

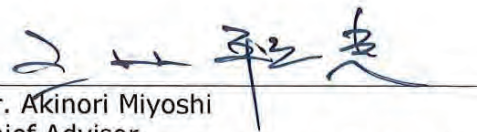
MINUTES OF MEETING
ON
THE SEVENTH JOINT COORDINATING COMMITTEE
FOR
THE FEDERAL CAPITAL TERRITORY
REDUCTION OF NON-REVENUE WATER PROJECT

HELD IN
THE OFFICE OF DIRECTOR, ECONOMIC PLANNING RESEARCH AND STATISTICS,
FEDERAL CAPITAL TERRITORY ADMINISTRATION

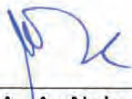
24th August 2017



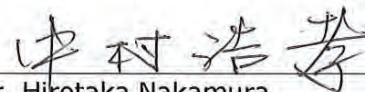
Mr. Abubakar Sani Pai
Project Director,
Director, Economic Planning, Research
and Statistics Department,
Federal Capital Territory Administration,
Federal Republic of Nigeria



Mr. Akinori Miyoshi
Chief Advisor,
The Federal Capital Territory Reduction
of Non-Revenue Water Project,
Japan International Cooperation Agency
(JICA) Expert Team



Engr. A. A. Nahuche
Project Manager,
Ag. Director
Federal Capital Territory Water Board,
Federal Republic of Nigeria



Mr. Hirotaka Nakamura
Chief Representative,
JICA Nigeria Office

Attached Document

The Monitoring Survey Mission, organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), was dispatched from 21st August to 24th August, 2017 in order to monitor the progress of the Technical Cooperation Project for "The Federal Capital Territory Reduction of Non-Revenue Water Project" (hereinafter referred to as "the Project") jointly with the Nigerian party.

The JICA Monitoring Survey Mission visited Federal Capital Territory Administration (hereinafter referred to as "FCTA"), Federal Capital Territory Water Board (hereinafter referred to as "FCTWB") and relevant organizations in order to exchange views and opinions on the Project with stakeholders and had series of discussion with the Nigerian authorities concerned.

As the conclusion of the joint monitoring, the seventh meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on 24th August 2017.

1. Remarks and Presentation

Mr. Abubakar Sani Pai, Project Director of the Project, chaired the JCC meeting and gave his welcome remarks addressing the importance of enhancing improvement of water supply services as well as the necessity of disseminating experiences and knowledge of the Project to other service areas.

Mr. Hirotaka Nakamura, Chief Representative of JICA Nigeria Office expressed his gratitude toward project team members. Then, he gave his remarks addressing that our experiences can contribute to other Nigerian water utilities responding to their increasing interest in NRW reduction. And he also requested that the problems raised by this joint project monitoring should be solved by cooperation among all the stakeholders. Lastly, he emphasized importance of participation of key stakeholders such as Federal Capital Development Authority (hereinafter referred to as "FCDA") in developing medium-term strategic plan for NRW reduction under the Project, while JICA will continue to support the Project with a view to a better water supply situation in the Federal Capital Territory.

Engr. M. Kabir Rabi, Head of NRW Unit made a presentation about the result of the Project Monitoring and revision of Project Design Matrix (hereinafter referred to as "PDM") and Plan of Operations (hereinafter referred to as "PO"), and requested the JCC Meeting members to discuss issues and countermeasures (*refer to Appendix 3, 4 and 5).

Mr. Hiroki Ishimaru, Project Officer, JICA Monitoring Survey Mission made a presentation about suggestions (*refer to Appendix 6) as a result of the monitoring survey.

Mr. Yoshiaki Omura, Senior Advisor, JICA Monitoring Survey Mission gave technical advices particularly on the necessity of replacing broken vacuum pump, a component of pulsator in the water treatment plant (Phase-1&2) for efficient operations.

Engr. A. R. Lawal, Head of Distribution Department, FCTWB made a presentation about participation in the third training in Japan (*refer to Appendix 7).

At the end of the discussions, Engr. A. A. Nahuche, the Project Manager of the Project, the new Director of FCTWB gave closing remarks. He emphasized that FCTWB is delighted to have implemented the Project and it has been learning scientific ways of operation and maintenance. Finally, he appreciated the attendance of Japanese party and other partners and expressed further collaboration among them.

2. Main Points Discussed

As a result of discussions, all JCC members confirmed the matters mentioned below:

2-1. Revision of PDM and PO

In line with the result of project monitoring, the both parties agreed to revise PDM and PO. Major revisions are as follows:

(1) Project Period, Verifiable Indicators and Activities in General

According to the amended Record of Discussion (hereinafter referred to as "R/D") dated on 15th December 2016, which extended the Project period for six months, the both parties agreed to extend the Project period, modify and delete timeframe in the related verifiable indicators and activities.

(2) Overall Goal and its Indicators

Considering delay in Output-1 activities and difficulties in implementation of pilot projects of Output-2 activities, the both parties agreed to revise Overall Goal and its indicators as a more realistic approach.

(3) Project Purpose's Indicators

Considering delay in Output-1 activities and difficulties in implementation of pilot projects of Output-2 activities, the both parties agreed to revise Project Purpose's indicators as a more realistic approach.

(4) Output-1, its Verifiable Indicators and Activities

The Project has faced difficulties in measuring water flow by ultrasonic flow meters continuously due to non-full of water flow in pipelines at bulk meters, which seems to be affected by water flow interference at an injection point along a trunk main from water treatment plants, as well as at zonal meters because of supply shortage. Therefore, the both parties agreed to revise Output-1, the related verifiable indicators and activities by adding a term "estimate or estimation" based on available/reliable data.

2-2. Review and Streamlining of Meter Reading and Billing, and Clearly-stated Procedures

Complicated commerce operations (mixture of customer categories, meter types, reading divisions, water tariff, etc.) have impeded the project's activities. Therefore, simplified job-allocation and uniform management are the key to improve water supply services including NRW reduction. JICA Monitoring Survey Mission suggested FCTWB to review the choice of meter type and streamline the appointment of personnel in charge of meter reading and billing, then prepare clearly-stated Standard Operating Procedures (SOP).

In this regard, FCTWB had established (1) task force team for debt recovery as a short-term measure and (2) another committee for identification of estimated billing. And the detailed actions of these teams and the points JICA Monitoring Survey Mission suggested will be included in the strategic NRW reduction plan.

2-3. Prompt Summary of Pilot Projects

Out of three pilot projects, one in Garki I did not achieve successful result because actual network is quite different from the information collected beforehand (e.g. types of customers are much more complicated, there are possibly some unlisted major consumers in the area, etc.) Considering timeline of the Project, JICA Monitoring Survey Mission requested the Project to move on to summarizing the result of pilot projects (by clarifying obstructive factors and calculating cost/benefit) without further delay.

In this regard, FCTWB will finish implementing follow-up activities in Garki I right after this JCC meeting until the end of September 2017 and move on to wrap-up of the pilot projects including clarification of obstructive factors and calculation of cost/benefit.

2-4. Facilitating Timely Execution of Counterpart Fund 2017

Considering the current status of Counterpart Fund 2017, JICA Monitoring Survey Mission requested FCTA and FCTWB to facilitate prompt and timely execution of counterpart fund.

In this regard, FCTA and FCTWB confirmed that allocated fund would be processed properly and FCTWB is going to keep close communication with FCTA and goes through with the procedures till the execution of the fund. Also, they will have in-house meetings and consider utilization of Counterpart Fund allocated to the Minister's Office if the departmental fund is exhausted.

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2-5. Development and Effective Utilization of GIS

Considering the current status of development of FCTWB's own GIS, JICA Monitoring Survey Mission suggested the Project to accelerate the related activities by adding workforce to utilize GIS data for Output-3.

In this regard, FCTWB already deployed three officers in GIS Unit and started suggested actions.

2-6. Strengthening Collaboration between Distribution Department and Commerce Department

JICA Monitoring Survey Mission suggested FCTWB to empower NRW Unit for strengthening collaboration between Distribution Department and Commerce Department, which improves water supply services including NRW reduction.

In this regard, FCTWB has organized more interactive sessions among those Departments which support the task of NRW Unit.

2-7. Awareness Raising of Quality Management

JICA Monitoring Survey Mission suggested FCTWB to ensure quality management regarding O&M of the procured facilities and equipment and other routine works for the sustainable achievement of the project outputs.

In this regard, all Departments in FCTWB were mandated to produce SOPs and manuals for quality management by the end of September 2017.

2-8. Encouraging Individual's Effort on NRW Reduction

JICA Monitoring Survey Mission suggested FCTWB to encourage individual's effort on NRW reduction for sustainability of the project and motivation of staffs.

In this regard, FCTWB will secure and execute the fund, enhance laid-down procedures of annual performance evaluation and commend individual's effort.

2-9. Knowledge Sharing System of Counterpart Personnel in FCTWB

Since June 2017, some project members of FCTWB have been relocated including the Director (Project Manager), Heads of Department of Distribution and Commerce (Technical Managers) and Area Managers. JICA Monitoring Survey Mission requested FCTWB to keep and utilize knowledge and information regarding NRW reduction activities in the organization even though project counterpart members are changed.

In this regard, FCTWB will firmly establish platform for regular interaction among project members as knowledge and information sharing in the organization.

2-10. Actions toward FCTWB Autonomy and Bill

The FCTWB Bill was approved by the House of Representatives and have been in committee stage by the Senate in the National Assembly.

In anticipation of FCTWB autonomy in the near future, JICA Expert Team has suggested FCTWB to set up a preparatory committee or taskforce to discuss related issues to strengthen and improve administrative and financial management of FCTWB. JICA Monitoring Survey Mission suggested the Nigerian party to discuss it with support from a JICA Expert in charge of financial analysis and organization.

In this regards, FCTA and FCTWB accepted it.

2-11. Strengthening Partnership between FCTWB and FCDA

JICA Monitoring Survey Mission suggested the Project to continue communication and collaboration among members of NRW Planning Working Group (including FMWR). Especially, the Mission puts importance on the collaboration between FCTWB and FCDA to take concrete steps toward improvement in water supply services and O&M including data/drawing management such as archive by making use of lessons learned in training in Japan.

In this regards, the Nigerian party accepted and confirmed that delegates of the third training in Japan would make a presentation to FCTA Management with support of JICA Expert Team as the 1st activity after this JCC.

FCDA added opinions that the collaboration has been improved through the Project. And FCDA has already started discussions with FCTWB about water flow interference at an injection point along a trunk main from water treatment plants and they will find solutions immediately.

2-12. Project Vehicle

JICA asked about conditions of the project vehicle damaged by the traffic accident in March 2017 and also an alternate vehicle for implementing project activities.

FCTWB answered that the vehicle cannot be fixed because of heavy damage, so FCTWB provides substitute vehicles for the implementation and

it will purchase a new vehicle by using Counterpart Fund when readily available and sufficient.

3. Approval of Project Monitoring Sheet (Draft)

As a result of discussions, the JCC meeting members approved the Project Monitoring Sheets (Draft) (refer to Appendix 3).

4. Revision of PDM and PO

Based on Project Monitoring Sheet (Draft) (refer to Appendix 3) and the results of the above discussions, the JCC members approved revision of both PDM and PO (refer to Appendix 5). Comparison table is as follows:

Before Revision	After Revision
Project Period	
October 2014 to March 2018	October 2014 to September 2018
Overall Goal	
(a) Narrative Summary	
Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB	Non-Revenue Water reduction activities are routinely implemented in the service area of FCTWB.
(b) Objectively Verifiable Indicators	
a: Annual NRW ratio is reduced to X%(*) at the end of the year 2021 Note(*): Target value (X%), which is expected to be determined in the medium-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA	a: NRW reduction operations are carried out according to the medium-term strategic plan for NRW reduction (2019-2023).
(c) Means of Verification	
a. Record of NRW ratio kept by Distribution Department	a. Report of NRW reduction activities and monitoring by NRW Unit (NRW ratio, records of leakage detection,

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Before Revision	After Revision
	repair, disconnection of illegal connections, etc.)
Project Purpose	
(b) Objectively Verifiable Indicators	
<p>a. The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.</p> <p>b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB.</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level.</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**).</p> <p>Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year.</p>	<p>a. The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project.</p> <p>b. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level.</p> <p>c. NRW ratio of each PMA is monitored.</p>
(c) Means of Verification	
<p>b. Result of monitoring by NRW Management Team</p> <p>c. Results of joint assessment based on the criteria set by the Project</p> <p>d. Record of NRW ratio kept by Distribution Department</p>	<p>b. Results of joint assessment based on the criteria set by the Project.</p> <p>c. Record of NRW ratio kept by NRW Unit.</p>

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Before Revision	After Revision
Output-1	
(a) Narrative Summary	
1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored regularly.	1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored and estimated.
(b) Objectively Verifiable Indicators	
1a. Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the second year of the Project.	1a. Record of NRW ratio is kept by NRW Unit.
1b. Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the second year of the Project.	1b. NRW ratio of the service area of FCTWB is reported to its Joint Management Meeting.
1c. Quarterly NRW ratio of the service area of FCTWB is reported to Management of FCTWB from the third quarter of the second year of the Project.	1c. NRW ratio of the service area of FCTWB is reported to Management of FCTWB.
1d. Periodic records of data on water distribution management such as water flow of zonal meters and water pressure are kept by Distribution Department from the first quarter of the third year of the Project.	1d. Periodic records of data and estimation on water distribution management such as water flow of zonal meters and water pressure are kept by NRW Unit.
(c) Means of Verification	
1a. Monthly record of NRW ratio. 1b&1c. Material for meetings submitted by the Distribution Department.	1a. Record of NRW ratio. 1b&1c. Material for meetings submitted by NRW Unit.
Output-2	
(b) Objectively Verifiable Indicators	
2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers),	2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers),

Before Revision	After Revision
including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project.	including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce.
(c) Means of Verification	
2a. Record of NRW ratio kept by the Distribution Department.	2a. Record of NRW ratio kept by NRW Unit.
Output-3	
(b) Objectively Verifiable Indicators	
3a. By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval. 3b. By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project. 3d. By November 2016, framework of water distribution management is established.	3a. Draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval. 3b. An annual NRW reduction plan (2019) is incorporated in FCWTB's annual recurrent and capital plan (2019) for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the Director of FCTWB. 3d. Framework of water distribution management is established.
Activities (Output-1)	
1-2 Measure monthly water production of water treatment plants 1, 2, 3 and 4 1-3 Tally the above water production data monthly 1-4 Calculate the monthly water consumption based on the billing data 1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4	1-2 Measure/estimate water production of water treatment plants 1, 2, 3 and 4 1-3 Tally the above water production data/estimation 1-4 Calculate the water consumption based on the billing data 1-5 Calculate NRW ratio of the service area of FCTWB using the results obtained from Activity 1-3 and 1-4

Before Revision	After Revision
1-7 Measure and collect data for water distribution management such as water flow of zonal meters and water pressure	1-7 Measure/estimate and collect data for water distribution management such as water flow of zonal meters and water pressure
Activities (Output-3)	
3-5 Develop the first medium-term strategic plan (2018-2022) for approval by FCTA	3-5 Develop the first medium-term strategic plan (2019-2023) for approval by FCTA
Inputs (the Nigerian Side)	
<u>Land, Building and Facilities</u>	<u>Land, Building and Facilities</u> (to be financed by Counterpart Fund)
<u>Local Costs</u>	<u>Local Costs</u> (to be financed by Counterpart Fund)
Inputs (the Japanese Side)	
<u>Japanese Experts</u> 7. Procurement Manage't / Coordinator 11. Remote Monitoring 12. Other experts mutually agreed upon as necessary	<u>Japanese Experts</u> 7. Procurement Manage't / Coordination 11. Remote Monitoring Design 12. Remote Monitoring Device Installation / Training 13. Financial Analysis / Organization 14. Other experts mutually agreed upon as necessary
<u>Equipment</u> 8. Telemetric monitoring system with standby power generating facility for selected zonal meter(s) and/or water pressure sensor(s). 9. Other equipment mutually agreed upon as necessary	<u>Equipment</u> 8. Telemetric monitoring system for selected zonal meters 9. Solar powering systems for zonal meters 10. Other equipment mutually agreed upon as necessary
<u>Facilities</u> 2. Chambers for bulk meters for water treatment plants, zonal meters and water pressure sensors	<u>Facilities</u> 2. Chambers for bulk meters for water treatment plants, and zonal meters

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Before Revision	After Revision
<u>Training of the Nigerian Project Personnel</u> 1. Four persons mutually agreed upon will be trained in Japan annually.	<u>Training of the Nigerian Project Personnel</u> 1. Eighteen persons mutually agreed upon will be trained in Japan.

END

Appendix

Appendix 1: Programme/Agenda

Appendix 2: Attendance List

Appendix 3: Project Monitoring Sheet (Draft)

Appendix 4: Results of Project Monitoring and Revision of PDM & PO

Appendix 5: Revision of PDM (PDM₃ to PDM₄) and PO (PO₃ to PO₄)

Appendix 6: Suggestions from JICA Joint-Monitoring Mission

Appendix 7: The 3rd Training in Japan: NRW Management (Strategy)

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Federal Capital Territory Administration (FCTA)

Federal Capital Territory Water Board (FCTWB)

assisted by

Japan International Cooperation Agency (JICA)

**THE FEDERAL CAPITAL TERRITORY
REDUCTION OF NON-REVENUE WATER PROJECT
PROGRAMME/AGENDA FOR 7TH JOINT COORDINATING COMMITTEE**

Venue: Conference Room, EPRS, FCT Administration, Abuja

Date: 10:00, Thursday, 24th August 2017

- | | |
|---------------|---|
| 10:00 | Opening Prayer |
| 10:00 - 10:05 | Introduction of JCC Members |
| 10:05 - 10:15 | Welcome Remarks by Project Director, Mr. Sani Pai (Director, EPRS, FCTA) |
| 10:15 - 10:25 | Address by Chief Representative, Mr. Hirotaka Nakamura (JICA Nigeria Office) |
| 10:25 - 10:55 | Presentation of Results of Project Monitoring by Engr. M. Kabir Rabi (Head of NRW Unit, FCTWB) |
| 10:55 - 11:15 | -Recommendation by Mr. Hiroki Ishimaru (Project Officer, JICA Headquarters)
-Technical Advice by Mr. Yoshiki Omura (Senior Advisor in Urban Water Supply, JICA Headquarters) |
| 11:15 - 11:45 | Questions, Answers and Discussions |
| 11:45 - 11:55 | Approval of Project Monitoring Sheets, Revision of PDM and PO |
| 11:55 - 12:25 | Presentation of the Third Training in Japan by Engr. A. R. Lawal (Assistant Director, Distribution, FCTWB) |
| 12:25 - 12:35 | Any other business |
| 12:35 - 12:45 | Closing Remarks by Project Manager, Engr. A. A. Nahuchc (Director, FCTWB) |
| 12:45 | Closing Prayer |

FEDERAL CAPITAL TERRITORY REDUCTION OF NON-REVENUE WATER PROJECT

SEVENTH JOINT COORDINATING COMMITTEE (JCC) MEETING

HELD ON 24TH AUGUST 2017 AT FCTA/EPRS CONFERENCE ROOM

ATTENDANCE LIST

S/N	NAME	POSITION
1	Sani Pai	Director, EPRS/FCTA
2	Hirotaaka Nakamura	Chief Representative, JICA Nigeria
3	Nahuche A.A	Ag. Director, FCTWB
4	Omura Yoshiki	Senior Advisor, JICA HQ
5	Hiroki Ishimaru	Project Officer, JICA HQ
6	Takayuki Ohira	Project Formulation Advisor, JICA Nigeria Office
7	Ezeoha F.O	DD, W&S, Dep't of Engineering Services, FCDA
8	Usman A Aliyu	FCTWB
9	Agbontaen O.S	HOD, Production, FCTWB
10	Phoebe Ochega	Ag. HOD, Admin&Supply FCTWB
11	Lawal A.R	Ag. HOD, Distribution, FCTWB
12	Muazo Aliyu S.B	Ag. HOD, Commerce, FCTWB
13	Hasfat Ahmed Lawi	HOD, Finance, FCTWB
14	Okobi O.Y	HOD, Quality Control, FCTWB
15	Rabiu M.K	Head of NRW Unit, Distribution, FCTWB
16	Ahmed M Kabiru	EPRS/FCTA
17	Umar Sambo Idris	EPRS/FCTA
18	Osondu Ogbuaku	EPRS/FCTA
19	Udeh E.C	Dep't of Engineering Services, FCDA
20	Gambo Y.L	Dep't of Engineering Services, FCDA
21	Udo S.T	Dep't of Engineering Services, FCDA
22	Oruche S.F	Dep't of Engineering Services, FCDA
23	Adebanjo Adebayo J	FMWR/WS
24	Akinori Miyoshi	CA, JICA Expert Team
25	Tomohiro Shimizu	JICA Expert Team
26	Noboru Osakabe	JICA Expert Team
27	Sadiq Abubakar Gulma	JICA Nigeria

To Chief Representative of JICA Nigeria Office

PROJECT MONITORING SHEETS (DRAFT)

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water

Project

Version of the Sheet: Ver. 5 (Term covered: January, 2017 - July, 2017)

Name: Akinori Miyoshi

Title: Chief Advisor

Submission Date: 24 August 2017

I. Summary

1 Progress

1-1 Progress of Inputs

[The Nigerian Side]

Project Personnel

All project members including Project Director, Project Manager, Deputy Project Manager, Technical Managers, Non-Revenue Water (NRW) Management Team members, NRW Action Team members have been involved in the Project.

Land, Building and Facilities

Office spaces and necessary facilities at the Federal Capital Territory Water Board (FCTWB) have been provided for the Japanese side.

Local Costs

Cost for operation and maintenance of the provided equipment, and also administrative and operational costs for local traveling, demurrage and communication of telemetric device have been provided. However, these costs have been paid temporarily by the Japanese side because of delay in release of the Counterpart Fund, which will be refunded.

[The Japanese Side]

JICA Experts

Japan International Cooperation Agency (JICA) Expert Team consisting of a Chief Advisor and members for nine areas of expertise were assigned to the works in Nigeria for 17.1 man-months between January 2017 and July 2017 (83.6 man-months from the commencement of the Project in November 2014).

Equipment

Equipment for water distribution management such as zonal meters, data loggers, telemetric

PM Form 3-1 Monitoring Sheet Summary

monitoring system and etc. were procured in Japan, delivered and handed over to FCTWB.

Equipment for solar powering systems for zonal meters, data loggers and telemetric monitoring system were procured in Nigeria, delivered and handed over to FCTWB.

Installation of zonal meters, data loggers, telemetric monitoring system and solar powering systems is ongoing from July to August 2017.

Materials for follow-up activities of pilot projects such as pipe, fittings, valves and etc. were procured.

Refer to the Annex-1: List of Equipment for the Project.

Facilities

There are no inputs during this monitoring period.

Training of the Nigerian Project Personnel

The third training in Japan for six delegation officials from both Federal Capital Development Authority (FCDA) and FCTWB was conducted in the period between 10th and 14th July 2017. Refer to the Annex-2: The Third Training in Japan.

PM Form 3-1 Monitoring Sheet Summary

1-2 Progress of Activities

[Activities for Output-1: Level of NRW of both the service area of FCWTB and water distribution areas monitored regularly.]

No	Activity	Previous Monitoring (as at Dec.2016) *Progress against Phase-1 Work Plan	Current Monitoring (as at Jul.2017) *Progress against Phase-2 Work Plan
1-1	Install bulk meters to water treatment plants 1 and 2	Completed. However, data acquisition seems to be not always available, which may be due to not water-filled flow inside pipelines.	Completed.
1-2	Measure monthly water production of water treatment plants 1, 2, 3, and 4	Progress: 0%, Behind: 9.5 months Ready to measure monthly water production but the Project needs at least 6 months for monitoring this Activity.	Progress: 0%, Behind: 7.0 months Flow data measurement has not always been available, which is due to non-full of water flow inside pipelines and electrical challenges (fuse burning). The Project needs at least 6 months for monitoring this Activity.
1-3	Tally the above water production data monthly	Progress: 0%, Behind: 9.5 months Ready to measure monthly water production but the Project needs at least 6 months for monitoring this Activity.	Progress: 0%, Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.
1-4	Calculate the monthly water consumption based on the billing data	Completed (billing system modification only). Ready to calculate monthly water consumption, but the Project needs at least 6 months for monitoring this Activity.	Behind: 7.0 months (Calculation pending) Zonal coding is ongoing for water distribution management. The Project needs at least 6 months for monitoring this Activity. Re-evaluation and update of the modified billing system is necessary. Constant power supply, adequate provision for consumables and SOP are necessary.
1-5	Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4	Progress: 0%, Behind: 4.5 months Ready to calculate monthly NRW ratio, but the Project needs at least 6 months for monitoring this Activity.	Progress: 0%, Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.
1-6	Install zonal meters, water pressure sensor and pilot remote monitoring (telemetry) system	Progress :90%, Behind: 4.5 months Delayed. Construction of chambers for zonal meters was completed Zonal meters, water pressure sensor and pilot remote monitoring (telemetry) system have been procured in Japan.	Progress :95%, Behind: 0.0 months Setting-up of zonal meters has not been done properly due to non-full of water flow inside pipelines (Automatic Gain Adjustment for data correction). Constant power supply and adequate provision for logistics are necessary.
1-7	Measure and collect data for water distribution management such as water flow of zonal meters and water pressure	Progress: 0%, Behind: 4.5 months Delayed as a result of delay in Activity 1-6. The Activity will be implemented after the completion of Activity 1-6.	Progress: 0%, Behind: 0.0 months The Activity will be implemented after the completion of Activity 1-6.

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PM Form 3-1 Monitoring Sheet Summary

[Activities for Output-2: Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.]

No	Activity	Previous Monitoring (as at Dec.2016) *Progress against Phase-1 Work Plan	Current Monitoring (as at Jul.2017) *Progress against Phase-2 Work Plan
2-1	Review existing NRW reduction operations at each pilot Area Office	Completed.	Completed.
2-2	Conduct capacity assessment of organization and the relevant staff	Progress: 50%, Behind: 0.0 months Done for Phase-1.	Progress: 50%, Behind: 2.0 months Assessment will be done after the completion of follow-up activities in Garki I and also NRW monitoring in pilot Area offices.
2-3	Identify and select a Pilot Metering Area (PMA) for each Pilot Area Office based on the selection criteria of PMA	Completed.	Completed.
2-4	Prepare/update distribution network drawings for each PMA	Completed. AGIS security has still hindered data import/export and analysis in spite of FCTA PS's instruction.	Completed. Refer to Activity 3-3.
2-5	Install water flow meters to each PMA and measure in/outflows monthly	Completed, but partially and provisionally. Check/repair a PMA meter in Jabi and complete fully electricity connection for the ultrasonic flow meter in Garki I	Completion (installation only). Meter reading in Gudu is ongoing. Adequate provision for logistics and SOP are necessary for monitoring monthly in/outflows.
2-6	Zone each PMA into Sub Metering Areas (SMA)	Completed.	Completed.
2-7	Isolate a SMA by installing valves	Completed.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Discrepancy between as-built drawings and actual situation on ground exist, and updated as-built drawings are not available. Information management with standardization and quality should be improved.
2-8	Update the distribution network drawings for each SMA	Completed.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Refer to Activity 3-3.
2-9	Measure an initial level of NRW of each SMA	Completed.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area

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PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Dec.2016) *Progress against Phase-1 Work Plan	Current Monitoring (as at Jul.2017) *Progress against Phase-2 Work Plan
			Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Activity in Garki I will be repeated. Administrative complication with respect to Commerce operations (mixture of customer categories, meter types, reading divisions, water tariff, etc.) has suffered the Activity. Streamlining, simplification, uniform management are necessary.
2-10	Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA	Provisionally completed. Re-detection may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Activity in Garki I will be repeated and will be kept in pilot Area offices based on results of Activity 2-5.
2-11	Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department	Provisionally completed. Revision may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Revision will be done in Garki I.
2-12	Review and approve NRW reduction operation plan of each SMA	Provisionally completed. Revision may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Revision will be done in Garki I.
2-13	Implement NRW reduction operations at each SMA	Provisionally completed. Further operations may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Further operations will be done in Garki I.
2-14	Monitor the progress of the NRW reduction operations of each SMA	Provisionally completed. Further monitoring may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Further operations will be done in Garki I.
2-15	Measure level of NRW of each SMA at the end of the respective operations	Provisionally completed. Detailed check and revision may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW

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PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Dec.2016) *Progress against Phase-1 Work Plan	Current Monitoring (as at Jul.2017) *Progress against Phase-2 Work Plan
			reduction. Further operations will be done in Garki I.
2-16	Prepare a report on pilot projects, covering Activity 2-1~2-15	Provisionally completed. Detailed check may be done if necessary.	Progress: 90%, Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Revision will be done after the completion of Activity 2-10 to 2-15.
2-17	Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers & meter readers), incl. audio visual materials	Provisionally completed. Revision may be done if necessary.	Progress: 50%, Behind: 0.0 months (Follow-up) Revision ongoing. Finalization will be done after the completion of Activity 2-10 to 2-16.

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PM Form 3-1 Monitoring Sheet Summary

[Activities for Output-3: A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output-1&2.]

No	Activity	Previous Monitoring (as at Dec.2016)	Current Monitoring (as at Jul.2017)
3-1	Establish a Working Group for NRW reduction planning	Completed, but will be reviewed in Phase-2.	Reviewed and completed.
3-2	Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB	Completed, but will be reviewed in Phase-2.	Reviewed and Completed. Lack of HRD planning of FCTWB's staff. FCTWB should have comprehensive training programme including OJT and internal training.
3-3	Conduct hydraulic and water pressure distribution analyses of the pipeline networks	To be implemented in Phase-2. AGIS security has still hindered data import/export and analysis in spite of FCTA PS's instruction.	Progress: 00%, Behind: 2.0 months To be completed by November 2017. Close communication and feed-back with FCDA should be enhanced. Pipeline and customer information should be entered extensively into GIS for all service areas.
3-4	Develop outlines of the medium-term strategic plan and its annual NRW reduction plan (approval by the Director)	To be implemented in Phase-2.	Progress: 25%, Behind: 0.0 months Draft content was prepared and officers were selected provisionally. Scenarios of NRW reduction strategic plan has been discussed. To be completed by November 2017.
3-5	Develop the first medium-term strategic plan (2018-2022) for approval by FCTA	To be implemented in Phase-2.	Progress: 00%, Behind: 0.0 months To be completed by March 2018.
3-6	Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA	To be implemented in Phase-2.	Progress: 00%, Behind: 0.0 months To be completed by March 2018.
3-7	Develop a planning manual for NRW reduction	To be implemented in Phase-2.	Progress: 00%, Behind: 0.0 months To be completed by March 2018.
3-8	Review existing plans, activities and implementing structure, etc. related to water distribution management	Progress: 75%, Behind: 11.0 months Delayed as a result of delay in information submission from Area Offices. 8 out of 13 Area Offices submitted the required information. There was difficulty in implementation due to dearth of as-built drawings which will have provided sufficient information on pipeline and appurtenances.	Progress: 80%, Behind: 0.0 months Some Area Offices submitted the required information. To be completed by October 2017. Close communication and feed-back among FCTWB's divisions should be enhanced. Pipeline and customer information should be entered extensively into GIS for all service areas.
3-9	Establish framework of water distribution management	Progress: 25%, Behind: 4.5 months Delayed as a result of delay in Activity 1-6 and 1-7.	Progress: 25%, Behind: 0.0 months To be completed by October 2017.

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1-3 Achievement of Output

[Output-1: Level of NRW of the service area of FCTWB is monitored regularly.]

No	Indicator	Previous Monitoring (as at Dec.2016)	Current Monitoring (as at Jul.2017)
1a	Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the first (*replace by "second" in PDM2) year of the Project.	No achievement (delayed). Monthly NRW ratio based results of Activity 1-5 has not been still obtained due to delay in Activity 1-2 to 1-4. In the current schedule, it is expected that monthly NRW ratio will be obtained from the second quarter of the third year.	None and delayed as a result of delay in Activities 1-2 to 1-5.
1b	Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first (*replace by "second" in PDM2) year of the Project.	No achievement (delayed). Same as the above in Indicator 1a.	None and delayed as a result of delay in Activities 1-2 to 1-5.
1c	Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors (*replace by "Management" in PDM2) of FCTWB from the third quarter of the first (*replace by "second" in PDM2) year of the Project.	No achievement (delayed). Quarterly NRW ratio based results of Activity 1-5 has not been still obtained due to delay in Activity 1-2 to 1-4. In the current schedule, it is expected that quarterly NRW ratio will be obtained from Mar. 2017, the second quarter of the third year.	None and delayed as a result of delay in Activities 1-2 to 1-5.
1d	Periodic records of data on water distribution management such as water flow of zonal meters and water pressure are kept by Distribution Department from the first quarter of the third year of the Project.	No achievement (as planned).	None and delayed as a result of delay in Activities 1-6 and 1-7.

Verification of Achievement and Implementing Process

Although the Project found out the failure of main units of bulk flow meters in the beginning of March 2017, FCTWB purchased spare parts from Japan and repaired them with support of JICA Expert Team for data acquisition to achieve Output-1. Also, based on preliminary investigation by FCTWB and JICA Expert Team, FCTWB has communicated with FCDA to discuss solutions to non-full water flow inside pipelines and interference along trunk mains by water flow from new water treatment plant (No.3&4) to water flow from old plant (No.1&2) at the upstream point of bulk flow meters.

To avoid further delay, FCTWB has accomplished tax exemption for import of zonal meters, telemetric system and etc. procured from Japan.

There are no problems in the implementing process during this monitoring period.

PM Form 3-1 Monitoring Sheet Summary

[Output-2: Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.]

No	Indicator	Previous Monitoring (as at Dec.2016)	Current Monitoring (as at Jul.2017)																																																																																																														
2a	Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations.	<p>Most of results did not reach the target level.</p> <p>Provisional NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Before</th> <th>After</th> <th>Red. Point</th> </tr> </thead> <tbody> <tr> <td colspan="4">Gudu</td> </tr> <tr> <td>SMA-1</td> <td>52.0</td> <td>62.9</td> <td>-10.9</td> </tr> <tr> <td>SMA-2</td> <td>53.9</td> <td>49.0</td> <td>4.9</td> </tr> <tr> <td colspan="4">Jabi</td> </tr> <tr> <td>SMA-2</td> <td>47.6</td> <td>48.0</td> <td>-0.4</td> </tr> <tr> <td>SMA-3</td> <td>86.4</td> <td>67.2</td> <td>19.2</td> </tr> <tr> <td colspan="4">Garki I</td> </tr> <tr> <td>SMA-1</td> <td>86.6</td> <td>82.9</td> <td>3.7</td> </tr> <tr> <td>SMA-2</td> <td>79.0</td> <td>85.0</td> <td>-6.0</td> </tr> <tr> <td>SMA-3</td> <td>68.8</td> <td>41.8</td> <td>27.0</td> </tr> </tbody> </table> <p>Detailed re-check of results and follow up activities to achieve the target level are immediately necessary by utilizing lessons and learnt.</p>		Before	After	Red. Point	Gudu				SMA-1	52.0	62.9	-10.9	SMA-2	53.9	49.0	4.9	Jabi				SMA-2	47.6	48.0	-0.4	SMA-3	86.4	67.2	19.2	Garki I				SMA-1	86.6	82.9	3.7	SMA-2	79.0	85.0	-6.0	SMA-3	68.8	41.8	27.0	<p>Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I.</p> <p>NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Bef</th> <th>Aft</th> <th>Red. Point</th> <th>Target After Full (80%)</th> <th></th> </tr> </thead> <tbody> <tr> <td colspan="6">Gudu</td> </tr> <tr> <td>SMA-1</td> <td>52.0</td> <td>14.3</td> <td>37.7</td> <td>26.0(31.2)</td> <td>OK</td> </tr> <tr> <td>SMA-2</td> <td>53.9</td> <td>28.7</td> <td>25.2</td> <td>27.0(32.3)</td> <td>OK</td> </tr> <tr> <td colspan="6">Jabi</td> </tr> <tr> <td>SMA-2</td> <td>45.6</td> <td>21.1</td> <td>24.5</td> <td>22.8(27.4)</td> <td>OK</td> </tr> <tr> <td>SMA-3</td> <td>87.6</td> <td>42.6</td> <td>45.0</td> <td>43.8(52.6)</td> <td>OK</td> </tr> <tr> <td colspan="6">Garki I</td> </tr> <tr> <td>SMA-1</td> <td>85.1</td> <td>62.2</td> <td>22.9</td> <td>42.6(51.1)</td> <td>No</td> </tr> <tr> <td>SMA-2</td> <td>74.8</td> <td>78.2</td> <td>-3.4</td> <td>37.4(44.9)</td> <td>No</td> </tr> <tr> <td>SMA-3</td> <td>70.0</td> <td>53.7</td> <td>16.3</td> <td>35.0(42.0)</td> <td>No</td> </tr> </tbody> </table>		Bef	Aft	Red. Point	Target After Full (80%)		Gudu						SMA-1	52.0	14.3	37.7	26.0(31.2)	OK	SMA-2	53.9	28.7	25.2	27.0(32.3)	OK	Jabi						SMA-2	45.6	21.1	24.5	22.8(27.4)	OK	SMA-3	87.6	42.6	45.0	43.8(52.6)	OK	Garki I						SMA-1	85.1	62.2	22.9	42.6(51.1)	No	SMA-2	74.8	78.2	-3.4	37.4(44.9)	No	SMA-3	70.0	53.7	16.3	35.0(42.0)	No
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2b	Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project.	<p>Technical manuals were prepared and provisionally approved.</p> <p>Revision may be necessary.</p>	<p>Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.</p>																																																																																																														
<p>Verification of Achievement and Implementing Process</p> <p>Under the circumstances that the Counterpart Fund 2017 has not been available as a result of non-passage of 2017 appropriation, the Project made efforts of implementation of pilot projects as follow-up activities to achieve the target in March and April 2017 with concentrated inputs including supervisors and supporters from the FCTWB Headquarters and other Area Offices.</p> <p>The activities related to pilot projects have been suspended from July 2017, but as soon as installation of zonal meters and solar powering systems is completed, the Project resumes the activities.</p> <p>There are no problems in the implementing process during this monitoring period.</p>																																																																																																																	

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PM Form 3-1 Monitoring Sheet Summary

[Output-3: A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output-1&2.]

No	Indicator	Previous Monitoring (as at Dec.2016)	Current Monitoring (as at Jul.2017)
3a	By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval.	No achievement (as planned).	None (as planned).
3b	By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval.	No achievement (as planned).	None (as planned).
3c	A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project.	No achievement (as planned).	None (as planned).
3d	By November 2016, framework of water distribution management is established.	No achievement (delayed). Framework has not been ready due to delay in Activity 1-6 and 1-7.	None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.

Verification of Achievement and Implementing Process

The activities related to medium-term strategic plan for NRW reduction have been suspended from July 2017, but as soon as installation of zonal meters and solar powering systems is completed, the Project resumes the activities. There are no problems in the implementing process during this monitoring period.

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1-4 Achievement of the Project Purpose**[Project Purpose: Capacity of FCTWB for NRW reduction is strengthened.]**

No	Indicator	Previous Monitoring (as at Dec.2016)	Current Monitoring (as at Jul.2017)
a	The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.	No achievement (as planned).	None (as planned).
b	NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB.	No achievement (as planned).	None (as planned).
c	Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level.	Ongoing. Results of interim capacity assessment in Nov.-Dec. 2016 show that capacity developed has not reached to the criteria. Follow-up capacity development is necessary in Phase-2 of the Project.	Follow-up capacity development have been done in Phase-2 of the Project.
d	NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**). Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year.	No achievement (as planned).	None (as planned). Inflow data has been read in Gudu, but not in Jabi and Garki I.
Verification of Achievement and Implementing Process Budget constraint from the Nigerian side has slowed down the achievement of project purpose, particularly Indicator b. There are no problems in the implementing process during this monitoring period.			

1-5 Changes of Risks and Actions for Mitigation

Following last physical year 2016, recent budget constraint of the Nigerian side including non-release or late-release of the Counterpart Fund has corresponded to an important assumption "A. Natural disaster / political instability / economic crisis that affect the Project activities do not occur." in 2017, too. As an action discussed in the past project monitoring, taking over procurement of small materials for Pilot activities by the Japanese side, subsequent to the request from the Nigerian side, has mitigated this risk.

1-6 Progress of Actions undertaken by JICA

The JICA Expert Team procured small materials for the follow-up Pilot activities.

1-7 Progress of Actions undertaken by Nigerian side

FCTWB cooperated with the JICA Expert Team for smooth procurement of small materials for the follow-up Pilot activities. FCTWB has requested FCTA for the immediate release of the Counterpart Fund.

1-8 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) Personnel Reassignment of the FCTWB's Project Members

In June 2017, the Director of FCTWB, Technical Managers (Heads of Distribution and Commerce) and other Project members including Pilot Area Managers were relocated. FCTWB needs to assure transfer of information, knowledge and lessons learned in the Project activities to his/her successor and other members.

(2) Delay in Release of Counterpart Fund 2017

Though national budget for 2017 was approved in June 2017, but FCT budget for 2017 is still in the process of the approval. Accordingly, the Counterpart Fund 2017 has not been released yet. The Nigerian side needs to keep in touch with JICA Expert Team on the status of FCT budget approval and release of the Counterpart Fund.

(3) Legal Instrument (Enabling Law) establishing autonomous FCTWB

Through deliberations of bills by the sub-committee for FCT, the FCTWB Bill was presented at public hearing and then passed to the National Assembly for approval. Hereafter, remaining steps are approvals by the National Assembly and then the President. In anticipation of autonomy in the near future, JICA Expert Team suggests FCTWB set up a preparatory committee or task-force to discuss solutions to various issues and challenges surrounding FCTWB as well as strengthening and improvement in management.

(4) Administrative Complication with respect to Commerce Operations

Mixture of customer categories, meter types, reading divisions and water tariff, etc. have caused inefficiency in commerce operations which leads to financial losses of FCTWB. JICA Expert Team suggests FCTWB to resolve the issues in consideration of streamlining, simplification and uniform management among relevant Units.

(5) Project Vehicle

Investigation of conditions of the project vehicle damaged by the traffic accident in March 2017 and arrangement of an alternate vehicle for implementing project activities are necessary. FCTWB will send staff in charge to the Federal Road Safety Corps in Lokoja for the investigation, and also will bring back then repair the vehicle if possible, or purchase a new vehicle by using

Counterpart Fund if the conditions are critical.

(6) Situation of Actions raised in the past Monitoring

(6)-1: Action for “Involvement of Counterparts”

One FCTWB staff belonging to Gudu Area Office has a high motivation to implement the NRW reduction activities by his effort outside the Pilot Metering Area based on action plan which was prepared by him in the training course in Hokkaido, Japan.

From the beginning, the Project aims to promote such NRW reduction activities outside the Pilot Metering Area by the Nigerian self-effort, this is good example of the Project activities.

Situation: He has identified a candidate project site, materials to be procured for the implementation of the action plan and prepared estimated cost. However, the budget for funding has not been approved.

(6)-2: Action for “Assignment of Counterparts”

Considering sustainability of implementing NRW reduction based on a NRW reduction strategic plan to be prepared through Output 3 activities, it may be necessary for the Nigerian side to enhance project management skill for working level staff such as Head of Unit for example. Such project management skill should be enhanced through the Project activities. In addition, the existing operational structure should be reviewed.

Situation: Remarkably, FCTWB created new unit “NRW Unit” consisting of a Unit Head and two staff in Distribution Department in March 2017, which deals with all NRW aspects. Since this establishment, NRW Unit has been always a center point in project implementation and project management skill is being developed through the Project.

(6)-3: Action for “Involvement of Relevant Organizations”

FCTA has been involved well in the Project as the chairperson of Joint Coordination Committee (JCC) and also has assisted and advised the Project in dealing with issues including the Counterpart Fund and AGIS security.

Situation: Due to non-responsive action by AGIS and then no relaxation in AGIS security, FCTWB decided to establish its own GIS which is separated from AGIS security.

(6)-4: Action for “Communication between Distribution Department and Commerce Department”

The JICA Expert Team reported that Distribution Department and Commerce Department have to implement the cross-cutting activities for NRW reduction. Both Departments understand the importance of collaboration and active communication; however they need to collaborate more to the success of the Project. Also, active participation of Commerce staff (FCTWB Headquarters) particularly in the field activities is a key to success of the Project and improvement in water supply services.

Situation: The newly-created “NRW Unit” is expected to work in conjunction with all

stakeholders.

(6)-5: Action for “Necessity for Strengthening Partnership between FCDA and FCTWB”

It is necessary for FCTWB to obtain the updated as-built drawings and information correctly and timely for proper operation, maintenance and implementing NRW reduction activities efficiently. However, FCWB has not been able to obtain the updated as-built drawings and information in respect of its operation and maintenance activities from FCDA charged with responsibility of providing infrastructure. This is as a result of lack of feedback system between the two sister agencies. So, FCTWB is encouraged to always share its operation and maintenance experiences with FCDA while FCDA is equally advised to carry along FCTWB in its water project implementation.

Situation: The Project has communicated officially/bilaterally with FCDA for setting up further relationship and information sharing. Remarkably, through occasion of participating in the third training in Japan by delegation officials comprised of FCDA and FCTWB, their partnership has been more strengthened through shared awareness and knowledges.

(6)-6: Action for “Lack of the Quality Management”

The monitoring survey mission found quality of information and performance as well as quality of constructed facilities is not properly managed by FCTWB. For example,

- (a) Information such as deliverables from FCTWB has lacked often accuracy, so this has led to decrease in data reliability and duplication of effort.
- (b) There are many honeycombs on the surface of the concrete of constructed chambers for the bulk flowmeter.
- (c) In Garki I Pilot area, FCTWB cannot read PMA flowmeter regularly because of mortar plastering on entire concrete slab covers.
- (d) In Gudu Pilot area, inside of the chamber for PMA flowmeter is in muddy conditions because FCTWB has not placed concrete slab covers.

It is very important to pay attention to quality management in order to enhance the Project outcome with adequate performance, avoid further delay of the Project and keep sustainability through proper operation and maintenance.

Situation: Quality management of FCTWB has been improved through joint supervision of construction of bulk/zonal meter chambers and solar power system installation, etc.

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

2-1 Detail

(1) Delay of the Project (Output-1)

Same as the previous monitoring, the Project has been delayed for six (6) months from the original plan of operation, and also Project needs certain time frame to monitor the water

PM Form 3-1 Monitoring Sheet Summary

production, consumption and NRW ratio. Without the monitoring, the Project cannot make a realistic NRW reduction strategic plan through the activities of Output 3, so that it is indispensable for securing the Project's outcome.

Available monitoring period of Activities 1-2 to 1-5 is insufficient, so the Project needs at least six months for monitoring the Activities 1-2 to 1-5.

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

Through commissioning and/or periodical monitoring of bulk and zonal flow meters (ultrasonic meters), the Project found out that data acquisition is not always available due to non-full of water flow inside pipelines and also electrical challenges at bulk flow meters. Thus, the Project needs to solve this problem technically as soon as possible which leads to non-achievement of Activity 1-2 to 1-7.

(3) Irregular Billing (Output-1)

Billing has not been regularly done due to non-constant power supply and other operational challenges, however the situation has begun to improve. June bills were produced while July bills is in process.

(4) Unsuccessful Results of the Pilot Project (Output-2)

A series of follow-up activities and operations for NRW reduction in PMAs/SMA's were completed in April 2017, however should be repeated and monitored particularly in Garki I, because the targeted reduction in NRW ratio was not achieved. See the following table.

Table Reduction in NRW Ratio (Follow-Up)

PMA/SMA	Before (%)	After (%)	Reduction Point	Target Ratio After (%) Full (80% case)	Acceptance
Gudu					
SMA-1	52.0	14.3	37.7	26.0 (31.2)	OK
SMA-2	53.9	28.7	25.2	27.0 (32.3)	OK
Jabi					
SMA-2	45.6	21.1	24.5	22.8 (27.4)	OK
SMA-3	87.6	42.6	45.0	43.8 (52.6)	OK
Garki I					
SMA-1	85.1	62.2	22.9	42.6 (51.1)	Not
SMA-2	74.8	78.2	+3.4	37.4 (44.9)	Not
SMA-3	70.0	53.7	16.3	35.0 (42.0)	Not

2-2 Cause

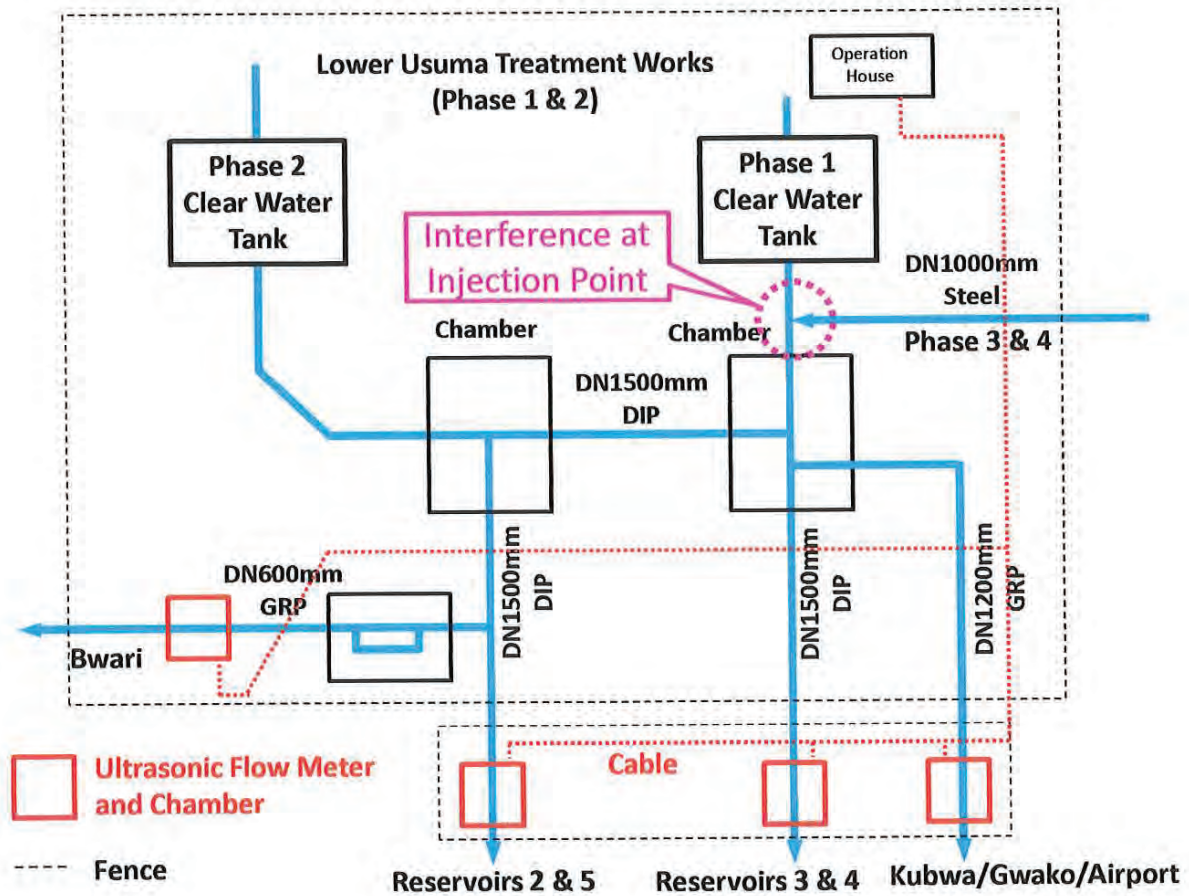
(1) Delay of the Project (Output-1)

In the Phase-1, the chamber construction for bulk flow meters and procurement of necessary materials for pilot activities had delayed and suspended activities due to non-release of the

Counterpart Fund in 2015 and 2016. These were solved by JICA's intervention, particularly taking over chamber construction based on request from the Nigerian side. However, Activities 1-2 to 1-5 are still behind the schedule.

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

One of possible causes seems to be interference along trunk mains by water flow from new water treatment plants (No.3&4) to water flow from old plants (No.1&2) at the upstream point of bulk flow meters. However essentially, the Project identifies main cause as the situation that water supply (production) does not meet water demand in the whole system of FCTWB.



(3) Irregular Billing (Output-1)

The inability of regular billing is attributed to non-constant power supply. Also, non-fully optimized billing application has caused disorder of billing operations.

(4) Unsuccessful Results of the Pilot Project (Output-2)

As a change of conditions, new inlet pipeline into a SMA was discovered at the last minute during the follow-up activities in Garki I, which brought confusion to the implementation and analysis. In consideration of characteristics of Garki I pilot area, the Project assumes that

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missing major consumers in the list and undiscovered inlet/outlet or connections caused unexpected results of the pilot project.

2-3 Action to be taken

(1) Delay of the Project (Output-1)

In the past monitoring, the Nigerian side requested to the Japanese side to extend the project period in order to secure the necessary time frame to monitor the water production, consumption and NRW ratio, then the Japanese side agreed it through approval of the past monitoring sheets by the JICA headquarters. So, the Project period will be extended for six months for monitoring the Activities 1-2 to 1-5.

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

The Project continues to monitor water flow.

As proposed by the Nigerian side, the Project identifies how to estimate water supply (production) based on available and reliable data which the Project can obtain with support of JICA Expert Team. And, FCTWB solves electrical challenges of bulk meters immediately after detecting the cause.

(3) Irregular Billing (Output-1)

Improvement in power supply conditions for resumption of regular billing has been addressed in FCTWB since June 2017.

The updated billing system and its operation are re-evaluated holistically and FCTWB reviews and prepares SOP for billing operations with support of JICA Expert Team.

(4) Unsuccessful Results of the Pilot Project (Output-2)

As further follow-up activities, the Project repeats NRW reduction operations with focusing on major consumers in Garki I pilot area. Even if the operations lead to unsuccessful results again, FCTWB identifies factors responsible and analyzes cost-benefit.

2-4 Roles of Responsible Persons/Organization

[Nigerian Side]

(1) Delay of the Project (Output-1)

The Nigerian side signed the amendment of Record of Discussion (R/D) to extend the Project period in the end of December 2016, so will proceed to revision of PDM (PDM₃ to PDM₄) for this extension.

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

FCTWB gathers all necessary data for the estimation of water supply (production) and distribution with the support of JICA Expert Team (effective measured data, proportional ratio among trunk and/or distribution mains, operation hours and any other useful data).

(3) Irregular Billing (Output-1)

FCTWB keeps constant power supply improving for continuous billing operations with necessary provisions.

Also, FCTWB coordinates the system integrator and relevant Units such as MIS, billing and AMR to re-evaluate the numerous challenges of billing system operations and then solves them by reviewing and preparing SOP.

(4) Unsuccessful Results of the Pilot Project (Output-2)

FCTWB repeats Activity 2-10 to 2-15 to reduce NRW to a certain degree as further follow-up activities with concentrated inputs including manpower, immediately after the completion of ongoing Activity 1-6.

[Japanese Side]

(1) Delay of the Project (Output-1)

The Japanese side signed the amendment of Record of Discussion (R/D) to extend the Project period in the end of December 2016, so will proceed to revision of PDM (PDM₃ to PDM₄) for this extension.

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

JICA Expert Team supports FCTWB to identify how to estimate water supply (production) based on available and reliable data which the Project can obtain.

(3) Irregular Billing (Output-1)

JICA Expert Team supports FCTWB on re-evaluation of the system operations, also review and preparation of SOP.

(4) Unsuccessful Results of the Pilot Project (Output-2)

JICA Expert Team supports FCTWB to repeat NRW reduction operations with focusing on major consumers in Garki I pilot area, identify factors responsible and analyze cost-benefit.

3 Modification of the Project Implementation Plan

3-1 Plan of Operation

In accordance with extension of project period for six months through revision of PDM (PDM₃ to

PDM₄), the Project will extend all relevant activities and allocate necessary inputs for the extended period in Plan of Operation (PO₃ to PO₄).

3-2 Other modifications on detailed implementation plan

None.

4 Preparation by Nigerian side toward after completion of the Project

To be considered.

II. Project Monitoring Sheet I & II (as attached)

Annex

Annex-1: List of Equipment for the Project

Annex-2: The Third Training in Japan

Annex-3: Participants in Preparation of Project Monitoring Sheets and Photos

Project Monitoring Sheet I

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project
Project Period: October 2014 to March 2018
Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)
Direct Beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices
Pilot Area Offices: Jabi, Garki I and Gudu

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
<p><Overall Goal> Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB</p>	<p>a. Annual NRW ratio is reduced to X% (*) at the end of the year 2021 Note (*): Target value (X%), which is expected to be determined in the medium-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA</p>	<p>a. Date of approval of the plan b. Result of monitoring by NRW Management Team c. Results of joint assessment based on the criteria set by the Project d. Record of NRW ratio kept by Distribution Department</p>	<p>A. Policy support for NRW reduction is not discontinued B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur C. Activities to implement the medium-term strategic plan are not discontinued or delayed</p>	<p>Indicator a: None Indicator b: None Indicator c: Follow-up capacity development have been done in Phase-2 of the Project Indicator d: None. Inflow data has been read in Gudu, but not in Jabi and Garki I.</p>	None.
<p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p>	<p>a. The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project. b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB. c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level. d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**).</p> <p>Note (**): Target for each PMA is expected to be determined by the end of the first quarter of the second year.</p>	<p>1a. Monthly record of NRW ratio 1b. Material for meetings submitted by the Distribution Department 1c. Periodic records of data on water distribution management</p>	<p>A. Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p>	<p>Indicator 1a&1b&1c: None and delayed as a result of delay in Activities 1-2 to 1-5. Indicator 1d: None and delayed as a result of delay in Activities 1-6 and 1-7.</p>	
<p><Outputs> Level of NRW of both the service area of FOWTB and water distribution areas is monitored regularly</p>	<p>1a. Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the second year of the Project. 1b. Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the second year of the Project. 1c. Quarterly NRW ratio of the service area of FCTWB is reported to Management of FCTWB from the third quarter of the second year of the Project. 1d. Periodic records of data on water distribution management such as water flow of zonal meters and water pressure are kept by Distribution Department from the first quarter of the third year of the Project.</p>	<p>2a. Record of NRW ratio kept by the Distribution Department 2b. Date of approval of the manuals</p>	<p>Indicator 2a: Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I. Indicator 2b: Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.</p>	<p>Indicator 2a: Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I. Indicator 2b: Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.</p>	
<p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices (**)</p>	<p>2a. Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations. 2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project.</p>	<p>3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan 3c. Date of approval of the manual 3d. Implementing structure and workflow of water distribution management</p>	<p>Indicator 3a: None Indicator 3b: None Indicator 3c: None Indicator 3d: None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.</p>	<p>Indicator 3a: None Indicator 3b: None Indicator 3c: None Indicator 3d: None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.</p>	
<p>3. A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (**)</p>	<p>3a. By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval. 3b. By October 2017, an annual NRW reduction plan (2018) is incorporated in FCTWB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project. 3d. By November 2016, framework of water distribution management is established.</p>	<p>3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan 3c. Date of approval of the manual 3d. Implementing structure and workflow of water distribution management</p>	<p>Indicator 3a: None Indicator 3b: None Indicator 3c: None Indicator 3d: None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.</p>	<p>Indicator 3a: None Indicator 3b: None Indicator 3c: None Indicator 3d: None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.</p>	

Note (**): NRW components targeted by Output 2 are (i) invisible leakage; (ii) customer meter malfunction; and (iii) illegal connection
 Note (**): A medium-term strategic plan is a five-year plan, which may include medium-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (***) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).

Activities	Inputs	The Japanese Side	Important Assumption
<p>1-1. Install bulk meters to water treatment plants 1 and 2</p> <p>1-2. Measure monthly water production of water treatment plants 1, 2, 3 and 4</p> <p>1-3. Tally the above water production data monthly</p> <p>1-4. Calculate the monthly water consumption based on the billing data</p> <p>1-5. Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> <p>1-6. Install zonal meters, water pressure sensor and pilot remote monitoring (telemetry) system</p> <p>1-7. Measure and collect data for water distribution management such as water flow of zonal meters and water pressure</p> <p>2-1. Review existing NRW reduction operations at each pilot Area Office</p> <p>2-2. Conduct capacity assessment of the relevant staff of each pilot Area Office</p> <p>2-3. Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*)</p> <p>2-4. Prepare/update distribution network drawings for each PMA</p> <p>2-5. Install water flow meters to each PMA and measure in/outflows monthly</p> <p>2-6. Zone each PMA into Sub Metering Areas (SMA)</p> <p>2-7. Isolate a SMA by installing valves</p> <p>2-8. Update the distribution network drawings for each SMA</p> <p>2-9. Measure an initial level of NRW of each SMA</p> <p>2-10. Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA</p> <p>2-11. Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department</p> <p>2-12. Review and approve NRW reduction operation plan of each SMA</p> <p>2-13. Implement the NRW reduction operations at each SMA</p> <p>2-14. Monitor the progress of the NRW reduction operations of each SMA</p> <p>2-15. Measure level of NRW of each SMA at the end of the respective operations</p> <p>2-16. Prepare a report on pilot projects, covering Activity 2-1~2-15</p> <p>2-17. Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p>	<p>The Nigerian Side</p> <p>Project Personnel</p> <ol style="list-style-type: none"> 1. Project Director: Director of Economic Planning, Research and Statistic Department, FCTA 2. Project Manager: Director of FCTWB 3. Deputy Project Manager: HoD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team): HoD for Distribution and HoD for Commerce /FCTWB 5. Members of NRW Management Team (FCTWB): <ul style="list-style-type: none"> - Head of Special Project Unit of Distribution Department (as Coordinator) - Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department 6. Heads of other relevant Departments and Unit of FCTWB: HoD for Finance, HoD for Production, HoU for Planning Research and Statistics (PRS) 7. Members of NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution), and meter readers (Commerce) of each pilot Area Office 8. Other personnel mutually agreed upon as necessary <p>Land, Building and Facilities</p> <ol style="list-style-type: none"> 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each pilot Area Office, including internet connection and air conditioners 3. Chambers for flow meters and valves for the selected PMAs/SMAs. 4. Electric wiring to bulk/zonal meters, loggers and pressure sensors. 5. Other facilities mutually agreed upon as necessary <p>Local Costs</p> <ol style="list-style-type: none"> 1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PMAs 2. Administration and operational costs, including cost for local travel for the Project Personnel, demurrage at local customs point, licensing cost of radio application and cost for communication of telemetric device for selected zonal meter(s) and water pressure sensor(s) 3. Other costs mutually agreed upon as necessary 	<p>The Japanese Side</p> <p>Japanese Experts</p> <ol style="list-style-type: none"> 1. Chief Advisor / NRW Reduction Planning / Water Distribution Management 1 2. Deputy Chief Advisor / NRW Reduction Planning 3. NRW Reduction Operations Management 4. Leakage Detection Technology 5. Commercial Loss 6. Hydraulic Analysis / GIS 7. Procurement Management / Coordinator 8. Facility Design / Construction Supervision 9. Equipment Design / Installation 10. Water Distribution Management 2 11. Remote Monitoring 12. Other experts mutually agreed upon as necessary <p>Equipment</p> <ol style="list-style-type: none"> 1. Bulk meters and loggers for water treatment plants 2. Water flow meters, valves, and customer meters for SMA 3. Leakage detection equipment for PMA 4. Pipe repair equipment for PMA 5. Vehicles (Pick-ups) 6. Generator for project office 7. Zonal meters, loggers and water pressure sensors 8. Telemetric monitoring system with standby power generating facility for selected zonal meter(s) and/or water pressure sensor(s). 9. Other equipment mutually agreed upon as necessary <p>Facilities</p> <ol style="list-style-type: none"> 1. Modification of existing billing system 2. Chambers for bulk meters for water treatment plants, zonal meters and water pressure sensors <p>Training of the Nigerian Project Personnel</p> <ol style="list-style-type: none"> 1. Four persons mutually agreed upon will be trained in Japan annually 2. GIS training in Nigeria 	<p>A. Natural disaster / political / instability / economic crisis that affect the Project activities do not occur.</p> <p>Pre-Conditions</p> <ol style="list-style-type: none"> A. Furnished offices for Japanese Experts are secured at the Headquarters and each Pilot Area Office of FCTWB. B. Project Personnel is assigned with the finalized list.
<p>3-1. Establish a Working Group for NRW planning (*)</p> <p>3-2. Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB</p> <p>3-3. Conduct hydraulic and water pressure distribution analyses of the pipeline networks</p> <p>3-4. Develop outlines of the medium-term strategic plan and its annual NRW reduction plan</p> <p>3-5. Develop the first medium-term strategic plan (2016-2022) for approval by FCTA</p> <p>3-6. Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA</p> <p>3-7. Develop a planning manual for NRW reduction</p> <p>3-8. Review existing plans, activities and implementing structure, etc. related to water distribution management</p> <p>3-9. Establish framework of water distribution management</p>	<p>Issues & Countermeasures</p> <p>(1) Delay of the Project (Output-1) Issue: Available monitoring period of Activities 1-2 to 1-5 is insufficient, so the Project needs at least six months for monitoring the Activities 1-2 to 1-5. Countermeasures: The Project period will be extended for six months for monitoring the Activities 1-2 to 1-5. Record of Discussion was amended for this extension in Dec. 2016, but PDM has not been revised.</p> <p>(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1) Issue: The Project found out that data acquisition is not always available due to non-full of water flow inside pipelines of bulk meters as well as possibly zonal meters, and also bulk meters has suffered from electrical challenges. Countermeasures: The Project continues to monitor water flow. The Project identifies how to estimate water supply (production) based on available and reliable data which the Project can obtain with support of JICA Expert Team. And, FCTWB solves electrical challenges of bulk meters immediately after detecting the cause.</p> <p>(3) Irregular Billing (Output-1) Issue: Billing has not been regularly done due to non-constant power supply and other operational challenges, however the situation has begun to improve. Countermeasures: The Nigerian side keeps addressing improvement in power supply, and re-evaluates updated billing system operations holistically, then reviews and prepares SOP with support of JICA Expert Team.</p> <p>(4) Unsuccessful Results of the Pilot Project (Output-2) Issue: Follow-up activities for NRW reduction in PMAs/SMAs were conducted, however the decrease in NRW ratio in Garki I is not encouraging. Countermeasures: The Project needs to repeat NRW reduction in Garki I pilot Area Office to achieve the target.</p>	<p>Notes</p> <p>(*) Safety for night works is secured in measuring minimum night flow. (i) Distribution network is separated and it is easy to isolate it in measuring NRW ratio, and (ii) NRW ratio is supposedly high.</p> <p>(*) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., Head of PRRS Unit, and members of NRW Management Team.</p>	<p>(*) Safety for night works is secured in measuring minimum night flow. (i) Distribution network is separated and it is easy to isolate it in measuring NRW ratio, and (ii) NRW ratio is supposedly high.</p> <p>(*) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., Head of PRRS Unit, and members of NRW Management Team.</p>

Project Monitoring Sheet II (Plan of Operations)
 Plan of Schedule and Actual Work Period

Project Title: The Peace Capital Territory Reduction of Non-Revenue Water Project

Task ID	Task Name	Task Description	Task Type	Priority	Status	Start Date	End Date	Milestone												Remarks							
								Milestone																			
								M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12								
1	Task 1.1	Task 1.1 Description	Work Package	High	Completed	2017-07-01	2017-07-31																				
2	Task 2.1	Task 2.1 Description	Work Package	Medium	In Progress	2017-08-01	2017-08-31																				
3	Task 3.1	Task 3.1 Description	Work Package	Low	Planned	2017-09-01	2017-09-30																				
Milestones																											
Summary																											

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Project Monitoring Sheet II (Plan of Operations) Plan of Schedule and Actual Work Period

PM Four 2-1 Project Monitoring Sheet II
PO3
Version: 3
Issue: 28 Sep 2018
Issuing: 21 July 2020

Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project

Activities	2020												2021												Remarks	Achievement	Comments
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
000001 Overall Project Management 1.1 Conduct a project kick-off meeting 1.2 Determine the project objectives and scope 1.3 Develop a project plan and timeline 1.4 Establish the project governance structure 1.5 Identify the project risks and mitigation strategies 1.6 Develop a communication and reporting framework 1.7 Establish a project steering committee 1.8 Prepare the project budget and financial plan 1.9 Obtain project approval from the relevant authorities 1.10 Assign project team and allocate resources 1.11 Develop a project risk management plan 1.12 Conduct a project baseline assessment 000002 Technical Studies 2.1 Conduct a detailed hydraulic and hydrological study 2.2 Perform a water audit to identify areas of non-revenue water 2.3 Conduct a water quality assessment 2.4 Develop a water loss reduction strategy 2.5 Prepare a detailed technical design for water loss reduction 2.6 Obtain approval for the technical design from the relevant authorities 2.7 Develop a procurement plan for the technical design 2.8 Prepare a project schedule and resource plan 2.9 Obtain approval for the project schedule and resource plan from the relevant authorities 2.10 Conduct a project monitoring and evaluation plan 2.11 Develop a project communication and reporting framework 2.12 Conduct a project risk management plan 2.13 Prepare a project budget and financial plan 2.14 Obtain project approval from the relevant authorities 2.15 Assign project team and allocate resources 2.16 Develop a project risk management plan 2.17 Conduct a project baseline assessment 000003 Construction and Commissioning 3.1 Obtain approval for the project schedule and resource plan from the relevant authorities 3.2 Develop a procurement plan for the technical design 3.3 Prepare a project schedule and resource plan 3.4 Obtain approval for the project schedule and resource plan from the relevant authorities 3.5 Conduct a project monitoring and evaluation plan 3.6 Develop a project communication and reporting framework 3.7 Conduct a project risk management plan 3.8 Prepare a project budget and financial plan 3.9 Obtain project approval from the relevant authorities 3.10 Assign project team and allocate resources 3.11 Develop a project risk management plan 3.12 Conduct a project baseline assessment																											

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2020

Project Monitoring Sheet II (Plan of Operations)
Plan of Schedule and Actual Work Period

Project Title: The Freetown Jubilee Redevelopment (New Revenue Water Project)

Activity ID	Activity Name	Start	End	Plan of Schedule												Actual	Status	Remarks
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
1.1	Procurement of water treatment equipment	2023-01-01	2023-03-31													Completed		
1.2	Construction of water treatment plant	2023-01-01	2023-12-31															
1.3	Installation of water distribution network	2023-01-01	2023-12-31															
1.4	Construction of water reservoir	2023-01-01	2023-12-31															
1.5	Testing and commissioning of water supply system	2023-01-01	2023-12-31															

Month	Year	Activity	Status	Remarks
Jan	2023	1.1	Completed	Equipment delivered and installed.
Feb	2023	1.2	In Progress	Excavation and foundation work.
Mar	2023	1.2	In Progress	Structural framework of treatment plant.
Apr	2023	1.2	In Progress	Installation of equipment in treatment plant.
May	2023	1.2	In Progress	Continued construction of treatment plant.
Jun	2023	1.2	In Progress	Completion of treatment plant construction.
Jul	2023	1.3	In Progress	Laying of distribution network pipes.
Aug	2023	1.3	In Progress	Continued laying of distribution network pipes.
Sep	2023	1.3	In Progress	Completion of distribution network laying.
Oct	2023	1.3	In Progress	Installation of valves and fittings.
Nov	2023	1.3	In Progress	Testing of distribution network.
Dec	2023	1.3	In Progress	Final inspection and commissioning.

PO 03
March 2023
Monitoring from July 2023

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List of Equipment for the Project

No.	Equipment	Specification		Procurement in		Quantity	Hand-over	Remarks
		Japan	Nigeria	Plan	Actual			
For Activity 1-2								
1	Ultrasonic flow meter (stationary, 220m)	✓		2	2	2	Done	including installation, commissioning and training
2	Ultrasonic flow meter (stationary, 300m)	✓		2	2	2	Done	including installation, commissioning and training
3	Data logger (stationary)	✓		1	1	1	Done	for the above No. 1&2 ultrasonic flow meters
For Activity 1-5								
1	Ultrasonic flow meter (stationary)	✓		6	6	6	Done	including installation, commissioning and training
2	Ultrasonic flow meter (stationary)	✓		3	3	3	Done	including installation, commissioning and training
3	Ultrasonic flow meter (stationary)	✓		2	2	2	Done	including installation, commissioning and training
4	Ultrasonic flow meter (stationary)	✓		2	2	2	Done	including installation, commissioning and training
5	Ultrasonic flow meter (stationary)	✓		1	1	1	Done	including installation, commissioning and training
6	Data logger (stationary)	✓		13	13	13	Done	for the above No. 1-5 ultrasonic flow meters
7	Data logger (portable)	✓		2	2	2	Done	
8	Remote Monitoring System	✓		2	2	2	Done	Plot system
9	Solar System		✓	8	-	-	Done	for the above ultrasonic flow meter
10	Solar System		✓	2	-	-	Done	for the above ultrasonic flow meter
11	Solar System		✓	2	-	-	Done	for the above ultrasonic flow meter and telemetry system
12	Solar System		✓	1	-	-	Done	for the above ultrasonic flow meter
For Activity 2-4 and 2-8								
1	GIS software		✓	1	1	1	Done	Software has been adopted by AGIS. V13.1
2	GIS software		✓	1	1	1	Done	Mainly for data input
3	Plotter (A0)		✓	1	1	1	Done	
4	GPS terminal	✓		2	2	2	Done	Garmin
5	Personal computer		✓	2	2	2	Done	
6	Anti-virus software		✓	2	2	2	Done	for the above PCs (No.5)
7	UPS		✓	2	2	2	Done	
For Activity 2-5								
1	Ultrasonic flow meter (stationary)	✓		1	1	1	Done	
2	Data logger (portable)	✓		1	1	1	Done	for the above No.1 ultrasonic flow meter
3	Fbw meter			0	0	0	-	
4	Fbw meter			0	0	0	-	
5	Fbw meter			0	0	0	-	
6	Fbw meter		✓	0	1	1	Done	
7	Fbw meter		✓	1	2	2	Done	
8	Fbw meter			0	0	0	-	
9	Fbw meter		✓	3	3	3	Done	
For Activity 2-7								
1	Slice valve			2	0	0	-	
2	Slice valve			0	0	0	-	
3	Slice valve		✓	9	1	1	Done	
4	Slice valve		✓	12	7	7	Done	
5	Slice valve		✓	6	8	8	Done	
6	Slice valve			2	0	0	-	
7	Slice valve		✓	10	6	6	Done	

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List of Equipment for the Project

No.	Equipment	Specification	Procurement in		Quantity		Hand-over	Remarks
			Japan	Nigeria	Plan	Actual		
For Activity 2-10								
1	Ultrasonic flow meter (portable)	Ultrasonic pulse transmit time difference method, sensors (small x3, medium x6, large x3)	✓		6	6	Done	
2	Data logger (portable)	2ch (flow and pressure), 1s-24h record cycle, 4-20mA, 5 years battery life	✓		6	6	Done	
3	Leak noise correlator	Main unit, preamplifier and piezoelectric sensor	✓		2	2	Done	
4	Water leak detector	Acoustic type, piezoelectric sensor	✓		6	6	Done	
5	Non-metal pipe locator	Electromagnetic induction type for plastic pipe (PVC, PE)	✓		3	3	Done	
6	Metal locator	Optical and acoustical output signal, 50cm depth	✓		3	3	Done	
7	Time integral water leak detector	Automatic leak noise determination method	✓		3	3	Done	
8	Acoustic rod	1.5m length	✓		9	9	Done	
9	Distance meter	Max. 10cm, 10cm scale	✓		3	3	Done	
10	Hammer drill	Dia. 38mm, 270rpm, 3,000 stroke/min	✓		3	3	Done	
11	Boring bar	Dia. 16mm, 1.0m length	✓		3	3	Done	
12	Drill bit	Dia. 19x800mm	✓		9	9	Done	
13	Portable residual chlorine analyzer	DPD, absorbimetry, 0.02-2.00mg/L	✓		3	3	Done	
14	Metal pipe and cable locator	5m depth	✓		3	3	Done	
15	Reference meter	Portable built-in case type, 13-25mm	✓		3	3	Done	
16	Leakage quantity measurement device	13-25mm	✓		3	3	Done	
17	Personal computer	500HD, 2GB Ram, Windows 7or8, Microsoft Office installed, Mouse	✓		3	3	Done	for the above PCs (No.17)
18	Anti-virus software		✓		3	3	Done	
19	UPS	1.2kVA	✓		3	3	Done	
20	Inkjet printer	A4, Color, All-in-one	✓		3	3	Done	
21	Digital camera	Compact type, Optical zoom, 10 mega-pixel (min), LCD	✓		3	3	Done	
For Activity 2-13								
1	Generator	200V, 5.5kVA	✓		3	3	Done	
2	Asphalt cutter	3600RPM, 13kW	✓		3	3	Done	
3	Concrete breaker		✓		3	3	Done	
4	Small-sized dewatering pump	2"	✓		3	3	Done	
5	Small-sized tamper		✓		3	3	Done	
6	Electric drum	50m	✓		3	3	Done	
7	Customer meter	Dia. 2/3" with fittings, conventional type			388	0	-	
8	Customer meter	Dia. 1" with fittings, conventional type	✓		259	600	Done	
9	Customer meter	Dia. 50mm with fittings, conventional type			89	0	-	
10	Customer meter	Dia. 80mm with fittings, conventional type			23	0	-	
11	Customer meter	Dia. 100mm with fittings, conventional type			7	0	-	
12	Compact Reciprocating Saw	Pipe cutting	✓		3	3	Done	
For Output 2								
1	Pickup truck for pilot sites		✓		2	2	Done	
For Operation of the Project								
1	Laser printer	A4, B/W	✓		1	1	Done	
2	Inkjet printer	A3, Color	✓		1	1	Done	
3	Multifunction copier	A3, B/W	✓		1	1	Done	
4	Graphic/movie editing software	Windows Movie Maker, Microsoft Powerpoint	✓		1	1	Done	Free or preinstalled softwares to be utilized.
5	Projector	3,000 Lummen, HDMI, VGA, USB port	✓		1	1	Done	

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The Third Training in Japan

Course Name: The Federal Capital Territory Reduction of Non-Revenue Water Project, NRW Reduction (Strategy)

Purpose:

The participants visit "Yokohama City", as a model case or benchmark, the second largest city in Japan,

- To understand institutions and organization structure of integrated water supply services, and planning, designing and O&M and coordination and feedback among them.
- To understand bases, knowledge and methodology of water supply services/O&M including non-revenue water reduction.

The participants compare them with those of FCT and utilize them in contribution for further improvement and implementation in development and O&M of water supply services of FCT.

Programme:

- Water Supply O&M System
- Water Supply Control and Management
- History of Waterworks Technology
- Water Distribution Management
- Outline of Water Supply Installation (Service Connection)
- NRW Contents / Water Pressure Control
- Water Treatment Plant
- Water Leakage Detection
- Pipeline Information Management
- Water Meter Maintenance
- Construction Management and As-built Drawing Making
- Self-support Accounting System and PPP
- Management (Business) Plan
- Water Demand Forecasting (Facility Development Planning)
- Replacement of Aged Pipes

Period: 9th to 15th July 2017

Receiving Water Utility: Yokohama City Waterworks Bureau

Participants: 6 delegation officials (FCDA: 4, FCTWB: 2)

Name	Organ.	Position in FCTWB
Engr. AHMAD Shehu Hadi	FCDA	Director, Department of Engineering Services
Engr. EZECHA Ferdinand Obiora	FCDA	Deputy Director, Water & Sewage, Department of Engineering Services
Engr. OSAYANDE Joseph Uyi	FCDA	Deputy Director, Department of Engineering Design and Evaluation
Engr. OLUWADAMISI Emmanuel Abiodun	FCDA	Deputy Director. Engineering PPP, Department of Mass Housing / PPP
Engr. ALIYU Abubakar Usman	FCTWB	Head of Department, Department of Production,
Engr. LAWAL Rasaki Abolade	FCTWB	Assistant Director, Distribution Department

Annex 3: Participants in Preparation of Monitoring Sheets and Photos

Participants in Preparation of Draft Monitoring Sheets

Day 1: 31st July 2017 for Draft Project Monitoring Sheet II

S/N	NAME	POSITION
1	Lawal Abolade R.	Head [Special Projects] (Coordinator)
2	Rabiu M.Kabir	Head [NRW]
3	Dikko Musa	Head[PL/WC]
4	Muazo Aliyu S.B	Ag Head[Comm.]
5	Mohammed E Gana	AAM[Dist.] Garki1
6	Choji Pam	Ag. Area Manager Garki1
7	Aluko Tope	Head[E&M]
8	Amos Bulus	PEE[M&E]
9	Mumini Raifu	Ag. Area Manager Gwarinpa
10	Sulaiman A Muhammad	AgArea Manager Jabi
11	Abubakar Danladi	Distribution Dept.
12	Abbas A. Ahmed	Head[Public Relation]
13	Ibrahim Umar	Ag Area Manager Gudu
14	Muhammed Dauda	Pipeline Unit
15	Kenneth Madu	Snr. Craftman
16	Titus Dawan	Garki1[Commerce]
17	Ezeh Hillary	Surveyor/ GIS
18	Rose Akpan	Head[Billing]
19	Abdulahman shehu Sani	Head[prepaid Meter]
20	Shehu Suleiman	Head[GIS]
21	Salihu Sadiq	AAM [Dist.] Jabi
22	Abdul Yusuf	Superintendent[P&P Estate]
23	Abdul Ozumi	AAM[Dist.] Gudu
24	Akinori Miyoshi	CA, JICA Expert Team

Day 2: 1st August 2017 for Draft Project Monitoring Sheet I

S/N	NAME	POSITION
1	Nahuche A.A	Ag Director (Project Manager)
2	Lawal Abolade R.	Head [Special Projects] (Coordinator)
3	Rabiu M.Kabir	Head [NRW]
4	Dikko Musa	Head [PL&Wc]
5	Pheobe Ocheja	Ag Head [Admin&Supply]
6	Muazu Aliyu S. B	Ag Head[Commerce]
7	Abbas Ahmed	Head[Public Relation]
8	Rose Akpan	Head[Billing]
9	Hasfat Ahmed Lawi	Head[Finance and Account]
10	Aliyu Ahmad Usuman	Asst. Director
11	Ezeh Hillary	Surveyor[GIS]
12	Akinori Miyoshi	CA, JICA Expert Team

Annex 3: Participants in Preparation of Monitoring Sheets and Photos

Day 3: 3rd August 2017 for Draft Project Monitoring Sheet Summary

S/N	NAME	POSITION
1	Nahucho A.A	Ag Director (Project Manager)
2	Lawal Abolade R.	Head [Special Projects] (Coordinator)
3	Rabiu M.Kabir	Head [NRW]
4	Dikko Musa	Head [PL&Wc]
5	Hasfat Ahmed Lawi	Head[Finance and Account]
6	Aliyu Ahmad Usuman	Asst. Director
7	Muazu Aliyu S. B	Ag Head[Commerce]
8	Pheobe Ocheja	Ag Head [Admin&Supply]
9	Agbontaen O. S.	Head [Reservoirs&Production]
10	Yahaya O. Kuike	Audit
11	Akinori Miyoshi	CA, JICA Expert Team

Day 4: 21st August 2017 for Draft Project Monitoring Sheet Summary

S/N	NAME	POSITION
1	Nahucho A.A	Ag Director (Project Manager)
2	Lawal Abolade R.	Head [Special Projects] (Coordinator)
3	Rabiu M.Kabir	Head [NRW]
4	Dikko Musa	Head [PL&Wc]
5	Hasfat Ahmed Lawi	Head[Finance and Account]
6	Aliyu Ahmad Usuman	Asst. Director
7	Pheobe Ocheja	Ag Head [Admin&Supply]
8	Agbontaen O. S.	Head [Reservoirs&Production]
9	Shehu Suleiman	Head [GIS]
10	Bamidele Olatunji	Head [International Cooperation]
11	Akinori Miyoshi	CA, JICA Expert Team

Monitoring Mission Members from JICA Headquarters (21st to 24th August 2017)

S/N	NAME	POSITION
1	Yoshiki Omura	Senior Advisor in Urban Water Supply
2	Hiroki Ishimaru	Project Officer, Water Resources Group, Global Environment Department

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Annex 3: Participants in Preparation of Monitoring Sheets and Photos

Photos of Preparation of Monitoring Sheet

	<p>Day 1: 31st July 2017</p> <p>Preparation of Draft Project Monitoring Sheet II (Attendance: NRW Management Team members and Action Team Members)</p>
	<p>Day 2: 1st August 2017</p> <p>Preparation of Draft Project Monitoring Sheet I (Attendance: Project Manager, Deputy Project Manager, NRW Management Team members and FCTWB Management)</p>
	<p>Day 3: 3rd August 2017</p> <p>Preparation of Draft Project Monitoring Summary (Attendance: Project Manager, Deputy Project Manager, NRW Management Team members and FCTWB Management)</p>
	<p>Day 4: 21st August 2017</p> <p>Revision of Draft Project Monitoring Sheet I, II and Summary (Attendance: Project Manager, Deputy Project Manager, NRW Management Team members and FCTWB Management)</p>

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Federal Capital Territory Administration
Federal Capital Territory Water Board
Japan International Cooperation Agency



The Federal Capital Territory Reduction of Non-Revenue Water Project 7th Joint Coordinating Committee Meeting

Results of Project Monitoring (Period: January 2017 - July 2017) and Revision of PDM & PO

Engr. M. K. Rabiu, HOU NRW, FCTWB

24th August, 2017

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1. Outline of the Project
2. Overall Goal, Project Purpose and Three Outputs
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9. Remarkable/Considerable Issues
10. Actions raised in the past Monitoring
11. Delay of Work Schedule and/or Problems
12. Necessity of PDM & PO Revision

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1. Outline of the Project

Project Name

The Federal Capital Territory Reduction of Non-Revenue Water Project

Project Period

Phase-1: October 2014 to December 2016

Phase-2: January 2017 to March 2018 (to be extended to September 2018)

Project Areas

Federal Capital Territory (FCT)

Pilot Areas: Gudu, Jabi and Garki I

Nigerian Counterparts

Federal Capital Territory Administration (FCTA)

Federal Capital Territory Water Board (FCTWB)

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2. Overall Goal, Project Purpose and Three Outputs

Overall Goal	Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB.
Project Purpose	Capacity of FCTWB for NRW reduction is strengthened.
Output-1	Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.
Output-2	Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.
Output-3	A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2.

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3. Progress of Inputs

Inputs from Nigeria

Project Personnel

- Project Director, Project Manager, Deputy Project Manager, Technical Managers, NRW Management Team, NRW Action Team.

Land, Building and Facilities

- Office spaces and necessary facilities at FCTWB

Local Cost

- Operation and maintenance of the provided equipment, and also administrative and operational costs for local traveling, demurrage and communication of telemetric device have been provided.

These costs have been paid temporarily by the Japanese side because of delay in release of the Counterpart Fund, which will be refunded.

3. Progress of Inputs

Inputs from Japan

JICA Experts :

- A Chief Advisor and members for nine areas of expertise

Equipment :

- Zonal meters, data loggers, telemetric monitoring system procured from Japan for water distribution management
- Solar powering systems for the above equipment
- Installation of the above equipment and systems (ongoing)
- Materials for follow-up activities of pilot projects such as pipe, fittings, valves

Facilities

- None during this monitoring period

Training

- The third training in Japan for six delegation officials from FCDA and FCTWB in July 2017.

3. Progress of Inputs



Workshop in May 2017



Solar Panels for Zonal Meter



Ultrasonic Flowmeter and Logger for Zonal Meter



Telemetry System (Monitoring PC)



Materials for Pilot Follow-up Activities



3rd Training in Japan (Meter Laboratory)

4. Progress of Activity for Output-1

Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.

No	Activity	Current Monitoring (as at July 2017)
1-1	Install bulk meters to water treatment plants 1 and 2	Completed.
1-2	Measure monthly water production of water treatment plants 1, 2, 3, and 4	Progress: 0% , Behind: 7.0 months Flow data measurement has not always been available, which is due to non-full of water flow inside pipelines and electrical challenges (fuse burning). The Project needs at least 6 months for monitoring this Activity.
1-3	Tally the above water production data monthly	Progress: 0% , Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.
1-4	Calculate the monthly water consumption based on the billing data	Behind: 7.0 months (Calculation pending) Zonal coding is ongoing for water distribution management. The Project needs at least 6 months for monitoring this Activity. Re-evaluation and update of the modified billing system is necessary. Constant power supply, adequate provision for consumables and SOP are necessary.

4. Progress of Activity for Output-1

Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.

No	Activity	Current Monitoring (as at July 2017)
1-5	Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4	Progress: 0% , Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.
1-6	Install zonal meters, water pressure sensor and pilot remote monitoring (telemetry) system	Progress: 95% , Behind: 0.0 months Setting-up of zonal meters has not been done properly due to non-full of water flow inside pipelines (Automatic Gain Adjustment for data correction). Constant power supply and adequate provision for logistics are necessary.
1-7	Measure and collect data for water distribution management such as water flow of zonal meters and water pressure	Progress: 0% , Behind: 0.0 months The Activity will be implemented after the completion of Activity 1-6.

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5. Progress of Activity for Output-2

Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.

No	Activity	Current Monitoring (as at July 2017)
2-1	Review existing NRW reduction operations at each pilot Area Office	Completed.
2-2	Conduct capacity assessment of organization and the relevant staff	Progress: 50% , Behind: 2.0 months To be done after the completion of follow-up activities in Garki I and also NRW monitoring in pilot Area Offices.
2-3	Identify and select a Pilot Metering Area (PMA) for each Pilot Area Office based on the selection criteria of PMA	Completed.
2-4	Prepare/update distribution network drawings for each PMA	Completed.
2-5	Install water flow meters to each PMA and measure in/outflows monthly	Completion (installation only). Meter reading in Gudu is ongoing. Adequate provision for logistics and SOP are necessary for monitoring monthly in/outflows.
2-6	Zone each PMA into Sub Metering Areas (SMA)	Completed.

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4. Progress of Activity for Output-1

Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.

Tank Site Visit

Inspection of Solar Powering System Equipment

Meeting on Function Check of Updated Billing System

Installed Zonal Meter (Ultrasonic Flowmeter)

Installation of Zonal Meter's Main Unit (Ultrasonic Flowmeter)

Installed Data Logger and Telemetry System

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5. Progress of Activity for Output-2

Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.

No	Activity	Current Monitoring (as at July 2017)
2-7	Isolate a SMA by installing valves	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Discrepancy between as-built drawings and actual situation on ground exist, and updated as-built drawings are not available. Information management with standardization and quality should be improved.
2-8	Update the distribution network drawings for each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction.
2-9	Measure an initial level of NRW of each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Activity in Garki I will be repeated. Administrative complication with respect to Commerce operations (mixture of customer categories, meter types, reading divisions, water tariff, etc.) has suffered the Activity. Streamlining, simplification, uniform management are necessary.

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5. Progress of Activity for Output-2

Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.

No	Activity	Current Monitoring (as at July 2017)
2-10	Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Activity in Garki I will be repeated and will be kept in pilot Area offices based on results of Activity 2-5.
2-11	Develop a NRW reduction operation plan of each SMA, including reduction target for review by Head of Distribution Department	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but provisionally completed in Garki I because of unsuccessful NRW reduction. Revision will be done in Garki I.
2-12	Review and approve NRW reduction operation plan of each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Revision will be done in Garki I.
2-13	Implement NRW reduction operations at each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Further operations will be done in Garki I.

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5. Progress of Activity for Output-2

Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.



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5. Progress of Activity for Output-2

Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.

No	Activity	Current Monitoring (as at July 2017)
2-14	Monitor the progress of the NRW reduction operations of each SMA	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Further operations will be done in Garki I.
2-15	Measure level of NRW of each SMA at the end of the respective operations	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Further operations will be done in Garki I.
2-16	Prepare a report on pilot projects, covering Activity 2-1~2-15	Progress: 90% , Behind: 2.0 months (Follow-up) Completed in Gudu and Jabi Area Offices, but not completed in Garki I because of unsuccessful NRW reduction. Revision will be done after the completion of Activity 2-10 to 2-15.
2-17	Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers & meter readers), incl. audio visual materials	Progress: 50% , Behind: 0.0 months (Follow-up) Revision ongoing . Finalization will be done after the completion of Activity 2-10 to 2-16.

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6. Progress of Activity for Output-3

A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2.

No	Activity	Current Monitoring (as at July 2017)
3-1	Establish a Working Group for NRW reduction planning	Reviewed and completed .
3-2	Review existing plans, implementation structure, on-the-job training mechanism, etc. related to NRW reduction at FCTWB	Reviewed and completed . Lack of HRD planning of FCTWB's staff. FCTWB should have comprehensive training programme including OJT and internal training.
3-3	Conduct hydraulic and water pressure distribution analyses of the pipeline networks	Progress: 00% , Behind: 2.0 months To be completed by November 2017. Close communication and feed-back with FCDA should be enhanced. Pipeline and customer information should be entered extensively into GIS for all service areas.
3-4	Develop outlines of the medium-term strategic plan and its annual NRW reduction plan (approval by the Director)	Progress: 25% , Behind: 0.0 months Draft content was prepared and officers were selected provisionally. Scenarios of NRW reduction strategic plan have been discussed. To be completed by November 2017.

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6. Progress of Activity for Output-3

A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2.

No	Activity	Current Monitoring (as at July 2017)
3-5	Develop the first medium-term strategic plan (2018-2022) for approval by FCTA	Progress: 00%. Behind: 0.0 months To be completed by March 2018.
3-6	Develop an annual NRW reduction plan based on the strategic plan as an integral part of an annual recurrent and capital plan of FCTWB for approval by FCTA	Progress: 00%. Behind: 0.0 months To be completed by March 2018.
3-7	Develop a planning manual for NRW reduction	Progress: 00%. Behind: 0.0 months To be completed by March 2018.
3-8	Review existing plans, activities and implementing structure, etc. related to water distribution management	Progress: 80%. Behind: 0.0 months Some Area Offices submitted the required information. To be completed by October 2017. Close communication and feed-back among FCTWB's divisions should be enhanced. Pipeline and customer information should be entered extensively into GIS for all service areas.
3-9	Establish framework of water distribution management	Progress: 25%. Behind: 0.0 months To be completed by October 2017.

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7. Achievement of Three Outputs

No	Indicator	Current Monitoring (as at July 2017)
1d	Periodic records of data on water distribution management such as water flow of zonal meters and water pressure are kept by Distribution Department from the first quarter of the third year of the Project.	None and delayed as a result of delay in Activities 1-6 and 1-7.
Output-2: Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices.		
2a	Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations.	Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Gariki 1.
2b	Technical manuals for Area Office managers and field operators, including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project.	Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.

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7. Achievement of Three Outputs

No	Indicator	Current Monitoring (as at July 2017)
Output-1: Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.		
1a	Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the second (*replace by "second" in PDM2) year of the Project.	None and delayed as a result of delay in Activities 1-2 to 1-5.
1b	Monthly NRW ratio of the service area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the first (*replace by "second" in PDM2) year of the Project.	None and delayed as a result of delay in Activities 1-2 to 1-5.
1c	Quarterly NRW ratio of the service area of FCTWB is reported to the Board of Directors (**replace by "Management" in PDM2) of FCTWB from the third quarter of the first (*replace by "second" in PDM2) year of the Project.	None and delayed as a result of delay in Activities 1-2 to 1-5.

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7. Achievement of Three Outputs

No	Indicator	Current Monitoring (as at July 2017)
Output-3: Level of NRW of both the service area of FCTWB and water distribution areas is monitored regularly.		
3a	By October 2017, draft medium-term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval.	None (as planned).
3b	By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval.	None (as planned).
3c	A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project.	None (as planned).
3d	By November 2016, framework of water distribution management is established.	None and delayed . Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.

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8. Achievement of Project Purpose

Capacity of FCTWB for NRW reduction is strengthened.

No	Indicator	Current Monitoring (as at July 2017)
a	The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project.	None (as planned)
b	NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out according to the plan by FCTWB.	None (as planned)
c	Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level	Follow-up capacity development have been done in Phase-2 of the Project.
d	NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**). Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year.	None (as planned). Inflow data has been read in Gudulu, but not in Jabi and Garki I.

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9. Remarkable/Considerable Issues

- (1) **Personnel Reassignment of the FCTWB's Project Members**
FCTWB needs to assure **transfer of information, knowledge and lessons learned** in the Project activities to his/her successor and other members
- (2) **Delay in Release of Counterpart Fund 2017**
The Counterpart Fund 2017 has not been released yet. The Nigerian side needs to keep in touch with JICA Expert Team on the status of FCT budget approval and release of the Counterpart Fund.
- (3) **Legal Instrument (Enabling Law) establishing autonomous FCTWB**
In anticipation of autonomy in the near future, JICA Expert Team suggests FCTWB set up a **preparatory committee or task-force** to discuss solutions to various issues and challenges surrounding FCTWB as well as strengthening and improvement in management.

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9. Remarkable/Considerable Issues

- (1) **Personnel Reassignment of the FCTWB's Project Members**
- (2) **Delay in Release of Counterpart Fund 2017**
- (3) **Legal Instrument (Enabling Law) establishing autonomous FCTWB**
- (4) **Administrative Complication with respect to Commerce Operations**
Mixture of customer categories, meter types, reading divisions and water tariff, etc. have caused **inefficiency in commerce operations** which leads to **financial losses** of FCTWB. JICA Expert Team suggests FCTWB to resolve the issues in consideration of **streamlining, simplification and uniform management** among relevant Units.
- (5) **Project Vehicle**
Investigation of conditions of the project vehicle damaged by the traffic accident in March 2017 and arrangement of an alternate vehicle for implementing project activities are necessary.

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10. Actions raised in the past Monitoring

- (1) Involvement of Counterparts
- (2) Assignment of Counterparts
- (3) Involvement of Relevant Organizations
- (4) Communication between Distribution Department and Commerce Department
- (5) Necessity for Strengthening Partnership between FCDA and FCTWB
- (6) Lack of the Quality Management

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10. Actions raised in the past Monitoring

- (4) **Communication between Distribution Department and Commerce Department**
Distribution Department and Commerce Department have to implement the **cross-cutting activities** for NRW reduction. The newly-created **"NRW Unit"** is expected to work in conjunction with all stakeholders.
- (5) **Necessity for Strengthening Partnership between FCDA and FCTWB**
The Project has communicated officially/bilaterally with FCDA for setting up **further relationship and information sharing**. Remarkably, through occasion of participating in the third training in Japan by delegation officials comprised of FCDA and FCTWB, their partnership has been more strengthened through shared awareness and knowledges.

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10. Actions raised in the past Monitoring

- (1) **Involvement of Counterparts**
As a good example, a member of the Project has a high **motivation** to implement the NRW reduction activities by his effort. He has identified a candidate project site, materials to be procured for the implementation and prepared estimated cost. However, the budget has not been approved.
- (2) **Assignment of Counterparts**
The Nigerian side needs to enhance **project management skill** for the Project activities. Remarkably, FCTWB created new unit **"NRW Unit"** consisting of a Unit Head and two staff in Distribution Department in March 2017.
- (3) **Involvement of Relevant Organizations**
Due to non-responsive action by AGIS and then no relaxation in AGIS security, FCTWB decided to establish its **own GIS** which is separated from AGIS security.

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10. Actions raised in the past Monitoring

- (6) **Action for "Lack of the Quality Management"**
It is very important to pay attention to **quality management** in order to enhance the Project outcome with **adequate performance**, avoid further delay of the Project and keep **sustainability** through proper operation and maintenance. Quality management of FCTWB has been improved through joint supervision of construction of bulk/zonal meter chambers and solar power system installation, etc. But, the Project continues to emphasize quality management through the project implementation.

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10. Delay of Work Schedule and/or Problems

- (1) Delay of the Project
- (2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)
- (3) Irregular Billing (Output-1)
- (4) Unsuccessful Results of the Pilot Project (Output-2)

11. Delay of Work Schedule and/or Problems

(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1)

The Project found out that **data acquisition is not always available** due to **non-full of water flow** inside pipelines and also **electrical challenges** at bulk flow meters.

Cause

One of possible causes seems to be **interference at the upstream injection point** of the meters by water flow from WTP (No.3&4) to water flow from WTP (No.1&2) along trunk mains. However essentially, the Project identifies main cause as the situation that **water supply does not meet water demand** in the whole system.

Actions

The Project continues to monitor water flow, and identifies **how to estimate** water supply (production) based on **available and reliable data** which the Project can obtain with support of JICA Expert Team. And, FCTWB solves electrical challenges of bulk meters immediately. 31

11. Delay of Work Schedule and/or Problems

(1) Delay of the Project

Available **monitoring period** of Activities 1-2 to 1-5 is **insufficient**, so the Project needs at least six months for monitoring the Activities 1-2 to 1-5.

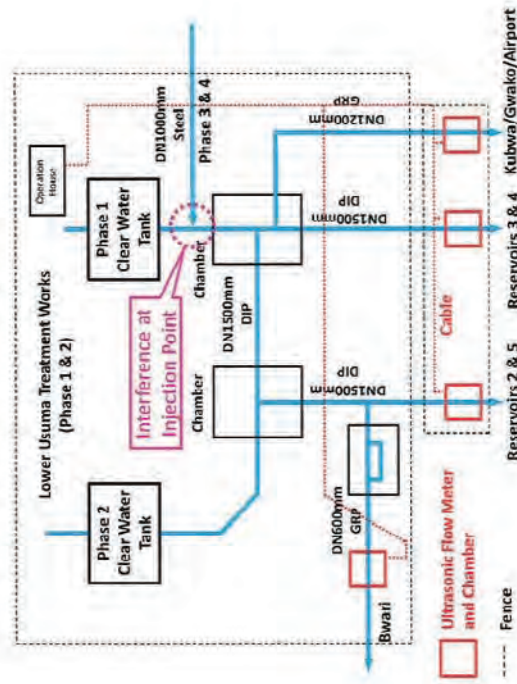
Cause

In the Phase-1, the chamber construction and procurement of materials had delayed and suspended activities due to non-release of the Counterpart Fund 2015&2016. These were solved by JICA's intervention, particularly taking over chamber construction. However, Activities 1-2 to 1-5 are still behind the schedule.

Actions

In the past monitoring, the Nigerian side requested to the Japanese side to extend the project period, then the Japanese side agreed. So, the Project period will be **extended** for six months for monitoring the Activities 1-2 to 1-5.

Bulk Flow Meters at LUD Outlet



11. Delay of Work Schedule and/or Problems

(3) Irregular Billing (Output-1)

Billing has **not been regularly done** due to **non-constant power supply** and other **operational challenges**, however the situation has begun to improve. June bills were produced while July bills is in process.

Cause

The inability of regular billing is attributed to non-constant power supply. Also, **non-fully optimized billing application** has caused disorder of billing operations.

Actions

Improvement in power supply conditions for resumption of regular billing has been addressed in FCTWB since June 2017.

The updated billing system and its operation are **re-evaluated holistically** and FCTWB **reviews and prepares SOP** for billing operations with support of JICA Expert Team.

NRW Ratio (%)

	Before %	After %	Reduction Point	Target After Full (80%)	Status
Gudu					
SMA-1	52.0	14.3	37.7	26.0 (31.2)	OK
SMA-2	53.9	28.7	25.2	27.0 (32.3)	OK
Jabi					
SMA-2	45.6	21.1	24.5	22.8 (27.4)	OK
SMA-3	87.6	42.6	45.0	43.8 (52.6)	OK
Garki I					
SMA-1	85.1	62.2	22.9	42.6 (51.1)	No
SMA-2	74.8	78.2	-3.4	37.4 (44.9)	No
SMA-3	70.0	53.7	16.3	35.0 (42.0)	No

11. Delay of Work Schedule and/or Problems

(4) Unsuccessful Results of the Pilot Project (Output-2)

Follow-up activities and operations for NRW reduction in PMA's/ SMA's were completed in April 2017, however should be repeated and monitored particularly in **Garki I**, because the targeted reduction in NRW ratio was **not achieved**. See the next slide.

Cause

As a change of conditions, **inlet pipeline** into a SMA was discovered newly at the last minute in Garki I, which brought confusion to the implementation and analysis. Considering characteristics of Garki I, the Project assumes that **missing major consumers in the list** and **undiscovered inlet/outlet or connections** caused unexpected results.

Actions

As further follow-up activities, the Project **repeats** NRW reduction operations with focusing on major consumers in Garki I pilot area. If the operations lead to unsuccessful results again, FCTWB identifies **factors responsible** and finalizes **cost-benefit** of pilot project

12. Necessity of PDM&PO Revision

Arising from the result of project monitoring, (see other handout)

- (1) Project period should be **extended** for six months.
- (2) **Overall goal**, its **indicators** should be achievable in accordance with findings in the past Project implementation.
- (3) Also, **indicators of project purpose** also should be achieved.
- (4) **Timeline** in activities and indicators should suit the current situation.
- (5) Due to **difficulty in data measurement** of water flow under Output-1 activities, "**estimation**" based on available/ reliable data should be accepted, and
- (6) Other small modifications



Preparation of Draft Project Monitoring Sheets by Project Team

Thank you very much for your attention.

Revision of PDM (PDM₃ to PDM₄) and PO (PO₃ to PO₄)

Before Revision	After Revision
Project Period	
October 2014 to March 2018	October 2014 to September 2018
Overall Goal	
(a) Narrative Summary	
Level of Non-Revenue Water (NRW) is reduced at the service area of FCTWB	Non-Revenue Water reduction activities are routinely implemented in the service area of FCTWB.
(b) Objectively Verifiable Indicators	
a: Annual NRW ratio is reduced to X%(*) at the end of the year 2021 Note(*): Target value (X%), which is expected to be determined in the medium-term strategic plan for NRW reduction, shall be tentatively filled when the final draft was approved by the Director of FCTWB, which shall be finalized when the plan is approved by FCTA	a: NRW reduction operations are carried out according to the medium-term strategic plan for NRW reduction (2019-2023).
(c) Means of Verification	
a. Record of NRW ratio kept by Distribution Department	a. Report of NRW reduction activities and monitoring by NRW Unit (NRW ratio, records of leakage detection, repair, disconnection of illegal connections, etc.)
Project Purpose	
(b) Objectively Verifiable Indicators	
a. The medium-term strategic plan for NRW reduction (2018-2022) is approved by FCTA by the end of the Project. b. NRW reduction operations of the first quarter of 2018 specified in the annual plan of the above plan are carried out	a. The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project. b. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become

Before Revision	After Revision
<p>according to the plan by FCTWB.</p> <p>c. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level.</p> <p>d. NRW ratio of each PMA in the last quarter of the Project reaches its respective target (**).</p> <p>Note(**): Target for each PMA is expected to be determined by the end of the first quarter of the second year.</p>	<p>equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level.</p> <p>c. NRW ratio of each PMA is monitored.</p>
(c) Means of Verification	
<p>b. Result of monitoring by NRW Management Team</p> <p>c. Results of joint assessment based on the criteria set by the Project</p> <p>d. Record of NRW ratio kept by Distribution Department</p>	<p>b. Results of joint assessment based on the criteria set by the Project.</p> <p>c. Record of NRW ratio kept by NRW Unit.</p>
Output-1	
(a) Narrative Summary	
<p>1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored regularly.</p>	<p>1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored and estimated.</p>
(b) Objectively Verifiable Indicators	
<p>1a. Record of monthly NRW ratio is kept by Distribution Department from the third quarter of the second year of the Project.</p> <p>1b. Monthly NRW ratio of the service</p>	<p>1a. Record of NRW ratio is kept by NRW Unit.</p> <p>1b. NRW ratio of the service area of</p>

Before Revision	After Revision
<p>area of FCTWB is reported to its monthly Joint Management Meeting from the third quarter of the second year of the Project.</p> <p>1c. Quarterly NRW ratio of the service area of FCTWB is reported to Management of FCTWB from the third quarter of the second year of the Project.</p> <p>1d. Periodic records of data on water distribution management such as water flow of zonal meters and water pressure are kept by Distribution Department from the first quarter of the third year of the Project.</p>	<p>FCTWB is reported to its Joint Management Meeting.</p> <p>1c. NRW ratio of the service area of FCTWB is reported to Management of FCTWB.</p> <p>1d. Periodic records of data and estimation on water distribution management such as water flow of zonal meters and water pressure are kept by NRW Unit.</p>
(c) Means of Verification	
<p>1a. Monthly record of NRW ratio.</p> <p>1b&1c. Material for meetings submitted by the Distribution Department.</p>	<p>1a. Record of NRW ratio.</p> <p>1b&1c. Material for meetings submitted by NRW Unit.</p>
Output-2	
(b) Objectively Verifiable Indicators	
<p>2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce by the first quarter of the third year of the Project.</p>	<p>2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce.</p>
(c) Means of Verification	
<p>2a. Record of NRW ratio kept by the Distribution Department.</p>	<p>2a. Record of NRW ratio kept by NRW Unit.</p>
Output-3	
(b) Objectively Verifiable Indicators	
<p>3a. By October 2017, draft medium-</p>	<p>3a. Draft medium-term strategic plan</p>

Before Revision	After Revision
<p>term strategic plan for NRW reduction (2018-2022) is submitted by FCTWB to FCTA for review and approval.</p> <p>3b. By October 2017, an annual NRW reduction plan (2018) is incorporated in FCWTB's annual recurrent and capital plan (2018) for submission to FCTA for review and approval.</p> <p>3c. A planning manual for NRW reduction is approved by the Director of FCTWB by the end of the Project.</p> <p>3d. By November 2016, framework of water distribution management is established.</p>	<p>for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval.</p> <p>3b. An annual NRW reduction plan (2019) is incorporated in FCWTB's annual recurrent and capital plan (2019) for submission to FCTA for review and approval.</p> <p>3c. A planning manual for NRW reduction is approved by the Director of FCTWB.</p> <p>3d. Framework of water distribution management is established.</p>
Activities (Output-1)	
<p>1-2 Measure monthly water production of water treatment plants 1, 2, 3 and 4</p> <p>1-3 Tally the above water production data monthly</p> <p>1-4 Calculate the monthly water consumption based on the billing data</p> <p>1-5 Calculate monthly NRW ratio of the service area of FCTWB using the data obtained from Activity 1-3 and 1-4</p> <p>1-7 Measure and collect data for water distribution management such as water flow of zonal meters and water pressure</p>	<p>1-2 Measure/estimate water production of water treatment plants 1, 2, 3 and 4</p> <p>1-3 Tally the above water production data/estimation</p> <p>1-4 Calculate the water consumption based on the billing data</p> <p>1-5 Calculate NRW ratio of the service area of FCTWB using the results obtained from Activity 1-3 and 1-4</p> <p>1-7 Measure/estimate and collect data for water distribution management such as water flow of zonal meters and water pressure</p>
Activities (Output-3)	
<p>3-5 Develop the first medium-term strategic plan (2018-2022) for approval by FCTA</p>	<p>3-5 Develop the first medium-term strategic plan (2019-2023) for approval by FCTA</p>
Inputs (the Nigerian Side)	
<p><u>Land, Building and Facilities</u></p>	<p><u>Land, Building and Facilities</u> (to be financed by Counterpart Fund)</p>

Before Revision	After Revision
<u>Local Costs</u>	<u>Local Costs</u> (to be financed by Counterpart Fund)
Inputs (the Japanese Side)	
<p><u>Japanese Experts</u></p> <p>7. Procurement Manage't / Coordinator 11. Remote Monitoring 12. Other experts mutually agreed upon as necessary</p> <p><u>Equipment</u></p> <p>8. Telemetric monitoring system with standby power generating facility for selected zonal meter(s) and/or water pressure sensor(s). 9. Other equipment mutually agreed upon as necessary</p> <p><u>Facilities</u></p> <p>2. Chambers for bulk meters for water treatment plants, zonal meters and water pressure sensors</p> <p><u>Training of the Nigerian Project Personnel</u></p> <p>1. Four persons mutually agreed upon will be trained in Japan annually.</p>	<p><u>Japanese Experts</u></p> <p>7. Procurement Manage't / Coordination 11. Remote Monitoring Design 12. Remote Monitoring Device Installation / Training 13. Financial Analysis / Organization 14. Other experts mutually agreed upon as necessary</p> <p><u>Equipment</u></p> <p>8. Telemetric monitoring system for selected zonal meters 9. Solar powering systems for zonal meters 10. Other equipment mutually agreed upon as necessary</p> <p><u>Facilities</u></p> <p>2. Chambers for bulk meters for water treatment plants, and zonal meters</p> <p><u>Training of the Nigerian Project Personnel</u></p> <p>1. Eighteen persons mutually agreed upon will be trained in Japan.</p>






Project Title: The Federal Capital Territory Reduction of Non-Revenue Water Project
 Project Period: October 2014 to September 2018
 Implementing Organization: Federal Capital Territory Administration (FCTA) / Federal Capital Territory Water Board (FCTWB)
 Direct Beneficiaries: FCTWB, relevant staff of FCTWB Headquarters and pilot Area Offices
 Project Site: FCT
 Pilot Area Offices: Jabi, Garki I and Gudu

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
<p><Overall Goal> Non-Revenue Water reduction activities are routinely implemented in the service area of FCTWB.</p>	<p>1. NRW reduction operations are carried out according to the medium-term strategic plan for NRW reduction (2019-2023).</p>	<p>a. Report of NRW reduction activities and monitoring by NRW Unit (NRW ratio, records of leakage detection, repair, disconnection of illegal connections, etc.)</p>	<p>None.</p>		
<p><Project Purpose> Capacity of FCTWB for NRW reduction is strengthened</p>	<p>a. The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project. b. Relevant staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) become equipped with skills and knowledge necessary for NRW reduction according to the criteria set by the Project for each level. c. NRW ratio of each PMA is monitored.</p>	<p>a. Date of approval of the plan b. Results of joint assessment based on the criteria set by the Project c. Record of NRW ratio kept by NRW Unit</p>	<p>A. Policy support for NRW reduction is not discontinued B. NRW reduction is not discontinued C. Natural disaster/political instability/economic crisis that affect the service area of FCTWB do not occur D. Activities to implement the medium-term strategic plan are not discontinued or delayed</p>	<p>Indicator a: None Indicator b: None Indicator c: Follow-up capacity development have been done in Phase-2 of the Project. Indicator d: None. Inflow data has been read in Gudu, but not in Jabi and Garki I.</p>	
<p><Outputs> 1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored and estimated.</p>	<p>1a. Record of NRW ratio is kept by NRW Unit. 1b. NRW ratio of the service area of FCTWB is reported to its Joint Management Meeting. 1c. NRW ratio of the service area of FCTWB is reported to Management of FCTWB. 1d. Periodic records of data and estimation on water distribution management such as water flow of zonal meters and water pressure are kept by NRW Unit.</p>	<p>1a. Record of NRW ratio 1b. Material for meetings submitted by NRW Unit 1c. Periodic records of data on water distribution management</p>	<p>A. Staff of FCTWB (i.e. members of NRW Management Team and Pilot NRW Action Teams) trained through the Project do not leave the office in large numbers</p>	<p>Indicator 1a&1b&1c: None and delayed as a result of delay in Activities 1-2 to 1-5. Indicator 1d: None and delayed as a result of delay in Activities 1-6 and 1-7.</p>	
<p>2. Methods/operational procedures for effective NRW reduction are established through pilot projects at Pilot Metering Areas (PMAs) under pilot Area Offices (*)</p>	<p>2a. Decrease rate of NRW ratio for each Sub Metering Area of a PMA reaches at least 80% of its target at the end of the respective NRW reduction operations. 2b. Technical manuals for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials, are approved by Head of Department (HoD) for Distribution and HoD for Commerce.</p>	<p>2a. Record of NRW ratio kept by NRW Unit 2b. Date of approval of the manuals</p>		<p>Indicator 2a: Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I. Indicator 2b: Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.</p>	
<p>3. A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*)</p>	<p>3a. Draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval. 3b. An annual NRW reduction plan (2019) is incorporated in FCTWB's annual recurrent and capital plan (2019) for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the Director of FCTWB. 3d. Framework of water distribution management is established.</p>	<p>3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan 3c. Date of approval of the manual 3d. Implementing structure and workflow of water distribution management</p>		<p>Indicator 3a: None. Indicator 3b: None. Indicator 3c: None and delayed. Framework has not been ready due to delay in Activity 1-6, 1-7, 3-8 and 3-9.</p>	

Note (*): NRW components targeted by Output 2 are (i) invisible leakage, (ii) customer meter malfunction, and (iii) illegal connection
 Note (**): A medium-term strategic plan is a five-year plan, which may include medium-term target, strategies and actions, timeframe, human resource requirement, on-the-job training mechanism, cost-benefit analysis of NRW reduction, etc. It is noted that NRW components addressed by the strategic plan are not limited to the ones mentioned in (*) above; they shall be discussed and determined in developing the outline of the strategic plan (through Activity 3-4).

Activities	Inputs	Important Assumption
<p>The Nigerian Side</p> <p>Project Personnel</p> <ol style="list-style-type: none"> 1. Project Director, Director of Economic Planning, Research and Statistics Department, FCTA 2. Project Manager, Director of FCTWB 3. Deputy Project Manager, HoD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team); HoD for Distribution and HoD for Commerce/FCTWB 5. Members of NRW Management Team (FCTWB): <ul style="list-style-type: none"> - Head of Special Project Unit of Distribution Department (as Coordinator) - Relevant Head of Unit (HoU) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department - HoD for Production, HoU for Planning Research and Statistics (PRS) - Members of NRW Action Team: Area Manager, Assistant Area Manager (Distribution), Assistant Area Manager (Commerce), technical officers (Distribution) and meter readers (Commerce) of each pilot Area Office - Other personnel mutually agreed upon as necessary <p>Land, Building and Facilities (to be financed by Counterpart Fund)</p> <ol style="list-style-type: none"> 1. Office building and facilities necessary for the implementation of the Project 2. Office spaces and necessary facilities for the Japanese Experts at the FCTWB Headquarters and each pilot Area Office, including internet connection and air conditioners 3. Chambers for flow meters and valves for the selected PIMAs/SIMAs. 4. Electric wiring to bulk/zonal meters, loggers and pressure sensors. 5. Other facilities mutually agreed upon as necessary <p>Local Costs (to be financed by Counterpart Fund)</p> <ol style="list-style-type: none"> 1. Cost for installation, operation and maintenance of the provided equipment and cost for pipe repair at PIMAs 2. Administration and operational costs, including cost for local travel for the Project Personnel, demurrage at local customs point, licensing cost of radio application and cost for communication of telemetric device for selected zonal meter(s) and water pressure sensor(s) 3. Other costs mutually agreed upon as necessary 	<p>The Japanese Side</p> <p>Japanese Experts</p> <ol style="list-style-type: none"> 1. Chief Advisor / NRW 2. Deputy Chief Advisor / NRW 3. NRW Reduction Operations Management 4. Leakage Detection Technology 5. Commercial Loss 6. Hydraulic Analysis / GIS 7. Procurement Manager / Coordination 8. Facility Design / Construction Supervision 9. Equipment Design / Installation 10. Water Distribution Management 2 11. Remote Monitoring Design 12. Remote Monitoring Device Installation / Training 13. Financial Analysis / Organization 14. Other experts mutually agreed upon as necessary <p>Equipment</p> <ol style="list-style-type: none"> 1. Bulk meters and loggers for water treatment plants 2. Water flow meters, valves, and customer meters for SMA 3. Leakage detection equipment for PMA 4. Pipe repair equipment for PMA 5. Vehicles (Pick-ups) 6. Generator for project office 7. Zonal meters, loggers and water pressure sensors 8. Telemetric monitoring system for selected zonal meters 9. Solar powering systems for zonal meters 10. Other equipment mutually agreed upon as necessary <p>Facilities</p> <ol style="list-style-type: none"> 1. Modification of existing billing system 2. Chambers for bulk meters for water treatment plants and zonal meters <p>Training of the Nigerian Project Personnel</p> <ol style="list-style-type: none"> 1. Eighteen persons mutually agreed upon will be trained in Japan. 2. GIS training in Nigeria 	<p>Important Assumption</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 Experts are secured at the Headquarters and each Pilot Area Office of FCTWB.</p> <p>B. Project Personnel is assigned with the finalized list.</p>
<p>1.1 Install bulk meters to water treatment plants 1, 2, 3 and 4</p> <p>1.2 Measure/estimate water production of water treatment plants 1, 2, 3 and 4</p> <p>1.3 Tally the above water production data/estimation</p> <p>1.4 Calculate the water consumption based on the billing data</p> <p>1.5 Calculate NRW ratio of the service area of FCTWB using the results obtained from Activity 1.3 and 1.4</p> <p>1.6 Install zonal meters, water pressure sensor and pilot remote monitoring (telemetry) system</p> <p>1.7 Measure/estimate and collect data for water distribution management such as water flow of zonal meters and water pressure</p> <p>2.1 Review existing NRW reduction operations at each pilot Area Office</p> <p>2.2 Conduct capacity assessment of the relevant staff of each pilot Area Office</p> <p>2.3 Identify and select a Pilot Metering Area (PMA) for each pilot Area Office based on the selection criteria of PMA(*)</p> <p>2.4 Prepare/update distribution network drawings for each PMA</p> <p>2.5 Install water flow meters to each PMA and measure in/outflows monthly</p> <p>2.6 Zone each PMA into Sub Metering Areas (SMA)</p> <p>2.7 Isolate a SMA by installing valves</p> <p>2.8 Update the distribution network drawings for each SMA</p> <p>2.9 Measure an initial level of NRW of each SMA</p> <p>2.10 Detect target NRW components (i.e. invisible leakage, customer meter malfunction, and illegal connection) of each SMA</p> <p>2.11 Develop a NRW reduction operation plan of each SMA, including reduction target, for review by Head of Distribution Department</p> <p>2.12 Review and approve NRW reduction operation plan of each SMA</p> <p>2.13 Implement the NRW reduction operations at each SMA</p> <p>2.14 Monitor the progress of the NRW reduction operations of each SMA</p> <p>2.15 Measure level of NRW of each SMA at the end of the respective operations</p> <p>2.16 Prepare a report on pilot projects, covering Activity 2.1-2.15</p> <p>2.17 Develop manuals for NRW reduction for Area Office managers and field operators (i.e. technical officers and meter readers), including audio visual materials</p>	<p>Issues & Countermeasures</p> <p>(1) Delay of the Project (Output-1) Issue: Available monitoring period of Activities 1-2 to 1-5 is insufficient, so the Project needs at least six months for monitoring the Activities 1-2 to 1-5. Countermeasures: The Project period will be extended for six months for monitoring the Activities 1-2 to 1-5. Record of Discussion was amended for this extension in Dec. 2016, but PDM has not been revised.</p> <p>(2) Data Acquisition by Bulk and Zonal Flow Meters (Output-1) Issue: The Project found out that data acquisition is not always available due to non-fill of water flow inside pipelines of bulk meters as well as possibly zonal meters, and also bulk meters has suffered from electrical challenges. Countermeasures: The Project continues to monitor water flow. The Project identifies how to estimate water supply (production) based on available and reliable data which the Project can obtain with support of JICA Expert Team. And, FCTWB solves electrical challenges of bulk meters immediately after detecting the cause.</p> <p>(3) Irregular Billing (Output-1) Issue: Billing has not been regularly done due to non-constant power supply and other operational challenges, however the situation has begun to improve. Countermeasures: The Nigerian side keeps addressing improvement in power supply, and re-evaluates updated billing system operations holistically, then reviews and prepares SOP with support of JICA Expert Team.</p> <p>(4) Unsuccessful Results of the Pilot Project (Output-2) Issue: Follow-up activities for NRW reduction in PIMAs/SIMAs were conducted, however the decrease in NRW ratio in Garki II is not encouraging. Countermeasures: The Project needs to repeat NRW reduction in Garki I pilot Area Office to achieve the target.</p>	<p>Note (*) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it in measuring NRW ratio; and (iii) NRW ratio is supposedly high.</p> <p>Note (**) Working Group for NRW planning would consist of Project Manager (as chair), Deputy Project Manager, Technical Managers, Head of Finance Dept., Head of Production Dept., and members of NRW Management Team.</p>

Project Monitoring Sheet II (Plan of Operations)

Plan of Schedule and Actual Work Period

Activity ID	Activity Name	Start	End	Status	2017					2018					Remarks	Advancement	Milestone	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				Nov
1.1	Finalize the detailed design for the water treatment plant (WTP) and associated infrastructure.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.2	Obtain all necessary permits for the WTP and associated infrastructure.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.3	Finalize the detailed design for the sewer treatment plant (STP) and associated infrastructure.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.4	Obtain all necessary permits for the STP and associated infrastructure.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.5	Finalize the detailed design for the water distribution network.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.6	Obtain all necessary permits for the water distribution network.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.7	Finalize the detailed design for the sewer distribution network.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.8	Obtain all necessary permits for the sewer distribution network.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.9	Finalize the detailed design for the water supply network.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.10	Obtain all necessary permits for the water supply network.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.11	Finalize the detailed design for the sewer supply network.	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.12	Obtain all necessary permits for the sewer supply network.	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.13	Finalize the detailed design for the water distribution network (Phase 2).	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.14	Obtain all necessary permits for the water distribution network (Phase 2).	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.15	Finalize the detailed design for the sewer distribution network (Phase 2).	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.16	Obtain all necessary permits for the sewer distribution network (Phase 2).	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.17	Finalize the detailed design for the water supply network (Phase 2).	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.18	Obtain all necessary permits for the water supply network (Phase 2).	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.
1.19	Finalize the detailed design for the sewer supply network (Phase 2).	2017-07-01	2017-08-31	Completed													Completed	Final design completed.
1.20	Obtain all necessary permits for the sewer supply network (Phase 2).	2017-07-01	2017-10-31	In Progress													In Progress	Permitting process is ongoing.

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Project Monitoring Sheet II (Plan of Operations)
 Plan of Schedule and Action Work Period

Project Title: The Federal Capital Territory Rehabilitation of the Revenue Water Project

Activity ID	Activity Name	Activity Description	Activity Type	Start Date	End Date	Activity Progress (Gantt Chart)																						
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec											
151	Procurement subcontractors	Procurement of subcontractors for various activities including civil works, electrical works, and plumbing works.	Activity	2017-01-01	2017-01-31	100%																						
152	Site mobilization	Site mobilization and preparation of work area.	Activity	2017-01-01	2017-01-31	100%																						
153	Excavation and foundation works	Excavation and foundation works for various structures.	Activity	2017-02-01	2017-02-28	100%																						
154	Structural works	Structural works including walls, columns, and beams.	Activity	2017-03-01	2017-03-31	100%																						
155	Roofing and waterproofing	Roofing and waterproofing works for various structures.	Activity	2017-04-01	2017-04-30	100%																						
156	Electrical and plumbing installations	Electrical and plumbing installations for various structures.	Activity	2017-05-01	2017-05-31	100%																						
157	Finishing works	Finishing works including painting, plastering, and flooring.	Activity	2017-06-01	2017-06-30	100%																						
158	Site clearance and handover	Site clearance and handover of completed works.	Activity	2017-07-01	2017-07-31	100%																						

Activity ID	Activity Name	Activity Description	Activity Type	Start Date	End Date	Progress (%)	Remarks
151	Procurement subcontractors	Procurement of subcontractors for various activities including civil works, electrical works, and plumbing works.	Activity	2017-01-01	2017-01-31	100%	Completed by 2017-01-31.
152	Site mobilization	Site mobilization and preparation of work area.	Activity	2017-01-01	2017-01-31	100%	Completed by 2017-01-31.
153	Excavation and foundation works	Excavation and foundation works for various structures.	Activity	2017-02-01	2017-02-28	100%	Completed by 2017-02-28.
154	Structural works	Structural works including walls, columns, and beams.	Activity	2017-03-01	2017-03-31	100%	Completed by 2017-03-31.
155	Roofing and waterproofing	Roofing and waterproofing works for various structures.	Activity	2017-04-01	2017-04-30	100%	Completed by 2017-04-30.
156	Electrical and plumbing installations	Electrical and plumbing installations for various structures.	Activity	2017-05-01	2017-05-31	100%	Completed by 2017-05-31.
157	Finishing works	Finishing works including painting, plastering, and flooring.	Activity	2017-06-01	2017-06-30	100%	Completed by 2017-06-30.
158	Site clearance and handover	Site clearance and handover of completed works.	Activity	2017-07-01	2017-07-31	100%	Completed by 2017-07-31.

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Project Monitoring Sheet II (Plan of Operations)
Plan of Schedule and Actual Work Performed

Task ID	Task Name	Start	End	Actual	Remaining	Responsible Party	Notes
1.1	Phase 1: Site Assessment	2017-01-15	2017-02-28				
1.2	Phase 2: Design & Procurement	2017-03-01	2017-06-30				
1.3	Phase 3: Construction	2017-07-01	2017-12-31				
1.4	Phase 4: Commissioning & Handover	2018-01-01	2018-03-31				

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