

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

— Capacity Development of the CUs through Self-Capacity Assessment and Formulation of Business Plan utilizing the Evaluation Manual —

March 2019

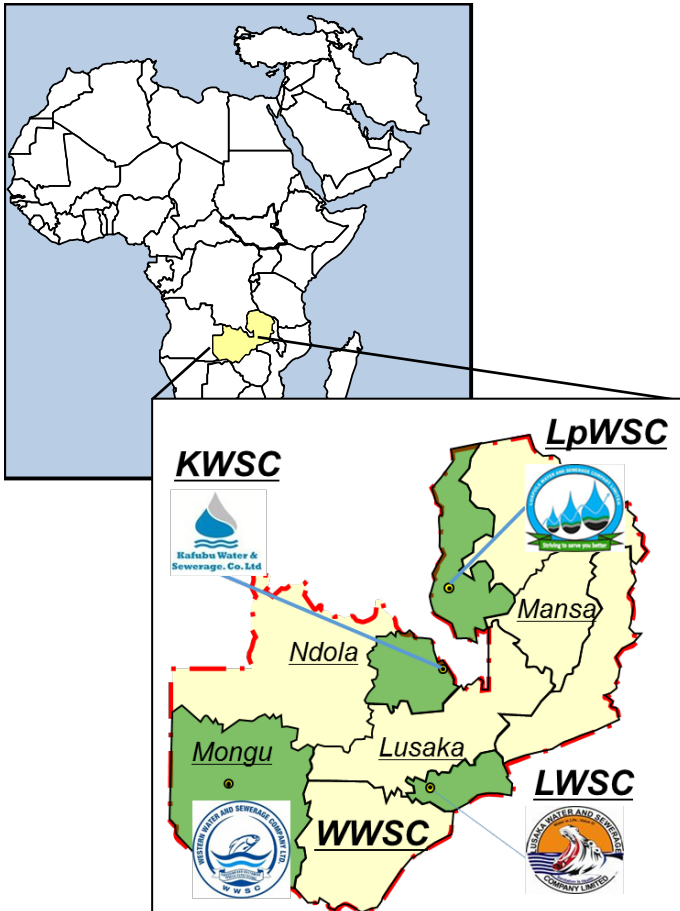
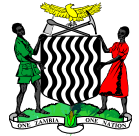


Japan
International
Cooperation
Agency



National Water Supply
and Sanitation Council

Ministry of Water
Development, Sanitation
and Environmental
Protection



1. Background

The Republic of Zambia (Zambia) which has population of about 15 million (as of 2014, World Bank) commenced water supply services for the people working in copper-bearing ores industries between the year 1964 and 1970. Assisted by international donors based on National Development Plans, urban and rural water supply system has being developed since commencement of water supply services. However due to the deteriorated water supply facilities and illegal

connections, ratio of Non-Revenue Water (NRW) of the urban water supply service is high at about 48% (as of 2014, World Bank) across Zambia. The Commercial Utilities (CUs) did not identify to prioritize challenges systematically and manage to formulate business plans. Moreover, Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP¹) didn't have a tool to evaluate the implementation structure of the CUs.

The Government of Zambia requested Japan on the technical assistance in capacity development of

¹ Ministry of Local Government and Housing (MLGH)

supervised water sector in 2015. It was transferred from MLGH to MWDSEP from February 2017.

Operation & Maintenance (O&M) of water supply system. It was agreed between the Zambian side and the Japanese side to conduct the technical assistance in human resource development for the eleven CUs in March 2015. The JICA Expert Team contributed to formulate the Evaluation Manual (EM) for evaluating the CUs systematically and to establish the system required for the formulation of further accurate & appropriate annual action plans and budget arrangements.

2. Approach

The Project was aimed to establish an appropriate operation system of the CUs and to strengthen their own management capacity. Activities of the Project are composed of three components such as preparation of the EM, evaluation of the CUs at organization & individual level and formulation of the Mid-term Business Plan (MBP) & the Human Resource Development Plan (HRDP). Overall goal, purpose, outputs and activities of the Project are summarized as shown in Figure-1.

【Overall Goal】

Urban water supply infrastructure is managed in a sustainable way by each CU.

【Project Purpose】

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

【Output 1】

Capacity of MWDSEP and NWASCO on evaluating the CUs is strengthened.

【Output 2】

Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.

【Output 3】

MBP and HRDP are prepared by LWSC, WWSC, LpWSC and KWSC.

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

The project implementation structure of the counterpart (C/P) is shown in Figure-2. Implementation bodies of the Project were MWDSEP and NWASCO. The four pilot CUs; Lusaka Water and Sewerage Company (LWSC), Luapula Water and Sewerage Company (LpWSC), Western Water and Sewerage Company (WWSC) and Kafubu Water and Sewerage Company (KWSC) out of all the eleven CUs were evaluated.

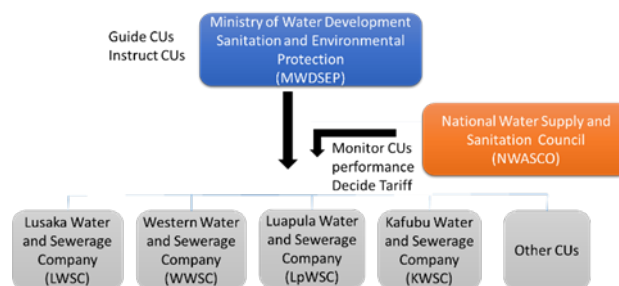


Figure-2 C/P of the Project

It is necessary to steadily take next steps to scale-up the outputs of the Project to all the eleven CUs. The Expert Team discussed orientation of scaling-up detail activities with NWASCO after termination of the Project. In order to scale up capacity assessment to the remaining seven CUs, NWASCO planned to invite them to attend the workshop in October 2019.

(1) Output 1: Capacity of MWDSEP and NWASCO on evaluating the CUs is strengthened.

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

The Expert Team had interviews with the four targeted CUs and field visits in order to prepare the EM systematically (See Picture-1).

2) To formulate EM

Through interviews with the four CUs and field visits, the Project Team prepared the EM in the light of evaluation to be standardized, so that the CUs evaluate their capacity quantitatively in the regular rule. The EM is composed of three categories; Performance Indicators (PIs) for water supply service, Evaluation Items for

Management Capacity and Evaluation Items for Communication & Negotiation Capacity.

3) To share EM to staffs of MWDSEP, NWASCO and CUs.

The 2nd Joint Coordination Committee (JCC) of the Project took place in August 2017 and the Project Team shared the purpose of the EM with MWDSEP, NWASCO and the Human Resources and Technical Directors of the targeted CUs. NWASCO had the training on how to utilize the EM with MWDSEP and the targeted CUs.



Picture-1 Surface Leakage in KWSC

(2) Output 2: Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.

1) Evaluation based on EM

The Project Team together with NWASCO’s staff evaluated the targeted CUs by utilizing the EM. The Project Team verified whether the CUs assessed their capacity properly on the basis of regular calculation especially in terms of PIs and fed-back evaluation results to the targeted CUs (See Picture-2).

2) Analyses of Evaluation Result

The Project Team analyzed the result of evaluation and sorted out the CUs’ challenges by item. The targeted CUs evaluated organizational capacity (PIs and Management Capacity) and individual capacity (Communication & Negotiation Capacity). Capacity level is composed of five categories such as “Very Serious”, “Serious”, ”Not Good Enough”, “Good” and “Very Good”.



Picture-2 Feedback of the result on the Evaluation

3) Preparation of Report on Evaluation Results

The Project Team prepared the report on evaluation results on a series of capacity assessment by utilizing the EM. The report consisted of an overview of the EM, purpose of capacity assessment, methods of capacity assessment, evaluation results and challenges. For instance, the evaluation results were composed of Aspects to be improved mainly and Summary of Causes as shown in Figure-3. All the indicators were visualized as a spider chart (See Figure-4).

Challenges on PIs	Aspects to be improved mainly	Summary of Causes
[Very Serious]		
P2: Overall service coverage is less than 50%	By Facility Investment	CU faces not only function depression due to deterioration of treatment plant but also NRW such as leaks and illegal connections.
P3: Surplus capacity to maximum design capacity is less than minus (-) 30%.	By Facility Investment	Production capacity is insufficient because treatment plant is not maintained appropriately, while the plant is deteriorated.
P6: More than 30% of installed major mechanical and electrical equipment are malfunctioning.	By Facility Investment	Budget is insufficient in order to replace equipment with new ones and to maintain equipment.
P10: NRW ratio is more than 50%	By Capacity Development (Technical Aspect)	NRW occurs due to apparent loss such as illegal connections & meter inaccuracy, and 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 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 to replace asbestos pipes with other types of pipes.

Figure-3 Sample of Listed Evaluation Result

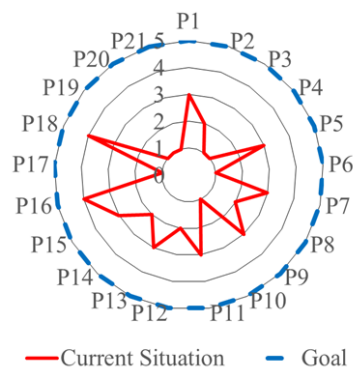


Figure-4 Sample of Evaluation Result as Spider Chart (Five Capacity Level for 21 PIs)

(3) Output 3: MBP & HRDP are prepared by LWSC, WWSC, LpWSC and KWSC.

1) Workshop to share Challenges

The 1st Workshop of the Project took place to share the challenges with the targeted CUs in December 2017 (See Picture-3). The targeted CUs mentioned budget constraint and insufficient training as the main causes for various challenges. However, the Expert Team instructed that budget constraint should not be taken as a main factor.



Picture-3 Presentation of Evaluation Result by Mr. Mutale, Chief Inspector, NWASCO at 1st Workshop

2) Establishment of Task Force on developing MBP & HRDP

Task force for each targeted CU to work on formulation of the MBP & the HRDP was established at the 1st JCC held in March 2017.

3) To prioritize Challenges and to set up Goals and Indicators

The Project Team created the action priority matrix to evaluate importance and urgency as shown in Figure-5. Moreover goals and verifiable indicators to evaluate achievement of goals of the targeted 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.

4) Workshop to share Prioritized Challenges, Goals and Verifiable Indicators

After prioritizing challenges, setting-up goals and their verifiable indicators of each CU as per Chapter (3) 3) above, the CUs started formulating the MBP & the

HRDP. The information about the prioritized challenges, goals and verifiable indicators was shared with the Project Team in the 2nd workshop in April 2018.

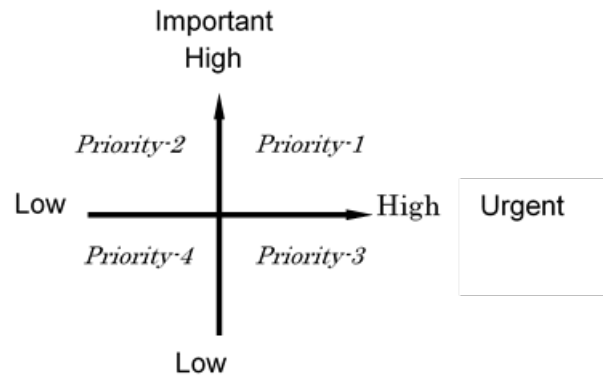


Figure-5 Action Priority Matrix

5) Preparation of Draft MBP & HRDP

Preparation of the draft MBP & HRDP for each CU were updated based on the result of the 2nd consultative formulation meeting in July 2018. The draft MBP & HRDP were shared with all the eleven CUs at the 3rd workshop in July 2018.

In addition, each CU recognizes NRW reduction is one of the most important activities which solve their key challenges. However there has been no opportunity of discussing the challenge among the CUs. Therefore, Lukanga Water and Sewerage Company (LgWSC) introduced the activities to all the eleven CUs at the 3rd workshop in July 2018, and the solution and practice on work efficiency and NRW reduction were discussed by all the eleven CUs. NRW reduction activity introducing Digital Meter Reading (DMR) System in LgWSC by the support of National KAIZEN Project Phase2, JICA's Technical Cooperation Project, was a good practice of NRW reduction activity in Zambia. For instance, elimination of commercial loss caused by errors in records, meter reading inaccuracy contributes to NRW reduction. In addition, noticeable points to introduce DMR System are of low initial cost.

6) To finalize and to approve MBP & HRDP

The MBP & the HRDP were finalized by the targeted CUs from August to December 2018, and approved by each board member by March 2019.

(4) Other Approach

1) Activities for the sustainable implementation after the Project

• Questionnaire on the EM and Capacity Assessment of CUs

In regard to improvements on the EM and sustainable capacity assessment to formulate the MBP & the HRDP, this survey was aimed at acquiring the opinions from the targeted CUs.

• Trial Exercise on Capacity Assessment and Formulation of MBP & HRDP

As per request of NWASCO, the Expert Team held the training session focusing on sustainable implementation after termination of the Project to NWASCO in July 2018. On the other hand, the targeted CUs conducted trial exercise on a series of capacity assessment and formulation of the MBP & the HRDP by themselves in order to implement sustainably after termination of the Project.

• Support of Formulating Programs for Countermeasures against NRW

The formulation of detailed programs for countermeasures against NRW which was one of common challenges for each CU, was supported by the Expert Team so that each CU could implement by itself as the process of formulating the MBP & the HRDP. The Expert Team carried out interviews with the targeted CUs and field visits additionally for formulating NRW reduction program (See Picture-4).



Picture-4 Additional Field Visit (Surface Leakage in KWSC)

• Coordination with Other Development Partners

GIZ and AfDB have been planning financial and

technical assistance on water supply sector. The Expert Team shared the outputs (such as the EM, the MBP & HRDP, and NRW reduction program) and discussed utilization of the EM, etc. after termination of the Project (See Picture-5).



Picture-5 Discussion with Other Donner

2) Measures against Cholera Outbreak

Zambia faced outbreak of cholera since the end of October 2017 until May 2018 in Lusaka. The Project Team collected the fund data which is Cholera Emergency Respond Fund from Ministry of Health (MoH), and insisted importance of preventive approaches to MWDSEP.

3) Perspective from Aspect of Financial Analysis

In the Project, the activities were not conducted directly to contribute to financial improvement. However, the Expert Team suggested the perspective from aspect of financial analysis for improving water supply management.

4) 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, all the eleven CUs and other donors (See Picture-6).

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. Facebook pages of LWSC, LpWSC

and WWSC were updated to the events such as workshops, and introduced the activities supported by JICA to citizen (See Picture-7). The article of the project achievement is also available on JICA homepages which were uploaded twice so far.



Picture-6 Project Poster



Picture-7 Picture of WWSC's Facebook Page (Introduce of Project Poster)

3. Results

(1) Results based on each Output and Indicator (Achievements)

1) 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.

Major Outcome

The EM for the CUs were approved by MWDSEP and NWASCO as a draft through the 2nd JCC in August 2017. Finally, the EM were approved by

MWDSEP and NWASCO at the 5th JCC in January 2019.

Indicator 1-2

The way to utilize the evaluation manual is understood by MWDSEP, NWASCO and CUs staff in charge of urban water supply.

Major Outcome

MWDSEP which supervises NWASCO and the CUs relies on NWASCO to direct the CUs to evaluate their own capacity by utilizing the EM and formulate the MBP & the HRDP. NWASCO understood a series of process such as 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 the CUs was strengthened through the process of formulating the new evaluation manual system such as discussion, presentations and trainings, etc.

2) Output 2 : Capacity of LWSC, WWSC, LpWSC and KWSC is evaluated.

Indicator 2

Challenges of each CU are clarified.

Major Outcome

The common challenges for each CU such as countermeasures against NRW were identified.

3) Output 3 : MBP & HRDP are prepared by LWSC, WWSC, LpWSC and KWSC.

Indicator 3

The MBP & the HRDP are logically prepared in a manner consistent with target figure of key performance indicator.

Major Outcome

The Project Team formulated the MBP & the HRDP consisted of Indicators (Items), Challenges, Priority, Goal and Project Contents (See Figure-6), and

estimated approximate cost of activities for five (5) years (See Figure-7).

Final MBP & HRDP were submitted and approved by board members by March 2019.

No.	Items	Challenges	Priority	Goal	Proposed Project	Detail	Remarks
(1) NRW Reduction Project							
1.	P4: Transmission and mains	Asbestos, old cast iron and old steel pipes make up 75% of main pipelines	3	Ratio of deteriorated pipes will be reduced to 45%.		(1-1) Replacement of the deteriorated pipes of 183km.	AfDB has the project for NRW improvement. Installation of water, etc.
2.	P10: NRW ratio	NRW ratio is more than 50%	1	NRW rate will be reduced from 54% (current) to 40%.	(1-1) Replacement of deteriorated pipes (1-2) Implementation of PFR activity	(1-2) Implementation of awareness-raising activity for water conservation and cholera's preventive measures such as oral rehydration solution, boiling water before drinking.	
3.	P19: Awareness-raising on NRW reduction, collection of water charges, etc.	No or minimal effective awareness-raising activities have been implemented.	2	A system for effective awareness-raising activities is established.			

Figure-6 Image of MBP & HRDP

Project	2019	2020	2021	2022	2023	Sub total (ZMW)
A. Medium Business Plan						
(1) NRW Reduction Project- Replacement of deteriorated pipes						
1-1) PFR activity (183km)				4,294,000	5,750,000	11,260,000
1-2) Distribution Management (5MM)	625,000	625,000	625,000	625,000	625,000	2,500,000
1-3) Construction Supervision (40MM)	5,000,000	5,000,000	5,000,000	5,000,000		20,000,000
(1-4) Replacement of deteriorated pipes (183km)	50,000,000	50,000,000	50,000,000	50,000,000		200,000,000
(1-5) PFR activity (5MM)					2,000,000	2,000,000
Sub total (ZMW)	61,628,000	61,628,000	61,628,000	66,132,000	8,800,000	259,817,000

Figure-7 Image of Estimated Approximate Cost of Activities for 5 years

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

Indicator
MBP & HRDP of LWSC, WWSC, LpWSC and KWSC are prepared and approved by board member of each CU.
Major Outcome
The MBP & the HRDP of the targeted CUs were prepared by the Project Team and finally approved by the board members of each CU.

For the purpose of formulation of the MBP & the HRDP, the four CUs evaluated their own capacity by utilizing 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) Results based on Other Approach (Achievements)

1) Activities for the sustainable implementation after the Project

• Questionnaire on the EM and Capacity Assessment of CUs

It is very important to conduct capacity assessment and formulation of the plans sustainably. Almost all the persons answered positive opinions to conduct the capacity assessment utilizing the EM and to formulate the MBP & the HRDP sustainably. The result of this survey contributed to revision of the EM and formulation of the MBP & the HRDP.

• Trial Exercise on Capacity Assessment and Formulation of MBP & HRDP

Activities, that NWASCO received and inspected the outputs of the trial exercise by the CUs and then fed back to the CUs respectively in cooperation with JICA Expert Team, contributed to implementation of a series of capacity assessment and formulation of the MBP & the HRDP sustainably after termination of the Project for NWASCO and the targeted CUs.

• Support of Formulating Programs for Countermeasures against NRW

The Expert Team assisted the targeted CUs in formulating the programs for countermeasures against NRW which is one of common challenges for each CU. It would contribute to formulation of the new or revision of the MBP & the HRDP and the detailed annual plans after the termination of the Project.

• Coordination with Other Development Partners

GIZ and AfDB were very interested in the EM, the MBP & the HRDP, and the NRW reduction program, and commenced to utilize these documents.

2) Measures against Cholera Outbreak

According to data on cholera outbreak from MOH, the Project Team recognized that the proactive approach costs were much huger than the preventive approach. Therefore, the Project Team proposed preventive measures in Soft-component to MWDSEP as example. MWDSEP recognized importance of preventive

approaches and showed an understanding.

3) Perspective from Aspect of Financial Analysis

Reduction of the current NRW ratio through NRW reduction activities which was setup in the MBP, further contributes to increase of tariff income to improve water supply management.

Historically, as it is likely that International Water Association (IWA) water balance has not been conducted properly in the four CUs, it is expected that visibility of water tariff income by using a Profit and Loss (P/L) sheet promotes acceleration of NRW reduction activities positively for the CUs.

4) PR Activities

Through internal PR activities, activities of the Project were shared and it contributed to promotion of project management. Moreover, activities of the Project were widely recognized to citizens through external PR activities.

4. Efforts and Lessons Learnt

(1) Efforts for implementing the Project

1) Formulating the EM for the sustainable implementation

As a result of preparing the EM, the four CUs made it possible to formulate the MBP & the HRDP by utilizing 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 staff of the CUs to implement capacity assessment systematically and adequately in connection with further sustainable implementation. It was contrived as the CUs could evaluate easily by multiple-choice criteria, by number of indicators without workload for evaluators, and by a clear description for definition of the indicators and for a method of calculation of the evaluation.

2) Structure of the C/P Teams

The Task Force for formulation of the MBP & the HRDP consisted of each Managing Director (MD) and Human Resources Director (HRD). However, the Project invited not only each MD and HRD but also several sectors in charge to the meetings such as workshops, JCCs, etc. so as to improve their ownership.

3) Collaboration among the CUs

The targeted CUs implemented almost the same programs simultaneously. In addition, the members of these CUs sometimes had opportunities to have the workshops, trainings, consultative meetings, JCCs, 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 the CUs.

These CUs recognized NRW reduction is one of the most important activities which solve their key challenges. However, there was no opportunity of discussing among the CUs. NRW reduction activity of KAIZEN project in LgWSC was good practice of NRW reduction activity in Zambia. LgWSC introduced the activities to all the eleven CUs, and the solution and practice on work efficiency and NRW reduction were discussed by all the eleven CUs. It is expected that comprehensive measures will be taken by the CUs as a result of the collaboration among the CUs after termination of the Project.

(2) Lessons Learnt

1) Sharing information with other projects

Although less collaboration had been held among the CUs, sharing information would create further opportunities and effects as LgWSC introduced in the workshop of the Project as shown in Chapter 4. (1) 3) above. Therefore, each project on water supply sector which are carried out by other organizations across Zambia should be shared among the CUs and relevant donors.

2) Monitoring of the Project

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

3) Assisting in materializing projects following NRW reduction as example

In order to implement projects based on the MBP & the HRDP appropriately, the Expert Team assisted the targeted CUs in materializing projects as a next step. The Expert Team flexibly followed-up surveying

current status of NRW which was one of common challenges among the targeted CUs, and prepared specific programs which would be referred to their own annual action plans. It was confident that the targeted CUs would be able to conduct a series of process such as evaluation of capacity, formulation of the MBP & the 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.

5. Project Period

February 2017 to February 2019