MBP as NRW reduction project.

(2) Structure of the C/P Teams

Based on the original PDM, the Task Force for formulation of MBP and HRDP consisted of each MD and HRD. However, the Project invited not only each MD and HRD but also several sectors in charge to the meetings so as to improve their ownership.

(3) Activities for the sustainable implementation after the Project

- The indicators of the EM such as the PIs for the water supply service, the evaluation items for the management capacity and the communication & negotiation capacity, were selected so that all the persons of CUs could implement capacity assessment systematically and adequately, and so that they could collaborate on the NWASCO's benchmarking system as well.
- MWDSEP issued the letter to NWASCO on the 26th November, 2018 to ensure sustainability of activities in the targeted CUs and to scale up capacity assessment to the remaining seven CUs.
- NWASCO determined the scaling-up schedule; 1) for the four targeted CUs in 2019, and 2) scale-up capacity assessment to all the 11 CUs in 2020. CUs will submit the revisions of the MBP and HRDP and annual plans to NWASCO every year end respectively. NWASCO will inspect these plans to be submitted from CUs in January through February and will feed back the adequacy of the plans as inspection results to CUs.
- JICA Expert Team assisted the targeted CUs in formulating the programs for countermeasures against NRW which is common challenges for each CU. It will contribute to formulation of the new or revised MBP and HRDP and the detailed annual plans after the termination of the Project.

Through the discussions with the donors of developing the water sector such as GIZ and AfDB, JICA Expert Team shared the outputs of the Project. They will examine whether they utilize the outputs of the Project as shown in Article 1.6.

3.3 Lessons Learnt

This Project terminated confirmation on the approval of the MBP and HRDP by each board of CU in accordance with PDM. However, there are the following three lessons learnt through the Project:

(1) Sharing information with other projects

Each projects on water supply sectors which are carried out by other organizations across Zambia should be shared among the CUs and relevant donors. Sharing information will create synergy effects as LgWSC introduced in the workshop of the Project. For instance, some of the four pilot CUs visited LgWSC so as to collect the furthermore details on DMR System in the JICA's KAIZEN project after introducing the JICA's KAIZEN project to other CUs, DMR system is to reduce the reading errors for the customer meters, which contribute to the NRW reduction.

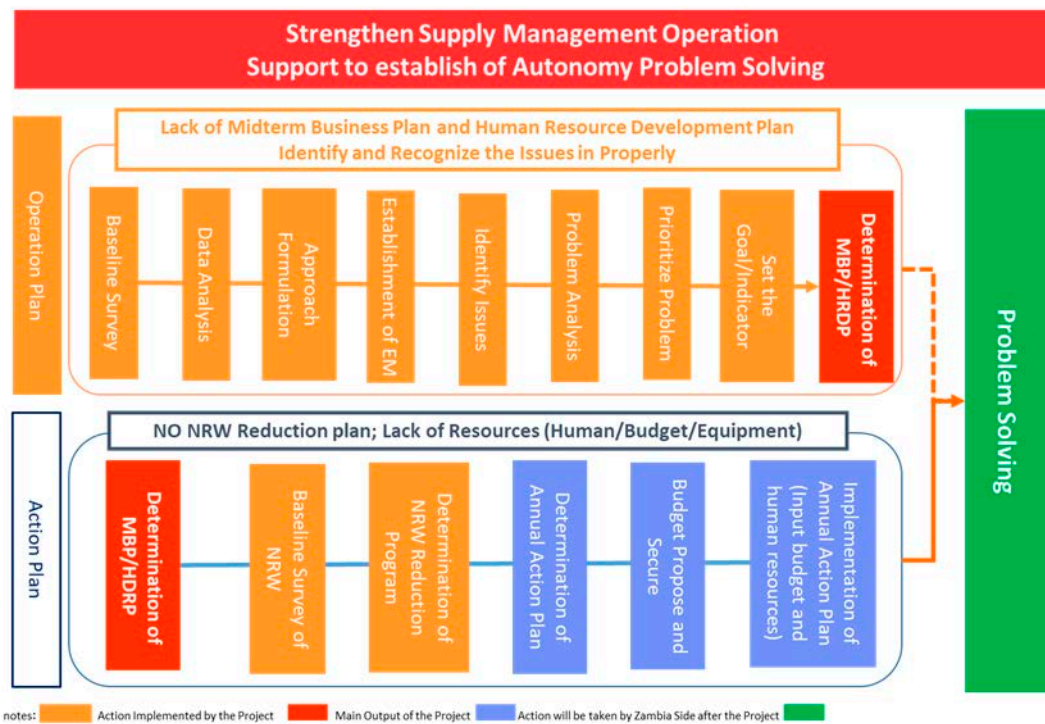
(2) Period of the Project

The processes of NWASCO's inspection and feedback to each CU couldn't be confirmed in this Project. It is necessary for JICA Expert Team to confirm these processes for conducting CUs' capacity evaluation

and formulating the MBP and HRDP after the Project’s termination. In order for JICA Expert to monitor all cycle from evaluation of CUs to formulation of the MBP and HRDP after transferring the process to CUs, further time is required for monitoring CUs’ activities.

(3) **Assisting the four CUs in materializing projects following NRW reduction as example**

The Project Team formulated the MBP and HRDP 2019 through 2023 for five years. MWDSEP and NWASCO were able to understand scopes of projects to be carried out and scale of project cost. The MBP is not documents of applying for an annual budget. In order to implement projects based on the MBP and HRDP appropriately, Japanese side decided to assist the four CUs in materialize projects as a next step. (Figure 3.3 1 is the flowchart of the Project activities. The upper part shows the original scope in the Project and the lower part in orange was added in the Project.) Actually, JICA Expert Team flexibly followed-up surveying current status of NRW which is one of common challenges among the four CUs, and prepared specific programs which will be referred to their own annual action plan. It is confident that four CUs will be able to conduct a series of process such as evaluation of capacity, formulation of the MBP and HRDP, preparing program and more accurate annual action plans.



Source: Project Team

Figure 3.3-1 Flowchart of the Project Activities

CHAPTER 4 ACHIEVEMENT FOR OVERALL GOAL AFTER COMPLETION OF THE PROJECT

4.1 Perspective on Achievement for Overall Goal after Completion of the Project

The Overall Goal of the Project is “Urban water supply infrastructure is managed in a sustainable way by each CU”. As mentioned in the Chapter 2, the Project Purpose was achieved. In addition, MWDSEP and NWASCO are steadily taking next steps which scale-up to all the 11 CUs by self-supporting effort towards the overall goal. It seems that the scaling-up to all the 11 CUs will be achieved as shown in Clause 3.1.5.

4.2 Plan of Operation on Achievement for Overall Goal by the Zambian Side

NWASCO determined to scale up utilization of outputs as below:

4.2.1 Four targeted CUs

(1) Request of Capacity Assessment

NWASCO will request the CUs to conduct capacity assessment at organizational and individual level in July or August every year.

(2) Formulation or review of MBP and HRDP

The HRD of each CU will finalize formulation or review of the MBP and HRDP in November every year. NWASCO will conduct monitoring of progress in reviews and implementation of the MBP and HRDP every year.

(3) Approval of MBP and HRDP

MBP and HRDP will be approved by each board of CU in December every year.

(4) Inspection of MBP and HRDP

NWASCO will inspect each MBP and HRDP in January and February. After the inspection, NWASCO will feed back the result to each CU.

4.2.2 All the CUs

(1) Workshop

In order to scale up capacity assessment to the remaining seven CUs, NWASCO will invite them to attend the workshop in October 2019.

(2) Commencement of Scale-up

NWASCO will request the remaining seven CUs to conduct capacity assessment based on the EM in January 2020. All the eleven CUs will also follow the same process as the four targeted CUs as shown in Clause 4.2.1.

4.3 Recommendation to the Zambian Side

Prior to commencement of the Project, all the CUs requested MWDSEP to make budget arrangement without any basis. In other words, annual budget was applied to MWDSEP for making budget arrangement qualitatively. However, after the introduction of the EM, the four CUs make it possible to request budget with basis such as challenges which were selected based on the EM systematically, so that MWDSEP enables to verify and approves their request on annual budget.

From the aspects of the above points, it is significant that all the CUs assess their own capacity at organization and individual level and feedback the result of assessment to the MBP and HRDP in order for MWDSEP to approve practical budget. Actually, there is no incentive for all the CUs to utilize the EM for their evaluation, therefore, it is recommended that MWDSEP determines one of regulations that MWDSEP cannot accept request of annual budget without the results based on the EM, the MBP and HRDP.

In order to conduct activities of capacity assessment and formulation of the MBP and HRDP sustainably, JICA Expert Team suggested the following two types of measures:

■ **Actions at CUs' Level**

- a) Introducing remuneration system based on performance basis in CUs
- b) Introducing promotion (Demotion) and awards

■ **Actions at other Levels apart from CUs**

- a) Regulating capacity assessment as pre-condition in a case that any projects implementation of CUs are subsidized by the Government.
- b) Regulating capacity assessment as pre-condition in order for the CU's annual budget to be approved.

4.4 Monitoring Plan from Completion to Post-Evaluation of the Project

The following two activities for the monitoring are suggested by JICA Expert Team.

4.4.1 Four targeted CUs

NWASCO determined to monitor the annual activities by the four targeted CUs as shown in the Section 4.2.1. It is suggested that JICA monitors the implementation of these activities.

4.4.2 All the CUs

NWASCO determined to invite the remaining seven CUs to attend the workshop for the purpose of scaling-up capacity assessment in October, 2019 as shown in the Section 4.2.2. It is suggested that JICA assists all the CUs in scaling-up capacity assessment. The follow-up project is assumed before and after three months of the workshop that NWASCO planned in October, 2019 as shown in Figure 4.4-1

(1) Before three months of the Workshop

- NWASCO scales up capacity assessment to the remaining seven CUs in advance with two persons to be appointed among the targeted CUs who have sufficient ability of the Project. The mutual cooperation to other seven CUs by staff appointed from the four pilot CUs will be capable to utilize the case of the AfDB project as shown in Figure 4.5-1.
- JICA Expert Team could be assigned for two weeks before three months of the workshop in Zambia. JICA Expert Team then discusses the scaling-up activities with the Zambian side and visits one of seven CUs with two persons to be appointed.
- Each person sent from the targeted CUs visits the remaining seven CUs to enable to conduct capacity assessment. (Total four days (meetings: two days and transportations: two days))
- JICA Expert Team makes report of monitoring the seven CUs at the end of this period.

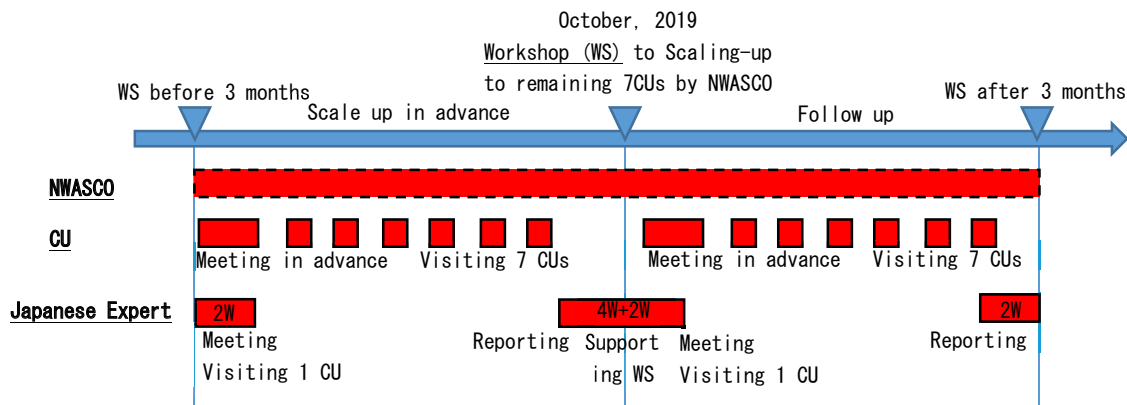
(2) At the Workshop

- JICA Expert Team could be assigned for four weeks (before and after two weeks of the workshop) in Zambia to support the implementation of the workshop. In addition another JICA Expert Team could be assigned for two weeks (before and after one week of the workshop) in Zambia to administrate this follow-up project as well.

(3) After three months of the Workshop

- NWASCO monitors to the remaining seven CUs with two persons sent from the targeted CUs so that CUs are able to conduct capacity assessment for three months after the workshop.
- JICA Expert Team discusses the monitoring scaling-up activities with the Zambian side and visits one of the seven CUs with two persons from the targeted CUs at the beginning of this period.
- Each person from the targeted CUs visits the remaining seven CUs to enable to conduct capacity assessment. (Total four days (meetings: two days and transportations: two days))

- JICA Expert Team makes report of monitoring the seven CUs at the end of this period.

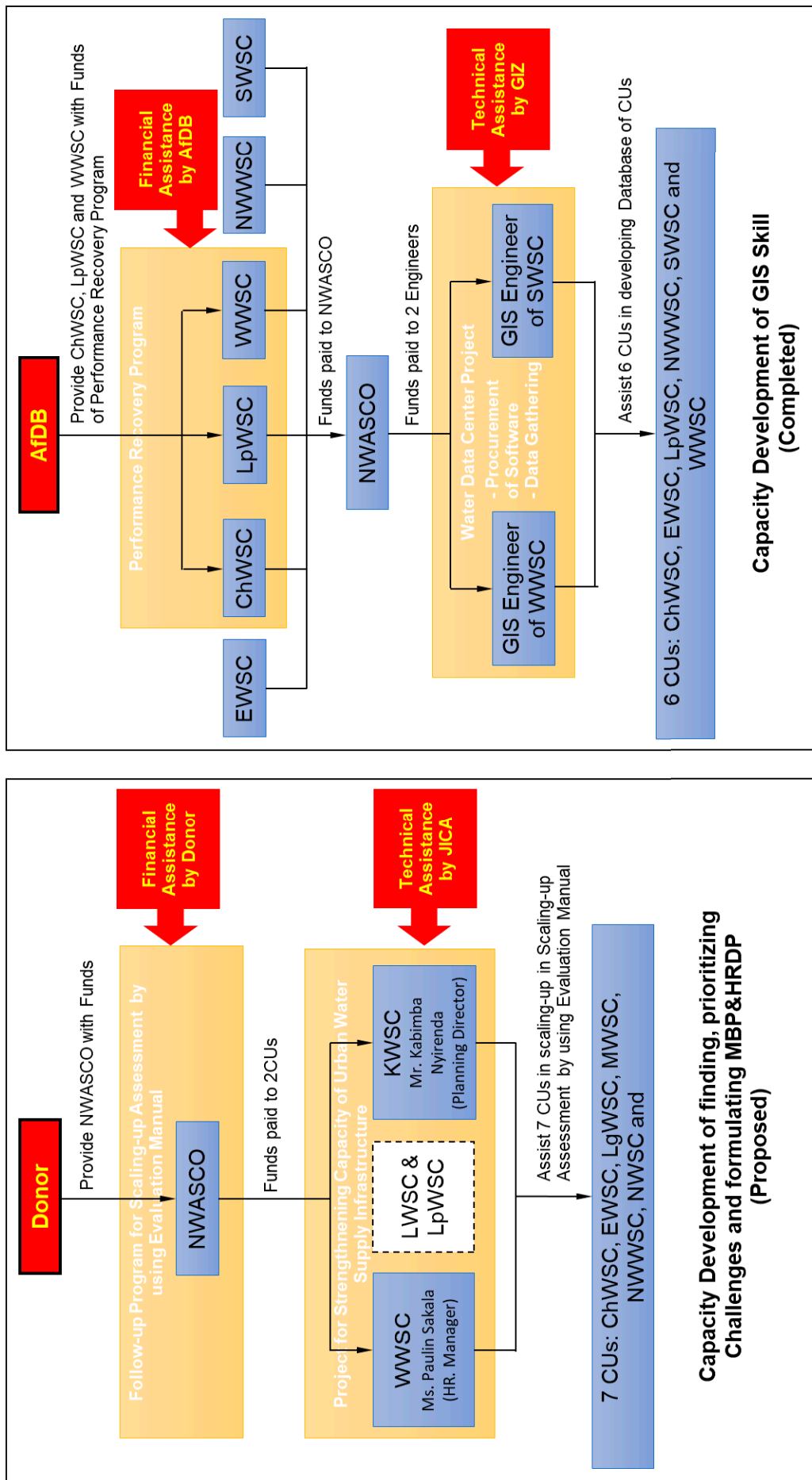


Source: Project Team

Figure 4.4-1 Schedule for the follow-up project (Draft)

4.5 Taking over Assistance on Water Supply Sector by Other Donors

GIZ and AfDB have been planning financial and technical assistance on water supply sector for WWSC and LpWSC. GIZ has plans on strengthening of MWDSEP's management capacity, while, AfDB has been designing scope of the project through the preliminary survey. In connection with assistance of AfDB, AfDB mentioned that it will finalize specification and scope of their project based on the EM and the NRW reduction program which was prepared by JICA Expert Team. Specifically, AfDB will focus on installation of water meters which were proposed in the program. On the other hand, GIZ is also interested in the EM and the NRW reduction program and decided to utilize these documents.



Source: Project Team

Figure 4.5-1 Concept of Mutual Cooperation to other Seven CUs by Staff appointed from the Four Pilot CUs

APPENDICES

APPENDIX. A-1
ASSIGNMENT SHEET OF THE
JAPANESE EXPERTS

Appendix A-1 Assignment Schedule of the Japanese Expert

Name	Position	Firm	2017												2018			2019			Total Days	Total Man-Month									
			Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
IGARASHI HIDEYUKI	Chief Advisor/Water Supply Management1	YEC	Plan	(25)																											
			Amend Plan	(26)																											
			Actual	(4)	(22)																										
TAKETOSHI FUJIYAMA	Deputy Chief Advisor/Water Supply Management2/ Strengthening Capacity of Organization	YEC	Plan		(15)																										
			Amend Plan	(16)																											
			Actual	(4)	(12)																										
YOSHIFUMI WADA	Human Resource Development/ Evaluation	YWC	Plan		(15)																										
			Amend Plan		(23)																										
			Actual		(23)																										
SHINJI MIWA (until June 2018) KIMIKO TAMOTSU (from July 2018)	O&M of Water Supply Facilities	YEC	Plan	(25)																											
			Amend Plan	(26)																											
			Actual	(4)	(22)																										
			Sub Total												Sub Total			Plan	Amend	Actual											
																		673	692	701	22.43	23.06	23.37								

Name	Position	Firm	2017												2018			2019			Total Days	Total Man-Month									
			Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
IGARASHI HIDEYUKI	Advisor/Water Supply Management	YEC	Plan	(1)																											
			Amend Plan	(1)																											
			Actual	(1)																											
TAKETOSHI FUJIYAMA	Deputy Chief Advisor/Water Supply Management2/ Strengthening Capacity of Organization	YEC	Plan	(1)																											
			Amend Plan	(1)																											
			Actual	(1)																											
			Sub Total												Sub Total			Plan	Amend	Actual											
																		4	2	2	0.10	0.05	0.10								

Report	IC/R: Inception Report, WP: Work Plan, MS: Monitoring Sheet, FR: Final report		IC/R		WP MS		MS		YEC Expense	
	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Total										
Plan									22.63	
Amend									23.16	
Actual									23.47	

APPENDIX. A-2
LIST OF COUNTERPART (C/P)

List of Counterpart (C/P)

Department of Water Supply and Sanitation (DWSS), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP)

No.	Name	Title	Remarks
1	Eng. Oswell Katooka	Acting Director/Project Director	
2	Ms. Selenia M. Matimelo	Principal Community Development Officer/Project Manager	
3	Eng. Kalapa B. Charles	Senior Engineer	On study leave from the middle of September 2017
4	Eng. Michael Mwamba Museba	Senior Engineer	Assigned at the end of September 2017

National Water Supply and Sanitation Council (NWASGO)

No.	Name	Title	Remarks
1	Mr. Peter Mutale	Chief Inspector	Kick-off Meeting
2	Ms. Chola Mbilima	Senior Inspector	
3	Mr. Hara Kasenga	Senior Inspector	

Commercial Utilities (CUs)

No.	Name	Title	Remarks
1	Dr. Sylvester Mashamba	Managing Director (MD) Lusaka Water and Sewerage Company (LWSC)	No longer at LWSC as at the middle of July 2017
2	Eng. Jonathan Kampata	MD, Lusaka Water and Sewerage Company (LWSC)	Assigned at the middle of July 2017
3	Eng. Wamuwi Changani	MD, Western Water and Sewerage Company	
4	Eng. Kenneth Chense	MD, Western Water and Sewerage Company (WWSC)	
5	Eng. Athanasius K. Mwaba	MD, Kafubu Water and Sewerage Company (KWSC)	
6	Mr. Christopher Walimuntu	Acting Human Resource and Administration (HRA) Director, LWSC	
7	Ms. Pauline Sakala	Human Resources (HR) Manager, WWSC	
8	Mr. Barnard Chama	HR Manager, LpWSC	
9	Mr. Portipher Phiri	HR Director, KWSC	No longer at KWSC as at end of August, 2017
10	Mr. Brian Ng'onga	Acting HRA Manager, KWSC	Assigned at the beginning of September, 2017

APPENDIX. A-3
LIST OF VARIOUS MEETINGS
(JCC, WORKSHOP, TRAININGS,
CONSULTATIVE FORMULATION
MEETING, ETC.)

List of Various Meetings

Joint Coordination Committee

No.	Duration	Description
1	17th March 2017	Kick-off Meeting
2	9th August 2017	Confirmation of Evaluation Report
3	12th December 2017	Confirmation of Evaluation Report
4	25th July 2018	Confirmation of MBP and HRDP
5	30th January 2019	Confirmation of the implementation after the Project

Consultative Formulation Meeting

No.	Duration	Description
1	25th July 2017	Confirmation of MBP and HRDP
2	22nd January 2019	Preparation for 5th JCC

Stakeholder Meeting

No.	Duration	Description
1	19th June 2018	To secure the sustainable implementation

Work Shop

No.	Duration	Description
1	12th December 2017	Sharing the Challenges and Solution
2	19th April 2018	Sharing the Prioritization of the Challenges and Solution
3	24th July 2018	Confirmation of MBP and HRDP

Trainings

No.	Duration	Description
1	27th July 2018	Training of Inspectors

APPENDIX. A-4
RECORD OF DISCUSSION (R/D)

RECORD OF DISCUSSIONS
ON
THE PROJECT FOR STRENGTHENING CAPACITY OF URBAN
WATER SUPPLY INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA
AGREED UPON BETWEEN
MINISTRY OF LOCAL GOVERNMENT AND HOUSING
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Lusaka, 30th August, 2016



Mr. Hisanao Noda
Chief Representative
JICA Zambia office
Japan



Mr. Amos Malupenga
Permanent Secretary,
Ministry of Local Government and
Housing
The Republic of Zambia



Based on the minutes of meetings on the Detailed Planning Survey on The Project for Strengthening Capacity of Urban Water Supply Infrastructure (hereinafter referred to as “the Project”) signed on June 13, 2016 between the Ministry of Local Government and Housing (hereinafter referred to as “MLGH”) and the Japan International Cooperation Agency (hereinafter referred to as “JICA”), JICA held a series of discussions with MLGH and relevant organizations to develop a detailed plan of the Project.

Both parties agreed on the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that MLGH, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute towards social and economic development of the Republic of Zambia.

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 27th June, 2006 (hereinafter referred to as “the Agreement”) and Note Verbales exchanged on 8th August, 2016 between the Government of Japan (hereinafter referred to as “GOJ”) and the Government of the Republic of Zambia (hereinafter referred to as “GRZ”).

Appendix 1: Project Description

Appendix 2: Main Points Discussed

Appendix 3: Minutes of Meetings on the Detailed Planning Survey

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PROJECT DESCRIPTION

Both parties confirmed that there is no change in the Project Description agreed on in the minutes of meetings on the Project signed on 13th June, 2016 (Appendix 3).

I. BACKGROUND

Zambia's urban water supply is managed by 11 Commercial Utilities (CU). The situation of urban water supply has not reached adequate level, for instance, non-revenue water average rate is 48%, hours of water supply average is 17 hours, and average ratio for metering is 67%. These indicators are caused by old facilities which were constructed 50-60 years ago and significant population growth in urban area (Population in urban area is increased by 4.44% per year).

In order to improve the situation, GRZ has set target figures such as reducing non-revenue water rate from 48% to 25 % and supplying water 24 hours by 2025. In this regard, capacity development for CUs has high priority.

In terms of capacity development of CUs, several Cooperating Partners are supporting various project implementations. However, it is not good enough for achieving the adequate service level.

GRZ has developed the Capacity Development Strategy which establishes appropriate action plan. In the draft of Capacity Development Strategy, capacity development of CU will be noted as high priority action.

In order to accelerate improvement of the stated condition, GRZ requested to the GOJ to implement the project "the Project for Strengthening Capacity of Urban Water Supply Infrastructure".

II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex 1) and the tentative Plan of Operation (Annex 2).

1. Input

- (1) Input by JICA
 - (a) Dispatch of Experts
 - Chief Advisor/ O&M Management
 - Performance Evaluation
 - Human Resources Development Planning
 - Workshop Facilitator
 - (b) Machinery and Equipment
 - Leakage Detection Equipment
 - Pipe Repair Equipment

Input other than indicated above will be determined through mutual consultations between the Zambian side and JICA during the implementation of the Project, as necessary.



(2) Input by MLGH

MLGH will take necessary measures to provide at its own expense:

- (a) Services of MLGH and other relevant organizations counterpart personnel and administrative personnel as referred to in II-2;
- (b) Suitable office space with necessary equipment;
- (c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA;
- (d) Information as well as support in obtaining medical service;
- (e) Credentials or identification cards;
- (f) Available data (including maps and photographs) and information related to the Project;
- (g) Running expenses necessary for the implementation of the Project;
- (h) Expenses necessary for transportation within the Republic of Zambia of the equipment referred to in II-1 (1) as well as for the installation, operation and maintenance thereof; and
- (i) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into the Republic of Zambia from Japan in connection with the implementation of the Project

2. Implementation Structure

The Project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) MLGH and other relevant organizations

- (a) Director of Department of Housing and Infrastructure Development of MLGH chairs the Joint Coordination Committee (hereinafter referred as "JCC") and will be responsible for overall administration and implementation of the Project.
- (b) Assistant Director of Water and Sanitation, Department of Housing and Infrastructure of MLGH will be responsible for administration and implementation of the Project.
- (c) Managing Director of Lusaka Water and Sewerage Company (hereinafter referred to as "LWSC"), Western Water and Sewerage Company (hereinafter referred to as "WWSC"), Luapala Water and Sewerage Company (hereinafter referred to as "LpWSC") and Kafubu Water and Sewerage Company (hereinafter referred to as "KWSC") to participate in JCC

(2) Counterpart Personnel for JICA experts

MLGH, LWSC, WWSC, LpWSC and KWSC would assign suitable number of capable counterpart personnel to JICA experts in order to ensure the effective implementation of the Project.

(3) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to MLGH on any matters pertaining to the implementation of the Project.

(4) JCC

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JCC will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deemed necessary. JCC will review the progress, revise the overall plan when necessary, approve an annual work plan, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex 4.

(5) Task Force

Task Force is chaired by Director/Head of Human Resources of LWSC, WWSC, LpWSC and KWSC (hereinafter referred as "target CU"). Target CU would assign suitable number of capable counterpart to establish a task force of each Target CU. The task force plays key role to develop human resources development plan of each target CU.

3. Project Sites and Beneficiaries

Project site: Lusaka, Mongu, Mansa and Ndola.

Direct beneficiaries: Staffs of MLGH and CUs of above mentioned cities.

Indirect beneficiaries: Citizens of Republic of Zambia

4. Duration

1 year and 9 months (One year and nine months) after first dispatch of experts.

5. Environmental and Social Considerations

(1) MLGH agreed to abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

III. UNDERTAKINGS OF GRZ

1. GRZ will take necessary measures to:

(1) ensure that the technologies and knowledge acquired by the Republic of Zambia nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Republic of Zambia, and that the knowledge and experience acquired by the personnel of the Republic of Zambia from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project;

(2) grant privileges, exemptions and benefits to the JICA experts referred to in II-1 (1) above and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Republic of Zambia.

(3) provide security-related information as well as measures to ensure the safety of the JICA experts;

(4) permit the JICA expert to enter, leave and sojourn in the Republic of Zambia for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees.

(5) exempt the JICA experts from taxes and any other charges on the equipment, machinery and other material necessary for the implementation of the Project;

(6) exempt the JICA experts from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to them and/or remitted to them



from abroad for their services in connection with the implementation of the Project; and (7) meet taxes and any other charges on the equipment, machinery and other material, referred to in II-1 above, necessary for the implementation of the Project.

GRZ will bear claims, if any arises, against the JICA experts resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Project, except when such claims arise from gross negligence or willful misconduct on the part of the JICA experts.

IV. MONITORING AND EVALUATION

JICA and MLGH will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets will be reviewed every six (6) months.

Also, Project Completion Report will be drawn up one (1) month before the termination of the Project.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, GRZ will take appropriate measures to make the Project widely known to the people of the Republic of Zambia.

VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, MLGH and relevant organizations shall provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Republic of Zambia.

MLGH and relevant organizations shall not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and MLGH will consult each other whenever any major issues arise in the course of Project implementation.

VIII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and MLGH. However, PO may be amended in the Monitoring Sheets.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

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- Annex 1 Logical Framework (Project Design Matrix: PDM)
- Annex 2 Tentative Plan of Operation
- Annex 3 Project Organization Chart
- Annex 4 A list of proposed members of JCC

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Annex 1 Draft of Project Design Matrix (PDM)

PDM ver. 0 (day/month/year)

Project Title: "The Project for Strengthening Capacity of Urban Water Supply Infrastructure"
 Project Period : One year and Nine months from the date when the first Japanese Expert is dispatched
 Implementing Organization: MLGH
 Direct beneficiaries: Staff of MLGH and CUs Indirect beneficiaries: Citizens of GRZ

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
<p><Overall Goal> Urban water supply infrastructure is managed in a sustainable way by each Commercial Utility (CU)</p> <p><Project Purpose> The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.</p>	<p>Urban water supply infrastructure is managed based on the strategic paper and/or human resources development plan.</p> <p>Human resources development plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.</p>	<p>Annual Report</p> <p>Project report</p>	<p>Senior management does not leave the CU</p>		
<p><Outputs> 1. Capacity of MLGH on evaluating CUs is strengthened.</p> <p>2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated</p> <p>3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC and KWSC</p>	<p>1-1 The evaluation manual for evaluating CUs is approved by MLGH. 1-2 The way to utilize the evaluation manual is understood by MLGH staffs in charge of urban water supply.</p> <p>2-1 Challenges of each CU is clarified.</p> <p>3-1 Midterm business Plan and Human resources development plan is logically prepared in a manner consistent with target figure of key performance indicator</p>	<p>Project report</p> <p>Project report</p> <p>Project report</p>			




Annex 1 Draft of Project Design Matrix (PDM)

Activities	Inputs	A. Natural disaster/ political instability/ economic crisis that affect the project activities do not occur
<p>1-1 To collect policy, strategy and information related to CUs in Zambia. 1-2 To decide target issues covered by the Evaluation manual. 1-3 To formulate the Evaluation Manual. 1-4 To share purpose and components of the Evaluation manual to staffs of MLGH and CU 1-5 To conduct training for MLGH on how to utilize the Evaluation manual</p>	<p><Zambian Side> Project Personnel 1. Director of DHID, MLGH 2. Assistant Director Water and Sanitation of DHID, MLGH 3. Managing Director of LWSC, WWSC, LpWSC and KWSC 4. Director/ Head of Human Resources of LWSC, WWSC, LpWSC and KWSC 5. Counterpart personnel from MLGH, LWSC, WWSC, LpWSC and KWSC to JICA Experts 6. Counterpart personnel for task force of LWSC, WWSC, LpWSC and KWSC 7. Other personnel mutually agreed upon as necessary</p>	<p><Japanese Side> Japanese Experts 1. Chief Advisor/ Planning Operation and Maintenance 2. Strengthen Organization 3. Human Resource Planning/ Evaluation 4. Other experts mutually agreed upon as necessary</p>
<p>***** 2-1 To conduct evaluation based on the Evaluation manual. 2-2 To analyze the result of evaluation take place in Activity 2-1. 2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.</p>	<p>Land, Building and Facilities 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts, including internet connection and air conditioners 3. Other facilities mutually agreed upon as necessary</p>	<p><Pre-Conditions> A Furnished offices for Japanese Expert Team are secured at MLGH and LWSC B Project Personnel is assigned</p>
<p>***** 3-1 To hold a workshop for all target CUs to share challenges and possible solutions. 3-2 To establish task force for each target CU to work on developing human resources development plan. 3-3 To prioritize challenges listed in Activity 2-4. 3-5 To set up goal(s) for each target CU. 3-6 To set up target figure of key performance indicators, to measure achievement of goal(s). 3-7 To hold workshop to share and review goal(s) and key performance indicators of each CU.</p>	<p>Local Costs 1. Administration and operational costs, including costs of DSA for business trip inside the country.</p>	<p>↑ ↑ Issues & Counter measures</p>
<p>3-8 To prepare draft human resources development plan for each target CU. 3-9 To hold a workshop to share human resources development plan of each target CU in order to finalize those 3-10 To submit human resources development plan to board member of each target CU.</p>		

Version 0

Dated ●●,●●,●●

Project Title: The Project for Strengthening Capacity of Urban Water Supply Infrastructure

Schedule of Major Japanese Inputs	Year	2016				2017				2018				Monitoring		
		I	II	III	IV	I	II	III	IV	I	II	III	IV	Issue	Solution	
Expert	Plan															
Chief Advisor/O&M Management	Actual															
Performance evaluation	Plan															
	Actual															
Human resources development planning	Plan															
	Actual															
Technical Advisor	Plan															
	Actual															
Equipment	Plan															
	Actual															
Training in Japan	Plan															
	Actual															
	Plan															

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Activities	Sub-Activities	Year												Remarks	Achievements	Issue & Countermeasures	
		2016				2017				2018							
		Qr I	Qr II	Qr III	Qr IV	I	II	III	IV	I	II	III	IV				
Output 1: Capacity of MLGH on evaluating CUs is Strengthened																	
1.1	To collect policy, strategy and information related to CU in Zambia	Plan															
		Actual															
1.2	To decide target issues covered by the Evaluation manual	Plan															
		Actual															
1.3	To formulate the Evaluation Manual	Plan															
		Actual															
1.4	To share purpose and components of the Evaluation Manual to staffs of MLGH and CU	Plan															
		Actual															
1.5	To conduct Training for MLGH staffs on how to utilize the Evaluation Manual	Plan															
		Actual															
Output 2: Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated																	
2.1	To conduct evaluation based on the Evaluation Manual	Plan															
		Actual															
2.2	To analyse the results of evaluation take in Activity 1	Plan															
		Actual															
2.3	To grasp and clarify current situation of CUs based on data analysis	Plan															
		Actual															
2.4	To prepare evaluation report for each target Cus	Plan															
		Actual															
Output 3: Mid-term Business Plan and Human Resource Development Plan are prepared by LWSC, WWSC, LpWSC and																	
3.1	To enlist challenges of each target Cus	Plan															
		Actual															
3.2	To hold a workshop for all target Cus to share challenges and possible solutions for their	Plan															
		Actual															
3.3	To establish task force for each CU to work on developing human resources development	Plan															
		Actual															
3.4	To prioritize challenges losted in 3-1	Plan															
		Actual															
3.5	To set up goal(s) for each target CU	Plan															
		Actual															
3.6	To set up target figure of key performance indicators, to measure achievement of	Plan															
		Actual															
3.7	To hold workshop to share and review goal(s) and key performance indicators of each target CU	Plan															
		Actual															
3.8	To prepare draft human resources development plan for each target CU.	Plan															
		Actual															
3.9	To hold workshop to share human resources development plan of each target CU in order to finalize those	Plan															
		Actual															
3.10	To submit human resources development plan to board member of each target CU.	Plan															
		Actual															

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Annex 2 Tentative Plan of Operation (PO)

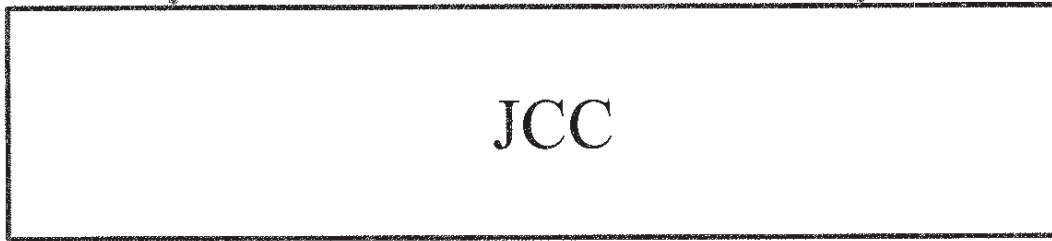
Activities	Year	2016				2017				2018				Remarks	Achievements	Issue & Countermeasures
		1st Year				2nd Year										
		Qr	I	II	III	IV	I	II	III	IV	I	II	III			
Project Management and Coordination	Year															
Planning, Monitoring, and coordination	Plan															
1.1 Organize Joint Coordination Committee	Actual															
1.2 Conduct Joint Monitoring semi-annually	Plan															
	Actual															
1.3 Submit Monitoring Sheet to JICA Zambia Office semi-annually	Plan															
	Actual															
	Plan															
	Actual															
Reports/Documents	Year															
2.1 Project Completion Report	Plan															
	Actual															
Public Relations	Year															
3.1 Develop Project Website	Plan															
	Actual															
3.2 Preparation of public relation materials	Plan															
	Actual															

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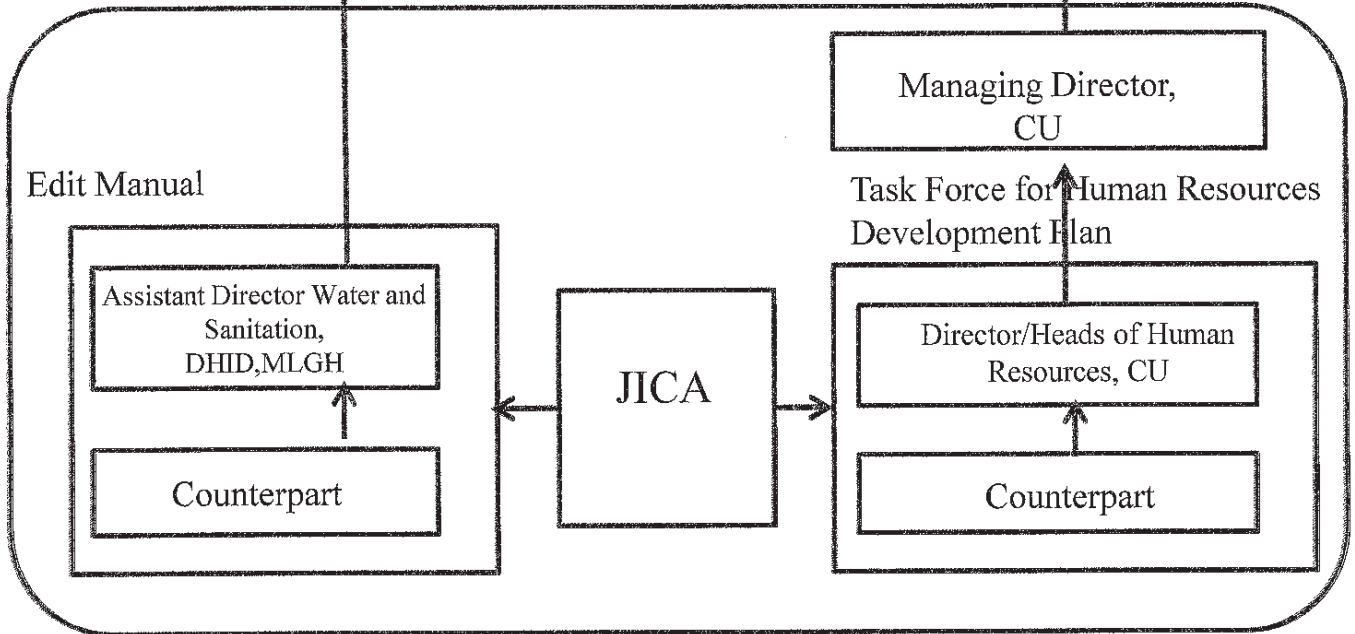
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Annex3 Project Organization Chart

Management Side



Project Side



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Annex4 A List of Proposed Members of Joint Coordination Committee

1. Zambian side

Director of DHID, MLGH

Assistant Director Water and Sanitation of DHID, MLGH

Managing Director of LWSC, WWSC, LpWSC and KWSC

Director of Human Resources from LWSC, WWSC, LpWSC and KWSC

Representative of NWASCO (as an observer)

2. Japanese side

Chief Representative of JICA Zambia Office

JICA Experts

Other Personnel concerned to be proposed by JICA



MAIN POINTS DISCUSSED

1. Input by MLGH and Other Related Organizations

(1) Allocation of Budget

Both sides confirmed that the following would be allocated by MLGH and other related organizations to ensure effective implementation of the project

- a) Salary and domestic travel cost for the counterpart personnel
- b) Project Office and expenses for utility such as electricity and water supply
- c) Other expenses necessary to ensure effective implementation of the Project per R/D.

(2) Allocation of Counterpart Personnel

Both sides confirmed that MLGH and other related organizations would assign suitable number of capable counterpart personnel in order to ensure the effective implementation of the Project.

The Main roles of the counterpart personnel are as follows;

- a) To arrange for JICA experts to collect information and data related to the Project
- b) To arrange for JICA experts for their site visits
- c) To participate in the discussion with JICA experts, and
- d) To work with JICA experts and provide other supports necessary for the performance of the duties of JICA experts.

MLGH shall submit a list of counterparts to JICA Zambia office by end of September, 2016.

(3) Designation of Members of JCC and task force

Both sides confirmed that MLGH would arrange for setting up the JCC, which shall be comprised of personnel from following organizations

- a) Director of Department of Housing and Infrastructure of Development (hereinafter referred as "DHID"), MLGH as chair of JCC
- b) Assistant Director Water and Sanitation of DHID, MLGH
- c) Managing Director of LWSC, WWSC, LpWSC and KWSC
- d) Director of Human Resources from LWSC, WWSC, LpWSC and KWSC
- e) Representative of NWASCO to participate in JCC as an observer

Both sides also confirmed that MLGH would arrange with LWSC, WWSC, LpWSC and KWSC to establish a task force in each CU which is chaired by Director/Head of Human Resources of each CU. A task force will play a key role to develop human resources development plan.

MLGH shall submit member lists of JCC and task force to JICA Zambia office by September, 2016.

2. Coordination with Other Relevant Organizations

Both sides agreed that MLGH will make necessary arrangement with other relevant organizations of the Project, including LWSC, WWSC, LpWSC, KWSC, and NWASCO in order to ensure smooth implementation of the Project.

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Appendix 3

**MINUTES OF MEETING
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
MINISTRY OF LOCAL GOVERNMENT AND HOUSING
OF THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA
ON
JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT FOR STRENGTHENING CAPACITY OF URBAN
WATER SUPPLY INFRASTRUCTURE**

Japan International Cooperation Agency (hereinafter referred to as "JICA") and the
Zambian authorities concerned had a series of discussion and exchanged views on "the
Project for Strengthening Capacity of Urban Water Supply Infrastructure" (hereinafter
referred to as "the Project").

As a result, JICA and the Ministry of Local Government and Housing (hereinafter
referred to as "MLGH") agreed on the matters referred to in the documents attached.

Lusaka, June 13, 2016



Mr. Hisanao Noda
Chief Representative
JICA Zambia Office



Mr. Nkumbu Siame
Director
Department of Housing and Infrastructure
Development
Ministry of Local Government and Housing



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ATTACHMENT

1. Amendment of the Minutes of the Meeting

As a result of discussions both sides confirmed necessity of establishing a human resources development plan for Commercial Utilities (hereinafter referred to as "CU") in Zambia in order to strength their capacity in terms of operation and maintenance for urban water supply.

In this regard, both sides agreed to modify outline of the project from providing training to staffs of CUs to establishing human resources development plan of CUs.

Both sides also agreed that these minutes will supersede the Minutes of the Meeting signed on 27th of March, 2015 as attached Attachment I.

2. Modification of The Project Title

Both sides agreed to modify the Project title from "the Project for Training in Operation and Maintenance of Urban Water Supply Infrastructure" to "the Project for Strengthening Capacity of Urban Water Supply Infrastructure"

3. Record of Discussion

Both sides agreed the draft Record of Discussions (hereinafter referred to as "R/D") shown in Attachment II. After the necessary procedure within JICA and MLGH, R/D will be signed by both JICA and MLGH.

4. Project Design Matrix (PDM) and Plan of Operation (PO)

Both sides agreed that the draft PDM and PO shown in Attachment III and IV as a tool for monitoring and managing of the Project. Both PDM and PO will be modified as needed by the signing date of the R/D and during the Project after mutual consultations and agreements by both sides.

Both sides agreed that the indicators of "Overall Goal" will be determined during the Project, based on the discussions within the Joint Coordination Committee (hereinafter referred to as "JCC").

5. Coordination with Other Relevant Organizations

Both sides agreed that MLGH will make necessary arrangements with other relevant organizations of the Project, including Lusaka Water and Sewerage Company (hereinafter referred to as "LWSC"), Western Water and Sewerage Company (hereinafter referred to as "WWSC"), Luapula Water and Sewerage Company (hereinafter referred to as "LpWSC"), Kafubu Water and Sewerage Company (hereinafter referred to as "KWSC"), and NWASCO in order to ensure smooth implementation of the Project.

6. Input by MLGH and Other Related Organizations

(1) Allocation of Budget

Both sides confirmed that the following would be allocated by MLGH and other related organizations to ensure effective implementation of the project

- a) Salary and domestic travel cost for the counterpart personnel
- b) Project office and expenses for utility services such as electricity and water supply

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c) Other expenses necessary to ensure effective implementation of the Project as per R/D.

(2) Allocation of Counterpart Personnel

Both sides confirmed that MLGH and other related organizations would assign suitable number of capable counterpart personnel in order to ensure the effective implementation of the Project.

The Main roles of the counterpart personnel are as follows;

- a) To arrange for JICA experts to collect information and data related to the Project
- b) To arrange for JICA experts for their site visits
- c) To participate in the discussion with JICA experts, and
- d) To work with JICA experts and provide other support necessary for the performance of the duties of JICA experts.

MLGH shall submit a list of counterparts to JICA Zambia office by end of September, 2016.

(3) Designation of Members of JCC and task force

Both sides confirmed that MLGH would arrange for setting up the JCC, which shall be comprised of personnel from following organizations

- a) Director of Department of Housing and Infrastructure of Development (hereinafter referred as "DHID"), MLGH as chair of JCC
- b) Assistant Director of Water and Sanitation, DHID, MLGH
- c) Managing Director of LWSC, WWSC, LpWSC and KWSC
- d) Director/Head of Human Resources from LWSC, WWSC, LpWSC and KWSC
- e) Representative of NWASCO to participate in JCC as an observer

Both sides also confirmed that MLGH would arrange with LWSC, WWSC, LpWSC and KWSC to establish a task force in each CU which is chaired by Director/Head of Human Resources of each CU. A task force will play a key role to develop human resources development plan.

MLGH shall submit member lists of JCC and task force to JICA Zambia office by September, 2016.

7. Duration of the Project

JICA shared that the project duration is one year and nine months from first dispatch of the experts.

JICA also shared that procurement of experts may need three months from the signing of R/D by both parties.



ATTACHMENT I MINUTES OF MEETING SIGNED ON 27TH OF MARCH 2015
ATTACHMENT II DRAFT RECORD OF DISCUSSIONS
ATTACHMENT III DRAFT PROJECT DESIGN MATRIX (PDM)
ATTACHMENT IV DRAFT PLAN OF OPERATION (PO)

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**MINUTES OF MEETING
FOR
AMENDMENT
OF
RECORD OF DISCUSSIONS
ON
THE PROJECT FOR STRENGTHENING CAPACITY OF URBAN
WATER SUPPLY INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

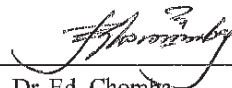
**AGREED UPON BETWEEN
MINISTRY OF WATER DEVELOPMENT, SANITATION AND
ENVIRONMENTAL PROTECTION
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Water Development, Sanitation and Environmental Protection (hereinafter referred to as "MWDSEP") hereby agree that the Record of Discussions on the Project for Strengthening Capacity of Urban Water Supply Infrastructure (hereinafter referred to as "the Project") signed on 30th August 2016 will be amended as described in the attached sheets. This amendment will become effective as of 16th March 2017.

Lusaka, 16th March 2017



Dr. Hitoshi Fujiie
Acting Chief Representative
JICA Zambia Office
Japan



Bishop. Dr. Ed. Chomba
Permanent Secretary,
Ministry of Water Development, Sanitation and
Environmental Protection
Government of the Republic of Zambia

Attachment:

“II. OUTLINE OF THE PROJECT” of PROJECT DESCRIPTION as Appendix 1 in the original Record of Discussions shall be amended as follows:

The following sentences

“1. Input

(1) Input by JICA

- (a) Dispatch of Experts
 - Chief Advisor/ O&M Management
 - Performance Evaluation
 - Human Resources Development Planning
 - Workshop Facilitator
- (b) Machinery and Equipment
 - Leakage Detection Equipment
 - Pipe Repair Equipment”

shall be deleted and

“1. Input

(1) Input by JICA

- (a) Dispatch of Experts
 - Chief Advisor/ O&M Management
 - Performance Evaluation
 - Human Resources Development Planning
 - Workshop Facilitator

shall be substituted in lieu thereof:

The following sentences

“(2) Input by MLGH

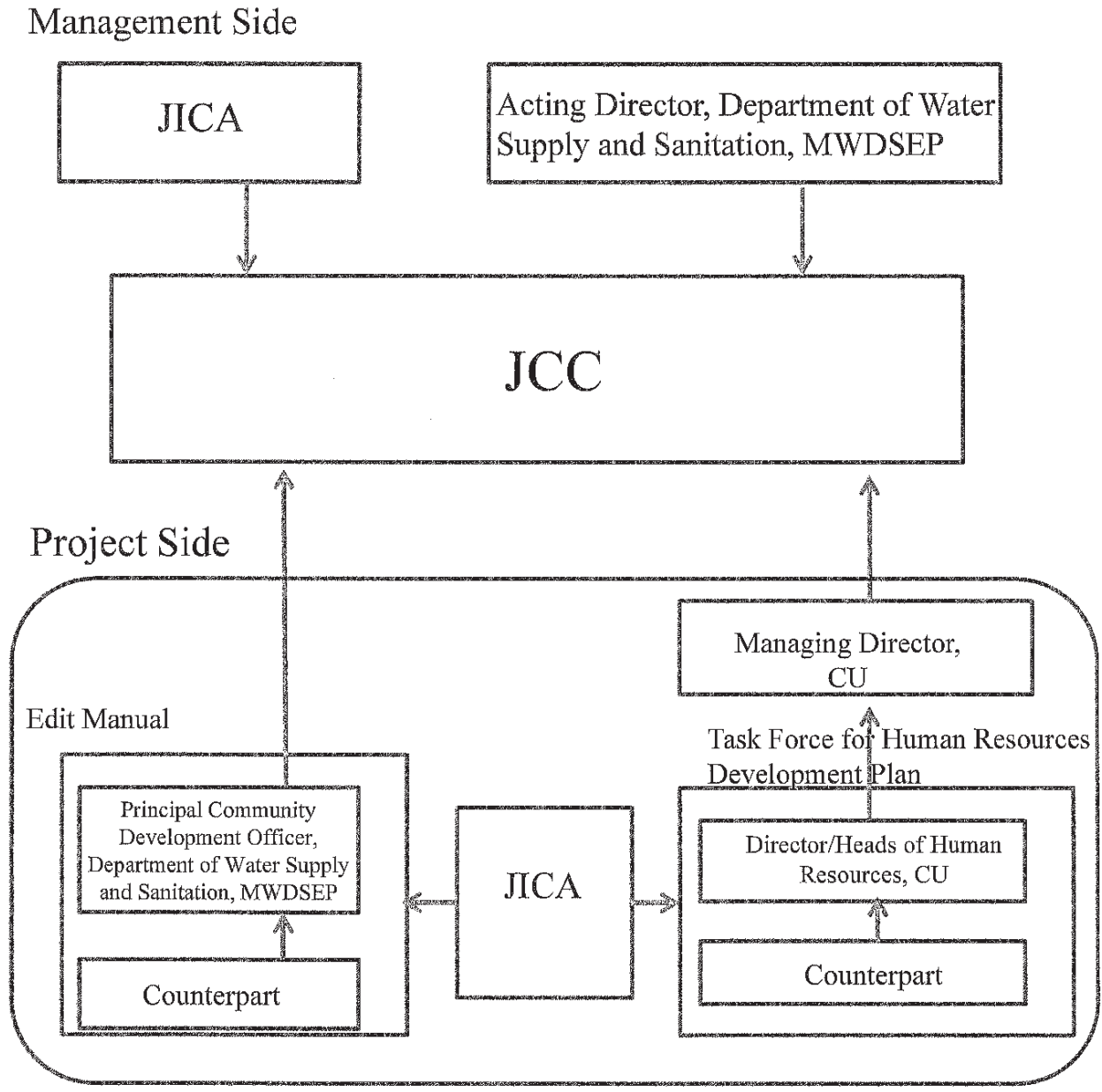
MLGH will take necessary measures to provide at its own expense:

- (a) Services of MLGH and other relevant organizations counterpart and administrative personnel as referred to in II-2;”

shall be deleted and



Annex3 Project Organization Chart



Handwritten signature or initials

**MINUTES OF MEETINGS
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
MINISTRY OF WATER DEVELOPMENT, SANITATION AND ENVIRONMENTAL
PROTECTION
FOR AMENDMENT OF THE RECORD OF DISCUSSIONS
ON
THE PROJECT FOR STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Water Development, Sanitation and Environmental Protection (hereinafter referred to as "MWDSEP") hereby agree that the Record of Discussions on the Project for Strengthening Capacity of Urban Water Supply Infrastructure (hereinafter referred to as "the Project") signed on 30th August 2016, as amended on 16th March 2017 will be amended as follows;

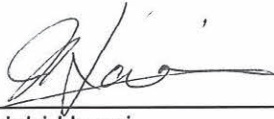
1. Duration of the project

Before	Amended Version
1 year and 9 months (one year and nine months) after first dispatch of experts.	2 years (two years) after first dispatch of experts; this is from 26th February, 2017 to 28th February, 2019.
<p>Reason: The timing of the approval for the Mid-term Business Plan (hereinafter referred to as "MBP") and Human Resource Development Plan (hereinafter referred to as "HRDP") by the Board of Directors of each Commercial Utility has delayed and is expected to be implemented at the end of December 2018.</p> <p>In order to confirm the contents of MBP and HRDP, the Project needs to follow it up until approval at the Board of Directors' meeting. Therefore, the duration of the project will be extended for about 3 (three) months.</p>	

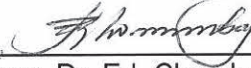
This amendment will become effective as of 22nd October, 2018.

Annex 1 : Record of Discussions (signed on 30th August 2016)

Lusaka, 22nd October, 2018



Mr. Junichi Hanai
Chief Representative
JICA Zambia Office
Japan



Bishop Dr. Ed. Chomba
Permanent Secretary,
Ministry of Water Development, Sanitation and
Environmental Protection
Government of the Republic of Zambia

APPENDIX. A-5
PROJECT MONITORING SHEET

TO JICA Zambia OFFICE

PROJECT MONITORING SHEET

**Project Title: The Project for Strengthening Capacity of Urban Water Supply
Infrastructure in the Republic of Zambia**

Version of the Sheet: Ver.1 (Term: February 2017 - November 2018)

Name: Hideyuki IGARASHI

Title: Chief Advisor

Submission Date: 11th August 2017

I. Summary

1 Progress

1-1 Progress of Inputs

(1) The Zambian Side

1) Project Personnel

All project members were involved in the Project and confirmed their roles and responsibilities for the Project. Project members appointed are as shown below;

- Project Director (PD): Acting Director of Department of Water Supply and Sanitation (DWSS), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP): Eng. Oswell Katooka
- Project Manager (PM): Principal Community Development Officer, DWSS, MWDSEP: Ms. Selenia M. Matimelo
- Acting Principal Engineer - Urban Water and Sanitation, DWSS, MWDSEP: Mr. Kalapa B. Charles
- Managing Director (MD), Lusaka Water and Sewerage Company (LWSC) until the middle of July 2017: Dr. Sylvester Mashamba^{*1}
- MD, LWSC from the middle of July 2017: Eng. Jonathan Kampata^{*2}
- MD, Western Water and Sewerage Company (WWSC): Mr. Wamuwi Changani
- MD, Luapula Water and Sewerage Company (LpWSC): Eng. Kenneth Chense
- MD, Kafubu Water and Sewerage Company (KWSC): Eng. Athanasius K. Mwaba
- Acting Human Resource and Administration (HRA) Director, LWSC: Mr. Christopher Walimuntu
- Human Resources (HR) Manager, WWSC: Ms. Pauline Sakala
- HR manager, LpWSC: Mr. Barnard Chama
- HR Director, KWSC: Mr. Portipher Phiri

- Chief Inspector, National Water Supply and Sanitation Council (NWASCO): Mr. Peter Mutale^{*3}

Note: *1: Resigned at the middle of July 2017

*2: Assigned at the middle of July 2017

*3: Involved as an observer

2) Land, Building and Facilities

Office spaces for the Project were secured as shown below.

- Office space in Ministry of Local Government (MLG) until the 21st July 2017
- Office space in LWSC from the 24th July 2017

(2) The Japanese Side

1) Project Personnel

As at the end of July 2017, Chief Advisor and three other experts were assigned to work in Zambia for about 5.6 Man-Months in total in the months of February, March, April, May and July 2017.

1-2 Progress of Activities

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Activity 1-1. To collect policy, strategy and information related to CUs in Zambia.

This Project commenced in accordance with the overall plan as contained in the National Water Supply and Sanitation Capacity Development Strategy (2015- 2020). The Strategy states that the following objectives at organization and individual level are related to the capacity development of the Ministry of Local Government and Housing (MLGH) (water and sanitation function of Department of Housing Infrastructure and Development (DHID) in the MLGH was transferred to MWDSEP in February 2017) and Commercial Utilities (CUs).

(1) Organization Level:

- To strengthen the Capacity of MWDSEP^{*4} to guide the sector
- To develop the Capacities of CUs to manage their operations sustainably within the conditions of resource constraints.
- To develop the Capacities of Local Authorities (LAs) in resource mobilization, resource allocation prioritization, resource utilization and shareholder responsibilities for sustainable Water supply and sanitation (WSS) service delivery.
- To strengthen the Capacity of NWASCO to optimize the utility of its database and to

upscale its coverage.

Note: *4: According to the raw statement stated in the Strategy, “MLGH” is described in the sentence.

(2) Individual Level:

- To enhance the HR performance in the WSS sector.
- To recruit and retain both male and female staff in the sector.

MWDSEP and NWASCO are responsible for evaluation of CUs’ organizational capacity. In this Project, local CU counterparts comprise LWSC, LpWSC, KWSC and WWSC.

Project Team had interviews with four CUs in order to identify various challenges on water supply service and examine evaluation indicators.

Activity 1-2. To decide target issues covered by the Evaluation Manual

Through interviews with the four CUs and field visits, the following issues were observed and will contribute to the selection of Performance Indicators (PIs), which the Evaluation Manual consists of.

(1) LWSC

Issues	Causes
a) Number of PI ● Few PIs (10 in number).	● Using PIs as evaluation of the benchmark of NWASCO.
b) Geological Information System (GIS) Database ● Lack of pipe information in GIS Database.	● No linkage with the other Databases. ● Limited human resources.
c) Pipe Location ● Uncertainly over exact location of the existing pipeline.	● Imprecise database of pipeline location.
d) Non-Revenue Water (NRW) Management ● High NRW ratio (46% ^{*5}).	● Non-implementation of NRW reduction. ● Lots of illegal connections. ● Lots of malfunctioning water meters.

(2) LpWSC

Issues	Causes
a) GIS Database ● Lack of pipe information in GIS Database.	● Limited human resources.
b) Operation and Maintenance (O&M) at Mansa Water Treatment Plant (WTP) ● Difficulties in the response to sudden change of raw water quality. ● Lack of management of service reservoir.	● Inappropriate water treatment management ● No checking the water level of the service reservoir.
c) NRW Management ● High NRW ratio (70% ^{*5}).	● Non-implementation of NRW reduction.

<ul style="list-style-type: none"> ● Unreliable NRW ratio. 	<ul style="list-style-type: none"> ● Lack of bulk meters at service reservoirs
<p>d) Leakage Management</p> <ul style="list-style-type: none"> ● Wide spread leakage. 	<ul style="list-style-type: none"> ● No visual leakage patrols. ● No leakage report system by customers. ● Non-implementation leakage reduction.
<p>e) Arrear of Water Tariff</p> <ul style="list-style-type: none"> ● Arrear of water tariff from large consumers. 	<ul style="list-style-type: none"> ● Difficulties in collecting from large water tariff customers such as government organizations and institutions.
<p>f) Construction Management</p> <ul style="list-style-type: none"> ● Lack of construction management. 	<ul style="list-style-type: none"> ● No construction supervisors in the CU.

(3) WWSC

Issues	Causes
<p>a) GIS Database</p> <ul style="list-style-type: none"> ● Lack of pipe information in GIS Database. 	<ul style="list-style-type: none"> ● Limited human resources.
<p>b) WTP Treatment Process</p> <ul style="list-style-type: none"> ● Metal odor from tap water. 	<ul style="list-style-type: none"> ● Inappropriate treatment process.
<p>c) NRW Management</p> <ul style="list-style-type: none"> ● High NRW ratio (54%^{*5}). 	<ul style="list-style-type: none"> ● Lots of illegal connections due to easiness of illegal connections. ● Non-implementation of NRW reduction. ● Lots of malfunctioning water meters. ● Lack of plumbers to repair leakage.

Note: *5: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

(4) KWSC

Issues	Causes
<p>a) O&M at ITAWA WTP</p> <ul style="list-style-type: none"> ● Deterioration of the concrete structure at ITAWA WTP. ● Malfunction of the filter control panel. ● Filtration by manual operation at filter basin on operator's experience. 	<ul style="list-style-type: none"> ● Constructed in 1955. ● Lack of maintenance. ● Deterioration of equipment. ● Inadequacy of equipment replacement. ● Insufficient intelligibility of staff concerning the importance of control panel.
<p>b) Distribution Management</p> <ul style="list-style-type: none"> ● Existence of asbestos pipes. ● Deterioration of distribution pipes. 	<ul style="list-style-type: none"> ● Buried according to original design. ● Non-implementation of asbestos pipe replacement. ● Non-implementation of distribution pipe replacement.
<p>c) O&M</p> <ul style="list-style-type: none"> ● Malfunctioning flow meter. 	<ul style="list-style-type: none"> ● Insufficient intelligibility of some staff concerning water distribution management. ● Inadequate O&M for the flow meter.
<p>d) Procurement of parts</p> <ul style="list-style-type: none"> ● Delay of repairing leakage. 	<ul style="list-style-type: none"> ● No repair tools and materials to be procured promptly.
<p>e) NRW Management</p> <ul style="list-style-type: none"> ● High NRW ratio (54%^{*6}) 	<ul style="list-style-type: none"> ● Various reasons such as leakage, etc.

Note: *6: Source KWSC at 2nd JCC

Activity 1-3. To formulate the Evaluation Manual

Each sheet in the Evaluation Manual consists of the following subjects.

- 1) PIs for water supply service
 - Definition
 - Purpose
 - Interviewee
 - Background and Concept
 - Evaluation Criteria
 - Causes
 - Points to be considered (if necessary)
 - Evaluation example (if necessary)
- 2) Evaluation Items for Management Capacity
 - Purpose of Indicator
 - Interviewee
 - Evaluation Criteria
 - Causes for Result of Evaluation
 - Points to be considered
- 3) Evaluation Items for Communication & Negotiation Capacity
 - Purpose of Indicator
 - Interviewee
 - Evaluation Criteria
 - Causes for Result of Evaluation
 - Points to be considered

Activity 1-4. To share purpose and components of the Evaluation Manual to staffs of MWDSEP, **NWASCO and CU.**

Kick-off Meeting and the 1st Joint Coordination Committee (JCC) of the Project took place on the 2nd and the 17th March 2017 respectively. MWDSEP and Japanese Experts (Project Team) shared the purpose of the Evaluation Manual with MWDSEP, **NWASCO**, LWSC, LpWSC, KWSC and WWSC. The Evaluation Manual consists of PIs, Management Capacity and Negotiation & Communication Capacity of CUs.

Project Team selected 21 PIs from the Web database of The International Benchmarking Network for Water and Sanitation Utilities (IBNET) that The Water and Sanitation Program (WSP) of the World Bank (WB) manages through the result of interviews with

four CUs and examination of the INDICATORS FOR THE URBAN AND PERI-URBAN WATER SUPPLY AND SANITATION SECTOR REPORT of NWASCO.

In addition, Project Team proposed 19 evaluation items for management capacity and six items for communication & negotiation capacity.

The components of the Evaluation Manual are as follows:

(1) Pls for the Water Supply Service:

1) Aspects to be improved mainly by Facility Investment

P1: Continuity of supply

P2: Overall water supply coverage

P3: Surplus purification capacity

P4: Transmission and distribution mains

P5: House connections

P6: Mechanical and electrical equipment

P7: Rate of facility utilization

2) Aspects to be improved mainly by Capacity Development (Technical Aspect)

P8: O&M of the facilities

P9: Drawings of pipe facilities

P10: NRW ratio

P11: Customer meters

P12: Bulk meters

P13: Water quality parameters tested at purification plants

3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)

P14: Cost recovery level

P15: Collection ratio

P16: Number of staff working especially for water (Number/'000 water connections)

P17: Implementation of training

P18: Complaint handling

P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

4) Aspects to be improved mainly by Program Approach

P20: Sewerage coverage (including On-site Facilities)

5) General Aspect

P21: Year of work experience on water supply service

The PIs underlined above are added to the PIs which NWASCO has as evaluation of the benchmark. The following are the reasons for the adding to the NWASCO's PIs.

Added PIs	Reasons for additional PIs
P4: Transmission and distribution mains	To determine a plan that the deteriorated pipelines should be replaced with new ones and to make an annual budget arrangement.
P6: Mechanical and electrical equipment	To maintain the existing mechanical & electrical equipment to optimize their operation.
P7: Rate of facility utilization	To revise the scale of the existing water supply facilities and/or examine their rehabilitation.
P8: O&M of the facilities	To operate water supply facilities appropriately and sustainably.
P9: Drawings of pipe facilities	To maintain the existing pipelines and formulate a plan of pipe replacement considering the deterioration of pipelines and a flow capacity of pipelines.
P12: Bulk meters	To figure out NRW ratio and the rate of facility utilizations.
P13: Water quality parameters tested at purification plants	To ensure supply of safe water.
P17: Implementation of training	To strengthen and develop the capacity of CUs sustainability.
P18: Complaint handling	To improve water supply service based on complaints from customers.
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	To improve the financial situation of water supply service through awareness-raising on NRW reduction, water conservation and water tariff collection.
P21: Years of work experience on water supply service	To sustain water supply service in future.

(2) Evaluation Items for Management Capacity:

1) Internal Policy and Planning

M1: Review on Short, Middle and Long Term Plan

M2: Evaluation Method to achieve Goal

2) Finance

M3: Analysis on Annual Financial Status

M4: Financial Improvement Status towards achievement of Goal

M5: Status of Metered Rate

M6: Budget Arrangement based on Historical Record and Result of Management Evaluation

M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection

3) Governance, Management and Human Resources

M8: Average Length of Service with CUs or Other Water Authority

M9: Record of Working Time

M10: System to evaluate Work Performance Capacity towards Goal

M11: Allocation and Input of Staff according to the Work Load

M12: Self-evaluation System at Individual Level

M13: Self-learning Support System

M14: Evaluation of Trainee's Efforts

4) Customer Relation

M15: Development of Customer's Information

M16: Time to deal with Customer's Complaint

M17: Record for dealing with Customer's Complaints

M18: Customer's Survey

M19: Promotion of Customer's Awareness

(3) Evaluation Items for Communication & Negotiation Capacity:

1) Leadership

C1: Executive: Capacity to achieve goal and to raise the standards of the leadership

C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department

2) Human Development

C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description

3) Negotiation and Coordination

C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions

4) Data Collection and Utilization

C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service

5) Communication with Customers

C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service

Components of the Evaluation Manual was shared with MWDSEP, NWASCO and

LWSC, LpWSC, KWSC and WWSC in July 2017.

Activity 1-5. To conduct training for MWDSEP, NWASCO and CU staff on how to utilize the Evaluation Manual.

The training on utilization of the Evaluation Manual will take place on 9th August 2017.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

Activity 2-1 to 2-5

After the training as well as the 2nd JCC on the 9th August 2017, the Project Team will evaluate four CUs, and identify challenges and gaps between the current situation and the ideal situation of the four CUs. Activities for Output 2 will be done from the middle of August 2017.

[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC]

Activity 3-1 to 3-9

After the identification of challenges and gaps of each CU as per Activity 3-1, CUs and Japanese Experts will prepare Midterm Business Plan and Human Resource Development Plan and submit to board members of each CU.

1-3 Achievement of Output

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Indicator 1-1: The Evaluation Manual for evaluating CUs is approved by MWDSEP.

Component and evaluation items, etc. shown in the Evaluation Manual for CUs will be approved by MWDSEP through the 2nd JCC on the 9th August 2017.

Indicator 1-2: The way to utilize the Evaluation Manual is understood by MWDSEP and NWASCO staff in charge of urban water supply.

In the training session after the 2nd JCC, the way to utilize the Evaluation Manual for four CUs will be introduced by NWASCO as well as MWDSEP who is responsible for evaluation in cooperation with Japanese Experts.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

Indicator 2-1: Challenges of each CU is clarified.

Output 2 will be obtained in Activity 2-1 to 2-5 that is scheduled to take place from the middle of August to December, 2017. Evaluation Manual which was formulated as Output 1 will clarify challenges of each CU.

[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC.]

Indicator 3-1: Midterm Business Plan and Human Resources Development Plan is logically prepared in a manner consistent with target figure of key performance indicator.

Output 3 will be obtained in Activity 3-1 to 3-9 that is scheduled to take place from December 2017 to October 2018. Project Team will clarify challenges as Output 2 and formulate Midterm Business Plan and Human Resources Development Plan based on challenges.

1-4 Achievement of the Project Purpose

Project Purpose: The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.

Indicator: Human Resources Development Plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.

Project Purpose will be achieved through activities of Output 3.

1-5 Changes of Risks and Actions for Mitigation

No concerns for the Project implementation to date.

1-6 Progress of Actions undertaken by JICA

None.

1-7 Progress of Actions undertaken by Gov. of Zambia

(1) Office Spaces

As per coordination between MWDSEP and LWSC, office spaces in both MWDSEP and LWSC were secured for Japanese Experts.

1) Office Space in MWDSEP

At the beginning of the Project (February 2017), MWDSEP provided the office for Japanese Experts in the building of MLG

In July, the office of DWSS was temporarily transferred to Mukuba Pension House, but an office for Japanese Experts has not been provided at Mukuba Pension House. Because the office space being occupied by DWSS is limited. However, MWDSEP will be able to prepare office space for one person (Facilitator) for the Project.

2) Office Space in LWSC

LWSC provided the office which six members (four Japanese Experts and two Local staff) can use for the Project, while Japanese Experts are in the Country. Since the provided office is a conference room, Japanese Experts cannot utilize it throughout the term of the Project. During absence of four experts, LWSC will provide another office for local staff (Project Facilitator and Assistant Engineer).

1-8 Progress of Environmental and Social Considerations (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for the Environment and Social Considerations.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for considerations on Gender/Peace Building/Poverty Reduction.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1) Initiative of NWASCO as well as MWDSEP in the Project

- MWDSEP stated that NWASCO is mandated to regulate CUs based on the Evaluation Manual as well as NWASCO's own indicators. Therefore, 'NWASCO' is added to Output 1, Activity 1-4 and Activity 1-5, PDM and PO.

2) Other Donor's Activities

- Millennium Challenge Corporation (MCC) targeting LWSC will set around 10 PIs in terms of sustainability for collecting factors to figure out PIs. Meanwhile, the Project set 21 PIs in terms of sustainability of water supply service as well as that of collecting factors as MCC is concerned. The Project confirmed that MCC was not in a position to comment on justification of 21 PIs.
- In addition, the Project had a dialogue with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to learn their activities. GIZ has activities for capacity development and regulatory reform in sanitation, also GIZ has a plan to establish a training center in the section of water supply service including practical programs, because there are many requests for practical training in Zambia.

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

(1) Office Spaces

It may cause problems in case MWDSEP does not provide office spaces for the Japanese Experts.

(2) Limited Manpower

It caused problems of activities for Output-1, particularly Activity 1-3 related to formulate the Evaluation Manuals. Project Team sometimes faced difficulties in efficiently managing the Project due to limited manpower of MWDSEP

2-2 Cause

(1) Office Spaces

DWSS of MWDSEP had limited space in accordance with the move from MLG office to MWDSEP office at Mukuba Pension House in July, 2017. It meant no office space was available for the Japanese Experts at Mukuba Pension House.

(2) Limited Manpower

DWSS of MWDSEP appointed PM and staff in charge of the Project. However, it has caused difficulties in efficiently managing the Project because they have had not only the works for the Project but also their own assignment.

2-3 Action to be taken

(1) Office Spaces

LWSC has provided office spaces for the Japanese Experts in HQ of LWSC temporarily in July instead of MWDSEP.

(2) Limited Manpower

PM and staff of MWDSEP in charge of the Project have coped with occupying their assignments to formulate the Evaluation Manual in compliance with the Project schedule.

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Zambia, etc.)

(1) Office Spaces

MWDSEP has all responsibilities for office spaces for the Japanese Experts.

(2) Limited Manpower

MWDSEP is responsible for arranging their assignment. On the other hand, the Japanese Experts are responsible for the sharing of information such as event, plan and a schedule as early as possible, so that MWDSEP can arrange their schedule.

3 Modification of the Project Implementation Plan

3-1 PO

At the 1st JCC, Plan of Operation (PO) was revised in accordance with the transfer from water and sanitation function of DHID in MLGH to MWDSEP and the change due to other reasons. See the Project Monitoring Sheet II as attached.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Modification on Record of Discussion (R/D) and Project Design Matrix (PDM) are shown as below.

Modification Document	Contents of Modification	Date
Amendment of RD	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Japanese Experts c) Deletion of Machinery and Equipment	16 th March 2017
Revision of PDM	a) Change of Assigned name of Japanese Experts b) Deletion of Machinery and Equipment	17 th March 2017 (1 st JCC)
Revision of PDM	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Project Personnel from Zambian Side in accordance with change of Implementation agency from MLGH to MWDSEP	9 th August 2017 (2 nd JCC)

4 Preparation of Gov. of Zambia toward after-completion of the Project

To be considered.

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 1.0

Dated 17th August 2017

Project Title: "The Project for Strengthening Capacity of Urban Water Supply Infrastructure"

Implementing Agency: MWDSEP

Target Group: Staff of MWDSEP, MWASCO, and CUs

Project Period: One year and nine months from the date when the first JICA Expert Team is dispatched.

Project Site: Lusaka **Model Site:** LWSC, WWSC, LpWSC and KWSC

Narrative Summary		Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal	Urban water supply infrastructure is managed in a sustainable way by each Commercial Utility (CU)	Urban water supply infrastructure is managed based on the Strategic Paper and/or Human Resources Development Plan	Annual Report		None	
Project Purpose	The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.	Human Resources Development Plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.	Project Report	Senior management does not leave the CU	None	
Outputs	1. Capacity of <u>MWDSEP and MWASCO</u> on evaluating CUs is strengthened.	1-1 The Evaluation Manual for evaluating CUs is approved by <u>MWDSEP</u> . 1-2 The way to utilize the Evaluation Manual is understood by <u>MWDSEP, MWASCO, and CUs</u> staffs in charge of urban water supply.	Project Report		None	
	2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.	2-1 Challenges of each CU is clarified.	Project Report			
	3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC.	3-1 Midterm Business Plan and Human Resources Development Plan is logically prepared in a manner consistent with target figure of key performance indicator.	Project Report			

Activities	The Zambian Side	The Japanese Side	Important Assumption
<p>1-1 To collect policy, strategy and information related to CUs in Zambia</p> <p>1-2 To decide target issues covered by the Evaluation Manual.</p> <p>1-3 To formulate the Evaluation Manual</p> <p>1-4 To share purpose and components of the Evaluation Manual to staffs of <u>MWDSEP</u>, <u>NWASCO</u> and CU.</p> <p>1-5 To conduct training for <u>MWDSEP</u>, <u>NWASCO</u> and CUs staffs on how to utilize the Evaluation Manual.</p>	<p>Project Personnel</p> <p>1. Acting Director of Department of Water Supply and Sanitation of MWDSEP</p> <p>2. Principal Community Department Officer, Department of Water Supply and Sanitation of MWDSEP</p> <p>3. Managing Director of LWSC, WWSC, LpWSC and KWSC</p> <p>4. Director/ Head of Human Resources of LWSC, WWSC, LpWSC and KWSC</p> <p>5. Counterpart Personnel from MWDSEP, LWSC, WWSC, LpWSC and KWSC to JICA Experts</p> <p>6. Counterpart Personnel for task force of LWSC, WWSC, LpWSC, KWSC.</p> <p>7. Other personnel mutually agreed upon as necessary</p> <p>Land, Building and Facilities</p> <p>1. Office building and facilities necessary for the implementation of the Project</p> <p>2. Office spaces and necessary facilities for the Japanese Experts, including internet connection and air conditioners</p> <p>3. Other facilities mutually agreed upon as necessary</p> <p>Local Costs</p> <p>1. Administration and operational costs, including costs of DSA for business trip inside the country.</p>	<p>Japanese experts</p> <p>1. Chief Advisor/Water Supply Service Management¹</p> <p>2. Deputy Chief Advisor/Water Supply Service Management^{2/} Strengthening of Organizational Capacity</p> <p>3. Human Resources Development/Evaluation</p> <p>4. O&M of Water Supply Facilities</p> <p>Equipment</p> <p>None.</p>	<p>A. Natural disaster/ political instability/ economic crisis that affect the project activities do not occur</p> <p>Pre-Conditions</p> <p>A. Furnished offices for Japanese Expert Team are secured MWDSEP and LWSC</p> <p>B. Project personnel is assigned</p> <p><Issues and countermeasures></p>
<p>2-1 To conduct evaluation based on the Evaluation Manual.</p> <p>2-2 To analyze the result of evaluation taken place in Activity 2-1.</p> <p>2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.</p> <p>2-4 To enlist challenges of each target CU.</p>			
<p>3-1 To hold a workshop for all target CUs to share challenges and possible solutions.</p> <p>3-2 To establish task force for each target CU to work on developing Human Resources Development Plan.</p> <p>3-3 To prioritize challenges listed in Activity 2-4.</p> <p>3-4 To set up the goal(s) for each target CU.</p> <p>3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).</p> <p>3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.</p> <p>3-7 To prepare draft Human Resources Development Plan for each target CU.</p> <p>3-8 To hold a workshop to share Human Resources Development Plan of each target CU in order to finalize those.</p> <p>3-9 To submit Human Resources Development Plan to board member of each target CU.</p>			

Project Title: The Project for Strengthening Capacity of Urban Water Supply Infrastructure

Schedule of Major Japanese Inputs		Monitoring												Remarks	Issue	Solution	
		2017				2018				2019							
Year	Qr.	I	II	III	IV	I	II	III	IV	I	II	III	IV				
Expert																	
Chief Advisor/Water Supply Service Management1	Plan																
Deputy Chief Advisor/Water Supply Service Management2/ Strengthening of Organizational Capacity	Actual																
Human Resources Development/ Evaluation	Plan																
O&M of Water Supply Facilities	Actual																
Equipment	Plan																
Training in Japan	Actual																
In-country/ Third country Training	Plan																
	Actual																
Activities																	
Sub-Activities	Plan																
	Actual																
Output 1: Capacity of MWDSEP and NWASCO on evaluating CUs in strengthened.																	
1-1 To collect policy, strategy and information related to CUs in Zambia.	Plan																
	Actual																
1-2 To decide target issues covered by the Evaluation Manual.	Plan																
	Actual																
1-3 To formulate the Evaluation Manual.	Plan																
	Actual																
1-4 To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.	Plan																
	Actual																
1-5 To conduct training for MWDSEP, NWASCO, and CUs staffs on how to utilize the Evaluation Manual.	Plan																
	Actual																
Output 2: Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.																	
2-1 To conduct evaluation based on the Evaluation Manual.	Plan																
	Actual																
2-2 To analyze the results of evaluation taken place in Activity 2-1.	Plan																
	Actual																
2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.	Plan																
	Actual																
2-4 To enlist challenges of each target CU.	Plan																
	Actual																
Output 3: Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC.																	
3-1 To hold a workshop for all target CUs to share challenges and possible solutions.	Plan																
	Actual																
3-2 To establish task force for each target CU to work on developing Human Resources Development Plan.	Plan																
	Actual																
3-3 To prioritize challenges listed in Activity 2-4.	Plan																
	Actual																
3-4 To set up the goal(s) for each target CU.	Plan																
	Actual																
3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).	Plan																
	Actual																
3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.	Plan																
	Actual																
3-7 To prepare draft Human Resources Development Plan for each target CU.	Plan																
	Actual																
3-8 To hold a workshop to share Human Resources Development Plan of each target CU in order to finalize those.	Plan																
	Actual																
3-9 To submit Human Resources Development Plan to board member of each target CU.	Plan																
	Actual																
Duration / Phasing	Plan																
	Actual																
Project Management and Coordination	Plan																
	Actual																
Planning, Monitoring and Coordination																	
1.1 Organize Joint Coordination Committee	Plan																
	Actual																
1.2 Conduct Joint Monitoring semi-annually	Plan																
	Actual																
1.3 Submit Monitoring sheet to JICA Zambia Office semi-annually	Plan																
	Actual																
Reports/Documents																	
2.1 Project Completion Report	Plan																
	Actual																
Public Relations																	
3.1 Develop Project Website	Plan																
	Actual																
3.2 Preparation of public relation materials	Plan																
	Actual																

TO JICA Zambia OFFICE

PROJECT MONITORING SHEET

**Project Title: The Project for Strengthening Capacity of Urban Water Supply
Infrastructure in the Republic of Zambia**

Version of the Sheet: Ver.2 (Term: February 2017 - November 2018)

Name: Hideyuki IGARASHI

Title: Chief Advisor

Submission Date: 28th February 2018

I. Summary

1 Progress

1-1 Progress of Inputs

(1) The Zambian Side

1) Project Personnel

All project members were involved in the Project and confirmed their roles and responsibilities for the Project. Project members appointed are as shown below;

- Project Director (PD): Acting Director of Department of Water Supply and Sanitation (DWSS), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP): Eng. Oswell Katooka
- Project Manager (PM): Principal Community Development Officer, DWSS, MWDSEP: Ms. Selenia M. Matimelo
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Kalapa B. Charles^{*1}
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Michael Mwamba Museba^{*2}
- Chief Inspector, National Water Supply and Sanitation Council (NWASCO): Mr. Peter Mutale
- Senior Inspector, NWASCO: Ms. Chola Mbilima
- Senior Inspector, NWASCO: Mr. Hara Kasenga
- Managing Director (MD), Lusaka Water and Sewerage Company (LWSC) until the middle of July 2017: Dr. Sylvester Mashamba^{*3}
- MD, LWSC from the middle of July 2017: Eng. Jonathan Kampata^{*4}
- MD, Western Water and Sewerage Company (WWSC): Eng. Wamuwi Changani
- MD, Luapula Water and Sewerage Company (LpWSC): Eng. Kenneth Chense

- MD, Kafubu Water and Sewerage Company (KWSC): Eng. Athanasius K. Mwaba
- Acting Human Resource and Administration (HRA) Director, LWSC: Mr. Christopher Walimuntu
- Human Resources (HR) Manager, WWSC: Ms. Pauline Sakala
- HR Manager, LpWSC: Mr. Barnard Chama
- HR Director, KWSC: Mr. Portipher Phiri*⁵
- Acting HRA Manager. KWSC: Mr. Brian Ng'onga*⁶

Note: *1: On study leave from the middle of September 2017

*2: Assigned at the end of September 2017

*3: No longer at LWSC as at the middle of July 2017

*4: Assigned at the middle of July 2017

*5: No longer at KWSC as at end of August, 2017

*6: Assigned at the beginning of September, 2017

2) Land, Building and Facilities

Office spaces for the Project were secured as shown below.

- Office space in Ministry of Local Government (MLG) until the 21st July 2017
- Office space in LWSC from the 24th July 2017

(2) The Japanese Side

1) Project Personnel

As at the end of November 2017, Chief Advisor and three other experts were engaged in the Project in Zambia for about 9.0 Man-Months in total from February to November 2017 apart from September 2017.

1-2 Progress of Activities

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Activity 1-1. To collect policy, strategy and information related to CUs in Zambia.

This Project commenced in accordance with the overall plan as contained in the National Water Supply and Sanitation Capacity Development Strategy (2015- 2020). The Strategy states that the following objectives at organization and individual level are related to the capacity development of the Ministry of Local Government and Housing (MLGH) (water and sanitation function of Department of Housing Infrastructure and Development (DHID) in the MLGH. The CD strategy is now implemented by the MWDSEP following the creation of the Ministry in 2016.

(1) Organization Level:

- To strengthen the Capacity of MWDSEP*7 to guide the sector
- To develop the Capacities of CUs to manage their operations sustainably within the conditions of resource constraints.
- To develop the Capacities of Local Authorities (LAs) in resource mobilization, resource allocation prioritization, resource utilization and shareholder responsibilities for sustainable Water supply and sanitation (WSS) service delivery.
- To strengthen the Capacity of NWASCO to optimize the utility of its database and to upscale its coverage.

Note: *7: According to the raw statement stated in the Strategy, “MLGH” is described in the sentence.

(2) Individual Level:

- To enhance the HR performance in the WSS sector.
- To recruit and retain both male and female staff in the sector.

MWDSEP and NWASCO are responsible for evaluation of CUs’ organizational and individual capacity. In this Project, local CU counterparts comprise LWSC, WWSC, LpWSC and KWSC.

Project Team had interviews with four CUs in order to identify various challenges on water supply service and examine evaluation indicators.

Activity 1-2. To decide target parameters covered by the Evaluation Manual

Through interviews with the four CUs and field visits, the following challenges were observed and will contribute to the selection of Performance Indicators (PIs), which the Evaluation Manual consists of.

(1) LWSC

Challenges	Causes
a) Number of PI ● Few PIs (10 in number).	● Using PIs as evaluation of the benchmark of NWASCO.
b) Geological Information System (GIS) Database ● Inadequacy of pipe information in GIS Database.	● No linkage with the other Databases. ● Limited human resources.
c) Pipe Location ● Uncertainly over exact location of the existing pipeline.	● Imprecise database of pipeline location.
d) Non-Revenue Water (NRW) Management ● High NRW ratio (46%*5).	● Difficulties in reduction of apparent and real loss due to deteriorated water meters,

	<p>deterioration of pipes and lack of leak detectors.</p> <ul style="list-style-type: none"> ● Lots of illegal connections due to easiness of illegal connections. ● Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters.
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(2) WWSC

Challenges	Causes
<p>a) GIS Database</p> <ul style="list-style-type: none"> ● Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> ● Limited human resources.
<p>b) WTP Treatment Process</p> <ul style="list-style-type: none"> ● Metal odor from tap water. 	<ul style="list-style-type: none"> ● Inappropriate treatment process.
<p>c) NRW Management</p> <ul style="list-style-type: none"> ● High NRW ratio (54%^{*8}). 	<ul style="list-style-type: none"> ● Lots of illegal connections due to easiness of illegal connections. ● Non-implementation of NRW reduction due to inadequacy of skilled staff for detecting leaks and inadequacy of leak detectors. ● Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters in addition to inadequacy of skilled staff who can calibrate the water meters. ● Inadequacy of plumbers to repair leakage.

Note: *8: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

(3) LpWSC

Challenges	Causes
<p>a) GIS Database</p> <ul style="list-style-type: none"> ● Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> ● Limited human resources.
<p>b) Operation and Maintenance (O&M) at Mansa Water Treatment Plant (WTP)</p> <ul style="list-style-type: none"> ● Difficulties in the response to sudden change of raw water quality. 	<ul style="list-style-type: none"> ● Inappropriate water treatment management due to inadequacy of skilled staff for maintaining water supply facilities.
<ul style="list-style-type: none"> ● Inadequacy of management of service reservoir. 	<ul style="list-style-type: none"> ● Inadequacy of skilled staff for maintaining water supply facilities.
<p>c) NRW Management</p> <ul style="list-style-type: none"> ● High NRW ratio (70%^{*8}). 	<ul style="list-style-type: none"> ● Non-implementation of NRW reduction due to difficulties in identifying illegal connections and inadequacy of staff to patrol illegal connections.
<ul style="list-style-type: none"> ● Unreliable NRW ratio. 	<ul style="list-style-type: none"> ● Inadequacy of bulk meters at service reservoirs due to no plan to install the bulk meters.
<p>d) Leakage Management</p> <ul style="list-style-type: none"> ● Wide spread leakage. 	<ul style="list-style-type: none"> ● No visual leakage patrols due to no a

	<ul style="list-style-type: none"> dedicated leakage management section. No leakage report system by customers <u>due to no a dedicated leakage management section.</u> Non-implementation leakage reduction <u>due to no a dedicated leakage management section.</u>
e) Arrear of Water Tariff <ul style="list-style-type: none"> Arrear of water tariff from large consumers. 	<ul style="list-style-type: none"> Difficulties in collecting from large water tariff customers such as government organizations and institutions due to insufficient training programs for staff to raise awareness on tariff collection.
f) Construction Management <ul style="list-style-type: none"> Inadequacy of construction management. 	<ul style="list-style-type: none"> No construction supervisors in the CU.

Note: *8: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

Project Team supposed some of causes underlined in '(3 d)' from the aspect of evaluation result by using Evaluation Manual, because of no information available.

(4) KWSC

Challenges	Causes
a) O&M at ITAWA WTP <ul style="list-style-type: none"> Deterioration of the concrete structure at ITAWA WTP. 	<ul style="list-style-type: none"> Constructed in 1955. Insufficient maintenance due to inadequacy of skilled staff to maintain facilities appropriately.
<ul style="list-style-type: none"> Malfunction of the filter control panel. 	<ul style="list-style-type: none"> Deterioration of equipment due to inadequacy of skilled staff to maintain various equipment. Inadequacy of equipment replacement due to inadequacy of skilled staff to maintain equipment.
<ul style="list-style-type: none"> Filtration by manual operation at filter basin on operator's experience. 	<ul style="list-style-type: none"> Insufficient intelligibility of staff concerning the importance of control panel.
b) Distribution Management <ul style="list-style-type: none"> Existence of asbestos pipes. 	<ul style="list-style-type: none"> Buried according to original design. Non-implementation of asbestos pipe replacement due to inadequacy of training concerning hazardous materials.
<ul style="list-style-type: none"> Deterioration of distribution pipes. 	<ul style="list-style-type: none"> Non-implementation of distribution pipe replacement due to no plans to replace distribution pipe.
c) O&M <ul style="list-style-type: none"> Malfunctioning flow meter. 	<ul style="list-style-type: none"> Insufficient intelligibility of some staff concerning water distribution management. Inadequate O&M for the flow meter due to inadequacy of understanding of the necessity of flow meters.
d) Procurement of parts <ul style="list-style-type: none"> Delay of repairing leakage. 	<ul style="list-style-type: none"> No repair tools and materials to be procured promptly.
e) NRW Management <ul style="list-style-type: none"> High NRW ratio (54%⁷) 	<ul style="list-style-type: none"> Various reasons such as leakage, lots of illegal connections due to social aspects, meter inaccuracies due to no replacement of

malfunctioning water meters.

Note: *9: Source KWSC at the 2nd JCC**Activity 1-3. To formulate the Evaluation Manual**

In principle, each CU evaluates their own capacity at organizational and individual level by using Evaluation Manual. Project Team prepared Evaluation Manual in light of evaluation to be standardized, so that CUs evaluate the capacity quantitatively in the constant rule.

Evaluation Manual is composed of three categories; PIs for water supply service, Evaluation Items for Management Capacity and Evaluation Items for Communication & Negotiation Capacity. Each sheet in the Evaluation Manual consists of the following subjects.

1) PIs for water supply service

- Definition
- Purpose
- Interviewee
- Background and Concept
- Evaluation Criteria
- Causes
- Points to be considered (if necessary)
- Evaluation example (if necessary)

2) Evaluation Items for Management Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

3) Evaluation Items for Communication & Negotiation Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

Activity 1-4. To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.

Kick-off Meeting and the 1st Joint Coordination Committee (JCC) of the Project took place on the 2nd and the 17th March 2017 respectively. MWDSEP and Japanese Experts (Project Team) shared the purpose of the Evaluation Manual with MWDSEP, NWASCO, LWSC, LpWSC, KWSC and WWSC. The Evaluation Manual consists of PIs, Management Capacity and Negotiation & Communication Capacity of CUs.

Project Team selected 21 PIs from the Web database of The International Benchmarking Network for Water and Sanitation Utilities (IBNET) that The Water and Sanitation Program (WSP) of the World Bank (WB) manages through the result of interviews with four CUs and examination of the INDICATORS FOR THE URBAN AND PERI-URBAN WATER SUPPLY AND SANITATION SECTOR REPORT of NWASCO.

In addition, Project Team proposed 19 evaluation items for management capacity and six items for communication & negotiation capacity.

The components of the Evaluation Manual are as follows:

(1) PIs for the Water Supply Service:

1) Aspects to be improved mainly by Facility Investment

P1: Continuity of supply

P2: Overall water supply coverage

P3: Surplus purification capacity

P4: Transmission and distribution mains

P5: House connections

P6: Mechanical and electrical equipment

P7: Rate of facility utilization

2) Aspects to be improved mainly by Capacity Development (Technical Aspect)

P8: O&M of the facilities

P9: Drawings of pipe facilities

P10: NRW ratio

P11: Customer meters

P12: Bulk meters

P13: Water quality parameters tested at purification plants

3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)

P14: Cost recovery level

P15: Collection ratio

P16: Number of staff working especially for water (Number/'000 water connections)

P17: Implementation of training

P18: Complaint handling

P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

4) Aspects to be improved mainly by Program Approach

P20: Sewerage coverage (including On-site Facilities)

5) General Aspect

P21: Year of work experience on water supply service

The PIs underlined above are added to the PIs which NWASCO has as evaluation of the benchmark. The following are the reasons for the adding to the NWASCO's PIs.

Added PIs	Reasons for additional PIs
P4: Transmission and distribution mains	To determine a plan that the deteriorated pipelines should be replaced with new ones and to make an annual budget arrangement.
P6: Mechanical and electrical equipment	To maintain the existing mechanical & electrical equipment to optimize their operation.
P7: Rate of facility utilization	To revise the scale of the existing water supply facilities and/or examine their rehabilitation.
P8: O&M of the facilities	To operate water supply facilities appropriately and sustainably.
P9: Drawings of pipe facilities	To maintain the existing pipelines and formulate a plan of pipe replacement considering the deterioration of pipelines and a flow capacity of pipelines.
P12: Bulk meters	To figure out NRW ratio and the rate of facility utilizations.
P13: Water quality parameters tested at purification plants	To ensure supply of safe water.
P17: Implementation of training	To strengthen and develop the capacity of CUs sustainability.
P18: Complaint handling	To improve water supply service based on complaints from customers.
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	To improve the financial situation of water supply service through awareness-raising on NRW reduction, water conservation and water tariff collection.
P21: Years of work experience on water supply service	To sustain water supply service in future.

(2) Evaluation Items for Management Capacity:

1) Internal Policy and Planning

M1: Review on Short, Middle and Long Term Plan

M2: Evaluation Method to achieve Goal

2) Finance

M3: Analysis on Annual Financial Status

M4: Financial Improvement Status towards achievement of Goal

M5: Status of Metered Rate

M6: Budget Arrangement based on Historical Record and Result of Management Evaluation

M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection

3) Governance, Management and Human Resources

M8: Average Length of Service with CUs or Other Water Authority

M9: Record of Working Time

M10: System to evaluate Work Performance Capacity towards Goal

M11: Allocation and Input of Staff according to the Work Load

M12: Self-evaluation System at Individual Level

M13: Self-learning Support System

M14: Evaluation of Trainee's Efforts

4) Customer Relation

M15: Development of Customer's Information

M16: Time to deal with Customer's Complaint

M17: Record for dealing with Customer's Complaints

M18: Customer's Survey

M19: Promotion of Customer's Awareness

(3) Evaluation Items for Communication & Negotiation Capacity:

1) Leadership

C1: Executive: Capacity to achieve goal and to raise the standards of the leadership

C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department

2) Human Development

C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description

3) Negotiation and Coordination

C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions

4) Data Collection and Utilization

C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service

5) Communication with Customers

C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service

Components of the Evaluation Manual was shared with MWDSEP, NWASCO and LWSC, LpWSC, KWSC and WWSC in July 2017.

Activity 1-5. To conduct training for MWDSEP, NWASCO and CU staff on how to utilize the Evaluation Manual.

NWASCO trained MWDSEP and CUs how to utilize the Evaluation Manual in support of JICA Expert Team. The training took place on 9th August 2017 in Lusaka.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

After the training as well as the 2nd JCC on 9th August 2017, the Project Team evaluated four CUs, and identified challenges and gaps between the current situation and the ideal situation of the four CUs.

Activity 2-1. To conduct evaluation based on the Evaluation Manual.

Project Team together with NWASCO staff evaluated LWSC, WWSC, LpWSC and KWSC in terms of PIs, Management Capacity and Communication & Negotiation Capacity. Actual evaluation for level 1 i.e. departmental heads (directors for LWSC and KWSC and managers for WWSC and LpWSC), were evaluated by their respective managing directors. Evaluation for Level 2 i.e. managers for LWSC and KWSC and supervisors for WWSC and LpWSC were done by respective Level 1 such as directors for LWSC and KWSC and managers for WWSC and LpWSC. Evaluation for Level 3 i.e. general officers were done by Level 2. Moreover, Project Team verified whether CUs assessed their capacity properly on the basis of calculation especially in terms of PIs.

Through conducting the evaluation, the defects on the Evaluation Manual were identified as follows. These will be reflected to the revision of the Evaluation Manual.

- The causes which were not contained in the Evaluation Manual were mentioned.
- In case that the evaluation criteria were selected as “Good”, some causes were not mentioned.
- It was difficult for CUs to evaluate because they were not familiar with some PIs *apart*

from the indicators on the benchmarking by NWASCO.

Activity 2-2. To analyze the result of evaluation taken place in Activity 2-1.

Project Team analyzed the result of evaluation and sorted out CUs' challenges by items which were mentioned in Activity 1-2.

CUs evaluated 21 PIs and 19 parameters of Management Capacity at an organization level. Capacity level is composed of five (5) categories; 'Very Serious', 'Serious', 'Not Good Enough', 'Good', and 'Very Good'. The percentages of 'Very Serious' and 'Serious' challenges on PIs and parameters of Management Capacity are as shown in the following table.

CU	PI	Management Capacity
LWSC	19.0%	10.6%
WWSC	57.1%	47.4%
LpWSC	38.1%	31.6%
KWSC	42.8%	36.9%

Meanwhile, CUs evaluated six (6) parameters of Communication & Negotiation Capacity as an individual level. Capacity level is composed of five (5) categories, the same as that at an organization level. The ranges by categories of Communication & Negotiation Capacity are as shown in the following table.

CU	'Serious'	'Not Good Enough'	'Good'	Total
LWSC	0.0%	50.0%	50.0%	100%
WWSC	50.0%	50.0%	0.0%	100%
LpWSC	83.3%	26.7%	0.0%	100%
KWSC	0.0%	100.0%	0.0%	100%

Activity 2-3. To grasp and clarify current situation of 4CUs based on data analysis & prepare report.

Project Team prepared the report on evaluation results in accordance with the following contents.

Report of Capacity Assessment based on Evaluation Manual
- CONTENTS -

1. *Overview of CUs evaluated based on Evaluation Manual*
2. *Purpose of evaluating CUs (Capacity Assessment)*
3. *Composition of Position by CU*

- 4. *Method of Capacity Assessment*
 - 4.1 *Organizational Level*
 - 4.2 *Individual Level*
 - 4.3 *Process of Evaluation*
 - 4.4 *Observation and Improvement of Evaluation Manual through Evaluation of CUs*
 - 4.5 *Days required for self-evaluating CU*
- 5. *Result of Capacity Assessment*
 - 5.1 *Organizational Level*
 - (1) *Performance Indicators (PIs)*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - (2) *Management Capacity*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - 5.2 *Individual Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
- 6. *Challenges based on the Assessment Result*
 - 6.1 *Organizational Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - 6.2 *Individual Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*

Annex:

Activity 2-4. To make a list of challenges of 4 CUs.

For the reference of formulation of Midterm Business Plan (MBP) and Human Resources Development Plan (HRDP) which will be formulated in Output 3, the Project Team made the lists of not only challenges but also preliminary priorities in dealing with urgency and their solutions as shown in the following tables. In the table, Project Team also supposed three types of means such as infrastructure development, technical assistance and procurement of equipment to solve challenges from the aspect of the causes observed through the capacity assessment.

The Challenges were summarized regarding the organizational level that three CUs faced P10: high NRW ratio and two CUs faced P4: the existing asbestos and old pipes, P6: malfunction of mechanical and electrical equipment and P19: inadequacy of effective awareness-raising activities as “Very Serious” for Pls. Two CUs faced M13: no self-learning system and M14: no evaluation system for trainees’ efforts as “Very Serious” for Management Capacity. Regarding Communication & Negotiation Capacity of the individual level, two CU faced C1: inadequacy of leadership, C3: inadequacy of qualification and C4: inadequacy of communication and coordination as “Serious” for the directors/managers’ level (Level 1) and C2: inadequacy of leadership and supervision and C4: inadequacy of communication and coordination as “Serious” for the managers/supervisors’ level (Level 2) of Technical Department.

(1) Pls

● **LWSC**

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.*10	Tech.*11	Pro*12
<u>Challenges that solution is required for a certain period</u>				
P10: NRW ratio is 36-50%.	Reduction of NRW		X	X
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

Note: *10: Infrastructure, *11: Technical Assistance, *12: Procurement of Equipment

● **WWSC**

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.*10	Tech.*11	Pro*12
<u>Challenges that solution is required urgently</u>				
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
P10: NRW ratio is more than 50%	Reduction of NRW		X	X
P17: Training is quite rare or not provided at all.	Increase of the training		X	

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P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
P20: Sewer coverage is zero.	Development of sewer system and or sanitation facilities	X	X	
P21: Average year of work that staff have experience on water supply service is zero to seven years.	Accumulation of technologies		X	
<u>Challenges that solution is required for a certain period</u>				
P2: Overall service coverage is 50- 69%.	Increase of service coverage	X	X	
P8: CU has O&M manuals which are not effective.	Preparation of O&M manuals		X	
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P14: All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.	Reduction of O&M cost and or increase of revenue	X	X	

● LpWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²

Challenges that solution is required urgently

P2: Overall service coverage is less than 50%	Increase of service coverage	X	X	
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
P10: NRW ratio is more than 50%	Reduction of NRW		X	X
P14: Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Reduction of O&M cost and or Increase of revenue	X	X	

Challenges that solution is required for a certain period

P4: Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.	Replacement of asbestos pipes	X		
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	

● KWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²

Challenges that solution is required urgently

P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
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P10: NRW ratio is more than 50%.	Reduction of NRW		X	X
P15: Collection ratio is less than 60%.	Strengthening of tariff collection system		X	
P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
<u>Challenges that solution is required for a certain period</u>				
P5: 80-94% of house connections are more than 25 years old.	Replacement of service pipelines	X	X	
P8: Facilities have O&M manuals which are not effective, leading to O&M deficiency.	Preparation of O&M manuals		X	
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

(2) Management Capacity

● LWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
<u>Challenges that solution is required urgently</u>			
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X	
<u>Challenges that solution is required for a certain period</u>			
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	

● WWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
<u>Challenges that solution is required urgently</u>			
M8: Average length of service with current CU is less than five years.	Accumulation of technologies	X	
M12: There is no a self-evaluation system.	Establishment of a self-evaluation system for staff	X	
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X	
<u>Challenges that solution is required for a certain period</u>			
M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	

M9: Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Encouragement of recording for working time	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	
M18: Customer survey has never been conducted but the survey is under consideration.	Conducting of the training on customer survey	X	

● LpWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech. ^{*11}	Pro ^{*12}

Challenges that solution is required urgently

M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
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Challenges that solution is required for a certain period

M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	
M8: Average length of service with current CU is five to 10 years.	Accumulation of technologies	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
M12: A self-evaluation system is under development.	Establishment of a self-evaluation system for staff	X	
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	

● KWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech. ^{*11}	Pro ^{*12}

Challenges that solution is required urgently

M7: There are no manual, or even if there is a manual, it has not been used at all.	Preparation of O&M manuals for meter reading, billing & tariff collection, and conducting of their training	X	
M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
M15: Customers' information has not been developed at all.	Development of database on customer information	X	
M16: It takes at least 10 days to respond to customer's complaint.	Strengthening of customer service	X	

Challenges that solution is required for a certain period

M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	
M4: Financial status has not been improved at all.	Conducting of the training on financial analysis	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	

(3) Communication & Negotiation Capacity

- LWSC

No serious challenges for Communication & Negotiation Capacity.

- WWSC

Challenges	Outline of Solution
<u>Managers' Level (Level 1)</u>	
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis
<u>Supervisors' Level (Level 2) of Human Resource and Administration Department</u>	
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>Supervisors' Level (Level 2) of Commercial Service Department</u>	
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification

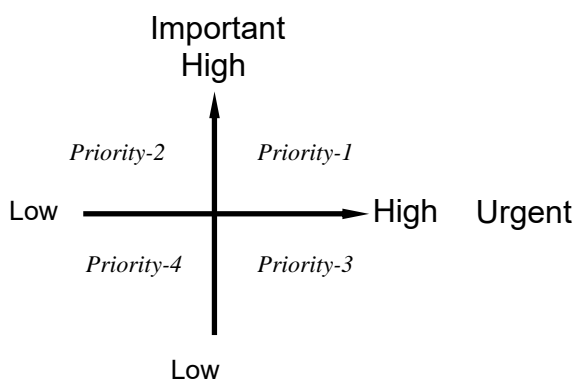
- LpWSC

Challenges	Outline of Solution
<u>Managers' Level (Level 1)</u>	
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>Supervisors' Level (Level 2) of Technical Department</u>	
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
C5: Capacity to collect data and to apply for analysis for the water	Conducting of the training on

supply service is still insufficient in terms of standards of current post.	data collection and their analysis
General Officers' Level (Level 3)	
<u>C6</u> : Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.	Conducting of the training on communication with customers
<p>● KWSC</p> <p>No serious challenges for Communication & Negotiation Capacity.</p> <p>[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC]</p> <p>Activity 3-1. To hold workshop for all target CUs to share the challenges and possible solution.</p> <p>The workshop for all target CUs to share the challenges and possible solution took place in the morning of 12th December 2017.</p> <p>All the four CUs mentioned budget constraint and insufficient training as the main causes for various challenges. However, the Project Team considered that budget constraint couldn't be taken as the main factor since there were usually a number of factors which make a budget necessary.</p> <p>The Project Team will analyze the challenges for each PI and or parameter of management capacity, prioritize challenges to be solved and then share the solution in the next workshop to be held in March to April 2018. In order to efficiently formulate Midterm Business Plan and Human Resources Development Plan, some solutions for challenges can be aggregated into project packages and then prioritized to be solved.</p> <p>NWASCO provisionally pointed out some possible solutions based on the challenges and gaps in the Workshop. The possible solutions consist of investment in infrastructure, technical assistance and procurement of equipment.</p> <p>Activity 3-2. To establish task force for each target CU to work on developing human resource development plan.</p> <p>Task force for each Target CU to work on Human Resource Development Plan was established at 1st JCC held in March 2017. According to current organization of each CU, task force member was updated at 3rd JCC.</p> <p>Activity 3-3. To prioritize challenges listed in Activity 2-4.</p> <p>Project Team created priority criteria of challenges as the following actions to solve</p>	

challenges and their outlines are shown based on action priority matrix as indicated below.

Priority-	Action to solve challenges	Outline of Actions
1	Urgent and Important: DO	If a task is both urgent and important, take actions immediately.
2	Not Urgent, but Important: DECIDE	If a task is important, but not urgent, set a due date and take actions later.
3	Urgent, but not Important: DELEGATE	If a task is urgent, but not important, the best thing is to delegate it to someone else.
4	Not Urgent and Not Important: DELETE	If a task is neither important nor urgent, it should not be prioritized. Drop it or take actions when you have some extra time.



Action Priority Matrix

Meanwhile, the following are instruction on how to evaluate Importance and Urgency to solve various challenges.

- How to evaluate importance? : Consider challenges that must be solved definitely in order to achieve goal or objective in the CUs’ own plans like strategic plans. While each challenge corresponds with ‘Important’, ‘2’ can be scored.

- How to evaluate urgency? :

Unless actions are taken soon, consider what kinds of influences occur, who receive the influences and how the influence impacts on other projects. While each challenge corresponds with ‘Urgent’, ‘1’ can be scored.

Maximum score will be ‘3’ as Priority-1, while Score ‘2’, Score ‘1’ and Score ‘0’ will be as Priority-2, Priority-3 and Priority-4 respectively.

The challenges were prioritized based on the above instruction in terms of importance and urgency. The items and challenges that were evaluated as Priority-4 will be excluded from MBP and HRDP in accordance with the above table.

Firstly, the following tables show scoring for prioritizing challenges on PIs of four CUs.

(1) Prioritizing Challenges on PIs

[LWSC]

Since LWSC has no ‘Very Serious’, items were selected among challenges of ‘Serious’ to be prioritized for solution.

PM Form 3-1 Monitoring Sheet Summary

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P10: NRW Ratio	36 - 50%	2	1	3	1
2	P11: Customer Meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	2	1	3	1
3	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	2		2	2
4	P21: Year of Work Experience on Water Supply Service	8-15 years			0	4

[WWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P3: Surplus Purification Capacity	Less than -30%	2		2	2
2	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P17: Implementation of Training	Training is quite rare or not provided at all.			0	4
6	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2
7	P20: Sewerage Coverage (including On-site Facilities)	0%			0	4
8	P21: Year of Work Experience on Water Supply Service	0-7 years			0	4

[LpWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P2: Overall Water Supply Coverage	Less than 50%		1	1	3
2	P3: Surplus Purification Capacity	Less than -30%			0	4
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P14: Cost Recovery Level	Only part of the O&M costs (excluding depreciation of water supply facilities) are covered by water tariff. 'Annual Billed Revenue for Water / Total Annual Operating Costs for Water Excluding Depreciation and Financing Tariff' < 1	2		2	2

[KWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3
2	P10: NRW Ratio	More than 50%	2	1	3	1
3	P15: Collection Ratio	Less than 60%	2		2	2
4	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2

(2) Prioritizing Challenges on Management Capacity

Secondly, the following tables show scoring for prioritizing challenges on Management Capacity of four CUs as well.

[LWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M13: Self-learning Support System	There is no a self-learning system.	2		2	2

[WWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years			0	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.			0	4
3	M13: Self-learning Support System	There is no a self-learning system.			0	4

[LpWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.	2		2	2

[KWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	2	1	3	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.			0	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	2	1	3	1
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customer's complaint.			0	4

(3) Prioritizing Challenges on Communication & Negotiation Capacity

Finally, the following tables show scoring for prioritizing challenges on Communication & Negotiation Capacity of WWSC and KWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work			0	4

		well.				
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect Data and to apply for Analysis for the Water 4Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
Human Resource and Administration Department						
5	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
Commercial Service Department						
7	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4

[LpWSC]						
No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
Technical Department						
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
General Officer						
7	C6: General Officers: Capacity to communicate with Customers in order to provide them with high Quality Water	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2

Supply Service

At the end of February 2018, four CUs have been checking prioritization of challenges. The items and challenges are subject to change depending on CUs' comments.

Activity 3-4. To set up the goal(s) for each target CU.

&

Activity 3-5. To set up target figure of key performance indicators, to measure achievement of goal(s).

Goals of four CUs for the year 2023 were set-up based on the status-quo of the water supply service & water supply facilities, background of the past investment and the strategic plan as shown in the following tables in terms of PIs, Management Capacity and Communication & Negotiation Capacity respectively. Verifiable indicators to evaluate achievement of goals are shown in the same table as well.

(1) Goal and Verifiable Indicator on PIs

Firstly, the following tables show goals and verifiable indicators on PIs of three CUs in terms of 'Very Serious' apart from LWSC. LWSC's goal and verifiable indicators are shown in the table in terms of 'Serious'.

[LWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P10: NRW ratio	NRW ratio is 36% - 50%.	NRW will be reduced from 46% (current) to 30%.	NRW Ratio: A. 30% B. 34% C. 38% D. More than 42%	1
2	P11: Customer meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Installation ratio of customer meter will be increased from 67% (current) to 100%.	Ratio of Water Meter Installation: A. 100% B. 90% C. 80% D. less than 70%	1
3	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	1
4	P21: Year of work	Average year of work that staff	-	-	4

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	experience on water supply service	have experience on water supply service is 8-15 years.			
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[WWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than -30%.	Human Resources Development Plan is prepared for engineers who can formulate plans to raise the surplus capacity to maximum design capacity less than -10% and human resources is developed.	Ratio of surplus capacity to maximum capacity and other process: A. -10% B. Less than -20% C. Planning D. Study	2
2	P4: Transmission and distribution mains	Asbestos, old cast iron and old steel pipes make up 75% of main pipelines	Ratio of deteriorated pipes will be reduced to 45%.	Ratio of deteriorated Pipelines: A. 45% B. 50% C. 60% D. More than 65%	3
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%	NRW rate will be reduced from 54% (current) to 40%.	NRW Ratio: A. 40% B. 43.5% C. 47.0% D. More than 50.5%	1
5	P17: Implementation of training	Training is quite rare or not provided at all	-	-	4
6	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	2
7	P20: Sewerage coverage	Sewer coverage is zero.	-	-	4
8	P21: Year of work experience on water supply service	Average year of work that staff have experience on water supply service is zero to	-	-	4

		seven years.			
[LpWSC]					
No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P2: Overall water supply coverage	Overall service coverage is less than 50%.	Overall water supply coverage will be increased from 35.7% to 43 %.	Service Coverage Ratio: A. 43% B. 41% C. 39% D. Less than 37%	3
2	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than - 30%.	-	-	4
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%.	NRW ratio will be reduced from 70% to 60%.	NRW Ratio: A. 60% B. 62.5% C. 65.0% D. More than 67.5%	1
5	P14: Cost Recovery Level	Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Water supply facilities can be well-maintained and repaired.	Number of engineers to repair water supply facilities: A. All the technical engineers for maintenance to enable to repair water supply facilities B. 75% of all the technical engineers for maintenance to enable to repair water supply facilities C. 50% of all the technical engineers for maintenance to enable to repair water supply facilities D. Less than 25% of all the technical engineers for maintenance to enable to repair water supply facilities	2

[KWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	Ratio of aged pipes will be 64%.	Ratio of deteriorated Pipelines: A. 64% B. 67% C. 70% D. More than 72%	3
2	P10: NRW Ratio	More than 50%	NRW ratio will be reduced from 67% to 40%.	NRW Ratio: A. 40.0% B. 46.5% C. 52.5% D. More than 60.0%	1
3	P15: Collection Ratio	Less than 60%	Collection ratio will be increased from 55% to 80%.	Collection Ratio: A. 80.0% B. 74.0% C. 67.5% D. Less than 61.0%	2
4	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	2

(2) Goal and Verifiable Indicator on Management Capacity

Secondary, the following tables show goals and verifiable indicators on Management Capacity of four CUs.

[LWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M13: Self-learning Support System	There is no a self-learning system.	Training by utilizing a self-learning system is conducted.	Status after introduction of self-learning support system: A. Utilized for directors and managers or supervisors B. Utilized for only managers or supervisors	2

				C. Only introduced but not utilized D. Not introduced	
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[WWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years.	-	-	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.	-	-	4
3	M13: Self-learning Support System	There is no a self-learning system.	-	-	4

[LpWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	A system for trainees' effort is established.	Evaluation of trainees' efforts: A. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department and feed-back the result of evaluation to job description B. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department but not feed-back the result of evaluation to job description C. Established the dedicated unit to evaluate trainees' efforts D. Not established the dedicated unit to evaluate trainees' efforts	2

[KWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	Necessary manuals are prepared.	Preparation of Manual: A. Prepared manual which is composed of meter reading, billing and tariff collection B. Prepared manual which is composed of meter reading and billing C. Prepared manual only for meter reading D. Not prepared	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	-	-	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	Customers' information can be developed.	Development of Customer Information: A. Customer sections to enable develop customer list in terms of all the information required B. Customer sections to enable develop customer list in terms of only partial information C. Collected customer information and or data D. Conducted the training on customer information but not collected customer information and not developed yet at all	1
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customers' complaint.	-	-	4

(3) Goal and Verifiable Indicator on Communication & Negotiation Capacity

Finally, the following tables show goals and verifiable indicators on Communication Capacity of WWSC and LpWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]					
No.	Indicator	Challenges	Goal	Verifiable Indicators	Priority
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to develop and utilize data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1

	supply service				
Human Resources and Administration Department					
5	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Commercial Service Department					
7	C:3 Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
[KWSC]					
No.	Indicator	Challenges	Goal	Verifiable Indicators	Priority
Managers					
1	C1: Executive Officers: Capacity to	Performance is still insufficient in terms of	-	-	4

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	achieve goal and to raise the Standards of the Leadership	standards of current post. Therefore, staff must make an effort to work well.			
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of human resource development is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Technical Department					
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
6	C5: Executive Officers, Managers and or Supervisors, and General Officers:	Performance is still insufficient in terms of standards of current post. Therefore, staff	Training to make staff understand the necessity of development and utilization of data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1

	Capacity to collect data and to apply for analysis for the water supply service	must make an effort to work well.			
General Officer					
7	C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of communication with customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

At the end of February 2018, four CUs have been checking goals and the corresponded verifiable indicators to evaluate achievement of goals. The goals and verifiable indicators are subject to change depending on CU's comments.

Activity 3-6 to 3-9.

After prioritizing challenges, setting-up goals and their verifiable indicators of each CU as per Activity 3-3 to Activity 3-5, CUs and Japanese Experts will prepare Midterm Business Plan and Human Resource Development Plan and submit to board members of each CU.

1-3 Achievement of Output

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Indicator 1-1: The Evaluation Manual for evaluating CUs is approved by MWDSEP.

Component and evaluation items, etc. shown in the Evaluation Manual for CUs were approved by MWDSEP through the 2nd JCC on the 9th August 2017. Through conducting the evaluation, the challenges on the Evaluation Manual are identified, these will be reflected to the revision of the Evaluation Manual.

Indicator 1-2: The way to utilize the Evaluation Manual is understood by MWDSEP and NWASCO staff in charge of urban water supply.

In the training session after the 2nd JCC, the way to utilize the Evaluation Manual for four CUs was introduced by NWASCO as well as MWDSEP who is responsible for evaluation in cooperation with Japanese Experts.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]**Indicator 2-1: Challenges of each CU is clarified.**

Through Activity 2-1 to 2-5, challenges of each CU were identified. Challenges and gaps of each CU were shared in the workshop on 12th December 2017 as per Activity 3-1.

[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC.]**Indicator 3-1: Midterm Business Plan and Human Resources Development Plan is logically prepared in a manner consistent with target figure of key performance indicator.**

Output 3 has been obtained in Activity 3-1 to 3-9 that is scheduled to take place from December 2017 to October 2018. Project Team will clarify challenges as Output 2 and formulate Midterm Business Plan and Human Resources Development Plan based on challenges.

1-4 Achievement of the Project Purpose

Project Purpose: The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.

Indicator: Human Resources Development Plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.

Project Purpose will be achieved through activities of Output 3.

1-5 Changes of Risks and Actions for Mitigation

No concerns for the Project implementation to date.

1-6 Progress of Actions undertaken by JICA

None.

1-7 Progress of Actions undertaken by Gov. of Zambia

- **Office Spaces**

As per coordination between MWDSEP and LWSC, office spaces in both MWDSEP and LWSC were secured for Japanese Experts.

- **Office Space in MWDSEP**

At the beginning of the Project (February 2017), MWDSEP provided the office for Japanese Experts in the building of MLG

In July 2017, the DWSS moved from MLG to Mukuba Pension House where the MWDSEP is housed. Due to limited space at the Mukuba Pension House, the MWDSEP has not provided an office for the Japanese Experts yet.

- Office Space in LWSC

LWSC provided the office which six members (four Japanese Experts and two Local staff) can use for the Project, while Japanese Experts are in the Country. Since the provided office is a conference room, Japanese Experts cannot utilize it throughout the term of the Project. During absence of four experts, LWSC will provide another office for local staff (Project Facilitator and Assistant Engineer).

1-8 Progress of Environmental and Social Considerations (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for the Environment and Social Considerations.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for considerations on Gender/Peace Building/Poverty Reduction.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1) Initiative of NWASCO as well as MWDSEP in the Project

- MWDSEP stated that NWASCO is mandated to regulate CUs based on the Evaluation Manual as well as NWASCO's own indicators. Therefore, 'NWASCO' is added to Output 1, Activity 1-4 and Activity 1-5, PDM and PO.

2) Other Donor's Activities

- Millennium Challenge Corporation (MCC) targeting LWSC will set around 10 PIs in terms of sustainability for collecting factors to figure out PIs. Meanwhile, the Project set 21 PIs in terms of sustainability of water supply service as well as that of collecting factors as MCC is concerned. The Project confirmed that MCC was not in a position to comment on justification of 21 PIs.
- The Project had a dialogue with Deutsche Gesellschaft fuer Internationale

Zusammenarbeit (GIZ) to learn their activities. GIZ has activities for capacity development and regulatory reform in water and sanitation. In addition, GIZ supported the MWDSEP to carry out a feasibility study to develop a sustainable institutional model for the delivery of training and capacity building to Commercial Utilities and other service providers in WSS sub sector.

- LWSC under the Lusaka Sanitation Project funded by WB has an action plan of institutional capacity development at LWSC to improve the organizational behavior, structure, capability, tools and influence until January 2022.
- AfDB targets NWASCO as an implementing organization of the project for the Performance Recovery Program in WWSC, LpWSC and ChWSC. NWASCO follows-up the benchmarking for these CUs every three months.

3) PR Activities

At the end of February 2018, Project Team completed a poster preparation as PR activities for this Project and is about to deliver the posters to MWDSEP, NWASCO, four CUs and other donors.

In addition, Project Team prepared the newsletters for introducing the Project as external PR activities which will be brought into an original newsletter of NWASCO, LWSC and WWSC respectively. Project Team is also planning to introduce the Project in Facebook of KWSC and LpWSC which has suspended publication of a newsletter.

4) Challenges in Cholera Infection

Zambia Government has been facing outbreak of cholera since the end of September 2017 as well as the past years. According to Ministry of Health, it seems that outbreak of cholera are mainly caused by using shallow wells which are contaminated by waste water infiltrated from pit-latrines, etc.

From the status-quo of outbreak of cholera infection in the past long year, it is essential that relevant organizations such as CUs must focus on preventative approach apart from supportive approach as shown in the following table. It is suggested that preventive approaches at CUs' level should be contained in MBP and HRDP considering the feasibility of each plan.

Supportive Approach	Preventive Approach
<ul style="list-style-type: none"> ● Water supply by water bowsers ● PR activities (Regulate boiling water, enforce 	<ul style="list-style-type: none"> ● Extend water source and treatment plant (increase water production) ● Extend distribution network ● Repair the deteriorated and damaged pipelines

<p>hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.)</p>	<ul style="list-style-type: none"> ● Appropriate control of residual chlorine at distribution facilities ● PR activities (Regulate boiling water, enforce hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.)
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2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

(1) Office Spaces

It may cause problems because MWDSEP has not provided office spaces for the Japanese Experts, yet.

(2) Limited Manpower

It caused problems of activities for Output-1, particularly Activity 1-3 related to formulate the Evaluation Manuals. Project Team sometimes faced difficulties in efficiently managing the Project due to limited manpower of MWDSEP.

(3) Budget of Evaluation Activity

It caused problems of activities for Output-2, particularly Activity 2-1 related to conduct evaluation based on the Evaluation Manuals. Project Team sometimes faced difficulties in efficiently managing the Project because the budget for the evaluation activities of the Project in FY2017 had not been estimated by NWASCO.

2-2 Cause

(1) Office Spaces

DWSS of MWDSEP had the limited space in accordance with the move from MLG office to MWDSEP office at Mukuba Pension House in July, 2017. It meant no office space was available for the Japanese Experts at Mukuba Pension House.

(2) Limited Manpower

DWSS of MWDSEP appointed PM and staff in charge of the Project. However, it has caused difficulties in efficiently managing the Project because they have had not only the works for the Project but also their own assignment.

(3) Budget of Evaluation Activity

MWDSEP stated that NWASCO is mandated to regulate CUs based on the Evaluation Manual as well as NWASCO's own indicators on 11th August 2017. The budget for the evaluation activities of the Project in FY2017 had not been estimated by NWASCO.

2-3 Action to be taken

(1) Office Spaces

LWSC has provided office spaces for the Japanese Experts in HQ of LWSC temporarily

instead of MWDSEP, while MWDSEP will be supposed to provide the office spaces as well.

(2) Limited Manpower

PM and staff of MWDSEP in charge of the Project have coped with occupying their assignments to formulate the Evaluation Manual in compliance with the Project schedule.

(3) Budget of Evaluation Activity

The inspectors of NWASCO will follow-up the benchmarking for WWSC and LpWSC every three months. The budget for the evaluation activities for the Project will be secured from FY2018 by NWASCO.

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Zambia, etc.)

(1) Office Spaces

MWDSEP has all responsibilities for office spaces for the Japanese Experts.

(2) Limited Manpower

MWDSEP is responsible for arranging their assignment. On the other hand, the Japanese Experts are responsible for the sharing of information such as event, plan and a schedule as early as possible, so that MWDSEP can arrange their schedule.

(3) Budget of Evaluation Activity

NWASCO is responsible for arranging the budget from FY2018.

3 Modification of the Project Implementation Plan

3-1 PO

At the 1st JCC, Plan of Operation (PO) was revised in accordance with the transfer from water and sanitation function of DHID in MLGH to MWDSEP and the change due to other reasons. See the Project Monitoring Sheet II as attached.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Modification on Record of Discussion (R/D) and Project Design Matrix (PDM) are shown as below.

Modification Document	Contents of Modification	Date
Amendment of RD	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Japanese Experts c) Deletion of Machinery and Equipment	16 th March 2017
Revision of PDM	a) Change of Assigned name of Japanese Experts b) Deletion of Machinery and Equipment	17 th March 2017 (1 st JCC)
Revision of PDM	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Project Personnel from Zambian Side in accordance with change of Implementation agency from MLGH to MWDSEP	9 th August 2017 (2 nd JCC)

4 Preparation of Gov. of Zambia toward after-completion of the Project

To be considered.

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 1.0

Dated 11th August 2017

Project Title: "The Project for Strengthening Capacity of Urban Water Supply Infrastructure"

Implementing Agency: MWDSEP

Target Group: Staff of MWDSEP, NWASCO and CUs

Project Period: One year and nine months from the date when the first JICA Expert Team is dispatched.

Project Site: Lusaka

Model Site: LWSC, WWSC, LpWSC and KWSC

Narrative Summary		Objectively Verifiable Indicators		Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal	Project Purpose			Annual Report			
Urban water supply infrastructure is managed in a sustainable way by each Commercial Utility (CU)	The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.	Urban water supply infrastructure is managed based on the Strategic Paper and/or Human Resources Development Plan		Project Report	Senior management does not leave the CU	None	
Outputs	1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.	Human Resources Development Plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.		Project Report		None	
		1-1 The Evaluation Manual for evaluating CUs is approved by MWDSEP. 1-2 The way to utilize the Evaluation Manual is understood by MWDSEP, NWASCO and CUs staffs in charge of urban water supply.		Project Report		None	
	2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.	2-1 Challenges of each CU is clarified.		Project Report			
	3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC and KWSC.	3-1 Midterm Business Plan and Human Resources Development Plan is logically prepared in a manner consistent with target figure of key performance indicator.		Project Report			

Activities	Inputs	Important Assumption
<p>1-1 To collect policy, strategy and information related to CUs in Zambia</p> <p>1-2 To decide target parameters covered by the Evaluation Manual.</p> <p>1-3 To formulate the Evaluation Manual</p> <p>1-4 To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NAWASCO and CU.</p> <p>1-5 To conduct training for MWDSEP, NAWASCO and CUs staffs on how to utilize the Evaluation Manual.</p>	<p>The Zambian Side</p> <p>Project Personnel</p> <ol style="list-style-type: none"> Acting Director of Department of Water Supply and Sanitation of MWDSEP Principal Community Department Officer, Department of Water Supply and Sanitation of MWDSEP Managing Director of LWSC, WWSC, LpWSC and KWSC Director/ Head of Human Resources of LWSC, WWSC, LpWSC and KWSC Counterpart Personnel from MWDSEP, LWSC, WWSC, LpWSC and KWSC to JICA Experts Counterpart Personnel for task force of LWSC, WWSC, LpWSC and KWSC. Other personnel mutually agreed upon as necessary <p>Land, Building and Facilities</p> <ol style="list-style-type: none"> Office building and facilities necessary for the implementation of the Project Office spaces and necessary facilities for the Japanese Experts, including internet connection and air conditioners Other facilities mutually agreed upon as necessary <p>Local Costs</p> <ol style="list-style-type: none"> Administration and operational costs, including costs of DSA for business trip inside the country. 	<p>The Japanese Side</p> <p>Japanese experts</p> <ol style="list-style-type: none"> Chief Advisor/Water Supply Service Management¹ Deputy Chief Advisor/Water Supply Service Management²/ Strengthening of Organizational Capacity Human Resources Development/ Evaluation O&M of Water Supply Facilities <p>Equipment</p> <p>None.</p>
<p>2-1 To conduct evaluation based on the Evaluation Manual.</p> <p>2-2 To analyze the result of evaluation taken place in Activity 2-1.</p> <p>2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.</p> <p>2-4 To make a list of challenges of each target CU.</p>		<p>Pre-Conditions</p>
<p>3-1 To hold a workshop for all target CUs to share challenges and possible solutions.</p> <p>3-2 To establish task force for each target CU to work on developing Human Resources Development Plan.</p> <p>3-3 To prioritize challenges listed in Activity 2-4.</p> <p>3-4 To set up the goal(s) for each target CU.</p> <p>3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).</p> <p>3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.</p> <p>3-7 To prepare draft Human Resources Development Plan for each target CU.</p> <p>3-8 To hold a workshop to share Human Resources Development Plan of each target CU in order to finalize those.</p> <p>3-9 To submit Human Resources Development Plan to board member of each target CU.</p>		<p>A. Natural disaster/ political instability/ economic crisis that affect the project activities do not occur</p> <p>B. Furnished offices for Japanese Expert Team are secured MWDSEP and LWSC</p> <p>C. Project personnel is assigned</p> <p><Issues and countermeasures></p>

Project Title: The Project for Strengthening Capacity of Urban Water Supply Infrastructure

		Monitoring												Remarks	Issue	Solution	
Schedule of Major Japanese Inputs		Year	2017				2018				2019						
		Qr.	I	II	III	IV	I	II	III	IV	I	II	III	IV			
Expert																	
Chief Advisor/Water Supply Service Management1		Plan															
		Actual															
Deputy Chief Advisor/Water Supply Service Management2/ Strengthening of Organizational Capacity		Plan															
		Actual															
Human Resources Development/ Evaluation		Plan															
		Actual															
O&M of Water Supply Facilities		Plan															
		Actual															
Equipment		Plan															
		Actual															
Training in Japan		Plan															
		Actual															
In-country/ Third country Training		Plan															
		Actual															
Activities																	
Sub-Activities		Plan															
		Actual															
Output 1: Capacity of MWDSEP and NWASCO on evaluating CUs in strengthened.																	
1-1 To collect policy, strategy and information related to CUs in Zambia.		Plan															
		Actual															
1-2 To decide target parameters covered by the Evaluation Manual.		Plan															
		Actual															
1-3 To formulate the Evaluation Manual.		Plan															
		Actual															
1-4 To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.		Plan															
		Actual															
1-5 To conduct training for MWDSEP, NWASCO and CUs staffs on how to utilize the Evaluation Manual.		Plan															
		Actual															
Output 2: Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.																	
2-1 To conduct evaluation based on the Evaluation Manual.		Plan															
		Actual															
2-2 To analyze the results of evaluation taken place in Activity 2-1.		Plan															
		Actual															
2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.		Plan															
		Actual															
2-4 To make a list of challenges of each target CU.		Plan															
		Actual															
Output 3: Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC and KWSC.																	
3-1 To hold a workshop for all target CUs to share challenges and possible solutions.		Plan															
		Actual															
3-2 To establish task force for each target CU to work on developing Human Resources Development Plan.		Plan															
		Actual															
3-3 To prioritize challenges listed in Activity 2-4.		Plan															
		Actual															
3-4 To set up the goal(s) for each target CU.		Plan															
		Actual															
3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).		Plan															
		Actual															
3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.		Plan															
		Actual															
3-7 To prepare draft Human Resources Development Plan for each target CU.		Plan															
		Actual															
3-8 To hold a workshop to share Human Resources Development Plan of each target CU in order to finalize those.		Plan															
		Actual															
3-9 To submit Human Resources Development Plan to board member of each target CU.		Plan															
		Actual															
Duration / Phasing		Plan															
		Actual															
Project Management and Coordination																	
Planning, Monitoring and Coordination																	
1.1 Organize Joint Coordination Committee		Plan															
		Actual															
1.2 Conduct Joint Monitoring semi-annually		Plan															
		Actual															
1.3 Submit Monitoring sheet (MS) to JICA Zambia Office semi-annually		Plan															
		Actual															
Reports/Documents																	
2.1 Project Completion Report		Plan															
		Actual															
Public Relations (PR)																	
3.1 Develop Project Website		Plan															
		Actual															
3.2 Preparation of public relation materials		Plan															
		Actual															

TO JICA Zambia OFFICE

PROJECT MONITORING SHEET

**Project Title: The Project for Strengthening Capacity of Urban Water Supply
Infrastructure in the Republic of Zambia**

Version of the Sheet: Ver.3 (Term: February 2017 - November 2018)

Name: Hideyuki IGARASHI

Title: Chief Advisor

Submission Date: 3rd August 2018

I. Summary

1 Progress

1-1 Progress of Inputs

(1) The Zambian Side

1) Project Personnel

All project members were involved in the Project and confirmed their roles and responsibilities for the Project. Project members appointed are as shown below;

- Project Director (PD): Acting Director of Department of Water Supply and Sanitation (DWSS), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP): Eng. Oswell Katooka
- Project Manager (PM): Principal Community Development Officer, DWSS, MWDSEP: Ms. Selenia M. Matimelo
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Kalapa B. Charles^{*1}
- Senior Engineer, Urban Water Supply and Sanitation, DWSS, MWDSEP: Eng. Michael Mwamba Museba^{*2}
- Chief Inspector, National Water Supply and Sanitation Council (NWASCO): Mr. Peter Mutale
- Senior Inspector, NWASCO: Ms. Chola Mbilima
- Senior Inspector, NWASCO: Mr. Hara Kasenga
- Managing Director (MD), Lusaka Water and Sewerage Company (LWSC) until the middle of July 2017: Dr. Sylvester Mashamba^{*3}
- MD, LWSC from the middle of July 2017: Eng. Jonathan Kampata^{*4}
- MD, Western Water and Sewerage Company (WWSC): Eng. Wamuwi Changani
- MD, Luapula Water and Sewerage Company (LpWSC): Eng. Kenneth Chense

- MD, Kafubu Water and Sewerage Company (KWSC): Eng. Athanasius K. Mwaba
- Acting Human Resource and Administration (HRA) Director, LWSC: Mr. Christopher Walimuntu
- Human Resources (HR) Manager, WWSC: Ms. Pauline Sakala
- HR Manager, LpWSC: Mr. Barnard Chama
- HR Director, KWSC: Mr. Portipher Phiri^{*5}
- Acting HRA Manager. KWSC: Mr. Brian Ng'onga^{*6}

Note: *1: On study leave from the middle of September 2017

*2: Assigned at the end of September 2017

*3: No longer at LWSC as at the middle of July 2017

*4: Assigned at the middle of July 2017

*5: No longer at KWSC as at end of August, 2017

*6: Assigned at the beginning of September, 2017

2) Land, Building and Facilities

Office spaces for the Project were secured as shown below.

- Office space in Ministry of Local Government (MLG) until the 21st July 2017
- Office space in LWSC from the 24th July 2017

(2) The Japanese Side

1) Project Personnel

As at the end of July 2018, Chief Advisor and three other experts were engaged in the Project in Zambia for about 9.0 Man-Months in total from February to November 2017 apart from September 2017, January and May 2018

1-2 Progress of Activities

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Activity 1-1. To collect policy, strategy and information related to CUs in Zambia.

This Project commenced in accordance with the overall plan as contained in the National Water Supply and Sanitation Capacity Development Strategy (2015- 2020). The Strategy states that the following objectives at organization and individual level are related to the capacity development of the Ministry of Local Government and Housing (MLGH) (water and sanitation function of Department of Housing Infrastructure and Development (DHID) in the MLGH. The CD strategy is now implemented by the MWDSEP following the creation of the Ministry in 2016.

(1) Organization Level:

- To strengthen the Capacity of MWDSEP*7 to guide the sector
- To develop the Capacities of CUs to manage their operations sustainably within the conditions of resource constraints.
- To develop the Capacities of Local Authorities (LAs) in resource mobilization, resource allocation prioritization, resource utilization and shareholder responsibilities for sustainable Water supply and sanitation (WSS) service delivery.
- To strengthen the Capacity of NWASCO to optimize the utility of its database and to upscale its coverage.

Note: *7: According to the raw statement stated in the Strategy, “MLGH” is described in the sentence.

(2) Individual Level:

- To enhance the HR performance in the WSS sector.
- To recruit and retain both male and female staff in the sector.

MWDSEP and NWASCO are responsible for evaluation of CUs’ organizational and individual capacity. In this Project, local CU counterparts comprise LWSC, WWSC, LpWSC and KWSC.

The Project Team had interviews with four CUs in order to identify various challenges on water supply service and examine evaluation indicators.

Activity 1-2. To decide target parameters covered by the Evaluation Manual

Through interviews with the four CUs and field visits, the following challenges were observed and will contribute to the selection of Performance Indicators (PIs), which the Evaluation Manual consists of.

(1) LWSC

Challenges	Causes
a) Number of PI <ul style="list-style-type: none">● Few PIs (10 in number).	<ul style="list-style-type: none">● Using PIs as evaluation of the benchmark of NWASCO.
b) Geological Information System (GIS) Database <ul style="list-style-type: none">● Inadequacy of pipe information in GIS Database.	<ul style="list-style-type: none">● No linkage with the other Databases.● Limited human resources.
c) Pipe Location <ul style="list-style-type: none">● Uncertainly over exact location of the existing pipeline.	<ul style="list-style-type: none">● Imprecise database of pipeline location.
d) Non-Revenue Water (NRW) Management <ul style="list-style-type: none">● High NRW ratio (46%^{*8}).	<ul style="list-style-type: none">● Difficulties in reduction of apparent and real loss due to deteriorated water meters,

	<p>deterioration of pipes and lack of leak detectors.</p> <ul style="list-style-type: none"> ● Lots of illegal connections due to easiness of illegal connections. ● Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters.
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Note: *8: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

(2) WWSC

Challenges	Causes
a) GIS Database <ul style="list-style-type: none"> ● Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> ● Limited human resources.
b) WTP Treatment Process <ul style="list-style-type: none"> ● Metal odor from tap water. 	<ul style="list-style-type: none"> ● Inappropriate treatment process.
c) NRW Management <ul style="list-style-type: none"> ● High NRW ratio (54%^{*8}). 	<ul style="list-style-type: none"> ● Lots of illegal connections due to easiness of illegal connections. ● Non-implementation of NRW reduction due to inadequacy of skilled staff for detecting leaks and inadequacy of leak detectors. ● Lots of malfunctioning water meters because water meters were not checked without equipment such as test-bench that calibrates water meters in addition to inadequacy of skilled staff who can calibrate the water meters. ● Inadequacy of plumbers to repair leakage.

Note: *8: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

(3) LpWSC

Challenges	Causes
a) GIS Database <ul style="list-style-type: none"> ● Inadequacy of pipe information in GIS Database. 	<ul style="list-style-type: none"> ● Limited human resources.
b) Operation and Maintenance (O&M) at Mansa Water Treatment Plant (WTP) <ul style="list-style-type: none"> ● Difficulties in the response to sudden change of raw water quality. 	<ul style="list-style-type: none"> ● Inappropriate water treatment management due to inadequacy of skilled staff for maintaining water supply facilities.
<ul style="list-style-type: none"> ● Inadequacy of management of service reservoir. 	<ul style="list-style-type: none"> ● Inadequacy of skilled staff for maintaining water supply facilities.
c) NRW Management <ul style="list-style-type: none"> ● High NRW ratio (70%^{*8}). 	<ul style="list-style-type: none"> ● Non-implementation of NRW reduction due to difficulties in identifying illegal connections and inadequacy of staff to patrol illegal connections.
<ul style="list-style-type: none"> ● Unreliable NRW ratio. 	<ul style="list-style-type: none"> ● Inadequacy of bulk meters at service reservoirs due to no plan to install the bulk meters.
d) Leakage Management <ul style="list-style-type: none"> ● Wide spread leakage. 	<ul style="list-style-type: none"> ● No visual leakage patrols due to no a

	<ul style="list-style-type: none"> dedicated leakage management section. No leakage report system by customers <u>due to no a dedicated leakage management section.</u> Non-implementation leakage reduction <u>due to no a dedicated leakage management section.</u>
e) Arrear of Water Tariff <ul style="list-style-type: none"> Arrear of water tariff from large consumers. 	<ul style="list-style-type: none"> Difficulties in collecting from large water tariff customers such as government organizations and institutions due to insufficient training programs for staff to raise awareness on tariff collection.
f) Construction Management <ul style="list-style-type: none"> Inadequacy of construction management. 	<ul style="list-style-type: none"> No construction supervisors in the CU.

Note: *8: Source "Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016", NWASCO.

The Project Team supposed some of causes underlined in '(3) d)' from the aspect of evaluation result by using Evaluation Manual, because of no information available.

(4) KWSC

Challenges	Causes
a) O&M at ITAWA WTP <ul style="list-style-type: none"> Deterioration of the concrete structure at ITAWA WTP. 	<ul style="list-style-type: none"> Constructed in 1955. Insufficient maintenance due to inadequacy of skilled staff to maintain facilities appropriately.
<ul style="list-style-type: none"> Malfunction of the filter control panel. 	<ul style="list-style-type: none"> Deterioration of equipment due to inadequacy of skilled staff to maintain various equipment. Inadequacy of equipment replacement due to inadequacy of skilled staff to maintain equipment.
<ul style="list-style-type: none"> Filtration by manual operation at filter basin on operator's experience. 	<ul style="list-style-type: none"> Insufficient intelligibility of staff concerning the importance of control panel.
b) Distribution Management <ul style="list-style-type: none"> Existence of asbestos pipes. 	<ul style="list-style-type: none"> Buried according to original design. Non-implementation of asbestos pipe replacement due to inadequacy of training concerning hazardous materials.
<ul style="list-style-type: none"> Deterioration of distribution pipes. 	<ul style="list-style-type: none"> Non-implementation of distribution pipe replacement due to no plans to replace distribution pipe.
c) O&M <ul style="list-style-type: none"> Malfunctioning flow meter. 	<ul style="list-style-type: none"> Insufficient intelligibility of some staff concerning water distribution management. Inadequate O&M for the flow meter due to inadequacy of understanding of the necessity of flow meters.
d) Procurement of parts <ul style="list-style-type: none"> Delay of repairing leakage. 	<ul style="list-style-type: none"> No repair tools and materials to be procured promptly.
e) NRW Management <ul style="list-style-type: none"> High NRW ratio (54%^{*9}) 	<ul style="list-style-type: none"> Various reasons such as leakage, lots of illegal connections due to social aspects, meter inaccuracies due to no replacement of

Note: *9: Source KWSC at the 2nd JCC

Activity 1-3. To formulate the Evaluation Manual

In principle, each CU evaluates its own capacity at organizational and individual level by using Evaluation Manual. The Project Team prepared Evaluation Manual in light of evaluation to be standardized, so that CUs evaluate the capacity quantitatively in the constant rule.

Evaluation Manual is composed of three categories; PIs for water supply service, Evaluation Items for Management Capacity and Evaluation Items for Communication & Negotiation Capacity. Each sheet in the Evaluation Manual consists of the following subjects.

1) PIs for water supply service

- Definition
- Purpose
- Interviewee
- Background and Concept
- Evaluation Criteria
- Causes
- Points to be considered (if necessary)
- Evaluation example (if necessary)

2) Evaluation Items for Management Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

3) Evaluation Items for Communication & Negotiation Capacity

- Purpose of Indicator
- Interviewee
- Evaluation Criteria
- Causes for Result of Evaluation
- Points to be considered

Activity 1-4. To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.

Kick-off Meeting and the 1st Joint Coordination Committee (JCC) of the Project took place on the 2nd and the 17th March 2017 respectively. MWDSEP and Japanese Experts (The Project Team) shared the purpose of the Evaluation Manual with MWDSEP, NWASCO, LWSC, LpWSC, KWSC and WWSC. The Evaluation Manual consists of PIs, Management Capacity and Negotiation & Communication Capacity of CUs.

The Project Team selected 21 PIs from the Web database of The International Benchmarking Network for Water and Sanitation Utilities (IBNET) that The Water and Sanitation Program (WSP) of the World Bank (WB) manages through the result of interviews with four CUs and examination of the INDICATORS FOR THE URBAN AND PERI-URBAN WATER SUPPLY AND SANITATION SECTOR REPORT of NWASCO.

In addition, The Project Team proposed 19 evaluation items for management capacity and six items for communication & negotiation capacity.

The components of the Evaluation Manual are as follows:

(1) PIs for the Water Supply Service:

1) Aspects to be improved mainly by Facility Investment

P1: Continuity of supply

P2: Overall water supply coverage

P3: Surplus purification capacity

P4: Transmission and distribution mains

P5: House connections

P6: Mechanical and electrical equipment

P7: Rate of facility utilization

2) Aspects to be improved mainly by Capacity Development (Technical Aspect)

P8: O&M of the facilities

P9: Drawings of pipe facilities

P10: NRW ratio

P11: Customer meters

P12: Bulk meters

P13: Water quality parameters tested at purification plants

3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)

P14: Cost recovery level

P15: Collection ratio

P16: Number of staff working especially for water (Number/'000 water connections)

P17: Implementation of training

P18: Complaint handling

P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

4) Aspects to be improved mainly by Program Approach

P20: Sewerage coverage (including On-site Facilities)

5) General Aspect

P21: Year of work experience on water supply service

The PIs underlined above are added to the PIs which NWASCO has as evaluation of the benchmark. The following are the reasons for the adding to the NWASCO's PIs.

Added PIs	Reasons for additional PIs
P4: Transmission and distribution mains	To determine a plan that the deteriorated pipelines should be replaced with new ones and to make an annual budget arrangement.
P6: Mechanical and electrical equipment	To maintain the existing mechanical & electrical equipment to optimize their operation.
P7: Rate of facility utilization	To revise the scale of the existing water supply facilities and/or examine their rehabilitation.
P8: O&M of the facilities	To operate water supply facilities appropriately and sustainably.
P9: Drawings of pipe facilities	To maintain the existing pipelines and formulate a plan of pipe replacement considering the deterioration of pipelines and a flow capacity of pipelines.
P12: Bulk meters	To figure out NRW ratio and the rate of facility utilizations.
P13: Water quality parameters tested at purification plants	To ensure supply of safe water.
P17: Implementation of training	To strengthen and develop the capacity of CUs sustainability.
P18: Complaint handling	To improve water supply service based on complaints from customers.
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	To improve the financial situation of water supply service through awareness-raising on NRW reduction, water conservation and water tariff collection.
P21: Years of work experience on water supply service	To sustain water supply service in future.

(2) Evaluation Items for Management Capacity:

1) Internal Policy and Planning

M1: Review on Short, Middle and Long Term Plan

M2: Evaluation Method to achieve Goal

2) Finance

M3: Analysis on Annual Financial Status

M4: Financial Improvement Status towards achievement of Goal

M5: Status of Metered Rate

M6: Budget Arrangement based on Historical Record and Result of Management Evaluation

M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection

3) Governance, Management and Human Resources

M8: Average Length of Service with CUs or Other Water Authority

M9: Record of Working Time

M10: System to evaluate Work Performance Capacity towards Goal

M11: Allocation and Input of Staff according to the Work Load

M12: Self-evaluation System at Individual Level

M13: Self-learning Support System

M14: Evaluation of Trainee's Efforts

4) Customer Relation

M15: Development of Customer's Information

M16: Time to deal with Customer's Complaint

M17: Record for dealing with Customer's Complaints

M18: Customer's Survey

M19: Promotion of Customer's Awareness

(3) Evaluation Items for Communication & Negotiation Capacity:

1) Leadership

C1: Executive: Capacity to achieve goal and to raise the standards of the leadership

C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department

2) Human Development

C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description

3) Negotiation and Coordination

C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions

4) Data Collection and Utilization

C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service

5) Communication with Customers

C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service

Components of the Evaluation Manual was shared with MWDSEP, NWASCO and LWSC, LpWSC, KWSC and WWSC in July 2017.

Activity 1-5. To conduct training for MWDSEP, NWASCO and CU staff on how to utilize the Evaluation Manual.

NWASCO trained MWDSEP and CUs how to utilize the Evaluation Manual in support of JICA Expert Team. The training took place on 9th August 2017 in Lusaka.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

After the training as well as the 2nd JCC on 9th August 2017, the Project Team evaluated four CUs, and identified challenges and gaps between the current situation and the ideal situation of the four CUs.

Activity 2-1. To conduct evaluation based on the Evaluation Manual.

The Project Team together with NWASCO staff evaluated LWSC, WWSC, LpWSC and KWSC in terms of PIs, Management Capacity and Communication & Negotiation Capacity. Actual evaluation for level 1 i.e. departmental heads (directors for LWSC and KWSC and managers for WWSC and LpWSC), were evaluated by their respective managing directors. Evaluation for Level 2 i.e. managers for LWSC and KWSC and supervisors for WWSC and LpWSC were done by respective Level 1 such as directors for LWSC and KWSC and managers for WWSC and LpWSC. Evaluation for Level 3 i.e. general officers were done by Level 2. Moreover, The Project Team verified whether CUs assessed their capacity properly on the basis of calculation especially in terms of PIs.

Through conducting the evaluation, the defects on the Evaluation Manual were identified as follows. These will be reflected to the revision of the Evaluation Manual.

- The causes which were not contained in the Evaluation Manual were mentioned.
- In case that the evaluation criteria were selected as “Good”, some causes were not mentioned.
- It was difficult for CUs to evaluate because they were not familiar with some PIs *apart*

from the indicators on the benchmarking by NWASCO.

Activity 2-2. To analyze the result of evaluation taken place in Activity 2-1.

The Project Team analyzed the result of evaluation and sorted out CUs' challenges by items which were mentioned in Activity 1-2.

CUs evaluated 21 PIs and 19 parameters of Management Capacity at an organization level. Capacity level is composed of five (5) categories; 'Very Serious', 'Serious', 'Not Good Enough', 'Good', and 'Very Good'. The percentages of 'Very Serious' and 'Serious' challenges on PIs and parameters of Management Capacity are as shown in the following table.

CU	PI	Management Capacity
LWSC	19.0%	10.6%
WWSC	57.1%	47.4%
LpWSC	38.1%	31.6%
KWSC	42.8%	36.9%

Meanwhile, CUs evaluated six (6) parameters of Communication & Negotiation Capacity as an individual level. Capacity level is composed of five (5) categories, the same as that at an organization level. The ranges by categories of Communication & Negotiation Capacity are as shown in the following table.

CU	'Serious'	'Not Good Enough'	'Good'	Total
LWSC	0.0%	50.0%	50.0%	100%
WWSC	50.0%	50.0%	0.0%	100%
LpWSC	83.3%	26.7%	0.0%	100%
KWSC	0.0%	100.0%	0.0%	100%

Activity 2-3. To grasp and clarify current situation of 4CUs based on data analysis and prepare the report.

The Project Team prepared the report on evaluation results in accordance with the following contents.

Report of Capacity Assessment based on Evaluation Manual
- CONTENTS -

1. *Overview of CUs evaluated based on Evaluation Manual*
2. *Purpose of evaluating CUs (Capacity Assessment)*
3. *Composition of Position by CU*

4. *Method of Capacity Assessment*
 - 4.1 *Organizational Level*
 - 4.2 *Individual Level*
 - 4.3 *Process of Evaluation*
 - 4.4 *Observation and Improvement of Evaluation Manual through Evaluation of CUs*
 - 4.5 *Days required for self-evaluating CU*
5. *Result of Capacity Assessment*
 - 5.1 *Organizational Level*
 - (1) *Performance Indicators (PIs)*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - (2) *Management Capacity*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - 5.2 *Individual Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
6. *Challenges based on the Assessment Result*
 - 6.1 *Organizational Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*
 - 6.2 *Individual Level*
 - 1) *LWSC*
 - 2) *WWSC*
 - 3) *LpWSC*
 - 4) *KWSC*

Annex:

Activity 2-4. To make a list of challenges of 4 CUs.

For the reference of formulation of Midterm Business Plan (MBP) and Human Resources Development Plan (HRDP) which will be formulated in Output 3, the Project Team made the lists of not only challenges but also preliminary priorities in dealing with urgency and their solutions as shown in the following tables. In the table, the Project Team also supposed three types of means such as infrastructure development, technical assistance and procurement of equipment to solve challenges from the aspect of the causes observed through the capacity assessment.

The Challenges were summarized regarding the organizational level that three CUs faced P10: high NRW ratio and two CUs faced P4: the existing asbestos and old pipes, P6: malfunction of mechanical and electrical equipment and P19: inadequacy of effective awareness-raising activities as “Very Serious” for PIs. Two CUs faced M13: no self-learning system and M14: no evaluation system for trainees’ efforts as “Very Serious” for Management Capacity. Regarding Communication & Negotiation Capacity of the individual level, two CU faced C1: inadequacy of leadership, C3: inadequacy of qualification and C4: inadequacy of communication and coordination as “Serious” for the directors/managers’ level (Level 1) and C2: inadequacy of leadership and supervision and C4: inadequacy of communication and coordination as “Serious” for the managers/supervisors’ level (Level 2) of Technical Department.

(1) PIs

- LWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.*10	Tech.*11	Pro*12
<u>Challenges that solution is required for a certain period</u>				
P10: NRW ratio is 36-50%.	Reduction of NRW		X	X
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

Note: *10: Infrastructure, *11: Technical Assistance, *12: Procurement of Equipment

- WWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.*10	Tech.*11	Pro*12
<u>Challenges that solution is required urgently</u>				
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
P10: NRW ratio is more than 50%	Reduction of NRW		X	X
P17: Training is quite rare or not provided	Increase of the training		X	

at all.				
P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
P20: Sewer coverage is zero.	Development of sewer system and or sanitation facilities	X	X	
P21: Average year of work that staff have experience on water supply service is zero to seven years.	Accumulation of technologies		X	
<u>Challenges that solution is required for a certain period</u>				
P2: Overall service coverage is 50- 69%.	Increase of service coverage	X	X	
P8: CU has O&M manuals which are not effective.	Preparation of O&M manuals		X	
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P14: All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.	Reduction of O&M cost and or increase of revenue	X	X	

● LpWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²

Challenges that solution is required urgently

P2: Overall service coverage is less than 50%	Increase of service coverage	X	X	
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X	
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X
P10: NRW ratio is more than 50%	Reduction of NRW		X	X
P14: Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Reduction of O&M cost and or Increase of revenue	X	X	

Challenges that solution is required for a certain period

P4: Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.	Replacement of asbestos pipes	X		
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	

● KWSC

Challenges	Outline of Solution	Means to solve Challenge		
		Infra.* ¹⁰	Tech.* ¹¹	Pro* ¹²

<u>Challenges that solution is required urgently</u>				
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X		
P10: NRW ratio is more than 50%.	Reduction of NRW		X	X
P15: Collection ratio is less than 60%.	Strengthening of tariff collection system		X	
P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X	
<u>Challenges that solution is required for a certain period</u>				
P5: 80-94% of house connections are more than 25 years old.	Replacement of service pipelines	X	X	
P8: Facilities have O&M manuals which are not effective, leading to O&M deficiency.	Preparation of O&M manuals		X	
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X	

(2) Management Capacity

● LWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
<u>Challenges that solution is required urgently</u>			
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X	
<u>Challenges that solution is required for a certain period</u>			
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	

● WWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²
<u>Challenges that solution is required urgently</u>			
M8: Average length of service with current CU is less than five years.	Accumulation of technologies	X	
M12: There is no a self-evaluation system.	Establishment of a self-evaluation system for staff	X	
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X	

<u>Challenges that solution is required for a certain period</u>			
M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	
M9: Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Encouragement of recording for working time	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	
M18: Customer survey has never been conducted but the survey is under consideration.	Conducting of the training on customer survey	X	

● LpWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²

Challenges that solution is required urgently

M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
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Challenges that solution is required for a certain period

M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	
M8: Average length of service with current CU is five to 10 years.	Accumulation of technologies	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	
M12: A self-evaluation system is under development.	Establishment of a self-evaluation system for staff	X	
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X	

● KWSC

Challenges	Outline of Solution	Means to solve Challenge	
		Tech.* ¹¹	Pro* ¹²

Challenges that solution is required urgently

M7: There are no manual, or even if there is a manual, it has not been used at all.	Preparation of O&M manuals for meter reading, billing & tariff collection, and conducting of their training	X	
M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X	
M15: Customers' information has not been developed at all.	Development of database on customer information	X	
M16: It takes at least 10 days to respond to customer's complaint.	Strengthening of customer service	X	

Challenges that solution is required for a certain period

M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X	
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M4: Financial status has not been improved at all.	Conducting of the training on financial analysis	X	
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X	

(3) Communication & Negotiation Capacity

- LWSC

No serious challenges for Communication & Negotiation Capacity.

- WWSC

Challenges	Outline of Solution
<u>Managers' Level (Level 1)</u>	
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis
<u>Supervisors' Level (Level 2) of Human Resource and Administration Department</u>	
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>Supervisors' Level (Level 2) of Commercial Service Department</u>	
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification

- LpWSC

Challenges	Outline of Solution
<u>Managers' Level (Level 1)</u>	
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
<u>Supervisors' Level (Level 2) of Technical Department</u>	
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision

C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis
General Officers' Level (Level 3)	
C6: Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.	Conducting of the training on communication with customers

- KWSC

No serious challenges for Communication & Negotiation Capacity.

[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC]

Activity 3-1. To hold workshop for all target CUs to share the challenges and possible solution.

The workshop for all target CUs to share the challenges and possible solution took place in the morning of 12th December 2017.

All the four CUs mentioned budget constraint and insufficient training as the main causes for various challenges. However, the Project Team considered that budget constraint couldn't be taken as the main factor since there were usually a number of factors which make a budget necessary.

The Project Team analyzed the challenges for each PI and/or parameter of management capacity, prioritize challenges to be solved and then shared the solution in the 2nd workshop on 19 April 2018. In order to efficiently formulate Midterm Business Plan and Human Resources Development Plan, some solutions for challenges were aggregated into project packages and then prioritized to be solved.

NWASCO provisionally pointed out some possible solutions based on the challenges and gaps in the Workshop. The possible solutions consist of investment in infrastructure, technical assistance and procurement of equipment.

Activity 3-2. To establish task force for each target CU to work on developing Midterm Business Plan (MBP) and Human Resource Development Plan (HRDP).

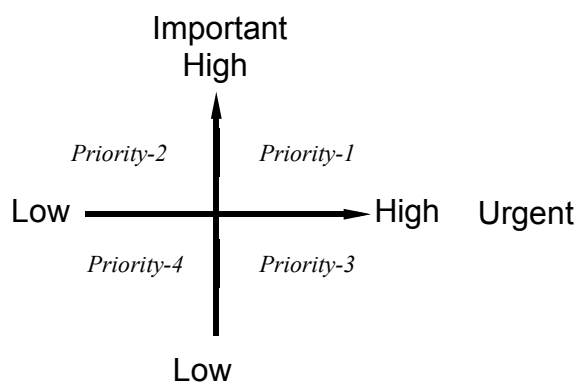
Task force for each Target CU to work on MBP & HRDP was established at 1st JCC held in March 2017. According to current organization of each CU, task force member was

updated at 3rd JCC.

Activity 3-3. To prioritize challenges listed in Activity 2-4.

The Project Team created priority criteria of challenges as the following actions to solve challenges and their outlines are shown based on action priority matrix as indicated below.

Priority-	Action to solve challenges	Outline of Actions
1	Urgent and Important: DO	If a task is both urgent and important, take actions immediately.
2	Not Urgent, but Important: DECIDE	If a task is important, but not urgent, set a due date and take actions later.
3	Urgent, but not Important: DELEGATE	If a task is urgent, but not important, the best thing is to delegate it to someone else.
4	Not Urgent and Not Important: DELETE	If a task is neither important nor urgent, it should not be prioritized. Drop it or take actions when you have some extra time.



Action Priority Matrix

Meanwhile, the following are instruction on how to evaluate Importance and Urgency to solve various challenges.

- How to evaluate importance? : Consider challenges that must be solved definitely in order to achieve goal or objective in the CUs’ own plans like strategic plans. While each challenge corresponds with ‘Important’, ‘2’ can be scored.

- How to evaluate urgency? : Unless actions are taken soon, consider what kinds of influences occur, who receive the influences and how the influence impacts on other projects. While each challenge corresponds with ‘Urgent’, ‘1’ can be scored.

Maximum score will be ‘3’ as Priority-1, while Score ‘2’, Score ‘1’ and Score ‘0’ will be as Priority-2, Priority-3 and Priority-4 respectively.

The challenges were prioritized based on the above instruction in terms of importance and urgency. The items and challenges that were evaluated as Priority-4 will be excluded from MBP and HRDP in accordance with the above table.

Firstly, the following tables show scoring for prioritizing challenges on PIs of four CUs.

(1) Prioritizing Challenges on PIs

[LWSC]

Since LWSC has no 'Very Serious', items were selected among challenges of 'Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P10: NRW Ratio	36 - 50%	2	1	3	1
2	P11: Customer Meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	2	1	3	1
3	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	2		2	2
4	P21: Year of Work Experience on Water Supply Service	8-15 years			0	4

[WWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P3: Surplus Purification Capacity	Less than -30%	2		2	2
2	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P17: Implementation of Training	Training is quite rare or not provided at all.			0	4

6	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2
7	P20: Sewerage Coverage (including On-site Facilities)	0%			0	4
8	P21: Year of Work Experience on Water Supply Service	0-7 years			0	4

[LpWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P2: Overall Water Supply Coverage	Less than 50%	2	1	3	1
2	P3: Surplus Purification Capacity	Less than -30%	2	1	3	1
3	P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.		1	1	3
4	P10: NRW Ratio	More than 50%	2	1	3	1
5	P14: Cost Recovery Level	Only part of the O&M costs (excluding depreciation of water supply facilities) are covered by water tariff. 'Annual Billed Revenue for Water / Total Annual Operating Costs for Water Excluding Depreciation and Financing Tariff' < 1	2		2	2

[KWSC]

Items were selected among challenges of 'Very Serious' to be prioritized for solution.

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.		1	1	3

2	P10: NRW Ratio	More than 50%	2	1	3	1
3	P15: Collection Ratio	Less than 60%	2		2	2
4	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2		2	2

(2) Prioritizing Challenges on Management Capacity

Secondly, the following tables show scoring for prioritizing challenges on Management Capacity of four CUs as well.

[LWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M13: Self-learning Support System	There is no a self-learning system.	2		2	2

[WWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years			0	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.			0	4
3	M13: Self-learning Support System	There is no a self-learning system.			0	4

[LpWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.	2		2	2

[KWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	2	1	3	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.			0	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	2	1	3	1
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customer's complaint.			0	4

(3) Prioritizing Challenges on Communication & Negotiation Capacity

Finally, the following tables show scoring for prioritizing challenges on Communication

& Negotiation Capacity of WWSC and KWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect Data and to apply for Analysis for the Water 4Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
Human Resource and Administration Department						
5	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
Commercial Service Department						

7	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.			0	4
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[LpWSC]

No.	Items	Challenges	Importance	Urgency	Total	Priority
Managers						
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
Technical Department						
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2	1	3	1
General Officer						

7	C6: General Officers: Capacity to communicate with Customers in order to provide them with high Quality Water Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	2		2	2
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At the end of February 2018, four CUs have been checking prioritization of challenges. The items and challenges are subject to change depending on CUs' comments.

Activity 3-4. To set up the goal(s) for each target CU.

&

Activity 3-5. To set up target figure of key performance indicators, to measure achievement of goal(s).

Goals of four CUs for the year 2023 were set-up based on the status-quo of the water supply service & water supply facilities, background of the past investment and the strategic plan as shown in the following tables in terms of PIs, Management Capacity and Communication & Negotiation Capacity respectively. Verifiable indicators to evaluate achievement of goals are shown in the same table as well.

(1) Goal and Verifiable Indicator on PIs

Firstly, the following tables show goals and verifiable indicators on PIs of three CUs in terms of 'Very Serious' apart from LWSC. LWSC's goal and verifiable indicators are shown in the table in terms of 'Serious'.

[LWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P10: NRW ratio	NRW ratio is 36% - 50%.	NRW will be reduced from 46% (current) to 30%.	NRW Ratio: A. 30% B. 34% C. 38% D. More than 42%	1
2	P11: Customer meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Installation ratio of customer meter will be increased from 67% (current) to 100%.	Ratio of Water Meter Installation: A. 100% B. 90% C. 80% D. Less than 70%	1
3	P19: Awareness-raising on NRW reduction,	A few effective awareness-raising activities have been	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly	1

	collection of water charges, etc.	implemented.		C. Biannually D. Annually or less	
4	P21: Year of work experience on water supply service	Average year of work that staff have experience on water supply service is 8-15 years.	-	-	4

[WWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than -30%.	Human Resources Development Plan is prepared for engineers who can formulate plans to raise the surplus capacity to maximum design capacity less than -10% and human resources is developed.	Ratio of surplus capacity to maximum capacity and other process: A. -10% B. Less than -20% C. Planning D. Study	2
2	P4: Transmission and distribution mains	Asbestos, old cast iron and old steel pipes make up 75% of main pipelines	Ratio of deteriorated pipes will be reduced to 45%.	Ratio of deteriorated Pipelines: A. 45% B. 50% C. 60% D. More than 65%	3
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%	NRW rate will be reduced from 54% (current) to 40%.	NRW Ratio: A. 40% B. 43.5% C. 47.0% D. More than 50.5%	1
5	P17: Implementation of training	Training is quite rare or not provided at all	-	-	4
6	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	2
7	P20: Sewerage coverage	Sewer coverage is zero.	-	-	4

8	P21: Year of work experience on water supply service	Average year of work that staff have experience on water supply service is zero to seven years.	-	-	4
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[LpWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P2: Overall water supply coverage	Overall service coverage is less than 50%.	Overall water supply coverage will be increased from 35.7% to 38.0 %.	Service Coverage Ratio: A. 38.0% B. 37.5% C. 37.0% D. Less than 36.5%	1
2	P3: Surplus purification capacity	Surplus capacity to maximum design capacity is less than -30%.	Surplus capacity to maximum design capacity is more than 0%.	Ratio of surplus capacity to maximum design capacity: A. More than 0% B. More than -5% C. More than -15% D. Less than -25%	1
3	P6: Mechanical and electrical equipment	More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Mechanical and electrical engineers can be trained.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	3
4	P10: NRW ratio	NRW ratio is more than 50%.	NRW ratio will be reduced from 70% to 63%.	NRW Ratio: A. 63.0% B. 65.0% C. 66.5% D. More than 68.0%	1
5	P14: Cost Recovery Level	Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Water supply facilities can be well-maintained and repaired.	Number of engineers to repair water supply facilities: A. All the technical engineers for maintenance to enable to repair water supply facilities B. 75% of all the technical engineers for maintenance to enable to repair water supply facilities C. 50% of all the technical engineers for maintenance to enable to repair	2

				water supply facilities D. Less than 25% of all the technical engineers for maintenance to enable to repair water supply facilities	
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[KWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	Ratio of aged pipes will be 64%.	Ratio of deteriorated Pipelines: A. 64% B. 67% C. 70% D. More than 72%	3
2	P10: NRW Ratio	More than 50%	NRW ratio will be reduced from 67% to 40%.	NRW Ratio: A. 40.0% B. 46.5% C. 52.5% D. More than 60.0%	1
3	P15: Collection Ratio	Less than 60%	Collection ratio will be increased from 55% to 80%.	Collection Ratio: A. 80.0% B. 74.0% C. 67.5% D. Less than 61.0%	2
4	P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	2

(2) Goal and Verifiable Indicator on Management Capacity

Secondary, the following tables show goals and verifiable indicators on Management Capacity of four CUs.

[LWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M13: Self-learning Support	There is no a self-learning system.	Training by utilizing a self-learning system is conducted.	Status after introduction of self-	2

	System			learning support system: A. Utilized for directors and managers or supervisors B. Utilized for only managers or supervisors C. Only introduced but not utilized D. Not introduced	
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[WWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M8: Average Length of Service with CUs or Other Water Authority	Less than five years.	-	-	4
2	M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.	-	-	4
3	M13: Self-learning Support System	There is no a self-learning system.	-	-	4

[LpWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	A system for trainees' effort is established.	Evaluation of trainees' efforts: A. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department and feed-back the result of evaluation to job description B. Annually evaluated the trainees' efforts in the dedicated unit established or human resource development department but not feed-back the result	2

				of evaluation to job description C. Established the dedicated unit to evaluate trainees' efforts D. Not established the dedicated unit to evaluate trainees' efforts	
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[KWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	Necessary manuals are prepared.	Preparation of Manual: A. Prepared manual which is composed of meter reading, billing and tariff collection B. Prepared manual which is composed of meter reading and billing C. Prepared manual only for meter reading D. Not prepared	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have been evaluated.	-	-	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	Customers' information can be developed.	Development of Customer Information: A. Customer sections to enable develop customer list in terms of all the information required B. Customer sections to enable develop customer list in terms of only partial information C. Collected customer information and or data D. Conducted the training on customer information but not collected customer information and not developed yet at all	1

4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customers' complaint.	-	-	4
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(3) Goal and Verifiable Indicator on Communication & Negotiation Capacity

Finally, the following tables show goals and verifiable indicators on Communication Capacity of WWSC and LpWSC in terms of 'Serious'. LWSC and KWSC have neither 'Very Serious' nor 'Serious'.

[WWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
4	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to develop and utilize data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1

Human Resources and Administration Department

5	C2: Managers and Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
6	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

Commercial Service Department

7	C:3 Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
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[LpWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of human resource development is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

	Description				
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Technical Department					
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of development and utilization of data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
General Officer					
7	C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of communication with customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

	service				
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[KWSC]

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
Managers					
1	C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	-	-	4
2	C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of human resource development is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
3	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
Technical Department					
4	C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training on how to lead staff is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2
5	C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of negotiation and coordination with staff and/or customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1

	and Opinions				
6	C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of development and utilization of data is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	1
General Officer					
7	C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Training to make staff understand the necessity of communication with customers is conducted.	Frequency of the Training: A. Bimonthly B. Quarterly C. Biannually D. Annually or less	2

At the end of February 2018, four CUs have been checking goals and the corresponded verifiable indicators to evaluate achievement of goals. The goals and verifiable indicators are subject to change depending on CU's comment. Based on the result at the 1st consultative formulation meeting for MBP & HRDP on 17th April 2018, verifiable indicators were determined by The Project Team as shown in the table above.

Activity 3-6. To hold workshop to share and review goal(s) and key performance indicator of each CU.

After prioritizing challenges, setting-up goals and their verifiable indicators of each CU as per Activity 3-3 to Activity 3-5, CUs started preparing MBP & HRDP. The information about verifiable indicators which was related to Activity 3-3 to Activity 3-5 was shared with the Project Team in the 2nd workshop on 18th April 2018.

Activity 3-7. To prepare draft MBP & HRDP of each target CU.

Preparation of the draft MBP & HRDP for each CU was started according to the 1st consultative formulation meeting for MBP & HRDP on 17th April 2018. The draft MBP & HRDP were updated based on the result of the 2nd consultative formulation meeting on 24th July 2018. The draft MBP & HRDP were shared with the Project Team at the 3rd workshop held on 25th July 2018. In addition, each CU recognizes NRW reduction is one of the most important activities which solve their challenges. However there is no opportunity of discussing the topic among CUs. NRW reduction activity of KAIZEN

project in Lukanga Water and Sewerage Company (LgWSC) was good practice of NRW reduction activity in Zambia. LgWSC introduced the activities to the 11 CUs at the 3rd workshop on 25th July 2018, and the solution and practice on work efficiency and NRW reduction were discussed by the 11 CUs. These activities which have contributed to reduction of errors for meter reading and so on in terms of NRW reduction activities, will be helpful so as to finalize the MBP as NRW reduction project.

Activity 3-8. To finalize draft MBP & HRDP of each target CU.

&

Activity 3-9. To submit MBP & HRDP to board member of each target CU.

MBP & HRDP will be finalized based on information which was discussed at the 2nd consultative meeting and the 3rd workshop. It will be submitted to the board members of each CU in October 2018.

1-3 Achievement of Output

[Output 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened.]

Indicator 1-1: The Evaluation Manual for evaluating CUs is approved by MWDSEP.

Component and evaluation items, etc. shown in the Evaluation Manual for CUs were approved by MWDSEP through the 2nd JCC on the 9th August 2017. Through conducting the evaluation, the challenges on the Evaluation Manual are identified, and these will be reflected to the revision of the Evaluation Manual.

Indicator 1-2: The way to utilize the Evaluation Manual is understood by MWDSEP and NWASCO staff in charge of urban water supply.

In the training session after the 2nd JCC, the way to utilize the Evaluation Manual for four CUs was introduced by NWASCO as well as MWDSEP who is responsible for evaluation in cooperation with Japanese Experts.

[Output 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.]

Indicator 2-1: Challenges of each CU is clarified.

Through Activity 2-1 to 2-5, challenges of each CU were identified. Challenges and gaps of each CU were shared in the workshop on 12th December 2017 as per Activity 3-1.

[Output 3. Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC, and KWSC.]

Indicator 3-1: Midterm Business Plan and Human Resources Development Plan is logically prepared in a manner consistent with target figure of key performance indicator.

Output 3 has been achieved in Activity 3-1 to 3-9 that is scheduled to take place from December 2017 to October 2018. The Project Team will clarify challenges as Output 2 and formulate MBP & HRDP based on challenges.

1-4 Achievement of the Project Purpose

Project Purpose: The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.

Indicator: Human Resources Development Plan of LWSC, WWSC, LpWSC and KWSC is prepared and approved by board members of each CU.

Project Purpose will be achieved through activities of Output 3.

1-5 Changes of Risks and Actions for Mitigation

No concerns for the Project implementation to date.

1-6 Progress of Actions undertaken by JICA

None.

1-7 Progress of Actions undertaken by Gov. of Zambia

● Office Spaces

As per coordination between MWDSEP and LWSC, office spaces in both MWDSEP and LWSC were secured for Japanese Experts.

● Office Space in MWDSEP

At the beginning of the Project (February 2017), MWDSEP provided the office for Japanese Experts in the building of MLG

In July 2017, the DWSS moved from MLG to Mukuba Pension House where the MWDSEP is housed. Due to limited space at the Mukuba Pension House, the MWDSEP has not provided an office for the Japanese Experts yet.

● Office Space in LWSC

LWSC provided the office which six members (four Japanese Experts and two Local staff) can use for the Project, while Japanese Experts are in the Country. Since the provided office is a conference room, Japanese Experts cannot utilize it throughout the term of the Project. During absence of four experts, LWSC will have provided another

office for local staff (Project Facilitator and Assistant Engineer).

1-8 Progress of Environmental and Social Considerations (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for the Environment and Social Considerations.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

The purpose of the Project is to develop the capacity at the organizational level, that is, CUs. Therefore, the Project shall not be applied for considerations on Gender/Peace Building/Poverty Reduction.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

- 1) Initiative of NWASCO as well as MWDSEP in the Project
- MWDSEP stated that NWASCO is mandated to regulate CUs based on the Evaluation Manual as well as NWASCO's own indicators. Therefore, 'NWASCO' is added to Output 1, Activity 1-4 and Activity 1-5, PDM and PO.
- To secure the sustainable implementation of Monitoring and Evaluation activities even after the Project is terminated, Stakeholder Meeting held on 19th June 2018 among MWDSEP, NWASCO, JICA and JICA Expert Team. NWASCO determined scaling-up utilization schedule; 1) for the four targeted CUs in 2019, and 2) scale-up to all the 11 CUs in 2020. CUs will submit revisions of the MBP & HRDP and annual plans to NWASCO every year end respectively. NWASCO will inspect the plans to be submitted from CUs in January through February and will feed back the adequacy of the plans as inspection results to CUs.

As per request of NWASCO, the Japanese Experts held the training session focusing on sustainable implementation after the Project to NWASCO's five inspectors and Finance Director of WWSC on 27th July 2018. The Japanese Expert Team presented the overall workflow between capacity assessment and formulation of MBP & HRDP, and the specific activities with Guideline to take Activities from Capacity Assessment to Formulation of the MBP & HRDP. According to NWASCO in the training session, NWASCO conveyed their own views as follows:

[General]:

- NWASCO will request all the CUs to make a pacty as an ent at organizational and individual levels in July or August. CUs will then finalize formulation or review of the MBP & HRDP in November every year.
- NWASCO conducts monitoring of progress in reviews and implementation of the MBP & HRDP every year.
- NWASCO will invite the workshop for all the CUs in October 2019.
- NWASCO will request the other seven CUs to make a a pacty as an ent based on the evaluation manual in January 2020.

[4 CUs]:

- NWASCO will monitor progress of a series of activities form a pacty as an ent to formulation of MBP & HRDP which four CUs will have a review in cooperation with JICA Expert Team in October 2018.

NWASCO’s tentative plan from the year 2018 to 2020 to lead the pilot four CUs and the other seven CUs to conduct a series of activities such as capacity assessment, prioritizing challenges, formulation of the MBP & HRDP, etc. is illustrated in the following schedule.

Items	FY2018				FY2019				FY2020							
	5	8	9	12	1	4	5	8	9	12	1	4	5	8	9	12
【Pilot 4CUs】																
Trial Activities			■													
Monitored by JICA Expert Team			■													
Inspected by NWASCO (For progress of planning)			■													
Submit MBP & HRDP and annual action plan to board members or MWDSEP by CUs				▲												
Approve MBP & HRDP and annual action plan by board members or MWDSEP				▲												
Inspected by NWASCO (For progress of implementation)					■											
【Scaling-up to 7CUs】																
Conduct workshop by NWASCO									▲							
Commence capacity assessment and a series of other activities										■						
Inspected by NWASCO (For progress of planning)										■						
Finalize MBP & HRDP and annual action plan																▲

Note:

- : Substantial Activities
- : Intermittent Activities

2) Other Donor’s Activities

- Millennium Challenge Corporation (MCC) targeting LWSC will set around 10 PIs in terms of sustainability for collecting factors to figure out PIs. Meanwhile, the Project set 21 PIs in terms of sustainability of water supply service as well as that of collecting factors as MCC is concerned. The Project confirmed that MCC was not in a position to comment on justification of 21 PIs.
- The Project had a dialogue with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to learn their activities. GIZ has activities for capacity development and regulatory reform in water and sanitation. In addition, GIZ supported the MWDSEP to carry out a feasibility study to develop a sustainable institutional model for the delivery of training and capacity building to Commercial Utilities and other service providers in WSS sub sector.

On the other hand, JICA Expert Team shared MBP & HRDP with GIZ on 2nd August 2018 in order to learn GIZ's orientation of their future assistance. According to GIZ, GIZ focuses on large impact with cheap fund and a synergy effect with other assistant partners. However, GIZ has no sufficient fund to develop infrastructure. Currently, GIZ is considering procurement of smart phones for contributing to development of the digital meter reading system in LgWSC.

- LWSC under the Lusaka Sanitation Project funded by WB has an action plan of institutional capacity development at LWSC to improve the organizational behavior, structure, capability, tools and influence until January 2022.
- AfDB targets NWASCO as an implementing organization of the project for the Performance Recovery Program in WWSC, LpWSC and ChWSC. NWASCO follows-up the benchmarking for these CUs every three months.

3) PR Activities

At the end of February 2018, The Project Team completed a poster preparation as PR activities for this Project and is about to deliver the posters to MWDSEP, NWASCO, four CUs and other donors.

In addition, The Project Team prepared the newsletters for introducing the Project as external PR activities brought into an original newsletter of NWASCO issued in June 2018. The newsletter article for LWSC and WWSC were prepared as well, and it will be issued on early August 2018. Updating Facebook pages of LWSC, LpWSC and WWSC are subject to the events. The article of the project achievement is also available on JICA homepage currently. Organizational assessment contributes to quantitative challenge abstraction and causal analysis for formulating MBP & HRDP,

that is, these activities are internally shared with staff of each CU through PR activities which result in improvement of formulating MBP & HRDP.

2) Challenges in Cholera Infection

Zambia Government has been facing outbreak of cholera since the end of September 2017 as well as the past years. According to Ministry of Health, it seems that outbreak of cholera are mainly caused by using shallow wells which are contaminated by waste water infiltrated from pit-latrines, etc.

From the status-quo of outbreak of cholera infection in the past long year, it is essential that relevant organizations such as CUs must focus on preventative approach apart from supportive approach as shown in the following table. Zambia National Public Health Institution (ZNPHI) will issue the post-outbreak cholera at the end of July 2018. The Project Team collected the fund data which is Cholera Emergency Respond Fund from Ministry of Health (MoH). The detail information about Cholera Emergency Respond Fund will be considered in further together with International organization funds for cholera. According to the data of Cholera Emergency Respond Fund, the Project Team recognized that the proactive approach costs much huger than the preventive approach at the 2nd consultative formulation meeting on 24th July 2018. It is suggested that preventive approaches at CUs' level should be contained in MBP and HRDP considering the feasibility of each plan. It is necessary for the plans to supply sufficient water to rationing service areas through NRW reduction activities in order not to depend on shallow wells which might be one of the causes of cholera infection. It is significant that the project on PR activities should be formulated as shown in the following table to prevent cholera infection as well.

Proactive Approach	Preventive Approach
<ul style="list-style-type: none"> ● Water supply by water bowsers ● PR activities (Regulate boiling water, enforce hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.) 	<ul style="list-style-type: none"> ● Extend water source and treatment plant (increase water production) ● Extend distribution network ● Repair the deteriorated and damaged pipelines ● Appropriate control of residual chlorine at distribution facilities ● PR activities (Regulate boiling water, enforce hand-wash, prepare oral-rehydration liquid and encourage to connect to water supply system, etc.)

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

(1) Office Spaces

It may cause problems because MWDSEP has not provided office spaces for the

Japanese Experts, yet.

(2) Limited Manpower

It caused problems of activities for Output-1, particularly Activity 1-3 related to formulate the Evaluation Manuals. The Project Team sometimes faced difficulties in efficiently managing the Project due to limited manpower of MWDSEP.

(3) Budget of Evaluation Activity

It caused problems of activities for Output-2, particularly Activity 2-1 related to conduct evaluation based on the Evaluation Manuals. The Project Team sometimes faced difficulties in efficiently managing the Project because the budget for the evaluation activities of the Project in FY2017 had not been estimated by NWASCO.

2-2 Cause

(1) Office Spaces

DWSS of MWDSEP had the limited space in accordance with the move from MLG office to MWDSEP office at Mukuba Pension House in July, 2017. It meant no office space was available for the Japanese Experts at Mukuba Pension House.

(2) Limited Manpower

DWSS of MWDSEP appointed PM and staff in charge of the Project. However, it has caused difficulties in efficiently managing the Project because they have had not only the works for the Project but also their own assignment.

(3) Budget of Evaluation Activity

MWDSEP stated that NWASCO is mandated to regulate CUs based on the Evaluation Manual as well as NWASCO's own indicators on 11th August 2017. The budget for the evaluation activities of the Project in FY2017 had not been estimated by NWASCO.

2-3 Action to be taken

(1) Office Spaces

LWSC has provided office spaces for the Japanese Experts in HQ of LWSC temporarily instead of MWDSEP, while MWDSEP will be supposed to provide the office spaces as well.

(2) Limited Manpower

PM and staff of MWDSEP in charge of the Project have coped with occupying their assignments to formulate the Evaluation Manual in compliance with the Project schedule.

(3) Budget of Evaluation Activity

The inspectors of NWASCO will follow-up the benchmarking for WWSC and LpWSC every three months. The budget for the evaluation activities for the Project will have been worked out from conventional recurrent budget from FY2018 by NWASCO.

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Zambia, etc.)

(1) Office Spaces

MWDSEP has all responsibilities for office spaces for the Japanese Experts.

(2) Limited Manpower

MWDSEP is responsible for arranging their assignment. On the other hand, the Japanese Experts are responsible for the sharing of information such as event, plan and a schedule as early as possible, so that MWDSEP can arrange their schedule.

(3) Budget of Evaluation Activity

NWASCO is responsible for arranging the budget from FY2018.

3 Modification of the Project Implementation Plan

3-1 PO

At the 1st JCC, Plan of Operation (PO) was revised in accordance with the transfer from water and sanitation function of DHID in MLGH to MWDSEP and the change due to other reasons. See the Project Monitoring Sheet II as attached.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Modification on Record of Discussion (R/D) and Project Design Matrix (PDM) are shown as below.

Modification Document	Contents of Modification	Date
Amendment of RD	a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Japanese Experts c) Deletion of Machinery and Equipment	16 th March 2017
Revision of PDM	a) Change of Assigned name of Japanese Experts b) Deletion of Machinery and Equipment	17 th March 2017 (1 st JCC)

Revision of PDM	<ul style="list-style-type: none"> a) Change of Implementation agency from MLGH to MWDSEP b) Change of Assigned name of Project Personnel from Zambian Side in accordance with change of Implementation agency from MLGH to MWDSEP 	9 th August 2017 (2 nd JCC)
Revision of PDM	<ul style="list-style-type: none"> a) Change of Project Site from Lusaka to Lusaka, Mongu, Mansa and Mdola b) Add to Objectively Verifiable Indicators for 1-1. Approval agency from MWDSEP to MWDSEP and NWASCO. c) Add the document of Output 3 from Human Resource Development Plan to Midterm Business Plan and Human Resource Development Plan 	25 th July 2018 (3 rd JCC)

4 Preparation of Gov. of Zambia toward after-completion of the Project

To be considered.

II. Project Monitoring Sheet I & II *as Attached*

APPENDIX. A-6
PROJECT MONITORING SHEET I
(PROJECT DESIGN MATRIXS
/PDM)

Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 4.0

Dated 30th January 2019

Project Title: "The Project for Strengthening Capacity of Urban Water Supply Infrastructure"

Implementing Agency: MWDSEP

Target Group: Staff of MWDSEP and CUs

Project Period: One year and nine months from the date when the first JICA Expert Team is dispatched.

Project Site: Lusaka, Mongu, Mansa and Mdola **Model Site:** LWSC, WWSC, LpWSC and KWSC

Overall Goal	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Urban water supply infrastructure is managed in a sustainable way by each Commercial Utility (CU)	Urban water supply infrastructure is managed based on the Strategic Paper and/or Human Resources Development Plan (HRDP)	Annual Report		Completed	
Project Purpose The structure for operation is strengthened in LWSC, WWSC, LpWSC and KWSC.	Midterm Business Plan (MBP) and HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.	Project Report	Senior management does not leave the CU	Completed	
Outputs 1. Capacity of MWDSEP and NWASCO on evaluating CUs is strengthened. 2. Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.	1-1 The Evaluation Manual for evaluating CUs is approved by MWDSEP and NWASCO. 1-2 The way to utilize the Evaluation Manual is understood by MWDSEP, NWASCO and targeted CUs staff in charge of urban water supply. 2-1 Challenges of each CU are clarified.	Project Report Project Report		Completed	
3. MBP and HRDP are prepared by LWSC, WWSC, LpWSC, and KWSC.	3-1 MBP and HRDP are logically prepared in a manner consistent with target figure of key performance indicator.	Project Report			

Activities	Inputs		Important Assumption
	The Zambian Side	The Japanese Side	
<p>1-1 To collect policy, strategy and information related to CUs in Zambia</p> <p>1-2 To decide target parameters covered by the Evaluation Manual.</p> <p>1-3 To formulate the Evaluation Manual</p> <p>1-4 To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.</p> <p>1-5 To conduct training for MWDSEP, NWASCO and CUs staffs on how to utilize the Evaluation Manual.</p>	<p>Project Personnel</p> <ol style="list-style-type: none"> Acting Director of Department of Water Supply and Sanitation of MWDSEP Principal Community Department Officer, Department of Water Supply and Sanitation of MWDSEP Chief Inspector of National Water Supply and Sanitation Council (NWASCO) Senior Inspector of NWASCO Managing Director of LWSC, WWSC, LpWSC and KWSC Director/ Head of Human Resources of LWSC, WWSC, LpWSC and KWSC Counterpart Personnel from MWDSEP, LWSC, WWSC, LpWSC and KWSC to Counterpart Personnel for task force of LWSC, WWSC, LpWSC, KWSC. Other personnel mutually agreed upon as necessary 	<p>Japanese experts</p> <ol style="list-style-type: none"> Chief Advisor/Water Supply Service Management¹ Deputy Chief Advisor/Water Supply Service Management²/ Strengthening of Organizational Capacity Human Resources Development/Evaluation O&M of Water Supply Facilities <p>Equipment</p> <p>None.</p>	<p>A. Natural disaster/ political instability/ economic crisis that affect the project activities do not occur</p>
<p>2-1 To conduct evaluation based on the Evaluation Manual.</p> <p>2-2 To analyze the result of evaluation taken place in Activity 2-1.</p> <p>2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.</p> <p>2-4 To make a list of challenges of each target CU.</p>	<p>Land, Building and Facilities</p> <ol style="list-style-type: none"> Office building and facilities necessary Office spaces and necessary facilities Other facilities mutually agreed upon as 	<p>Pre-Conditions</p> <p>A. Furnished offices for Japanese Expert Team are secured MWDSEP and LWSC</p> <p>B. Project personnel is assigned</p>	<p><Issues and countermeasures></p>
<p>3-1 To hold a workshop for all target CUs to share challenges and possible solutions.</p> <p>3-2 To establish task force for each target CU to work on developing MBP and HRDP.</p> <p>3-3 To prioritize challenges listed in Activity 2-4.</p> <p>3-4 To set up the goal(s) for each target CU.</p> <p>3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).</p> <p>3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.</p> <p>3-7 To prepare draft MBP and HRDP of each target CU.</p> <p>3-8 To finalize MBP and HRDP of each target CU.</p> <p>3-9 To approve of MBP and HRDP by board member of each target CU.</p>	<p>Local Costs</p> <ol style="list-style-type: none"> Administration and operational costs, 		

APPENDIX. A-7
PROJECT MONITORING SHEET II
(PLAN OF OPERATION/PO)

Project Monitoring Sheet II (Revision of Plan of Operation)

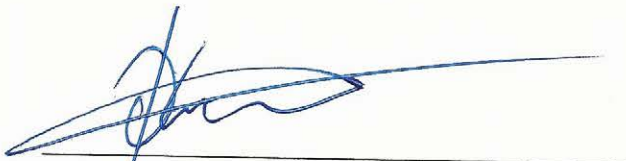
Version 4.0
Dated 31th January 2019

Project Title: The Project for Strengthening Capacity of Urban Water Supply Infrastructure												Monitoring														
Schedule of Major Japanese Inputs												Issue	Solution													
Expert	Year	2017				2018				2019				Remarks	Issue	Solution										
		Qr.	I	II	III	IV	I	II	III	IV	I	II	III				IV									
Chief Advisor/Water Supply Service Management1 Deputy Chief Advisor/Water Supply Service Management2/ Strengthening of Organizational Capacity Human Resources Development/ Evaluation O&M of Water Supply Facilities Equipment Training in Japan In-country/ Third country Training	Plan																									
	Actual																									
	Plan															None										
	Actual															None										
	Plan															None										
	Actual															None										
	Plan																									
	Actual																									
	Plan																									
	Actual																									
Activities												Responsible Organization														
Sub-Activities												Japan	Zambia													
Output 1: Capacity of MWDSEP and NWASCO on evaluating CUs in strengthened.																										
1-1 To collect policy, strategy and information related to CUs in Zambia.																						Completed	None			
1-2 To decide target parameters covered by the Evaluation Manual.																									Completed	None
1-3 To formulate the Evaluation Manual.																									Completed	None
1-4 To share purpose and components of the Evaluation Manual to staffs of MWDSEP, NWASCO and CU.																									Completed	None
1-5 To conduct training for MWDSEP, NWASCO and CUs staffs on how to utilize the Evaluation Manual.																									Completed	None
Output 2: Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.																										
2-1 To conduct evaluation based on the Evaluation Manual.																									Completed	None
2-2 To analyze the results of evaluation taken place in Activity 2-1.																									Completed	None
2-3 To grasp and clarify current situation of each target CU based on data analysis and prepare the report.																									Completed	None
2-4 To make a list of challenges of each target CU.																									Completed	None
Output 3: Midterm Business Plan and Human Resources Development Plan is prepared by LWSC, WWSC, LpWSC and KWSC.																										
3-1 To hold a workshop for all target CUs to share challenges and possible solutions.																									Completed	None
3-2 To establish task force for each target CU to work on developing Midterm Business Plan (MBP) and Human Resources Development Plan (HRDP).																									Completed	None
3-3 To prioritize challenges listed in Activity 2-4.																									Completed	None
3-4 To set up the goal(s) for each target CU.																									Completed	None
3-5 To set up target figure of key performance indicators, to measure achievement of goal(s).																									Completed	None
3-6 To hold workshop to share and review goal(s) and key performance indicator of each CU.																									Completed	None
3-7 To prepare draft MBP and HRDP of each target CU.																									Completed	None
3-8 To finalize MBP and HRDP of each target CU.																									Completed	None
3-9 To approve of MBP and HRDP by board member of each target CU.																									Completed	None
Duration / Phasing																										
Plan																										
Actual																										
Project Management and Coordination																										
Planning, Monitoring and Coordination																										
1.1 Organize Joint Coordination Committee																									Completed	None
1.2 Conduct Joint Monitoring semi-annually																									Completed	None
1.3 Submit Monitoring sheet (MS) to JICA Zambia Office semi-annually																									Completed	None
Reports/Documents																										
2.1 Project Completion Report																									Completed	None
Public Relations (PR)																										
3.1 Develop Project Website																									Completed	None
3.2 Preparation of public relation materials																									Completed	None

APPENDIX. A-8
MINUTES OF MEETING

**MINUTES OF MEETING
ON
THE 1ST JOINT COORDINATION COMMITTEE (JCC)
FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

Lusaka, 20 March 2017



Mr. Oswell Katooka
Acting Director WSS
Project Director
Department of Water Supply & Sanitation,
Ministry of Water Development, Sanitation and
Environmental Protection



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team

The first Joint Coordinating Committee (JCC) was held on the 17 March 2017.

Firstly, Committee was called to order by the Project Manager (PM) - Selenia M. Matimelo with opening remarks and asked participants present to introduce themselves.

Mr. Oswell Katooka, Project Director (PD), chaired the 1st JCC meeting and gave a brief overview of the sector and services provided by Commercial Utilities. He requested for cooperation from the CUs to ensure the project is implemented successfully. The PD indicated that a capacity development strategy was developed under the Ministry of Local Government and Housing (MLGH) to guide implementation of capacity activities in the sector. (the PM can share document with the stakeholders of this meeting) which has a number of cardinal points that can be utilized by this project, for example; it looks at;

- Organizational Capacity Development
- Individual Capacity Development in the sector through various types of Training
- Provides linkages with training institutions, etc.

The PD urged all members of the JCC to familiarize themselves with the Capacity Development Strategy so as to have a clear understanding of what the Ministry entails to achieve. He further mentioned Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) with the support from JICA will implement the Project Strengthening Capacity of Urban Water Supply Infrastructure whose duration is 22 Months from February, 2017 to November, 2018. He advised the committee that MWDSEP, NWASCO and the four (4) utilities companies (CUs) being covered in the project will provide policy direction accordingly. He further indicated that a Feasibility study to develop an institutional model for delivering training to CUs was done with support from GIZ. .

Finally the PD emphasized the importance of consultation amongst stakeholders (JICA Expert Team, LpWSC, LWSC, KWSC & WWSC and NWASCO) so as to avoid duplicating efforts. The four (4) CUs would be used as pilot projects and depending on the outcome of the project, this may be replicated in other CUs.

JICA Assistant Resident Representative (ARR) Ryo Sarashina gave a very brief background of the project. He encouraged all stakeholders to work together so as to achieve the set Project purpose, so that the Project is a success. He ended by encouraging information sharing and wide consultation among all stakeholders.

The following were presented by the Chief Advisor of the JICA Expert Team in the 1st JCC;

1. Outline of the Project

The Chief Advisor Igarashi gave a brief presentation on project overall goals and the 3 outputs expected out of this project. As a way of amplifying activities of output 1- formulation of evaluation manuals to CUs, he made mention that in the courtesy call held with NWASCO on Wednesday 15th March, 2017, the Chief Inspector- Peter Mutale availed the Expert Team with manuals currently being utilized by the regulatory body as regards the running of the various CUs. This will help the team identify gaps and make necessary improvements as seen fit and approved by all concerned stakeholders.

2. Appointment of the Project Team Members

The Chief Advisor requested the participants to officially appoint the Project Team members from MWDSEP, NWASCO and each CU. (See Attachment-1)

3. Project Monitoring

The Chief Advisor explained that the Project Team which is composed of the Team to formulate evaluation manuals, the taskforce to formulate the Midterm Business Plan and Human Resources Development Plan and JICA Expert Team who should monitor the progress of the Project using three Monitoring Sheets, Ver.1 to Ver.3.

4. Revision of PDM

As the water sector was transferred from MLGH to MWDSEP, the implementation organization was replaced with MWDSEP. The Chief Advisor explained the revision on the change of the implementation organization, the change in policy on provision of equipment based on the Minutes of Meeting for Amendment of Record of Discussion dated 16th March, 2017 as well as the revision of position's name of JICA Expert Team.

The followings were discussed at the question and answer session in the 1st JCC;

1. Dr. Sylvester Mashamba, LWSC MD was concerned regarding the Human Resource Development Plan (HRDP) that the Project is supposed to come up with as per output 3. He wondered what the Project would use as a guideline if the Ministry is yet to develop the water and sanitation policy which should guide the Human Resources framework. He felt it would be better to finalize the policy which would serve as a guideline for the Expert team first, then to come up with the HRDP. The PD then clarified that Capacity Development strategy document (the National Water Supply & Sanitation Capacity Development Strategy 2015-2020), the document about the strategy of strengthening capacity in the water sector was in place to guide the JICA team. The document would be made available to members of the JCC so -as to be familiar with them.
2. Eng. Kenneth Chense, LpWSC MD was concerned with what "Deep wells with hand pumps" in slide 6 meant. He said the focus that was needed for LpWSC was urban water supply and not "Deep

wells with hand pumps”. In addition, WWSC MD, Mr. Wamuwi Changani also clarified that his CU operated in both Urban and peri-Urban and not only Peri-Urban as the slide indicated.

PD clarified that slide 6 was making reference to historic support rendered to the four CUs. For example, there is the water treatment plant with the Yen loan in LWSC, water treatment and pumping station in form of a grant in KWSC, digging deep well with hand pumps in form of a grant in LpWSC etc.

3. WWSC, MD was concerned with the implementation period with regards to the outcomes of the Project. When the Project ends in November 2018, the Government will be done with its budgeting activities. It may be too late for the Government & indeed the Ministry to have a budget in 2018 to carry out the outcomes of the Project immediately. Instead it may only then be possible for the Government & the Ministry to implement the outcome of the Project in 2020. So he suggested to the JCC if these outcomes can be adopted as and when made available so that they are applied to the sector budget.

The chief advisor clarified that there would be periodic monitoring of project outputs. It was highlighted that the Project team would start making “Preparation with the Government of Zambia towards & after completion of the Project” as per “slide 9 under I: summary, sentence 4,” so that there will be a smooth transition for self- sustainable implementation on the Zambian side as per slide 2.

4. NWASCO Chief Inspector wanted to know how the various Human Resource plans and other plans being worked on even by other projects and cooperating partners could be synchronized with this Project’s HRDP and Mid- term Business Plans so as to avoid duplication of efforts.

The PD explained that the JICA Expert team were not working in isolation from other stakeholders but will indeed work in collaboration with the stakeholders by holding consultative meetings that will help all stakeholders in synchronizing and harmonizing all plans being worked on so as to have one inclusive and solid plan.

5. A suggestion to the JICA Expert Team from WWSC MD where he proposed that instead of having monitoring sessions every 6 months, why not shorten the period to 3 months given the time frame of the Project so as to try and resolve as many issues as possible?

The ARR said JICA would definitely consider that and it would not be a problem at all to have the monitoring exercise using the monitoring sheets every 3 months instead of 6 months informally, and the committee anonymously agreed to evaluate every 3 months.

6. Finally, the committee through the LpWSC MD wanted to know what the immediate steps would be after this committee meeting.

The Chief Advisor explained that from here, evaluation of the four (4) CUs would start by way of sharing a questionnaire by the Project Facilitator Daisy L Mwila, that the team has designed with NWASCO and the four (4) CUs for their comments after which all comments will be consolidated and then the questionnaire at this point will be used to collect data in the four CUs. The committee was also informed that there will be field trips to be done by the expert team to the four (4) CUs to collect data. This exercise is scheduled to start next week after the questionnaire has been finalized by the JICA Expert Team.

There being no AOB, the PD closed the committee meeting.

Steve *M*

Attachment-1

Agreed Appointment of the Project Team Members

1. Project Director (PD) (Chairperson of JCC):

Mr. Oswell Katooka, Acting Director, Department of Water Supply and Sanitation, MWDSEP

2. Team for Formulation of Evaluation Manual

Project Manager (PM) (Chairperson of the Team):

Ms. Selenia M. Matimelo, Principal Community Development Officer, Department of Water Supply & Sanitation, MWDSEP

NWASCO (as an observer):

Mr. Peter Mutale, Chief Inspector, National Water Supply & Sanitation (NWASCO)

3. Task Force for formulation of MBP & HRDP

LWSC:

Dr. Sylvester Mashamba, Managing Director (MD)

Mr. Christopher Walimuntu, Acting Director/ HRA (Chairperson)

LpWSC:

Eng. Kenneth Chense, Managing Director (MD)

Mr. Barnard Chama, Director/ Heads of Human Resources (Chairperson)

WWSC:

Mr. Wamuwi Changani, Managing Director (MD)

Ms. Pauline Sakala, Manager/ Human Resources (Chairperson)

KWSC:

Eng. Athanasius K. Mwaba, Managing Director (MD)

Mr. Portpher Phiri, Director/ Heads of Human Resources (Chairperson)

ANNEX

[Attendance List – Joint Coordination Committee (JCC) held on 17th March 2017]

No.	Name	Org.	Position	Mail address	Contact No.
1	OSWELL KATOOKA	MWDSEP	ACTING DIRECTOR	Katooka71@yahoo.com	0977-334422
2	SELENIA MATIMELO	MWDSEP	PRINCIPAL COMMUNITY DEVELOPMENT OFFICER	Selmat2006@yahoo.com	0977-762577
3	SYLVESTER MASHAMBA	LWSC	MANAGING DIRECTOR	mshmashamba@lwsc.com.zm	0976-337450
4	CHRISTOPHER WALIMUNTU	LWSC	ACTING DIRECTOR- HUMAN RESOURCES AND ADMIN	cwalimuntu@LWSC.com.zm	0964-104985
5	CHENSE KENNETH	LpWSC	MANAGING DIRECTOR	kennethchense@yahoo.co.uk	0966-783385
6	BARNARD CHAMA	LpWSC	SENIOR MANAGER HUMAN RESOURCES & ADMIN	bpchama@hotmail.com	0955-911010
7	WAMUWI CHANGANI	WWSC	MANAGING DIRECTOR	Wamuwi.changani@wwsc.co.zm	0962-197051
8	PAULINE SAKALA	WWSC	HUMAN RESOURCES & ADMIN MANAGER	Pauline.sakala@wwsc.co.zm	0977-429514
9	NGONGA BRIAN	KWSC	HUMAN RESOURCES OFFICER	bryanngonga@yahoo.com or Brian.Ngonga@kafubu.co.zm	0977-291020
10	PETER MUTALE	NWASCO	CHIEF INSPECTOR	pmutale@nwasco.org.zm	0977-702013
11	TUSEKO SINDANO	MWDSEP / GIZ	CAPACITY DEVELOPMENT ADVISOR	Tuscko.sindano@giz.de	0976-203457
12	RYO SARASHINA	JICA	ARR	Sarashina.Ryo@jica.go.jp	0977-770463
13	MARY MUKOMBA	JICA	PHW	MukombaMary.ZB@jica.go.jp	0967-633614
14	IGARASHI HIDEYUKI	JICA EXPERT TEAM	CHIEF ADVISOR	Hd-igarashi@intl.yachiyo-eng.co.jp	0976-917510
15	MIWA SHINJI	JICA EXPERT TEAM	O & M WATER SUPPLY FACILITIES	Sh-miwa@intl.yachiyo-eng.co.jp	0976-916900
16	DAISY L. MWILA	JICA EXPERT TEAM	PROJECT FACILITATOR	Daisy.mwila97@gmail.com	0977841696

**MINUTES OF MEETING
ON
THE 2nd JOINT COORDINATION COMMITTEE (JCC)
FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

Lusaka, 9th August 2017



Ms. Selenia M. Matimelo
Principal Community Development Officer,
Project Manager
Department of Water Supply & Sanitation
(DWSS),
Ministry of Water Development, Sanitation and
Environmental Protection (MWDSEP)



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team



Mr. Peter Mutale
Chief Inspector
National Water Supply and Sanitation Council
(NWASCO)

The second Joint Coordinating Committee (JCC) took place on the 9th August 2017.

The Committee was called to order by the Project Manager (PM) - Ms. Selenia M. Matimelo.

Ms. Matimelo tendered an apology on behalf of Eng. Oswell Katooka, Acting Director of DWSS and Project Director who was attending to an urgent matter.

Ms. Matimelo chaired the 2nd JCC meeting and gave a brief overview of the project and the expected outcome.

The following were presented in the 2nd JCC by Project Team;

1. Presentation and Remarks

1.1 Final Work Plan - Mr. Igarashi, Chief Advisor of JICA Expert Team

First of all, Mr. Igarashi, Chief Advisor of JICA Expert Team, gave a brief description of various handouts.

Mr. Igarashi pointed out that as a consequence of the water and sanitation section of the then Ministry of Local Government and Housing (MLGH) being moved to MWDSEP, revisions of the Work Plan (WP) were made to that effect to the initial WP. He also reported that the project's Output 1, i.e. formulation of Draft Evaluation Manual, had been achieved and mentioned that Project Team was going to revise Draft Evaluation Manual following feedback and comments obtained from the 2nd JCC meeting towards Output 2.

1.2 Project Monitoring Sheet Ver. 1 with exception of Activity 1-2 and Activity 1-4 - Ms. Matimelo, Project Manager, MWDSEP

Ms. M. Matimelo, the Project Manager, reported on progress of the Project by the Project Monitoring Sheet (MS) Ver. 1.

As regards to input by MWDSEP, the Project Manager reported two points regarding counterparts from the Zambian side on staff and office space. She indicated that the Ministry had assigned staff to work with the JICA Expert Team on the project. However, due to the current limited structure, the staff could not be entirely attached to the Project as they had other projects under their jurisdictions.

Concerning the office space, she explained that the Ministry previously provided office space to the JICA Expert Team in Ministry of Local Government (MLG) (Water and sanitation section was transferred to MWDSEP). She, however, added that since there was limited space at the new offices at Mukuba Pension House where MWDSEP was working, MWDSEP could not provide office space to JICA Expert Team. She further explained that JICA Expert Team was provisionally given office at Lusaka Water and Sewerage Company.

1.3 Project Monitoring Sheet (MS) Ver. 1 for Activity 1-2 and Activity 1-4 - Mr. Kalapa, Senior Engineer, MWDSEP

In terms of Activity 1-2; 'To decide Target Issues covered by the Evaluation Manual', Mr. Charles

Kalapa , Senior Engineer, Urban Water Supply and Sanitation, MWDSEP summarized the major challenges faced by Commercial Utilities (CUs) such as incomplete GIS Data on Lusaka Water and Sewerage Company (LWSC), unreliable information on Non-Revenue Water (NRW) for Luapula Water and Sewerage Company (LpWSC), dilapidated infrastructure for Western Water and Sewerage Company (WWSC) and existence of asbestos pipes in the distribution network for Kafubu Water and Sewerage Company (KWSC).

Finally, Mr. Kalapa stated that Project Team selected 21 Performance Indicators (PIs) considering the issues observed in the four CUs.

1.4 Formulation of Evaluation Manual - Mr. Igarashi, Chief Advisor of JICA Expert Team

Mr. Igarashi, Chief Advisor introduced that Project Team selected 21 PIs for various reasons such as to operate water supply facilities appropriately and to evaluate performance sustainability, while National Water Supply and Sanitation Council (NWASCO) had been applying nine indicators for benchmarking of the 11 CUs.

1.5 Schedule to be Implemented - Mr. Igarashi, Chief Advisor of JICA Expert Team

Mr. Igarashi, Chief Advisor introduced overall schedule after the 2nd JCC. He pointed out that after revising the MS Ver.1, Project Design Matrix (PDM), WP and Draft Evaluations Manual, the Project Team would proceed with evaluating the CUs in order to identify challenges and gaps. This would be followed by the formulation of Midterm Business Plan (MBP) and Human Resource Development Plan (HRDP) at the stage of Output 3.

1.6 Approval of WP & MS Ver. 1 - Ms. Matimelo, Project Manager, MWDSEP

Ms. Matimelo, the Project Manager said in statement that approval of MS Ver. 1 with PDM and Plan of Operation (PO) was going to be on the agreed items after the MS Ver. 1 is edited to incorporate additions and comments from the 2nd JCC as well as that of WP. Finally, she added that MS Ver. 1 would thereafter be submitted to JICA Zambia Office by Project Team.

1.7 Remarks by Mr. Junichi Hanai, Resident Representative JICA Zambia Office

Mr. Junichi Hanai, the Resident Representative of JICA Zambia Office thanked participants for the active engagement, including technical input to the performance indicators and strong ownership to complete the first important output i.e. draft Evaluation Manual within the time scope, and hence, leaving time for implementation and reflection. He also expected that the Evaluation Manual would realize real impact to CUs for their improvement with close cooperation among the Ministry, NWASCO and CUs, and scale up the evaluation and implementation planning to all the 11 CUs.

2. Questions, Comments and Answers

The following were questioned, commented and answered:

- 2.1 In the presentation of Final Work Plan, Mr. Kenneth Chense, Managing Director (MD) of LpWSC asked whether NWASCO would be strengthened in addition to MWDSEP since the PDM only showed MWDSEP. Mr. Kalapa, Senior Engineer, MWDSEP responded that since what NWASCO

was doing was delegated function of the Ministry, the PDM would be revised to reflect NWASCO's roles. At the same time, Mr. Jonathan Kampata, MD of LWSC agreed that it would be important to revise PDM, since the Ministry was more concerned with monitoring and evaluation, whilst NWASCO was more concerned with regulating CUs. Ms. Matimelo, the Project Manager affirmed Mr. Kalapa's submission that the PDM be revised to make it more specific.

- 2.2 In the presentation of MS Ver.1 by Ms. Matimelo, the Project Manager, Mr. Kampata, MD of LWSC questioned the target years of the MBP and the reasons of not-including on overall business plans. Mr. Fujiyama, Deputy Chief Advisor of JICA Expert Team explained that the project would be focusing on a period of only five years, because the project would consider HRDP to strengthen individual capacity in addition to Infrastructure Development.

Mr. Wamuwi Changani, MD of WWSC expressed concern that while current status on water supply service of CU would be identified through evaluation, Output 3, that is, MBP and HRDP would only be known late 2018. This time frame notwithstanding, there could be changes in corporate governance and macro environment between the stage of Output 2 and late 2018. Mr. Fujiyama stated that the result of evaluation must be reviewed in accordance with changes in any conditions.

Mr. Changani also asked whether it was possible to have links to commitment for project cooperation in case of some constraints such as budget being monumental. Mr. Matsui, Assistant Resident Representative of JICA Zambia Office, explained that the focus of the Project was not on demand survey but on improving management capacity that manages operation within limited resources. Mr. Fujiyama then pointed out that the MBP would be based on past records of disbursement about three years for its forecasting so that the feasible MBP would be formulated. As regards to links to commitment for project cooperation, Mr. Kalapa, Senior Engineer further indicated that the purpose of the Project was to increase or develop capacity of CUs and this would result in strengthened capacity of CUs.

- 2.3 In the presentation of MS Ver. 1 by Mr. Kalapa, Senior Engineer, MWDSEP, Mr. Ben Phiri, Director of Engineering, KWSC was desirous that NRW be reported on by the JICA Expert Team because it is a challenge to the KWSC. Project Team agreed on his statement to be indicated in MS Ver. 1.

Ms. Tuseko Sindano, Capacity Development Advisor (Reform of Water Sector Program), MWDSEP/GIZ observed that on-site sanitation was not covered, Ms. Matimelo mentioned that it could be included in the evaluation criteria.

- 2.4 In the presentation of Formulation of Evaluation, Mr. Kampata, MD of LWSC observed that some of the proposed indicators were descriptive in nature and not quantitative and questioned how a CU would be compared with other CUs. Mr. Igarashi, Chief Advisor of JICA Expert Team explained examples which were indicated in the Evaluation Manual how qualitative data would be converted to quantitative.

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In terms of years of experience, Mr. Walimuntu, Acting Director of HRA, LWSC, observed that labour turnover was high in the water sector. At the same time, Mr. Chense MD of LpWSC explained that the water sector could be as young as 16 years and hence the need to modify the indicator in order to show how young the CU was. Mr. Fujiyama, Deputy Chief Advisor explained that the criteria were based on World Bank standards. Mr. Kalapa , Senior Engineer then added that it would then be good to see how the CUs compare internationally. Director of Engineering, LpWSC echoed the sentiments by Mr. Kalapa.

Mr. Mutale, Chief Inspector, NWASCO noted that evaluation models (criteria) of PIs such as Water Supply Coverage, NRW Ratio, Tariff Collection Ratio and Staff Efficiency required to be harmonized with NWASCO's benchmarks. Project Team agreed on the comments in terms of avoiding CUs' confusion.

Ms. Matimelo, Project Manager, MWDSEP, thanked all the participants for the lively interaction and the assured delegates that the feedback from the 2nd JCC would be used for the Project Team to revise the Draft Evaluation Manuals. Ms. Matimelo further stated that the Ministry desires to see the benefits of the project beyond the project duration.

End

Annex

Attendance List – 2nd Joint Coordination Committee (JCC) held on 9th August 2017

No.	Name	Position	Mail address	Contact No.
	MWDSEP			
1.	Selenia Matimelo	PCPO/PM	Selmat2006@yahoo.com	0977 762577
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	MWDSEP/ GIZ			
3.	Tuseko Sindano	Capacity Dev. Advisor	Tuseko.sindano@giz.de	0976 203457
	NWASCO			
4.	Peter Mutale	Chief Inspector	pmutale@nwasco.org.zm	0977 702013
	LWSC			
5.	Jonathan Kampata	MD	jkampata@lwsc.com.zm	0955 806049
6.	Wilson Shane	Director Engineering	wshane@lwsc.com.zm	0977 569542
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	LpWSC			
9.	Kenneth Chense	MD	Kennethchense@yahoo.co.uk	0966 783385
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11.	Barnard Chama	Snr Manager HRA	bpchama@hotmail.com	0974115379
	WWSC			
12.	Wamuwi Changani	MD	Wamuwi.changani@wwsc.co.zm	0962 197051
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	KWSC			
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21.	Mary Mukomba Njovu	P.O	Mukombamary.ZB@jica.go.jp	0967 653614
	JICA Expert Team			
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25.	Joseph Sichone	Assistant Engineer	Josephsichone1@gmail.com	0978 144427

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**MINUTES OF MEETING
ON
THE 3rd JOINT COORDINATION COMMITTEE (JCC)
FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

Lusaka, 12th December 2017



Ms. Selenia M. Matimelo
Principal Community Development Officer,
Project Manager
Department of Water Supply & Sanitation
(DWSS),
Ministry of Water Development, Sanitation and
Environmental Protection (MWDSEP)



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team



Mr. Peter Mutale
Chief Inspector
National Water Supply and Sanitation Council
(NWASCO)

The third Joint Coordinating Committee (3rd JCC) took place on the 12th December 2017.

The Committee was called to order at 14:00 by the Project Manager (PM)- Ms. Selenia M. Matimelo, who also gave the welcoming remarks and chaired the Committee. An apology was also received from the Project Director (PD)- Mr. Oswell Katooka, Acting Director WSS/PD as he was attending another meeting. The Committee further heard that Mr. Douglass Sing'anga, Assistant Director, Department of Water Supply and Sanitation, Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) would sit in on behalf of Mr. Katooka. The agenda for the Committee was adopted as distributed without any alterations.

The following were presented in the 3rd JCC;

1. Address by Mr. Junichi Hanai, Resident Representative JICA Zambia Office

Mr. Junichi Hanai, the Resident Representative, JICA Zambia Office, thanked participants for the active engagement, including technical input required for understanding challenges and gaps on organizational and individual capacity of four CUs. He also appreciated the strong ownership exhibited in the formulation of the Evaluation Manual as well as in the execution of the evaluation by each of the four CUs.

Mr. Hanai further said that JICA was confident that the aforementioned exercises had helped CUs identify challenges they faced and also made the CUs realize the gap between their current situation and the ideal situation, and that analysis of the evaluation will contribute to making Midterm Business Plan (MBP) and Human Resources Development Plan (HRDP). He also mentioned the importance of close cooperation among MWDSEP, National Water and Sanitation Council (NWASCO) and the CUs, while further highlighting the importance of steady but flexible implementation of the evaluation framework. He expected MWDSEP and NWASCO to have a strong leadership for quality control on water supply services among different CUs and for sustainability of evaluation activities after termination of the Project. He further stated that JICA hoped that the evaluation framework will be shared and disseminated to other CUs apart from the four CUs under this project with the result that quality of water supply in all over Zambia will be enhanced.

2. Address by Mr. Douglas Sing'anga, Assistant Director, Department of Water Supply and Sanitation, MWDSEP

Mr. Douglas Sing'anga emphasized that development on Water Supply & Sanitation is very important through capacity and infrastructure development, while some of projects cannot be implemented at the same time. He called on the participants from the four CUs to develop a framework which could be scaled-up to other CUs in the country. Mr. Sing'anga further urged the Project Team to work together towards the goal of providing water and sanitation to all by 2030.

3. Presentation and Remarks by Project Team

3.1 Briefing on Schedule & Activities of the Project- Mr. Igarashi, Chief Advisor of JICA Expert

Team

First of all, Mr. Igarashi, Chief Advisor of JICA Expert Team, gave a brief description of various handouts.

Mr. Igarashi reported that the Project's Output 2, i.e. Evaluation to CUs and identification of challenges as current progress of the Project has been achieved throughout the Project schedule.

3.2 Project Monitoring Sheet Ver. 2 - Ms. Matimelo, Project Manager and Mr. Michael Museba, MWDSEP

Ms. M. Matimelo, the PM and Mr. Michael Museba reported on non-technical and technical monitoring of the Project respectively through the Project Monitoring Sheet (MS) Ver. 2.

The PM highlighted that the project team member, Mr. Charles Kalapa was on study leave and Mr. Michael Museba was sitting in for him. She further pointed out that Mr. Hara Kasenga, Senior Technical Inspector- NWASCO, had been incorporated into the project. .

Meanwhile, Mr. Michael Museba explained that having conducted evaluations, the summary of the evaluation results and prioritized list of challenges, will be reflected in the MBP and HRDP.

3.3 Confirmation of Evaluation Report- Mr. Peter Mutale, Chief Inspector NWASCO

Mr. Peter Mutale, Chief Inspector summarized and confirmed challenges of the four CUs which were presented during the workshop which took place in the morning on 12th December 2017.

Finally, he emphasized the need for commitments by MWDSEP and or NWASCO in order to evaluate the CUs' capacity and further encouraged the four CUs to correspondingly and sustainably evaluate their capacity in terms of significance of improvement of water supply service.

3.4 Schedule to be Implemented- Mr. Igarashi, Chief Advisor of JICA Expert Team

Mr. Igarashi, Chief Advisor introduced overall schedule after the 3rd JCC. The Project Team will proceed to prioritize the challenges which were listed based on the Evaluation Report. This would be followed by the formulation of MBP and HRDP at Output 3 stage.

3.5 Approval of MS Ver. 2- Ms. Matimelo, Project Manager, MWDSEP

Ms. Matimelo, the PM said in statement that approval of MS Ver. 2 was going to be on the agreed items after MS Ver. 2 is edited to incorporate additions and comments from the 3rd JCC. Finally, she added that MS Ver. 2 would thereafter be submitted to JICA Zambia Office by the Project Team.

3.6 Closing Remarks by Assistant Director WSS, MWDSEP

Mr. Sing'anga, acknowledged that CUs had a number of challenges and that identification of the challenges was a key step to find solutions and that solutions should not only be looked at in terms of money because not all solutions would need money. He elaborated further that smaller CUs like LpWSC and WWSC had a geographical spread challenge whereby one CU was managing several districts. He was confident of the steps taken by LpWSC and WWSC, which had increased billing and reduced illegal connections respectively. He further mentioned that Government was in the processing of engaging

Development Bank of Southern Africa to tackle NRW and would want more stakeholders to come on board.

4. Questions, Comments and Answers

The following were questioned, commented and answered:

- 4.1 LWSC, Acting Human Resource Director (AHRD), Mr. Christopher Walimuntu, wanted to find out why challenges on budget constraints were not highlighted and he further suggested that tariffs were too low and were lower than O&M cost of CUs. Mr. Mutale, NWASCO responded that tariffs were quite adequate but most CUs had high NRW and a number of inefficiencies. LpWSC Managing Director (MD), Mr. Chense explained that the challenge for LpWSC was not the low tariffs but the number of customers. He, however, added that tariffs needed to be in tandem with inflation adjustments.
- 4.2 Mr. Sing'anga wanted to know why LpWSC indicated that it had inadequacy of bulk meters, while a project was underway for the installation of bulk meters. LpWSC Managing Director, Mr. Chense, clarified that historically LpWSC has had no bulk meters but that there are plans to install in future.
- 4.3 Mr. Sing'anga asked the CUs on whether the MDs approved of the evaluation findings which indicated there was inadequacy of leadership. He further questioned what the MDs were doing if there was inadequacy of leadership.
- WWSC MD, Mr. Changani, explained that the inadequacy represented leadership in a wide context. He further elaborated that leadership at all levels, especially at district level must be enlightened and fully understand the CUs operation. To this end, Mr. Changani mentioned that capacity development was needed not only at the head office but also in the districts. Mr. Fujiyama explained that the evaluation manual has three (3) components, namely; Performance Indicators (PIs), Management Capacity and Negotiation and Communication Capacity. He further explained that evaluation for Negotiation and Communication Capacity was obviously difficult as it is a qualitative parameter but the Project Team made it quantitative to make it easy.
- 4.4 Mr. Sing'anga stressed the importance of identifying challenges as a key step to finding solutions. On capacity development, he cited the example of district managers who needed to be made to understand their responsibilities and the need for training programs to that effect. Mr. Fujiyama added that having a clear job description was the first step and then instituting self-evaluation systems where individuals could assess their performance.
- 4.5 Mr. Sing'anga wondered whether JICA support will be extended to project implementation after the formulation of MBP and HRDP. Mr. Matsumura, Assistant Resident Representative of JICA Zambia Office, explained that projects implementation will, in principle, be carried out by Zambian side based on the MBP and HRDP which will be formulated in the next stage (Output-3). However, if MWDSEP and CUs make a strong request for assistance, JICA would consider a scaled up project. In addition, he commented that CUs presented budget constraint and insufficient training as the main causes for some challenges, but main causes apart from budget constraint were the most important from the technical aspect. Finally, he emphasized that four CUs would examine future

solution for challenges.

Ms. Matimelo, Project Manager, MWDSEP, thanked all the participants for the lively interaction and the assured delegates that the finding from the 3rd JCC would be used by the Project Team to feed-back to Output 3.

End

Annex

[Attendance List – Joint Coordination Committee (3rd JCC) meeting held on 12th December, 2017]

No.	Name	Org.	Position	Mail address	Contact No.
1.	Douglas Sing'anga	MWDSEP	Assistant Director WSS/PD	dsinganga@yahoo.com	0955951291
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28.	Motohiro Matsumura	JICA	Assistant RR	Matsumura.Motohiro@jica.go.jp	0978778542
28.	Nyambe Nambayo	JICA	P.O.	NyambeNambayoZB@jica.go.jp	0969 429131
30.	Hideyuki Igarashi	JICA Expert Team	Chief Advisor/ Water Supply Service Management I	hd-igarashi@intl.yachiyo-eng.co.go	0976 917150
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*Un-honorific title omitted

P.M. S.M

**MINUTES OF MEETING
ON
THE 4th JOINT COORDINATION COMMITTEE (JCC)
FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

Lusaka, 3rd August 2018



Ms. Selenia M. Matimelo
Principal Community Development Officer,
Project Manager
Department of Water Supply & Sanitation
(DWSS),
Ministry of Water Development, Sanitation and
Environmental Protection (MWDSEP)



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team



Mr. Mr. Hara Kasenga
Senior Inspector
National Water Supply and Sanitation Council
(NWASCO)

The Fourth Joint Coordinating Committee (4th JCC) took place on the 25th July 2018.

The meeting was called to order at 15.00 hours by Eng. Michael Museba Acting Principal Engineer, Lusaka Province. The Principal Community Development Officer chaired the meeting and gave welcoming remarks.

1. Opening Remarks by the Principal Community Development Officer (PCDO) - Ms. Matimelo

The PCDO encouraged all the CUs to follow up with Lukanga water Sewerage Company on its implementation of the digital metering project. Regarding the approval processes for Mid Term Business Plans (MBP) and Human Resources Development Plan (HRDP), which require board approval, the Ministry of Water Development Sanitation and Environmental Protection (MWDSEP) was hopeful that the boards would be in place soon but also indicated that in the absence of the board, submissions could be done to the MWDSEP for necessary action.

On scaling-up of the project to the other seven CUs, the PCDO hoped JICA could clarify if there is a window of support. JICA responded that the project terminates in November 2018. Because of difficulties in the budget, JICA cannot extend the project at present. However, since JICA is concerned about the sustainability of the project and there is a possibility that JICA could dispatch the experts to follow-up on the project. He added that the Government of Zambia could make a formal request for projects to be considered by using the normal channels of JICA.

The PCDO further emphasized that CUs needed to scale up measures on cholera prevention especially because poor sanitation is one of the reasons for the outbreak.

2. Project Monitoring Sheet Ver. 3 - Ms. Matimelo, Project Manager, MWDSEP

The PCDO who is also the PM reported on monitoring of the Project through the Project Monitoring Sheet (MS) Ver. 3. The MS Ver. 3 was unanimously approved by the JCC members.

3. Confirmation of Sustainable Use of Evaluation Manual & Expansion into all the 11 CUs by PCDO

The PCDO also indicated that sustainability of the project after November 2018, when the project terminates, was addressed by National Water Supply and Sanitation Council (NWASCO) in their presentation during the 4th Workshop on 25th July 2018.

In addition, she emphasized that agenda item No. 4 on sustainable use of the EM & scaling-up to all the 11 CUs which was presented by NWASCO during the 4th Workshop on 25th July 2018, and this was an important activity.

4. Schedule to be Implemented- Mr. Igarashi, Chief Advisor of JICA Expert Team

Mr. Igarashi, Chief Advisor introduced overall schedule after the 4th JCC. The Project Team will finalize Midterm Business Plan and Human Resource Development Plan. He also mentioned that since the project will terminate in November 2018, CUs can get in contact with the Expert Team in the remaining three months regarding any issues on the Project and that the JICA Expert Team will be available to support the CUs.

5. Closing Remarks by Assistant Director WSS, MWDSEP

In closing, the MWDSEP thanked all participants and stressed the Ministry would continue providing oversight on activities pertaining to the project and its scaling-up.

6. Comments

Managing Director, Luapula Water and Sewerage Company (LpWSC) indicated that LpWSC was interested in additional trial activities. LpWSC also gave a vote of thanks to the JICA Expert Team and hoped that the JCC meeting should continue on a quarterly basis for sustainability.

End

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Annex:

Attendance List of 4th JCC



[Attendance List – 3rd Workshop & 4th JCC Meeting at Government Complex]

25th July, 2018

No.	Name	Org.	Position	Mail address	Contact No.	Signature
1.	Oswell Katooka	MWDSEP	Acting Director WSS/PD	katooka71@yahoo.com	0977334422	
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3.	Selenia Matimelo	MWDSEP	PCPO/PM	Selmat2006@yahoo.com	0977762577	<i>Swine</i>
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5.	Musole Kambita	MWDSEP	SE_UWSS	musolem@yahoo.co.uk	0977285007	<i>Musole</i> ✓ forgot
6.		MWDSEP				
7.	Kasenga Hara	NWASCO	Senior Inspector	khara@nwasco.org.zm	0967108246	<i>Kasenga Hara</i>
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9.	Pauline Sakala	WWSC	HRAM	Pauline.sakala@wwsc.co.zm	0977429514	<i>Pauline Sakala</i>
10.	Philip Zyambo	WWSC	Acting Technical Manager	phillip.zyambo@wwsc.co.zm	0974369875	<i>Philip Zyambo</i>
11.	Nthangali Katyetye	WWSC	Finance Manager	Nkatyetye2@gmail.com	0954907681	<i>Nthangali Katyetye</i>
12.	Kenneth Chense	LpWSC	MD	kennethchense@yahoo.co.uk	0977845383	<i>Kenneth Chense</i>
13.	Keren Nasiyongo	LpWSC	HRA Officer	nasiyonk@gmail.com	0966783385	<i>Keren Nasiyongo</i>
14.	Bwembya N. Bright	LpWSC	Snr Manager Engineering	bwembyab@yahoo.com	0978152701	<i>Bwembya N. Bright</i>
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TECHNICAL NOTE
ON
THE TRAINING SESSION BETWEEN NWASCO AND JICA EXPERT
TEAM

FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA

Lusaka, 31st July 2018



Mr. Peter Mutale
Chief Inspector
National Water Supply and Sanitation
Council (NWASCO)



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team

In order to further make NWASCO understand workflow from capacity assessment to formulation of Midterm Business Plan (MBP) and Human Resource Development Plan (HRDP), the Training Session between NWASCO and JICA Expert Team took place on the 27th July 2018.

At the beginning of the training session, JICA Expert Team presented the guideline to take activities from capacity assessment to formulation of the MBP & HRDP.

After the presentation, the following viewpoints were confirmed between NWASCO and JICA Expert Team:

1. General:

- NWASCO will yearly request all the CUs to make assessment of capacity at organizational and individual levels in July or August. CUs will then finalize MBP and HRDP in November.
- NWASCO will further internalize the components and contents of the evaluation manual so that it will be able to guide all the CUs through the evaluation manual.
- NWASCO will then monitor formulation and implementation of the MBP and HRDP every year in principle.
- NWASCO will have workshop in October 2019 on a series of activities from capacity assessment to formulation of MBP& HRDP, so that all the CUs undertake these activities routinely in future.
- In January 2020, NWASCO will request other seven CUs to make an assessment of their capacity based on the evaluation manual.

2. Pilot four CUs

- CUs will have a review of the assessment results and the MBP & HRDP as a trial exercise in order for CUs to develop confidence in assessing capacity, formulating the MBP & HRDP, etc. NWASCO will monitor the corresponded sequence in cooperation with the JICA Expert Team as long as the Team will be able to manage.
- NWASCO will inspect progress of the review by four CUs in October 2018.



Attendance List

No.	Name	Organization	Job Title
1.	Mr. Peter Mutale	National Water Supply and Sanitation Council (NWASCO)	Chief Inspector
2.	Mr. Kasenga Hara	NWASCO	Senior Technical Inspector
3.	Ms. Chola Mbilima	NWASCO	Senior Financial Inspector
4.	Mr. Curtis Muleya	NWASCO	Technical Inspector
5.	Mr. Manfred Sinkolongo Kayivwa	NWASCO	Technical Inspector
6.	Mr. Nthangali Katyetye	WWSC	Finance Manager
7.	Mr. Taketoshi Fujiyama	JICA Expert Team	Deputy Chief Advisor
8.	Mr. Yoshiharu Wada	JICA Expert Team	HR Development / Evaluation
9.	Mr. Joseph Sichone	JICA Expert Team	Assistant Engineer of

**TRIAL EXERCISE BY LWSC, WWSC, LpWSC & KWSC
ON
EVALUATION AND FORMULATION OF MIDTERM BUSINESS PLAN &
HUMAN RESOURCES DEVELOPMENT PLAN**

**FOR
THE PROJECT
FOR
STRENGTHENING CAPACITY OF URBAN WATER SUPPLY
INFRASTRUCTURE
IN
THE REPUBLIC OF ZAMBIA**

Lusaka, 3rd August 2018



Mr. Hideyuki Igarashi
Chief Advisor
JICA Expert Team

1. BACKGROUND

The project of strengthening the capacity of urban CUs has two broad levels which are organization level strengthening and individual level strengthening.

At organization level, strengthening of the CU, as per National Water Supply and Sanitation Capacity Development Strategy (2015-2020), entails among other things the development of capacities of CUs to manage their operations sustainably within the conditions of resource constraints, development of the capacity of local authorities in resource mobilization, resource allocation prioritization, resource utilization and shareholder responsibilities for sustainable Water Supply and Sanitation (WSS) service delivery.

On an individual level, , strengthening of the CU, as per National Water Supply and Sanitation Capacity Development Strategy (2015-2020), entails enhancement of HR performance in WSS sector and recruitment and retention of both male and female staff in the sector.

To achieve these objectives, evaluations of the project CUs were completed (resulted in identification and prioritization of challenges) and preparations of Midterm Business Plans (MBP) and Humana Resources Development Plans (HRDP) are nearly complete. The plans will result in verifiable goals and sustainable solutions to the challenges.

So far, the evaluations have been initialized by JICA Experts who also prioritized the challenges. The CUs only self-evaluated. The Expert Team is concerned about whether the CUs can manage the series of activities associated with the whole process. Hence, it is felt that CUs should now do unofficial and independent evaluations.

2. PURPOSE

The purpose of this trial exercise is to:

- Assess how CUs are internalizing the evaluation process.
- How the results of the evaluation could be utilized in the formulation and/or review of Midterm Business Plans (MBP) and Humana Resources Development Plans (HRDP).
- Assess the changes that have taken place since the last evaluation.

This trial exercise is even of more significance to CUs which have had personnel changes as it is a test of the CU's institutional memory. Further, this exercise is entirely by the CU and for the CU.

3. ASSESSORS

The Evaluation Manual is divided into three main parts namely: Performance Indicators, Management Capacity and Communication & Negotiation Capacity. Performance Indicators and Management Capacity evaluations require input from senior personnel from each CU and the assessors include the Managing Director, the Head or senior most personnel (Director or Manager depending on the CU) of the following units: Human Resources and Administration,

Engineering, Finance and Commercial Services. Details on evaluations on communication and negotiation capacity are shown in Figure 2 on Page 3 of the attached guidelines. Please note that negotiation & communication capacity is confidential and mention of particular names should be avoided.

4. OUTPUTS

4.1. Finding Challenges

The initial step involves finding challenges by scoring based on evaluation criteria's ("very serious", "serious", "not good enough", "good" and "very good")

4.2. Identifying Causes

Main causes and detailed causes which brought about the challenges should be selected. Please note that as many as apply should be selected.

4.3. Prioritizing of Challenges

Each CU is expected to produce a prioritized table of "very serious" and "serious" challenges, with due consideration to the importance and urgency of the challenge (See Table 5 of Page 7 of the attached guidelines).

4.4. Setting up of goals and verifiable indicators

Then the CU is expected to set up goals and verifiable indicators by also consideration the CU's strategic plans

4.5. Aggregating challenges

Challenges which could be efficiently solved concurrently should be aggregated (See Tables 6 and 7 on Pages 7 and 8 of the attached guidelines).

4.6. Formulating MBP & HRDP

The final expected output is a table on prioritized challenges, goal and proposed projects on MBP and HRDP as shown in Table 8 of Page 9 of the guidelines.

5. PERIOD

WWSC took the shortest time (a week) of all the four CUs to self-evaluate. It is therefore assumed the evaluation could take a week and identifying and prioritization of challenges an extra week with a further one week for formulation and review of MBP and HRDP. This would give a total of three weeks to complete the trial exercise. If the timeline described above is impossible, the CUs could propose a suitable submission date. However, the submission ought not to be later than 14th September 2018 due to project termination.

6. WHERE TO SUBMIT

The evaluation results and the ensuing documents should be submitted to NWASCO

7. ATTACHMENT

Included as attachments are "Guideline to take Activities from Capacity Assessment to Formulation of MBP and HRDP" and the "Evaluation Manual".

8. NWASCO'S INTERVENTION

Apart from initializing the evaluation process, NWASCO will also provide oversight by requesting CUs to submit progress reports in this trial exercise.

3

APPENDIX. A-9
SURVEY RESULTS CONCERNING
EVALUATION MANUAL AND
CAPACITY ASSESSMENT OF CU

**The Project for Strengthening Capacity of Urban Water Supply Infrastructure in the
Republic of Zambia**

**The Report on Survey Results concerning the Evaluation Manual and Capacity
Assessment of CUs by using it**

February 2018
JICA Expert Team

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Appendix

Appendix 1: Questionnaire

Appendix 2: Summary Sheet of Survey Result

1. Purpose of the Survey

It contributes to the development of the organization for the Commercial Utilities (CUs) to conduct the capacity assessment utilizing the Evaluation Manual and to formulate Midterm Business Plans (MBPs) and Human Resource Development Plans (HRDPs). However, it is very important to conduct sustainable capacity assessment and formulation of the plans.

This survey was aimed at acquiring the opinions from four targeted CUs concerning improvements on the Evaluation Manual and sustainable capacity assessment to formulate MBPs and HRDPs.

2. Methods of the Survey

The questionnaires of the survey was distributed to the staff who participated in the 1st Workshop and the 3rd Joint Coordination Committee (JCC) held on December 12, 2017 from four targeted CUs (LWSC: five persons, WWSC: four persons, LpWSC: six persons, KWSC: six persons, 21 persons in total). The answer sheets were collected from all the 21 persons at the end of the JCC. The questionnaire consisted of multiple-choice or description type of answers for all the 32 questions (see Appendix 1).

3. Outline of Response to Each Question

The answer sheets were collected from five persons of LWSC, four persons of WWSC, six persons of LpWSC and six persons of KWSC. Survey results are attached herewith as Appendix 2 and their outlines by question are shown as below.

A. Your (Respondent's) Contribution

The staff of targeted CUs answered questions that either Performance Indicators (PIs), Management Capacity, Communication and Negotiation Capacity at individual level, or the corresponding parts was evaluated. As the result of top three, 33% of the all respondents evaluated PIs, Management Capacity and Communication & Negotiation Capacity. 24% of all the respondents evaluated both PIs and Management Capacity. 19% of all the respondents evaluated only Management Capacity. 81%, 71% and 48% of all the respondents were responsible for evaluation of Management Capacity, PIs and Communication and Negotiation Capacity respectively. A lot of staff were engaged in evaluation of Management Capacity.

B. Evaluation Manual

B.1 Understanding on the Evaluation Manual

B.1.1 Did you appreciate the purpose of the Evaluation Manual?

95% of all the respondents answered '1) Appreciated enough' or '2) Fairly appreciated', while the other 5% of all the respondents, who are some staff of KWSC answered '3) Partially not appreciated'.

B.1.2 For a respondent who answered '3)' or '4)' in the above 'B.1.1', what are your reasons?

The respondents who answered '3) Partially not appreciated' or '4) Not appreciated at all' answered '4)

There was no time to read the Evaluation Manual' as the reason that they could not appreciate.

B.1.3 Did you appreciate the contents of the Evaluation Manual?

All the respondents answered '1) Appreciated enough' or '2) Fairly appreciated'.

B.1.4 For a respondent who answered '3)' or '4)' in the above 'B.1.3', what are your reasons?

Not Applicable (N.A.)

B.1.5 For a respondent who answered '1)' in the above 'B.1.4', describe in detail what you could not appreciate.

N.A.

B.1.6 Did you appreciate the evaluation parameters which are composed of three categories: Performance Indicators (PIs), parameters of Management Capacity and that of Communication & Negotiation Capacity in the Evaluation Manual?

95% of all the respondents answered '1) Appreciated enough' or '2) Fairly appreciated', while the other 5% of all the respondents, who are some staff of KWSC answered '3) Partially not appreciated'.

B.1.7 For a respondent who answered '4)' in the above 'B.1.6', describe in detail what you could not appreciate at all.

N.A.

B.2 Interest in the Evaluation Manual

B.2.1 How could you rate your interest in using the Evaluation Manual?

All the respondents answered '1) Very interested in' or '2) Interested in to some extent'.

B.3 Significance of the Evaluation Manual

B.3.1 Was it significant to evaluate the CU by using the Evaluation Manual?

All the respondents answered '1) Much significant' or '2) Significant to some extent'.

B.3.2 For a respondent who answered '1)' or '2)' in the above 'B.3.1', why do you suppose so?

85% of the respondents who answered '1) Much significant' or '2) Significant to some extent' answered the following opinions as the reasons that they supposed it is significant.

- Enable to monitor the activity of CUs sustainably.
- Enable to clarify the administrative performance of CUs.
- Indicate the activities so as to improve the administrative performance of CUs.
- Enable to clarify the challenges and their causes and goals of CUs.
- Enable to develop strategy so as to address the challenges of CUs
- Enable to evaluate not only Management Capacity at organizational level but also Individual Capacity.
- Enable to make operation of CUs more efficiently by means of improving Management Capacity and Communication Capacity.
- Enable to formulate the plans required for tackling the capacity assessment extensively.

B.3.3 For a respondent who answered '3) Hardly significant' or '4) Not significant at all' in the above 'B.3.1', why do you suppose so?

N.A.

B.3.4 How frequently do you think that the CU needs to assess PIs, Management Capacity at organizational level and Communication & Negotiation Capacity at individual level in future?

95% of all the respondents answered '2) Every-year evaluation', while, the other 5% of all the respondents, who are some staff of KWSC answered '1) Every three-year evaluation'.

B.3.5 For a respondent who answered '3) No evaluation required at all' in the above 'B.3.4', describe in detail what the reasons are.

N.A.

C. Evaluation by using the Evaluation Manual

C.1 Evaluation

C.1.1 Was it difficult for CU to self-evaluate the CU's capacity by using the Evaluation Manual?

70% of respondents answered '3) Easy', while the other 30% of respondents answered '2) Difficult'. All of LWSC, 75% of WWSC and 67% of LpWSC answered '3) Easy'. The respondents of KWSC chose '2)' or '3)'.

C.1.2 For a respondent who answered '1) Very difficult' or '2)Difficult' in the above 'C.1.1', describe in detail what difficulties were.

Respondents who answered '1) Very difficult' or '2) Difficult' described that difficulties of self-evaluation were 'Insufficient explanation to use evaluation manual', 'Difficulties in the contents of the evaluation manual', 'New format' and 'Difficulties in self-evaluation about some items.' etc.

C.1.3 Describe in detail what the difference is between an evaluation output of NWASCO and that of this Project.

90% of respondents had comments as below about what the difference is between an evaluation output of NWASCO and that of this Project.

- Evaluation output of NWASCO is composed of general contents, meanwhile, that of this Project consists of specific one. (comments from a lot of respondents)
- PIs enable to clarify cause to improve current situation.
- Evaluation output of NWASCO focuses on comparison of performance among CUs, while that of this Project focuses on finding the current challenge for capacity development.
- The evaluation output of this Project enables to analyze in detail and focuses on building the capacity of staff.
- NWASCO evaluation covers extensively so that NWASCO can monitor operation of CUs' water supply service
- There are not so much difference between Evaluation output of NWASCO and that of this Project.

C.2 Time / Date required for Evaluation

C.2.1 How was the time or date required for evaluation (from starting evaluation to submission of

sheet to person in charge of collection in the CU)?

58% of respondents answered '1) About a week' or '2) One to two weeks', 32% of respondents answered '3) Three to four weeks' and 10% of respondents answered '4) More than a month'. LWSC took the longest time to submit the evaluation output among four CUs. 67% of respondents from LWSC answered 'More than a month' and 33% of respondents from LWSC answered '3) Three to four weeks'. The respondents who answered '1) About a week' or '2) One to two weeks' are 100% for WWSC, 50% for LpWSC and 67% for KWSC.

C.2.2 For a respondent who answered '1) About a week' or '2) One to two weeks' in the above 'C.2.1', describe in detail what kinds of actions you took to complete evaluation quickly?

What kinds of actions respondents took to complete evaluation quickly are described as below.

- Spend much time for preparation.
- Commit by senior managers.
- Prioritize the evaluation activities other than routine work.
- Allocate time for the evaluation activities other than routine work.

C.2.3 For a respondent who answered '3) Staff targeted for evaluation was not available because of day-off, etc.' or '4) Staff targeted for evaluation was so busy because of other daily work' in the above 'C.2.1', why did you take time to evaluate capacity of the CU or capacity at individual level and submit answer sheet (Answer all that apply)?

The respondents who answered '3) Staff targeted for evaluation was not available because of day-off, etc.' or '4) Staff targeted for evaluation was so busy because of other daily work' described the reason as below.

- 50% of respondents from CUs apart from WWSC answered '1) I was busy because of other work.', '3) Staff targeted for evaluation was not available because of day-off, etc.' and '4) Staff targeted for evaluation was so busy because of other daily work'
- 67% of respondents from LpWSC answered '4) Staff targeted for evaluation was so busy because of other daily work' and 50% of respondents from WWSC answered '3) Staff targeted for evaluation was not available because of day-off, etc.'
- The contents of '5) Others' were 'The evaluation was commenced at the time when we had a change in CEO', 'It took time to read and understand the evaluation manual', 'It was first time for CUs to evaluate their own capacity by using the evaluation manual' and 'It took time for coordinator like human resource managers to collect evaluation sheets'.

D. Report of Capacity Assessment

D.1 Preparation of Evaluation Report for Capacity Assessment

D.1.1 JICA Expert Team prepared the Evaluation Report for capacity assessment by using the Evaluation Manual in this time around. In future, MWDSEP, NWASCO and JICA Expert Team expect that the CU prepares the Evaluation Report for organizational and individual capacity which can be assessed by using the Evaluation Manual in future. Do you think you can prepare the Evaluation Report

for the CU, while referring to the Evaluation Report that JICA Expert Team prepared?

'1) Definitely yes' and '2) I think so' accounted for 67% of respondents. It was possible for all respondents to make the evaluation report, if some of respondents who answered '3) To some extent' are included. '1) Definitely yes' and '2) I think so' made up 100% for WWSC, 80% for LWSC, 67% for LpWSC and 34% for KWSC.

D.1.2 For a respondent who answered '4) Not sure' in the above 'D.1.1', describe in detail what the reasons are.

N.A.

D.2 Overcome of Evaluation Report

D.2.1 Do you think that current situation of water supply service is clarified based on the Evaluation Report?

'1) Surely clarified' and '2) Clarified to some extent' accounted for 95% of all the respondents. '1) Surely clarified' and '2) Clarified to some extent' made up 100% for WWSC, LpWSC and KWSC, and 80% for LWSC respectively.

D.2.2 For a respondent who answered '1) Surely Clarified' in the above 'D.2.1', describe in detail what the reasons are.

The reason were described as below,

- Enable to bring out key elements that CUs are interested in
- Enable to clarify the status-quo of water supply service in the CU's based on capacity evaluation
- Enable to learn current situation and apply the experiences through evaluation for future analysis of water supply service.

D.2.3 For a respondent who answered '2) Clarified to some extent' in the above 'D.2.1', describe in detail what the reasons are.

The reason were described as below,

- Final result is close to current situation of water supply service.
- Current situation was clarified based on the evaluation result.
- Current situation was clarified based on the evaluation result to some extent but there is no sufficient study to clarify the causes of the result through evaluation of the particular PIs.
- Service coverage is defined as one of PIs. Hours of water supply operation, water quality and condition of equipment were reflected to the evaluation results.

D.2.4 For a respondent who answered '3) Hardly Clarified' in the above 'D.2.1', describe in detail what the reasons are.

N.A.

D.2.5 For a respondent who answered '4) Not clarified at all' in the above 'D.2.1', describe in detail

what the reasons are.

N.A.

E. Utilization, etc. of the Evaluation Manual in Future

E.1 From Capacity Assessment by using the Evaluation Manual to Formulation of Midterm Business Plan & Human Resources Development Plan

E.1.1 After completion of this Project, do you think that the CU will have capacity continuously to self-evaluate capacity by using the Evaluation Manual and to formulate Midterm Business Plan and Human Resources Development Plan?

‘2) CU will be able to assess capacity by using the Evaluation Manual and formulate Midterm Business Plan & Human Resources Development Plan WITH guidance and regulation under MWDSEP and NWASCO’ accounted for 70% of respondents, while ‘1) CU will be able to assess capacity by using the Evaluation Manual and formulate Midterm Business Plan & Human Resources Development Plan WITHOUT any guidance and regulation under MWDSEP and NWASCO’ accounted for 30%. ‘1)’ accounted for 40% of respondents for LWSC and KWSC, while ‘2)’ accounted for 60%. ‘1)’ and ‘2)’ accounted for 50% of respondents for WWSC. ‘2)’ accounted for 100% of respondents for LpWSC. Four CUs answered that they would continue to evaluate their own capacity with and or without direction and guidance under MWDSE and or NWASCO.

E.1.2 For a respondent who answered ‘3) Even if MWDSEP and NWASCO provides guidance and regulates the CU, the CU will not be able to evaluate capacity by using the Evaluation Manual’ or ‘4) Without the Evaluation Manual, the CU will be able to formulate Midterm Business Plan & Human Resources Development Plan’ in the above ‘E.1.1’, describe in detail what the reasons are.

N.A.

E.1.3 For all respondent in the above ‘E.1.1’, what are the required factors to maintain the capacity assessment based on the Evaluation Manual and the formulation of Midterm Business Plan & Human Resources Development Plan in future (Answer all that apply)?

‘1) Introduce incentive’, ‘3) Strictly regulate capacity assessment under the right of MWDSEP and NWASCO’, ‘5) Regulate capacity assessment as pre-condition in order for the CU’s annual budget to be approved.’, ‘2) Establish penalty’ and ‘4) Regulate capacity assessment as pre-condition in a case that any project implementation of CU is subsidized by the Government’ accounted for 33%, 24%, 17% and 14% of all the respondents respectively but no respondent answered ‘6) Not necessary.’.

E.1.4 For a respondent who answered ‘1) Introduce incentive’ in the above ‘E.1.3’, describe in detail what kinds of incentives are required.

Of respondents who selected ‘1) Introduce incentive’, lots of staff answered that individual incentive in terms of improvement of salary and bonus is required. Some of staff answered that finance assistance for capacity development is required as organizational incentive.

E.1.5 For a respondent who answered '2) Establish penalty' in the above 'E.1.3', describe in detail what kinds of penalties are required.

Of respondents who selected '2) Establish penalty' lots of staff answered that the penalty to individual person is required. Some of staff answered that penalties such as 'warning', 'demotion' and monetary penalty, etc. at institutional or directors' level are required

4. Summary of Analysis Results by Item

A. Your (Respondent's) Contribution

Respondents are MD, Director and staff are in class in a key position who evaluated '(1) Performance Indicators', '(2) Management Capacity' at organizational level, '(3) Communication & Negotiation Capacity' at individual level. Project Team considered that the following answers reflected the circumstances of each CU and the credibility of the evaluation results were relatively high, because all of the respondents evaluated the above three items and the answers to this survey were anonymous.

B. Evaluation Manual

B.1 Understanding on Evaluation Manual

The staff in charge of the evaluation learned the purpose, contents, composition of the Evaluation Manual through the 'Training related to evaluation by using the Evaluation Manual' held in August 2017 and through each presentation at this workshop. As a result, the respondents answered that 95% and all of them understood the purposes of the Evaluation Manual, the contents & composition respectively. It is envisaged that training and workshops contribute to promotion of understanding of the Evaluation Manual.

On the other hand, 5% of the respondents answered, 'Partially not understandable' for the purpose of the Evaluation Manual. It is the reason that it was difficult to understand the evaluation manual due to time constraint in regular work. It is inferred that there are some staff in a position where it is difficult to balance the time required for regular work and evaluation in a balanced manner.

B.2 Interest in Evaluation Manual

For the question 'How could you rate your interest in using the Evaluation Manual, all the respondents answered that they were 'Very interested in.' or 'Interested in to some extent'. Their interest may have increased because it was the first attempt different from NWASCO's.

B.3 Significance of Evaluation Manual

Respondents are aware that NWASCO's assessment differs from 'Issues become clearer.', 'To evaluate Management Capacity and Communication & Negotiation Capacity', etc. in the Evaluation Manual. It can be said that respondents acknowledge the significance of the Evaluation Manual by evaluating these items, because there are opinions from the respondent that 'to manage CU more efficiently', 'to clarify the issues CU has', and 'to develop a wide-ranging action plan for capacity development' through the evaluation of management capacity and Communication & Negotiation Capacity.

To the question 'How frequently do you think that the CU needs to assess PIs, Management Capacity at

organizational level and Communication & Negotiation Capacity at individual level in future?', there were many opinions that evaluation would be carried out every year.

Regarding the evaluation by using the Evaluation Manual in this manner, all the respondents of four CUs are highly motivated. However, it has not reached the attitude of proceeding actively on CUs.

C. Evaluation by using Evaluation Manual

C.1 Evaluation

Approximately 70% of the respondents answered that they were 'not too difficult' for the question 'Was it difficult for CU to self-evaluate the CU's capacity by using Evaluation Manual?', From this result, it can be said that the respondents understood and evaluated the purpose and contents of the Evaluation Manual well.

On the other hand, KWSC seems to be due to poor comprehension of 'contents of the Evaluation Manual' because 50% of them answered 'it was difficult'.

Regarding the difference in evaluation contents on PIs between NWASCO and this Project, the respondent answered 'the Evaluation Manual focuses on Human Resources Development of CUs' staff' and 'the Evaluation Manual contributes to improvement of the current situation', etc. based on causes learnt through evaluation. Meanwhile, the respondents recognized that 'NWASCO focuses on the comparison of each CU' in terms of PIs. Therefore, it is envisaged that they highly appreciate the Evaluation Manual after understanding the difference between NWASCO's evaluation and the evaluation by using the Evaluation Manual.

Approximately 30% of the respondents replied that the question 'Was it difficult for CU to self-evaluate the CU's capacity by using Evaluation Manual?' was 'difficult'. Those respondents enable to deepen their understanding by using the Evaluation Manual continuously. Consequently, it is anticipated that the difficulty of self-evaluation will be reduced.

C.2 Preparation of Evaluation Report for Capacity Assessment

There was a big difference among four CUs in the period from the start of the evaluation to the submission of the evaluation result to the staff in charge of collection. The respondents stated the reasons such as 'Busy or absence of evaluator' why it took time for CUs. This may be because of insufficient time frame concept, low motivation, insufficient information sharing, etc.

Meanwhile, lots of respondents from CU that responded promptly directed a number of initiatives such as 'Notification from directors and or managers', etc. Therefore, in order to evaluate their own capacity and collect the sheet of evaluation results in a short period of time, it is necessary for each CU to share 'spend time for preparation in advance', 'notify of preparation of the Evaluation Manual from directors and or managers', 'Prioritize evaluation activities other than regular work', 'allocate time for evaluation other than regular work.'

D. Report of Capacity Assessment

D.1 Preparation of Evaluation Report for Capacity Assessment

Regarding preparation of the evaluation report for capacity assessment, for the question that ‘Do you think you can prepare the Evaluation Report for the CU, while referring to the Evaluation Report that JICA Expert Team prepared?’, all respondents replied that ‘Definitely yes’. There is no objection among four CUs continuously to prepare the evaluation report for capacity assessment.

D.2 Overcome of Evaluation Report

The respondents gave opinions such as ‘clarified the current situation at the site’ and ‘status-quo of water supply was highlighted’ through preparation of the Evaluation Report.

The respondent appreciated output of evaluation result as it enables to learn ‘The situation at the site’ and ‘current status of water supply’ which are not clarified by NWASCO’s evaluation and which cannot be found in ordinary work through preparation of the Evaluation Report.

E. Utilization, etc. of Evaluation Manual in Future

E.1 From Capacity Assessment by using Evaluation Manual to Formulation of Midterm Business Plan & Human Resources Development Plan

For the question ‘After completion of this Project by using the Evaluation Manual to Formulation of Midterm Business Plan & Human Resources Development Plan, 70% of the respondents answered that ‘CU will be able to assess by using the Evaluation Manual and formulate Midterm Business Plan & Human Resources Development Plan with guidance and regulation under MWDSEP and NWASCO.’ Due to the fact that the respondents are in the upper level, their daily work was very tight and it was difficult for evaluators to spare time for evaluating their own capacity. If the respondents are regulated by supervisory organizations such as MWDSEP and or NWASCO, they have intention to maintain evaluation by utilizing the Evaluation Manual. Thus, reliable guidance or direction from supervisory organizations to CUs is indispensable. Therefore, it is anticipated that organizational and individual capacity of CUs can be assessed by using the Evaluation Manual and allocating time for assessing CUs.

33% of the respondents indicated that ‘incentives should be introduced’ as necessity for ‘to carry on by using the Evaluation Manual’. Establishing incentives at individual and organizational level will contribute to promoting motivation for the activities such as ‘capacity evaluation by utilizing the Evaluation Manual’.

It can be said that external promotion by the supervisory organizations such as MWDSEP and NWASCO is required for ‘evaluation by utilizing the Evaluation Manual continuously’.

5. Overview of the Survey and Analysis Results on the Evaluation Manual and its Utilization

All the respondents are interested in evaluating the CUs by using the evaluation manual but 71% of these respondents are very interested in that. In addition, 62% and 71% of the respondents recognized the significance of the evaluation manual and the evaluation result (report) respectively. 71% of the respondents stated that it is easy to evaluate CUs by itself and all the respondents were confident in reporting the evaluation result by utilizing the evaluation manual.

Most of the respondents stated that it took one to two weeks to evaluate the CU itself, while some of the

respondents stated that it took three to four weeks to do that. From this point of view, there may be a concern with sustainability of evaluation in future. Practically, all the respondents were confident in continuous evaluation of activities, while, 70% of them stated that guidance and regulation under MWDSEP and NWASCO would enable them to evaluate and prepare their report by using the evaluation manual sustainably.

Accordingly, it is vital that MWDSEP and NWASCO who have the leadership are involved in CU's evaluation of activities by using the evaluation manual.

6. Suggestion of Effective Measures to maintain Evaluation by using the Evaluation Manual and Business Plan Formulation

It is envisaged that effective measures by MWDSEP and NWASCO are to regulate system of evaluation & penalty, introduction of incentives & annual award ceremony in order to maintain evaluation of CUs by using the evaluation manual.

NWASCO has not introduced penalty system for any evaluation activities and expressed their positive opinions on the introduction of incentives and annual award ceremony in addition to the existing award system for the best performing CUs on PIs of water supply service. Specific contents of the incentives and additional annual award system are as follows:

6.1 Incentives

- Introducing remuneration system based on performance basis in CUs, promotion and demotion system Actions at CUs' level
- Introducing subsidy system for project implementation by the government at MWDSEP's level
- Improve budget approval system

6.2 Annual Awards

- Introducing award system for evaluation by using the evaluation manual in addition to NWASCO's current award system for result for performance indicators

Appendix 1

Questionnaire on the Evaluation Manual, Capacity Assessment and Evaluation Report

12 December 2017

Your CU (tick):

LWSC	WWSC	LpWSC	KWSC
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Frankly tick and describe your answer in the following questions:

C. Your Contribution

What did you evaluate by using the Evaluation Manual (Answer all that apply) ?

- 1) Evaluated Performance Indicators (PIs)
- 2) Evaluated Management Capacity
- 3) Evaluated Communication & Negotiation Capacity at individual level
- 4) Nothing to evaluate

D. Evaluation Manual

B.1 Understanding on the Evaluation Manual

B.1.1 Did you appreciate the purpose of the Evaluation Manual?

- 1) Appreciated enough
- 2) Fairly appreciated
- 3) Partially not appreciated
- 4) Not appreciated at all

B.1.2 For a respondent who answered '3' or '4' in the above 'B.1.1', what are your reasons?

- 1) Purpose stated in the Evaluation Manual did not make sense.
- 2) There was no time to read the Evaluation Manual.
- 3) It is not significant to appreciate the Evaluation Manual.
- 4) Others (Describe in detail).

B.1.3 Did you appreciate the contents of the Evaluation Manual?

- 1) Appreciated enough
- 2) Fairly appreciated
- 3) Partially not appreciated
- 4) Not appreciated at all

B.1.4 For a respondent who answered '3)' or '4)' in the above 'B.1.3', what are your reasons?

- 1) Contents stated in the Evaluation Manual did not make sense.
- 2) There was no time to read the Evaluation Manual.
- 3) Contents lacked depth and did not cover enough PIs and parameters for capacity assessment.
- 4) Others (Describe in detail).

B.1.5 For a respondent who answered '1)' in the above 'B.1.4', describe in detail what you could not appreciate.

B.1.6 Did you appreciate the evaluation parameters which are composed of three categories; Performance Indicators (PIs), parameters of Management Capacity and that of Communication & Negotiation Capacity in the Evaluation Manual?

- 1) Appreciated enough
- 2) Fairly appreciated
- 3) Partially not appreciated
- 4) Not appreciated at all

B.1.7 For a respondent who answered '4)' in the above 'B.1.6', describe in detail what you could not appreciate at all.

B.2 Interest in the Evaluation Manual

B.2.1 How could you rate your interest in using the Evaluation Manual?

- 1) Very interested in.
- 2) Interested in to some extent.
- 3) Hardly interested in
- 4) Not interested in at all

B.3 Significance of the Evaluation Manual

B.3.1 Was it significant to evaluate the CU by using the Evaluation Manual?

- 1) Much significant
- 2) Significant to some extent.
- 3) Hardly significant
- 4) Not significant at all

B.3.2 For a respondent who answered ‘1)’ or ‘2)’ in the above ‘B.3.1’, why do you suppose so?

B.3.3 For a respondent who answered ‘3)’ or ‘4)’ in the above ‘B.3.1’, why do you suppose so?

B.3.4 How frequently do you think that the CU needs to assess PIs, Management Capacity at organizational level and Communication & Negotiation Capacity at individual level in future?

- 1) Every three-year evaluation
- 2) Every-year evaluation
- 3) No evaluation required at all

B.3.5 For a respondent who answered ‘3)’ in the above ‘B.3.4’, describe in detail what the reasons are.

E. Evaluation by using the Evaluation Manual

C.1 Evaluation

C.1.1 Was it difficult for CU to self-evaluate the CU's capacity by using the Evaluation Manual?

- 1) Very difficult
- 2) Difficult
- 3) Easy
- 4) Very easy

C.1.2 For a respondent who answered '1)' or '2)' in the above 'C.1.1', describe in detail what difficulties were.

C.1.3 Describe in detail what the difference is between an evaluation output of NWASCO and that of this Project.

C.2 Time / Date required for Evaluation

C.2.1 How was the time or date required for evaluation (from starting evaluation to submission of sheet to person in charge of collection in the CU)?

- 1) About a week
- 2) One to two weeks
- 3) Three to four weeks
- 4) More than a month

C.2.2 For a respondent who answered '1)' or '2)' in the above 'C.2.1', describe in detail what kinds of actions you took to complete evaluation quickly?

C.2.3 For a respondent who answered ‘3)’ or ‘4)’ in the above ‘C.2.1’, why did you take time to evaluate capacity of the CU or capacity at individual level and submit answer sheet (Answer all that apply)?

- 1) I was busy because of other work
- 2) I did not think that evaluation is high priority considering other daily work in the CU.
- 3) Staff targeted for evaluation was not available because of day-off, etc.
- 4) Staff targeted for evaluation was so busy because of other daily work.
- 5) Others (Describe in detail).

F. Report of Capacity Assessment

D.1 Preparation of Evaluation Report for Capacity Assessment

D.1.1 JICA Expert Team prepared the Evaluation Report for capacity assessment by using the Evaluation Manual in this time around. In future, MWDSEP, NWASCO and JICA Expert Team expect that the CU prepares the Evaluation Report for organizational and individual capacity which can be assessed by using the Evaluation Manual in future. Do you think you can prepare the Evaluation Report for the CU, while referring to the Evaluation Report that JICA Expert Team prepared?

- 1) Definitely yes
- 2) I think so.
- 3) To some extent
- 4) Not sure

D.1.2 For a respondent who answered ‘4)’ in the above ‘D.1.1’, describe in detail what the reasons are.

D.2 Overcome of Evaluation Report

D.2.1 Do you think that current situation of water supply service is clarified based on the Evaluation Report?

- 1) Surely clarified
- 2) Clarified to some extent
- 3) Hardly clarified
- 4) Not clarified at all

D.2.2 For a respondent who answered '1)' in the above 'D.2.1', describe in detail what the reasons are.

D.2.3 For a respondent who answered '2)' in the above 'D.2.1', describe in detail what the reasons are.

D.2.4 For a respondent who answered '3)' in the above 'D.2.1', describe in detail what the reasons are.

D.2.5 For a respondent who answered '4)' in the above 'D.2.1', describe in detail what the reasons are.

G. Utilization, etc. of the Evaluation Manual in Future

E.1 From Capacity Assessment by using the Evaluation Manual to Formulation of Midterm Business Plan & Human Resources Development Plan

E.1.1 After completion of this Project, do you think that the CU will have capacity continuously to self-evaluate capacity by using the Evaluation Manual and to formulate Midterm Business Plan and Human Resources Development Plan?

- 1) CU will be able to assess capacity by using the Evaluation Manual and formulate Midterm Business Plan & Human Resources Development Plan WITHOUT any

guidance and regulation under MWDSEP and NWASCO.

- 2) CU will be able to assess capacity by using the Evaluation Manual and formulate Midterm Business Plan & Human Resources Development Plan WITH guidance and regulation under MWDSEP and NWASCO.
- 3) Even if MWDSEP and NWASCO provides guidance and regulates the CU, the CU will not be able to evaluate capacity by using the Evaluation Manual,
- 4) Without the Evaluation Manual, the CU will be able to formulate Midterm Business Plan & Human Resources Development Plan.

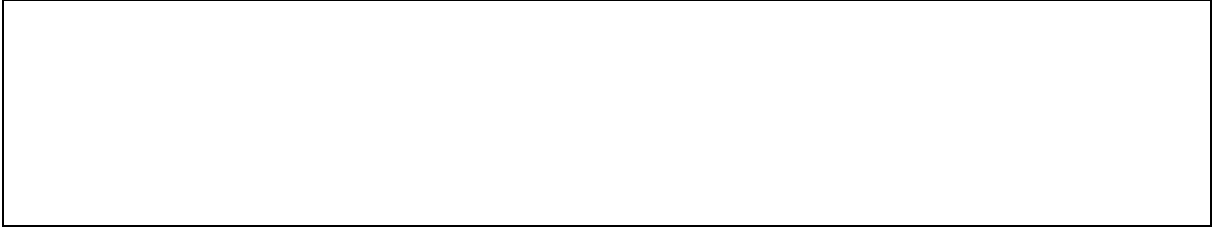
E.1.2 For a respondent who answered ‘3)’ or ‘4)’ in the above ‘E.1.1’, describe in detail what the reasons are.

E.1.3 For all respondent in the above ‘E.1.1’, what are the required factors to maintain the capacity assessment based on the Evaluation Manual and the formulation of Midterm Business Plan & Human Resources Development Plan in future (Answer all that apply)?

- 1) Introduce incentive
- 2) Establish penalty
- 3) Strictly regulate capacity assessment under the right of MWDSEP and NWASCO
- 4) Regulate capacity assessment as pre-condition in a case that any project implementation of CU is subsidized by the Government.
- 5) Regulate capacity assessment as pre-condition in order for the CU’s annual budget to be approved.
- 6) Not necessary.

E.1.4 For a respondent who answered ‘1)’ in the above ‘E.1.3’, describe in detail what kinds of incentives are required.

E.1.5 For a respondent who answered ‘2)’ in the above ‘E.1.3’, describe in detail what kinds of penalties are required.



Thank You Very Much for Your Cooperation.

Appendix 2

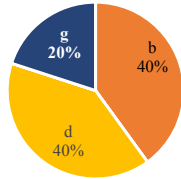
Questionnaire on the Evaluation Manual, Capacity Assessment and Evaluation Report

LWSC	WWSC	LpWSC	KWSC	Total no. of answers: 21
No. of answers: 5	No. of answers: 4	No. of answers: 6	No. of answers: 6	

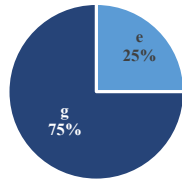
A Your Contribution

* N/A means Not Applicable

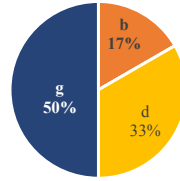
What did you evaluate by using the Evaluation Manual (Answer all that apply) ?



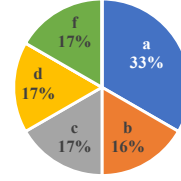
LWSC



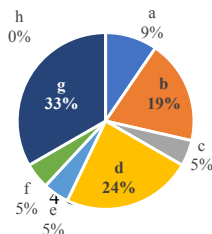
WWSC



LpWSC



KWSC

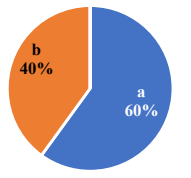


- a: Evaluated Performance Indicators (PIs)
- b: Evaluated Management Capacity
- c: Evaluated Communication & Negotiation Capacity at individual level
- d: Evaluated PIs & Management Capacity
- e: Evaluated PIs & Communication & Negotiation Capacity at individual level
- f: Evaluated Management Capacity & Communication & Negotiation Capacity at individual level
- g: Evaluated PIs, Management Capacity & Communication & Negotiation Capacity at individual level
- h: Nothing to evaluate

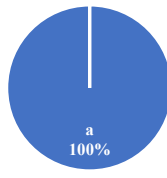
B. Evaluation Manual

B.1 Understanding on the Evaluation Manual

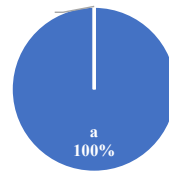
B.1.1 Did you appreciate the purpose of the Evaluation Manual?



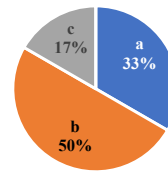
LWSC



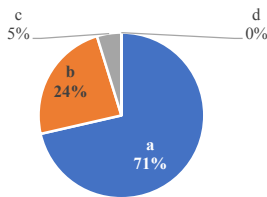
WWSC



LpWSC



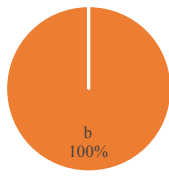
KWSC



4 CUs

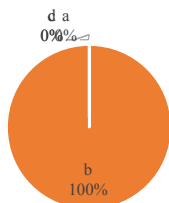
- a: Appreciated enough
- b: Fairly appreciated
- c: Partially not appreciated
- d: Not appreciated at all

B.1.2 For a respondent who answered 'c' or 'd' in the above 'B.1.1', what are your reasons?



LWSC: N/A
WWSC: N/A
LpWSC: N/A

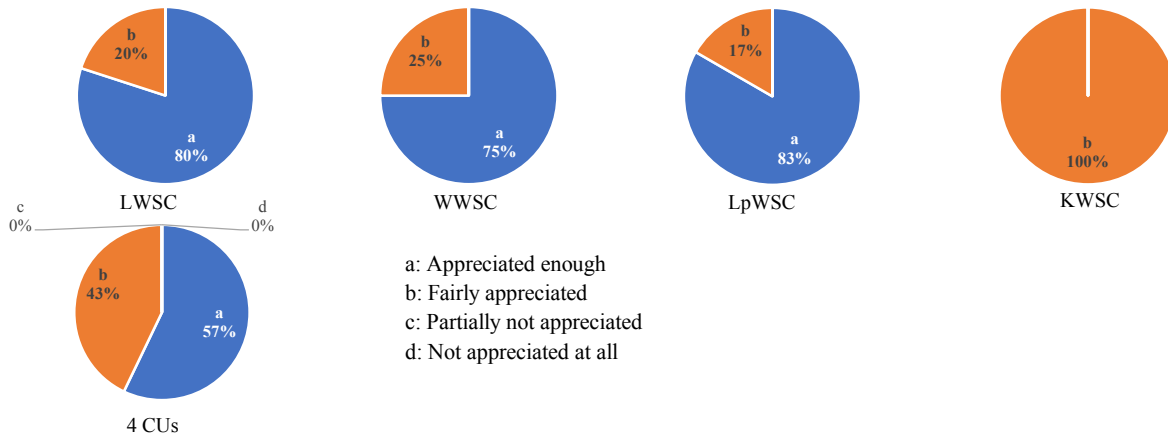
KWSC



4 CUs

- a: Purpose stated in the Evaluation Manual did not make sense.
- b: There was no time to read the Evaluation Manual.
- c: It is not significant to appreciate the Evaluation Manual.
- d: Others (Describe in detail).

B.1.3 Did you appreciate the contents of the Evaluation Manual?



B.1.4 For a respondent who answered 'c' or 'd' in the above 'B.1.3', what are your reasons?

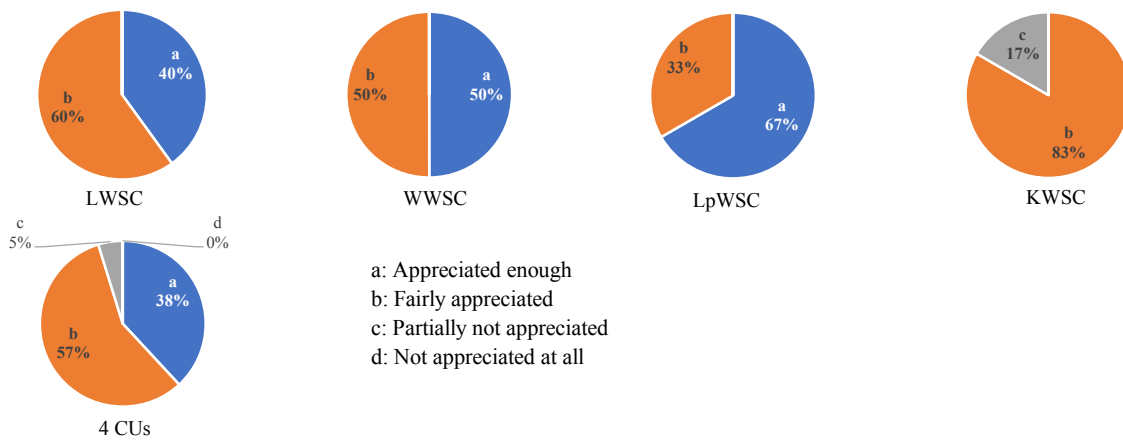
4 CUs: N/A

- a: Contents stated in the Evaluation Manual did not make sense.
- b: There was no time to read the Evaluation Manual.
- c: Contents lacked depth and did not cover enough PIs and parameters for capacity assessment.
- d: Others (Describe in detail).

B.1.5 For a respondent who answered '1)' in the above 'B.1.4', describe in detail what you could not appreciate.

4 CUs: N/A

B.1.6 Did you appreciate the evaluation parameters which are composed of three categories; Performance Indicators (PIs), parameters of Management Capacity and that of Communication & Negotiation Capacity in the Evaluation Manual?

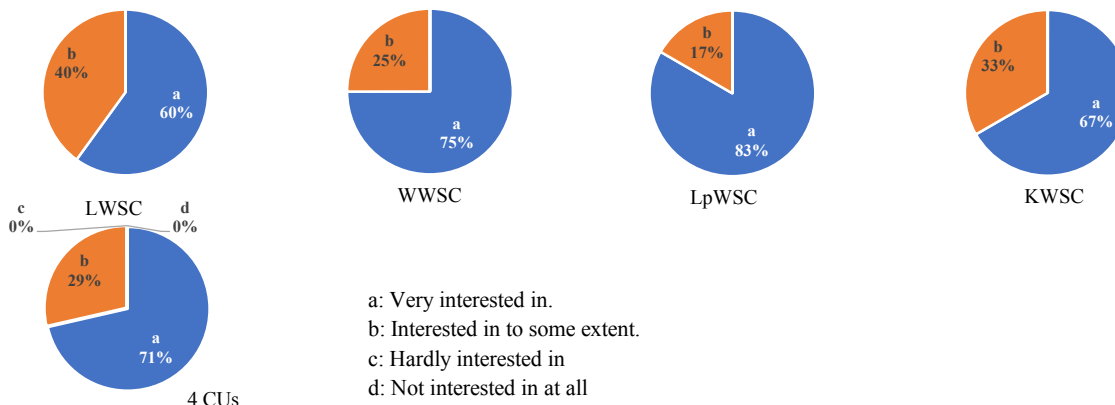


B.1.7 For a respondent who answered '4)' in the above 'B.1.6', describe in detail what you could not appreciate at all.

4 CUs: N/A

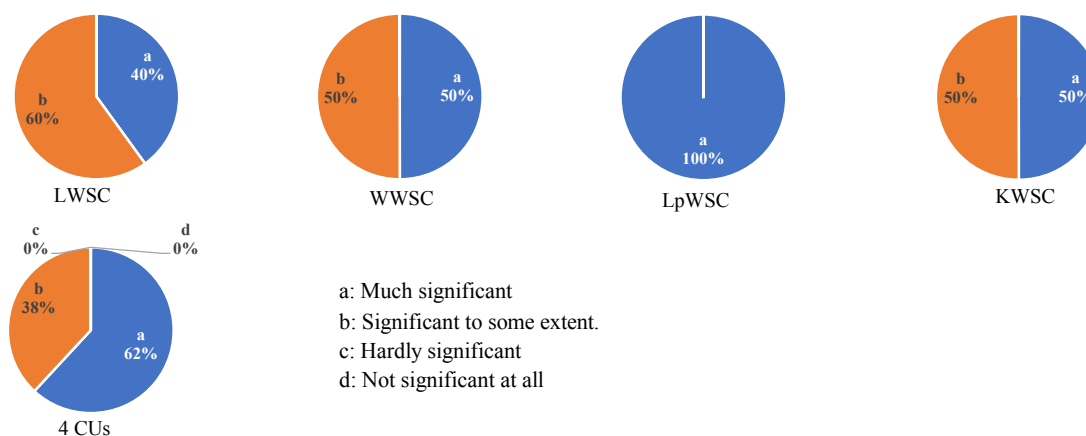
B.2 Interest in the Evaluation Manual

B.2.1 How could you rate your interest in using the Evaluation Manual?



B.3 Significance of the Evaluation Manual

B.3.1 Was it significant to evaluate the CU by using the Evaluation Manual?



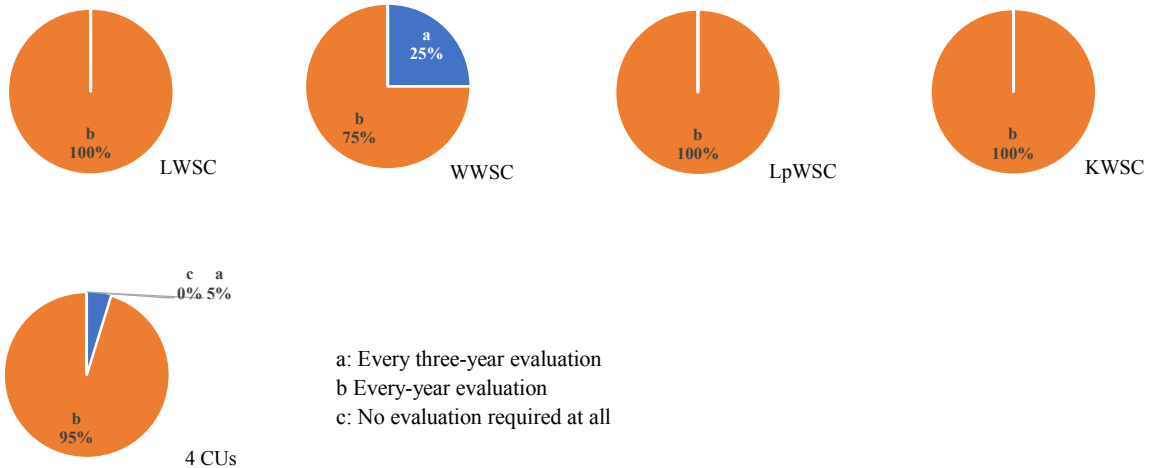
B.3.2 For a respondent who answered 'a' or 'b' in the above 'B.3.1', why do you suppose so?

Comment
LWSC: The evaluation manual was a bit restrictive and general to a certain extent without much scope to elaborate the or some score where need arose, in my view.
LWSC: To keep monitoring the performance of the CU.
LWSC: It gave a broad overview. Perhaps the only issue was that options were limited and did not accurately represent the position of the CU in certain instances.
LWSC: The evaluation gives a picture of how the utility is performing, the state of assets and staff capacity. It also brings out challenges and causes of challenges. That way remedial measures can be prescribed.
WWSC: The Manual was logically prepared and broke down the key components intelligently.
WWSC: It covered a wide range of activities covered by the CU and gives challenges that need to be addressed. It also looked at the management capacity and negotiation & communication capacity. Good management and communication will enable the CU to operate effectively
WWSC: Yes the evaluation showed the situation of the CU and thus showed activities that need to be undertaken to correct the situation.
LpWSC: Weaknesses were identified
LpWSC: The Manual was able to bring out the current situation of the CU, the challenges and their summary causes. It is important to first identify the challenges and its causes for easy remedy.
LpWSC: It was significant because the Evaluation Manual was used to determine the challenges and gaps of CU's.
LpWSC: For good growth of company. *For the company to have correct manual and work accordingly. *For the company to determine the challenges and gaps
LpWSC: It creates a broad approach to Capacity Development.
KWSC: It's a guidance but should try to link to each CU's predicaments.
KWSC: Standard/Common evaluation basis for CU's.
KWSC: It helped us understand areas where work was needed and helped to find operational challenges related to our capacity and competences as a team. Mostly, I found that jobs and tools given to team members were not explained or no training given, or not matching work with staff capacity.
KWSC: It is important for the improvement of Service Delivery.
KWSC: The Manual addresses the operational challenges of the CU.
KWSC: It left some factors which would have been brought out some challenges prompting for solutions.

B.3.3 For a respondent who answered '3)' or '4)' in the above 'B.3.1', why do you suppose so?

4 CUs: N/A

B.3.4 How frequently do you think that the CU needs to assess PIs, Management Capacity at organizational level and Communication & Negotiation Capacity at individual level in future?



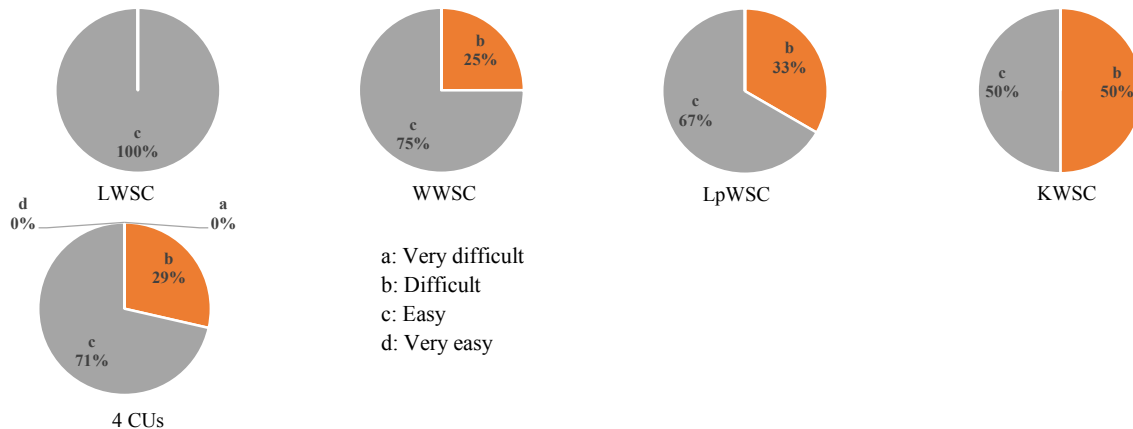
B.3.5 For a respondent who answered '3)' in the above 'B.3.4', describe in detail what the reasons are.

4 CUs: N/A

C: Evaluation by using the Evaluation Manual

C.1 Evaluation

C.1.1 Was it difficult for CU to self-evaluate the CU's capacity by using the Evaluation Manual?



C.1.2 For a respondent who answered '1' or '2' in the above C.1.1, describe in detail what the difficulties were.

<p>Comment</p> <p>LWSC: After explanation of how to use it.</p> <p>WWSC: The level of understanding of the evaluation manual was a bit difficult. The manual did not give room for other concerns from CU's to give room for other concerns from CU's to give the actual reason for some challenges.</p> <p>LpWSC: The Template was new.</p> <p>LpWSC: There were limitations to some of the questions.</p> <p>KWSC: We did not consolidate responses between departments as it was not easy to get an overall position of the CU.</p> <p>KWSC: As indicated above B.1.2. Some items were difficult to understand & it could have led to answering differently.</p>

C.1.3 Describe in detail what the difference is between an evaluation output of NWASCO and that of this Project.

Comment

LWSC: I think this Project was more detailed than NWASCO.

LWSC: Similar but not all aspects covered. Need to harmonize.

LWSC: These are a bit more. But they also extend to management Capacity & Communication Issues.

LWSC: The evaluation by NWASCO does not go to the depth of the evaluation under the project. The project takes care of State assets.

WWSC: For NWASCO, the evaluation output is more on a monitoring level, while for the project, it is the development of HRDP & Business Midterm Plan.
: There is however need to have a clear road map on how to achieve the outputs beyond Nov.2018.

WWSC: For the PI's, this evaluation gives the causes and the aspect to be improved to change the situation.

WWSC: NWASCO's evaluation output model is based on operations mostly, while for this project covers the general aspect including governance system.

LPWSC: Evaluation by NWASCO is meant for regulating CU's. The JICA evaluation is aimed at Strengthening Capacity in the CU.

LPWSC: The evaluation of NWASCO is designed to observe and improve the evaluation Manual through the evaluation of CU's whole the JICA
: one is evaluating the Capacity of the CU's with a view of Building Capacity.

LPWSC: NWASCO evaluation of the CU is inline with the agreed SLG's/SLA (Service Level Guarantees/Agreements) whereas this project looks
: developing the business concept and building the capacity of staff and Human Resources.

LPWSC: NWASCO concentrate on generally water quality, record keeping and supply hours and customer complaints while that of this project
: concentrates on Capacity Building to strengthen the CU.

LpWSC: Output of NWASCO are for the CU's to use for the long time, now for the project, it's just for the period of time based on the time they will finish the project.

LpWSC: NWASCO is very broad because it includes Service Level Agreements with regards Customer Service Output.

KWSC: Not much difference.

KWSC: NWASCO is focused on output/performance comparison with a standard and with other CU's. The current project is more focused on finding
: gaps for capacity development.

KWSC: This one is more detailed and concentrates on the Human Resource Capacity in relation to the work. NWASCO evaluation is very broad
: as it covers all aspects of CU operations.

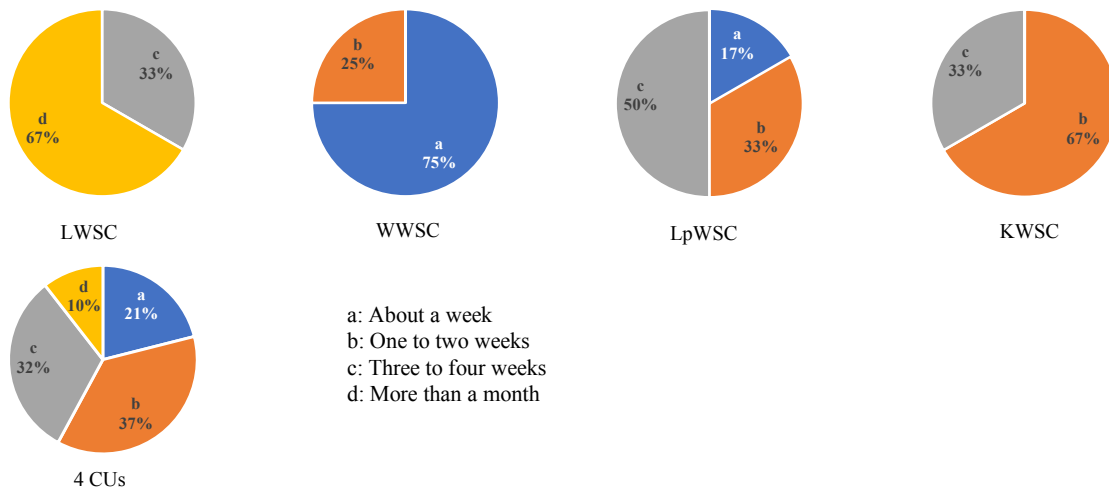
KWSC: This project comes out specifically while NWASCO is generally.

KWSC: The NWASCO and the Project manuals are somehow complimentary.

KWSC: NWASCO covers Urban and Rural which is, all the CU's while this project picked on 3 factors concentrated on the Urban (infrastructure)
: for Capacity Building.

C.2 Time / Date required for Evaluation

C.2.1 How was the time or date required for evaluation (from starting evaluation to submission of sheet to person in charge of collection in the CU)?



C.2.2 For a respondent who answered 'a' or 'b' in the above 'C.2.1', describe in detail what kinds of actions you took to complete evaluation quickly?

Comment

WWSC: Compiled Key data & reports. Interviewed key heads of departments. Spent time understanding the questions-filled out questionnaires

WWSC: There was a commitment from senior management. Employee respondents were given enough notice before the actual evaluation.
So they were prepared. *The methods or evaluation manual was clearly explained by the JICA Team before hand

WWSC: Read through the manual and consulted the JICA Assistant Engineer for clarifications.

WWSC: I had planned my time well.

LpWSC: I sidelined other activities for that period.

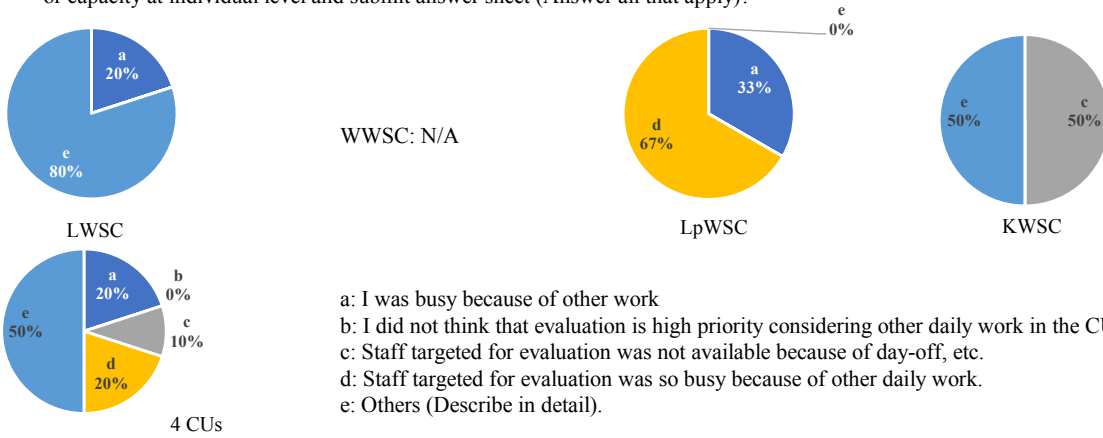
LpWSC: I had to clear the evaluation quickly from my table so that I attend to other tasks assigned to my office.

KWSC: Set specific time aside specifically for responding to the evaluation sheets.

KWSC: Information submitted had to be verified on the ground. Some of the requirements in the questionnaire were not usually done in the CU
therefore information information may have not been very accurate.

KWSC: Allocate time for the assignment.

C.2.3 For a respondent who answered 'c' or 'd' in the above 'C.2.1', why did you take time to evaluate capacity of the CU or capacity at individual level and submit answer sheet (Answer all that apply)?



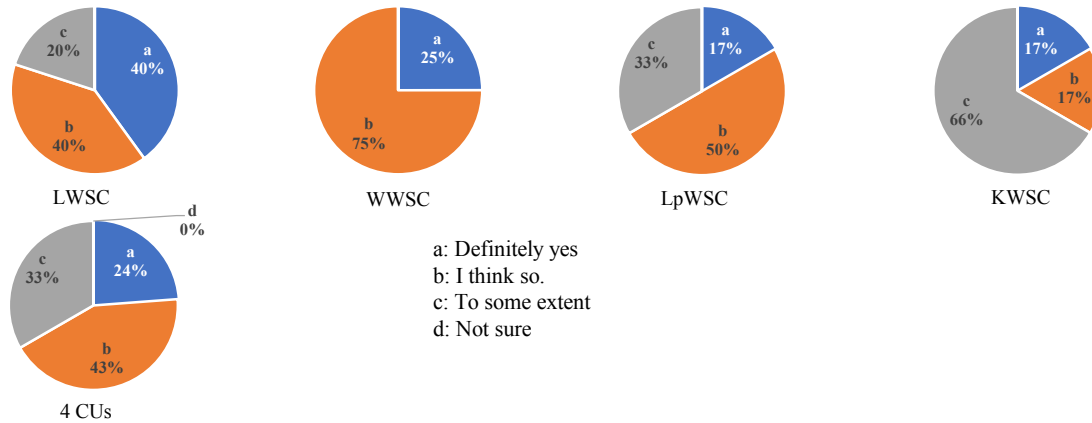
Comment

LWSC: The evaluation was circulated at the time when we had a change in CEO and proved busier adjusting to change
: I- had to take time to read and understand the manual as well as consult with JICA Expert Team for better understanding
: It came at a time when we were looking at our Strategic Planning
: Evaluation came at a time we were preparing for Board Meetings
LpWSC: Because evaluation was important, when I was asked to evaluate capacity at individual level, I quickly evaluated them.
KWSC: That was the time given from giving of evaluation sheets to collection

D. Report of Capacity Assessment

D.1 Preparation of Evaluation Report for Capacity Assessment

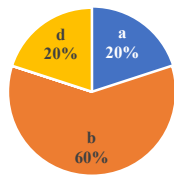
D.1.1 JICA Expert Team prepared the Evaluation Report for capacity assessment by using the Evaluation Manual in this time around. In future, MWDSEP, NWASCO and JICA Expert Team expect that the CU prepares the Evaluation Report organizational and individual capacity which can be assessed by using the Evaluation Manual in future. Do you think you can prepare the Evaluation Report for the CU, while referring to the Evaluation Report that JICA Expert Team prepared?



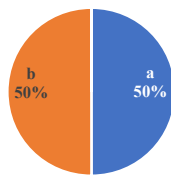
D.1.2 For a respondent who answered '4)' in the above 'D.1.1', describe in detail what the reasons are.
4 CUs: N/A

D.2 Overcome of Evaluation Report

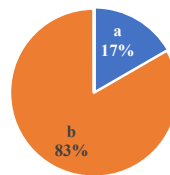
D.2.1 Do you think that current situation of water supply service is clarified based on the Evaluation Report?



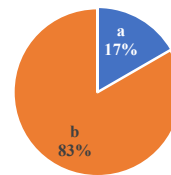
LWSC



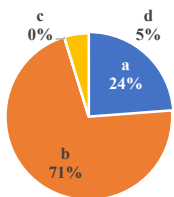
WWSC



LpWSC



KWSC



4 CUs

a: Surely clarified
 b: Clarified to some extent
 c: Hardly clarified
 d: Not clarified at all

D.2.2 For a respondent who answered 'a' in the above 'D.2.1', describe in detail what the reasons are.

Comment

WWSC: It has brought out key areas of concern in the CU.

WWSC: It gives the real water supply situation in the CU's as indicated in our reports. The CU situation analysis is based on the real picture on the ground.

LpWSC: I have picked and learnt what has been taught, I use the experience.

D.2.3 For a respondent who answered 'b' in the above 'D.2.1', describe in detail what the reasons are.

Comment

LWSC: I think to an extent, our final result is closer to what is currently prevailing.

LWSC: It looked at hours of supply among other indicators.

LWSC: Service coverage is defined. Hours of supply highlighted clearly. Water Quality and state of equipment covered.

WWSC: To some extent because it does not clearly spell out the situation leading to failure to meet the PIs.

WWSC: Because the Evaluation Report together with the guidelines are clear.

LpWSC: Other factors affecting water supply were not highlighted.

LpWSC: Not all the direct cost/labour has been addressed by the manual. There is need to harmonize and cost what is involved in the O & M costs.

LpWSC: Requires more practice

KWSC: Issues came out for strengthening.

KWSC: Some responses do not match the CU situation exactly.

KWSC: It clarified the commercial aspects and a few areas that I understand from other departments.

: I would be more clear once we consolidate answers/ evaluation results.

KWSC: It is very clearly clarified.

KWSC: The Manual clarified except for limited scope of the summary of causes.

KWSC: The Manual needs to be revised because there are some elements which need to be addressed in order for the evaluation to be able to use it, without much difficulties.

D.2.4 For a respondent who answered '3)' in the above 'D.2.1', describe in detail what the reasons are.

4 CUs: N/A

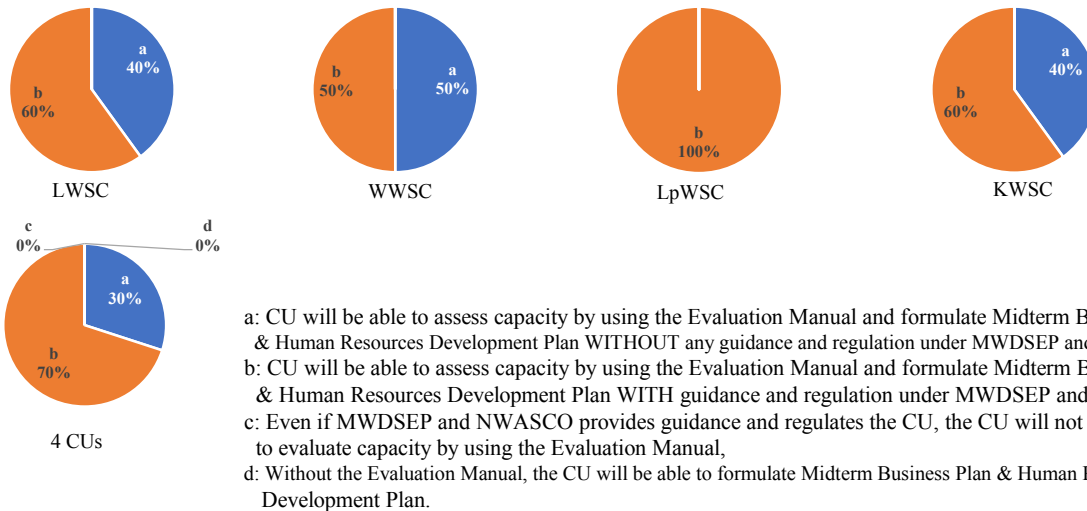
D.2.5 For a respondent who answered '4)' in the above 'D.2.1', describe in detail what the reasons are.

4 CUs: N/A

E. Utilization, etc. of the Evaluation Manual in Future

E.1 From Capacity Assessment by using the Evaluation Manual to Formulation of Midterm Business Plan & Human Resources Development Plan

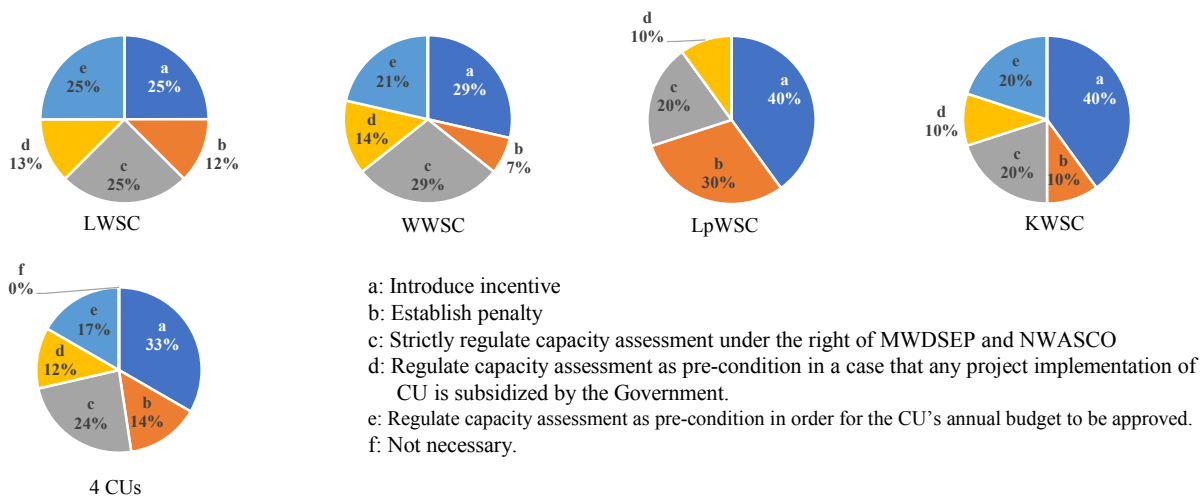
E.1.1 After completion of this Project, do you think that the CU will have capacity continuously to self-evaluate capacity by using the Evaluation Manual and to formulate Midterm Business Plan and Human Resources Development Plan?



E.1.2 For a respondent who answered '3' or '4' in the above 'E.1.1', describe in detail what the reasons are.

4 CUs: N/A

E.1.3 For all respondent in the above 'E.1.1', what are the required factors to maintain the capacity assessment based on the Evaluation Manual and the formulation of Midterm Business Plan & Human Resources Development Plan in future (Answer all that apply)?



E.1.4 For a respondent who answered 'a' in the above 'E.1.3', describe in detail what kinds of incentives are required.

Comment

LWSC: The Incentive -either monetary or non-monetary to encourage adherence especially at inception to encourage acceptance.

WWSC: Incorporate the key performance indicators into performance contracts by staff.

WWSC: Rewarding CU's that will be able to carry out the capacity assessments.

WWSC: Make remunerations of staff for similar positions/Jobs in the CU's uniform. This will allow for/encourage retention of qualified/experienced staff.

WWSC: CU performance based incentives, and also the CU itself. Incentives from the Government in terms of funding and Technical assistance should be made on time. Monitoring and Evaluation programs must be undertaken by both NWASCO and Government through the Ministry of Water.

LpWSC: Financial Assistance.

LpWSC: Publication is the NWASCO Sector report monetary form to the deserving CU's/Staff.

LpWSC: The Incentive can be in form of % of the salary for those who are doing well to encourage them and others.

LpWSC: XX% salaries to those who are doing well to motivate them.

KWSC: Funding for training for Capacity Development.

KWSC: Incentives on individuals; Promotions, Awards, Recognition, Bonuses, Refresher courses &/or Training.

KWSC: Provide incentives in form of materials and any other support. Introduce Training as a form of capacity building.

KWSC: It can be in form of meeting the Company's CU's much needed infrastructure of payment of 50% towards the challenges raised in the report by the project.

E.1.5 For a respondent who answered 'b' in the above 'E.1.3', describe in detail what kinds of penalties are required.

Comment

LWSC: The penalty will act as a deterrent for non-adherence.

WWSC: Negative Feedback/Warnings.

LpWSC: Charging/Punitive action to be taken on individuals who fail to show improvement even after taking them through what is required/Training.

LpWSC: If an employee is not showing seriousness in the work, must be changed or if he/she is not showing improvements.

LpWSC: For those not showing seriousness, should be charged.

KWSC: Administrative action, Demotion, Deduction from pay of costs incurred due to negligence, Penalties at Institutional or Director Level.

APPENDIX. A-10
REPORT OF CAPACITY
ASSESSMENT BASED ON
EVALUATION MANUAL (EM)

**Ministry of Water Development, Sanitation and Environment
Protection**



National Water Supply and Sanitation Council



Japan International Cooperation Agency



The Project

for

Strengthening Capacity of Urban Water Supply

Infrastructure

in

the Republic of Zambia

Report of Capacity Assessment based on Evaluation Manual

December 2017

**Ministry of Water Development, Sanitation and
Environmental Protection**

National Water Supply and Sanitation Council

Japanese Experts

**The Project for Strengthening Capacity of Urban Water Supply Infrastructure in the
Republic of Zambia**

Report (Draft) of Capacity Assessment based on Evaluation Manual

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1. Overview of CUs evaluated based on Evaluation Manual

Overviews of four CUs are shown in Table 1.1. 82 staff of four CUs were evaluated by their superiors at an individual level apart from an organizational level which consists of Performance Indicators and Management Capacity, making up about 4.8% of total staff of four CUs.

Table 1.1 Scale of CUs Evaluated

CUs*	Established Year	Number of Connections 1)	Number of Staff** 2)	Number of staff per 1000 connections 3) =2)/1) x 1000	Number of evaluated Staff at Individual Level 4)	Rate of Evaluated Staff to Total Staff (%) 5) =4)/2) x 100
LWSC	1989	97,008	899	9.3	23	2.6
WWSC	2000	13,288	133	10.0	24	18.0
LpWSC	2009	7,355	81	11.0	16	19.8
KWSC	2000	61,438	601	9.8	19	3.2
Total		179,089	1,714	9.6	82	4.8

Source: WSS Sector Report 2016 and Project Team

Note:

* Order based on PDM

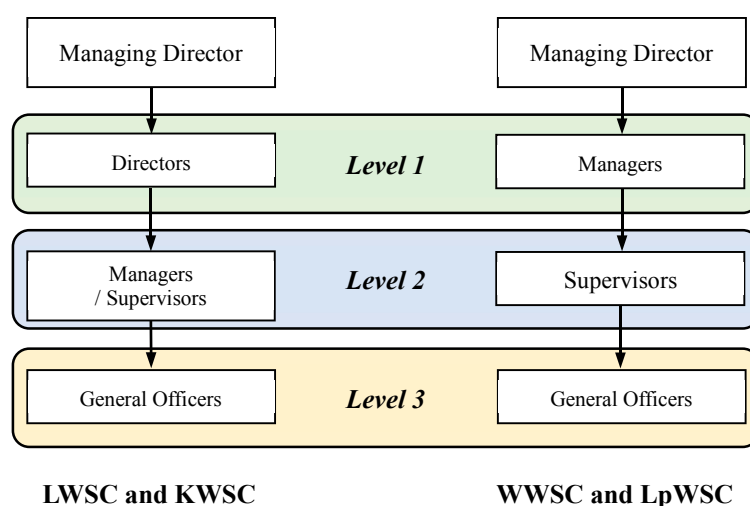
**Including the dedicated persons in charge of sewer service

2. Purpose of evaluating CUs (Capacity Assessment)

Project Team conducted capacity assessment of CUs to identify their challenges and gaps in order to formulate Midterm Business Plans and Human Resource Development Plans.

3. Composition of Position by CU

Level 1, Level 2 and Level 3 are defined as Director or Manager, Manager or Supervisor and General Officer (see Figure 3.1). The particular title of the above level of positions in the CU depended on individual CUs. In this Project, Level 1, Level 2 and Level 3 are evaluated.



Source: Project Team

Figure 3.1 Composition of Post by CU

4. Method of Capacity Assessment

4.1 Organizational Level

CU's Level 1 staff evaluated 21 Performance Indicators (PIs) and 19 parameters of Management Capacity at an organizational level. Table 4.1 shows PIs and parameters of management capacity for CUs. Actual valuations are indicated in Annex-42 to Annex-45.

Evaluation criteria for capacity level is composed of five categories; '1: Very Serious', '2: Serious', '3: Not Good Enough', '4: Good' and '5: Very Good'. Evaluators of CUs selected only one category for each parameter. Additionally, CUs had the option to select causes from the list of 'Causes' which were shown in Evaluation Manual, or clarify their original causes apart from the list of 'Causes'. This was applied for all the selected categories apart from the capacity level of "Very Good",

Table 4.1 PIs and Parameters of Management Capacity

Performance Indicators (PIs)	Management Capacity
1) Aspects to be improved mainly by Facility Investment	1) Internal Policy and Planning
P1: Continuity of supply	M1: Review on Short, Middle and Long Term Plan
P2: Overall water supply coverage	M2: Evaluation Method to achieve Goal
P3: Surplus purification capacity	2) Finance
P4: Transmission and distribution mains	M3: Analysis on Annual Financial Status
P5: House connections	M4: Financial Improvement Status towards achievement of Goal
P6: Mechanical and electrical equipment	M5: Status of Metered Rate
P7: Rate of facility utilization	M6: Budget Arrangement based on Historical Record and Result of Management Evaluation
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection
P8: O&M of the facilities	3) Governance, Management and Human Resources
P9: Drawings of pipe facilities	M8: Average Length of Service with CUs or Other Water Authority
P10: NRW ratio	M9: Record of Working Time
P11: Customer meters	M10: System to evaluate Work Performance Capacity towards Goal
P12: Bulk meters	M11: Allocation and Input of Staff according to the Work Load
P13: Water quality parameters tested at purification plants	M12: Self-evaluation System at Individual Level
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)	M13: Self-learning Support System
P14: Cost recovery level	M14: Evaluation of Trainee's Efforts
P15: Collection ratio	4) Customer Relation
P16: Number of staff working especially for water (Number/'000 water connections)	M15: Development of Customer's Information
P17: Implementation of training	M16: Time to respond to Customer's Complaint
P18: Complaint handling	M17: Record for dealing with Customer's Complaints
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	M18: Customer's Survey
4) Aspects to be improved mainly by Program Approach	M19: Promotion of Customer's Awareness
P20: Sewerage coverage (including On-site Facilities)	-
5) General Aspect	-
P21: Year of work experience on water supply service	-

Source: Project Team

4.2 Individual Level

Each superior evaluated two to six parameters of Communication & Negotiation Capacity of their subordinate staff. All the staff evaluated of four CUs are shown in Table 4.2.

Capacity level evaluation and attribution of causes at individual level follows the same methodology as that of the organizational level, as highlighted above under Section 4.1.

Table 4.2 Targeted Staff for Individual Capacity Evaluation

Post (Level)	Department	LWSC	WWSC	LpWSC	KWSC
Directors (Managers for LpWSC and WWSC) (Level 1)	Human Resource and Administration	1	1	1	-
	Technical and or Engineering	1	1	2	1
	Planning & Development	1	-	-	1
	Finance	1	1	1	1
	Commerce Services	1	1	-	1
	Sub-Total	5	4	4	4
Managers (Supervisors for LpWSC and WWSC) (Level 2)	Human Resource and Administration	1	2	-	-
	Technical or Engineering	5	10	5	5
	Planning & Development	3	-	-	-
	Finance	1	1	2	3
	Commerce Services	4	3	2	-
Sub-Total	14	16	9	8	
General Officers (Level 3)	All Department	4	4	3	7
	Sub-Total	4	4	3	7
Total		23	24	16	19

Source: Project Team

In addition, evaluation parameters depend on Levels such as Level 1, Level 2 and Level 3. Evaluation parameters which were applied for each Level of position in the CUs are shown in Table 4.3.

Table 4.3 Evaluation Parameters by Level

Evaluation Parameters on Communication & Negotiation Capacity	Level 1	Level 2		Level 3
		HRA* Dep.	Other Dep.**	
1) Leadership				
C1: Capacity to achieve goal and to raise the standards of the leadership	X			
C2: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department		X	X	
2) Human Development				
C3: Capacity to improve qualification of staff in terms of post and job description	X	X	X	
3) Negotiation and Coordination				
C4: Capacity to convince the third parties to understand different ideas and opinions	X	X	X	
4) Data Collection and Utilization				
C5: Capacity to collect data and to apply for analysis for the water supply service	X		X	X
5) Communication with Customers				
C6: Capacity to communication with customers in order to provide them with high quality water supply service				X

Source: Project Team

Note:

*HRA: Human Resource and Administration

**Other Dep.: Technical, Finance, Commerce, etc.

4.3 Process of Evaluation

The local assistant engineer employed by JICA Expert Team gave directors of each CU the detail briefing on how to self-evaluate their own organization from September to October 2017 subsequent to the training on Evaluation Manual which took place on 9 August.

JICA Expert Team with the local assistant engineer collected the results evaluated by CUs and also checked if the results were figured out correctly from 11 to 23 October 2017.

4.4 Observation and Improvement of Evaluation Manual through Evaluation of CUs

JICA Expert Team practically observed the following challenges required for improving Evaluation Manual.

- Some of the actual causes that CU were facing were not stated in Evaluation Manual.
- In the case that ‘Good’ was selected, the causes were not clarified in the answer sheets.
- Some supplement notes were required to help with the understanding of some PI.

In order to solve the above challenges, JICA Expert Team added extra causes as suggested by CUs to ‘Causes (Please tick all that apply)’ stated in Evaluation Manual. Furthermore, supplementary explanatory notes were added to aid the CUs’ understanding of self-evaluation of their capacities. Consequently, the Evaluation Manual will be revised to incorporate the above observation.

4.5 Days required from giving briefing to collect the result of self-evaluating CU

From 14th August 2017, the JICA Expert Team gave a briefing to each CU through physical meetings, phone conversations and emails on how the CUs could self-evaluate themselves by way of utilizing the Evaluation Manual. Thereafter, each CU conducted its own self-evaluation. Consequently, Table 4.4 shows the number of days taken by each CU for self-evaluation. The JICA Expert Team are confident that Evaluation Manual was well-designed in order for CUs to easily self-evaluate. To this end, each individual CU should take about one (1) hour to self-evaluate if they concentrate on the evaluation. However, the days required for self-evaluation depended so much on a CU. According to some of the CUs’ executive officers and JICA Expert Team’s observation, it seemed that there are various factors which affected the time to self-evaluate which included intelligibility of Evaluation Manual, interest in evaluation of CUs, motivation, etc.

Table 4.4 Days required for collecting the Result of self-evaluating CU

CUs	Date of giving Briefing	Date of completing Self-Evaluation	Days required for Self-Evaluation 1)	Number of evaluated Staff at Individual Level 2)	Days required for Self-Evaluation per evaluated staff 3) = 1)/2) x 100
LWSC	14 August	20 October	68 days	23	3.0 days/staff
WWSC	4 October	12 October	9 days	24	0.4 days/staff
LpWSC	6 September	12 October	37 days	16	2.3 days/staff
KWSC	26 September	20 October	25 days	19	1.3 days/staff

Source: Project Team

5. Result of Capacity Assessment

5.1 Organizational Level

(1) PIs

Diagram of the evaluation results and future goals on PIs of the four CUs is shown in Figure 5.1. In addition, the rate of distribution by capacity level which is categorized into five levels is indicated in Figure 5.2.

1) LWSC

From the results of evaluation, it was observed that zero (0.0%) and four (19.0%) out of 21 PIs (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Serious’ challenges are summarized as follows:

- P10: NRW ratio is 36-50%.
- P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.
- P19: A few effective awareness-raising activities have been implemented.
- P21: Average year of work that staff have experience on water supply service is 8-15 years.

Table 5.1 shows LWSC’s challenges on PIs by aspect to be improved mainly by and summary of their causes (See Annex-1 and Annex-13 for breakdown of the causes). 75% of ‘Serious’ challenges may be improved by capacity development at organizational and individual level, while 25% these ‘Serious’ Challenges could be improved by other actions.

Table 5.1 Challenges on PIs by Aspect to be improved and Summary of Causes (LWSC)

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
[Serious]		
P10: NRW ratio is 36-50%.	Capacity Development (Technical Aspect)	NRW occurs due to meter inaccuracy and leaks. Water meters are not maintained sufficiently and not replaced with new ones promptly due to lack of budget. Water meters are not calibrated because of non-test-bench, etc. CU has not enough leak detectors and there exists deteriorated pipes which may cause leaks.
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Capacity Development (Technical Aspect)	Budget is insufficient to install customer meters.
P19: A few effective awareness-raising activities have been implemented.	Capacity Development (Non-Technical Aspect)	<u>Detail reasons are not available.</u> Project Team supposes that awareness-raising activities is low priority judging from the current condition of frequency of newsletter’s issue.
P21: Average year of work that staff have experience on water supply service is 8-15 years.	General Aspect	Nowadays, lots of staff leave CU because of low salary and mandatory retirement.

Source: Project Team

2) WWSC

From the results of evaluation, it was observed that eight (38.1%) and four (19.0%) out of 21 PIs (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Very Serious’ challenges are summarized as follows:

- P3: Surplus capacity to maximum design capacity is less than -30%.
- P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.
- P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.
- P10: NRW ratio is more than 50%.
- P17: Training is quite rare or not provided at all.
- P19: No or minimal effective awareness-raising activities have been implemented.
- P20: Sewer coverage is zero.
- P21: Average year of work that staff have experience on water supply service is zero to seven years.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- P2: Overall service coverage is 50- 69%.
- P8: CU has O&M manuals which are not effective.
- P12: There are not enough functioning bulk meters for accurate flow rate of water production.
- P14: All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.

Table 5.2 shows WWSC’s challenges on PIs by aspect to be improved mainly by and summary of their causes (See Annex-2 and Annex-22 for breakdown of the causes). About 40% of ‘Very Serious’ challenges may be improved by facility investment, while 40% of these challenges could be improved by capacity development at organizational and individual level. Meanwhile, 25% of ‘Serious’ challenges may be improved by facility investment, while 75% of these ‘Serious’ challenges could be improved by capacity development at organizational and individual level.

Table 5.2 Challenges on PIs by Aspect to be improved mainly by and Summary of Causes (WWSC)

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
[Very Serious]		
P3: Surplus capacity to maximum design capacity is less than -30%.	Facility Investment	CU faces lack of adequate intake facilities. Most of intake facilities and treatment plant are deteriorated and not maintained properly due to budget constraint. CU has no the skilled staff to plan, and design intake & treatment plant, and to supervise their construction. In addition, NRW is one of causes for lack of purification capacity.
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Facility Investment	CU has no the skilled staff to plan, and design intake & treatment plant, and to supervise their construction. One of the main causes is lack of budget for replacing the existing pipes.
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Facility Investment	The existing equipment are not replaced with new ones because of lack of budget, skilled staff for planning and or designing and supervision. It is also difficult to procure spare parts in Zambia. In addition, CU has neither skilled staff nor budget to maintain equipment.

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
P10: NRW ratio is more than 50%.	Capacity Development (Technical Aspect)	NRW occurs due to meter inaccuracy and leaks. Water meters are not maintained sufficiently and not replaced with new ones promptly due to lack of budget. Water meters are not calibrated because of non-test-bench and lack of skilled staff, etc. CU has not enough leak detectors and the skilled staff to detect water leaks, and there exists deteriorated pipes (asbestos pipes) which may cause leaks.
P17: Training is quite rare or not provided at all.	Capacity Development (Non-Technical Aspect)	There are no training implementation system and trainers. CU also faces lack of budget to conduct the training.
P19: No or minimal effective awareness-raising activities have been implemented.	Capacity Development (Non-Technical Aspect)	Budget is insufficient to employ the skilled staff to implement awareness-raising activities.
P20: Sewer coverage is zero.	Program Approach	Because of lack of budget, development of sewer system is low priority in CU.
P21: Average year of work that staff have experience on water supply service is zero to seven years.	General Aspect	CU is relatively new organization.
[Serious]		
P2: Overall service coverage is 50- 69%.	Facility Investment	CU faces function depression due to deterioration of intake facilities and difficulties in maintaining them due to budget constraint and lack of the skilled staff. Capacity of transmission & distribution facilities is insufficient due to deterioration, while budget and the skilled staff are not sufficient to maintain the facilities. In addition, CU has no the skilled staff to plan, and design water supply facilities, and to supervise their construction.
P8: CU has O&M manuals which are not effective.	Capacity Development (Technical Aspect)	There are no staff to prepare O&M manual and to utilize it.
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Capacity Development (Technical Aspect)	There are no budget provisions to install bulk meters and no skilled staff to plan & design the bulk meters' installation. In addition, CU has no the skilled staff to maintain the bulk meters as well.
P14: All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.	Capacity Development (Non-Technical Aspect)	Revenue is low because of a lot of leaks. High O&M cost is caused by deterioration of water supply facilities.

Source: Project Team

3) LpWSC

From the results of evaluation, it was observed that five (23.8%) and three (14.3%) out of 21 PIs (100%) were 'Very Serious' and 'Serious' respectively. 'Very Serious' challenges are summarized as follows:

- P2: Overall service coverage is less than 50%.
- P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.
- P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.
- P10: NRW ratio is more than 50%.

- P14: Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- P4: Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.
- P12: There are not enough functioning bulk meters for accurate flow rate of water production.
- P19: A few effective awareness-raising activities have been implemented.

Table 5.3 shows LpWSC’s challenges on PIs by aspect to be improved mainly by and summary of their causes (See Annex-3 and Annex-30 for breakdown of the causes). 60% of ‘Very Serious’ challenges may be improved by facility investment, while 40% of these challenges could be improved by capacity development at organizational and individual level. Meanwhile, 30% of ‘Serious’ challenges may be improved by facility investment, while 70% of these ‘Serious’ challenges could be improved by capacity development at organizational and individual level.

Table 5.3 Challenges on PIs by Aspect to be improved and Summary of Causes (LpWSC)

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
[Very Serious]		
P2: Overall service coverage is less than 50%	Facility Investment	CU faces not only function depression due to deterioration of treatment plant but also NRW such as leaks and apparent loss caused by illegal connections.
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Facility Investment	Production capacity is insufficient because treatment plant is not maintained appropriately, and the plant has deteriorated.
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Facility Investment	Budget is insufficient in order to replace equipment with new ones and to maintain equipment.
P10: NRW ratio is more than 50%	Capacity Development (Technical Aspect)	NRW occurs due to apparent loss caused by illegal connections & meter inaccuracy, and real loss caused by leaks. Illegal connections are caused by lack of PR activities to optimize water supply service and lack of patrol by CU’s staff under difficulties in identifying illegal connections. Water meters are not calibrated because of non-test-bench, etc. Water meters are not maintained sufficiently and not replaced with new ones promptly due to lack of budget. In addition, there are no budget provisions to replace asbestos pipes with other types of pipes.
P14: Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Capacity Development (Non-Technical Aspect)	O&M cost is higher than revenue because of high NRW ratio. High O&M cost is caused by deterioration of water supply facilities without appropriate maintenance. Lack of budget and skill made inappropriate maintenance.
[Serious]		
P4: Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.	Facility Investment	There are no budget provisions to replace asbestos pipes with other types of pipes.
P12: There are not enough functioning bulk meters for accurate flow rate of water	Capacity Development (Technical	There are no budget provisions to formulate plan and to install bulk meters.

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
production.	Aspect)	
P19: A few effective awareness-raising activities have been implemented.	Capacity Development (Non-Technical Aspect)	The training to raise awareness on NRW reduction, water conservation and tariff collection is insufficient.

Source: Project Team

4) KWSC

From the results of evaluation, it was observed that four (19.0%) and five (23.8%) out of 21 PIs (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Very Serious’ challenges are summarized as follows:

- P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.
- P10: NRW ratio is more than 50%.
- P15: Collection ratio is less than 60%.
- P19: No or minimal effective awareness-raising activities have been implemented.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- P5: 80-94% of house connections are more than 25 years old.
- P8: Facilities have O&M manuals which are not effective, leading to O&M deficiency.
- P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.
- P12: There are not enough functioning bulk meters for accurate flow rate of water production.
- P21: Average year of work that staff have experience on water supply service is 8-15 years.

Table 5.4 shows KWSC’s challenges on PIs by aspect to be improved mainly by and summary of their causes (See Annex-4 and Annex-36 for breakdown of the causes). 25% of ‘Very Serious’ challenges may be improved by facility investment, while 75% of these challenges could be improved by capacity development at organizational and individual level. Meanwhile, 20% of ‘Serious’ challenges may be improved by facility investment, while 80% of these ‘Serious’ challenges could be improved by capacity development at organizational and individual level.

Table 5.4 Challenges on PIs by Aspect to be improved and Summary of Causes (KWSC)

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
[Very Serious]		
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Facility Investment	The existing asbestos pipes cannot be replaced with other types of pipes, because budget required for replacing the pipes is insufficient and staff are not aware of hazard for human health.
P10: NRW ratio is more than 50%.	Capacity Development (Technical Aspect)	NRW occurs due to apparent loss caused by illegal connections & meter inaccuracy, and real loss caused by leaks. Illegal connections are caused by lack of PR activities to optimize water supply service and lack of patrol by CU’s staff. Water meters are not sufficiently maintained and not promptly replaced with new ones due to lack of budget. In

Challenges on PIs	Aspects to be improved mainly by	Summary of Causes
		addition, there are no budget provisions to manage water leak reduction and to replace asbestos pipes with other types of pipes.
P15: Collection ratio is less than 60%.	Capacity Development (Non-Technical Aspect)	<u>Detail reasons are not available.</u> Project Team assumes that tariff collection system at organizational level is not well developed as one of the causes.
P19: No or minimal effective awareness-raising activities have been implemented.	Capacity Development (Non-Technical Aspect)	The training to raise awareness on NRW reduction, water conservation and tariff collection is insufficient.
[Serious]		
P5: 80-94% of house connections are more than 25 years old.	Facility Investment	There are no regulation and plans to replace service pipeline with new ones. Even though the CU has a plan to replace service pipelines, there are no budget provisions made available.
P8: Facilities have O&M manuals which are not effective, leading to O&M deficiency.	Capacity Development (Technical Aspect)	There are no O&M manuals because of lack of budget and skill to prepare it. In addition, staff's awareness on manual usage is insufficient.
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Capacity Development (Technical Aspect)	PR activities such as awareness meeting are not conducted in order to make customers understand the necessity of customer meters.
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Capacity Development (Technical Aspect)	Appreciation of staff on the necessity of bulk meters is insufficient.
P21: Average year of work that staff have experience on water supply service is 8-15 years.	General Aspect	CU is relatively new organization.

Source: Project Team

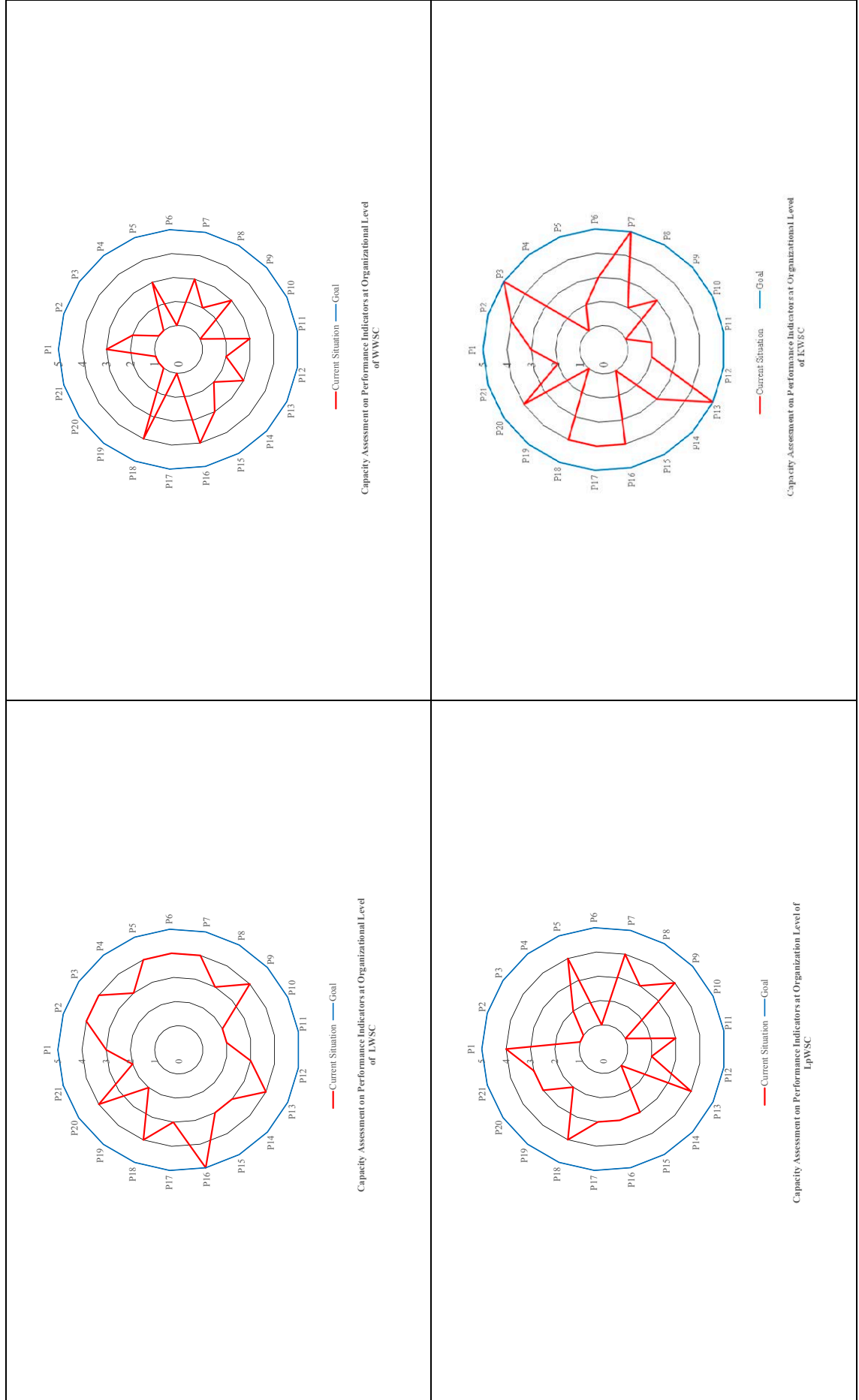


Figure 5.1 Current Condition on PIs and their Goal of CUs

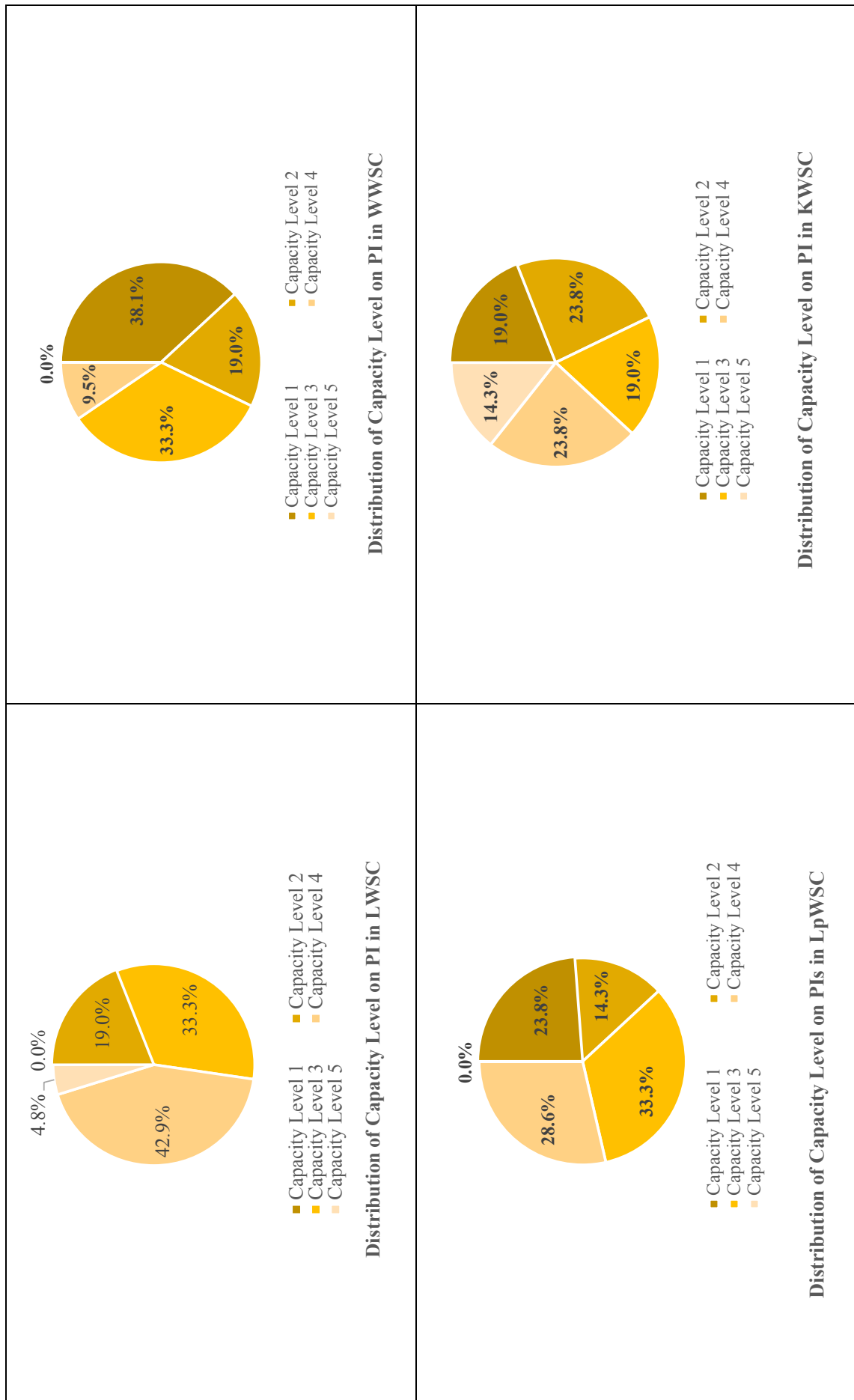


Figure 5.2 Distribution of Capacity Level on PIs in CUs

(2) Management Capacity

Diagram of the evaluation results on management capacity are shown in Figure 5.3. In addition, the rate of distribution by capacity level which is categorized into five is indicated in Figure 5.4.

1) LWSC

From the results of the evaluation, it was observed that two (10.6%) out of 19 parameters (100%) were either ‘Very Serious’ or ‘Serious’. ‘Very Serious’ challenges are summarized as follows:

- M13: There is no a self-learning system.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- M16: It takes a week to respond to customer’s complaint.

Table 5.5 shows LWSC’s challenges on Management Capacity by category and summary of causes (See Annex-5 and Annex-14 for breakdown of the causes). Challenges on ‘Governance, Management and Human Resource’ and ‘Customer Relation’ each make up 50% of the whole ‘Very Serious’ and ‘Serious’ challenges in LWSC.

Table 5.5 Challenges on Management Capacity and Summary of Causes (LWSC)

Challenges on Management Capacity	Category	Summary of Causes
[Very Serious]		
M13: There is no self-learning system.	Governance, Management and Human Resource	There are no training programs on how to use a self-learning support system.
[Serious]		
M16: It takes a week to respond to customer’s complaint.	Customer Relation	There are no training programs on how to manage quick actions.

Source: Project Team

3) WWSC

From the results of evaluation, it was observed that three (15.8%) and five (26.3%) out of 19 parameters (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Very Serious’ challenges are summarized as follows:

- M8: Average length of service with current CU is less than five years.
- M12: There is no self-evaluation system.
- M13: There is no self-learning system.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- M2: Evaluation method has not been established.
- M9: Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.
- M10: Evaluation system for work performance is under development.
- M16: It takes a week to respond to customer’s complaint.
- M18: Customer survey has never been conducted but the survey is under consideration.

Table 5.6 shows WWSC’s challenges on Management Capacity by category and summary of causes

(See Annex-6 and Annex-23 for breakdown of the causes). Challenges on ‘Governance, Management and Human Resource’ make up about 60% of the whole ‘Very Serious’ and ‘Serious’ challenges in WWSC, while ‘Customer Relation’ make up about 25%.

Table 5.6 Challenges on Management Capacity and Summary of Causes (WWSC)

Challenges on Management Capacity	Category	Summary of Causes
[Very Serious]		
M8: Average length of service with current CU is less than five years.	Governance, Management and Human Resource	CU is relatively new organization.
M12: There is no a self-evaluation system.	Governance, Management and Human Resource	There are no training programs on how to conduct a self-evaluation.
M13: There is no a self-learning system.	Governance, Management and Human Resource	There are no training programs on how to use a self-learning support system.
[Serious]		
M2: Evaluation method has not been established.	Internal Policy and Planning	There are no training programs on how to prepare evaluation method and to evaluate activities.
M9: Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of working record.
M10: Evaluation system for work performance is under development.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of work performance evaluation.
M16: It takes a week to respond to customer’s complaint.	Customer Relation	There are no training programs to make staff understand the necessity of quick actions and on how to manage the quick actions.
M18: Customer survey has never been conducted but the survey is under consideration.	Customer Relation	There are no budget provisions to conduct surveys.

Source: Project Team

4) LpWSC

From the results of evaluation, it was observed that one (5.3%) and five (26.3%) out of 19 parameters (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Very Serious’ challenges are summarized as follows:

- M14: Trainees’ effort have not been evaluated.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- M2: Evaluation method has not been established.
- M8: Average length of service with current CU is five to 10 years.
- M10: Evaluation system for work performance is under development.
- M12: A self-evaluation system is under development.
- M16: It takes a week to respond to customer’s complaint.

Table 5.7 shows LpWSC’s challenges on Management Capacity by category and summary of causes (See Annex-7 and Annex-31 for breakdown of the causes). Challenges on ‘Governance, Management

and Human Resource’ make up about 70% of the whole ‘Very Serious’ and ‘Serious’ challenges in LpWSC.

Table 5.7 Challenges on Management Capacity and Summary of Causes (LpWSC)

Challenges on Management Capacity	Category	Summary of Causes
[Very Serious]		
M14: Trainees’ effort have not been evaluated.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of trainees’ effort and on how the effort should be evaluated.
[Serious]		
M2: Evaluation method has not been established.	Internal Policy and Planning	There are no training programs on how to conduct evaluation activities.
M8: Average length of service with current CU is five to 10 years.	Governance, Management and Human Resource	Lots of retired staff are not interested in CU.
M10: Evaluation system for work performance is under development.	Governance, Management and Human Resource	There are no training programs on how to evaluate work performance. In addition, CU has no budget to employ the staff to evaluate work performance.
M12: A self-evaluation system is under development.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of a self-evaluation and on how to conduct a self-evaluation.
M16: It takes a week to respond to customer’s complaint.	Customer Relation	CU has no budget to employ the skilled staff to manage quick actions to customers’ complaint.

Source: Project Team

5) KWSC

From the results of evaluation, it was observed that four (21.1%) and three (15.8%) out of 19 parameters (100%) were ‘Very Serious’ and ‘Serious’ respectively. ‘Very Serious’ challenges are summarized as follows:

- M7: There are no manuals, or even if there is a manual, it has not been used at all.
- M14: Trainees’ effort have not been evaluated.
- M15: Customers’ information has not been developed at all.
- M16: It takes at least 10 days to respond to customer’s complaint.

Meanwhile, ‘Serious’ challenges are also summarized as follows:

- M2: Evaluation method has not been established.
- M4: Financial status has not been improved at all.
- M10: Evaluation system for work performance is under development.

Table 5.8 shows KWSC’s challenges on Management Capacity by category and summary of causes (See Annex-8 and Annex-37 for breakdown of the causes). Challenges on ‘Governance, Management and Human Resource’, ‘Finance’ and ‘Customer Relation’ make up each about 30% of the whole ‘Very Serious’ and ‘Serious’ challenges in KWSC.

Table 5.8 Challenges on Management Capacity and Summary of Causes (KWSC)

Challenges on Management Capacity	Category	Summary of Causes
[Very Serious]		

Challenges on Management Capacity	Category	Summary of Causes
M7: There are no manual, or even if there is a manual, it has not been used at all.	Finance	There are no training programs to make staff understand the necessity of using manuals.
M14: Trainees' effort have not been evaluated.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of trainees' effort and on how to evaluate their efforts.
M15: Customers' information has not been developed at all.	Customer Relation	There are no training programs on how to develop customers' information.
M16: It takes at least 10 days to respond to customer's complaint.	Customer Relation	There are no training programs to make staff understand the necessity of quick actions and on how to manage quick actions. On the other hand, CU faces much work load.
[Serious]		
M2: Evaluation method has not been established.	Internal Policy and Planning	There are no training programs on how to prepare evaluation method and to evaluate activities.
M4: Financial status has not been improved at all.	Finance	There are no training programs to make staff understand the necessity of analyzing financial status.
M10: Evaluation system for work performance is under development.	Governance, Management and Human Resource	There are no training programs to make staff understand the necessity of work performance evaluation and on how to evaluate work performance.

Source: Project Team

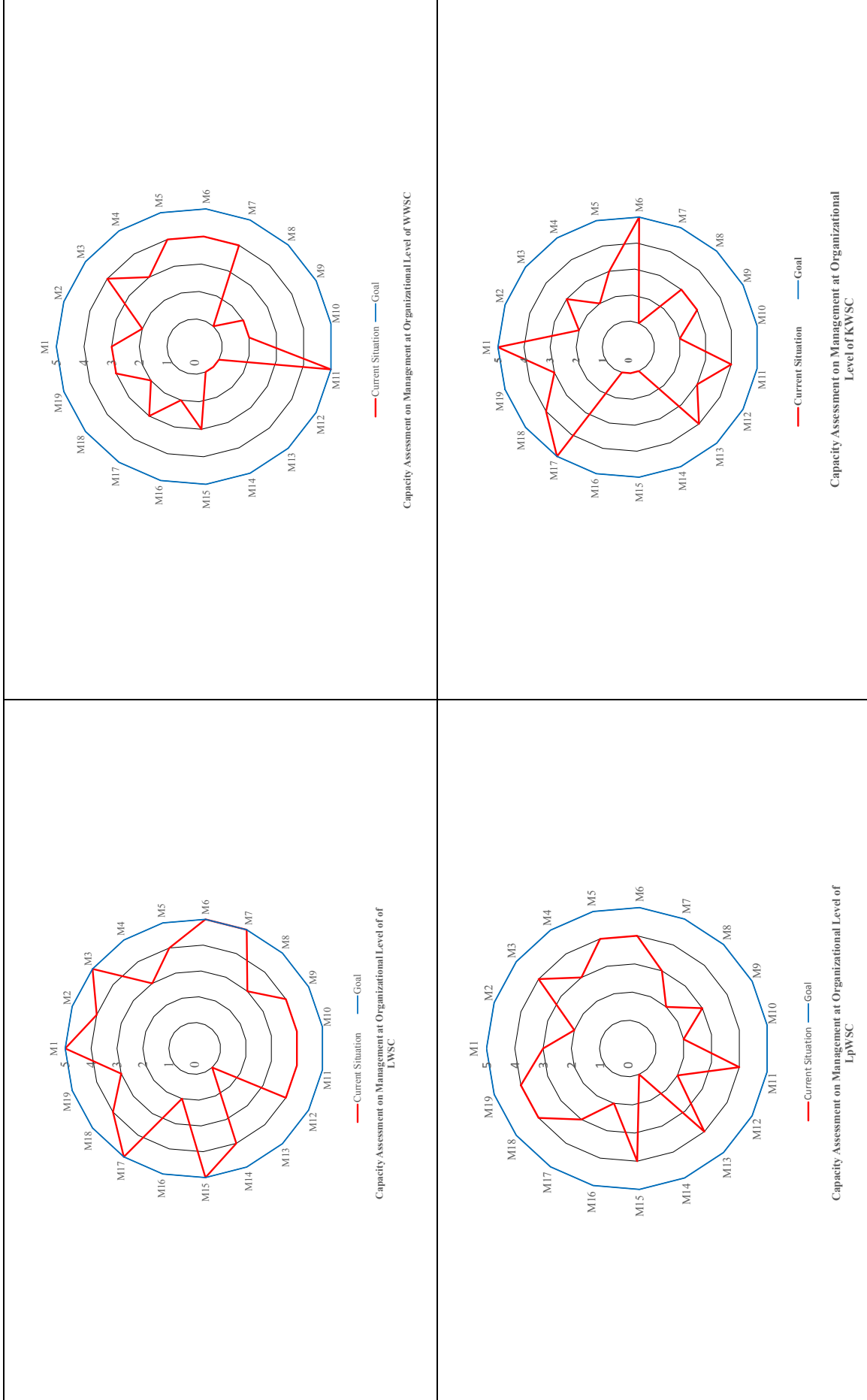


Figure 5.3 Current Condition on Management Capacity and their Goal of CUs

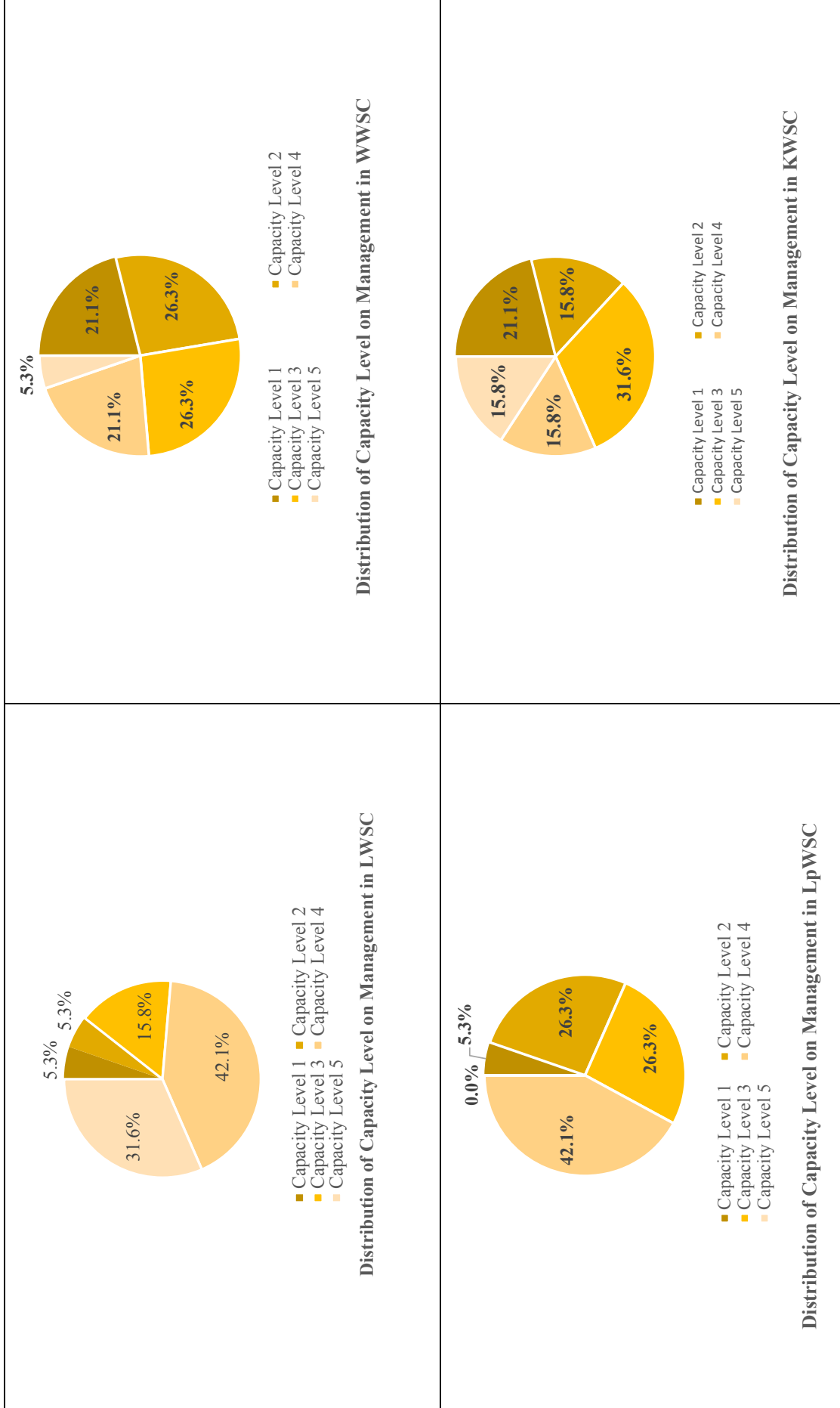


Figure 5.4 Distribution of Capacity Level on Management in CUs

5.2 Individual Level

Capacity of communication & negotiation was evaluated by a fellow member of staff for each CU. Since capacity assessment at individual level is very confidential, JICA Expert Team reported the result of respective Level 1 and Level 3 lumped, and that of Level 2 grouped by department to avoid revealing individual results.

Figure 5.5 to Figure 5.8 show current condition on Communication & Negotiation Capacity and their Goal of each CU. In addition, current condition on Communication & Negotiation Capacity are summarized as follows:

1) LWSC

[Directors' Level (Level 1)]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Directors' Level (Level 1) of LWSC.

[Managers' Level (Level 2) of Human Resource & Administration Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Human Resource & Administration Department.

[Managers' Level (Level 2) of Technical Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Technical Department.

[Managers' Level (Level 2) of Planning & Development Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Planning & Development Department.

[Managers' Level (Level 2) of Finance Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Finance Department.

[Managers' Level (Level 2) of Commercial Services Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Commercial Services Department.

[General Officers' Level (Level 3)]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in General officers' Level (Level 3) of LWSC.

Breakdown of the causes at Director, Manager/Supervisor and General officer level is Annex-15, Annex-16-20 and Annex-21 respectively.

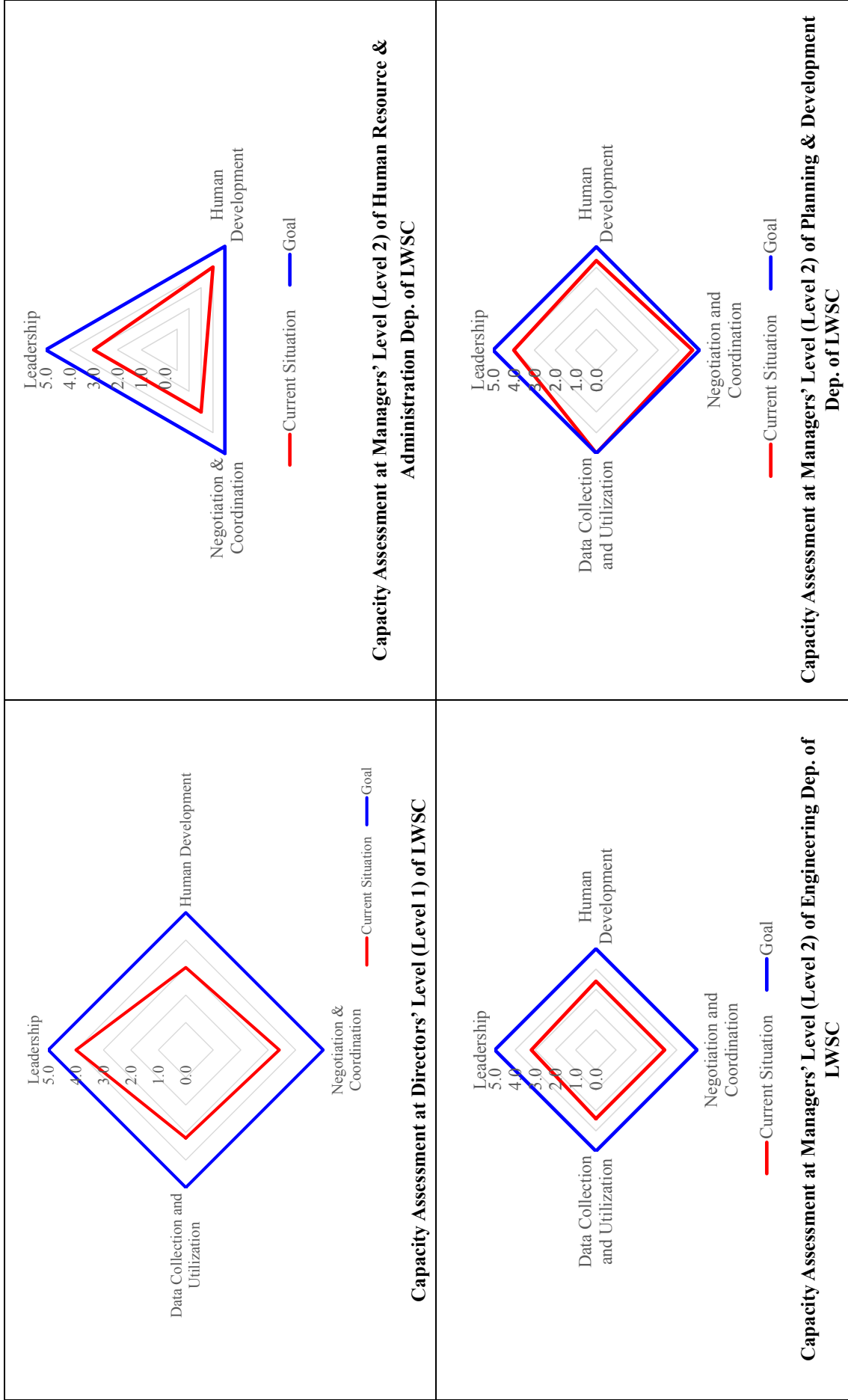


Figure 5.5 Current Condition on Communication & Negotiation Capacity and their Goal of LWSC's Staff

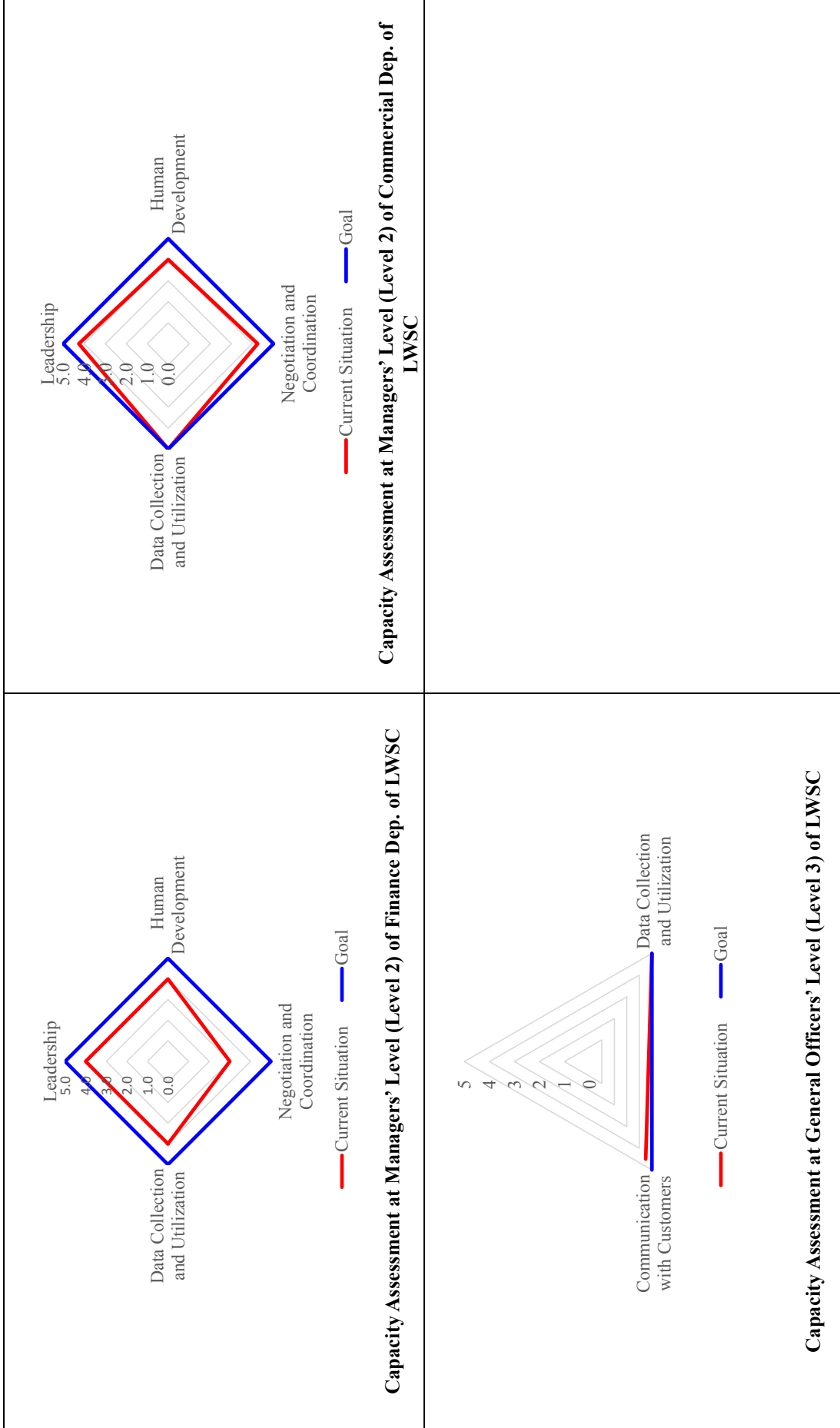


Figure 5.5 Current Condition on Communication & Negotiation Capacity and their Goal of LWSC's Staff

2) WWSC

[Managers' Level (Level 1)]

'Very Serious' on Communication & Negotiation Capacity was not observed. 'Serious' challenges are summarized as follows:

- C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.
- C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.
- C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.
- C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.

[Supervisors' Level (Level 2) of Human Resource and Administration Department]

'Very Serious' on Communication & Negotiation Capacity was not observed in Supervisors' Level (Level 2) of Human Resource and Administration Department. 'Serious' challenges are summarized as follows:

- C2: Capacity to supervise staff efficiently and effectively, and to strengthen the Department is still insufficient in terms of standards of current post.
- C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.

[Supervisors' Level (Level 2) of Technical Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Technical Department.

[Supervisors' Level (Level 2) of Finance Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Finance Department as well as Technical Department.

[Supervisors' Level (Level 2) of Commercial Service Department]

'Very Serious' on Communication & Negotiation Capacity was not observed. 'Serious' challenges are summarized as follows:

- C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.

[General Officers' Level (Level 3)]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in General Officers' Level (Level 3).

Table 5.9 shows WWSC's challenge on Communication & Negotiation Capacity by category and summary of causes. It is observed that both Managers' Level (Level 1) and Supervisors' Level (Level 2) commonly face serious challenges on 'Leadership' and Negotiation & 'Coordination' in LpWSC as well as WWSC.

Table 5.9 Challenges on Communication & Negotiation Capacity by Category and Summary of Causes (WWSC)

Challenges on Communication & Negotiation Capacity	Category	Summary of Causes
Managers' Level (Level 1)		
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Leadership	There are no training programs on how to lead staff.
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Human Development	There are no budget to develop human resource.
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Negotiation and Coordination	There are no training programs to make executive officer understand the necessity of negotiation and coordination with staff and or customers.
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Data Collection and Utilization	There are no training programs on how to develop and utilize data.
Supervisors' Level (Level 2) of Human Resource and Administration Department		
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Leadership	There are no training programs to make supervisors understand the necessity of leadership.
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Negotiation and Coordination	There are no training programs to make supervisors understand the necessity of negotiation and coordination with staff and or customers.
Supervisors' Level (Level 2) of Commercial Service Department		
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Communication with Customers	There are no training programs on how to develop human resource.

Source: Project Team

Breakdown of the causes at Manager, Supervisor and General officer level is Annex-24, Annex-25-28 and Annex-29 respectively.

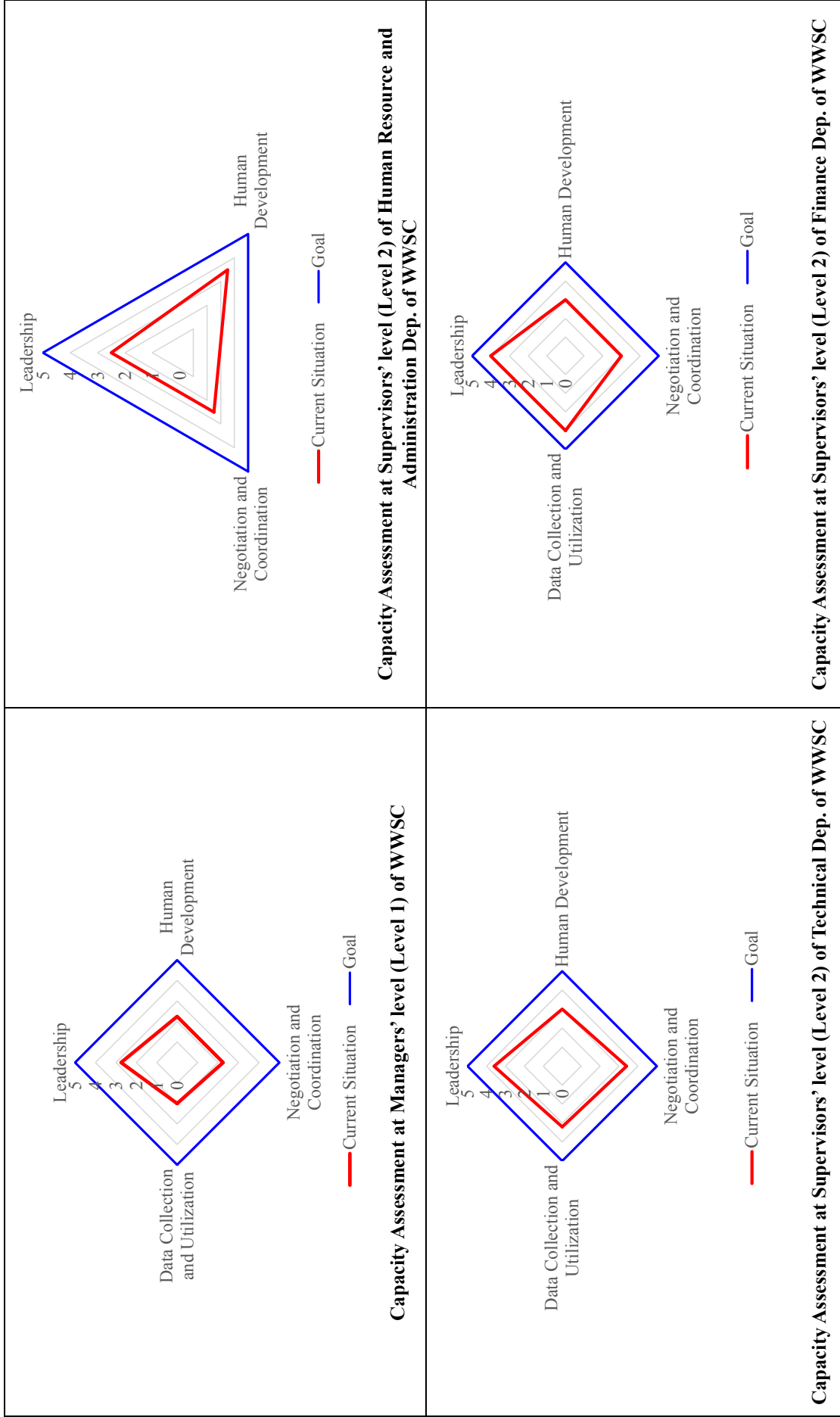


Figure 5.6 Current Condition on Communication & Negotiation Capacity and their Goal of WWSC's Staff



Figure 5.6 Current Condition on Communication & Negotiation Capacity and their Goal of WWSC's Staff

3) LpWSC

[Managers' Level (Level 1)]

'Very Serious' on Communication & Negotiation Capacity was not observed. 'Serious' challenges are summarized as follows:

- C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.
- C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.
- C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.

[Supervisors' Level (Level 2) of Technical Department]

'Very Serious' on Communication & Negotiation Capacity was not observed in Supervisors' Level (Level 2) of Technical Department. 'Serious' challenges are summarized as follows:

- C2: Capacity to supervise staff efficiently and effectively, and to strengthen the Department is still insufficient in terms of standards of current post.
- C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.
- C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.

[Supervisors' Level (Level 2) of Finance & Commercial Services Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Finance Department.

[General Officers' Level (Level 3)]

'Very Serious' on communication & negotiation was not observed in General officers' Level (Level 3). 'Serious' challenge is summarized as follows

- C6: Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.

Table 5.10 shows LpWSC's serious challenges on Communication & Negotiation Capacity by category and summary of causes. It is observed that both Managers' Level (Level 1) and Supervisors' Level (Level 2) commonly face serious challenges on 'Leadership' and Negotiation & 'Coordination' in LpWSC.

Table 5.10 Challenges on Communication & Negotiation Capacity by Category and Summary of Causes (LpWSC)

Challenges on Communication & Negotiation Capacity	Category	Summary of Causes
Managers' Level (Level 1)		
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Leadership	There are no training programs to make executive officer understand the necessity of leadership.
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Human Development	
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Negotiation and Coordination	There are no training programs to make executive officer understand the necessity of negotiation and coordination with staff and or customers.
Supervisors' Level (Level 2) of Technical Department		
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Leadership	There are no training programs on how to lead staff and no incentive as a leader.
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Negotiation and Coordination	There are no training programs to make supervisors understand the necessity of negotiation and coordination with staff and or customers.
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Data Collection and Utilization	There are no training programs to make supervisors understand the necessity of development and utilization of data.
General Officers' Level (Level 3)		
C6: Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.	Communication with Customers	There are no training programs to make general officers understand the necessity of communication with customers.

Source: Project Team

Breakdown of the causes at Manager, Supervisor and General officer level is Annex-32, Annex-33-34 and Annex-35 respectively.

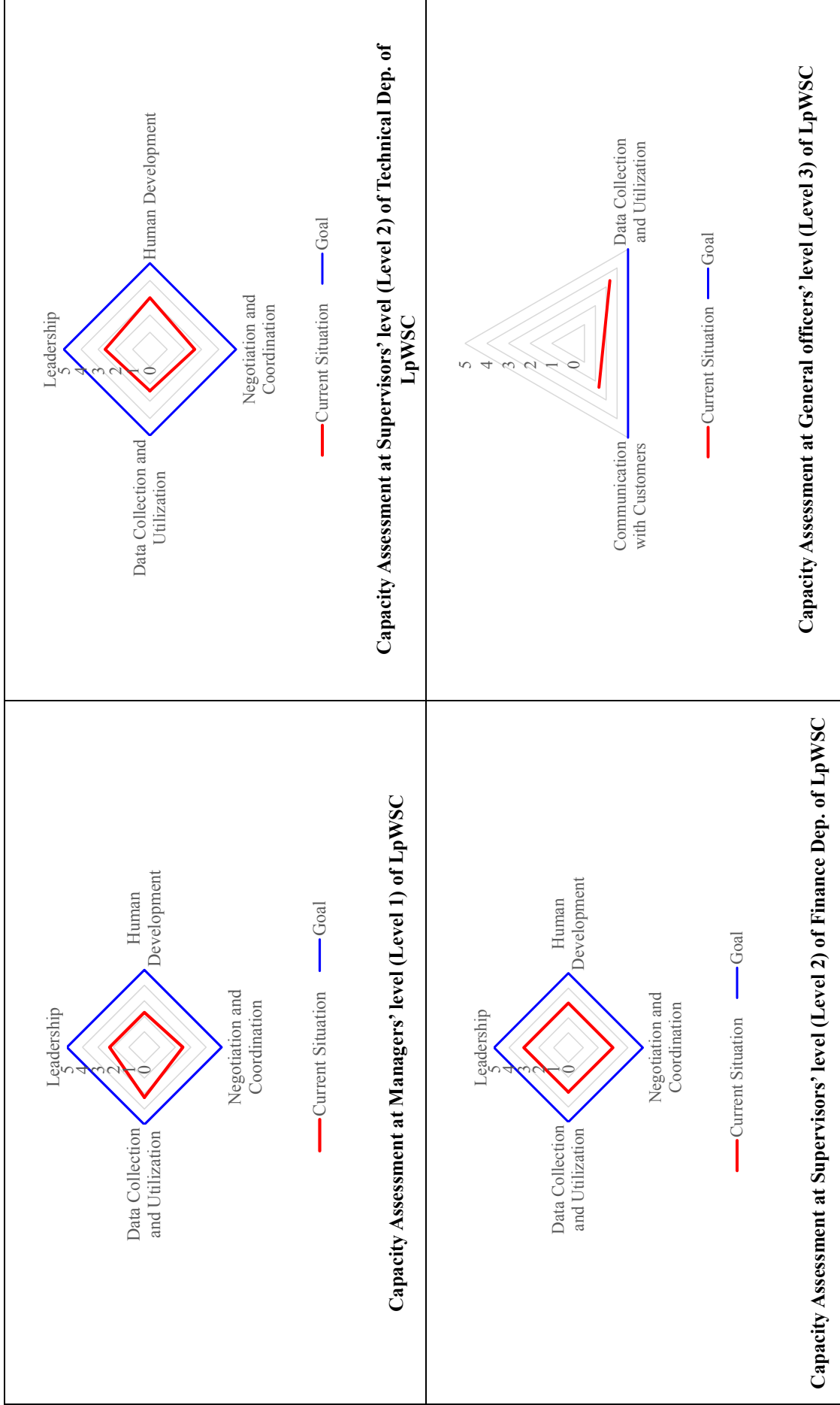


Figure 5.7 Current Condition on Communication & Negotiation Capacity and their Goal of LpWSC's Staff

4) **KWSC**

[Directors' Level (Level 1)]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Directors' Level (Level 1) of KWSC.

[Managers' Level (Level 2) of Engineering Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Managers' Level (Level 2) of Engineering Department.

[Managers' Level (Level 2) of Planning & Development Department]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in Supervisors' Level (Level 2) of Planning & Development Department.

[General Officers' Level (Level 3)]

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed in General officers' Level (Level 3).

Breakdown of the causes at Director, Manager/Supervisor and General officer level is Annex-38, Annex-39-40 and Annex-41 respectively.

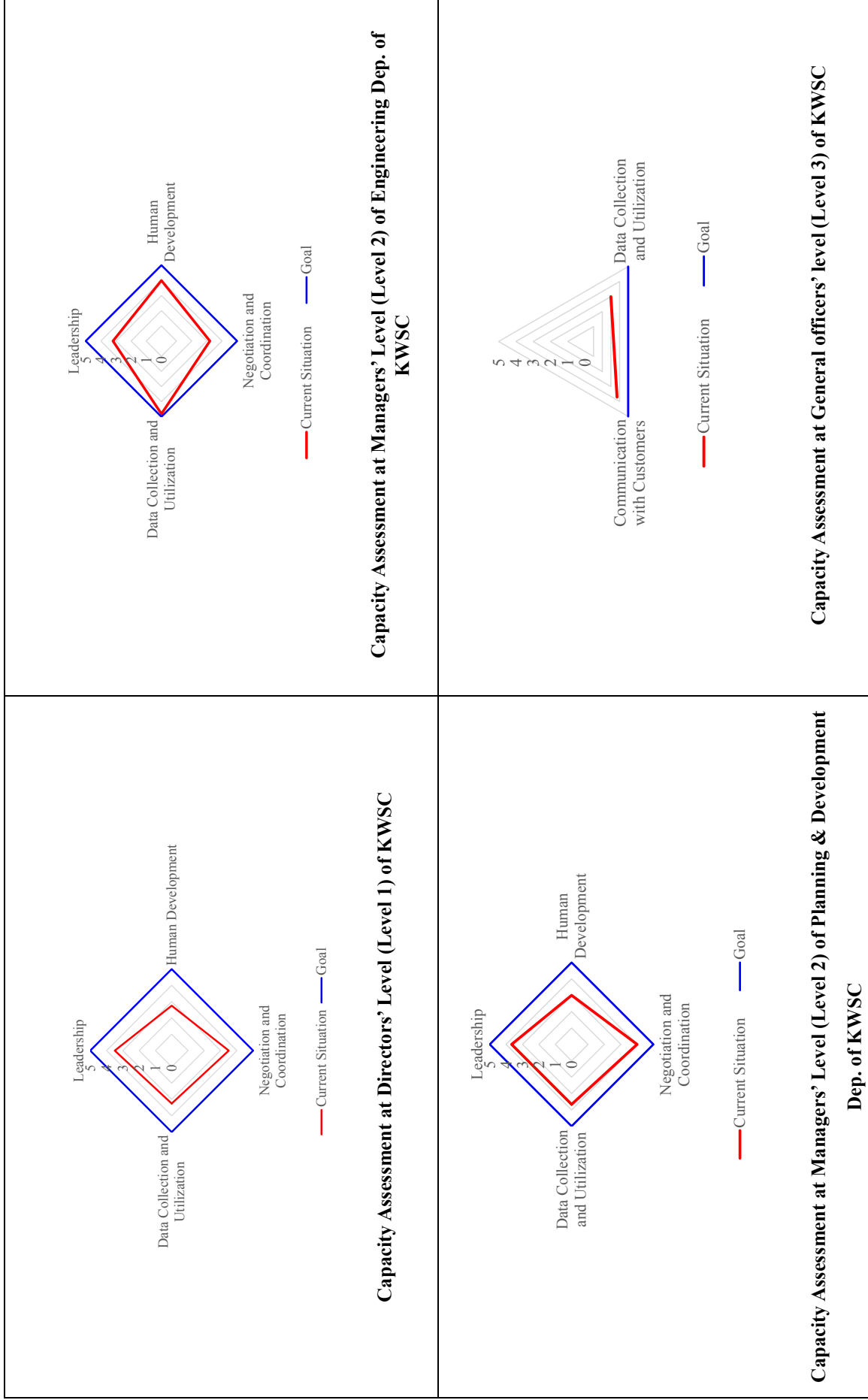


Figure 5.8 Current Condition on Communication & Negotiation Capacity and their Goal of KWSC's Staff

6. Challenges based on the Assessment Result

6.1 Organizational Level

Challenges and corresponding solutions for all the four CUs are tabulated in this section. Table 6.1 to Table 6.8 show challenges and corresponding solutions on PIs and Management Capacity for CUs. ‘Very Serious’ challenges and ‘Serious’ challenges were categorized into two; ‘Challenges that require Urgent Solutions’ and ‘Challenges that require Medium to Long-term Solutions’. It is desirable that the projects in terms of ‘Challenges that require Urgent Solution’ are scheduled to commence by 2023 as a Medium-Term Business Plan. Moreover, ‘Challenges that require medium to long-term solution’ may be scheduled after 2024. On the other hand, it is significant that projects integrated with each project in order to solve certain challenges should be carried out from the aspect of efficiency, effectiveness and the synergistic effect of the projects.

(1) PIs

Table 6.1 Challenges based on the Assessment Result in terms of PIs (LWSC)

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
Challenges that require Medium to Long-term Solutions					
P10: NRW ratio is 36-50%.	Reduction of NRW	X	X	X	<ul style="list-style-type: none"> ● Introduce water customer meters and equipment such as their test-bench ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Introduce leak detectors and conduct their training
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X	<ul style="list-style-type: none"> ● Introduce water customer meters and equipment such as their test-bench
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X		<ul style="list-style-type: none"> ● Formulate staffing plan to secure the dedicated staff who coordinate awareness raising activities ● Conduct the training including role-play required for awareness-raising for NRW reduction, water saving and tariff collection
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X		<ul style="list-style-type: none"> ● Examine remuneration system in performance basis ● Strengthen OJT program in all Department

Source: Project Team

Note: *Infrastructure, **Technical Assistance, ***Procurement of Equipment

Table 6.2 Challenges based on the Assessment Result in terms of PIs (WWSC)

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
Challenges that require Urgent Solutions					

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of water supply facility capacity	X	X		<ul style="list-style-type: none"> ● Rehabilitate the existing intake facilities and treatment plant ● Conduct the training required for maintenance of intake facilities and treatment plant ● Conduct the training required for construction supervision and population projection ● Conduct the training required for leak detection ● Replace the existing pipes with new ones
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X	X		<ul style="list-style-type: none"> ● Replace the existing pipes with other types of pipes ● Conduct the training required for construction supervision ● Formulate the plan of outsourcing for supervision
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment		X	X	<ul style="list-style-type: none"> ● Replace the mechanical & electrical equipment ● Conduct the training required for installation supervision ● Conduct the training required for maintenance of mechanical & electrical equipment
P10: NRW ratio is more than 50%	Reduction of NRW	X	X	X	<ul style="list-style-type: none"> ● Introduce water customer meters and equipment such as their test-bench ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Introduce leak detectors and conduct their training
P17: Training is quite rare or not provided at all.	Increase of the training		X		<ul style="list-style-type: none"> ● Establish dedicated team to formulate the training plan ● Formulate midterm and annual training plan ● Examine the training of trainers (ToT)
P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X		<ul style="list-style-type: none"> ● Appoint staff to implement awareness-raising activities from PR section
P20: Sewer coverage is zero.	Development of sewer system and or sanitation facilities	X	X		<ul style="list-style-type: none"> ● Examine types of waste water disposal ● Conducting the training required for population projection
P21: Average year of work that staff have experience on water supply service is zero to seven years.	Accumulation of technologies		X		<ul style="list-style-type: none"> ● Strengthen OJT program in all Department
Challenges that require Medium to Long-term Solutions					
P2: Overall service coverage is 50- 69%.	Increase of service coverage	X	X		<ul style="list-style-type: none"> ● Rehabilitate the existing intake facilities ● Conduct the training required

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
					for maintenance of intake facilities ● Replace and augment capacity of transmission & distribution pump ● Extend service reservoirs ● Conduct the training required for construction supervision
P8: CU has O&M manuals which are not effective.	Preparation of O&M manuals		X		● Conduct the training required for preparation of O&M manuals and their utilization
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X	● Install bulk meters ● Conduct the training required for planning, designing of installation and their maintenance
P14: All O&M costs apart from depreciation of water supply facilities are fully covered by water tariff.	Reduction of O&M cost and or increase of revenue	X	X		● Review current water tariff system ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Conduct the training required for leak detection

Source: Project Team

Note: *Infrastructure, **Technical Assistance, ***Procurement of Equipment

Table 6.3 Challenges based on the Assessment Result in terms of PIs (LpWSC)

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
Challenges that require Urgent Solutions					
P2: Overall service coverage is less than 50%	Increase of service coverage	X	X		● Rehabilitate the existing treatment plant facilities ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Conduct the training required for NRW reduction activities such as leak detection, monitoring of illegal connections
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	Augmentation of Treatment plant capacity	X	X		● Rehabilitate the existing treatment plant facilities
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	Replacement of mechanical & electrical equipment			X	● Replace the mechanical & electrical equipment ● Conduct the training required for installation supervision ● Conduct the training required for maintenance of mechanical & electrical equipment
P10: NRW ratio is more than 50%	Reduction of NRW	X	X	X	● Conducting the training required for illegal connection monitoring and awareness meeting ● Introduce water customer meters and equipment such as

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
					their test-bench ● Replace the existing distribution network (especially, ACP) with other types of pipes
P14: Only part of the O&M costs excluding depreciation of water supply facilities are covered by water tariff.	Reduction of O&M cost and or Increase of revenue	X	X		● Study record of current O&M cost ● Examine plan of replacement of inefficient equipment based on the above study ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Conduct the training required for leak detection and monitoring of illegal connection
Challenges that require Medium to Long-term Solutions					
P4: Asbestos, old cast iron and old steel pipes make up 50-75% of main pipelines.	Replacement of asbestos pipes	X			● Replace the existing pipes with other types of pipes
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters			X	● Install bulk meters
P19: A few effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X		● Conduct the training including role-play required for awareness-raising for NRW reduction, water saving and tariff collection

Source: Project Team

Note: *Infrastructure, **Technical Assistance, ***Procurement of Equipment

Table 6.4 Challenges based on the Assessment Result in terms of PIs (KWSC)

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
Challenges that require Urgent Solutions					
P4: Asbestos, old cast iron and old steel pipes make up 75% of main pipelines.	Replacement of asbestos pipes	X	X		● Replace the existing pipes with other types of pipes ● Conduct the training required for awareness on hazardous materials
P10: NRW ratio is more than 50%.	Reduction of NRW	X	X	X	● Conducting the training required for illegal connection monitoring and awareness meeting ● Introduce water customer meters and equipment such as their test-bench ● Replace the existing distribution network (especially, ACP) with other types of pipes ● Introduce leak detectors and conduct the training required for leak detection

Challenges	Outline of Solution	Means to solve Challenge			Specific Solution
		Infra.*	Tech.**	Pro.***	
P15: Collection ratio is less than 60%.	Strengthening of tariff collection system		X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of tariff collection ● Examine remuneration system in performance basis
P19: No or minimal effective awareness-raising activities have been implemented.	Conducting of the training on awareness-raising activities		X		<ul style="list-style-type: none"> ● Conduct the training including role-play required for awareness-raising for NRW reduction, water saving and tariff collection
Challenges that require Medium to Long-term Solutions					
P5: 80-94% of house connections are more than 25 years old.	Replacement of service pipelines	X	X		<ul style="list-style-type: none"> ● Replace service pipes including water customer meters ● Formulate midterm and annual plans that contain replacement of service pipes ● Conduct the training required for making staff understand the necessity of periodical replacement
P8: Facilities have O&M manuals which are not effective, leading to O&M deficiency.	Preparation of O&M manuals		X		<ul style="list-style-type: none"> ● Prepare O&M manuals ● Conduct the training required for preparation of O&M manuals and their utilization
P11: Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	Replacement of customer meters		X	X	<ul style="list-style-type: none"> ● Introduce water customer meters and equipment such as their test-bench ● Conduct the training required for awareness meeting to be done for staff in terms of influence to NRW by inaccuracy of reading and flat rate
P12: There are not enough functioning bulk meters for accurate flow rate of water production.	Installation of bulk meters		X	X	<ul style="list-style-type: none"> ● Install bulk meters ● Conduct the training required for making staff understand the necessity of bulk meters
P21: Average year of work that staff have experience on water supply service is 8-15 years.	Accumulation of technologies		X		<ul style="list-style-type: none"> ● Strengthen OJT program in all Department

Source: Project Team

Note: *Infrastructure, **Technical Assistance, ***Procurement of Equipment

(2) Management Capacity

Table 6.5 Challenges based on the Assessment Result in terms of Management Capacity (LWSC)

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
Challenges that require Urgent Solutions				
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X		<ul style="list-style-type: none"> ● Introduce a self-learning support system (software that requires internet for a self-learning) which is developed by educational institution for targeting staff of

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
				Level 1 and Level 2 ● Conduct the training required for managing software ● Conduct a self-learning through Internet
Challenges that require Medium to Long-term Solutions				
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X		● Conduct the training required for the way to respond to complaint and management of quick actions

Source: Project Team

Note: *Technical Assistance, **Procurement of Equipment

Table 6.6 Challenges based on the Assessment Result in terms of Management Capacity (WWSC)

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
Challenges that require Urgent Solutions				
M8: Average length of service with current CU is less than five years.	Accumulation of technologies	X		● Strengthen OJT program in all Department
M12: There is no a self-evaluation system.	Establishment of a self-evaluation system for staff	X		● Conduct the training required for applying a self-evaluation system
M13: There is no a self-learning system.	Establishment of a self-learning system for staff	X		● Introduce a self-learning support system (software that requires internet for a self-learning) which is developed by educational institution for targeting staff of Level 1 and Level 2 ● Conduct the training required for managing software ● Conduct a self-learning through Internet
Challenges that require Medium to Long-term Solutions				
M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X		● Conduct the training required for setting-up evaluation method and evaluating staff's activities
M9: Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Encouragement of recording for working time	X		● Conduct the training required for making staff understand the necessity of working record
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X		● Conduct the training required for making staff understand the necessity of work performance evaluation
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X		● Conduct the training required for making staff understand the necessity of quick actions and managing quick actions
M18: Customer survey has never been conducted but the survey is under consideration.	Conducting of the training on customer survey	X		● Conduct the training required for making staff understand how to do the customers' survey ● Introduce customer survey with questionnaires which is delivered by water meter readers

Source: Project Team

Note: *Technical Assistance, **Procurement of Equipment

Table 6.7 Challenges based on the Assessment Result in terms of Management Capacity (LpWSC)

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
Challenges that require Urgent Solutions				
M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of trainees' effort and evaluating trainees' effort
Challenges that require Medium to Long-term Solutions				
M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X		<ul style="list-style-type: none"> ● Conduct the training required for setting-up evaluation method and evaluating staff's activities
M8: Average length of service with current CU is five to 10 years.	Accumulation of technologies	X		<ul style="list-style-type: none"> ● Examine introduction of incentive in order for staff to be motivated
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of work performance evaluation and evaluating work performance
M12: A self-evaluation system is under development.	Establishment of a self-evaluation system for staff	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of a self-evaluation system and applying a self-evaluation system
M16: It takes a week to respond to customer's complaint.	Strengthening of customer service	X		<ul style="list-style-type: none"> ● Conduct the training required for managing quick actions

Source: Project Team

Note: *Technical Assistance, **Procurement of Equipment

Table 6.8 Challenges based on the Assessment Result in terms of Management Capacity (KWSC)

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
Challenges that require Urgent Solutions				
M7: There are no manual, or even if there is a manual, it has not been used at all.	Preparation of O&M manuals for meter reading, billing & tariff collection, and conducting of their training	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of manual
M14: Trainees' efforts have not been evaluated.	Establishment of evaluation system for trainees' efforts	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of trainees' effort and evaluating trainees' effort
M15: Customers' information has not been developed at all.	Development of database on customer information	X		<ul style="list-style-type: none"> ● Conduct the training required for developing customers' information ● Introduce Electric Data and Management System (EDMS), etc. ● Invite LWSC's staff who are familiar with EDMS.
M16: It takes at least 10 days to respond to customer's complaint.	Strengthening of customer service	X		<ul style="list-style-type: none"> ● Conduct the training required for making staff understand the necessity of quick actions and

Challenges	Outline of Solution	Means to solve Challenge		Specific Solution
		Tech.*	Pro.**	
				managing quick actions ● Examine deployment of staff to reduce work load
Challenges that require Medium to Long-term Solutions				
M2: Evaluation method has not been established.	Establishment of evaluation system for staff	X		● Conduct the training required for setting-up evaluation method and evaluating staff's activities
M4: Financial status has not been improved at all.	Conducting of the training on financial analysis	X		● Conduct the training required for making staff understand the necessity of analysis of financial status
M10: Evaluation system for work performance is under development.	Establishment of evaluation system for staff	X		● Conduct the training required for making staff understand the necessity of work performance evaluation and evaluating work performance

Source: Project Team

Note: *Technical Assistance, **Procurement of Equipment

6.2 Individual Level

Challenges and corresponding solutions for LpWSC and WWSC are tabulated. As stated in '5.2', there are no challenges on communication & Negotiation Capacity for KWSC and LWSC, according to the result of their self-evaluations. Table 6.9 to Table 6.10 show challenges and their solutions for LpWSC and WWSC.

Challenges shown in Table 6.9 to Table 6.10 are in 'Serious' situation but not in 'Very Serious'. As a result, each measure to solve the challenge is not a large scale task. It is preferable that challenges on communication & negotiation at individual level must be solved collaterally through the projects.

Table 6.9 Challenges based on the Assessment Result in terms of Communication & Negotiation Capacity (WWSC)

Challenges	Outline of Solution	Specific Solution
Managers' Level (Level 1)		
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership	● Conduct the <u>external</u> training required for gaining leadership through outsourcing
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification	● Conduct the training required for developing human resource in cooperation with NWASCO
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination	● Conduct the training required for making staff understand the necessity of negotiation and coordination with staff and/or customers
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis	● Conduct the training required for developing and utilizing data ● Introduce Electric Data and Management System (EDMS), etc. ● Invite LWSC's staff who are familiar with EDMS.
Supervisors' Level (Level 2) of Human Resource and Administration Department		
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or	Conducting of the training on the standard of the	● Conduct the training required for gaining leadership through

Challenges	Outline of Solution	Specific Solution
Department is still insufficient in terms of standards of current post.	leadership and supervision	outsourcing
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination	● Conduct the training required for making staff understand the necessity of negotiation and coordination with staff and/or customers
Supervisors' Level (Level 2) of Commercial Service Department		
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification	● Conduct the training required for developing human resource

Source: Project Team

Table 6.10 Challenges based on the Assessment Result in terms of Communication & Negotiation Capacity (LpWSC)

Challenges	Outline of Solution	Specific Solution
Managers' Level (Level 1)		
C1: Capacity to achieve goal and to raise the standards of the leadership is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership	● Conduct the training required for making executive officers understand the necessity of leadership
C3: Capacity to improve qualification of staff in consideration with post and job description is still insufficient in terms of standards of current post.	Conducting of the training on improvement of qualification	● Conduct the training required for making staff understand the necessity of human resource development and developing human resource
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination	● Conduct the training required for making staff understand the necessity of negotiation and coordination with staff and/or customers
Supervisors' Level (Level 2) of Technical Department		
C2: Capacity to supervise staff efficiently and effectively and to strengthen the Division and or Department is still insufficient in terms of standards of current post.	Conducting of the training on the standard of the leadership and supervision	● Conduct the training required for gaining leadership through outsourcing
C4: Capacity to convince the third parties to understand different ideas and opinion is still insufficient in terms of standards of current post.	Conducting of the training on communication and coordination	● Conduct the training required for making staff understand the necessity of negotiation and coordination with staff and/or customers
C5: Capacity to collect data and to apply for analysis for the water supply service is still insufficient in terms of standards of current post.	Conducting of the training on data collection and their analysis	● Conduct the training required for developing and utilizing data ● Introduce Electric Data and Management System (EDMS), etc. ● Invite LWSC's staff who are familiar with EDMS.
General Officers' Level (Level 3)		
C6: Capacity to communicate with customers in order to provide them with high quality water supply service is still insufficient in terms of current post.	Conducting of the training on communication with customers	● Conduct the training required for making staff understand the necessity of communication with customers

Source: Project Team

Annex-1

Summary of Challenges on PIs and their Causes in LWSC

Items	Challenges (Evaluation Criteria stated in Evaluation Manual)	Main Cause of Factor	Detail cause of Factor		Means to solve challenges		
					Infra.*	Tech.**	Pro.***
"Serious"							
P10: NRW Ratio	36 - 50%	1. Apparent loss 2. Real loss	1-2 Meter inaccuracies	1-2-1 Old meters 1-2-3 No equipment to calibrate water meters 1-2-5 Lack of budget to replace the existing water meters with new ones 2-1-2 Deterioration of pipes 2-1-4 Lack of leakage detectors	X	X	X
P11: Customer Meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	1. Difficulties in installing customer meters to all/necessary customers	1-1. Lack of budget to install necessary customer meters			X	X
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	1. Lack of Human Resources 2. Lack of experience on awareness-raising activities	1-2. No plan to hire more staff for implementation of Awareness-raising activity 2-1. Not enough training program for staff			X	
P21: Year of Work Experience on Water Supply Service	8-15 years	2. Retirement of lots of staff	2-1. Low Salary 2-2. Mandatory retirement 2-3. Self-convened retirement			X	

*Infrastructure, ** Technical Assistance, *** Procurement of Equipment

Annex-2

Summary of Challenges on PIs and their Causes in WWSC-1

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges		
				Infra.	Tech.	Pro.
“Very serious”						
P3: Purification Capacity	Less than -30%	1. Lack of water sources 2. Lack of capacity to treat raw water 3. Insufficient development of water supply facilities such as intake facilities, water treatment plant 4. Unexpected causes	1-2. Lack of adequate raw water intake facilities			
			1-3. Deterioration of intake facilities			
			1-4. Difficulties in maintaining intake facilities due to budget constraint			
			2-1. Deterioration of treatment plant			
P4: Transmission and Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	3. Lack of planning and designing the facilities of transmission and distribution mains	2-2. Difficulties in maintaining treatment plant due to budget constraint			
			3-1. Lack of skilled staff for planning water supply facilities	X		X
			3-2. Lack of skilled staff for designing water supply facilities			
			3-3. Lack of skilled staff for supervising construction			
			3-4. Lack of budget to develop water supply facilities			
			4-1. Unexpected increase in water supply population and water consumption			
			4-2. Frequent leakage			
			3-1. Lack of budget			
3-2. Lack of skilled staff for planning and or designing the facilities						
3-3. Lack of skilled staff for supervising construction		X		X		
3-4. Difficult procurement						

Summary of Challenges on PIs and their Causes in WWSC-2

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges	
				Infra.	Tech. Pro.
P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.	1. Deterioration of equipment 2. Inadequate Maintenance	1-1. Lack of budget to replace equipment with new ones		
			1-2. Lack of skilled staff for planning and or designing equipment and replacement		
			1-3. Lack of skilled staff for supervising replacement of equipment		
			1-4. Difficulties in procurement of replacement parts		
P10: NRW Ratio	More than 50%	1. Apparent loss	2-1. Lack of budget to maintain equipment		
			2-2. Lack of skilled staff for maintaining equipment		
		Meter inaccuracies	1-2-1 Old meters		
			1-2-2 Lack of skilled staff for calibration water meters		
			1-2-3 No equipment to calibrate water meters		
			1-2-4 Lack of budget to maintain water meters		
			1-2-5 Lack of budget to replace the existing water meters with new ones		
		2. Real loss	2-1-1 Lack of budget to manage water leakage		
			2-1-2 Deterioration of pipes		
			2-1-3 Lack of skilled staff for detecting leakage		
2-1-4 Lack of leakage detectors					
2-1-5 Existence of pipes (AC pipes)					
P17: Implementation of Training	Training is quite rare or not provided at all.	1.Lack of budget 2.No training implementation system 3.No training center 4.No teachers in CU			X

Summary of Challenges on PIs and their Causes in WWSC-3

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges	
				Infra.	Tech. Pro.
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	1. Lack of Human Resources	1-1. Lack of budget to employ skilled staff to implement awareness-raising activities		X
P20: Sewerage Coverage (including On-site Facilities)	0%	1. Low priority for sewerage development 2. Unexpected causes	1-2. Lack of budget 2-1. Unexpected increasing citizens 2-2. Difficulties in catching up developing sewerage system with population growth	X	X
P21: Year of Work Experience on Water Supply Service	0-7 years	1. Short history of CU	1-1. Recent establishment		X
“Serious”					
P2: Overall Water Supply Coverage	50-69%	1. Lack of water sources	1-2. Lack of adequate raw water intake facilities		
			1-3. Deterioration of intake facilities		
			1-4. Difficulties in maintaining intake facilities due to budget constraint		
			1-5. Lack of skilled staff for maintaining intake facilities		
			3-1. Insufficient capacity of transmission and or distribution pumps		
			3-2. Deterioration of transmission and or distribution pumps		
			3-3. Insufficient capacity of service reservoirs		X
			3-4. Difficulties in maintaining transmission and or distribution facilities due to budget constraint		X
			4-1. Lack of skilled staff for planning water supply facilities		
			4-2. Lack of skilled staff for designing water supply facilities		
4-3. Lack of skilled staff for supervising construction					
4-4. Lack of budget to develop water supply facilities					

Summary of Challenges on PIs and their Causes in WWSC-4

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges		
				Infra.	Tech.	Pro.
P8: O&M of the facilities	Facilities have O&M manuals which are not effective, leading to O&M deficiencies.	2. Missing manuals 4. No appropriate manuals	2-1. Inappropriate management. 4-2. Lack of skilled staff for preparing manuals.		X	
P12: Bulk Meters	There are not enough functioning bulk meters installed at the places requiring them for accurate measurement of water production and basic control of distribution; and existing bulk meters are not well maintained.	2. No planning to install the bulk meters	2-1. Lack of budget			
		3. No maintenance	2-2. Lack of skilled staff for planning and or designing of bulk meter installation			
			3-2. Lack of skilled staff for maintaining bulk meters		X	X
P14: Cost Recovery Level	All O&M costs (except for depreciation of water supply facilities) are fully covered by water tariff. 'Annual Billed Revenue for Water / Total Annual Operating Costs for Water Excluding Depreciation and Financing Tariff' \geq 1	1. Inappropriate water tariff	1-1. Low water tariff.			
		2. High NRW	2-1. Much leakage.			
		3. Lack of facility efficiency	3-1. Deterioration of facilities.	X	X	

Annex-3

Summary of Challenges on PIs and their Causes in LpWSC-1

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges		
				Infra.	Tech.	Pro.
“Very Serious”						
P2: Overall Water Supply Coverage	Less than 50%	2. Lack of capacity to treat raw water 5. Unexpected causes	2-1. Deterioration of treatment facilities	X	X	
			5-2. Frequent leakage			
			5-3. Illegal connections			
P3: Surplus Purification Capacity	Less than -30%	2. Lack of capacity to treat raw water	2-1. Deterioration of treatment plant	X	X	
			2-2. Difficulties in maintaining treatment plant due to budget constraint			
P6: Mechanical and Electrical Equipment	More than 30% of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are not operated due to serious failures.	1. Deterioration of equipment 2. Inadequate Maintenance	1-1. Lack of budget to replace equipment with new ones			X
			2-1. Lack of budget to maintain equipment			
P10: NRW Ratio	More than 50%	1. Apparent loss	1-1 Lots of illegal connections			
			1-1-1 Lack of awareness meeting for water users			
			1-1-3 Difficulties in identifying illegal connections			
			1-1-6 Lack of staff or patrolling illegal connections			
			1-2 Meter inaccuracies			
			1-2-3 No equipment to calibrate water meters			
			1-2-4 Lack of budget to maintain water meters			X
2. Real loss	(from transmissions, storage facilities, distribution mains or service connections)	1-2-5 Lack of budget to replace the existing water meters with new ones				
		2-1-2 Deterioration of pipes 2-1-5 Existence of pipes (AC pipes)				

Summary of Challenges on PIs and their Causes in LpWSC-2

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges		
				Infra.	Tech.	Pro.
P14: Cost Recovery Level	Only part of the O&M costs (excluding depreciation of water supply facilities) are covered by water tariff. 'Annual Billed Revenue for Water / Total Annual Operating Costs for Water Excluding Depreciation and Financing Tariff' < 1	1. Inappropriate water tariff 2. High NRW 3. Lack of facility efficiency	1-2. High O&M costs. 1-3. Difficulties in raising water tariff. 2-1. Much leakage. 2-2. Illegal connections. 3-1. Deterioration of facilities. 3-2. Lack of skilled staff for maintaining water supply facilities 3-3. Lack of budget to maintain water supply facilities well	X	X	
"Serious"						
P4: Transmission and Distribution Mains	50 - 75% of mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	3. Lack of planning and designing the facilities of transmission and distribution mains	3-1. Lack of budget	X		
P12: Bulk Meters	There are not enough functioning bulk meters installed at the places requiring them for accurate measurement of water production and basic control of distribution; and existing bulk meters are not well maintained.	2. No planning to install the bulk meters	2-1. Lack of budget			X
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	2. Lack of experience on awareness-raising activities	2-1. Not enough training program for staff		X	

Annex-4

Summary of Challenges on PIs and their Causes in KWSC-1

Items	Challenge	Main Cause of Factor	Detail cause of Factor		Means to solve challenges			
			Infra.	Tech.	Pro.			
“Very Serious”								
P4: Transmission and Distribution Mains	More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	2. No awareness concerning use of asbestos pipes	2-1. Lack of training concerning hazardous materials	X	X			
		3. Lack of planning and designing the facilities of transmission and distribution mains						
P10: NRW Ratio	More than 50%	1. Apparent loss	1-1 Lots of illegal connections	1-1-1 Lack of awareness meeting for water users	X	X		
				1-1-2 Lack of Public Relation (PR)				
				1-1-3 Difficulties in identifying illegal connections				
				1-1-5 Insufficient water supply service				
				1-1-6 Lack of staff or patrolling illegal connections				
				1-2-4 Lack of budget to maintain water meters				
		2. Real loss	2-1 Water leakage (from transmissions, storage facilities, distribution mains or service connections)	1-2 Meter inaccuracies	1-2-5 Lack of budget to replace the existing water meters with new ones	X	X	X
					2-1-1 Lack of budget to manage water leakage			
					2-1-2 Deterioration of pipes			
					2-1-5 Existence of pipes (AC pipes)			

Summary of Challenges on PIs and their Causes in KWSC-2

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges	
				Infra.	Tech. Pro.
P15: Collection Ratio	Less than 60%	3. No collection	3-1. No motivation of staff to collect tariff		
			3-2. No incentive for staff to collect tariff		
			3-3. Lack of skilled staff for tariff collection		X
			3-5. others (No collection for Sewerage due to usage of shallow well, not supplied water)		
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2. Lack of experience on awareness-raising activities	2-1. Not enough training program for staff		X
P5: House Connections	80 - 94% of house connections are more than 25 years old.	1. Difficulties in replacing house connections where more than 25 years has passed since pipes were laid. 2. Even though there are service pipes that more than 25 years has passed since service pipes were laid, there is no problem. Namely, no understanding the necessity of periodical replacement of service pipes	1-1. Lack of budget to replace service pipes		
			1-4. No the plans to replace house connections which are more than 25 years old		
P8: O&M of the facilities	Facilities <u>have</u> O&M manuals which are not effective, leading to O&M deficiencies.	1. No manuals prepared 2. Missing manuals 4. No appropriate manuals	2-1. No training to make staff understand the necessity of periodical replacement of service pipes	X	X
			1-1 Lack of budget.		
			1-2. Lack of skilled staff for preparing manuals		
			2-1. Inappropriate management. 4-1. Lack of budget to make new manuals. 4-2. Lack of skilled staff for preparing manuals.		X

Summary of Challenges on PIs and their Causes in KWSC-3

Items	Challenge	Main Cause of Factor	Detail cause of Factor	Means to solve challenges		
				Infra.	Tech.	Pro.
P11: Customer Meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	2. No awareness to use customer meters	2-2. No awareness meeting to make customers understand the necessity of customer meters		X	X
P12: Bulk Meters	There are not enough functioning bulk meters installed at the places requiring them for accurate measurement of water production and basic control of distribution; and existing bulk meters are not well maintained.	1. No awareness to use bulk meters	1-1. No awareness meeting to make staff understand the necessity of bulk meters		X	X
P21: Year of Work Experience on Water Supply Service	8-15 years	1. Short history of CU	1-1. Recent establishment		X	

Annex-5

Summary of Challenges on Management Capacity and their Causes in LWSC

Items	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
“Very Serious”						
M13: Self-learning Support System	There is no a self-learning system.	I. No awareness to introduce a self-learning support system	b. No training on how to use a self-learning support system		X	
“Serious”						
M16: Time to respond to Customer's Complaint	It takes a week to respond to customer's complaint.	II. No understanding of the necessity of quick actions to customers complaint	b. No training on how to manage quick actions		X	

Annex-6

Summary of Challenges on Management Capacity and their Causes in WWSC

Items	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
“Very Serious”						
M8: Average Length of Service with CUs or Other Water Authority	Less than five years	I. Short history	a. Recent establishment			
M12: Self-evaluation System at Individual Level	There is no a self-evaluation system.	I. No awareness to introduce a self-evaluation	b. No training on how to conduct a self-evaluation			X
M13: Self-learning Support System	There is no a self-learning system.	I. No awareness to introduce a self- learning support system	b. No training on how to use a self-learning support system			
“Serious”						
M2: Evaluation Method to achieve Goal	Evaluation method has not been established.	IV. No skill to prepare evaluation method	b. No training on how to prepare evaluation method c. No training on how to evaluate activities			X
M9: Record of Working Time	Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	II. No understanding of the necessity of working record	a. No training to make staff understand the necessity of working record			X
M10: System to evaluate Work Performance Capacity towards Goal	Evaluation system for work performance is under development.	II. No understanding of necessity of work performance evaluation	a. No training to make staff understand the necessity of work performance evaluation			X
M16: Time to respond to Customer's Complaint	It takes a week to respond to customer's complaint.	I. No awareness to take an action quickly to customers complaint	a. No training to make staff understand the necessity of quick actions b. No training on how to manage quick actions			X
M18: Customer's Survey	Customer survey has never been conducted but the survey is under consideration.	V. No surveyor to be outsourced to conduct customer survey	d. No budget to contract surveyor			X

Annex-7

Summary of Challenges on Management Capacity and their Causes in LpWSC

Items	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra	Tech.	Pro.
“Very Serious”						
M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.	IV. No skill to evaluate trainees' effort	a. No training to make staff understand the necessity of trainees' effort b. No training on how to evaluate trainees' effort c. No budget to employ staff		X	
“Serious”						
M2: Evaluation Method to achieve Goal	Evaluation method has not been established.	III. No staff to prepare evaluation method	c. No training on how to evaluate activities		X	
M8: Average Length of Service with CUs or Other Water Authority	Five to 10 years	II. Retirement of lots of staff	b. No interesting		X	
M10: System to evaluate Work Performance Capacity towards Goal	Evaluation system for work performance is under development.	III. No staff to evaluate work performance IV. No skill to evaluate work performance	c. No budget to employ staff b. No training on how to evaluate work performance c. No budget to employ staff		X	
M12: Self-evaluation System at Individual Level	Currently, a self-evaluation system is under development.	IV. No understanding on how to use the result	a. No training to make staff understand the necessity of a self-evaluation b. No training on how to conduct a self-evaluation		X	
M16: Time to respond to Customer's Complaint	It takes a week to respond to customer's complaint.	IV. No skill to manage quick actions to customers complaint	d. No budget to employ staff		X	

Annex-8

Summary of Challenges on Management Capacity and their Causes in KWSC

Items	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
“Very Serious”						
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	II. No understanding of the necessity of manual	a. No training to make staff understand the necessity of manual		X	
M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.	I. No awareness to evaluate trainees' effort II. No understanding of the necessity of trainees' effort	a. No training to make staff understand the necessity of trainees' effort b. No training on how to evaluate trainees' effort		X	
M15: Development of Customer's Information	Customers' information has not been developed at all.	IV. No skill to develop customers' information	b. No training on how to develop customers' information		X	
M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customer's complaint.	II. No understanding of the necessity of quick actions to customers complaint III. No staff to take actions quickly to customers complaint IV. No skill to manage quick actions to customers complaint	a. No training to make staff understand the necessity of quick actions c. Much work load b. No training on how to manage a quick action		X	
“Serious”						
M2: Evaluation Method to achieve Goal	Evaluation method has not been established.	V. No skilled staff to evaluate activities	b. No training on how to prepare evaluation method c. No training on how to evaluate activities		X	
M4: Financial Improvement Status towards achievement of Goal	Financial status has been improved barely.	II. No understanding of necessity of financial analysis	a. No training to make staff understand the necessity of analysis of financial status		X	
M10: System to evaluate Work Performance	Evaluation system for work performance is	I. No awareness to evaluate work performance	a. No training to make staff understand the necessity of work performance evaluation		X	

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Items	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
Capacity towards Goal	under development.	II. No understanding of necessity of work performance evaluation	b. No training on how to evaluate work performance			

Annex-9

Summary of Challenges on Communication & Negotiation Capacity and their Causes in LWSC

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed for Director, Engineering Department, Planning & Development Department, Finance Department, Commercial Service Department and General Officer .

Annex-10

Summary of Challenges (“Serious”) on Communication & Negotiation Capacity and their Causes in WWSC-1

Indicator	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
Managers						
C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of leadership	b. No training on how to lead staff	X		
C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	IV. No skill to develop human resource	c. No budget to develop human resource	-		
C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of negotiation and coordination with staff and/or customers	a. No training to make staff understand the necessity of negotiation and coordination with staff and/or customers	X		
C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect Data and to apply for Analysis for the Water Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	IV. No skill to develop and utilize data	b. No training on how to develop and utilize data	X		
Human Resource and Administration Department						
C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of leadership	a. No training to make supervisor understand the necessity of leadership	X		

Summary of Challenges (“Serious”) on Communication & Negotiation Capacity and their Causes in WWSC-2

Indicator	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of negotiation and coordination with staff and/or customers	a. No training to make staff understand the necessity of negotiation and coordination with staff and/or customers		X	
Commercial Service Department						
C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	IV. No skill to develop human resource	b. No training on how to develop human resource		X	

Note:

Neither of ‘Very Serious’ nor ‘Serious’ on Communication & Negotiation Capacity was observed in Technical Department, Financial Department and General Officer in WWSC.

Annex-11

Summary of Challenges (“Serious”) on Communication & Negotiation Capacity and their Causes in LpWSC-1

Indicator	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
Managers						
C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of leadership	a. No training to make executive officer understand the necessity of leadership		X	
C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	I. No awareness to develop human resource	a. No training to make staff understand the necessity of human resource development		X	
		II. No understanding of the necessity of human resource development	a. No training to make staff understand the necessity of human resource development			
C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of negotiation and coordination with staff and/or customers	a. No training to make staff understand the necessity of negotiation and coordination with staff and/or customers		X	
Technical Department						
C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	I. No awareness to lead staff	b. No training on how to lead staff			
		III. No motivation of managers and or supervisors	d. No incentive		X	
C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	I. No awareness to negotiate and coordinate with staff and/or customers	a. No training to make staff understand the necessity of negotiation and coordination with staff and/or customers		X	

Summary of Challenges (“Serious”) on Communication & Negotiation Capacity and their Causes in LpWSC-2

Indicator	Challenge	Main Causes	Detail Causes	Means to solve challenges		
				Infra.	Tech.	Pro.
C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service General Officer	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	II. No understanding of the necessity of development and utilization of data such as customers’ information and technical data	a. No training to make staff understand the necessity of development and utilization of data		X	
C6: General Officers: Capacity to communicate with Customers in order to provide them with high Quality Water Supply Service	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	I. No awareness to communicate with customers II. No understanding of the necessity of communication with customers	a. No training to make staff understand the necessity of communication with customers a. No training to make staff understand the necessity of communication with customers		X	

Note:

Neither of ‘Very Serious’ nor ‘Serious’ on Communication & Negotiation Capacity was Observed in Finance & Commercial Service Department in LpWSC

Annex-12

Summary of Challenges on Communication & Negotiation Capacity and their Causes in KWSC

Neither of 'Very Serious' nor 'Serious' on Communication & Negotiation Capacity was observed for Director, Engineering Department, Planning & Development Department and General Office.

Annex-13

Causes in Performance Indicators (PIs) of LWSC-1

Indicators	1.	2.	3.	4.	5.	6.	7.	8.	1-1.	1-2.	1-3.	1-4.	1-5.	1-6.	1-7.	2-1.	2-2.	2-3.	2-4.	2-5.	2-6.	3-1.	3-2.	3-3.	3-4.	3-5.	3-6.	4-1.	4-2.	4-3.	4-4.	4-5.	4-6.				
1) Aspects to be improved mainly by Facility Investment																																					
P1: Continuity of supply	✓	✓	✓						✓	✓						✓																					
P2: Overall water supply coverage	✓	✓	✓						✓	✓						✓																					
P3: Supplus purification capacity	✓	✓	✓						✓	✓																											
P4: Transmission and distribution mains	✓	✓	✓						✓	✓																											
P5: House connections	✓	✓	✓						✓	✓																											
P6: Mechanical and electrical equipment	✓	✓	✓						✓	✓																											
P7: Rate of facility utilization	✓	✓	✓						✓	✓																											
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																																					
P8: O&M of the facilities			✓																																		
P9: Drawings of pipe facilities		✓	✓																																		
P10: NRW ratio	✓	✓	✓																																		
P11: Customer meters	✓	✓	✓						✓	✓																											
P12: Bulk meters	✓	✓	✓																																		
P13: Water quality parameters tested at purification plants	✓	✓	✓																																		
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																																					
P14: Cost recovery level	✓	✓	✓						✓	✓																											
P15: Collection ratio																																					
P16: Number of staff working especially for water (Number/000 water connections)																																					
P17: Implementation of training																																					
P18: Complaint handling																																					
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																																					
4) Aspects to be improved mainly by Program Approach																																					
P20: Sewerage coverage (including On-site Facilities)	✓	✓	✓																																		
5) General Aspect																																					
P21: Year of work experience on water supply service	✓	✓	✓																																		

Note:

PIs highlighted in pink color: 'Serious'

Causes in Performance Indicators (PIs) of LWSC-2

Indicators	5-1.	5-2.	5-3.	5-4.	5-5.	5-6.	1-1-1.	1-1-2.	1-1-3.	1-1-4.	1-1-5.	1-1-6.	1-1-7.	1-2-1.	1-2-2.	1-2-3.	1-2-4.	1-2-5.	1-2-6.	2-1-1.	2-1-2.	2-1-3.	2-1-4.	2-1-5.	2-1-6.	2-1-7.	
1) Aspects to be improved mainly by Facility Investment																											
P1: Continuity of supply																											
P2: Overall water supply coverage																											
P3: Surplus purification capacity																											
P4: Transmission and distribution mains																											
P5: House connections																											
P6: Mechanical and electrical equipment																											
P7: Rate of facility utilization																											
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																											
P8: O&M of the facilities																											
P9: Drawings of pipe facilities																											
P10: NRW ratio																											
P11: Customer meters																											
P12: Bulk meters																											
P13: Water quality parameters tested at purification plants																											
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																											
P14: Cost recovery level																											
P15: Collection ratio																											
P16: Number of staff working especially for water (Number/000 water connections)																											
P17: Implementation of training																											
P18: Complaint handling																											
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																											
4) Aspects to be improved mainly by Program Approach																											
P20: Sewerage coverage (including On-site Facilities)																											
5) General Aspect																											
P21: Year of work experience on water supply service																											

Note:

PIs highlighted in pink color: 'Serious'

Annex-14

Causes in Evaluation Parameters (Management Capacity) of LWSC-1

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																												
M1: Review on Short, Middle and Long Term Plan																												
M2: Evaluation Method to achieve Goal	✓																											
2) Finance																												
M3: Analysis on Annual Financial Status																												
M4: Financial Improvement Status towards achievement of Goal																												
M5: Status of Metered Rate																												
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																												
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection.																												
3) Governance, Management and Human Resources																												
M8: Average Length of Service with CUs or Other Water Authority								✓																				
M9: Record of Working Time															✓													
M10: System to evaluate Work Performance Capacity towards Goal																												
M11: Allocation and Input of Staff according to the Work Load															✓													
M12: Self-evaluation System at Individual Level																												
M13: Self-learning Support System		✓																										
M14: Evaluation of Trainee's Efforts																												
4) Customer Relation																												
M15: Development of Customer's Information																												
M16: Time to respond to Customer's Complaint																												
M17: Record for dealing with Customer 's Complaints																												
M18: Customer's Survey																												
M19: Promotion of Customer's Awareness																												

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Causes in Evaluation Parameters (Management Capacity) of LWSC-2

Evaluation Items	V							VI							VII						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																					
M1: Review on Short, Middle and Long Term Plan																					
M2: Evaluation Method to achieve Goal																					
2) Finance																					
M3: Analysis on Annual Financial Status																					
M4: Financial Improvement Status towards achievement of Goal																					✓
M5: Status of Metered Rate				✓																	
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																					
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection.																					
3) Governance, Management and Human Resources																					
M8: Average Length of Service with CUs or Other Water Authority																					
M9: Record of Working Time																					
M10: System to evaluate Work Performance Capacity towards Goal																					
M11: Allocation and Input of Staff according to the Work Load																					
M12: Self-evaluation System at Individual Level																					
M13: Self-learning Support System																					
M14: Evaluation of Trainee's Efforts																					
4) Customer Relation																					
M15: Development of Customer's Information																					
M16: Time to respond to Customer's Complaint																					
M17: Record for dealing with Customer 's Complaints																					
M18: Customer's Survey																					
M19: Promotion of Customer's Awareness				✓																	

Note:

Pls highlighted in yellow color: 'Very Serious'

Pls highlighted in pink color: 'Serious'

Annex-15

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Directors in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	0	0	0	0				0	0	2	0				0	0	1	2										
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-				-	-	-	-				-	-	-	-										
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0				0	0	0	0				0	3	1					0	1	1	1			
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	0							5																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	2						0	1						1	3					
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-16

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Human Resource and Administration Department in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership																												
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	1	0	0	0			1	0	0	0	0			0	0	0	0	0									
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0				1	0	0	0			0	0	0	0			0	0	0	0					
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1							1																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	-	-						-	-											-	-							
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-17

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Engineering Department in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	0							0						5														
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0					0	0					0	0							
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-18

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Planning & Development Department in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	3				0	0	0	0				0	0	0	0				0	0	0	0			
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	2					0	0	0	0				0	0	0	0				0	0	0	0			
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	0							0														1						
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0						0	0						0	0					
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-19

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Finance Department in LWSC

Evaluation Items	I							II							III							IV										
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.				
1) Leadership																																
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-				-	-	-	-			-	-	-	-															
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0			0	0	0	0			0	0	1	0															
2) Human Development																																
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0				0	0	0	0			0	0	0	0			0	0	1	0			0	0	1	0			
3) Negotiation and Coordination																																
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1																															
4) Data Collection and Utilization																																
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0					1	0					1	0					0	0					
5) Communication with Customers																																
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																								

Annex-20

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Commercial Services Department in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	1	1	0	0				0	0	0	0				0	0	1	1										
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0					0	0	0					0	0	3											
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1							1								3												
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0						0	0						0	0					
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-21

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for General Officer in LWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0					0	0					0	0							
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	N.A.							N.A.						N.A.					N.A.									

Annex-22

Causes in Performance Indicators (PIs) of WWSC-1

Indicators	1.	2.	3.	4.	5.	6.	7.	8.	1-1.	1-2.	1-3.	1-4.	1-5.	1-6.	1-7.	2-1.	2-2.	2-3.	2-4.	2-5.	2-6.	3-1.	3-2.	3-3.	3-4.	3-5.	3-6.	4-1.	4-2.	4-3.	4-4.	4-5.	4-6.					
1) Aspects to be improved mainly by Facility Investment																																						
P1: Continuity of supply	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P2: Overall water supply coverage	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P3: Surplus purification capacity	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P4: Transmission and distribution mains	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P5: House connections	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P6: Mechanical and electrical equipment	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P7: Rate of facility utilization	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																																						
P8: O&M of the facilities	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P9: Drawings of pipe facilities	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P10: NRW ratio	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P11: Customer meters	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P12: Bulk meters	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P13: Water quality parameters tested at purification plants	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																																						
P14: Cost recovery level	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P15: Collection ratio	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P16: Number of staff working especially for water (Number/000 water connections)	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P17: Implementation of training	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P18: Complaint handling	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
4) Aspects to be improved mainly by Program Approach																																						
P20: Sewerage coverage (including On-site Facilities)	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													
5) General Aspect																																						
P21: Year of work experience on water supply service	✓	✓	✓	✓						✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓													

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Causes in Performance Indicators (PIs) of WWSC-2

Indicators	5-1.	5-2.	5-3.	5-4.	5-5.	5-6.	1-1-1.	1-1-2.	1-1-3.	1-1-4.	1-1-5.	1-1-6.	1-1-7.	1-2-1.	1-2-2.	1-2-3.	1-2-4.	1-2-5.	1-2-6.	2-1-1.	2-1-2.	2-1-3.	2-1-4.	2-1-5.	2-1-6.	2-1-7.
1) Aspects to be improved mainly by Facility Investment																										
P1: Continuity of supply																										
P2: Overall water supply coverage																										
P3: Surplus purification capacity																										
P4: Transmission and distribution mains																										
P5: House connections																										
P6: Mechanical and electrical equipment																										
P7: Rate of facility utilization																										
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																										
P8: O&M of the facilities																										
P9: Drawings of pipe facilities																										
P10: NRW ratio														✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
P11: Customer meters																										
P12: Bulk meters																										
P13: Water quality parameters tested at purification plants																										
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																										
P14: Cost recovery level																										
P15: Collection ratio																										
P16: Number of staff working especially for water (Number/000 water connections)																										
P17: Implementation of training																										
P18: Complaint handling																										
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																										
4) Aspects to be improved mainly by Program Approach																										
P20: Sewerage coverage (including On-site Facilities)																										
5) General Aspect																										
P21: Year of work experience on water supply service																										

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Annex -23

Causes in Evaluation Parameters (Management Capacity) of WWSC-1

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																												
M1: Review on Short, Middle and Long Term Plan																												
M2: Evaluation Method to achieve Goal																												
2) Finance																												
M3: Analysis on Annual Financial Status																												
M4: Financial Improvement Status towards achievement of Goal																												
M5: Status of Metered Rate																												
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																												
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection																												
3) Governance, Management and Human Resources																												
M8: Average Length of Service with CUs or Other Water Authority																												
M9: Record of Working Time																												
M10: System to evaluate Work Performance Capacity towards Goal																												
M11: Allocation and Input of Staff according to the Work Load																												
M12: Self-evaluation System at Individual Level																												
M13: Self-learning Support System																												
M14: Evaluation of Tramee's Efforts																												
4) Customer Relation																												
M15: Development of Customer's Information																												
M16: Time to respond to Customer's Complaint																												
M17: Record for dealing with Customer 's Complaints																												
M18: Customer's Survey																												
M19: Promotion of Customer's Awareness																												

Note:

Parameters highlighted in yellow color: 'Very Serious'

Parameters highlighted in pink color: 'Serious'

Causes in Evaluation Parameters (Management Capacity) of WWSC-2

Evaluation Items	V							VI							VII						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																					
M1: Review on Short, Middle and Long Term Plan																					
M2: Evaluation Method to achieve Goal																					
2) Finance																					
M3: Analysis on Annual Financial Status				✓																	
M4: Financial Improvement Status towards achievement of Goal				✓			✓													✓	
M5: Status of Metered Rate	✓											✓									
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																					
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection																					
3) Governance, Management and Human Resources																					
M8: Average Length of Service with CUs or Other Water Authority																					
M9: Record of Working Time																					
M10: System to evaluate Work Performance Capacity towards Goal																					
M11: Allocation and Input of Staff according to the Work Load																					
M12: Self-evaluation System at Individual Level																					
M13: Self-learning Support System																					
M14: Evaluation of Trainee's Efforts																					
4) Customer Relation																					
M15: Development of Customer's Information																					
M16: Time to respond to Customer's Complaint																					
M17: Record for dealing with Customer 's Complaints																					
M18: Customer's Survey																				✓	
M19: Promotion of Customer's Awareness																					

Note:

Parameters highlighted in yellow color: 'Very Serious'

Parameters highlighted in pink color: 'Serious'

Annex-24

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Managers in WWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	0	0	0	0				0	2	0	1				0	0	0	0	1									
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-				-	-	-	-				-	-	-	-										
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0				0	0	1					0	0	1				0	0	2					
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1							3																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	0						0	1					0	3						
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Note:

Parameters highlighted in pink color: 'Serious'

Annex-25

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Human Resource and Administration Department in WWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0							
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1				
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	0							2																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Note:

Parameters highlighted in pink color: 'Serious'

Annex-26

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Technical Department in WWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	1	1	1	1	0			1	2	0	0				0	0	9	1										
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	1	1	0					1	1	0					0	0	1					0	7	1				
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	2							6																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	1	1						1	3						0	1						1	4					
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-27

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Financial Department in WWSC

Evaluation Items	I							II							III							IV										
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.				
1) Leadership																																
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0			0	1	0	0			0	0	0	0			0	0	0	0									
2) Human Development																																
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0				0	0	1				0	0	0	0			0	0	0	0			0	0	0				
3) Negotiation and Coordination																																
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1							0																								
4) Data Collection and Utilization																																
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	1	0						1	0					0	1					0	1						0	1				
5) Communication with Customers																																
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																								

Annex-28

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Commercial Services Department in WWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	2	0	0	0	0
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	1							3																				
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	0	0						0	3						0	0						0	0					
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Note:

Parameters highlighted in pink color: 'Serious'

Annex-29

Causes in Evaluation Parameters (Communication & Negotiation Capacity) for General Officer in WWSC

Evaluation Items+A2:AC14	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive Officer: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2) Human Development																												
C3: Executive Officer, Managers & Supervisor: Capacity to improve qualification of staff in terms of post and job description	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3) Negotiation and Coordination																												
C4: Executive Officers, Managers & Supervisor and General Officers: Capacity to convince the third parties to understand different ideas and opinions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4) Data Collection and Utilization																												
C5: Executive Officer, Managers & Supervisor, and General Officers: Capacity to collect data and to apply for analysis for the water supply service	1	4						0	0					0	0					1	4							
5) Communication with Customers																												
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	4							4																				

Annex-30

Causes in Performance Indicators (PIs) of LpWSC-1

Indicators	1.	2.	3.	4.	5.	6.	7.	8.	1-1.	1-2.	1-3.	1-4.	1-5.	1-6.	1-7.	2-1.	2-2.	2-3.	2-4.	2-5.	2-6.	3-1.	3-2.	3-3.	3-4.	3-5.	3-6.	4-1.	4-2.	4-3.	4-4.	4-5.	4-6.			
1) Aspects to be improved mainly by Facility Investment																																				
P1: Continuity of supply					√																															
P2: Overall water supply coverage		√														√																				
P3: Surplus purification capacity		√														√																				
P4: Transmission and distribution mains			√																			√														
P5: House connections		√							√																											
P6: Mechanical and electrical equipment		√							√																											
P7: Rate of facility utilization			√																			√														
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																																				
P8: O&M of the facilities			√																				√													
P9: Drawings of pipe facilities		√														√																				
P10: NRW ratio		√																																		
P11: Customer meters				√																																
P12: Bulk meters				√																																
P13: Water quality parameters tested at purification plants				√																																
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																																				
P14: Cost recovery level		√	√																																	
P15: Collection ratio		√									√																									
P16: Number of staff working especially for water (Number/000 water connections)		√							√																											
P17: Implementation of training							√																													
P18: Complaint handling																																				
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																																				
4) Aspects to be improved mainly by Program Approach																																				
P20: Sewerage coverage (including On-site Facilities)		√																																		
5) General Aspect																																				
P21: Year of work experience on water supply service																																				

Note:

Parameters highlighted in yellow color: 'Very Serious'

Parameters highlighted in pink color: 'Serious'

Summary of Causes in Performance Indicators (PIs) of LpWSC-2

Indicators	5-1.	5-2.	5-3.	5-4.	5-5.	5-6.	1-1-1.	1-1-2.	1-1-3.	1-1-4.	1-1-5.	1-1-6.	1-1-7.	1-2-1.	1-2-2.	1-2-3.	1-2-4.	1-2-5.	1-2-6.	2-1-1.	2-1-2.	2-1-3.	2-1-4.	2-1-5.	2-1-6.	2-1-7.
1) Aspects to be improved mainly by Facility Investment																										
P1: Continuity of supply	√																									
P2: Overall water supply coverage		√	√	√																						
P3: Surplus purification capacity																										
P4: Transmission and distribution mains																										
P5: House connections																										
P6: Mechanical and electrical equipment																										
P7: Rate of facility utilization																										
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																										
P8: O&M of the facilities																										
P9: Drawings of pipe facilities																										
P10: NRW ratio							√									√	√	√						√		
P11: Customer meters																										
P12: Bulk meters																										
P13: Water quality parameters tested at purification plants																										
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																										
P14: Cost recovery level																										
P15: Collection ratio																										
P16: Number of staff working especially for water (Number/’000 water connections)																										
P17: Implementation of training																										
P18: Complaint handling																										
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																										
4) Aspects to be improved mainly by Program Approach																										
P20: Sewerage coverage (including On-site Facilities)																										
5) General Aspect																										
P21: Year of work experience on water supply service																										

Note:

Parameters highlighted in yellow color: 'Very Serious'

Parameters highlighted in pink color: 'Serious'

Annex-31

Causes in Evaluation Parameters (Management Capacity) of LpWSC-1

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																												
M1: Review on Short, Middle and Long Term Plan		v																										
M2: Evaluation Method to achieve Goal																	v											
2) Finance																												
M3: Analysis on Annual Financial Status																												
M4: Financial Improvement Status towards achievement of Goal																												
M5: Status of Metered Rate																												
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation									v																			
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection									v																			
3) Governance, Management and Human Resources																												
M8: Average Length of Service with CUs or Other Water Authority		v																										
M9: Record of Working Time									v																			
M10: System to evaluate Work Performance Capacity towards Goal																												
M11: Allocation and Input of Staff according to the Work Load																												
M12: Self-evaluation System at Individual Level																												
M13: Self-learning Support System																												
M14: Evaluation of Trainee's Efforts																												
4) Customer Relation																												
M15: Development of Customer's Information																												
M16: Time to respond to Customer's Complaint																												
M17: Record for dealing with Customer 's Complaints																												
M18: Customer's Survey																												
M19: Promotion of Customer's Awareness																												

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Causes in Evaluation Parameters (Management Capacity) of LpWSC-2

Evaluation Items	V							VI							VII						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																					
M1: Review on Short, Middle and Long Term Plan																					
M2: Evaluation Method to achieve Goal																					
2) Finance																					
M3: Analysis on Annual Financial Status				v																	
M4: Financial Improvement Status towards achievement of Goal				v																	
M5: Status of Metered Rate											v										
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																					
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection																					
3) Governance, Management and Human Resources																					
M8: Average Length of Service with CUs or Other Water Authority																					
M9: Record of Working Time																					
M10: System to evaluate Work Performance Capacity towards Goal																					
M11: Allocation and Input of Staff according to the Work Load																					
M12: Self-evaluation System at Individual Level																					
M13: Self-learning Support System																					
M14: Evaluation of Trainee's Efforts																					
4) Customer Relation																					
M15: Development of Customer's Information																					
M16: Time to respond to Customer's Complaint					v																
M17: Record for dealing with Customer 's Complaints																					
M18: Customer's Survey	-	-	-	-																	
M19: Promotion of Customer's Awareness																					

Note:

Pls highlighted in yellow color: 'Very Serious'

Pls highlighted in pink color: 'Serious'

Annex-32

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Managers in LpWSC

Evaluation Items	I							II							III							IV									
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.			
1) Leadership																															
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	1	1	1	0				2	1	0	0			0	0	0	0														
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-				-	-	-	-			-	-	-	-														
2) Human Development																															
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	2	1	1					3	1	1				0	0	0			0	1	1										
3) Negotiation and Coordination																															
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	0							3																							
4) Data Collection and Utilization																															
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	0	0						3	1					0	0				0	0											
5) Communication with Customers																															
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																							

Note:

Parameters highlighted in pink color: 'Serious'

Annex-33

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Technical Department in LpWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
Answer Sheet for Causes in Evaluation Items (Communication & Negotiation Capacity)																												
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	2										
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	2					0	0	2					0	0	1					0	0	0	0			
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	4							1																				
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	1	1						2	1						0	0						0	0					
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Note:
Parameters highlighted in pink color: 'Serious'

Annex-34

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Finance & Commercial Services Department in LpWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex-35

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for General Officer in LpWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	2	2						3	3					1	1					2	2							
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	3	0						3	0																			

Note:

Parameters highlighted in pink color: 'Serious'

Annex-36

Summary of Causes in Performance Indicators (PIs) of KWSC-1

Indicators	1.	2.	3.	4.	5.	6.	7.	8.	1-1.	1-2.	1-3.	1-4.	1-5.	1-6.	1-7.	2-1.	2-2.	2-3.	2-4.	2-5.	2-6.	3-1.	3-2.	3-3.	3-4.	3-5.	3-6.	4-1.	4-2.	4-3.	4-4.	4-5.	4-6.				
1) Aspects to be improved mainly by Facility Investment																																					
P1: Continuity of supply 5-4 * System is old.			✓	✓	✓																			✓													
P2: Overall water supply coverage				✓																																	
P3: Surplus purification capacity																																					
P4: Transmission and distribution mains				✓																																	
P5: House connections				✓																																	
P6: Mechanical and electrical equipment				✓																																	
P7: Rate of facility utilization																																					
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																																					
P8: O&M of the facilities																																					
P9: Drawings of pipe facilities																																					
P10: NRW ratio																																					
P11: Customer meters																																					
*Lack of appreciation for significance of water meters																																					
P12: Bulk meters																																					
*Lack of appreciation																																					
P13: Water quality parameters tested at purification plants																																					
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																																					
P14: Cost recovery level																																					
P15: Collection ratio																																					
*Shallow well																																					
P16: Number of staff working especially for water (Number/000 water connections)																																					
P17: Implementation of training																																					
P18: Complaint handling																																					
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																																					
4) Aspects to be improved mainly by Program Approach																																					
P20: Sewerage coverage (including On-site Facilities)																																					
5) General Aspect																																					
P21: Year of work experience on water supply service																																					

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Summary of Causes in Performance Indicators (PIs) of KWSC-2

Indicators	5-1	5-2	5-3	5-4	5-5	5-6	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	1-2-1	1-2-2	1-2-3	1-2-4	1-2-5	1-2-6	2-1-1	2-1-2	2-1-3	2-1-4	2-1-5	2-1-6	2-1-7
1) Aspects to be improved mainly by Facility Investment																										
P1: Continuity of supply		✓		✓																						
5-4 * System is old.																										
P2: Overall water supply coverage																										
P3: Surplus purification capacity																										
P4: Transmission and distribution mains																										
P5: House connections																										
P6: Mechanical and electrical equipment																										
P7: Rate of facility utilization																										
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)																										
P8: O&M of the facilities																										
P9: Drawings of pipe facilities																										
P10: NRW ratio							✓	✓	✓		✓	✓	✓				✓	✓	✓		✓	✓		✓		
P11: Customer meters																										
*Lack of appreciation for significance of water meters																										
P12: Bulk meters																										
*Lack of appreciation																										
P13: Water quality parameters tested at purification plants																										
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)																										
P14: Cost recovery level																										
P15: Collection ratio																										
*Shallow well																										
P16: Number of staff working especially for water (Number/000 water connections)																										
P17: Implementation of training																										
P18: Complaint handling																										
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.																										
4) Aspects to be improved mainly by Program Approach																										
P20: Sewerage coverage (including On-site Facilities)																										
5) General Aspect																										
P21: Year of work experience on water supply service																										

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Annex-37

Causes in Evaluation Parameters (Management Capacity) of KWSC-1

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																												
M1: Review on Short, Middle and Long Term Plan																												
M2: Evaluation Method to achieve Goal																												
2) Finance																												
M3: Analysis on Annual Financial Status																												
M4: Financial Improvement Status towards achievement of Goal																												
M5: Status of Metered Rate																												
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																												
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection																												
3) Governance, Management and Human Resources																												
M8: Average Length of Service with CUs or Other Water Authority																												
M9: Record of Working Time																												
M10: System to evaluate Work Performance Capacity towards Goal																												
M11: Allocation and Input of Staff according to the Work Load																												
M12: Self-evaluation System at Individual Level																												
M13: Self-learning Support System																												
M14: Evaluation of Trainee's Efforts																												
4) Customer Relation																												
M15: Development of Customer's Information																												
M16: Time to respond to Customer's Complaint																												
M17: Record for dealing with Customer's Complaints																												
M18: Customer's Survey																												
M19: Promotion of Customer's Awareness																												

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Causes in Evaluation Parameters (Management Capacity) of KWSC-2

Evaluation Items	V							VI							VII						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Internal Policy and Planning																					
M1: Review on Short, Middle and Long Term Plan																					
M2: Evaluation Method to achieve Goal		✓																			
2) Finance																					
M3: Analysis on Annual Financial Status																					
M4: Financial Improvement Status towards achievement of Goal																					
M5: Status of Metered Rate		✓									✓										
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation																					
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection																					
3) Governance, Management and Human Resources																					
M8: Average Length of Service with CUs or Other Water Authority																					
M9: Record of Working Time																					
M10: System to evaluate Work Performance Capacity towards Goal																					
M11: Allocation and Input of Staff according to the Work Load																					
M12: Self-evaluation System at Individual Level																					
M13: Self-learning Support System																					
M14: Evaluation of Trainee's Efforts																					
4) Customer Relation																					
M15: Development of Customer's Information																					
M16: Time to respond to Customer's Complaint																					
M17: Record for dealing with Customer 's Complaints																					
M18: Customer's Survey																					
M19: Promotion of Customer's Awareness																					

Note:

PIs highlighted in yellow color: 'Very Serious'

PIs highlighted in pink color: 'Serious'

Annex-38

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Directors in KWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	2	1	1	0				0	0	0	0				0	0	0	0										
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-				-	-	-	-				-	-	-	-										
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	0	0					4	0	0	0				0	0	0	0				0	0	0	0			
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	0							4																				
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	2	0						3	0						0	0						0	0					
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-39

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Engineering Department in KWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	2	0	0	0				0	1	0	0				0	0	1	1										
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	0	3	0					0	0	0	0				0	0	1					0	0	0	0			
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	2							3																				
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	1	0						0	0						0	0						0	0					
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-40

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for Planning & Development Department in KWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	1	1	1	0				1	1	0	0				0	0	0	0										
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	3	3	0					0	0	0	0				0	0	0	0				0	0	0	0			
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	2							0																				
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	2	1						0	0						0	1						0	0					
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	-							-																				

Annex-41

Summary of Causes in Evaluation Parameters (Communication & Negotiation Capacity) for General Officers in KWSC

Evaluation Items	I							II							III							IV						
	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	f.	g.
1) Leadership																												
C1: Executive: Capacity to achieve goal and to raise the standards of the leadership	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2: Supervisor: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2) Human Development																												
C3: Executive & Supervisor: Capacity to improve qualification of staff in terms of post and job description	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3) Negotiation and Coordination																												
C4: Executive & Supervisor & Officer: Capacity to convince the third parties to understand different ideas and opinions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4) Data Collection and Utilization																												
C5: Executive & Supervisor & Officer: Capacity to collect data and to apply for analysis for the water supply service	1	0						0	0					0	1					2	3							
5) Communication with Customers																												
C6: Officer: Capacity to communication with customers in order to provide them with high quality water supply service	1							5																				

Annex-42

Summary of Targeted Staff and Valuator (LWSC)

Performance Indicators for Water Supply Service, Evaluation Items for Management, Communication & Negotiation Capacity	Targeted Staff to be evaluated	Valuator					
		Managing Director	Director of HRA	Director of Engineering	Director of Finance	Director of Commercial Service	Manager and Supervisor
1) Aspects to be improved mainly by Facility Investment	-						
P1: Continuity of supply	-						
P2: Overall water supply coverage	-						
P3: Surplus purification capacity	-						
P4: Transmission and distribution mains	-						
P5: House connections	-						
P6: Mechanical and electrical equipment	-						
P7: Rate of facility utilization	-						
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)	-						
P8: O&M of the facilities	-						
P9: Drawings of pipe facilities	-						
P10: NRW ratio	-						
P11: Customer meters	-						
P12: Bulk meters	-						
P13: Water quality parameters tested at purification plants	-						
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)	-						
P14: Cost recovery level	-						
P15: Collection ratio	-						
P16: Number of staff working especially for water (Number/000 water connections)	-						
P17: Implementation of training	-						
P18: Complaint handling	-						
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	-						
4) Aspects to be improved mainly by Program Approach	-						
P20: Sewerage coverage (including On-site Facilities)	-						
5) General Aspect	-						
P21: Year of work experience on water supply service	-						
3. Evaluation Items for Management Capacity:							
1) Internal Policy and Planning							
M1: Review on Short, Middle and Long Term Plan	-						
M2: Evaluation Method to achieve Goal	-						
2) Finance							
M3: Analysis on Annual Financial Status	-						
M4: Financial Improvement Status towards achievement of Goal	-						
M5: Status of Metered Rate	-						
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation	-						
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	-						
3) Governance, Management and Human Resources							
M8: Average Length of Service with CUs or Other Water Authority	-						
M9: Record of Working Time	-						
M10: System to evaluate Work Performance Capacity towards Goal	-						
M11: Allocation and Input of Staff according to the Work Load	-						
M12: Self-evaluation System at Individual Level	-						
M13: Self-learning Support System	-						
M14: Evaluation of Trainee's Efforts	-						
4) Customer Relation							
M15: Development of Customer's Information	-						
M16: Time to deal with Customer's Complaint	-						
M17: Record for dealing with Customer's Complaints	-						
M18: Customer's Survey	-						
M19: Promotion of Customer's Awareness	-						
4. Evaluation Items for Communication & Negotiation Capacity:							
1) Leadership							
C1: Executive Officers: Capacity to achieve goal and to raise the standards of the leadership	All the Directors						
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	All the Managers and or Supervisors						
2) Human Development							
C3: Executive Officers, Managers & Supervisors: Capacity to improve qualification of staff in terms of post and job description	All the Directors, All the Managers and or Supervisors						
3) Negotiation and Coordination							
C4: Executive Officers and Managers & Supervisors: Capacity to convince the third parties to understand different ideas and opinions	All the Directors and All the Managers and or Supervisors						
4) Data Collection and Utilization							
C5: Executive Officers, Managers & Supervisors and General Officer: Capacity to collect data and to apply for analysis for the water supply service	All the Directors, All the Managers and or Supervisors, and some General officer (3 persons) working on Customer Service						
5) Communication with Customers							
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	General officer (at least 3 persons) working on Commercial Service						

Annex-43

Summary of Targeted Staff and Valuator (WWSC)

Performance Indicators for Water Supply Service, Evaluation Items for Management, Communication & Negotiation Capacity	Targeted Staff to be evaluated	Valuator							
		Managing Director	Director of HRA	Director of Engineering	Director of Finance	Director of Commercial Service	Manager and Supervisor		
2. Performance Indicators for the Water Supply Service:									
1) Aspects to be improved mainly by Facility Investment	-								
P1: Continuity of supply	-								
P2: Overall water supply coverage	-								
P3: Surplus purification capacity	-								
P4: Transmission and distribution mains	-								
P5: House connections	-								
P6: Mechanical and electrical equipment	-								
P7: Rate of facility utilization	-								
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)									
P8: O&M of the facilities	-								
P9: Drawings of pipe facilities	-								
P10: NRW ratio	-								
P11: Customer meters	-								
P12: Bulk meters	-								
P13: Water quality parameters tested at purification plants	-								
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)									
P14: Cost recovery level	-								
P15: Collection ratio	-								
P16: Number of staff working especially for water (Number/000 water connections)	-								
P17: Implementation of training	-								
P18: Complaint handling	-								
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	-								
4) Aspects to be improved mainly by Program Approach									
P20: Sewerage coverage (including On-site Facilities)	-								
5) General Aspect									
P21: Year of work experience on water supply service	-								
3. Evaluation Items for Management Capacity:									
1) Internal Policy and Planning									
M1: Review on Short, Middle and Long Term Plan	-								
M2: Evaluation Method to achieve Goal	-								
2) Finance									
M3: Analysis on Annual Financial Status	-								
M4: Financial Improvement Status towards achievement of Goal	-								
M5: Status of Metered Rate	-								
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation	-								
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	-								
3) Governance, Management and Human Resources									
M8: Average Length of Service with CUs or Other Water Authority	-								
M9: Record of Working Time	-								
M10: System to evaluate Work Performance Capacity towards Goal	-								
M11: Allocation and Input of Staff according to the Work Load	-								
M12: Self-evaluation System at Individual Level	-								
M13: Self-learning Support System	-								
M14: Evaluation of Trainee's Efforts	-								
4) Customer Relation									
M15: Development of Customer's Information	-								
M16: Time to respond to Customer's Complaint	-								
M17: Record for dealing with Customer's Complaints	-								
M18: Customer's Survey	-								
M19: Promotion of Customer's Awareness	-								
4. Evaluation Items for Communication & Negotiation Capacity:									
1) Leadership									
C1: Executive Officers: Capacity to achieve goal and to raise the standards of the leadership	All the Directors								
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	All the Managers and or Supervisors								
2) Human Development									
C3: Executive Officers, Managers & Supervisors: Capacity to improve qualification of staff in terms of post and job description	All the Directors, All the Managers and or Supervisors								
3) Negotiation and Coordination									
C4: Executive Officers and Managers & Supervisors: Capacity to convince the third parties to understand different ideas and opinions	All the Directors and All the Managers and or Supervisors								
4) Data Collection and Utilization									
C5: Executive Officers, Managers & Supervisors and General Officer: Capacity to collect data and to apply for analysis for the water supply service	All the Directors, All the Managers and or Supervisors, and some General officer (3 persons) working on Customer Service								
5) Communication with Customers									
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	General officer (at least 3 persons) working on Commercial Service								

Annex-44

Summary of Targeted Staff and Valuator (LpWSC)

Performance Indicators for Water Supply Service, Evaluation Items for Management, Communication & Negotiation Capacity	Targeted Staff to be evaluated	Valuator					
		Managing Director	Senior Manager HRA	Senior Manager Engineering	Senior Manager Finance	Senior Manager Commercial Service	Manager and Supervisor
1) Aspects to be improved mainly by Facility Investment	-						
P1: Continuity of supply	-						
P2: Overall water supply coverage	-						
P3: Surplus purification capacity	-						
P4: Transmission and distribution mains	-						
P5: House connections	-						
P6: Mechanical and electrical equipment	-						
P7: Rate of facility utilization	-						
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)	-						
P8: O&M of the facilities	-						
P9: Drawings of pipe facilities	-						
P10: NRW ratio	-						
P11: Customer meters	-						
P12: Bulk meters	-						
P13: Water quality parameters tested at purification plants	-						
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)	-						
P14: Cost recovery level	-						
P15: Collection ratio	-						
P16: Number of staff working especially for water (Number/000 water connections)	-						
P17: Implementation of training	-						
P18: Complaint handling	-						
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	-						
4) Aspects to be improved mainly by Program Approach	-						
P20: Sewerage coverage (including On-site Facilities)	-						
5) General Aspect	-						
P21: Year of work experience on water supply service	-						
3. Evaluation Items for Management Capacity:							
1) Internal Policy and Planning							
M1: Review on Short, Middle and Long Term Plan	-						
M2: Evaluation Method to achieve Goal	-						
2) Finance							
M3: Analysis on Annual Financial Status	-						
M4: Financial Improvement Status towards achievement of Goal	-						
M5: Status of Metered Rate	-						
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation	-						
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	-						
3) Governance, Management and Human Resources							
M8: Average Length of Service with CUs or Other Water Authority	-						
M9: Record of Working Time	-						
M10: System to evaluate Work Performance Capacity towards Goal	-						
M11: Allocation and Input of Staff according to the Work Load	-						
M12: Self-evaluation System at Individual Level	-						
M13: Self-learning Support System	-						
M14: Evaluation of Trainee's Efforts	-						
4) Customer Relation							
M15: Development of Customer's Information	-						
M16: Time to deal with Customer's Complaint	-						
M17: Record for dealing with Customer's Complaints	-						
M18: Customer's Survey	-						
M19: Promotion of Customer's Awareness	-						
4. Evaluation Items for Communication & Negotiation Capacity:							
1) Leadership							
C1: Executive Officers: Capacity to achieve goal and to raise the standards of the leadership	All the Senior Managers						
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	All the Managers and or Supervisors						
2) Human Development							
C3: Executive Officers, Managers & Supervisors: Capacity to improve qualification of staff in terms of post and job description	All the Senior Managers, All the Managers and or Supervisors						
3) Negotiation and Coordination							
C4: Executive Officers and Managers & Supervisors: Capacity to convince the third parties to understand different ideas and opinions	All the Senior Managers and All the Managers and or Supervisors						
4) Data Collection and Utilization							
C5: Executive Officers, Managers & Supervisors and General Officer: Capacity to collect data and to apply for analysis for the water supply service	All the Senior Managers, All the Managers and or Supervisors, and some General officer (3 persons) working on Customer Service						
5) Communication with Customers							
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	General officer (at least 3 persons) working on Commercial Service						

Annex-45

Summary of Targeted Staff and Valuator (KWSC)

Performance Indicators for Water Supply Service, Evaluation Items for Management, Communication & Negotiation Capacity	Targeted Staff to be evaluated	Valuator					
		Managing Director	Senior Manager HRA	Senior Manager Engineering	Senior Manager Finance	Senior Manager Commercial Service	Manager and Supervisor
1) Aspects to be improved mainly by Facility Investment	-						
P1: Continuity of supply	-						
P2: Overall water supply coverage	-						
P3: Surplus purification capacity	-						
P4: Transmission and distribution mains	-						
P5: House connections	-						
P6: Mechanical and electrical equipment	-						
P7: Rate of facility utilization	-						
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)	-						
P8: O&M of the facilities	-						
P9: Drawings of pipe facilities	-						
P10: NRW ratio	-						
P11: Customer meters	-						
P12: Bulk meters	-						
P13: Water quality parameters tested at purification plants	-						
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)	-						
P14: Cost recovery level	-						
P15: Collection ratio	-						
P16: Number of staff working especially for water (Number/000 water connections)	-						
P17: Implementation of training	-						
P18: Complaint handling	-						
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	-						
4) Aspects to be improved mainly by Program Approach	-						
P20: Sewerage coverage (including On-site Facilities)	-						
5) General Aspect	-						
P21: Year of work experience on water supply service	-						
3. Evaluation Items for Management Capacity:							
1) Internal Policy and Planning							
M1: Review on Short, Middle and Long Term Plan	-						
M2: Evaluation Method to achieve Goal	-						
2) Finance							
M3: Analysis on Annual Financial Status	-						
M4: Financial Improvement Status towards achievement of Goal	-						
M5: Status of Metered Rate	-						
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation	-						
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	-						
3) Governance, Management and Human Resources							
M8: Average Length of Service with CUs or Other Water Authority	-						
M9: Record of Working Time	-						
M10: System to evaluate Work Performance Capacity towards Goal	-						
M11: Allocation and Input of Staff according to the Work Load	-						
M12: Self-evaluation System at Individual Level	-						
M13: Self-learning Support System	-						
M14: Evaluation of Trainee's Efforts	-						
4) Customer Relation							
M15: Development of Customer's Information	-						
M16: Time to deal with Customer's Complaint	-						
M17: Record for dealing with Customer's Complaints	-						
M18: Customer's Survey	-						
M19: Promotion of Customer's Awareness	-						
4. Evaluation Items for Communication & Negotiation Capacity:							
1) Leadership							
C1: Executive Officers: Capacity to achieve goal and to raise the standards of the leadership	All the Senior Managers						
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	All the Managers and or Supervisors						
2) Human Development							
C3: Executive Officers, Managers & Supervisors: Capacity to improve qualification of staff in terms of post and job description	All the Managers, All the Managers and or Supervisors						
3) Negotiation and Coordination							
C4: Executive Officers and Managers & Supervisors: Capacity to convince the third parties to understand different ideas and opinions	All the Senior Managers and All the Managers and or Supervisors						
4) Data Collection and Utilization							
C5: Executive Officers, Managers & Supervisors and General Officer: Capacity to collect data and to apply for analysis for the water supply service	All the Senior Managers, All the Managers and or Supervisors, and some General officer (3 persons) working on Customer Service						
5) Communication with Customers							
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	General officer (at least 3 persons) working on Commercial Service						

APPENDIX. A-11
EVELUATION MANUAL (EM)

**Ministry of Water Development, Sanitation and
Environment Protection**



National Water Supply and Sanitation Council



Japan International Cooperation Agency



The Project

for

Strengthening Capacity of Urban Water Supply

Infrastructure

in

the Republic of Zambia

Evaluation Manual

January 2019

**Ministry of Water Development, Sanitation and
Environmental Protection**

National Water Supply and Sanitation Council

Japanese Experts

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1. INTRODUCCION

The aim of this Evaluation Manual is to contribute to learning of water supply status in each Commercial Utility (hereinafter referred to as ‘CU’). The Evaluation Manual is composed of Performance Indicators (hereinafter referred to as ‘PIs’), Evaluation Items for Management Capacity and Evaluation Items for Communication & Negotiation Capacity.

In order to develop Evaluation Manual, Project Team set 21 PIs in terms of sustainability of evaluation and the necessity of evaluation required for improving water supply service based on Evaluation Indicators used by National Water Supply and Sanitation Council (hereinafter referred to as ‘NWASCO’) as benchmark. Meanwhile, Project Team also set 19 and six Evaluation Items for Management and Communication & Negotiation Capacity respectively through interviews with four CUs.

It is anticipated that various challenges on water supply service in CUs will be found and Evaluation Manual will contribute to formulation of Midterm Business Plan and Human Resource Development Plan, so that capacity of CUs will be strengthened to improve water supply services.

2. PERFORMANCE INDICATORS FOR THE WATER SUPPLY SERVICES

This Evaluation Manual on Performance Indicators (PIs) consists of five categories; Seven Aspects to be improved mainly by Facility Investment, six Aspects to be improved mainly Capacity Development as Technical aspect, six Aspects to be improved mainly Capacity Development as Non-technical aspect, one Aspect to be improved mainly by Program Approach and one General Aspect. 21 indicators in total was selected in term of sustainability for evaluation with some data and an efficient improvement in water supply service.

2.1 Aspects to be improved mainly by Facility Investment

2.1.1 P1: Continuity of Supply

(1) Definition

Daily average hours that water is supplied to service areas

(2) Purpose

- Learning about of water supply service.
- Understanding the necessity for investment for water supply facilities.
- Learning ways of improving water supply service.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

Daily average hours of water supply in each district or other similar areas should be compiled and figured out using weighed average hours.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
<u>Mostly intermittent supply</u> , averaging approx. every 4 days or less	<u>Mostly intermittent supply</u> , averaging approx. every 1-3 days or less, with some served area receiving continuous supply	<u>Intermittent supply</u> , and <u>continuous supply</u> are both common in the served areas	<u>Mostly continuous supply</u> , but still there are some served areas with intermittent supply due to small utilities' inability to employ operators for 24 hours, high water demand and during summer, etc.	<u>Continuous supply</u> , in all served areas except for special cases such as serious drought

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of water sources			1-1. Lack of raw water quantity
			1-2. Lack of adequate raw water intake facilities
			1-3. Deterioration of intake facilities
			1-4. Difficulties in maintaining intake facilities due to budget constraint
			1-5. Lack of skilled staff for maintaining intake facilities
			1-6. Others
2. Lack of capacity to treat raw water			2-1. Deterioration of treatment facilities
			2-2. Difficulties in maintaining treatment plant due to budget constraint
			2-3. Lack of skilled staff for maintaining treatment plant
			2-4. Others
3. Lack of capacity to transfer and distribute water			3-1. Insufficient capacity of transmission and or distribution pumps

Main Cause of Factor		Detail Cause of Factor	
			3-2. Deterioration of transmission and or distribution pumps
			3-3. Insufficient capacity of service reservoirs
			3-4. Difficulties in maintaining transmission and or distribution facilities due to budget constraint
			3-5. Lack of skilled staff for maintaining transmission and or distribution facilities
			3-6. Others
	4. Insufficient development of water supply facilities such as intake facilities, treatment plant, transmission & distribution facilities.		4-1. Lack of skilled staff for planning water supply facilities
			4-2. Lack of skilled staff for designing water supply facilities
			4-3. Lack of skilled staff for supervising construction
			4-4. Lack of budget to develop water supply facilities
	5. Unexpected causes		5-1. Unexpected increase in water supply population and water consumption
			5-2. Frequent leakage
			5-3. Illegal connections
			5-4. Others
	6. Others		

(7) Points to be considered

- In case that the period of intermittent supply is more than five days, Evaluation Criteria is “1 (very serious)”

(8) Evaluation Example

e.g.

CU supplies water for twenty-four hours to the served area, however intermittent supply is implemented to some part of the served area.

Evaluation Criteria: Level 3 (as the result)

2.1.2 P2: Overall Water Supply Coverage

(1) Definition

Proportion of population served with drinking water (or with access to safe and reliable water)

Formula:

$$\text{Overall Water Supply Coverage} = \frac{\text{Total Population Served}}{\text{Total Population in Service Area}} \times 100$$

Unit: %

(2) Purpose

- Learning about the coverage of water supply service.
- Understanding the necessity of investment for water supply facilities.
- Learning ways of improving water supply service.

(3) Interviewee

- Director of Head of Engineering Department/ Division.

(4) Background and Concept

Total Population Served: The number of persons supplied with water from the provider's water network through individual connections, communal taps, public stand-posts or kiosks. The Total Population Served is calculated as follows:

Formula:

$$\begin{aligned} \text{Total Population Served} \\ &= \text{Total Number of Connections by Type} \\ &\times \text{Average Number of People Served} \end{aligned}$$

Unit: persons

Total Number of Connections

The Total Number of Connections are the actual domestic customer accounts on the billing database and include disconnected customers but exclude non-functional points.

Average Number of People Served

Limits have been set for the average number of persons accessing water from a connection type in consideration of what is acceptable. These limits are based on the Central Statistics Office (CSO) figures of a national average household size of 5.5 persons per household. However, because the average household size is dependent on the population density of an area, ranges have been established per connection type within which a provider can stipulate what is acceptable to their area.

Average Number of People Served

- Household connections: 4 - 10 persons
- Communal tap: 30 - 50 persons
- Kiosk: 400 - 600 persons/ tap
- Public stand post: = 400 - 600 persons/ tap

Total Population in Service Area: This is the number of people residing in the licensed urban and peri-urban area. The baseline figure for the population living in the area is obtained from the CSO and the 2005 Devolution Trust Fund (DTF) Baseline Study for Low-Income areas. The growth rate applicable to the town is applied to the population figures reported annually by the providers.

It is important to differentiate the customer account on the database and the persons actually accessing the service within acceptable limits.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Less than 50%	50-69%	70-79%	80%-94%	95%-100%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of water sources			1-1. Lack of raw water quantity
			1-2. Lack of adequate raw water intake facilities
			1-3. Deterioration of intake facilities
			1-4. Difficulties in maintaining intake facilities due to budget constraint
			1-5. Lack of skilled staff for maintaining intake facilities
			1-6. Others
2. Lack of capacity to treat raw water			2-1. Deterioration of treatment facilities
			2-2. Difficulties in maintaining treatment plant due to budget constraint
			2-3. Lack of skilled staff for maintaining treatment plant
			2-4. Others
3. Lack of capacity to transfer and distribute water			3-1. Insufficient capacity of transmission and or distribution pumps
			3-2. Deterioration of transmission and or distribution pumps
			3-3. Insufficient capacity of service reservoirs
			3-4. Difficulties in maintaining transmission and or distribution facilities due to budget constraint
			3-5. Lack of skilled staff for maintaining transmission and or distribution facilities
			3-6. Others
4. Insufficient development of water supply facilities such as intake facilities, treatment plant, transmission & distribution			4-1. Lack of skilled staff for planning water supply facilities
			4-2. Lack of skilled staff for designing water supply facilities

Main Cause of Factor		Detail Cause of Factor	
	facilities.		4-3. Lack of skilled staff for supervising construction
			4-4. Lack of budget to develop water supply facilities
	5. Unexpected causes		5-1. Unexpected increase in water supply population and water consumption
			5-2. Frequent leakage
			5-3. Illegal connections
			5-4. Others
	6. Others		

(7) Points to be considered

- If served areas are not clearly understood, please assume the areas where the commercial utility will be responsible for the foreseeable future.
- Disconnected customers that are temporarily cut off from supply due to non-payment of a bill are still considered to have access to water as this can be restored once the amount due is settled.
- Non-functional connections may appear as disconnected customers and therefore must be differentiated and removed from the Total Connections.
- Water Supply Coverage includes domestic customers only. Commercial, Industrial and Institutional connections are not included as these would create a double count. Institutions such as schools or police camps which have residential within the compound, are counted as individual or communal connections depending on the connection type.

(8) Evaluation Example

e.g.

(1) Total number of connections: 8,200 persons

(2) Average number of people served per household: 5.5 persons

(3) Total Population in Service Area: 60,000 persons

$$\text{Water Service Coverage} = (1) \times (2) / (3) \times 100 = 8,200 \times \frac{5.5}{60,000} \times 100 = 75.2(\%)$$

Evaluation Criteria: Level 3 (as the result)

2.1.3 P3: Surplus Purification Capacity

(1) Definition

Proportion of deference between designed max daily purification capacity and Average daily purification capacity to designed max daily purification capacity

Formula:

Surplus Purification Capacity

$$= \frac{\text{Designed Maximum Daily Purification Capacity} - \text{Average Daily Purification Capacity}}{\text{Designed Maximum Daily Purification Capacity}} \times 100$$

Unit: %

(2) Purpose

- Learning economic efficiency of water supply service.
- Understanding the necessity of investment for water supply facilities.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

The average daily purification capacity (m³/day) is the volume of water per day purified in the current purification plant. The designed maximum daily purification capacity (m³/day) is the designed maximum volume of water per day purified by the plant.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Less than -30%	Less than -10%	Less than 0%	0 – 5%	More than 5%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of water sources			1-1. Lack of raw water quantity
			1-2. Lack of adequate raw water intake facilities
			1-3. Deterioration of intake facilities
			1-4. Difficulties in maintaining intake facilities due to budget constraint
			1-5. Lack of skilled staff for maintaining intake facilities
			1-6. Others
2. Lack of capacity to treat raw water			2-1. Deterioration of treatment plant
			2-2. Difficulties in maintaining treatment plant due to budget constraint
			2-3. Lack of skilled staff for maintaining treatment plant
			2-4. Others

Main Cause of Factor		Detail Cause of Factor	
3. Insufficient development of water supply facilities such as intake facilities, water treatment plant			3-1. Lack of skilled staff for planning water supply facilities
			3-2. Lack of skilled staff for designing water supply facilities
			3-3. Lack of skilled staff for supervising construction
			3-4. Lack of budget to develop water supply facilities
4. Unexpected causes			4-1. Unexpected increase in water supply population and water consumption
			4-2. Frequent leakage
			4-3. Illegal connections
			4-4. Others
5. Others			

(7) Points to be considered

- Purification capacity includes purification capacity from bore-holes.
- The capacity of failed facilities and those under repair is excluded.

(8) Evaluation Example

e.g.

(1) Designed maximum daily treatment capacity: 45,000 m³

(2) Daily treatment capacity: 44,000 m³

$$\text{Surplus Purification Capacity} = ((1) - (2)) / (1) \times 100 = \frac{(45,000 - 44,000)}{45,000} \times 100 = 2.2(\%)$$

Evaluation Criteria: Level 4 (as the result)

2.1.4 P4: Transmission and Distribution Mains

(1) Definition

Proportion of asbestos pipes, old cast iron pipes or old steel pipes to total length of pipes in transmission and distribution mains.

Formula:

Proportion of asbestos pipes, old cast iron pipes or old steel pipes to total length

$$= \frac{\text{Total length of asbestos pipes, old cast iron pipes or old steel pipes}}{\text{Total length of transmission and distribution mains}} \times 100$$

Unit: %

(2) Purpose

- Learning status of water supply pipelines.
- Understanding the necessity of investment for water supply pipelines.

(3) Interviewee

- Director or Head of Engineering Department/ Division

(4) Background and Concept

If percentage of asbestos pipes, old cast iron pipes with rust significantly blocking flow becomes more, drinking water quality becomes worse.

This makes it possible to check the condition of pipelines. Furthermore, the indicator shows approach to NRW countermeasures.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
More than 75% of transmission and distribution mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	50 - 75% of mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	25 - 49% of mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	10 - 24% of mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes, with rust significantly blocking flow.	Less than 10% of mains are asbestos pipes, old cast iron pipes (excluding ductile cast iron) or old steel pipes.

(6) Causes (Please tick all that apply)

Asbestos pipes	
Main Cause of Factor	Detail Cause of Factor
1. Intentionally use	1-1. Cheap material cost
	1-2. Cheap construction cost
2. No awareness concerning use of asbestos pipes	2-1. Lack of training concerning hazardous materials
	2-2. Lack of training concerning water quality.
	2-3. Others

Asbestos pipes			
Main Cause of Factor		Detail Cause of Factor	
3. Lack of planning and designing the facilities of transmission and distribution mains			3-1. Lack of budget
			3-2. Lack of skilled staff for planning and or designing the facilities
			3-3. Lack of skilled staff for supervising construction
			3-4. Difficult procurement
			3-5. Others
3.Others			

Old cast iron pipes / Old steel pipes			
Main Cause of Factor		Detail Cause of Factor	
1. No awareness concerning use of old cast iron pipes			1-1. Lack of training concerning leakage
			1-2. Lack of training concerning water quality
			1-3. Others
2. Lack of planning and designing pipelines			2-1. Lack of budget
			2-2. Lack of skilled staff for planning and or designing pipelines
			2-3. Lack of skilled staff for supervising installation of pipelines
			2-4. Difficult procurement
			2-5. Others
3. Others			

(7) Points to be considered

- Old cast iron pipes and old steel pipes in Evaluation Criteria means the pipes which 50 years have passed since pipes were laid.

(8) Evaluation Example

e.g.

(1) Total length of asbestos pipes, old cast iron pipes or old steel pipes: 150 km

(2) Total length of transmission and distribution mains: 280 km

Percentage of asbestos pipes, old cast iron pipes or old steel pipes = (1)/(2) × 100

$$= \left(\frac{150}{280} \right) \times 100 = 53.5(\%)$$

Evaluation Criteria: Level 2 (as the result)

2.1.5 P5: House Connections

(1) Definition

Proportion of house connections that more than 25 years has passed since pipes were laid

Formula:

Proportion of house connections that more than 25 years has passed since pipes were laid

$$= \frac{\text{Total Number of house connections that more than 25 years has passed since pipe were laid}}{\text{Total Number of house connections}} \times 100$$

Unit: %

(2) Purpose

- Understanding the necessity of investment for improvement of house connections.
- Learning activity of leakage detection.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

The house connections are one of factors for figuring out service coverage. The reason why house connections were selected as Evaluation indicator is to assess the deterioration of service pipelines.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
95 - 100% of house connections are more than 25 years old.	80 - 94% of house connections are more than 25 years old.	60 - 79% of house connections are more than 25 years old.	40 - 59% of house connections are more than 25 years old.	0 - 39% of house connections are more than 25 years old.

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Difficulties in replacing house connections where more than 25 years has passed since pipes were laid.		1-1. Lack of budget to replace service pipes	
		1-2. Lack of budget to employ skilled staff	
		1-3. Lack of skilled staff for replacing service pipes with new ones	
		1-4. No the plans to replace house connections which are more than 25 years old	
		1-5. Others	
2. Even though there are service pipes that more than 25 years has passed since service pipes were laid, there is no problem. Namely, no understanding the necessity of periodical replacement of service pipes		2-1. No training to make staff understand the necessity of periodical replacement of service pipes	
3. Even though there are service pipes that more than 25 years has passed since service pipes were laid, there is		3-1. No training to make staff understand the necessity of periodical replacement of service pipes	

Main Cause of Factor		Detail Cause of Factor	
	no problem. Namely, no awareness to replace periodical replacement of service pipes		
	4. Others		

(7) Points to be considered

- Expected lifetime of house connections can be 25 years if using corrosion-resistant materials.
- Total Number of House Connections are counted from all customer categories on the billing database which include the disconnected customers but not include non-functional points.

(8) Evaluation Example

e.g.

(1) Total Number of house connections where more than 25 years has passed since pipes were laid : 12,000 connections

(2) Total number of house connections: 15,000 connections

Percentage of service connections where more than 25 years had passed since pipes were laid

$$= (1)/(2) \times 100 = \left(\frac{12,000}{15,000}\right) \times 100 = 80.0(\%)$$

Evaluation Criteria: Level 2 (as the result)

2.1.6 P6: Mechanical and Electrical Equipment

(1) Definition

Proportion of major mechanical and electrical equipment that are not operated to total major mechanical and electrical equipment due to serious failures.

Formula:

Proportion of major mechanical and electrical equipment that are not operated

$$= \frac{\text{Total number of major mechanical and electrical equipment that are not operated}}{\text{Total number of major mechanical and electrical equipment}} \times 100$$

Unit: %

(2) Purpose

- Learning about the status of operation and maintenance of major mechanical and electrical equipment.
- Understanding the necessity of investment for development of major mechanical and electrical equipment.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

This makes CU possible to know the operating status of major equipment. If the percentage of operating status of major mechanical and electrical equipment is low due to equipment failure, the score will be low.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
<u>More than 30%</u> of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are <u>not operated</u> due to serious failures.	<u>10-30%</u> of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are <u>not operated</u> due to serious failures.	<u>Less than 10%</u> of installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are <u>not operated</u> due to serious failures.	<u>Most or all</u> installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are <u>operated</u> , however some or many operate <u>with low performance or low efficiency</u> .	<u>Most or all</u> installed major mechanical and electrical equipment (such as pumps, electrical transformers and generators) are operated. Most operate <u>with appropriate performance and efficiency</u> .

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
	1. Deterioration of equipment		1-1. Lack of budget to replace equipment with new ones
			1-2. Lack of skilled staff for planning and or designing equipment and replacement

Main Cause of Factor		Detail Cause of Factor	
			1-3. Lack of skilled staff for supervising replacement of equipment
			1-4. Difficulties in procurement of replacement parts
			1-5. Others
2. Inadequate Maintenance			2-1. Lack of budget to maintain equipment
			2-2. Lack of skilled staff for maintaining equipment
			2-3. Uncompleted/ unused manual
			2-4. Others
3. Others			

(7) Points to be considered

- Major mechanical and electrical equipment includes pumps, electrical transformer and generators installed at water purification plants.
- It is necessary to calculate the number of major operated/non-operated mechanical and electrical equipment.
- Some terms shown in Evaluation Criteria means the following grades
‘Operate with low performance or low efficiency’: At least, major equipment reaches 80% of performance and efficiency level.

(8) Evaluation Example

e.g. 1

(1) Total number of major mechanical and electrical equipment that are not operated: 5

(2) Total number of major mechanical and electrical equipment: 28

Percentage of service connections where more than 25 years had passed since pipes were laid

$$= (1)/(2) \times 100 = \left(\frac{5}{28}\right) \times 100 = 17.8(\%)$$

Evaluation Criteria: Level 2 (as the result)

e.g. 2

(1) Total number of major mechanical and electrical equipment that are not operated: 1

(2) Total number of major mechanical and electrical equipment: 28

Percentage of major mechanical and electrical equipment that are not operated

$$= (1)/(2) \times 100 = \left(\frac{1}{28}\right) \times 100 = 3.6(\%)$$

Evaluation Criteria: Level 4 or 5 (as the result)

However, three pumps operate with efficiency of 70%. **Evaluation Criteria: Level 4 (as the result)**

2.1.7 P7: Rate of Facility Utilization

(1) Definition

Rate of the average daily distribution quantity to the daily water distribution capacity

Formula:

$$\text{Rate of Facility Utilization} = \frac{\text{Average daily water distribution quantity}}{\text{Daily water distribution capacity}} \times 100$$

Unit: %

(2) Purpose

- Learning about the efficiency of water facility.
- Understanding the necessity of investment for water supply facilities.
- Learning about the necessity of operation improvement of water supply facilities.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and concept

Whether the investment is appropriate or not can be judged by analyzing the efficiency of the facility. The rate of facility utilization is an important index for comprehensively judging the usage situation of the facility.

Average Daily Water Distribution Quantity: Volume of water per day distributed from the current purification plant.

Daily Water Distribution Capacity: Max Capacity of water distributed to the service areas.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
0 – 20%	21% - 40%	41% - 60%	61% - 80%	81% - 100%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of water resource			1-1. Lack of raw water quantity
			1-2. Lack of adequate raw water intake facilities
			1-3. Deterioration of intake facilities
			1-4. Difficulties in maintaining intake facilities due to budget constraint
			1-5. Lack of skilled staff for maintaining intake facilities
			1-6. Others
2. Lack of capacity to treat raw water			2-1. Deterioration of water treatment plant
			2-2. Difficulties in maintaining treatment plant due to budget constraint
			2-3. Lack of skilled staff for maintaining treatment plant

Main Cause of Factor		Detail Cause of Factor	
			2-4. Lack of spare parts for replacement
			2-5. Others
	3. Much equipment broken down		3-1. Lack of skilled staff for fixing and or maintaining equipment
			3-2. Lack of budget to replace or fix equipment
			3-4. Frequent power failure
			3-4. Others
	4. Others		

(7) Points to be considered

Since the facility utilization rate is merely an average utilization rate, it is necessary to look at the facility size in conjunction with the maximum occupancy rate and the loading rate with demand fluctuation depending on the season just like the water supply business.

(8) Evaluation Example

e.g.

(1) Average daily water distribution amount: 15,000 m³

(2) Daily water distribution capacity: 16,000 m³

$$\text{Percentage of facility utilization} = (1)/(2) \times 100 = \left(\frac{15,000}{16,000}\right) \times 100 = 93.7(\%)$$

Evaluation Criteria: Level 5 (as the result)

2.2 Aspects to be improved mainly by Capacity Development/ Technical Aspect

2.2.1 P8: O&M of the facilities

(1) Definition

Status of utilizing manual for Operation & Maintenance (O&M) of Water Supply facilities.

(2) Purpose

- Learning about the utilization of O&M manuals.
- Understanding the necessity of investment for making O&M manuals.
- Learning appropriateness of O&M.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

If there is an effective manual for O&M of facilities, it then it becomes possible to operate the facilities normally and to keep them in good condition.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Facilities <u>do not have</u> any O&M manuals.	Facilities <u>have</u> O&M manuals which are not effective, leading to <u>O&M deficiencies</u> .	Facilities <u>have</u> O&M manuals which are <u>not effective</u> , however the current O&M is <u>adequate</u> .	Facilities <u>have effective</u> O&M manuals, which are <u>followed reasonably well</u> .	Facilities <u>have effective and comprehensive</u> O&M manuals, which are <u>followed strictly</u> .

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. No manuals prepared			1-1. Lack of budget.
			1-2. Lack of skilled staff for preparing manuals
2. Missing manuals			2-1. Inappropriate management.
			2-2. Manuals not required to be used.
3. Manuals not utilized effectively			3-1. Much difficulties in use of manuals.
			3-2. Others.
			3-3. Others.
4. No appropriate manuals			4-1. Lack of budget to make new manuals.
			4-2. Lack of skilled staff for preparing manuals.
			4-3. Not necessary
			4-4. Others.
5. Others			

(7) Points to be considered

- The terms as show in Evaluation Criteria are defined as:
- Level 2: Utilization ratio of manual from 0% to less than 30%.
- Level 3: Utilization ratio of manual from 30% to less than 60%.

- Level 4: Utilization ratio of manual from 60% to less than 80%.
- Level 5: Utilization ratio of manual from at least 80%.

(8) Evaluation Example

e.g.

O&M manuals are prepared.

50% of O&M manuals are utilized, but the rest manuals are not utilized

Evaluation Criteria: Level 3 (*as the result*)

2.2.2 P9: Drawings of the Pipe Facilities

(1) Definition

Availability of the existing drawings of water supply facilities

(2) Purpose

- Learning about the status of pipe information.
- Understanding the necessity of investment to improve pipe information system.
- Assessing utilization of O&M.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

Basically, the existing drawings that are likely to be as-built drawing which are submitted from contractors are very important for O&M. Unless the existing drawings are available, the pipeline, etc. cannot be easily repaired. At any cases, either paper drawings or digitized drawings are acceptable.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Available paper drawings of existing transmission and distribution trunk mains are <u>quite limited</u> .	Paper drawings are <u>available</u> for most of the existing transmission and distribution trunk mains, but drawings for <u>branch</u> distribution mains are <u>limited</u>	Small/Medium utilities: Paper drawings are <u>available</u> for most of the existing distribution mains including branch distribution mains. Large utilities: As above, and a <u>primitive GIS</u> has been established for transmission mains, trunk distribution mains, etc.	Small/Medium utilities: <u>Updated CAD</u> files are available for most of the existing transmission and distribution mains. Large utilities: A GIS has been well-established and updated for management of transmission mains and distribution mains, <u>with reasonable accuracy</u> .	Small/Medium utilities: A map book of existing mains has been prepared for referencing and is periodically updated using CAD. Large utilities: A GIS has been well-established and <u>updated</u> for management of transmission, distribution mains, <u>customer information</u> , etc. <u>with good accuracy</u> .

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Only paper drawings			1-1. No problem only to use paper drawings
			1-2. Lack of GIS specialist and or GIS technician
			1-3. Lack of CAD operators
			1-3. Lack of budget to introduce CAD system and GIS
			1-4. Others
2. Primitive system of GIS and or CAD			2-1. No problem to use primitive GIS
			2-2. Lack of budget to improve GIS and or CAD system
			2-3. Lack of GIS specialist and or GIS technician

Main Cause of Factor		Detail Cause of Factor	
			2-4. Lack of CAD operator
			2-5. Others
	3. No understanding of the necessity of drawings		3-1. No training to make staff understand the necessary of drawings
	4. Others		

(7) Points to be considered

- Small/Medium CU: Scale of service population is less than 300,000 persons.
- Large CU: Scale of service population is more than 300,000 persons.
- Available paper drawings include submitted paper drawings from the contractor.
- Level 4: Pipe location is identified not using portable GPS.
- Level 5: Pipe location is identified using portable GPS.

(8) Evaluation Example

e.g. 1

Small/Medium CU: Paper drawings are available for most of the existing distribution mains including branch distribution mains.

Large CU: As above, and a primitive GIS has been established for transmission mains, trunk distribution mains, etc.

Evaluation Criteria: Level 3 (*as the result*)

e.g. 2

Large CU: Pipe location of existing distribution mains has been identified by portable GPS.

Evaluation Criteria: Level 5 (*as the result*)

2.2.3 P10: NRW Ratio

(1) Definition

Percentage of the volume of billed water to volume of distributed water

Formula:

Non – Revenue Water (NRW) Ratio

$$= \frac{\text{System Input Volume} - \text{Volume of Billed water}}{\text{System Input Volume}} \times 100$$

Unit: %

(2) Purpose

- Learning the status of Non-Revenue Water (NRW) ratio.
- Understanding the necessity of investment to reduce NRW ratio.
- Learning about challenges to reduce NRW ratio.

(3) Interviewee

- Director or Head of Engineering Department/ Division

(4) Back ground and Concept

System Input Volume: The volume of water distributed into the network.

Volume of Billed Water: This is the quantity of water that is accounted for and billed. This includes the metered and unmetered consumption.

Lost Revenues due to NRW: The quantity of water lost can be converted into monetary terms to reflect the magnitude of revenue unrealized. The monetary figure is an estimation based on the billing figures related to the quantity of water sold.

Formula:

$$\text{Lost Revenues due to NRW} = \frac{\text{Total Billing} \times \text{NRW}}{1 - \text{NRW}}$$

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
More than 50%	36 - 50%	26 - 35%	10 - 25%	Less than 10%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Apparent loss			
1-1 Lots of illegal connections		1-1-1	Lack of awareness meeting for water users
		1-1-2	Lack of Public Relation (PR)

Main Cause of Factor		Detail Cause of Factor		
		1-1-3	Difficulties in identifying illegal connections	
		1-1-4	Culture	
		1-1-5	Insufficient water supply service	
		1-1-6	Lack of staff or patrolling illegal connections	
		1-1-7	Others	
		1-2-1	Old meters	
		1-2-2	Lack of skilled staff for calibration water meters	
1-2	Meter inaccuracies	1-2-3	No equipment to calibrate water meters	
		1-2-4	Lack of budget to maintain water meters	
		1-2-5	Lack of budget to replace the existing water meters with new ones	
		1-2-6	Others	
2. Real loss				
	2-1	Water leakage (from transmissions, storage facilities, distribution mains or service connections)	2-1-1	Lack of budget to manage water leakage
			2-1-2	Deterioration of pipes
			2-1-3	Lack of skilled staff for detecting leakage
			2-1-4	Lack of leakage detectors
			2-1-5	Existence of pipes (AC pipes)
			2-1-6	Lack of skilled staff for repairing pipelines
			2-1-7	Others
3. Others				

(7) Points to be considered

- If bulk meters are not installed, it must be estimated to obtain system input volume based on pump specifications and operation hours.
- In the absence of metering, a representative sample of water consumption can be estimated based on an average consumption for the past six month. Where representative metering is not available “per capita consumption” (PCC) from the Demand Water Figures (ZS 361 2009) is used.

(8) Evaluation Example

e.g.

(1) System Input Volume: 15,000 m³/d

(2) Volume of Billed water: 12,000 m³/d

$$NRW \text{ ratio} = ((1) - (2)) / (1) \times 100 = \left(\frac{15,000 - 12,000}{15,000} \right) \times 100 = 20.0(\%)$$

Evaluation Criteria: Level 4 (as the result)

2.2.4 P11: Customer Meters

(1) Definition

Proportion of the number of functioning customer metered connections compared with the total number of connections.

Formula:

Proportion of number of functioning customer metered connections to total number of connections

$$= \frac{\text{Total Number of Functioning Customer Metered Connections}}{\text{Total Number of Connections}} \times 100$$

Unit: %

(2) Purpose

- Learning about CUs' understanding on the necessity of meter reading.
- Learning an intelligibility of CUs' understanding of their financial situation.
- Learning about the level of awareness of CUs to improve their financial status.
- Understanding the intended performance by CUs to carry for financial strength.

(3) Interviewee

- Director or Head of Customer Service Department/ Division.

(4) Background and Concept

Total Number of Functioning Customer Metered Connections: Functioning customer meters are one's of other than the missing meters, malfunctioning and non-sensitive meters.

Total Number of Connections: These are the total number of connections from all customer categories on the billing database including disconnected customers but excluding non-functional points. Ideally each connection is identified uniquely within the billing database to avoid duplication. Smart billing entails assigning a customer account to a property such that one property has one bill. That is, one customer can have many properties, but each property can have only one account in the billing system.

All providers are required to meter all their customers. Metering allows a provider to measure the amount of water consumed from what has been produced, as well as charge consumers according to their consumption. Metering plays a significant role in measuring and controlling water losses.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There are no customer meters due to a flat-rate system, or the majority of existing customer meters are not functioning.	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or	Functioning customer meters are supposed to be installed for every household and replaced with new ones periodically,	Most households have well-functioning customer meters due to rigorous periodical meter exchange.	Almost all households have well-functioning customer meters with good accuracy.

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
	not working well.	but more than 10% of them are missing or not working well.		

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Difficulties in installing customer meters to all/necessary customers			1-1. Lack of budget to install necessary customer meters
			1-2. Lack of skilled staff for installing customer meters
			1-3. Others
2. No awareness to use customer meters			2-1. No training to make staff understand the necessary of customer meters
			2-2. No awareness meeting to make customers understand the necessary of customer meters
3. No meter readers			3-1. Lack of budget to employ staff
4. Difficulties in maintaining the existing customer meters to keep good condition			4-1. Lack of budget to maintain existing customer meters to keep good condition
			4-2. Lack of skilled staff for maintaining customer meters
			4-3. No sections for meter calibration
			4-4. Meter calibration section is not working well
			4-5. Difficulties in keeping customer meters good condition without good relationship with customers
			4-6. Others
3. Others			

(7) Points to be considered

- Non-sensitive and malfunctioning meters should not be included as functioning metered connections.

(8) Evaluation Example

e.g.
(1) Total Number of Functioning Customer Metered Connections: 3,000 nos.
(2) Total Number of Connections: 10,000 connections
Percentage of functioning customer metered connections to total number of connections
$= (1)/(2) \times 100 = \left(\frac{3,000}{10,000}\right) \times 100 = 30.0(\%)$
Evaluation Criteria: Level 2 (as the result)

2.2.5 P12: Bulk Meters

(1) Definition

Bulk flow meters are used to measure flow rate of water distributed from service reservoirs in order to manage water distribution.

(2) Purpose

- Learning the status of installation of bulk meters.
- Understanding the necessity of investment to install bulk meters.

(3) Interviewee

- Director or Head of Engineering Department/ Division.

(4) Background and Concept

Types of bulk meters are mainly divided into three; mechanical, electro-magnetic and ultrasonic flow meters. Their types will be determined in terms of pipe diameter, O&M and commercial supply situation, etc.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Bulk meters for accurate measurement of water production and basic control of distribution are not installed at most of the places where they should be; or most of the existing bulk meters do not work well due to lack of maintenance.	There are not enough functioning bulk meters installed at the places requiring them for accurate measurement of water production and basic control of distribution; and existing bulk meters are not well maintained.	There are enough functioning bulk meters for accurate measurement of water production and basic control of distribution, but not enough for calculating NRW ratio of each sub-zone (DMA) for effective NRW reduction. Majority of the existing bulk meters are well maintained.	There are enough functioning bulk meters installed for calculating NRW ratio of each sub-zone (DMA) for effective NRW reduction. Most of the existing bulk meters are well maintained, and important meter readings are recorded periodically.	There are enough functioning bulk meters installed (with good accuracy) for calculating NRW ratio of each sub-zone (DMA) for effective NRW reduction. All of the existing bulk meters are well maintained, and important meter readings are recorded periodically and analyzed effectively.

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
	1. No awareness to use bulk meters		1-1. No awareness meeting to make staff understand the necessity of bulk meters
	2. No planning to install the bulk meters		2-1. Lack of budget
			2-2. Lack of skilled staff for planning and or designing of bulk meter installation
			2-3. Lack of skilled staff for supervising installation of bulk meters
	3. No maintenance		3-1. Lack of budget
			3-2. Lack of skilled staff for maintaining bulk meters

Main Cause of Factor		Detail Cause of Factor	
			3-3. Others
	4. Others		

(7) Points to be considered

- It is recommended that calibration intervals for bulk flow meters are five years for mechanical type and one year for electromagnetic and ultrasonic types, respectively.
- The terms as shown in Evaluation Criteria are defined as:

Installation ratio of bulk meters:

Level 1: 0 – 5 %, Level 2: 6 – 40 %, Level 3: 41 – 89%, Level 4 & 5: more than 90%

Difference between Level 4 and 5:

Level 4: Meter readings are recorded periodically.

Level 5: Meter readings are recorded periodically and analyzed effectively

(8) Evaluation Example

e.g.

There are not enough functioning bulk meters installed at locations requiring such for accurate measurement of water production.

Evaluation Criteria: Level 2 *(as the result)*

2.2.6 P13: Water Quality Parameters Tested at Purification Plants

(1) Definition

Number of test meeting the national drinking water standards

(2) Purpose

- Learning status of water quality testing.
- Understanding the necessity of investment to improve water quality management.

(3) Interviewee

- Director or Head of Engineering Department/ Division

(4) Background and Concept

None.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Water quality testing is based on a visual observation of water cleanliness.	Water quality testing is based on periodical simple water quality tests for pH, turbidity, chlorine, etc., using handheld water quality testers or pack test kits. The treated water usually meets existing standards for the parameters tested.	Water quality testing is based on periodical laboratory water quality tests for micro-organisms such as coliforms, and general physical and chemical water quality parameters. The treated water usually meets existing standards for the parameters tested.	Water quality testing is based on continuous and daily water quality monitoring using appropriate water quality testing methods and well-maintained apparatus. The treated water usually meets existing standards for basic parameters selected with reference to the WHO guidelines, etc.	Water quality testing is based on continuous and daily water quality monitoring using appropriate water quality testing methods and well-maintained apparatus. The treated water almost always meets existing standards for comprehensive parameters selected in reference to the WHO guidelines, etc.

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1.	No understanding of the necessary of water quality analysis		1-1. No training to make staff understand the necessity of water quality analysis
2.	Raw water quality is high		2-1. There is no sudden change of raw water quality
			2-2. Water quality is always good
			2-3. Not necessary to conduct water quality check
			2-4. Others
3.	Water quality test is carried out at other institutions		3-1. Low cost
			3-2. No water quality analyst
			3-3. Others
4.	No water quality laboratory		4-1. Lack of budget to establish water quality laboratory
			4-2. No plan to establish water quality laboratory
			4-3. No water quality analyst
			4-4. Low priority to establish water quality laboratory
			4-5. Others

Main Cause of Factor		Detail Cause of Factor	
5. Water quality is not monitoring continuously			5-1. Lack of water quality analyst
			5-2. Lack of water quality test equipment
			5-3. Lack of budget to establish water quality test/monitoring system
			5-4. Low priority
			5-5. Others
6. Others			

(7) Points to be considered

- Zambia Standard as well as WHO guideline can be applied for evaluation for this indicator.

(8) Evaluation Example

e.g.

Water quality is tested for paragraph such as pH, turbidity, chlorine. Hand held water quality testers are used. The treated water usually meets existing standard for the parameters tested.

Evaluation Criteria: Level 2 *(as the result)*

2.3 Aspects to be improved mainly by Capacity Development/ Non-technical Aspect

2.3.1 P14: Cost Recovery Level

(1) Definition

Proportion of income to the cost incurred for water supply service

(2) Purpose

- Learning about the status of management of water supply service.
- Learning about the status of O&M cost and other necessary cost.
- Learning about the status of billed amount and benefit.

(3) Interviewee

- Director or Head of Financial Department/ Division

(4) Background and Concept

All O&M, depreciation and financial costs (interest and capital repayments), and costs for own-capital-funded expansion of facilities (to some extent) are covered by water tariff or not.

- 1) Operating ratio (billed revenue covering O&M cost excluding depreciation and financing tariff) for water only. (Annual operational (billed) revenues for water / Total annual operating costs for water excluding depreciation and financing tariff (interest and capital repayments) as a percentage)
- 2) Operating ratio for water only, including depreciation but excluding financial tariff (interest and capital repayments) (%): Total operating (billed) revenue for water / (Total operational (O&M) expenses for water services (including depreciation)). Expressed as a percentage.
- 3) Operating ratio for water only, including depreciation and financial tariff (interest and capital repayments) (%): Total operating (billed) revenue for water / (Total operational (O&M) expenses for water services (including depreciation) + financial tariff including interest and capital repayments). Expressed as a percentage.
- 4) Ratio of depreciation related to water services to total operating (billed) revenue for water (%):
Depreciation related to water services / Total operating (billed) revenue for water. Expressed as a percentage.
- 5) Ratio of interest related to water services to total operating (billed) revenue for water (%): Interest related to water services / Total operating (billed) revenue for water. Expressed as a percentage.
- 6) Ratio of capital repayments related to water services to total operating (billed) revenue for water (%): Capital repayments related to water services / Total operating (billed) revenue for water. Expressed as a percentage.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Only part of the O&M costs (excluding depreciation of water supply facilities) are covered by water tariff. '1)' < 1	All O&M costs (except for depreciation of water supply facilities) are fully covered by water tariff. '1)' ≥ 1	All O&M and depreciation costs are covered by water tariff. '2)' ≥ 1, if not, check '4)'	All O&M, depreciation and financial costs (interest & capital repayments) are covered by water tariff. 1 ≤ '3)' < 1.01, if not, check '5)' and '6)'	All O&M, depreciation and financial costs (interest and capital repayments), and costs for own-capital-funded expansion of facilities (to some extent) are covered by water tariff. '3)' ≥ 1.01

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Inappropriate water tariff			1-1. Low water tariff.
			1-2. High O&M costs.
			1-3. Difficulties in raising water tariff.
			1-4. Others.
2. High NRW			2-1. Much leakage.
			2-2. Illegal connections.
			2-3. Adoption of flat rate.
			2-4. Others.
3. Lack of facility efficiency			3-1. Deterioration of facilities.
			3-2. Lack of skilled staff for maintaining water supply facilities
			3-3. Lack of budget to maintain water supply facilities well
			3-4. Others.
4. Others			

(7) Points to be considered

- Financial statement should be checked carefully in order not to collect inappropriate data for figuring out cost recovery.

(8) Evaluation Example

<p>e.g. All O&M costs (except for depreciation of water supply facilities) are fully covered by water tariff.</p> <p>Evaluation Criteria: Level 2 (as the result)</p>
--

2.3.2 P15: Collection Ratio

(1) Definition

Percentage of cash income to total amount billed for water supply and sewerage service

Formula:

$$\text{Collection Ratio} = \frac{\text{Total Water \& Waste water cash income}}{\text{System Input Volume}} \times 100$$

Unit: %

(2) Purpose

- Learning about the status of tariff collection ratio.
- Understanding the necessary investment to improve collection ratio.
- Learning about challenges to improve collection ratio.

(3) Interviewee

- Director or Head of Finance Department/ Division

(4) Background and Concept

Total water and waste water cash income: The total amount of money collected for billed water and sewerage service only. This comprises payments towards arrears, current bill payments and advance payments.

Total water and waste water billed: The total monetary amounts charged for Water Supply and Sewerage Service only.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Less than 60%	60-74%	75-84%	85-94%	At least 95%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. No meter reading			1-1. No motivation of meter readers to read customer meters
			1-2. No incentive for meter readers to read customer meters
			1-3. Impossible to read customer meters due to malfunctioning meters
			1-4. Impossible to read customer meters due to non-existence of customer meters
			1-5. Lack of meter readers
			1-6. Lack of budget to employ meter readers
			1-7. Others
2. No billing			2-1. No motivation of staff to charge customers
			2-2. No incentive for staff to charge customer

Main Cause of Factor		Detail Cause of Factor	
			2-3. Lack of skilled staff for billing
			2-4. Lack of budget to employ skilled staff
			2-5. Others
	3. No collection		3-1. No motivation of staff to collect tariff
			3-2. No incentive for staff to collect tariff
			3-3. Lack of skilled staff for tariff collection
			3-4. Lack of budget to employ skilled staff
			3-4. Others
	4. Only cash acceptable at customer service counter of CU		4-1. No remittance system
	5. Others		

(7) Points to be considered

- Total water supply & sewerage cash income does not include money collected from other services on charges such as penalties, connection fee, meter charge, etc.
- Total amount billed for Water Supply & Sewerage does not include charges for other services or sundries such as penalties, connection fee, meter change, etc.

(8) Evaluation Example

e.g.

(1) Total water supply & waste water (cash) income per year: 100,000,000 K

(2) Total water & waste water operating (billed) revenues per year: 120,000,000 K

$$\text{Collection ratio} = (1)/(2) \times 100 = \left(\frac{100,000,000}{120,000,000} \right) \times 100 = 85.0(\%)$$

Evaluation Criteria: Level 3 (as the result)

2.3.3 P16: Number of Staff Working specially for Water (Number/'000 water connections)

(1) Definition

Staff efficiency

Formula:

Number of Staff Working specially for Water (Number/'000 water connections)

$$= \frac{\text{Total number of staff of CU}}{\text{Total number of connections}} \times 1,000$$

Unit: Number of Staff

(2) Purpose

- Learning about status of staff efficiency.
- Understanding the necessity of restructuring of CUs.

(3) Interviewee

- Director or Head of Human Resource Department/ Division

(4) Background and Concept

Total number of staff - Full Time Equivalent (FTE): Total number of staff working at CU on water services expressed as FTE staff number.

Number of water connections ('000): Number of active water connections at year-end. All active connections should be counted – residential, non-residential etc.

(5) Evaluation Criteria (Please select)

For CUs with more than 50,000 connections and water production above 50million m³ per year

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
More than 15	11 - 14	9 - 10	6 - 8	Less than 5

For CUs with 50,000 connections or less and production 50million m³ or less per year

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
More than 21	17 - 20	15 - 16	10 - 14	Less than 9

(6) Causes(Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Excessive staff		1-1.	Many direct operation
		1-2.	Not enough introduction of automatic operation system at water treatment plants/pumping station.
		1-3.	Installation of work machine is not sufficient.
		1-4.	Difficulties in restructuring because of political issues
		1-5.	Others

Main Cause of Factor		Detail Cause of Factor	
2. A few number of connections.		2-1.	Lack of budget to install necessary number of customer meters
		2-2.	Lack of budget to hire necessary number of meter readers in the case of increasing necessary number of customer meters
		2-3.	Too many KIOSKs
		2-4.	There is no problem as current number of customer meters
		2-5.	Others
3.	Others		

(7) Points to be considered

- The total number of staff excludes casual labors and short-term contract labors.
- Number of water connection excludes inactive connections such as vacant, disconnected house due to various reasons.
- If certain staff are in charge of both water supply and sewer sector, two third of total staff should be applied for water supply sector.

(8) Evaluation Example

e.g.

(1) Total number of staff: 450 persons

(2) Number of connections: 80,000 connections

$$\text{Staff efficiency} = (1)/(2) \times 1,000 = \left(\frac{450}{80,000} \right) \times 1,000 = 5.6 \text{ (persons/ thou. connections)}$$

Evaluation Criteria: Level 3 (as the result)

2.3.4 P17: Implementation of Training

(1) Definition

Status of training implementation

(2) Purpose

- Learning about status of implementation of training.
- Learning improvement of implementation of training.

(3) Interviewee

- Director or Head of Human Resources Department/ Division

(4) Background and Concept

A wide range of training programs is important to improve and carry on water supply services. It is desirable that taking the training program is one of the pre-condition for staff promotion in future.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Training is quite rare or not provided at all.	A limited number of training programs on some aspects are provided, however there are no incentives for staff to undertake training programs.	There are minimum levels of training required for important aspects, but incentives for staff to undertake training programs are limited.	An adequate number of training programs are provided on important aspects, including management and technical matters. There are enough incentives for staff to undertake training programs.	A wide range of training programs are available. The completion of these training programs is generally a condition of promotion.

(6) Causes (Please tick all that apply)

Main Cause of Factor	
	1. Lack of budget
	2. No training implementation system
	3. No training center
	4. No teachers in CU
	5. No teachers to be outsourced
	6. No plan to implement training program
	7. No problem
	8. Others

(7) Points to be considered

- Training programs are required for engineers, technicians, administration staff, managers, etc.
- Training program excludes sewerage supply service but not water supply service.
- The terms as show in Evaluation Criteria are defined as:
 Quite rare or not provided: 5 times or less a year.
 A limited number of training: 6- 10 times a year.
 Minimum level of training: 11- 20 times a year.
 Adequate number of training: 21- 29 times a year.
 A wide range of training: At least 30 times.

(8) Evaluation Example

e.g.

- Training programs on some aspects are provided 7 times a year.

Evaluation Criteria: Level 2 (*as the result*)

2.3.5 P18: Complaint Handling

(1) Definition

Status of procedure to deal with customer's complaints

(2) Purpose

- Learning about the reliance by customers to water supply service.
- Understanding the needed improvement of water supply service.

(3) Interviewee

- Director or Head of Customer Service Department/ Division

(4) Background and Concept

An effective procedure and information system for complaint handling is established and data on complaints should be recorded and analyzed promptly.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
A procedure or information system for complaint handling has not been established, and complaints are currently dealt with on an ad-hoc basis.	A procedure or information system for complaint handling has been established, but there is a large backlog of unresolved complaints.	A procedure or information system for complaint handling has been established, but there are usually some complaints resolved.	An effective procedure and information system for complaint handling has been established, and data is recorded and analyzed. There can however be a backlog of complaints in a particular season.	An effective procedure and information system for complaint handling has been established, and data is recorded and analyzed. Even in peak complaints season, there is no backlog.

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Not established complaint handling section			1-1. Lack of budget
			1-2. No plan to establish complaint handling section
			1-3. Low priority
			1-4. Others
4. Lack of Human Resources			2-1. Lack of budget to hire staff for the complaint handling section
			2-2. Low priority to hire staff for the complaint handling section
			2-3. Others
5. Lack of ability to deal with complaints well			3-1. Not enough training for staff to handle complaints
			3-2. Lack of experience to handle complaint well
			3-3. Others
6. Others			

(7) Points to be considered

- This should be evaluated based on the average record of all the complaint handled in CU.

(8) Evaluation Example

e.g.

A procedure or information system for complaint handling has been established, but there are usually some complaints resolved.

Evaluation Criteria: Level 2 (*as the result*)

2.3.6 P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

(1) Definition

Status of Awareness-raising on NRW reduction, water saving, collection of water charges, etc.

(2) Purpose

- Learning about the efforts of CUs to eliminate illegal connections, to collect water charges and to make customers understand operation of water supply service

(3) Interviewee

- Director or Head of Customer Service Department/ Division

(4) Background and Concept

Public awareness can be enhanced through: 1) general public relations & publicity, 2) special promotional programs, 3) monitoring research, 4) painting/writing contests, 5) school education, etc.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
No or minimal effective awareness-raising activities have been implemented.	A few effective awareness-raising activities have been implemented.	Several effective awareness-raising activities have been implemented.	Many effective awareness-raising activities have been implemented.	Many effective awareness-raising activities are being implemented continuously.

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of Human Resources			1-1. Lack of budget to employ skilled staff to implement awareness-raising activities
			1-2. No plan to hire more staff for implementation of Awareness-raising activity
			1-3. Low priority to implementation of awareness-raising activity
			1-4. Others
2. Lack of experience on awareness-raising activities			2-1. Not enough training program for staff
			2-2. Others
3. Others			

(7) Points to be considered

- Some terms shown in Evaluation Criteria means the following grades:
A few effective awareness: Two to four times a month.
Several effective awareness: Five to eight times a month.
Many effective awareness: Nine to fifteen times a month.

(8) Evaluation Example

e.g.
Effective awareness-raising activities have been implemented three times a month.
Evaluation Criteria: Level 2 (as the result)

Effective awareness-raising activities have been implemented nine times a month.

Evaluation Criteria: Level 4 (*as the result*)

2.4 Aspects to be improved mainly by Program Approach

2.4.1 P20: Sewerage Coverage (including On-site Facilities)

(1) Definition

Proportion of population with access to adequate sanitation system (on-site or off-site)

Formula:

$$\text{Sewerage Covering} = \frac{\text{Total Population Served}}{\text{Total Population in Service Area}} \times 100$$

Unit: %

(2) Purpose

- Learning about the sewerage service situation.
- Understanding the necessity of investment to improve and extend sewerage system.

(3) Interviewee

- Director or Head of Engineering Department/ Division

(4) Background and Concept

Total Population Served: The number of persons with access to improved sanitation facilities for the disposal of waste via a sewer network (off-site) or septic tanks (on-site). The customer database tends to only reflect customers served by sewer network, therefore, information on septic tanks has to be collected additionally and outside the database due to differences in how they are billed. The Total Population Served is calculated as follows:

Formula:

$$\begin{aligned} \text{Total Population Served} \\ &= \text{Total Number of Connections by Type} \\ &\times \text{Average Number of People Served} \end{aligned}$$

Total Number of Connections

The Total Number of Connections are the septic tanks in the area of service and actual domestic customer accounts connected to the sewer network on the billing database. Total Connections include disconnected customers but exclude non-functional points. Disconnected customers that are temporarily cut off from water supply due to non-payment of a bill may still continue to be charged for sewerage services where water-borne systems are installed unless the provider deliberately blocks the sewer line. A non-functional water point may due to a collapsed network or vandalized line etc., that does not allow sewage to be passed through for disposal. Non-functional connections may appear as disconnected customers and therefore must be differentiated and removed from the Total Connections.

Average Number of People Served

Limits have been set for the average number of persons accessing sewerage services from a connection

type in consideration of what is acceptable. These limits are based on the Central Statistics Office (CSO) figures of a national average of 5.5 persons per household. However, because the average household size is dependent on the population density of an area, ranges have been established per connection type within which a provider can stipulate what is acceptable to their area.

<u>Average Number of People Served</u>
<ul style="list-style-type: none"> • Individual connection-sewer network = 4-10 persons • Communal connection-sewer network = 30-50 persons • Septic tank-single facility = 4-10 persons • Septic tank-shared facility = 30-50 persons

Total Population in Service Area: This is the same as for water supply coverage and is the number of people residing in the licensed urban and peri-urban area. The baseline figure for the population living in the area is obtained from the Central Statistics Office (CSO) and the 2005 DTF Baseline Study for Low-Income areas. The growth rate applicable to the town is applied to the population figures reported annually by the providers.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
0%	Less than 5%	Less than 30%	Less than 50%	More than 75%

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1. Low priority for sewerage development			1-1. Water supply is first priority
			1-2. Lack of budget
			1-3. Others
2. Unexpected causes			2-1. Unexpected increasing citizens
			2-2. Difficulties in catching up developing sewerage system with population growth
			2-4. Others
3. No understanding of the necessity of developing sewerage system and or sanitation facilities			3-1. No training to make staff understand the necessity of developing sewerage system and or sanitation facilities
4. No contamination in public water body			
5. Others			

(7) Points to be considered

- The proportion of population with access to adequate sanitation system includes on-site or off-site.
- Sewerage Coverage includes not only sewerage system but also sanitation system such as on-site facilities.

(8) Evaluation Example

e.g.
(1) Total Population Served: 45,000 persons

(2) Total Population in Service Area: 60,000 persons

$$\text{Sewerage Coverage} = (1)/(2) \times 100 = \frac{45,000}{60,000} \times 100 = 75.0 (\%)$$

Evaluation Criteria: Level 5 (*as the result*)

2.5 General Aspect

2.5.1 P21: Year of Work Experience on Water Supply Service

(1) Definition

Average Year of work that staff have experience on water supply service

(2) Purpose

- Learning about the capacity of CUs at organizational level to carry on water supply service
- Understanding the necessity of human resources development

(3) Interviewee

- Director or Head of Human Resources Department/ Division

(4) Background and Concept

Indicator represents the average years of experience for all staff on water supply service.

(5) Evaluation Criteria (Please select)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
0-7 years	8-15 years	16-23 years	24- 34 years	At least 35 years

(6) Causes (Please tick all that apply)

Main Cause of Factor		Detail Cause of Factor	
1.	Short history of CU		1-1. Recent establishment
			1-2. Others
2.	Retirement of lots of staff		2-1. Low Salary
			2-2. Mandatory retirement
			2-3. Self-convened retirement
			2-4. Others
3.	Others		

(7) Points to be considered

- Year of work experience includes that of external work experience on water supply sector.

(8) Evaluation Example

e.g.

(1) Total years of work experience of total staff: 2,250 years

(2) Total number of staff: 150 persons

Average Years of work that staff have experience on water supply service = (1)/(2) × 100

$$= \frac{2,250}{150} \times 100 = 15 \text{ (years / staff)}$$

Evaluation criteria: Level 2 (as the result)

3. Evaluation Items for Management Capacity

Since the Zambian Government has been decentralized gradually, Commercial Utilities need to strengthen Management Capacity on water supply and sanitation sector. Commercial Utilities are the main service providers for water supply and sanitation and sanitation services in a decentralized society.

Accordingly, it is anticipated that the Management Capacity of Commercial Utilities' staff should be improved in accordance with decentralization in Zambia in order for Commercial Utilities to manage water supply service sustainably and efficiently. The Management capacity of Commercial Utilities will be evaluated based on this Evaluation Manual. In this Chapter, the Evaluation Manual is composed of five Evaluation Items on the Management capacity, such as 1) Internal Policy, 2) Finance, 3) Governance, Management & Human Resource, 4) Education & Training and 5) Customer Relation. The Evaluation Manual will contribute to identification of issues and causes in terms of the above categories concerning Management Capacity in order for Commercial Utilities to formulate Human Resource Development Plan

3.1. Internal Policy and Planning

3.1.1. M1: Review on Short, Middle and Long Term Plan

(1) Purpose of Indicator

- Learning an intelligibility of CUs of the necessity of policy and planning.
- Learning awareness of CUs to improve water supply service.

(2) Interviewee

- Director of Engineering.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There are no Policy and or a Planning.	Planning are not reviewed.	Planning are reviewed by 10 years.	Planning are reviewed by five years.	Planning are reviewed by three years.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of policy and planning	b. No training on how to prepare policy and planning	c. No training on how to review planning	d. No budget to employ staff	Remarks
Main Causes					
I. No awareness to prepare policy and or planning, and review it					
II. No understanding of necessity of policy and or planning, and review it					
III. No staff to prepare policy and or planning, and review it					
IV. No skill to prepare policy and or planning, and review it					
V. No skilled staff to review planning					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- In case that the planning are reviewed by more than 10 years, it must be evaluated as '2: Serious'.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.1.2. M2: Evaluation Method to achieve Goal

(1) Purpose of Indicator

- Learning an intelligibility of CUs of the necessity of policy and planning.
- Learning awareness of CUs to improve water supply service.
- Learning intentional performance and feature of CUs.

(2) Interviewee

- Director of Engineering.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There is no a Planning.	Evaluation method has not been established.	Evaluation method has been under consideration.	Some of items have been evaluated.	All the items have been evaluated.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of evaluation method	b. No training on how to prepare evaluation method	c. No training on how to evaluate activities	d. No budget to employ staff	Remarks
I. No awareness to examine and prepare evaluation method					
II. No understanding of necessity of evaluation					
III. No staff to prepare evaluation method					
IV. No skill to prepare evaluation method					
V. No skilled staff to evaluate activities					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has been taking specific actions to consider the evaluation method, 'Evaluation method has been under consideration' shown in '3: Not Good Enough' is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.2. Finance

3.2.1. M3: Analysis on Annual Financial Status

(1) Purpose of Indicator

- Learning an intelligibility of CUs on their financial situation.
- Learning awareness of CUs to improve their financial status.

(2) Interviewee

- Director of Finance.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Annual finance has not been analyzed at all.	Analysis on annual financial status has been under consideration.	Annual finance has been analyzed but its result is not related to a budget arrangement.	Annual finance has been analyzed. Analysis result is partially reflected to a budget arrangement.	Annual finance has been analyzed. Analysis result is reflected to a budget arrangement completely.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of analysis of financial status	b. No training on how to analyze financial status	c. No budget to employ staff	d. No budget to purchase tools	e. No supplier of PC and software	Remarks
Main Causes						
I. No awareness to analyze financial status						
II. No understanding of necessity of financial analysis						
III. No staff to analyze financial status						
IV. No skill to analyze financial status						
V. No tools such as PC and software, etc.						
Remarks						

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has been taking specific actions to consider the analysis of annual financial status, ‘Analysis on annual financial status has been under consideration.’ shown in ‘2: Serious’ is applicable to the answer.

- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.2.2. M4: Financial Improvement Status towards achievement of Goal

(1) Purpose of Indicator

- Learning an intelligibility of CUs on their financial situation.
- Learning awareness of CUs to improve their financial status.
- Learning intentional performance of CUs to carry on financial strength.

(2) Interviewee

- Director of Finance.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Financial status has not been improved at all.	Financial status has been improved barely.	Financial status has been improved to some extent.	Financial status has been improved considerably.	Financial status has been improved as it achieves goal.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of analysis of financial status	b. No training on how to analyze financial status	c. No budget to employ staff	d. No budget to purchase tools	e. No supplier of PC and software	f. No skill to reduce NRW	g. No budget to purchase equipment	Remarks
	I. No awareness to analyze financial status							
II. No understanding of necessity of financial analysis								
III. No staff to analyze financial status								
IV. No skill to analyze financial status								
V. No tools such as PC and software, etc.								
VI. No effort to improve financial status								
VII. Difficult to reduce Non-								

Detail Causes Main Causes	a. No training to make staff understand the necessity of analysis of financial status	b. No training on how to analyze financial status	c. No budget to employ staff	d. No budget to purchase tools	e. No supplier of PC and software	f. No skill to reduce NRW	g. No budget to purchase equipment	Remarks
	Revenue Water (NRW)							
Remarks								

(5) Points to be considered

Evaluation should be based on the following points.

- Improvement of by 25%, 50% and 75% are applied for ‘2: Serious’, ‘3: Not Good Enough’ and ‘4: Good’ respectively.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.2.3. M5: Status of Metered Rate

(1) Purpose of Indicator

- Learning an intelligibility of CUs on the necessity of meter reading
- Learning an intelligibility of CUs on their financial situation.
- Learning awareness of CUs to improve their financial status.
- Learning intentional performance of CUs to carry on financial strength.

(2) Interviewee

- Director of Finance.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Flat rate is almost applied for billing.	Metered rate makes up 30% or less of all the meter reading.	Metered rate makes up about 50% of all the meter reading.	Metered rate makes up about 80% of all the meter reading.	Metered rate is allied for billing completely.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of water meter reading	b. No training on how to read water meters and sort out meter reading data	c. No budget to employ staff	d. No budget to purchase water meters	e. No supplier of water meters	Remarks
Main Causes						
I. No awareness to read water meters						
II. No understanding of the necessity of water meter reading						
III. No staff to read water meters						
IV. No skill to read water meters						
V. No skill to sort out meter reading data						
VI. No water meters						
Remarks						

(5) Points to be considered

Evaluation should be based on the following points.

- Since it is impossible to read meter on malfunctioning water meters, households having the malfunctioning water meter are defined as customers in flat rate.
- Pre-paid meters and Automatic Meter Reading System as well as mechanical water meters are defined as water meters in metered rate.

- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.2.4. M6: Budget Arrangement based on Historical Record and Result of Management Evaluation

(1) Purpose of Indicator

- Learning an intelligibility of CUs how to make a budget arrangement.

(2) Interviewee

- Director of Finance.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
A budget arrangement has not been made based on historical record and or management evaluation.	A budget arrangement based on historical record and or management evaluation is under consideration.	A budget arrangement has been made but it is not systematically.	A budget arrangement has been made based on historical record or management evaluation.	A budget arrangement has indeed been made based on both historical record and management evaluation.

(4) Causes for Result of Evaluation (Please tick all that apply)

Main Causes	Detail Causes	a. No staff to compile historical record and result of management evaluation	b. No training on how to make budget arrangement	Remarks
	I. No historical record and result of management evaluation			
II. No understanding on how to make budget arrangement				
Remarks				

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has been taking specific actions to consider introduction of the budget arrangement based on historical record and or management evaluation, ‘A budget arrangement based on historical record and or management evaluation is under consideration.’ shown in ‘2: Serious’ is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.2.5. M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection

(1) Purpose of Indicator

- Learning appropriate performance of CUs to manage water supply service.
- Learning awareness of CUs to improve their financial status.

(2) Interviewee

- Director of Finance.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There are no manual, or even if there is a manual, it has not been used at all.	All the manuals have almost not been used.	Some manuals have been used infrequently.	Some manuals have always been used.	All the manuals have been used as necessary. In addition, the training for the manual is conducted irregularly.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of manual	b. Lack of information in the manual	Remarks
I. No awareness to use manual			
II. No understanding of the necessity of manual			
III. Not useful			
Remarks			

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has been conducting the training for the manuals while using all the manuals of meter reading, billing and tariff collection, ‘All the manuals have been used as necessary. In addition, the training for the manual is conducted irregularly’ shown in 5: Very Good’ is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.3. Governance, Management and Human Resources

3.3.1. M8: Average Length of Service with CUs or Other Water Authority

(1) Purpose of Indicator

- Learning organizational capacity of CUs to carry on water supply service.
- Learning the necessity of human resource development.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Less than five years	Five to 10 years	11 to 20 years	21 to 30 years	More than 30 years

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. Recent establishment	b. No interesting	c. Restructuring	Remarks
I. Short history				
II. Retirement of lots of staff				
Remarks				

(5) Points to be considered

Evaluation should be based on the following points.

- Average length of service of staff working in the targeted CU should be focused on, while that of staff who worked in the other water authorities such as CUs and MWDSEP, etc. should not be considered.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.3.2. M9: Record of Working Time

(1) Purpose of Indicator

- Learning discipline of staff.
- Learning the work performance of CUs.
- Learning actual work load of staff.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Recording system for the working time has not been developed yet.	Recording system for the working time has been developed but the working time for all the staff has not been recorded yet.	Recording system for the working time has been developed but record of working time depends on staff.	Staff other than middle management executive and executive have recorded the working time.	All staff have been recorded the working time.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of working record	b. No budget to purchase time recorders	Remarks
I. No awareness to use a time recorder			
II. No understanding of the necessity of working record			
III. No time recorders			
Remarks			

(5) Points to be considered

Evaluation should be based on the following points.

- Equipment as recording system is not necessarily recording system for the working time. If CU has been using time record data book, '2: Serious', '3: Not Good Enough', '4: Good' and '5: Very Good' is applicable to answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.3.3. M10: System to evaluate Work Performance Capacity towards Goal

(1) Purpose of Indicator

- Learning evaluation method of work performance.
- Learning awareness of CUs to improve work performance.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Evaluation system for work performance has not been established.	Evaluation system for work performance is under development.	Limited items for work performance have been evaluated.	Work performance has been evaluated but it is still insufficient.	Evaluation system for work performance has been operated well.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of work performance evaluation	b. No training on how to evaluate work performance	c. No budget to employ staff	Remarks
Main Causes				
I. No awareness to evaluate work performance				
II. No understanding of necessity of work performance evaluation				
III. No staff to evaluate work performance				
IV. No skill to evaluate work performance				
Remarks				

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has been taking specific actions to develop evaluation system for work performance, 'Evaluation system for work performance is under development.' shown in '2: Serious' is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.3.4. M11: Allocation and Input of Staff according to the Work Load

(1) Purpose of Indicator

- Learning system to raise work performance and productivity.
- Learning awareness of CUs on the work-load of staff.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Even if work load is high, staff allocation has not been changed nor input additionally.	According to request from staff, staff allocation and or input have been done.	Staff allocation has been changed and staff have been input irregularly according to work load.	Staff allocation has been changed and staff have been input appropriately according to work load.	Staff allocation has been changed and staff have been input appropriately according to work load. In addition, mitigation of work load is usually examined.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of staff allocation	b. No training on how to allocate or input staff	c. No budget to employ staff	d. Un-acceptable by staff for moving	Remarks
Main Causes					
I. No awareness to allocate or input staff					
II. No understanding of the necessity of appropriate staff allocation and input					
III. No staff to be allocated or input					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically looked through the mitigation of work load, ‘Staff allocation has been changed and staff have been input appropriately according to work load. In addition, mitigation of work load is usually examined’ shown in ‘5: Very Good’ is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.3.5. M12: Self-evaluation System at Individual Level

(1) Purpose of Indicator

- Learning efforts of CUs to raise motivation and work performance of staff.
- Learning intentional work performance of CUs to improve water supply service.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There is no a self-evaluation system.	Currently, a self-evaluation system is under development.	A self-evaluation system was established but each staff has not evaluated work performance periodically.	A self-evaluation system was established. Staff have evaluated their work performance but the results of evaluation have not been utilized.	A self-evaluation system was established. Staff have evaluated their work performance and the results of evaluation have been utilized for setting next year's goal.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of a self-evaluation	b. No training on how to conduct a self-evaluation	c. No training on how to use the result	d. No reliable data of evaluation	e. Much work load	Remarks
Main Causes						
I. No awareness to introduce a self-evaluation						
II. No understanding of the necessity of a self-evaluation system						
III. No time to conduct a self-evaluation						
IV. No understanding on how to use the result						
Remarks						

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically develop a self-evaluation system, 'Currently, a self-evaluation system is under development.' shown in '2: Serious' is applicable to the answer.
- Executive officer such as Managing Director and Director are excluded from the staff targeted for a self-evaluation.

- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.4. Education and Training

3.4.1. M13: Self-learning Support System

(1) Purpose of Indicator

- Learning intension of CUs to develop their human resource.
- Learning an intelligibility of CUs to carry on water supply service stably.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
There is no a self-learning system.	Currently, a self-learning system is under development.	A self-learning system was established but it has not been utilized.	A self-learning system was established. It has been utilized and the effect has come up to some extent.	A self-learning system was established. It has been utilized and the effect has remarkably come up.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of a self-learning support system	b. No training on how to use a self-learning support system	c. No motivation of staff to improve their own capacity	d. No budget to introduce a self-learning support system	Remarks
I. No awareness to introduce a self-learning support system					
II. No understanding of the necessity of a self-learning support system					
III. No staff to use a self-learning support system					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically develop a self-learning system, ‘Currently, a self-learning system is under development.’ shown in ‘2: Serious’ is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.4.2. M14: Evaluation of Trainee's Efforts

(1) Purpose of Indicator

- Learning intension of CUs to develop their human resource.

(2) Interviewee

- Director or Manager of Human Resource and Administration.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Trainees' efforts have not been evaluated.	Evaluation system for trainees' effort is under consideration.	Trainees' efforts have been evaluated partially.	Efforts of a half of the trainees have been evaluated.	Efforts of all the trainees have been evaluated.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of trainees' effort	b. No training on how to evaluate trainees' effort	c. No budget to employ staff	Remarks
Main Causes				
I. No awareness to evaluate trainees' effort				
II. No understanding of the necessity of trainees' effort				
III. No staff to evaluate trainees' effort				
IV. No skill to evaluate trainees' effort				
Remarks				

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically consider evaluation system for trainees' effort, 'Evaluation system for trainees' effort is under consideration.' shown in '2: Serious' is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.5 Customer Relation

3.5.1. M15: Development of Customer's Information

(1) Purpose of Indicator

- Learning an intelligibility of CUs on their financial situation.
- Learning awareness of CUs to improve their financial status.
- Learning intentional performance of CUs to carry on financial strength.

(2) Interviewee

- Director of Engineering.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Customers' information has not been developed at all.	Some of customers' information have been developed as data book but they have not been digitized yet.	All the customers' information have been developed but not been digitized yet.	All the customers' information have been digitized but not been utilized efficiently.	All the customers' information have been digitized and utilized for tariff collection and various water supply service efficiently.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of customers' information	b. No training on how to develop customers' information	c. No training on how to utilize customers' information	d. No budget to employ staff	e. No budget to purchase tools such as PC and software, etc.	Remarks
	I. No awareness to develop customers' information					
II. No understanding of the necessity of customers' information						
III. No staff to develop customers' information						
IV. No skill to develop customers' information						
V. No tools to develop customers' information						
VI. No skilled staff to utilize customer information						
Remarks						

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

3.5.2. M16: Time to respond to Customer's Complaint

(1) Purpose of Indicator

- Learning an intelligibility of CUs on accountability for water supply service.
- Learning awareness of CUs to improve their water supply service.

(2) Interviewee

- Director or Customer Service.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
It takes at least 10 days to respond to customer's complaint.	It takes a week to respond to customer's complaint.	Customer's complaint is responded by the following day after receiving complaint.	Customer's complaint is responded on the day of receiving complaint.	Customer's complaint is responded within a couple of hours after receiving complaint.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of an action quickly	b. No training on how to manage a quick action	c. Much work load	d. No budget to employ staff	Remarks
Main Causes					
I. No awareness to take an action quickly to customers complaint					
II. No understanding of the necessity of quick actions to customers complaint					
III. No staff to take actions quickly to customers complaint					
IV. No skill to manage quick actions to customers complaint					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If it takes more than three hours to respond customer complaint, 'Customer's complaint is responded on the day of receiving complaint.' Shown in '4: Good' is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.5.3. M17: Record for dealing with Customer's Complaints

(1) Purpose of Indicator

- Learning an intelligibility of CUs on accountability for water supply service.
- Learning awareness of CUs to improve their water supply service.

(2) Interviewee

- Director or Customer Service.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Customer' complaint and its handling of complaints have never been recorded at all.	Customer' complaint and its handling of complaints have never been recorded but establishment of the record system is under consideration.	Customer' complaint and its handling of complaints have been recorded irregularly.	Customer' complaint and its handling of complaints other than their minors ones have been recorded periodically.	All the customer' complaint and its handling of complaints have been recorded every time.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand a record of customer' complaint and its handling of complaints	b. No training on how to record customer' complaint and its handling of complaints	c. Much work load	d. No budget to employ staff	Remarks
Main Causes					
I. No awareness to take a record of customer' complaint and its handling of complaints					
II. No understanding of the necessity of a record of customer' complaint and its handling of complaints					
III. No staff to take a record of customer' complaint and its handling of complaints					
IV. No skill to manage a record of customer' complaint and its handling of complaints					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically consider establishment of the record system, 'Customer' complaint and its handling of complaints have never been recorded but establishment of the record system is under consideration.' shown in '2: Serious' is applicable to the answer.
- Record system is not only a digital recording system but also a manual one with data book.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.5.4. M18: Customer's Survey

(1) Purpose of Indicator

- Learning an effort of CUs to improve water supply service.
- Learning an intelligibility of CUs on rehabilitation, development and extension of water supply facilities.
- Learning awareness of CUs to improve water supply service.

(2) Interviewer

- Director or Customer Service.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Customer survey has never been conducted and it will not be planned in the future.	Customer survey has never been conducted but the survey is under consideration.	Customer survey has never been conducted but the survey will be conducted irregularly in the future.	Customer survey has been conducted and the survey will be conducted irregularly in the future.	Customer survey has been conducted and the survey will be conducted periodically in the future.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of customer survey	b. No training on how to conduct customer survey	c. No budget to employ staff	d. No budget to contract surveyor	Remarks
Main Causes					
I. No awareness to conduct customer survey					
II. No understanding of the necessity of customer survey					
III. No staff to conduct customer survey					
IV. No skill to conduct customer survey					
V. No surveyor to be outsourced to conduct customer survey					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has specifically consider customer survey, 'Customer survey has never been conducted but the survey is under consideration.' shown in '2: Serious' is applicable to the answer.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

3.5.5. M19: Promotion of Customer's Awareness

(1) Purpose of Indicator

- Learning an effort of CUs to eliminate illegal connections, to collect water tariff and to make customers understand an operation of water supply service.

(2) Interviewee

- Director or Customer Service.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Customer' awareness has never been promoted and it will not be planned in the future.	Customer awareness has never been conducted but its promotion is planned.	Awareness promotion on two items or less out of water conservation, illegal connections, water quality and leakage has been done but it is likely that customers' awareness have not been changed.	Awareness promotion on two items or less out of water conservation, illegal connections, water quality and leakage has been done but it is likely that customers' awareness have been changed.	Awareness promotion on all the items of water conservation, illegal connections, water quality and leakage has been done but it is likely that customers' awareness have been changed.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make staff understand the necessity of customer awareness promotion	b. No training on how to promote customer awareness	c. Much work load	d. No budget to employ staff	Remarks
	I. No awareness to promote awareness of customers				
II. No understanding of the necessity of customer awareness promotion					
III. No staff to promote awareness of customers					
IV. No skill to promote awareness of customers					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- If CU has conducted awareness promotions of at least two items, '2: Serious' is applicable to the answer. Two items are not necessarily the items out of water conservation, illegal connections, water quality and leakage.
- Inspectors such as MWDSEP and NWASCO must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

4. Evaluation Items for Communication and Negotiation Capacity

It is anticipated that the capacity of Commercial Utilities' staff should be improved in accordance with decentralization in Zambia. Before decentralization, routine work was important for local government under centralization. It was likely that the solutions to problems had relied on advice from the central government.

In order to solve the problems being faced in the provinces, Commercial Utilities must strengthen their Capacity of Communication & Negotiation. The capacity will be evaluated based on this Evaluation Manual. In this Chapter, Evaluation Manual is composed of five Evaluation Items on Capacity of Communication & Negotiation, such as Leadership, Human Development, Negotiation & Coordination, Data Collection & Utilization and Communication with Customers. The Evaluation Manual will contribute to identification of issues and causes in terms of the above categories in order for Commercial Utilities to formulate Human Resource Development Plan.

4.1. Leadership

4.1.1. C1: Executive Officers: Capacity to achieve goal and to raise the Standards of the Leadership

(1) Purpose of Indicator

- Learning an effort of executive officers to ensure appropriate working condition.
- Learning negotiation and coordination with council and or customers of executive officers on goal set-up, progress management and post-evaluation.

(2) Interviewee

- Managing Director of CU.

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make executive officer understand the necessity of leadership	b. No training on how to lead staff	c. Much work load	d. No incentive	Remarks
Main Causes					
I. No awareness to lead staff					
II. No understanding of the necessity of leadership					
III. No motivation of executive officer					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors to evaluate executive officers should be Managing Director.
- All the Executive Officers must be evaluated through this sheet.
- Specific performance of executive officers required for improving CU's capacity is as follows:
 - 1) Having periodical meeting for executive officers and or that for managers.
 - 2) Planning policy for activities of CU.
 - 3) Coaching and or leading subordinate officers.
 - 4) Having counsel for managers and or supervisors.

Executive officer should be evaluated based on number of feature in the performance mentioned above as follows:

‘5: Very Good’: 1) + 2) + 3) + 4)

‘4: Good’: Three out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘3: Not Good Enough’: Two out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘2: Serious’: One out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘1: Very Serious’: Nothing

- Managing Director as an inspector must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

4.1.2. C2: Managers and or Supervisors: Capacity to supervise Staff efficiently and effectively and to strengthen the Division and or Department

(1) Purpose of Indicator

- Learning an effort of supervisors to ensure appropriate working condition.
- Learning negotiation and coordination with council and or customers of supervisors on goal set-up, progress management and post-evaluation.

(2) Interviewee

- Executive Officers (Directors) of any Directorates

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes Main Causes	a. No training to make supervisor understand the necessity of leadership	b. No training on how to lead staff	c. Much work load	d. No incentive	Remarks
	I. No awareness to lead staff				
II. No understanding of the necessity of leadership					
III. No motivation of managers and or supervisors					
Remarks					

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors to evaluate Managers and or Supervisors should be Executive Officers.
- All the Managers and or Supervisors must be evaluated through this sheet.
- Specific performance of managers and or supervisors required for improving CU's capacity is as follows:
 - 1) Having periodical meeting for staff.
 - 2) Always considering work efficiency.
 - 3) Sometimes coaching and or leading subordinate officers.
 - 4) Having counsel for staff, if necessary.

Managers and or supervisors should be evaluated based on number of feature in the performance mentioned above as follows:

‘5: Very Good’: 1) + 2) + 3) + 4)

‘4: Good’: Three out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘3: Not Good Enough’: Two out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘2: Serious’: One out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘1: Very Serious’: Nothing

- Executive Officers as inspectors must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

4.2. Human Development

4.2.1. C3: Executive Officers, Managers and or Supervisor: Capacity to improve Qualification of Staff in terms of Post and Job Description

(1) Purpose of Indicator

- Learning an intelligibility of CUs to train staff to appropriately carry on water supply operation.
- Learning performance of executive officer and supervisors to direct staff.

(2) Interviewee

- Managing Director and Executive Officers (Directors) of the Directorate

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of human resource development	b. No training on how to develop human resource	c. No budget to develop human resource	Remarks
Main Causes				
I. No awareness to develop human resource				
II. No understanding of the necessity of human resource development				
III. No staff to develop human resource				
IV. No skill to develop human resource				
Remarks				

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors to evaluate Executive Officers should be Managing Director.
- Inspectors to evaluate Managers and or Supervisors should be Executive Officers.
- All the Executive Officers and Managers and or Supervisors must be evaluated through this sheet.
- Specific performance of executive officers, managers and or supervisors required for improving CU's capacity is as follows:
 - 1) Planning and formulating training programs.
 - 2) Conducting trainings actively.

- 3) Coaching and leading subordinate officers to conduct OJT periodically.
- 4) Training subordinate officers.

Executive officers, Managers and or supervisors should be evaluated based on number of feature in the performance mentioned above as follows:

‘5: Very Good’: 1) + 2) + 3) + 4)

‘4: Good’: Three out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘3: Not Good Enough’: Two out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘2: Serious’: One out of four features such as ‘1)’, ‘2), ‘3)’ and ‘4)’

‘1: Very Serious’: Nothing

- Managing Director and Executive Officer as inspectors must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

4.3. Negotiation and Coordination

4.3.1. C4: Executive Officers, Managers and or Supervisors: Capacity to convince the third Parties to understand different Ideas and Opinions

(1) Purpose of Indicator

- Learning negotiation and coordination with council and or customers of executive officers on goal set-up, progress management and post-evaluation.

(2) Interviewee

- Managing Director and Executive Officers (Directors) of the Directorate

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of negotiation and coordination with staff	Remarks
Main Causes		
I. No awareness to negotiate and coordinate with staff		
II. No understanding of the necessity of negotiation and coordination with staff		
Remarks		

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors to evaluate Executive Officers should be Managing Director.
- Inspectors to evaluate Managers and or Supervisors should be Executive Officers.
- All the Executive Officers and Managers and or Supervisors must be evaluated through this sheet.
- Specific performance of executive officers, managers and or supervisors required for improving CU's capacity is as follows:
 - Providing subordinate officers with materials which are used for convincing customers
 - Dealing with complaints and other negotiable issues promptly
 - Preparing materials which are used for convincing customers by itself
 - Always ensuring an attitude to hear customers' opinion

Executive officers, managers and or supervisors should be evaluated based on number of feature in the performance mentioned above as follows:

'5: Very Good': 1) + 2) + 3) + 4)

‘4: Good’: Three out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘3: Not Good Enough’: Two out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘2: Serious’: One out of four features such as ‘1)’, ‘2), ‘3)’ and ‘4)’

‘1: Very Serious’: Nothing

- Executive, Supervisor and General Officer as inspectors must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

4.4. Data Collection and Utilization

4.4.1. C5: Executive Officers, Managers and or Supervisors, and General Officers: Capacity to collect data and to apply for analysis for the water supply service

(1) Purpose of Indicator

- Learning capacity of CUs actively to collect data in order flexibly to utilize them for improvement of water supply service.

(2) Interviewee

- Managing Director, Executive Officers (Directors) of the Directorate and Managers and or Supervisors

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes	a. No training to make staff understand the necessity of development and utilization of data	b. No training on how to develop and utilize data	Remarks
Main Causes			
I. No awareness to develop and utilize data such as customers' information and technical data			
II. No understanding of the necessity of development and utilization of data such as customers' information and technical data			
III. No staff to develop and utilize data			
IV. No skill to develop and utilize data			
Remarks			

(5) Points to be considered

Evaluation should be based on the following points.

- Inspectors to evaluate Executive Officers should be Managing Director.
- Inspectors to evaluate Managers and or Supervisors should be Executive Officers.
- Inspectors to evaluate General Officers should be Managers and or Supervisors.
- All the Executive Officers and Managers and or Supervisors must be evaluated through this sheet, while some selected General Officers were evaluated.
- Specific performance of executive officers, managers and or supervisors, general officers required for improving CU's capacity is as follows:
 - 1) Reflecting data on CU's itself organization and water supply service to an annual report, etc.

- 2) Recording repairing work, maintenance work and operation of water supply facilities
- 3) Recording data of water meter reading including prepaid reading, billing, tariff collection
- 4) Compiling CU's outline such as number of staff, year of experience, position, field, educational record and job background, etc.

Executive officers, managers and or supervisors, general officers should be evaluated based on number of feature in the performance mentioned above as follows:

'5: Very Good': 1) + 2) + 3) + 4)

'4: Good': Three out of four features such as '1)', '2)', '3)' and '4)'

'3: Not Good Enough': Two out of four features such as '1)', '2)', '3)' and '4)'

'2: Serious': One out of four features such as '1)', '2)', '3)' and '4)'

'1: Very Serious': Nothing

- 5) Managing Director, Executive Officers, Managers and or Supervisors as inspectors must specify causes for result of evaluation through an interview with CUs for the result of either '1: Very Serious', '2: Serious', '3: Not Good Enough' or '4: Good'.

4.5. Communication with Customers

4.5.1. C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service

(1) Purpose of Indicator

- Learning an intelligibility of CUs to communicate with customers for appropriate water supply service.
- Learning an intelligibility for discipline of CUs among staff members.

(2) Interviewee

- Managers and or Supervisors

(3) Evaluation Criteria (Please select)

1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Performance is much insufficient in terms of standards of current post. Therefore, staff must envisage their roles further.	Performance is still insufficient in terms of standards of current post. Therefore, staff must make an effort to work well.	Performance is enough in terms of standards of current post.	Performance is much sufficient in terms of standards of current post.	Performance is higher level than the standards of current post.

(4) Causes for Result of Evaluation (Please tick all that apply)

Detail Causes		Remarks
Main Causes	a. No training to make staff understand the necessity of communication with customers	
I. No awareness to communicate with customers		
II. No understanding of the necessity of communication with customers		
Remarks		

(5) Points to be considered

Evaluation should be based on the following points.

- 6) Inspectors to evaluate General Officers should be Supervisors.
- 7) Some selected General Officers were evaluated through this sheet.
- 8) Specific performance of general officers required for improving CU's capacity is as follows:
 - 1) Observed that general officers have counsel for staff.
 - 2) Observed that general officers give the quick response to customers appropriately.
 - 3) Working on PR activities on water supply service.
 - 4) Working on activities of customers' awareness.

General officers should be evaluated based on number of feature in the performance mentioned above as follows:

'5: Very Good': 1) + 2) + 3) + 4)

'4: Good': Three out of four features such as '1)', '2)', '3)' and '4)'

‘3: Not Good Enough’: Two out of four features such as ‘1)’, ‘2)’, ‘3)’ and ‘4)’

‘2: Serious’: One out of four features such as ‘1)’, ‘2), ‘3)’ and ‘4)’

‘1: Very Serious’: Nothing

- 9) Managers and or Supervisor as an inspector must specify causes for result of evaluation through an interview with CUs for the result of either ‘1: Very Serious’, ‘2: Serious’, ‘3: Not Good Enough’ or ‘4: Good’.

APPENDIX. A-12
GUIDELINE TO TAKE ACTIVITIES
FROM CAPACITY ASSESSMENT TO
FORMULATION OF MBP&HRDP

Guideline to take Activities from Capacity Assessment to Formulation of MBP & HRDP

1. Background and Objectives

In order to clarify current challenges and solve them efficiently, capacity assessment at organizational level will be carried out and Midterm Business Plan (MBP) and Human Resource Development Plan (HRDP) will be formulated by all the CUs in collaboration with NWASCO under MWDSEP's supervision.

As per request by NWASCO, CUs will self-evaluate their own organizational capacity by using the evaluation manual. Project Team prepared this guideline which is composed of essences on various activities such as capacity assessment, prioritization of challenges, formulation of plans, etc. so that all the CUs will be able to conduct capacity assessment and formulate MBP and HRDP smoothly.

2. Overall Workflow from Capacity Assessment to Formulation of MBP & HRDP

Workflow of activities between capacity assessment and formulation of MBP & HRDP is shown in Figure 1. Basically, all the activities will be conducted by each CU and inspected and or monitored by NWASCO. CUs will start capacity assessment as instructed by NWASCO, show NWASCO a list of the challenges prioritized by themselves during 1st inspection and submit MBP and HRDP to respective NWASCO and MWDSEP during 2nd Inspection.

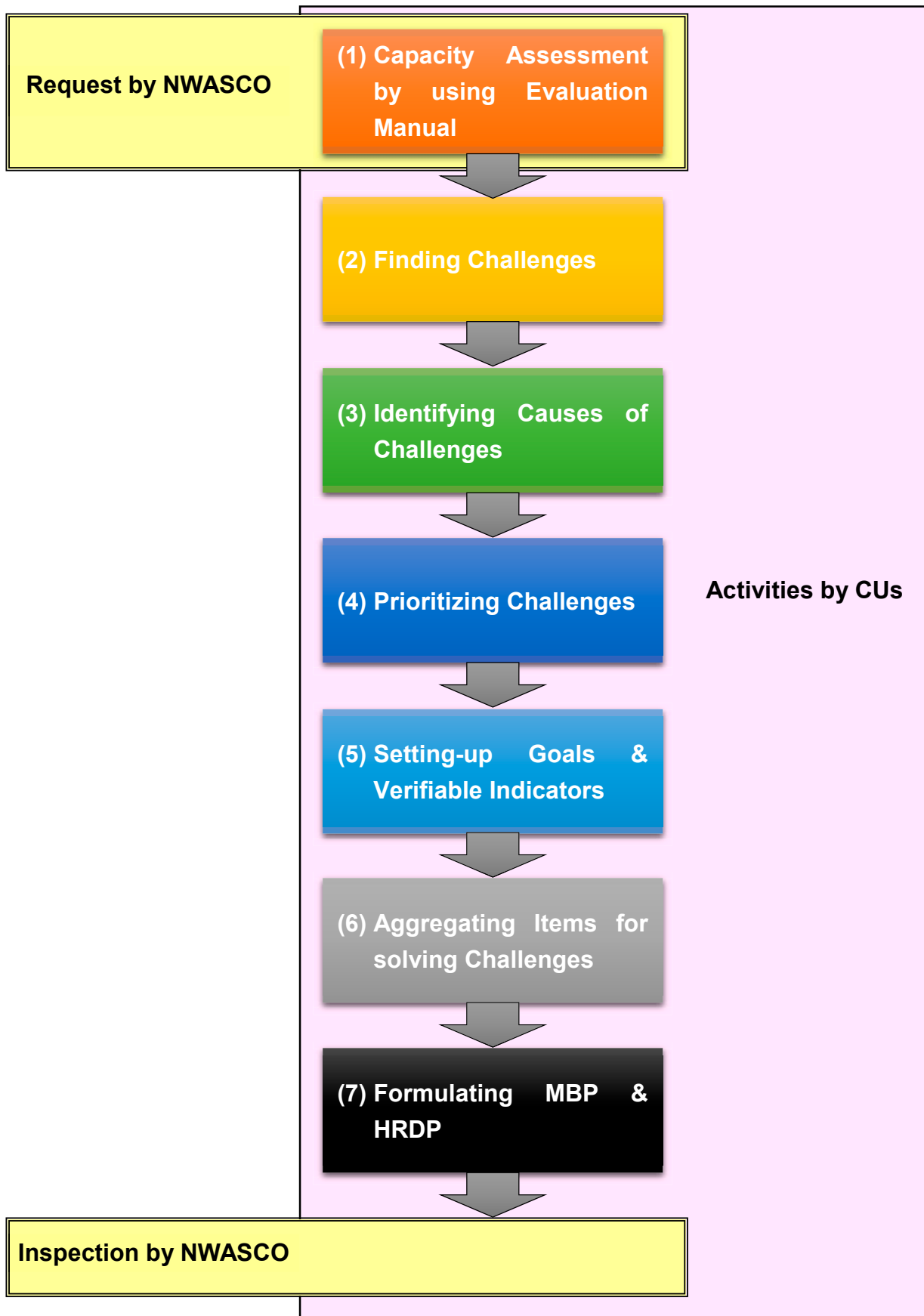


Figure 1 Workflow from Capacity Assessment to Formulation of MBP & HRDP

3. Detail Activities

(1) Capacity Assessment by using Evaluation Manual

According to request by NWASCO, CUs will start capacity assessment at their own organization level by using the evaluation manual. Prior to assessment, CUs must well learn definition, purpose, formula, evaluation points to be considered, etc. of Performance Indicators (PIs) and Evaluation Items, which are shown in the evaluation manual. Evaluation items are composed of 21 PIs, 19 items of Management Capacity and six items Communication & Negotiation Capacity.

PIs, Management capacity and Communication & Negotiation capacity will be assessed by Managing Director, Director (or Manager) of HRA, Engineering, Finance, Commercial Service and Manager/Supervisor. Assessment on PIs and Management Capacity can be referred to Appendix. Assessment on Communication & Negotiation Capacity will be conducted by assessors such as Level 1, Level 2 and Level 3 as shown in Table 1.

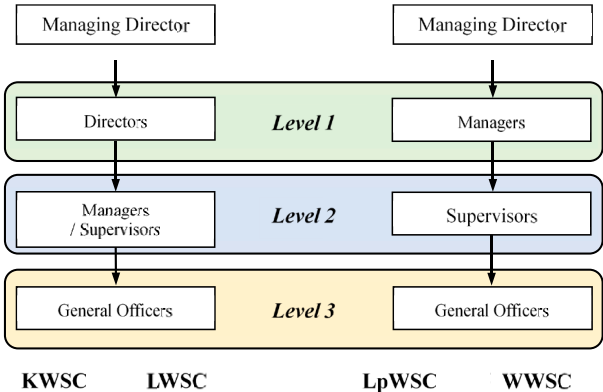


Figure 2 Job Title by CU (Sample)

Table 1 Evaluation Items on Communication & Negotiation Capacity

Evaluation Items on Communication & Negotiation Capacity	Level 1	Level 2		Level 3
		HRA* Dep.	Other Dep.**	
1) Leadership				
C1: Capacity to achieve goal and to raise the standards of the leadership	X			
C2: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department		X		
2) Human Development				
C3: Capacity to improve qualification of staff in terms of post and job description	X	X		
3) Negotiation and Coordination				
C4: Capacity to convince the third parties to understand different ideas and opinions	X	X		
4) Data Collection and Utilization				
C5: Capacity to collect data and to apply for analysis for the water supply service	X		X	X
5) Communication with Customers				
C6: Capacity to communication with customers in order to provide them with high quality water supply service				X

Note: Level 1, Level 2 and Level 3 are corresponded with that shown in Figure 2.

(2) Finding Challenges

CUs will actually assess condition on PI and Evaluation Item for Management and Communication & Negotiation based on the level which is shown in the Evaluation Criteria of the evaluation manual (see Figure 3). Table 2 shows level of condition. As result of the capacity assessment, CUs will find challenges that they face.

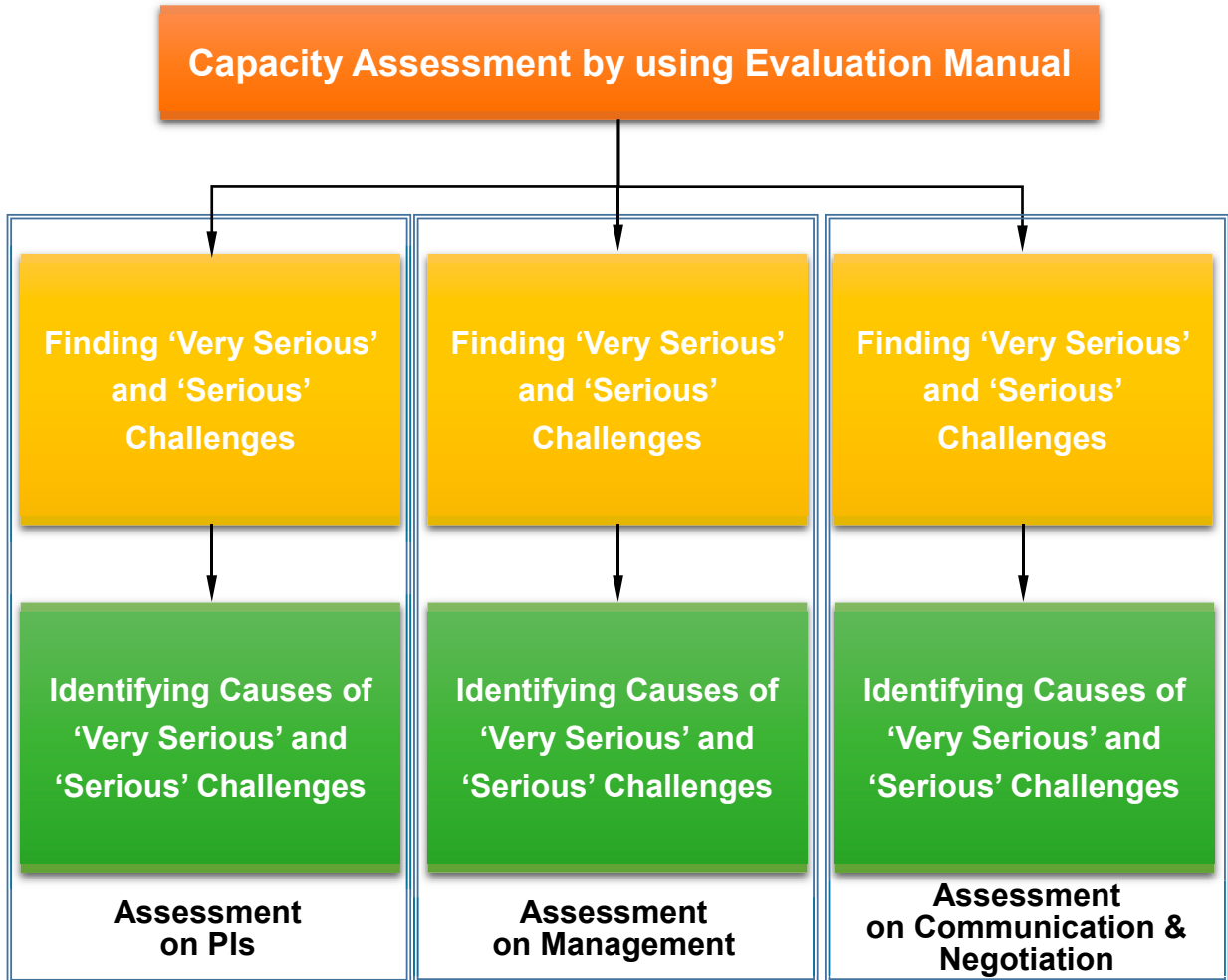


Figure 3 Assessment by Indicator and Evaluation Item

Table 2 Evaluation Criteria (Sample)

Level				
1: Very Serious	2: Serious	3: Not Good Enough	4: Good	5: Very Good
Less than 50%	50-69%	70-79%	80%-94%	95%-100%

Assess (Select)

(3) Identifying Causes of Challenges

CUs will identify causes of the challenges found in '2.' CUs will actually select all the causes that apply from a list of causes were made in the evaluation manual (see Table 3).

Table 3 Causes of Challenges (Sample)

Main Cause of Factor		Detail Cause of Factor	
1. Lack of water sources		1-1. Lack of raw water quantity	
		1-2. Lack of adequate raw water intake facilities	
		1-3. Deterioration of intake facilities	
		1-4. Difficulties in maintaining intake facilities due to budget constraint	
		1-5. Lack of skilled staff for maintaining intake facilities	
		1-6. Others	
2. Lack of capacity to treat raw water		2-1. Deterioration of treatment facilities	
		2-2. Difficulties in maintaining treatment plant due to budget constraint	
		2-3. Lack of skilled staff for maintaining treatment plant	
		2-4. Others	
3. Lack of capacity to transfer and distribute water	Assess (Select)	3-1. Insufficient capacity of transmission and or distribution pumps	Assess (Select) → ✓
		3-2. Deterioration of transmission and or distribution pumps	
		3-3. Insufficient capacity of service reservoirs	✓
		3-4. Difficulties in maintaining transmission and or distribution facilities due to budget constraint	Assess (Select) → ✓
		3-5. Lack of skilled staff for maintaining transmission and or distribution facilities	
		3-6. Others	
4. Insufficient development of water supply facilities such as intake facilities, treatment plant, transmission & distribution facilities.	Assess (Select)	4-1. Lack of skilled staff for planning water supply facilities	
		4-2. Lack of skilled staff for designing water supply facilities	
		4-3. Lack of skilled staff for supervising construction	
		4-4. Lack of budget to develop water supply facilities	
5. Unexpected causes	Assess (Select)	5-1. Unexpected increase in water supply population and water consumption	Assess (Select) → ✓
		5-2. Frequent leakage	
		5-3. Illegal connections	
		5-4. Others	
6. Others		6-1. Others	

(4) Prioritizing Challenges

CUs will prioritize challenges by ‘Very Serious’ and ‘Serious’ in terms of Importance and Urgency due to a budget constraint.

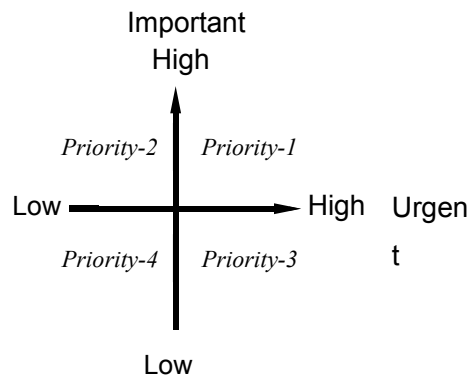
1) Action Priority Matrix

Priority criteria should be unified and facilitated in order for all the CUs to prioritize various challenges to be solved. Otherwise, projects which are proposed by CUs will not be consistent.

Figure 4 shows Action Priority Matrix and Table 4 indicates actions by the priority.

Table 4 Action to solve challenges and their Outlines

Priority-	Action to solve challenges	Outline of Actions
1	Urgent and Important: DO	If a task is both urgent and important, take actions immediately.
2	Not Urgent, but Important: DECIDE	If a task is important, but not urgent, set a due date and take actions later.
3	Urgent, but not Important: DELEGATE	If a task is urgent, but not important, the best thing is to delegate it to someone else.
4	Not Urgent and Not Important: DELETE	If a task is neither important nor urgent, it should not be prioritized. Drop it or take actions when you have some extra time.



Source: Project Team

Figure 4 Action Priority Matrix

2) Evaluation of Importance and Urgency

The following are instruction on how to evaluate Importance and Urgency to solve various challenges.

- How to evaluate importance? : Consider challenges that must be solved definitely in order to achieve goal or objective of CUs' own plans like mid-long-term strategic plans. While each challenge corresponds with 'Important', '2' can be scored.
- How to evaluate urgency? : Unless actions are taken soon, consider what kinds of influences occur, who receive the influences and how the influence impacts on other projects. While each challenge corresponds with 'Urgent', '1' can be scored.

Maximum score will be '3' as Priority-1 (see Table 5).

Table 5 Scoring for prioritizing Challenges on Management Capacity (Sample)

No.	Items	Challenges	Importance	Urgency	Total	Priority
1	M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	There are no manual, or even if there is a manual, it has not been used at all.	2	1	3	1
2	M14: Evaluation of Trainee's Efforts	Trainees' efforts have not been evaluated.			0	4
3	M15: Development of Customer's Information	Customers' information has not been developed at all.	2	1	3	1
4	M16: Time to respond to Customer's Complaint	It takes at least 10 days to respond to customer's complaint.			0	4

At the same time, 1st Inspection will be carried out by NWASCO to learn evaluation progress and prioritization of challenges in this stage. In case of late progress, NWASCO will encourage CUs to accelerate evaluation.

(5) Setting-up Goals & Verifiable Indicators

In order to solve challenges, CUs will set-up goal and verifiable indicators (see Table 6). Strategic plan, the past achievement, etc. will be considered for setting-up goal. In addition, verifiable indicators must be set-up quantitatively so that CUs will be able to evaluate their achievement easily.

Table 6 Goals and Verifiable Indicators on PIs (Sample)

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P2: Overall water supply coverage	Overall service coverage is less than 50%.	Overall water supply coverage will be increased from 35.7% to 38.0 %.	Service Coverage Ratio: A. 38.0% B. 37.5% C. 37.0% D. Less than 36.5%	1

(6) Aggregating Items for solving Challenges

Since some of the evaluated items can be solved with a particular project, CUs will aggregate their items so that CUs can solve challenges efficiently. For example, Table 7 shows sample of challenges, goal, and verifiable indicators by item. Challenges on P10, P11 and P19 will be solved with something like NRW reduction project.

Table 7 Goals and Verifiable Indicators on PIs (Sample)

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
1	P10: NRW ratio	NRW ratio is 36% - 50%.	NRW will be reduced from 46% (current) to 30%.	NRW Ratio: A. 30% B. 34% C. 38% D. More than 42%	1
2	P11: Customer meters	Functioning customer meters are supposed to be installed for every	Installation ratio of customer meter will be increased from 67% (current) to	Ratio of Water Meter Installation: A. 100% B. 90%	1

No.	Items	Challenges	Goal	Verifiable Indicators	Priority
		household, but more than 30% of them are missing or not working well.	100%.	C. 80% D. Less than 70%	
3	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	A system for effective awareness-raising activities is established.	Frequency of Awareness Meeting: A. Monthly B. Bimonthly C. Biannually D. Annually or less	1

(7) Formulating MBP & HRDP

CUs will formulate MBP and HRDP considering causes of challenges so as to solve various challenges. At the same time, 2nd Inspection will be carried out to check by NWASCO if the causes are fed-back to the MBP and HRDP which are formulated in order to make budget.

Noticeable points to be considered for formulating MBP and HRDP are as follows:

1) Midterm Business Plan (MBP)

- Challenges must be found from aspect of PIs and Management Capacity.
- MBP must be formulated so that causes identified through capacity assessment are eliminated.

2) Human Resource Development Plan (HRDP)

- Challenges must be found from aspect of PIs, Management Capacity and Communication & Negotiation Capacity.
- HRDP must be formulated so that causes identified through capacity assessment are eliminated.
- Formulation of HRDP must be considered in terms of human resource structure of CU in another 10 years.

Table 8 shows a sample of the MBP. Name of the project is '**NRW Reduction Project**' component of which is as follows:

- Creation of District Metered Area (DMA)
- Replacement of deteriorated pipes
- Leak management
- Installation of water meters
- Implementation of awareness-raising activity

Specific activities are stated in 'Detail' of Table 8.

In addition, annual cost of the MBP and HRDP must be equivalent to annual budget of the past five years or less, unless international donors commit large scale of projects. If annual cost of the MBP and HRDP is extremely higher than the past annual budget, contents such as specification, quantity, etc. of the MBP and HRDP must be revised.

Table 8 Prioritizing challenges, Goal and Proposed projects on Pls for Mid-term Business Plan (Sample)

No.	Items	Challenges	Priority	Goal	Proposed Project	Detail	Remarks
1	P10: NRW ratio	NRW ratio is 36% - 50%.	1	NRW will be reduced from 46% (current) to 30%.	(1) NRW Reduction Project (1-1) Establishment of District Metered Area (DMA) (1-2) Replacement of deteriorated pipes (1-3) Leak management (1-4) Installation of water meter (1-5) Implementation of awareness-raising activity.	(1) (1-1) ● Establishment of 30 DMA ● Procurement of water flow meter ● Installation of sluice valve (1-2) ● Replacement of deteriorated pipes for 200km (1-3) ● Leak detection and repairing (1-4) ● Installation of 25,000 water meter (1-5) ● Implementation of PR activity for water saving	● MCC has the project for NRW reduction ● It is necessary to consider the demarcation with MCC.
2	P11: Customer meters	Functioning customer meters are supposed to be installed for every household, but more than 30% of them are missing or not working well.	1	Installation ratio of customer meter will be increased from 67% (current) to 100%.			
3	P19: Awareness-raising NRW reduction, collection of water charges, etc.	A few effective awareness-raising activities have been implemented.	1	A system for effective awareness-raising activities is established.			

End

Appendix:

Summary of Targeted Staff and Assessors

Performance Indicators for Water Supply Service, Evaluation Items for Management, Communication & Negotiation Capacity	Targeted Staff to be evaluated	Valuator					
		Managing Director	Director of HRA	Director of Engineering	Director of Finance	Director of Commercial Service	Manager and Supervisor
2. Performance Indicators for the Water Supply Service:							
1) Aspects to be improved mainly by Facility Investment							
P1: Continuity of supply	-						
P2: Overall water supply coverage	-						
P3: Surplus purification capacity	-						
P4: Transmission and distribution mains	-						
P5: House connections	-						
P6: Mechanical and electrical equipment	-						
P7: Rate of facility utilization	-						
2) Aspects to be improved mainly by Capacity Development (Technical Aspect)							
P8: O&M of the facilities	-						
P9: Drawings of pipe facilities	-						
P10: NRW ratio	-						
P11: Customer meters	-						
P12: Bulk meters	-						
P13: Water quality parameters tested at purification plants	-						
3) Aspects to be improved mainly by Capacity Development (Non-technical aspects)							
P14: Cost recovery level	-						
P15: Collection ratio	-						
P16: Number of staff working especially for water (Number/000 water connections)	-						
P17: Implementation of training	-						
P18: Complaint handling	-						
P19: Awareness-raising on NRW reduction, water saving, collection of water charges, etc.	-						
4) Aspects to be improved mainly by Program Approach							
P20: Sewerage coverage (including On-site Facilities)	-						
5) General Aspect							
P21: Year of work experience on water supply service	-						
3. Evaluation Items for Management Capacity:							
1) Internal Policy and Planning							
M1: Review on Short, Middle and Long Term Plan	-						
M2: Evaluation Method to achieve Goal	-						
2) Finance							
M3: Analysis on Annual Financial Status	-						
M4: Financial Improvement Status towards achievement of Goal	-						
M5: Status of Metered Rate	-						
M6: Budget Arrangement based on Historical Record and Result of Management Evaluation	-						
M7: Utilization of Manual of Meter Reading, Billing and Tariff Collection	-						
3) Governance, Management and Human Resources							
M8: Average Length of Service with CUs or Other Water Authority	-						
M9: Record of Working Time	-						
M10: System to evaluate Work Performance Capacity towards Goal	-						
M11: Allocation and Input of Staff according to the Work Load	-						
M12: Self-evaluation System at Individual Level	-						
M13: Self-learning Support System	-						
M14: Evaluation of Trainee's Efforts	-						
4) Customer Relation							
M15: Development of Customer's Information	-						
M16: Time to deal with Customer's Complaint	-						
M17: Record for dealing with Customer's Complaints	-						
M18: Customer's Survey	-						
M19: Promotion of Customer's Awareness	-						
4. Evaluation Items for Communication & Negotiation Capacity:							
1) Leadership							
C1: Executive Officers: Capacity to achieve goal and to raise the standards of the leadership	All the Directors						
C2: Managers & Supervisors: Capacity to supervise staff efficiently and effectively and to strengthen the division and or department	All the Managers and or Supervisors						
2) Human Development							
C3: Executive Officers, Managers & Supervisors: Capacity to improve qualification of staff in terms of post and job description	All the Directors, All the Managers and or Supervisors						
3) Negotiation and Coordination							
C4: Executive Officers and Managers & Supervisors: Capacity to convince the third parties to understand different ideas and opinions	All the Directors and All the Managers and or Supervisors						
4) Data Collection and Utilization							
C5: Executive Officers, Managers & Supervisors and General Officer: Capacity to collect data and to apply for analysis for the water supply service	All the Directors, All the Managers and or Supervisors, and some General officer (3 persons) working on Customer Service						
5) Communication with Customers							
C6: General Officers: Capacity to communication with customers in order to provide them with high quality water supply service	General officer (at least 3 persons) working on Commercial Service						

APPENDIX. A-13
PREVENTIVE MEASURES AGAINST
CHOLERA OUTBREAK

Orientation to measures for Cholera

1. Conventional Pro-actives against Cholera Outbreak

For coping with outbreak of cholera, the Central Government administered oral-vaccine, introduced water bowsers, delivered chlorine disinfection and backfilled on the existing shallow wells, as a reactive approach. However, the Central Government did not take a preventive approach.

2. Cholera Emergency Response Fund

According to the Ministry of Health, expenses incurred for the reactive approach from September 2017 to June 2018 when cholera broke out was about ZMW162million in total. Items of reactive approach are as follows:

- Supply of medicine
- Education of health care
- Support of hygienist, etc.
- Logistics for emergency
- Coordination meeting among stakeholders
- Supply of drinking water
- Installation of water stand post
- Backfilling of shallow wells
- Elimination of waste water stored in pit-latrines
- Lease of water bowsers
- Solid waste management
- Vaccination of cholera

3. Preventive Measures

3.1 Proposal of Preventive Measures

The JICA Expert Team verified the cost (including fund donated by private sectors) incurred for reactive and preventive approach and suggested MWDSEP for the points of view on approach to cholera, so that the Central Government will not repeat conventional reactive approach after outbreak of cholera.

The reactive approaches were mentioned in the above '2.', while the preventive approaches are as follows:

- a. Extension of water source and treatment plant (Increase of water production)
- b. Extension of distribution networks
- c. Repair of deteriorated pipelines and damaged ones
- d. Appropriate control of residual chlorine in distribution water facilities
- e. PR activities (regulation of boiling water, washing hand, preparing oral-rehydration liquid and relying on public water supply service)

In order to prevent cholera infection, approaches of 'a.' to 'c.' is to develop infrastructure cost of which is high, while, those of 'd.' and 'e.' is to provide social assistance, that is, approach of 'KAIZEN' cost of which is lower than infrastructure development relatively.

3.2 Concepts of Assistance in Soft-component

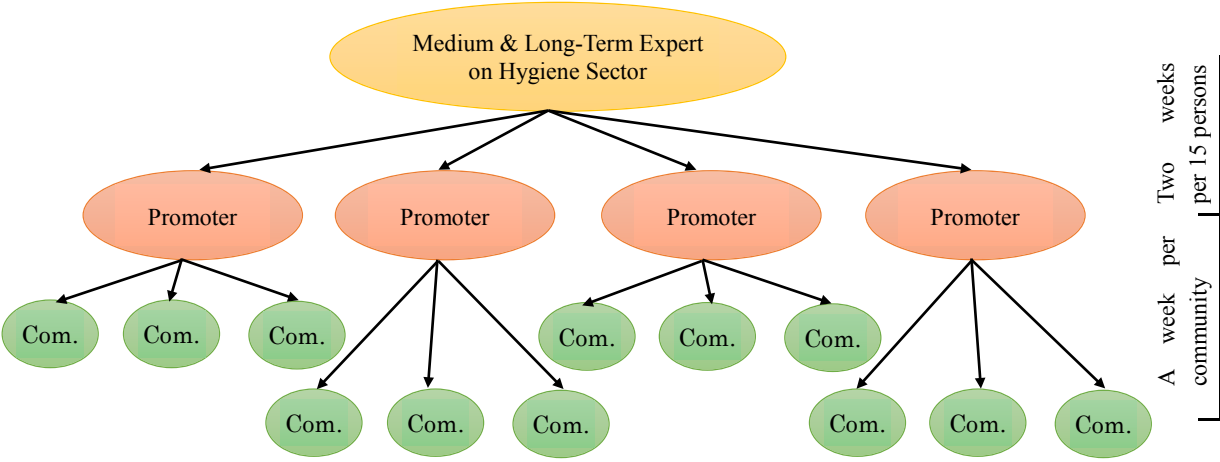
As cholera is a type of bacteria like E-coliform, infectious capacity of cholera enables to become less by chlorine disinfection. Accordingly, residual chlorine in the distribution networks must be controlled appropriately by water supply management of LWSC.

Meanwhile, it was reported that one of causes for the cholera outbreak in the year 2017 to 2018 was the contaminated shallow wells. In order to avoid cholera infection, boiling water for drinking and washing hand are appropriate measures. In addition, preparation of oral-hydration liquid is one of the measures to avoid severe health condition after infection.

3.3 Specific Assistance in Soft-component

Conventionally, community trainings were conducted as reactive approach after outbreak of cholera, but it is envisaged that community trainings were restrictive, judging from infected patients (5,444 persons) and dead persons (114 persons). Especially, 98 (86%) of 114 persons, were dead in Lusaka.

As assistance in soft-component stated in '3.2', permanent education will be required by hygienists who might be trained as promoters. Schematic diagram of the training for preventing cholera is as follows:



Note
Com.: Community

Figure 1 Schematic diagram of the training for preventing cholera

Medium & Long Term Experts will train 15 promoters for two weeks, who direct communities to deepen their understanding on hygiene issues. It is anticipated that the promoters direct each community for a week.

3.4 Cost incurred for Communities to be trained on Cholera

(1) Condition of Cost Estimate

- Promoters who will be trained by medium & long-term expert: about 50 persons
- Community population who a promoter directs: 1,747,152 persons / 50 persons = About 34,943 persons
- Population in a community: about 1,000 persons
- Communities that a promoter is responsible for: 34,943 persons / 1,000 persons = About 35 communities
- Frequency of training in a particular community by the promoter: Every three months
- Period of the training for the promoters: Two weeks for 15 persons
- Period of the training for each community: A week

(2) Cost incurred for Communities to be trained on Cholera

JICA Expert Team estimated annual cost incurred for communities to be trained on preventive approach for cholera as shown in Table 1. Total cost comes to about ZMW20million. After first year, the training for promoters can be omitted because they are supposed to be trained in the first year.

Table 1 Cost incurred for Communities to be trained

Items	Quantity	Unit Price (ZMW)	Amount (ZMW)	Basis of calculation
1. Training for Promoters on Hygiene Sector				
1.1 Medium & Long-term Expert on Hygiene Sector	2 months	324,000	648,000	<ul style="list-style-type: none"> ● 50 persons ÷ 15 persons ≙ 4 time-class ● 2 weeks x 4times = 8weeks (Actual working days: 40 days)
1.2 Personnel Cost of Promoter on Hygiene Sector	700 man-days	1,080	756,000	<ul style="list-style-type: none"> ● 14 days x 50 persons = 700 man-days
1.3 Daily Allowance and	700 man-days	756	529,200	<ul style="list-style-type: none"> ● 14 days x 50 persons =

Items	Quantity	Unit Price (ZMW)	Amount (ZMW)	Basis of calculation
Accommodation for Promoter on Hygiene Sector				700man-days
1.4 Transportation for Promoter on Hygiene Sector	50 persons	1,320	66,000	● 300km x 2 times x ZMW11 ÷ 5km/L = ZMW1,320
Sub-total			1,999,200	
2. Training for Communities (Annual)				
2.1 Personnel Cost of Promoter on Hygiene Sector	600 man-months	21,600	12,960,000	● 50 persons x 12 months = 600 man-months
2.2 Daily Allowance for Promoter on Hygiene Sector	600 man-months	2,160	1,296,000	● 50 persons x 12 months = 600 man-months
2.3 Transportation for Promoter on Hygiene Sector	50 persons	61,600	3,080,000	● 35 places x 200 km x ZMW11 x 4 times ÷ 5 km/L = ZMW61,600
Sub-total			17,336,000	
3. Training for Communities (Annual)				
3.1 Contingencies incurred for the Training (Stationery and other consumable items)	1 Ls		580,056	● 3% of ('1.' + '2.')
Total			19,915,256	
Round			20million	

Source: JICA Expert Team

4. Cost Effectiveness

Cost incurred for reactive approach at actual basis is about ZMW162million, while that for preventive approach is ZMW20million, which makes up about 12% of the cost for reactive approach. It is essential that preventive approach is more effective measures to control outbreak of cholera.

APPENDIX. A-14
LETTER TO Nwasco from
MWDSEP



REPUBLIC OF ZAMBIA

MINISTRY OF WATER DEVELOPMENT, SANITATION AND ENVIRONMENTAL PROTECTION

OFFICE OF THE PERMANENT SECRETARY
P. O. BOX 50288
LUSAKA

26th November, 2018

The Director
NWASCO
LUSAKA

**RE: JICA CAPACITY DEVELOPMENT PROJECT FOR URBAN WATER
SUPPLY**

The above captioned matter refers.

Reference is made to the JICA supported Capacity Strengthening Project for four (4) Commercial Utilities namely; Lusaka Water and Sewerage Company, Luapula Water and Sewerage Company, Kafubu Water and Sewerage Company and Western Water and Sewerage Company running from 2017 to February, 2019.

In view of the project coming to a close in February 2019, measures have to be put in place to ensure sustainability of activities in the participating CUs and to scale up to the remaining seven (7) Utilities. In this regard, kindly ensure the following:

- the use of the Evaluation Manual by the four CUs under this project is sustained by incorporating it in the CUs' annual plans and through regular monitoring by NWASCO.
- develop a roadmap to scale up the use of the Evaluation Manual and development of Business/Human Resource Plans to the Seven CUs who were not part of the Project.
- all the CUS have updated Business and Human Resource Plans which should be approved by the respective CU Boards.

Your cooperation in this matter is highly appreciated.


Dr. Bishop Ed Chomba
PERMANENT SECRETARY

APPENDIX. A-15
PROGRAMS FOR
COUNTERMEASURES AGAINST
NRW

Outlines of NRW Reduction Operation Program for LWSC

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<p>1. Calculation of NRW Ratio</p> <ul style="list-style-type: none"> ■ No bulk meters installed at the outlets of service reservoirs and or District Metered Areas (DMAs) 	<ul style="list-style-type: none"> ■ There are about 250 bulk flow meters including intake ones. About 100 flow meters out of about 250 are not functioning, making-up about 40%. ■ Flow meters were not sorted out by their purpose (for intake, outlets of service reservoirs or outlets of DMAs), it was difficult to clarify which flow meters can be used for measuring System Input Volume (SIV) in terms of NRW reduction operation. 	<ul style="list-style-type: none"> ● Identify points of flow meters at SIV ● Install bulk flow meters, if there are no flow meters or there are defective flow meters. 	<ul style="list-style-type: none"> ● Calculate NRW ratio based on accurate flow rate measured by bulk flow meters. 	<ul style="list-style-type: none"> ● Implement NRW reduction operation efficiently. 	
<ul style="list-style-type: none"> ■ No billing system developed well 	<p>[Meter Reading]</p> <ul style="list-style-type: none"> ■ Particular branch office managers suspect performance of water meter readers, the managers are interested in introducing DMRs. <p>[Billing System]</p> <ul style="list-style-type: none"> ■ LWSC uses 'Engineering Design Analysis Management System' which is connected to the headquarters. Data of meter reading is input in each branch office and checked by staff mutually. The headquarters also checks the reading data and is also confirmed in the headquarters and issues the bill. ■ Bills are delivered by water meter readers on 18th to 21st every month. 	<ul style="list-style-type: none"> ● Establish systematical water meter reading system by using Digital Meter Reading System (DMR). 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and data input. 	
<ul style="list-style-type: none"> ■ 2. Creation of District Metered 					

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
Areas (DMAs) ■ Creation of DMAs as pilot areas	■ There are 70 DMAs in the Areas that LWSC serves. 14DMAs (about 32,000 customers) of 70 DMAs will have been completed by assistance of MCC. ■ 21DMAs was designed and 35DMAs were planned but not analyzed yet.				● As long as LWSC has not taken NRW reduction activities regularly because of lack of dedicated staff, it is not desirable that DMAs are increased promptly.
3. Causes of NRW					
3.1 Physical Loss ■ Leakage	■ LWSC has four teams which are composed of 11 staff for patrol of leakage. However, seven staff are actually appointed for NRW reduction activities. Artisans on leak detection activities lack. ■ About 300 leaks are observed in all the service areas monthly. ■ Dedicated vehicle is only one for leak detection. ■ LWSC requires the following equipment, but the existing equipment are not clear. <ul style="list-style-type: none"> - Aqua Scopes - Electronic Listening Sticks - Ultra Sonic Meters. - Pipe Locators. - Valve Box Locators. - Measuring Wheels. - Leak Noise Correlators - Sets of Commanders - Hydrophones - Sets of Noise Loggers - Insertion Flow Meter. - Data Loggers 	● Ensure the dedicated staff and vehicles required for NRW reduction activities steadily in each branch office of LWSC. ● Develop SOP of NRW reduction activities	● Conduct NRW reduction activities periodically and systematically .	● Increase revenue water.	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Overflow at Service Reservoir and Elevated Tank 	<ul style="list-style-type: none"> ■ There are some leaks on the transmission pipelines. 				<ul style="list-style-type: none"> ● LWSC identifies visible leaks and repairs transmission pipelines by their own budget in case that leakage is observed. Therefore, it is desirable that such kind of repairing work can rely on their entity.
3.2 Commercial Loss <ul style="list-style-type: none"> ■ Illegal Connections 	<ul style="list-style-type: none"> ■ There are only four illegal connections monthly average in the entire service areas. However, it is likely that this numbers are not accurate at all, because there are no dedicated staff to monitor illegal connections in LWSC. ■ According to Main Report (Sep. 2016) of 'Baseline, socio-economic & health assessment, & willingness to pay study', monthly average expenditure is ZMW2,200 to ZMW2,500. From aspect of these values, ratio of flat rate is about 3 to 11% in LWSC's service areas. 11% is too high for customers to pay water tariff compared with per cent of World Bank's rule. ■ LWSC established the system that the data have been crosschecked in each branch office, but it is suspected that meter reading error are eliminated entirely and steadily. 	<ul style="list-style-type: none"> ● Ensure the dedicated staff and vehicles required for NRW reduction activities steadily in each branch office of LWSC. Develop SOP of NRW reduction activities 	<ul style="list-style-type: none"> ● Conduct NRW reduction activities periodically & systematically. 	<ul style="list-style-type: none"> ● Increase revenue water. 	
<ul style="list-style-type: none"> ■ Errors on Meter Reading 		<ul style="list-style-type: none"> ● Establish systematic water meter reading system by using Digital Meter Reading 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and 	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> Less performed Meter Readers 	<ul style="list-style-type: none"> Particular branch office managers suspect performance of water meter readers. 	System (DMR).		<ul style="list-style-type: none"> DMR is able to eliminate arbitrary meter reading and lazy work performance. 	
<ul style="list-style-type: none"> Non-functioning of Water Meters and Damaged 	<ul style="list-style-type: none"> Mechanical meters and prepaid meters makes up 75% and 25% of the total customers (about 64,000 customers) with water meters. However, about 20% of mechanical water meters and about three percentage of prepaid meters are defective. A test bench (USD260,000) was procured by MCC. 				<ul style="list-style-type: none"> MCC donated a test bench to check accuracy of water meters.
<ul style="list-style-type: none"> Water Tariff in Flat Rate 	<ul style="list-style-type: none"> Customers with water meters makes up about 60% of about 104,000 households. At least 40% is customers in flat rate. LWSC focuses on mechanical water meters but not prepaid meters. Because collection ratio of water tariff is about 80 to 90%. 	<ul style="list-style-type: none"> Install water meters of about 42,000sets in order to eliminate flat rate. 	<ul style="list-style-type: none"> Avoid a gap between metered data and water consumption for setting flat rate. 	<ul style="list-style-type: none"> Increase revenue water. 	
3.3 Lack of awareness <ul style="list-style-type: none"> Low Ratio of Water Tariff Collection 	<ul style="list-style-type: none"> Collection of water tariff for low cost customers¹ is challengeable, because of lack of their awareness. Water quality is not enough to condition of hygiene. In addition, such phenomenon 	<ul style="list-style-type: none"> To held awareness meeting every quarter for the customer. 	<ul style="list-style-type: none"> Improve collection ratio of water tariff. 	<ul style="list-style-type: none"> Increase profit of the company 	

¹ Note: LpWSC has three customer categories such as low, medium and high cost customer by population density. The categories are in inverse proportion to population density, that is, "High Cost Customers" inhabit Low densely populated area, "Medium Cost Customers" inhabit Medium densely populated area and "Low Cost Customers" inhabit High densely populated area.

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
	might be suspect a pandemic outbreak of infectious diseases.				

Outlines of NRW Reduction Operation Program for WWSC

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
<p>1. Calculation of NRW Ratio</p> <ul style="list-style-type: none"> ■ No bulk meters installed in distribution areas and or District Metered Areas (DMAs) ■ No billing system developed well 	<p>■ There are no DMAs in the service areas where WWSC serves water. There is only one bulk flow meter at outlets of service reservoirs located in 13 distributed areas (see Photo-1 and Photo-2). There are most of flow meters at outlets of water sources and treatment plants.</p> <p>[Meter Reading]</p> <ul style="list-style-type: none"> ■ In case that meter reading is not done due to customers' absence, WWSC bills customers based on average water consumption in the past three months. ■ The meter reader leader collects reading data and inputs it in 'Piano Billing System' together with other assistant staff on 11th to 17th every month (see Photo-3). After inputting reading data, the leader checks if the data is correct or not on 18th to 22nd. In case of some errors on the data, water meter readers goes to site to check and read water meters again. <p>[Billing System]</p> <ul style="list-style-type: none"> ■ Input of meter reading data to billing issue are consolidated by the 'Piano Billing System' (German Products) (see Photo-4). ■ Re-check of bill and print of the bill are done on 23rd to 28th, and data back-up and preparation of bill dispatch are done on 29th to the end of month. ■ Bills are delivered by water meter readers 	<ul style="list-style-type: none"> ● Install bulk flow meters in 12 distributed areas. 	<ul style="list-style-type: none"> ● Calculate NRW based on accurate flow rate measured by bulk flow meters. 	<ul style="list-style-type: none"> ● Implement NRW reduction operation efficiently. 	<ul style="list-style-type: none"> ● WWSC consolidates works between meter reading and billing by using billing system soft-ware. In addition, the respective office in charge of water meter reading and billing verifies errors of meter reading data and input so that it is likely that billing is highly accurate.

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
	on the beginning of month at the same time of meter reading.				
2. Creation of District Metered Areas (DMAs) ■ Creation of DMAs as pilot areas	■ WWSC has no know-how on a series of NRW reduction activities as well as their concept and objectives.	● Install and or replace valves required for creating DMAs	● Isolate service areas in order to implement NRW reduction activities by DMA	● Efficiency of NRW reduction activities increases because leak points to be identified easily.	
3. Causes of NRW					
3.1 Physical Loss					
■ Leakage	■ NRW is mainly caused by leakage which frequently occurs due to deterioration of AC pipes. Leakage occurs the nearby places where the pipelines are repaired (see Photo-6). ■ About 66 leaks are observed monthly. ■ Leaks are mostly reported by water meter readers and dwellers. WhatsApp, Web site of WWSC and customer service center are used for dwellers to report leakage. The report by dwellers using WhatsApp contributes to observation of leakage. ■ WWSC has an electric leak detector and a pipe locator, but has currently not used them (see Photo-7 and Photo-8). ■ The distribution pipelines of about 183km				● As mentioned in Mid-term Business Plan (MBP), AfDB has planned rehabilitation of about 183km-pipes. From the circumstance of actual release of budget, it is desirable that rehabilitation of the remaining deteriorated pipelines is carried out as the next mid-term business in another five years. ● WWSC has relied on water meter readers and dwellers

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
	<p>will be replaced with new ones through the Performance Recovery Program of AfDB. However, the pipelines which will not be replaced with new ones will remain in other zones apart from Sesheke, Senanga, Mongu and Kaoma.</p> <ul style="list-style-type: none"> ■ Tender documents for consultant selection have being prepared as the progress of the above project. 				<p>to report occurrence of leakage and illegal connections by using WhatsApp and Web site of WWSC. These conventional activities contribute to identification of surface leak points and their repair in the areas where NRW is high, therefore, it is desirable that WWSC takes conventional measures for the time being.</p>
<ul style="list-style-type: none"> ■ Overflow at Service Reservoir and Elevated Tank* 	<ul style="list-style-type: none"> ■ WWSC has repaired service reservoirs at any time. However, leakage has also recurred due to deterioration of structure (see Photo-9). 				<ul style="list-style-type: none"> ● WWSC has repaired service reservoirs by their own budget in case that leakage is observed. Therefore, it is desirable such kind of repairing work can rely on their entity.
<p>3.2 Commercial Loss</p>					
<ul style="list-style-type: none"> ■ Illegal Connections 	<ul style="list-style-type: none"> ■ There is no dedicated team to find out surface leakage and illegal connections. ■ On the other hand, roles of water meter readers are not only meter reading but also observation of surface leakage and illegal connections. Water meter readers find out average 16 illegal connections in the entire service areas monthly, while they read water meters. ■ In the awareness meeting which is conducted once quarterly, NRW including water loss caused by illegal connections, 				<ul style="list-style-type: none"> ● 16 illegal connections are found out monthly, that is, about one illegal connection in a service area. Under this circumstance, WWSC relies on water meter readers to inspect illegal connections, therefore, dedicated team to patrol is not required for the time

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
	<p>water tariff and WhatsApp which is used for reporting anything to WWSC are introduced.</p> <ul style="list-style-type: none"> ■ Ratio of water tariff to disposable income is unknown but according to commerce manager, it is likely to be 4 to 5%. ■ Pilot project has been conducted in order to assess prepaid-meters. Currently, 19 prepaid-meters were installed under the pilot project (See Photo-11 to Photo-13). 				<p>being.</p> <ul style="list-style-type: none"> ● WWSC has frequently conducted an awareness meeting to make customers understand water supply service. It is expected that an awareness meeting will be conducted continuously in future as well. ● If ratio of water tariff to disposable income is 4 to 5%, current water tariff system does not cause illegal connections. Therefore, it is desirable that current water tariff system should be maintained for the time being.
<ul style="list-style-type: none"> ■ Errors on Meter Reading 	<ul style="list-style-type: none"> ■ As mentioned in 'No billing system developed well' of '1. Calculation of NRW Ratio', reading data is checked, while it is input. If there is incorrect data, WWSC sends water meter readers to customers (see Photo-10). 	<ul style="list-style-type: none"> ● Establish systematical water meter reading system by using Digital Meter Reading System (DMR) 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and data input. 	
<ul style="list-style-type: none"> ■ Less performed Meter Readers 	<ul style="list-style-type: none"> ■ Number of water meter reading is daily 85 to 90 households which depends on weather conditions. All of the meter reading are taken on foot. 			<ul style="list-style-type: none"> ● DMR is able to eliminate arbitrary meter reading 	

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
	<ul style="list-style-type: none"> ■ Water meter reading is taken on 1st to 10th monthly. ■ The commerce manage of WWSC suspects that water meter readers sometimes skip monthly meter reading for some of customers and record at the same consumption level as that in previous month arbitrarily. ■ In order to collect information on DMR and examine its advisability, WWSC plans visiting LgWSC who already introduced DMR in their CU. 			and lazy work performance.	
<ul style="list-style-type: none"> ■ Non-functioning of Water Meters and Damaged 	<ul style="list-style-type: none"> ■ There are 346 non-functioning water meters in the areas where WWSC operates. ■ WWSC does not replace water meters with new ones regularly, that is, reactive system on replacement of water meters. ■ In case that it is impossible to read water meter due to defective meters, etc. WWSC bills customers based on average water consumption in the past three months. 	<ul style="list-style-type: none"> ● In order to judge advisability of water meter replacement, introduce test meter to check an accuracy of water meters or measuring flow rate with water meter by using a bucket for pouring water which is an economical measure 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● Test meter is effective equipment for judging advisability of water meter replacement. 	
<ul style="list-style-type: none"> ■ Water Tariff in Flat Rate 	<ul style="list-style-type: none"> ■ WWSC sets flat rate considering 25m³/month, 30m³/month and 60m³/month for small consumers, medium 				<ul style="list-style-type: none"> ● Since the Project of water meter installation has been carried out, it is expected

Items	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required
	<p>consumers and large consumers respectively and encourages customers to install water meters.</p> <ul style="list-style-type: none"> ■ There are 3,485 customers in flat rate, which makes up about 22% of total customers (15,957 households) under WWSC' water supply service. ■ The Project that water meters (mechanical type) are installed has been carried out. According to original schedule, water meters is supposed to be installed by December 2018 (see Photo-14). 				<p>that water meters will be installed in all the customers.</p>

Outlines of NRW Reduction Operation Program for LpWSC

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<p>1. Calculation of NRW Ratio</p> <ul style="list-style-type: none"> ■ No bulk meters installed at the outlets of service reservoirs and or District Metered Areas (DMAs) 	<p>■ There are no DMAs in the service areas where LpWSC serves water. There is only one bulk flow meter at the outlet out of the 12 outlets of service reservoirs in the five service areas.</p> <p>■ There are 10 bulk flow meters at outlets of treatment plants. These meters have been used for calculating NRW ratio. Of 10 bulk flow meters, nine meters have been functioning well.</p>	<ul style="list-style-type: none"> ● Install bulk flow meters in the outlets of 11 service reservoirs. 	<ul style="list-style-type: none"> ● Calculate NRW ratio based on accurate flow rate measured by bulk flow meters. 	<ul style="list-style-type: none"> ● Implement NRW reduction operation efficiently. 	
<ul style="list-style-type: none"> ■ No billing system developed well 	<p>[Meter Reading]</p> <ul style="list-style-type: none"> ■ In case that meter reading is not done due to customers' absence and or defective water meters, LpWSC bills customers based on average water consumption in the past three months. ■ The meter reader sections of Headquarters and each district collects reading data and inputs it in 'Piano Billing System' together with other assistant staff on 6th to 15th every month. ■ There are no customers in flat rate. ■ Customers in prepaid meter system make up about 30% of total customers. In 2016, LpWSC started installing prepaid-meters. [Billing System] ■ LpWSC uses 'Piano Billing System' which is used in VWSC as well. ■ However, since each district office has no the billing system, district offices input in 				<ul style="list-style-type: none"> ● It seems that LpWSC has been facing meter reading errors in terms of data input in headquarters and each district. From this circumstance, LpWSC will introduce 'Municipal Billing System'. It is expected that the billing work will be improved by introducing the above billing system.

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
	<p>Excel file and send reading data to Headquarters. Afterward, billing section inputs reading data to 'Piano Billing System'. LpWSC input reading data in districts and Headquarters respectively.</p> <ul style="list-style-type: none"> ■ Input data is not crosschecked each other between headquarters and each district because each district has no 'Piano Billing System'. ■ Bills are delivered by water meter readers on 18th to 21st every month. ■ LpWSC has planned introduction of 'Municipal Billing System' instead of 'Piano Billing System'. ■ LpWSC has 'Lapis Pre-payment Water Meter System' as a prepaid-meter billing system. ■ LpWSC will conduct a household survey through 'Performance Recovery Program' of AfDB's assistance in March to June 2019 in order to examine water tariff for the year of 2020 to 2022. 				
<p>2. Creation of District Metered Areas (DMAs)</p> <ul style="list-style-type: none"> ■ Creation of DMAs as pilot areas 	<ul style="list-style-type: none"> ■ There are no DMAs in the service areas. However, creation of some DMAs or appropriate areas is included in 'Performance Recovery Program' of AfDB's assistance. 				<p>Installation of bulk flow meters (Mansa: 24sets, Samfya: 10sets, Kawambwa: 6sets, Mwense: 10sets), isolation valves and creation of DMAs or appropriate areas in the areas where AfDB plans to rehabilitate</p>

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<p>3. Causes of NRW</p> <p>3.1 Physical Loss</p> <p>■ Leakage</p>	<p>■ NRW is mainly caused by leakage which frequently occurs due to deterioration of AC pipes.</p> <p>■ About 250 to 350 leaks are observed in all the service areas monthly.</p> <p>■ Most of leak observation is reported by LpWSC staff. Web site and WhatsApp have not been used for reporting observation of leaks. Some or most of LpWSC spend time to inspect leaks as well as illegal connections, etc. on every Thursday.</p> <p>■ LpWSC has no leak detectors at all and has not taken action on NRW reduction by using leak detectors, because according to Managing Director, detection of even surface leakage contributes to reduction of NRW extremely.</p> <p>■ The distribution pipelines of about 196km out of total distance of about 232km will be replaced with new ones through the 'Performance Recovery Program' of AfDB. The remaining pipelines of about 36km</p>				<p>distribution pipelines is included in 'Performance Recovery Program'. It is expected that DMAs, etc. will be created by the fund of AfDB soon to take NRW reduction operation.</p>
<p>■ Leakage</p>	<p>■ NRW is mainly caused by leakage which frequently occurs due to deterioration of AC pipes.</p> <p>■ About 250 to 350 leaks are observed in all the service areas monthly.</p> <p>■ Most of leak observation is reported by LpWSC staff. Web site and WhatsApp have not been used for reporting observation of leaks. Some or most of LpWSC spend time to inspect leaks as well as illegal connections, etc. on every Thursday.</p> <p>■ LpWSC has no leak detectors at all and has not taken action on NRW reduction by using leak detectors, because according to Managing Director, detection of even surface leakage contributes to reduction of NRW extremely.</p> <p>■ The distribution pipelines of about 196km out of total distance of about 232km will be replaced with new ones through the 'Performance Recovery Program' of AfDB. The remaining pipelines of about 36km</p>				<p>● As mentioned in Mid-term Business Plan (MBP), AfDB has planned rehabilitation of about 196km-pipes. From the circumstance of actual release of budget, it is desirable that rehabilitation of the remaining deteriorated pipelines is carried out as the next mid-term business in next five years.</p> <p>● LpWSC positively takes activities on observation of leakage and illegal connections in cooperation with most of the staff every Thursday.</p> <p>● These conventional activities contribute to observation of surface</p>

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Overflow at Service Reservoir and Elevated Tank* 	<p>which exist in Nchelense will be replaced with new ones through 'the Expansion and Rehabilitation of Water and Sewerage Infrastructure'. This (K112million) will be funded by central government of Zambia.</p> <ul style="list-style-type: none"> ■ According to LpWSC, currently there are no service reservoirs and elevated tanks in which leaks occur at their building frames. 				<p>leaks and illegal connections, therefore, it is desirable that LpWSC takes conventional measures for the time being.</p> <ul style="list-style-type: none"> ● LpWSC repairs service reservoirs by their own budget in case that leakage is observed. Therefore, it is desirable that such kind of repairing work can rely on their entity.
<p>3.2 Commercial Loss</p> <ul style="list-style-type: none"> ■ Illegal Connections 	<ul style="list-style-type: none"> ■ There is no dedicated team to find out surface leakage and illegal connections. ■ On the other hand, roles of water meter readers are not only meter reading but also observation of surface leakage and illegal connections. Every Thursday, some of staff inspect illegal connections as well as leaks. Average five illegal connections in the entire service areas are found out monthly. ■ Currently, ratio of water tariff to disposable income is unknown but household survey will be conducted from March to June 2019 under the 'Performance Recovery Program' of AfDB. Afterward, LpWSC will have a review of current water tariff and revise it for the year of 2020 to 2022, if necessary. 				<ul style="list-style-type: none"> ● Five illegal connections are found out monthly, that is, about one illegal connection in a service area. Under this circumstance, LpWSC relies on water meter readers and LpWSC's staff to inspect illegal connections, therefore, dedicated team to patrol is not required for the time being. ● If ratio of water tariff to disposable income is 4 to 5%, current water tariff system may not cause illegal connections.

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Errors on Meter Reading 	<ul style="list-style-type: none"> ■ As mentioned in 'No billing system developed well' of '1. Calculation of NRW Ratio', reading data is not checked, while it is input or after input. ■ LpWSC will completely introduce Municipal Billing System (annual license fee: K89,000) by March to June 2019. 				<p>Therefore, it is very important to conduct household survey in order to have a review on water tariff.</p>
<ul style="list-style-type: none"> ■ Less performed Meter Readers 	<ul style="list-style-type: none"> ■ Number of water meter reading is daily 70 to 75 households. ■ Water meter reading is taken on 1st to 5th monthly. ■ As mentioned above, there are two reading ways such as mechanical meter reading and pre-paid meter reading. Pre-paid meters are used for billing and calculation of NRW ratio. Therefore, water meter readers read not only mechanical meters but also prepaid meters. ■ LpWSC suspects that water meter readers sometimes skip monthly meter reading for some of customers and record at the same consumption level as that in previous month arbitrarily. 	<ul style="list-style-type: none"> ● Establish systematical water meter reading system by using Digital Meter Reading System (DMR) 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and data input. ● DMR is able to eliminate arbitrary meter reading and lazy work performance. 	
<ul style="list-style-type: none"> ■ Non-functioning of Water Meters and Damaged 	<ul style="list-style-type: none"> ■ There are no defective water meters currently. ■ A test meter was procured by the 	<ul style="list-style-type: none"> ● In order to judge advisability of 	<ul style="list-style-type: none"> ● Improve accuracy of water meter 	<ul style="list-style-type: none"> ● Test meter is effective equipment for 	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
	'Performance Recovery Program' of AfDB but it has not been used yet because none was trained to use it.	water meter replacement urgently, introduce test meter to check an accuracy of water meters or measure flow rate with water meter by using a bucket for pouring water which is an economical measure. ● Provide technical assistance on how to check accuracy of water meters.	reading data	judging advisability of water meter replacement.	
<ul style="list-style-type: none"> ■ Water Tariff in Flat Rate 	<ul style="list-style-type: none"> ■ There are no customers in flat rate. 				<ul style="list-style-type: none"> ● It is expected that LpWSC will have continuously eliminated customers in flat rate.
3.3 Lack of awareness <ul style="list-style-type: none"> ■ Low Ratio of Water Tariff 	<ul style="list-style-type: none"> ■ Collection of water tariff for low cost customers¹ is challengeable, because of 	<ul style="list-style-type: none"> ● To held 	<ul style="list-style-type: none"> ● Improve 	<ul style="list-style-type: none"> ● Increase 	

¹ Note: LpWSC has three customer categories such as low, medium and high cost customer by population density. The categories are in inverse proportion to population

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
Collection	<p>lack of their awareness.</p> <ul style="list-style-type: none"> ■ Customers who are disconnected by LpWSC due to arrear and or illegal connections use water obtained from shallow wells and leakage water. However, the water quality is not enough to condition of hygiene. In addition, such phenomenon might be suspect a pandemic outbreak of infectious diseases. 	awareness meeting every quarter for the customer.	collection ratio of water tariff.	profit of the company	

density, that is, "High Cost Customers" inhabit Low densely populated area, "Medium Cost Customers" inhabit Medium densely populated area and "Low Cost Customers" inhabit High densely populated area.

Outlines of NRW Reduction Operation Program for KWSC

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<p>1. Calculation of NRW Ratio</p> <ul style="list-style-type: none"> ■ No bulk meters installed at the outlets of service reservoirs and or District Metered Areas (DMAs) 	<p>There are eight DMAs (Ndola: 7, Luanshya: 1) as pilot areas in the service areas where KWSC serves water.</p> <ul style="list-style-type: none"> ■ There are no bulk flow meters at the outlets of service reservoirs in the three service areas. ■ There are 14 bulk flow meters at outlets of boreholes. These meters have been used for calculating NRW ratio. All of the 14 bulk flow meters have been functioning well. 	<ul style="list-style-type: none"> ● Install bulk flow meters in the three service areas. 	<ul style="list-style-type: none"> ● Calculate NRW ratio based on accurate flow rate measured by bulk flow meters. 	<ul style="list-style-type: none"> ● Implement NRW reduction operation efficiently. 	
<ul style="list-style-type: none"> ■ No billing system developed well 	<p>[Meter Reading]</p> <ul style="list-style-type: none"> ■ In case that meter reading is not done due to customers' absence, KWSC tries to read water meters during water meter reading period. ■ The meter reader sections in Headquarters and each district collects reading data and inputs it in 'PROMON Billing System' together with other assistant staff on 6th to 10th every month. ■ The customers in flat rate make up about 30% of the total customers. The customers in flat rate concentrate on high densely populated areas. ■ About 30% of the installed mechanical water meters (43,300 sets) is not functioning well. <p>[Billing System]</p> <ul style="list-style-type: none"> ■ KWSC uses 'PROMON Billing System'. ■ Since each district office has no the billing 	<ul style="list-style-type: none"> ● Establish systematical water meter reading system by using Digital Meter Reading System (DMR). 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and data input. 	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
	<p>system, district offices input in Excel file and send reading data to Headquarters. Afterward, billing section inputs reading data to 'PROMON Billing System'. KWSC inputs reading data in districts and Headquarters respectively.</p> <ul style="list-style-type: none"> ■ Input data is not crosschecked each other between headquarters and each district because each district has no 'PROMON Billing System'. ■ Bills are delivered by water meter readers on 18th to 21st every month. 				
2. Creation of District Metered Areas (DMAs)					
<ul style="list-style-type: none"> ■ Creation of DMAs as pilot areas 	<ul style="list-style-type: none"> ■ There are eight DMAs (Ndola: 7, Luanshya: 1) as pilot areas in the service areas. 				<ul style="list-style-type: none"> ● Unless dedicated staff for NRW reduction are appointed, it is not necessary to create DMAs.
3. Causes of NRW					
3.1 Physical Loss					
<ul style="list-style-type: none"> ■ Leakage 	<ul style="list-style-type: none"> ■ KWSC has not taken NRW reduction activities by using DMAs due to insufficient skills on NRW reduction. ■ About 170 to 180 leaks are observed in all the service areas monthly. ■ Most of leak observation is reported by KWSC staff such as meter readers. Web site and WhatsApp have not been used for reporting observation of leaks. ■ KWSC has the following equipment on 				<ul style="list-style-type: none"> ● KWSC replaced pipelines of about 73km with new ones and has planned rehabilitation of about 90km-pipes. From the circumstance of actual release of budget, it is desirable that rehabilitation of the remaining

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Overflow at Service Reservoir and Elevated Tank* 	<p>leak detectors.</p> <ul style="list-style-type: none"> - Listening stick x 4 - Correlator x 1 - Pipe locator x 1 - Pressure gauge x 1 - Mechanical flow meter x 1 - Electric leak detector x 1 <p>■ KWSC has not taken action on NRW reduction by using leak detectors, but observation of surface leakage contributes to reduction of leaks.</p> <p>■ The distribution pipelines of about 90km out of total distance of about 1,037km will be replaced with new ones through the 'Kafalafuta Water Supply System Project'.</p> <p>■ There are some leaks on the service reservoirs in which leaks occur at their building frames.</p>				<p>deteriorated pipelines is carried out as the next mid-term business in next five years.</p> <ul style="list-style-type: none"> ● These conventional activities contribute to observation of surface leaks and illegal connections, therefore, it is desirable that KWSC takes conventional measures for the time being in terms of cost effectiveness.
<p>3.2 Commercial Loss</p> <ul style="list-style-type: none"> ■ Illegal Connections 	<ul style="list-style-type: none"> ■ There is no dedicated team to find out surface leakage and illegal connections. ■ On the other hand, roles of water meter readers are not only meter reading but also observation of surface leakage and illegal connections. Average 80 to 90 illegal connections in the entire service areas are found out monthly. ■ Currently, ratio of water tariff to disposable 				<ul style="list-style-type: none"> ● KWSC repairs service reservoirs by their own budget in case that leakage is observed. Therefore, it is desirable that such kind of repairing work can rely on their entity.
					<ul style="list-style-type: none"> ● 80 to 90 illegal connections are found out monthly, that is, about 30 illegal connections in a service area. Under this circumstance, KWSC relies on water meter readers and KWSC's staff to inspect illegal connections,

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Errors on Meter Reading 	<p>income is unknown but household survey will be conducted from March to June 2019 under the 'Performance Recovery Program' of AfDB. Afterward, LpWSC will have a review of current water tariff and revise it for the year of 2020 to 2022, if necessary.</p> <ul style="list-style-type: none"> ■ As mentioned in 'No billing system developed well' of '1. Calculation of NRW Ratio', reading data is not checked, while it is input in manual or after input. ■ KWSC introduced PROMON Billing System (annual license fee: K87,000) for 130 licenses. 	<ul style="list-style-type: none"> ● Establish systematical water meter reading system by using Digital Meter Reading System (DMR). 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data. 	<ul style="list-style-type: none"> ● DMR is able to avoid human errors of meter reading in a sequence of the works between meter reading and data input. 	<p>therefore, dedicated team to patrol is not required for the time being.</p> <ul style="list-style-type: none"> ● If ratio of water tariff to disposable income is 4 to 5%, current water tariff system may not cause illegal connections. Therefore, it is very important to conduct household survey in order to have a review on water tariff.
<ul style="list-style-type: none"> ■ Less performed Meter Readers 	<ul style="list-style-type: none"> ■ Number of water meter reading is daily 100 to 120 households. ■ Water meter reading is taken on 1st to 5th monthly. ■ There is only mechanical type water meter. ■ KWSC has examined to introduce pre-paid meters in order to eliminate arrears and avoid reading errors. However, a period of pre-paid meters' introduction has not been decided yet. ■ KWSC suspects that water meter readers 			<ul style="list-style-type: none"> ● DMR is able to eliminate arbitrary meter reading and lazy work performance. 	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
<ul style="list-style-type: none"> ■ Non-functioning of Water Meters and Damaged 	<p>sometimes skip monthly meter reading for some of customers and record at the same consumption level as that in previous month arbitrarily.</p> <ul style="list-style-type: none"> ■ 30% of the total mechanical meters is not functioning. ■ A test meter was procured by the 'Performance Recovery Program' of AfDB but it has not been used yet because none was trained to use it. 	<ul style="list-style-type: none"> ● In order to judge advisability of water meter replacement urgently, introduce test meter to check an accuracy of water meters or measure flow rate with water meter by using a bucket for pouring water which is an economical measure. ● Provide technical assistance on how to check accuracy of water meters. 	<ul style="list-style-type: none"> ● Improve accuracy of water meter reading data. 	<ul style="list-style-type: none"> ● Test meter is effective equipment for judging advisability of water meter replacement. 	
<ul style="list-style-type: none"> ■ Water Tariff in Flat Rate 	<ul style="list-style-type: none"> ■ The customers in flat rate make up about 44% of the total customers. 	<ul style="list-style-type: none"> ● Install water meters about 	<ul style="list-style-type: none"> ● Avoid a gap between metered data 	<ul style="list-style-type: none"> ● Increase revenue water. 	

Challenges	Brief Summary of Survey Result	NRW Reduction Operation Program (Draft)	Purpose of Operation	Technical Effect	Reasons that NRW Reduction Operation is not required as a program at this moment
		20,000sets in order to eliminate flat rate.	and water consumption for setting flat rate.		
3.3 Lack of awareness					
<ul style="list-style-type: none"> ■ Low Ratio of Water Tariff Collection 	<ul style="list-style-type: none"> ■ Collection of water tariff for low cost customers¹ is challengeable, because of lack of their awareness. ■ Customers who are disconnected by LpWSC due to arrear and or illegal connections use water obtained from shallow wells and leakage water. However, the water quality is not enough to condition of hygiene. In addition, such phenomenon might be suspect a pandemic outbreak of infectious diseases. 	<ul style="list-style-type: none"> ● To held awareness meeting every quarter for the customer. 	<ul style="list-style-type: none"> ● Improve collection ratio of water tariff. 	<ul style="list-style-type: none"> ● Increase profit of the company 	

¹ Note: LpWSC has three customer categories such as low, medium and high cost customer by population density. The categories are in inverse proportion to population density, that is, "High Cost Customers" inhabit Low densely populated area, "Medium Cost Customers" inhabit Medium densely populated area and "Low Cost Customers" inhabit High densely populated area.