

Suggestions from JICA Joint-Monitoring Mission

24 August, 2017
Abuja

Contents

1. Review of the last Joint-Monitoring JCC (held on the 21 September 2016)
2. New issues which the Mission team investigated
3. Technical advice



2

Contents

1. Review of the last Joint-Monitoring JCC
2. New issues which the Mission team investigated
3. Technical advice

1

Review of the last Joint-Monitoring JCC

- (1) Strengthening partnership between FCDA and FCTWB
- (2) Relaxing the Restriction for GIS use for FCTWB
- (3) Activating the Collaboration in FCTWB
- (4) Enhancing Quality Management
- (5) Necessary Support for Voluntary NRW Reduction Activities

3

(1) Strengthening partnership between FCDA and FCTWB

① Progress since the last JCC



(2) Relaxing the Restriction for GIS use for FCTWB

① Progress since the last JCC

- As there were no relaxation in AGIS security, FCTWB decided to establish its own GIS which is separated from AGIS.

② Further Suggestions from the monitoring mission

- The Project will accelerate the related activities by adding workforce to utilize GIS data for Output-3 (Formulating a medium-term strategic plan for NRW reduction).

(1) Strengthening partnership between FCDA and FCTWB

② Further Suggestions from the monitoring mission

- FCTWB and FCDA will 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



(3) Activating the Collaboration in FCTWB

① Progress since the last JCC

- The newly-created "NRW Unit" is expected to work in conjunction with all stakeholders.

② Further Suggestions from the monitoring mission

- FCTWB will empower NRW Unit for strengthening collaboration between Distribution Department and Commerce Department, which improves water supply services including NRW reduction.

1. Review

(4) Enhancing Quality Management

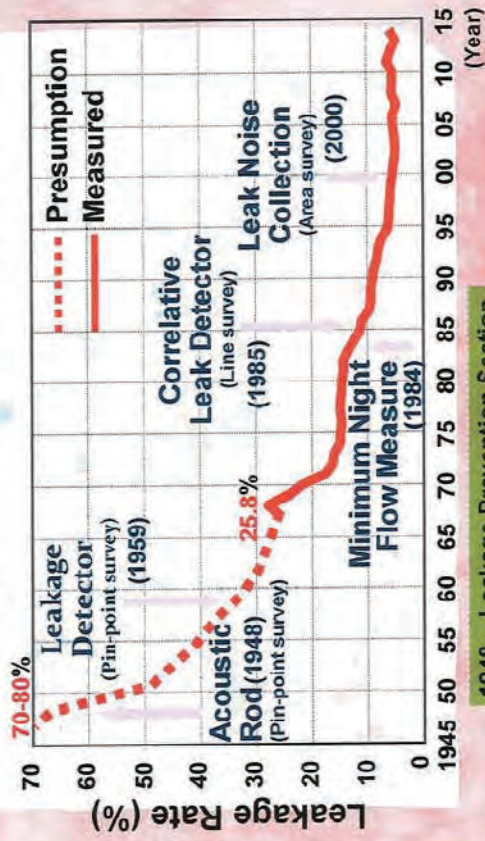
① Further Suggestions from the monitoring mission

- FCTWB will continuously ensure quality management regarding O&M of the procured facilities and equipment and other routine works for the sustainable achievement of the project outputs.



3

History of Prevention Works
~Leakage Rate History of Yokohama~



1948~ Leakage Prevention Section

11

Contents

1. Review of the last Joint-Monitoring JCC
2. **New issues which the Mission team investigated**
3. Technical Advice

9

1. Review

(5) Necessary Support for Voluntary NRW Reduction Activities

① Further Suggestions from the monitoring mission

- FCTWB will encourage individual's effort on NRW reduction for sustainability of the project and motivation of staffs. (e.g. the monthly technical meetings)

New issues the Mission team investigated

- (1) Review Meter Reading and Billing (Output-1)
- (2) Prompt Summary of Pilot Projects (Output-2)
- (3) Facilitating Timely Execution of Counterpart Fund 2017
- (4) Knowledge Sharing System of Counterpart Personnel in FCTWB
- (5) Actions toward FCTWB Autonomy and Bill

31

2. New Issues

(1) Review Meter Reading and Billing

③ Actions / Countermeasures

- FCTWB established (1) task force team for debt recovery and (2) another committee for identification of estimated billing.
- The detailed actions of these teams will be included in the strategic NRW reduction plan.



34

2. New Issues

(1) Review Meter Reading and Billing

① What is challenge?

- Complicated commerce operations have impeded the project's activities.

② Suggestions from the monitoring mission

- FCTWB will review the choice of meter type and streamline the appointment of personnel in charge of meter reading and billing, then prepare clearly-stated SOP.

33

2. New Issues

(2) Prompt Summary of Pilot Projects

① What is challenge?

- 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

② Suggestions from the monitoring mission

- The Project will move on to summarizing the result of pilot projects (by clarifying obstructive factors and calculating cost/benefit) without further delay.

35

(3) Facilitating Timely Execution of Counterpart Fund 2017

① Suggestions from the monitoring mission

- FCTA and FCTWB to facilitate prompt and timely execution of counterpart fund.

15

(5) Actions toward FCTWB Autonomy and Bill

① Suggestions from the monitoring mission

- FCTWB will create "Start-up Committee" as an ideal autonomous body.
- The details will be discussed with support from a JICA Expert (Mr.Osakabe) in charge of financial analysis and organization.

18

(4) Knowledge Sharing System of Counterpart Personnel in FCTWB

① Suggestions from the monitoring mission

- FCTWB will keep and utilize knowledge and information regarding NRW reduction activities in the organization even though project counterpart members are changed.

17

Contents

1. Review of the last Joint-Monitoring JCC
2. New issues which the Mission team investigated
3. **Technical advice from Mr.Omura, Senior Advisor**

19

Thank you very much for your attention !

Na Gode!

Imeela!

Eshe gon!



The Federal Capital Territory Reduction of NRW Project (Phase-2)

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

9th – 15th July, 2017

Engr. Abolade R. Lawal
Tech. Manager, Ag. HOD (Distribution), FCTWB



INTRODUCTION

- The water sub-sector of the FCT is well documented under the support infrastructure system of the Master Plan of Abuja.
- The manner in which the water is supplied, distributed, used and disposed off in the FCT properly documented in the Abuja Water supply Master Plan.
- The Federal Capital Development Authority (FCDA) Engineering Services Department is responsible for the provision of Water Infrastructure in FCT.
- The FCT Water Board (FCTWB) is the Government Agency responsible for the provision of water supply to the residents of FCT.

3

3rd Training Programme

Venue: Yokohama, Japan
Date: 9th – 15th July, 2017

Participants:

- Federal Capital Development Authority (FCDA)
 - i. Engr. Ahmad, Shehu Hadi, Director, Engineering Services Dept;
 - ii. Engr. Ezeoha, Ferdinand Obiora, Deputy Director, (Water & Sewage);
 - iii. Engr. Osayande, Joseph Uyi, Deputy Director, Dept of Eng. Design & Evaluation; and
 - iv. Engr. Oluwadamisi, E. Abiodun, Ag. Director, Engineering PPP, Mass Housing
- Federal Capital Territory Water Board (FCTWB)
 - i. Engr. Aliyu, Abubakar Usman, Assist. Director Production Dept; and
 - ii. Engr. Lawal, Abolade Rasaki, Assist. Director, Distribution Dept

2

Purposes of the Training Program

- i. Understand the institutions and organization structure of integrated water supply services, and planning, designing and Operation & Maintenance (O&M) and coordination and feedback among them; and
- ii. Understand bases, knowledge and methodology of water supply services/O&M including non-revenue water (NRW) reduction.

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Purposes of the Training Program (Cont.)

These were then compared with those of FCT and how it can be utilized in contribution for further improvement and implementation in development and O&M of water supply services in the FCT

5

Lesson Learnt during the Training

- i. The need for regular inspection, repair and update planning for preventive maintenance;
- ii. The need for regular data measurement and effective utilization for planning purposes;
- iii. Understand the importance of rules and regulation of service connection (service pipe, water meter, valves, etc);
- iv. The approaches, efforts required for reduction of NRW;
- v. The effective use of leakage detection equipment in detecting leakages along the water supply pipeline;
- vi. Developing procedures and utilization of GIS;

7

Overview of The Training Program

- i. Water Supply O&M System;
- ii. Water Supply Control and Management;
- iii. Water Distribution Management;
- iv. Outline of Water Supply Installation (Service Connection);
- v. NRW Contents / Water Pressure Control;
- vi. Water Leakage Detection;
- vii. Pipeline Information Management;
- viii. Water Meter Maintenance;
- ix. Construction Management and As-built Drawing Making;
- x. Self-support Accounting System and PPP;
- xi. Water Demand Forecasting (Facility Development Planning);
- xii. Management Plan; and
- xiii. Replacement of Aged Pipes.

6

Lesson Learnt during the Training (cont.)

- vi. Importance of customer ledgers and drawing management, through mapping system and network drawing book;
- vii. The maintenance of water meter, also importance of accuracy check of water meter;
- viii. The need to have meter testing laboratory to check meter accuracy;
- ix. Typical supervision of construction, particularly as-built drawings management, quality management, safety management, progress management and photo recording.
- x. Utility to have Self-support accounting system and its workability;

8

Lesson Learnt during the Training (Cont..)

- xi. The procedure of developing plans, goal setting, project management and financial planning;
- xii. The concept of water tariff, customer management, disconnection, welfare-based exemption in Yokohama;
- xiii. Planning, prioritization, progress management and the renewal planning in accordance with financial resources;

9

Photos



Courtesy Visit to YVWB



Vote of Thank by Team Leader



Courtesy Visit to JICA H/Q



Vote of Thank by Team Leader



Courtesy Visit to JICA H/Q



GIS Training at YVWB

11

Photos



Leak Detecting Equipment



Participant



Participant



Resource Officer



Participant



Meter Testing Laboratory

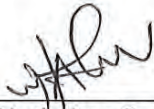
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MINUTES OF MEETING
ON
THE EIGHTH JOINT COORDINATING COMMITTEE
FOR
THE FEDERAL CAPITAL TERRITORY
REDUCTION OF NON-REVENUE WATER PROJECT

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

28th June 2018



Mr. Abubakar Sani Pai
Project Director,
Director, Economic Planning, Research
and Statistics Department,
Federal Capital Territory Administration
(FCTA),
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,
General Manager
Federal Capital Territory Water Board
(FCTWB),
Federal Republic of Nigeria



Mr. Katsutoshi Komori
Chief Representative,
JICA Nigeria Office

Attached Document

For monitoring, discussion on issues, solutions and acceleration of the Federal Capital Territory Reduction of Non-Revenue Water Project (hereinafter referred to as "the Project") with three months to termination, the eighth meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on 28th June 2018.

1. Remarks and Presentation

Mr. Abubakar Sani Pai, Project Director of the Project, chaired the JCC meeting and gave his welcome remarks emphasizing the importance of revenue generation and monitoring as well as the necessity of utilizing FCTWB's capacity developed through the Project.

Mr. Katsutoshi Komori, Chief Representative of JICA Nigeria Office introduced himself as the first participation in the JCC and congratulated establishment of new organizational structure of FCTWB as an autonomous agency. He emphasized achievement of Non-Revenue Water (hereinafter referred to as "NRW") reduction in the Pilot projects, which contributes to improvement in water supply services. He also requested outstanding issues are discussed for proper solutions and the draft medium-term strategic plan is approved by mutual cooperation among stakeholders for submission to FCTA. Lastly, he expressed continuous JICA' supports to the Project as well as his appreciation for participation and efforts of stakeholders.

Engr. M. Kabir Rabi, Head of NRW Unit of FCTWB 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 members to approve it through discussion of issues and solution for way forward (*refer to Appendix 3, 4 and 5).

Engr. M. Kabir Rabi, Head of NRW Unit of FCTWB made a presentation about the draft medium-term strategic plan for NRW reduction (2019-2023), and requested the JCC members to approve it for submission to FCTA (*refer to Appendix 6 and 7).

At the end of the discussions, Engr. A. A. Nahuche, the Project Manager of the Project gave closing remarks. He emphasized a great synergy between the Project and FCTWB's operations, then expressed his gratitude to the Japanese party and other partners.

2. Main Points Discussed

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

2-1. Personnel Reassignment of the FCTWB's Project Members

Technical Manager (Head of Commerce) and some Project members were reassigned since August 2017.

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Project monitoring highlighted that FCTWB needs to consider his/her experiences in the Project and assure transfer of information, knowledge and lessons learned in the Project activities to his/her successor and other members.

In this regard, FCTWB has utilized technical meetings as a platform for regular interaction among project members as knowledge and information sharing in the organization.

2-2. Preparation for FCTWB Autonomy

Following enactment of enabling law for autonomous FCTWB in December 2017, JICA assisted FCTWB in financial data collection, calculation of unit cost, price and profitable tariff, then financial analysis including profit-loss statement and cash flow until 2023 in accordance with the medium-term strategic plan for NRW reduction (2019-2023).

In preparation for full transition of FCTWB to an autonomous agency, FCTWB will utilize these deliverables to advance step by step as scheduled.

2-3. Project Vehicle

As a result of condition check of the project vehicle damaged by the traffic accident in Lokoja in March 2017, FCTWB concluded impossibility of repair and will purchase a new vehicle by using Counterpart Fund.

FCTWB reported procurement process is ongoing, and will use project vehicles for NRW reduction strictly for implementation of the medium-term strategic plan for NRW reduction.

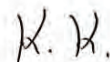
2-4. Data Acquisition by Bulk and Zonal Flow Meters

As a result of discussions and close collaboration between FCDA and FCTWB about water flow interference at an injection point along a trunk main, FCDA started relocation works of the injection point from the upstream side to the downstream side in June 2018, and will complete it by the end of July 2018.

As soon as FCDA completes relocation works, FCDA and FCTWB will work on cabling works, then FCTWB will monitor bulk and zonal flow meter reading (ultrasonic meters) for system input volume as originally designed.

2-5. Customers' Zonal and PMA Coding

Customers' zonal and PMA coding is still ongoing as a fundamental



condition for water distribution management and NRW monitoring, and FCTWB has faced difficulty in identifying their locations.

FCTWB will clarify customers' address information one by one and efficiently, then complete zonal and PMA coding by the second week of July 2018.

2-6. Irregular Billing Cycle

From the fact that bills were issued at 6 times in the past 12 months, meter reading and billing has not been done in regular intervals, which causes difficulty in calculation/monitoring of billed water consumption.

FCTWB will escalate this issue to governing Board and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary funding.

FCTWB noted that FCTWB started to discuss the possibility of meter workshop in Jabi Area Office.

2-7. Monitoring of NRW Ratio and/or related Data in Zone and PMA

a) System input volume to Zone 5 is not measurable for NRW monitoring, because Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.

FCTWB will recovered it by utilizing spare panels from other solar systems by the end of July 2018, and restock them later.

FCTA requested FCTWB to guarantee the security, then FCTWB answered that FCTWB will make efforts to avoid the same problem.

b) System input volume to PMAs in Jabi and Garki I are not measurable or recordable for NRW monitoring, because a mechanical meter in Jabi PMA is not functioning and data from an ultrasonic PMA meter seems to have not been transferred to portable data logger in Garki I PMA.

FCTWB will replace a PMA mechanical meter in Jabi PMA and solve data transfer failure from an ultrasonic PMA meter to data logger in Garki PMA with support from JICA Expert Team by the end of July 2018.

c) Prepaid meter payment record in Gudu PMA has not been submitted regularly from Metering Unit to NRW Unit, because existing prepaid meter software is incapable to create data sheets.

FCTWB will ensure that Metering Unit submit prepaid meter payment record in Gudu PMA regularly to NRW Unit by utilizing an alternative data source from Finance Department.

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2-8. Results of Pilot Projects

JICA Nigeria Office suggested that reasons leading to unsuccessful result in SMA-2 of Garki I be clarified and utilized into implementation of NRW reduction.

FCTWB answered that there was difficulties in identifying pipelines due to a lot of discrepancy among existing information including drawings particularly in Phase 1 development area, and agreed to the suggestion.

2-9. The Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

FCTA pointed out that the presentation needs more explanation about NRW reduction's impact for revenue generation

The Project Team will make it improved in preparation for submission and approval of the draft medium-term strategic plan for NRW reduction (2019-2023) and annual plan.

2-10. FCTA's Approval Process of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

The draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval as the indicator "3a" for Output-3, and then the approval shall be done by the end of the Project as the indicator "a" for Project Purpose.

FCTA expounded that governing Board of FCTWB authorized by FCTA takes responsibility of the review and approval, now that FCTWB became an autonomous agency and the FCT Minister appointed the Board members.

The JCC members confirmed this approval process.

2-11. Incorporation of Annual NRW Reduction Plan (2019) to FCTWB's Annual Recurrent and Capital Budget Plan (2019)

FCTWB prepares annual recurrent and capital budget plan in October in recent years, so annual NRW reduction plan (2019) is not likely to be incorporated to annual recurrent and capital budget plan by September 2018, the end of the Project.

The Nigerian side requested to modify the indicator 3b for Output-3 as a revision of the present PDM₄ and PO₄, and the Japanese side accepted the request.

Also, FCTWB noted the necessity to categorize budget items to be listed

12

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in annual NRW reduction plan into recurrent and capital budgets. The Project Team will do it in preparation of annual NRW reduction plan (2019).

3. Approval of Project Monitoring Sheet (Draft)

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

4. Approval of Revision of PDM and PO

Based on Project Monitoring Sheet (Draft) (refer to Appendix 3) and the results of the above discussion (refer to 2-11), the JCC members approved revision of both PDM and PO (refer to Appendix 5. PO revision is version number only). Comparison table of PDM revision is as follows:

Comparison Table of PDM Revision

Before Revision	After Revision
Output-3	
Objectively Verifiable Indicators	
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.	3b. An annual NRW reduction plan (2019) is committed by the governing Board of FCTWB, to be incorporated in FCWTB's annual recurrent and capital budget plan (2019) with high-priority listing for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the General Manager of FCTWB.
Means of Verification	
3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan	3a. Date of official letter submitting draft strategic plan 3b. Date of commitment incorporating annual NRW reduction plan in annual recurrent and capital budget plan
Inputs (the Nigerian Side)	
<u>Project Personnel</u>	<u>Project Personnel</u>

Before Revision	After Revision
2. Project Manager: Director of FCTWB	2. Project Manager: General Manager of FCTWB

Remarks: Although Indicator 3b for Output-3 after revision which was approved in the JCC meeting is "An annual NRW reduction plan (2019) is incorporated in FCWTB's annual recurrent budget plan (2019) or committed on its incorporation by the General Manager of FCTWB for submission to FCTA for review and approval.", the JCC members had follow-up discussions and concluded it as above in the table.

5. Approval of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

As a result of discussions, the JCC members approved the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) for submission to FCTA (refer to Appendix 6).

END

Appendix

- Appendix 1: Programme/Agenda
- Appendix 2: Attendance List
- Appendix 3: Project Monitoring Sheet (Draft)
- Appendix 4: Presentation: Results of Project Monitoring and Revision of PDM & PO
- Appendix 5: Revision of PDM (PDM₄ to PDM₅) and PO (PO₄ to PO₅)
- Appendix 6: Draft Summary of the Medium-Term Strategic Plan for NRW Reduction (2019-2023)
- Appendix 7: Presentation: Draft Summary of the Medium-Term Strategic Plan for NRW Reduction (2019-2023)

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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 8TH JOINT COORDINATING COMMITTEE**

Venue: Conference Room, EPRS, FCT Administration, Abuja

Date: 10:00, Thursday, 28th June 2018

- | | |
|---------------|--|
| 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. Katsutoshi Komori (JICA Nigeria Office) |
| 10:25 - 10:45 | Presentation of Results of Project Monitoring by Engr. M. Kabir Rabi (Head of NRW Unit, FCTWB) |
| 10:45 - 11:30 | - Presentation of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) by Engr. M. Kabir Rabi (Head of NRW Unit, FCTWB)

- Explanation of the Draft Annual NRW Reduction Plan (2019)

- Explanation of the Draft Planning Manual for NRW Reduction |
| 11:30 - 12:00 | Questions, Answers and Discussions |
| 12:00 - 12:10 | Approval of Project Monitoring Sheets, Revision of PDM and PO if any, and the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) |
| 12:10 - 12:20 | Any other business and Way forward |
| 12:20 - 12:30 | Closing Remarks by Project Manager, Engr. A. A. Nahuchc (General Manager, FCTWB) |
| 12:30 | Closing Prayer |

FEDERAL CAPITAL TERRITORY REDUCTION OF NON-REVENUE WATER PROJECT

EIGHTH JOINT COORDINATING COMMITTEE (JCC) MEETING

HELD ON 28TH JUNE 2018 AT FCTA/EPRS CONFERENCE ROOM

ATTENDANCE LIST

S/N	NAME	ORAGANIZATION	POSITION
1	Katsatoshi Komori	JICA Nig.	Country Representative
2	Masanori Sakamoto	JICA Nig.	Representative
3	Abubakar Sani Pai	EPRS	Director
4	Aliyu A. Nahuche	FCT Water Board	General Manager
5	Azuanah Kingsley	FMWR	Geologist
6	Udeh E.C	FCDA	ACE
7	Udo S. T	FCDA	AD
8	Rabiu M.K	FCT Water Board	Head NRW
9	Phoebe Ocheja	FCT Water Board	HOD/ Admin and Supply
10	Okobi O. Y	FCT Water Board	HOD/ Quality Control
11	Hasfat Ahmed Lawi	FCT Water Board	HOD/ Finance and Audit
12	Usuman A. Aliyu	FCT Water Board	Deputy Director Distribution
13	Abolade Lawal	FCT Water Board	Technical Manager
14	Dada James Oladele	FCT Water Board	-
15	Abbas Ahmed	FCT Water Board	Head Public Relations
16	Adeyemi A. Taiwo	FCT Water Board	HOD/ Commerce
17	Alkali Mohammed	FMWR	Civil Engineer
18	Abubakar Lawal	FCTA/EPRS	-
19	Ahmed m Kabiru	FCTA/EPRS	-
20	John Egbe	FCTA/EPRS	-
21	Akinori Miyoshi	JICA Expert Team	Chief Advisor NRW Project

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. 6 (Term covered: August, 2017 - June, 2018)

Name: Akinori Miyoshi

Title: Chief Advisor

Submission Date: 28 June 2018

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 had been paid temporarily by the Japanese side because of delay in release of the Counterpart Fund, which were 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 22.1 person-months between August 2017 and June 2018 (106.6 person-months from the commencement of the Project in November 2014).

Equipment

Zonal meters, data loggers, telemetric monitoring system and solar powering systems were installed from June to September 2017, and additional adjustment was done in November 2017.

PM Form 3-1 Monitoring Sheet Summary

Facilities

There are no inputs during this monitoring period.

Training of the Nigerian Project Personnel

There are no inputs during this monitoring period.

1-2 Progress of Activities

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

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
1-1	Install bulk meters to water treatment plants 1 and 2	Completed.	Completed.
1-2	Measure/estimate 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.	Completed in February 2018.
1-3	Tally the above water production data/estimation	Progress: 0%, Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.	Completed in February 2018.
1-4	Calculate the water consumption based on the billing data	Completed. 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.	Completed. However, customers' zonal coding is still ongoing as a fundamental condition for water distribution management. Periodic billed consumption has been not recorded because of non regular meter reading and billing. Constant power supply, adequate provision for consumables and SOP are necessary.
1-5	Calculate NRW ratio of the service area of FCTWB using the results 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.	Completed in February 2018.
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.	Completed in August 2017. After completion, loggers' failure were observed at Tank 2 and Tank Kubwa due to power instability and lightning, but they were replaced or fixed. Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.
1-7	Measure/estimate 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 1-4 and 1-6.	Progress: 85%, Behind: 0.0 months The Activity will be completed after the completion of customers' zonal coding stated in Activity 1-4, before July 2018.

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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 Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *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: 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.	Progress: 65%, Behind: 10.0 months Assessment was done partially after the completion of pilot projects, and will be completed after NRW monitoring in pilot Area offices in July and August 2018.
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. Refer to Activity 3-3.	Completed.
2-5	Install water flow meters to each PMA and measure in/outflows monthly	Completed (installation only). Meter reading in Gudu is ongoing. Adequate provision for logistics and SOP are necessary for monitoring monthly in/outflows.	Completed. However, a mechanical PMA meter in Jabi PMA is not functioning, and data from an ultrasonic PMA meter is not transferred to portable logger in Garki I PMA.
2-6	Zone each PMA into Sub Metering Areas (SMA)	Completed.	Completed.
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.	Completed in October 2017.
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. Refer to Activity 3-3.	Completed in October 2017.
2-9	Measure an initial level of NRW of each SMA	Progress: 90%, Behind: 2.0 months (Follow-up)	Completed in October 2017.

PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
		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.	
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.	Completed in October 2017.
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.	Completed in October 2017.
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.	Completed in October 2017.
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.	Completed in October 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.	Completed in October 2017.
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	Completed in October 2017.

PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
		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.	Completed in October 2017.
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.	Completed in May 2018.

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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 Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
3-1	Establish a Working Group for NRW reduction planning	Reviewed and completed.	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.	Completed.
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.	Completed in November 2017.
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 has been discussed. To be completed by November 2017.	Completed in November 2017.
3-5	Develop the first medium-term strategic plan (2019-2023) for approval by FCTA	Progress: 00%, Behind: 0.0 months To be completed by March 2018.	Progress: 95%, Behind: 3.0 months Working Group and Advisory Group members have been involved in documentation and check/comments. To be completed by the end of June 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.	Progress: 80%, Behind: 1.0 months Working Group, particularly NRW Unit has been involved in documentation based on the first medium-term strategic plan (2019-2023). To be completed by the end of July 2018.
3-7	Develop a planning manual for NRW reduction	Progress: 00%, Behind: 0.0 months To be completed by March 2018.	Progress: 80%, Behind: 0.0 months JICA Expert Team and NRW Unit have been involved in preparation. To be completed by the end of July 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.	Completed in October 2017.
3-9	Establish framework of water distribution management	Progress: 25%, Behind: 0.0 months To be completed by October 2017.	Progress: 85%, Behind: 8.5 months The Activity will be completed after

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PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
			the completion of customers' zonal coding stated in Activity 1-4, before July 2018.

1-3 Achievement of Output

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

No	Indicator	Previous Monitoring (as at Jul. 2017)	Current Monitoring (as at Jun.2018)
1a	Record of NRW ratio is kept by NRW Unit.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and recorded. Periodic billed consumption has been not calculated easily because of non monthly meter reading and billing cycle.
1b	NRW ratio of the service area of FCTWB is reported to its Joint Management Meeting.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and reported.
1c	NRW ratio of the service area of FCTWB is reported to Management of FCTWB.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and reported.
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.	None and delayed as a result of delay in Activities 1-6 and 1-7.	Water flow has been recorded by zonal meters although data deficiency. Billed consumption have been not calculated due to delay in customers' zonal coding.

Verification of Achievement and Implementing Process

Based on preliminary investigation by the Project Team, FCTWB had 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 (Phases 3&4) to water flow from old plant (Phases 1&2) at the upstream side of bulk flow meters. Then, FCTA started relocation works of injection point from the upstream side to the downstream side in June 2018.

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 Jul. 2017)	Current Monitoring (as at Jun.2018)																																																																																																																																																						
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>Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I.</p> <p style="text-align: center;">NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Bef (%)</th> <th>Aft (%)</th> <th>Red. Point</th> <th>Target (%)</th> <th>status</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>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>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>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>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>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>44.9</td> <td>Non</td> </tr> <tr> <td>SMA-3</td> <td>70.0</td> <td>53.7</td> <td>16.3</td> <td>42.0</td> <td>No</td> </tr> </tbody> </table>		Bef (%)	Aft (%)	Red. Point	Target (%)	status	Gudu						SMA-1	52.0	14.3	37.7	31.2	OK	SMA-2	53.9	28.7	25.2	32.3	OK	Jabi						SMA-2	45.6	21.1	24.5	27.4	OK	SMA-3	87.6	42.6	45.0	52.6	OK	Garki I						SMA-1	85.1	62.2	22.9	51.1	No	SMA-2	74.8	78.2	-3.4	44.9	Non	SMA-3	70.0	53.7	16.3	42.0	No	<p>Not successful in SMA-2 of Garki I due to difficulty in identifying the installed pipeline, however the Project concluded indicator was generally achieved in all three PMAs. Pilot project spent the period between Nov. 2014 and Dec. 2016 intermittently and the follow up between Mar. and Oct. 2017.</p> <p style="text-align: center;">NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Bef (%)</th> <th>Aft (%)</th> <th>Red. Point</th> <th>Target (%)</th> <th>status</th> </tr> </thead> <tbody> <tr> <td colspan="6">Gudu</td> </tr> <tr> <td>SMA-1</td> <td>52.0</td> <td>12.1</td> <td>39.9</td> <td>31.2</td> <td>OK</td> </tr> <tr> <td>SMA-2</td> <td>53.9</td> <td>29.9</td> <td>24.0</td> <td>32.3</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>53.3</td> <td>20.4</td> <td>32.9</td> <td>32.0</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>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>52.6</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>70.0</td> <td>30.9</td> <td>39.1</td> <td>42.0</td> <td>OK</td> </tr> <tr> <td colspan="6">Garki I</td> </tr> <tr> <td>SMA-1</td> <td>85.1</td> <td>45.2</td> <td>39.9</td> <td>51.1</td> <td>OK</td> </tr> <tr> <td>SMA-2</td> <td>74.8</td> <td>49.3</td> <td>25.5</td> <td>44.9</td> <td>Non</td> </tr> <tr> <td>SMA-3</td> <td>70.0</td> <td>27.4</td> <td>42.6</td> <td>42.0</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>74.8</td> <td>34.7</td> <td>40.1</td> <td>44.9</td> <td>OK</td> </tr> </tbody> </table>		Bef (%)	Aft (%)	Red. Point	Target (%)	status	Gudu						SMA-1	52.0	12.1	39.9	31.2	OK	SMA-2	53.9	29.9	24.0	32.3	OK	PMA	53.3	20.4	32.9	32.0	OK	Jabi						SMA-2	45.6	21.1	24.5	27.4	OK	SMA-3	87.6	42.6	45.0	52.6	OK	PMA	70.0	30.9	39.1	42.0	OK	Garki I						SMA-1	85.1	45.2	39.9	51.1	OK	SMA-2	74.8	49.3	25.5	44.9	Non	SMA-3	70.0	27.4	42.6	42.0	OK	PMA	74.8	34.7	40.1	44.9	OK
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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.	Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.	Technical manuals were reviewed and updated in May 2018. Approval process is ongoing.																																																																																																																																																						

Verification of Achievement and Implementing Process

Under the circumstances that 2017 Counterpart Fund was not released as scheduled due to delay in non-passage of 2017 appropriation and FCTA's internal process, the Project made efforts of implementation of pilot projects as follow-up activities to achieve the target with concentrated inputs including supervisors and supporters from the FCTWB Headquarters and other Area Offices from September to October 2017.

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 Jul. 2017)	Current Monitoring (as at Jun.2018)
3a	Draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval.	None (as planned).	Not yet. To be submitted in early July 2018, after JCC's approval of the draft medium-term strategic plan.
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.	None (as planned).	Not yet. The incorporation can be done after FCTA's approval of the draft medium-term strategic plan and when FCWTB's annual recurrent and capital plan (2019) is prepared probably in October 2019 which is after the termination of the Project. So, FCTWB highlighted the need to modify this indicator (refer to 3-1).
3c	A planning manual for NRW reduction is approved by the Director of FCTWB.	None (as planned).	Not yet. To be approved by the end of August 2018.
3d	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.	Ongoing but delayed due to delay in Activity 1-7 and 3-9.

Verification of Achievement and Implementing Process

Although it took time, working and advisory groups' members contributed effectively to documentation and check/comments/advices in preparation of the draft medium-term strategic plan.

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

No	Indicator	Previous Monitoring (as at Jul. 2017)	Current Monitoring (as at Jun.2018)
a	The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project.	None (as planned).	Not yet. To be approved by the end of August 2018.
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.	Follow-up capacity development have been done in Phase-2 of the Project.	Capacity development have been done in Phase-2 of the Project. Follow up to be completed by the end of August 2018.
c	NRW ratio of each PMA is monitored.	None (as planned). Inflow data has been read in Gudu, but not in Jabi and Garki I.	Partially monitored. Inflow data has been read in Gudu, but not in Jabi and Garki I due to malfunctioning of a mechanical PMA meter in Jabi and data transfer failure from an ultrasonic PMA meter to portable data logger in Garki I.
Verification of Achievement and Implementing Process In relation to Indicator c, less awareness and ownership have caused proper reporting and information sharing on problems among FCTWB Headquarters and pilot Area Offices and then delay in prompt measures.			

1-5 Changes of Risks and Actions for Mitigation

Although enabling law establishing autonomous FCTWB was enacted in the end of 2017 and members of governing Board of FCTWB were appointed in March 2018, FCTWB still depends financially on FCTA.

Following the past physical years 2016 and 2017, recent budget constraint of the Nigerian side including non-release or late-release of the Counterpart Fund and recurrent budget has corresponded to an important assumption "A. Natural disaster / political instability / economic crisis that affect the Project activities do not occur." in 2018, too.

Recent budget constraint has posed an impediment in the Project monitoring with adequate logistics.

1-6 Progress of Actions undertaken by JICA

None.

1-7 Progress of Actions undertaken by Nigerian side

National budget for 2018 was approved in the middle of June 2018, so FCTWB needs to request FCTA for the immediate release of the Counterpart Fund or adequate recurrent budget.

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

Same as the last monitoring, Technical Manager (Head of Commerce) and some Project members were reassigned since August 2017.

FCTWB needs to consider his/her experiences in the Project and assure transfer of information, knowledge and lessons learned in the Project activities to his/her successor and other members.

(2) Delay in Release of 2018 Counterpart Fund

As mentioned above, though national budget for 2018 was approved in the middle of June 2018, FCT budget for 2018 is still in the process of the approval. Accordingly, 2018 Counterpart Fund has not yet been released. 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) Preparation for FCTWB Autonomy

As of September 2017, JICA Expert Team suggested establishing a preparatory committee, listing up and scheduling preparatory activities in expectation for autonomy. Following enactment of enabling law for autonomous FCTWB in December 2017, JICA Expert Team assisted FCTWB in financial data collection, calculation of unit cost, price and profitable tariff, then financial analysis including profit-loss statement and cash flow until 2023 in accordance with the medium-term strategic plan for NRW reduction.

In preparation for full transition of FCTWB to an autonomous agency, FCTWB should utilize these deliverables to advance step by step as scheduled.

(4) Administrative Complication with respect to Commerce Operations

Same as several times of the past monitoring, mixture of customer categories, meter types, reading divisions and water tariff, and irregular billing cycle and also lagged billing reflection of payment record, etc. have caused inefficiency in commerce operations affecting NRW reduction, which leads to financial losses of FCTWB and customer dissatisfaction. JICA Expert Team suggests FCTWB to solve the issues in consideration of streamlining, simplification and uniform management among relevant Units.

In preparation for full transition of FCTWB to an autonomous agency as well as implementation of NRW reduction according to the medium-term strategic plan and annual plans, these issues should be seriously discussed among governing Board and management FCWTB based on lesson learnt from the Project.

(5) Project Vehicle

As a result of condition check of the project vehicle damaged by the traffic accident in Lokoja in March 2017, FCTWB concluded impossibility of repair and will purchase a new vehicle by using Counterpart Fund. Process of procurement is ongoing.

All project vehicles for NRW reduction should be used strictly for implementation of the medium-term strategic plan for NRW reduction.

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

2-1 Detail

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

Through monitoring of bulk and zonal flow meter reading (ultrasonic meters) for system input volume, the Project found out that data acquisition is not always available due to non-full flow of water at bulk flow meters in the previous monitoring, which results in difficulty in calculating/monitoring system input volume as well as NRW ratio of the whole water supply system.

(2) Customers' Zonal and PMA Coding (Output-1)

Customers' zonal and PMA coding is still ongoing (80% completed) as a fundamental condition for water distribution management and NRW monitoring, and FCTWB has faced in difficulty in identifying their locations.

(3) Irregular Billing Cycle (Output-1)

Same as the previous monitoring, from the fact that bills were issued at 6 times in the past 12 months, meter reading and billing has not been done in regular intervals, which causes difficulty in calculation/monitoring of billed water consumption.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) System input volume to Zone 5 is not measurable for NRW monitoring.
- b) Also, system input volume to PMAs in Jabi and Garki I are not measurable or recordable for NRW monitoring.
- c) Prepaid meter payment record in Gudu PMA has not been submitted regularly from Metering Unit to NRW Unit.

2-2 Cause

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

Based on the Project Team's preliminary investigation, FCTWB and FCDA identified

PM Form 3-1 Monitoring Sheet Summary

interference along trunk mains by water flow from new water treatment plants (Phases 3&4) to water flow from old plants (Phases 1&2) at the upstream side of bulk flow meters as a cause of non-full flow of water and also overflow from water treatment plants (Phases 3&4).

(2) Customers' Zonal and PMA Coding (Output-1)

Some customers lack address information in billing system database, so zonal coding has slowed down.

(3) Irregular Billing Cycle (Output-1)

The inability of regular billing is attributed to operational challenges such as dearth of billing paper and non-constant power supply which are caused by funding problem.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.
- b) A mechanical meter in Jabi PMA is not functioning, and data from an ultrasonic PMA meter seems to have not been transferred to portable data logger in Garki I PMA.
- c) Existing prepaid meter software cannot create data sheets.

2-3 Action to be taken

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

Since the previous monitoring, the Project estimated system input volume based on available and reliable data which the Project can obtain, and continue to do it.

As a result of discussions and close collaboration between FCDA and FCTWB about water flow interference at an injection point along a trunk main by water flow from new water treatment plant (Phases 3&4) to water flow from old plant (Phases 1&2) at the upstream side of bulk flow meters, FCDA started relocation works of the injection point from the upstream side to the downstream side in June 2018, and will complete it by the end of July 2018.

(2) Customers' Zonal and PMA Coding (Output-1)

Customers' address information should be clarified one by one and efficiently, then zonal and PMA coding should be completed by the second week of July 2018.

(3) Irregular Billing Cycle (Output-1)

Any possible measures and efforts are taken to ensure regular meter reading and billing. The issue should be escalated properly to not only management of FCTWB but also governing Board and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary funding.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

PM Form 3-1 Monitoring Sheet Summary

- a) The solar system should be recovered by utilizing spare panels from other solar systems by the end of July 2018, and those spare panels will be restocked later.
- b) A PMA mechanical meter in Jabi PMA should be replaced, and data transfer failure from an ultrasonic PMA meter to data logger in Garki PMA should be solved by the end of July 2018.
- c) Prepaid meter payment record in Gudu PMA should be submitted regularly from Metering Unit to NRW Unit by utilizing an alternative data source.

2-4 Roles of Responsible Persons/Organization

[Nigerian Side]

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

NRW Unit continues to estimate system input volume based on available and reliable data which the Project can obtain.

As soon as FCDA completes relocation works of the injection point from the upstream side to the downstream side by the end of July 2018, FCDA and FCTWB will work on cabling works, then FCTWB will monitor bulk and zonal flow meter reading (ultrasonic meters) for system input volume as originally designed.

(2) Customers' Zonal and PMA Coding (Output-1)

- Relevant Units such as MIS, billing, AMR and NRW as task team identify list of customers whom address information is unclear for zonal coding.
- By customer category, relevant Units such as major consumers and Area Office cooperate with task team for clarification of address information.
- Then, task team completes immediately zonal coding by clarified information as well as PMA coding based on pilot project customer list.

(3) Irregular Billing Cycle (Output-1)

NRW Unit and Billing Unit escalate the issue to management of FCTWB, then from FCTWB to Board members and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary budget allocation.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) Both NRW Unit and Facility & Electro-Mechanical Unit work on solar panel installation and supervision.
- b) Process of procurement of a mechanical meter is ongoing. NRW Unit, Pipeline Unit and Area Office replace the mechanical PMA meter by new one in Jabi. NRW Unit and Facility & Electro-Mechanical Unit investigate situation of data transfer from ultrasonic PMA meter

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

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

28th June 2018



Mr. Abubakar Sani Pai
Project Director,
Director, Economic Planning, Research
and Statistics Department,
Federal Capital Territory Administration
(FCTA),
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,
General Manager
Federal Capital Territory Water Board
(FCTWB),
Federal Republic of Nigeria



Mr. Katsutoshi Komori
Chief Representative,
JICA Nigeria Office

Attached Document

For monitoring, discussion on issues, solutions and acceleration of the Federal Capital Territory Reduction of Non-Revenue Water Project (hereinafter referred to as "the Project") with three months to termination, the eighth meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on 28th June 2018.

1. Remarks and Presentation

Mr. Abubakar Sani Pai, Project Director of the Project, chaired the JCC meeting and gave his welcome remarks emphasizing the importance of revenue generation and monitoring as well as the necessity of utilizing FCTWB's capacity developed through the Project.

Mr. Katsutoshi Komori, Chief Representative of JICA Nigeria Office introduced himself as the first participation in the JCC and congratulated establishment of new organizational structure of FCTWB as an autonomous agency. He emphasized achievement of Non-Revenue Water (hereinafter referred to as "NRW") reduction in the Pilot projects, which contributes to improvement in water supply services. He also requested outstanding issues are discussed for proper solutions and the draft medium-term strategic plan is approved by mutual cooperation among stakeholders for submission to FCTA. Lastly, he expressed continuous JICA' supports to the Project as well as his appreciation for participation and efforts of stakeholders.

Engr. M. Kabir Rabi, Head of NRW Unit of FCTWB 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 members to approve it through discussion of issues and solution for way forward (*refer to Appendix 3, 4 and 5).

Engr. M. Kabir Rabi, Head of NRW Unit of FCTWB made a presentation about the draft medium-term strategic plan for NRW reduction (2019-2023), and requested the JCC members to approve it for submission to FCTA (*refer to Appendix 6 and 7).

At the end of the discussions, Engr. A. A. Nahuche, the Project Manager of the Project gave closing remarks. He emphasized a great synergy between the Project and FCTWB's operations, then expressed his gratitude to the Japanese party and other partners.

2. Main Points Discussed

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

2-1. Personnel Reassignment of the FCTWB's Project Members

Technical Manager (Head of Commerce) and some Project members were reassigned since August 2017.

Project monitoring highlighted that FCTWB needs to consider his/her experiences in the Project and assure transfer of information, knowledge and lessons learned in the Project activities to his/her successor and other members.

In this regard, FCTWB has utilized technical meetings as a platform for regular interaction among project members as knowledge and information sharing in the organization.

2-2. Preparation for FCTWB Autonomy

Following enactment of enabling law for autonomous FCTWB in December 2017, JICA assisted FCTWB in financial data collection, calculation of unit cost, price and profitable tariff, then financial analysis including profit-loss statement and cash flow until 2023 in accordance with the medium-term strategic plan for NRW reduction (2019-2023).

In preparation for full transition of FCTWB to an autonomous agency, FCTWB will utilize these deliverables to advance step by step as scheduled.

2-3. Project Vehicle

As a result of condition check of the project vehicle damaged by the traffic accident in Lokoja in March 2017, FCTWB concluded impossibility of repair and will purchase a new vehicle by using Counterpart Fund.

FCTWB reported procurement process is ongoing, and will use project vehicles for NRW reduction strictly for implementation of the medium-term strategic plan for NRW reduction.

2-4. Data Acquisition by Bulk and Zonal Flow Meters

As a result of discussions and close collaboration between FCDA and FCTWB about water flow interference at an injection point along a trunk main, FCDA started relocation works of the injection point from the upstream side to the downstream side in June 2018, and will complete it by the end of July 2018.

As soon as FCDA completes relocation works, FCDA and FCTWB will work on cabling works, then FCTWB will monitor bulk and zonal flow meter reading (ultrasonic meters) for system input volume as originally designed.

2-5. Customers' Zonal and PMA Coding

Customers' zonal and PMA coding is still ongoing as a fundamental

condition for water distribution management and NRW monitoring, and FCTWB has faced difficulty in identifying their locations.

FCTWB will clarify customers' address information one by one and efficiently, then complete zonal and PMA coding by the second week of July 2018.

2-6. Irregular Billing Cycle

From the fact that bills were issued at 6 times in the past 12 months, meter reading and billing has not been done in regular intervals, which causes difficulty in calculation/monitoring of billed water consumption.

FCTWB will escalate this issue to governing Board and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary funding.

FCTWB noted that FCTWB started to discuss the possibility of meter workshop in Jabi Area Office.

2-7. Monitoring of NRW Ratio and/or related Data in Zone and PMA

a) System input volume to Zone 5 is not measurable for NRW monitoring, because Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.

FCTWB will recovered it by utilizing spare panels from other solar systems by the end of July 2018, and restock them later.

FCTA requested FCTWB to guarantee the security, then FCTWB answered that FCTWB will make efforts to avoid the same problem.

b) System input volume to PMAs in Jabi and Garki I are not measurable or recordable for NRW monitoring, because a mechanical meter in Jabi PMA is not functioning and data from an ultrasonic PMA meter seems to have not been transferred to portable data logger in Garki I PMA.

FCTWB will replace a PMA mechanical meter in Jabi PMA and solve data transfer failure from an ultrasonic PMA meter to data logger in Garki PMA with support from JICA Expert Team by the end of July 2018.

c) Prepaid meter payment record in Gudu PMA has not been submitted regularly from Metering Unit to NRW Unit, because existing prepaid meter software is incapable to create data sheets.

FCTWB will ensure that Metering Unit submit prepaid meter payment record in Gudu PMA regularly to NRW Unit by utilizing an alternative data source from Finance Department.

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2-8. Results of Pilot Projects

JICA Nigeria Office suggested that reasons leading to unsuccessful result in SMA-2 of Garki I be clarified and utilized into implementation of NRW reduction.

FCTWB answered that there was difficulties in identifying pipelines due to a lot of discrepancy among existing information including drawings particularly in Phase 1 development area, and agreed to the suggestion.

2-9. The Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

FCTA pointed out that the presentation needs more explanation about NRW reduction's impact for revenue generation

The Project Team will make it improved in preparation for submission and approval of the draft medium-term strategic plan for NRW reduction (2019-2023) and annual plan.

2-10. FCTA's Approval Process of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

The draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval as the indicator "3a" for Output-3, and then the approval shall be done by the end of the Project as the indicator "a" for Project Purpose.

FCTA expounded that governing Board of FCTWB authorized by FCTA takes responsibility of the review and approval, now that FCTWB became an autonomous agency and the FCT Minister appointed the Board members.

The JCC members confirmed this approval process.

2-11. Incorporation of Annual NRW Reduction Plan (2019) to FCTWB's Annual Recurrent and Capital Budget Plan (2019)

FCTWB prepares annual recurrent and capital budget plan in October in recent years, so annual NRW reduction plan (2019) is not likely to be incorporated to annual recurrent and capital budget plan by September 2018, the end of the Project.

The Nigerian side requested to modify the indicator 3b for Output-3 as a revision of the present PDM₄ and PO₄, and the Japanese side accepted the request.

Also, FCTWB noted the necessity to categorize budget items to be listed

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in annual NRW reduction plan into recurrent and capital budgets. The Project Team will do it in preparation of annual NRW reduction plan (2019).

3. Approval of Project Monitoring Sheet (Draft)

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

4. Approval of Revision of PDM and PO

Based on Project Monitoring Sheet (Draft) (refer to Appendix 3) and the results of the above discussion (refer to 2-11), the JCC members approved revision of both PDM and PO (refer to Appendix 5. PO revision is version number only). Comparison table of PDM revision is as follows:

Comparison Table of PDM Revision

Before Revision	After Revision
Output-3	
Objectively Verifiable Indicators	
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.	3b. An annual NRW reduction plan (2019) is committed by the governing Board of FCTWB, to be incorporated in FCWTB's annual recurrent and capital budget plan (2019) with high-priority listing for submission to FCTA for review and approval. 3c. A planning manual for NRW reduction is approved by the General Manager of FCTWB.
Means of Verification	
3a&3b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan	3a. Date of official letter submitting draft strategic plan 3b. Date of commitment incorporating annual NRW reduction plan in annual recurrent and capital budget plan
Inputs (the Nigerian Side)	
<u>Project Personnel</u>	<u>Project Personnel</u>

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Before Revision	After Revision
2. Project Manager: Director of FCTWB	2. Project Manager: General Manager of FCTWB

Remarks: Although Indicator 3b for Output-3 after revision which was approved in the JCC meeting is "An annual NRW reduction plan (2019) is incorporated in FCWTB's annual recurrent budget plan (2019) or committed on its incorporation by the General Manager of FCTWB for submission to FCTA for review and approval.", the JCC members had follow-up discussions and concluded it as above in the table.

5. Approval of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023)

As a result of discussions, the JCC members approved the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) for submission to FCTA (refer to Appendix 6).

END

Appendix

- Appendix 1: Programme/Agenda
- Appendix 2: Attendance List
- Appendix 3: Project Monitoring Sheet (Draft)
- Appendix 4: Presentation: Results of Project Monitoring and Revision of PDM & PO
- Appendix 5: Revision of PDM (PDM₄ to PDM₅) and PO (PO₄ to PO₅)
- Appendix 6: Draft Summary of the Medium-Term Strategic Plan for NRW Reduction (2019-2023)
- Appendix 7: Presentation: Draft Summary of the Medium-Term Strategic Plan for NRW Reduction (2019-2023)

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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 8TH JOINT COORDINATING COMMITTEE**

Venue: Conference Room, EPRS, FCT Administration, Abuja

Date: 10:00, Thursday, 28th June 2018

- | | |
|---------------|--|
| 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. Katsutoshi Komori (JICA Nigeria Office) |
| 10:25 - 10:45 | Presentation of Results of Project Monitoring by Engr. M. Kabir Rabi (Head of NRW Unit, FCTWB) |
| 10:45 - 11:30 | - Presentation of the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) by Engr. M. Kabir Rabi (Head of NRW Unit, FCTWB)

- Explanation of the Draft Annual NRW Reduction Plan (2019)

- Explanation of the Draft Planning Manual for NRW Reduction |
| 11:30 - 12:00 | Questions, Answers and Discussions |
| 12:00 - 12:10 | Approval of Project Monitoring Sheets, Revision of PDM and PO if any, and the Draft Medium-Term Strategic Plan for NRW Reduction (2019-2023) |
| 12:10 - 12:20 | Any other business and Way forward |
| 12:20 - 12:30 | Closing Remarks by Project Manager, Engr. A. A. Nahuchc (General Manager, FCTWB) |
| 12:30 | Closing Prayer |

FEDERAL CAPITAL TERRITORY REDUCTION OF NON-REVENUE WATER PROJECT

EIGHTH JOINT COORDINATING COMMITTEE (JCC) MEETING

HELD ON 28TH JUNE 2018 AT FCTA/EPRS CONFERENCE ROOM

ATTENDANCE LIST

S/N	NAME	ORGANIZATION	POSITION
1	Katsatoshi Komori	JICA Nig.	Country Representative
2	Masanori Sakamoto	JICA Nig.	Representative
3	Abubakar Sani Pai	EPRS	Director
4	Aliyu A. Nahuche	FCT Water Board	General Manager
5	Azuanah Kingsley	FMWR	Geologist
6	Udeh E.C	FCDA	ACE
7	Udo S. T	FCDA	AD
8	Rabiu M.K	FCT Water Board	Head NRW
9	Phoebe Ocheja	FCT Water Board	HOD/ Admin and Supply
10	Okobi O. Y	FCT Water Board	HOD/ Quality Control
11	Hasfat Ahmed Lawi	FCT Water Board	HOD/ Finance and Audit
12	Usuman A. Aliyu	FCT Water Board	Deputy Director Distribution
13	Abolade Lawal	FCT Water Board	Technical Manager
14	Dada James Oladele	FCT Water Board	-
15	Abbas Ahmed	FCT Water Board	Head Public Relations
16	Adeyemi A. Taiwo	FCT Water Board	HOD/ Commerce
17	Alkali Mohammed	FMWR	Civil Engineer
18	Abubakar Lawal	FCTA/EPRS	-
19	Ahmed m Kabiru	FCTA/EPRS	-
20	John Egbe	FCTA/EPRS	-
21	Akinori Miyoshi	JICA Expert Team	Chief Advisor NRW Project

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. 6 (Term covered: August, 2017 - June, 2018)

Name: Akinori Miyoshi

Title: Chief Advisor

Submission Date: 28 June 2018

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 had been paid temporarily by the Japanese side because of delay in release of the Counterpart Fund, which were 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 22.1 person-months between August 2017 and June 2018 (106.6 person-months from the commencement of the Project in November 2014).

Equipment

Zonal meters, data loggers, telemetric monitoring system and solar powering systems were installed from June to September 2017, and additional adjustment was done in November 2017.

PM Form 3-1 Monitoring Sheet Summary

Facilities

There are no inputs during this monitoring period.

Training of the Nigerian Project Personnel

There are no inputs during this monitoring period.

1-2 Progress of Activities

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

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
1-1	Install bulk meters to water treatment plants 1 and 2	Completed.	Completed.
1-2	Measure/estimate 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.	Completed in February 2018.
1-3	Tally the above water production data/estimation	Progress: 0%, Behind: 7.0 months The Project needs at least 6 months for monitoring this Activity.	Completed in February 2018.
1-4	Calculate the water consumption based on the billing data	Completed. 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.	Completed. However, customers' zonal coding is still ongoing as a fundamental condition for water distribution management. Periodic billed consumption has been not recorded because of non regular meter reading and billing. Constant power supply, adequate provision for consumables and SOP are necessary.
1-5	Calculate NRW ratio of the service area of FCTWB using the results 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.	Completed in February 2018.
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.	Completed in August 2017. After completion, loggers' failure were observed at Tank 2 and Tank Kubwa due to power instability and lightning, but they were replaced or fixed. Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.
1-7	Measure/estimate 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 1-4 and 1-6.	Progress: 85%, Behind: 0.0 months The Activity will be completed after the completion of customers' zonal coding stated in Activity 1-4, before July 2018.

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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 Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *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: 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.	Progress: 65%, Behind: 10.0 months Assessment was done partially after the completion of pilot projects, and will be completed after NRW monitoring in pilot Area offices in July and August 2018.
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. Refer to Activity 3-3.	Completed.
2-5	Install water flow meters to each PMA and measure in/outflows monthly	Completed (installation only). Meter reading in Gudu is ongoing. Adequate provision for logistics and SOP are necessary for monitoring monthly in/outflows.	Completed. However, a mechanical PMA meter in Jabi PMA is not functioning, and data from an ultrasonic PMA meter is not transferred to portable logger in Garki I PMA.
2-6	Zone each PMA into Sub Metering Areas (SMA)	Completed.	Completed.
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.	Completed in October 2017.
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. Refer to Activity 3-3.	Completed in October 2017.
2-9	Measure an initial level of NRW of each SMA	Progress: 90%, Behind: 2.0 months (Follow-up)	Completed in October 2017.

PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
		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.	
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.	Completed in October 2017.
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.	Completed in October 2017.
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.	Completed in October 2017.
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.	Completed in October 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.	Completed in October 2017.
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	Completed in October 2017.

PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
		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.	Completed in October 2017.
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.	Completed in May 2018.

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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 Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
3-1	Establish a Working Group for NRW reduction planning	Reviewed and completed.	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.	Completed.
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.	Completed in November 2017.
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 has been discussed. To be completed by November 2017.	Completed in November 2017.
3-5	Develop the first medium-term strategic plan (2019-2023) for approval by FCTA	Progress: 00%, Behind: 0.0 months To be completed by March 2018.	Progress: 95%, Behind: 3.0 months Working Group and Advisory Group members have been involved in documentation and check/comments. To be completed by the end of June 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.	Progress: 80%, Behind: 1.0 months Working Group, particularly NRW Unit has been involved in documentation based on the first medium-term strategic plan (2019-2023). To be completed by the end of July 2018.
3-7	Develop a planning manual for NRW reduction	Progress: 00%, Behind: 0.0 months To be completed by March 2018.	Progress: 80%, Behind: 0.0 months JICA Expert Team and NRW Unit have been involved in preparation. To be completed by the end of July 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.	Completed in October 2017.
3-9	Establish framework of water distribution management	Progress: 25%, Behind: 0.0 months To be completed by October 2017.	Progress: 85%, Behind: 8.5 months The Activity will be completed after

PM Form 3-1 Monitoring Sheet Summary

No	Activity	Previous Monitoring (as at Jul. 2017) *Progress against Phase-2 Work Plan	Current Monitoring (as at Jun.2018) *Progress against Phase-2 Work Plan
			the completion of customers' zonal coding stated in Activity 1-4, before July 2018.

1-3 Achievement of Output

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

No	Indicator	Previous Monitoring (as at Jul. 2017)	Current Monitoring (as at Jun.2018)
1a	Record of NRW ratio is kept by NRW Unit.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and recorded. Periodic billed consumption has been not calculated easily because of non monthly meter reading and billing cycle.
1b	NRW ratio of the service area of FCTWB is reported to its Joint Management Meeting.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and reported.
1c	NRW ratio of the service area of FCTWB is reported to Management of FCTWB.	None and delayed as a result of delay in Activities 1-2 to 1-5.	NRW ratio was estimated because of data deficiency at bulk meters and reported.
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.	None and delayed as a result of delay in Activities 1-6 and 1-7.	Water flow has been recorded by zonal meters although data deficiency. Billed consumption have been not calculated due to delay in customers' zonal coding.

Verification of Achievement and Implementing Process

Based on preliminary investigation by the Project Team, FCTWB had 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 (Phases 3&4) to water flow from old plant (Phases 1&2) at the upstream side of bulk flow meters. Then, FCTA started relocation works of injection point from the upstream side to the downstream side in June 2018.

Me

W.A.R.

H. K.

3m

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 Jul. 2017)	Current Monitoring (as at Jun.2018)																																																																																																																																																						
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>Achieved in Gudu and Jabi pilot Area Offices, but not achieved in Garki I.</p> <p style="text-align: center;">NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Bef (%)</th> <th>Aft (%)</th> <th>Red. Point</th> <th>Target (%)</th> <th>status</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>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>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>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>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>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>44.9</td> <td>Non</td> </tr> <tr> <td>SMA-3</td> <td>70.0</td> <td>53.7</td> <td>16.3</td> <td>42.0</td> <td>No</td> </tr> </tbody> </table>		Bef (%)	Aft (%)	Red. Point	Target (%)	status	Gudu						SMA-1	52.0	14.3	37.7	31.2	OK	SMA-2	53.9	28.7	25.2	32.3	OK	Jabi						SMA-2	45.6	21.1	24.5	27.4	OK	SMA-3	87.6	42.6	45.0	52.6	OK	Garki I						SMA-1	85.1	62.2	22.9	51.1	No	SMA-2	74.8	78.2	-3.4	44.9	Non	SMA-3	70.0	53.7	16.3	42.0	No	<p>Not successful in SMA-2 of Garki I due to difficulty in identifying the installed pipeline, however the Project concluded indicator was generally achieved in all three PMAs. Pilot project spent the period between Nov. 2014 and Dec. 2016 intermittently and the follow up between Mar. and Oct. 2017.</p> <p style="text-align: center;">NRW Ratio (%)</p> <table border="1"> <thead> <tr> <th></th> <th>Bef (%)</th> <th>Aft (%)</th> <th>Red. Point</th> <th>Target (%)</th> <th>status</th> </tr> </thead> <tbody> <tr> <td colspan="6">Gudu</td> </tr> <tr> <td>SMA-1</td> <td>52.0</td> <td>12.1</td> <td>39.9</td> <td>31.2</td> <td>OK</td> </tr> <tr> <td>SMA-2</td> <td>53.9</td> <td>29.9</td> <td>24.0</td> <td>32.3</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>53.3</td> <td>20.4</td> <td>32.9</td> <td>32.0</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>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>52.6</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>70.0</td> <td>30.9</td> <td>39.1</td> <td>42.0</td> <td>OK</td> </tr> <tr> <td colspan="6">Garki I</td> </tr> <tr> <td>SMA-1</td> <td>85.1</td> <td>45.2</td> <td>39.9</td> <td>51.1</td> <td>OK</td> </tr> <tr> <td>SMA-2</td> <td>74.8</td> <td>49.3</td> <td>25.5</td> <td>44.9</td> <td>Non</td> </tr> <tr> <td>SMA-3</td> <td>70.0</td> <td>27.4</td> <td>42.6</td> <td>42.0</td> <td>OK</td> </tr> <tr> <td>PMA</td> <td>74.8</td> <td>34.7</td> <td>40.1</td> <td>44.9</td> <td>OK</td> </tr> </tbody> </table>		Bef (%)	Aft (%)	Red. Point	Target (%)	status	Gudu						SMA-1	52.0	12.1	39.9	31.2	OK	SMA-2	53.9	29.9	24.0	32.3	OK	PMA	53.3	20.4	32.9	32.0	OK	Jabi						SMA-2	45.6	21.1	24.5	27.4	OK	SMA-3	87.6	42.6	45.0	52.6	OK	PMA	70.0	30.9	39.1	42.0	OK	Garki I						SMA-1	85.1	45.2	39.9	51.1	OK	SMA-2	74.8	49.3	25.5	44.9	Non	SMA-3	70.0	27.4	42.6	42.0	OK	PMA	74.8	34.7	40.1	44.9	OK
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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.	Technical manuals were prepared and provisionally approved, but reviewed and updated in Phase-2.	Technical manuals were reviewed and updated in May 2018. Approval process is ongoing.																																																																																																																																																						
<p>Verification of Achievement and Implementing Process</p> <p>Under the circumstances that 2017 Counterpart Fund was not released as scheduled due to delay in non-passage of 2017 appropriation and FCTA's internal process, the Project made efforts of implementation of pilot projects as follow-up activities to achieve the target with concentrated inputs including supervisors and supporters from the FCTWB Headquarters and other Area Offices from September to October 2017.</p>																																																																																																																																																									

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 Jul. 2017)	Current Monitoring (as at Jun.2018)
3a	Draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval.	None (as planned).	Not yet. To be submitted in early July 2018, after JCC's approval of the draft medium-term strategic plan.
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.	None (as planned).	Not yet. The incorporation can be done after FCTA's approval of the draft medium-term strategic plan and when FCWTB's annual recurrent and capital plan (2019) is prepared probably in October 2019 which is after the termination of the Project. So, FCTWB highlighted the need to modify this indicator (refer to 3-1).
3c	A planning manual for NRW reduction is approved by the Director of FCTWB.	None (as planned).	Not yet. To be approved by the end of August 2018.
3d	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.	Ongoing but delayed due to delay in Activity 1-7 and 3-9.
<p>Verification of Achievement and Implementing Process Although it took time, working and advisory groups' members contributed effectively to documentation and check/comments/advices in preparation of the draft medium-term strategic plan.</p>			

1-4 Achievement of the Project Purpose

[Project Purpose: Capacity of FCTWB for NRW reduction is strengthened.]

No	Indicator	Previous Monitoring (as at Jul. 2017)	Current Monitoring (as at Jun.2018)
a	The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project.	None (as planned).	Not yet. To be approved by the end of August 2018.
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.	Follow-up capacity development have been done in Phase-2 of the Project.	Capacity development have been done in Phase-2 of the Project. Follow up to be completed by the end of August 2018.
c	NRW ratio of each PMA is monitored.	None (as planned). Inflow data has been read in Gudu, but not in Jabi and Garki I.	Partially monitored. Inflow data has been read in Gudu, but not in Jabi and Garki I due to malfunctioning of a mechanical PMA meter in Jabi and data transfer failure from an ultrasonic PMA meter to portable data logger in Garki I.
<p>Verification of Achievement and Implementing Process</p> <p>In relation to Indicator c, less awareness and ownership have caused proper reporting and information sharing on problems among FCTWB Headquarters and pilot Area Offices and then delay in prompt measures.</p>			

1-5 Changes of Risks and Actions for Mitigation

Although enabling law establishing autonomous FCTWB was enacted in the end of 2017 and members of governing Board of FCTWB were appointed in March 2018, FCTWB still depends financially on FCTA.

Following the past physical years 2016 and 2017, recent budget constraint of the Nigerian side including non-release or late-release of the Counterpart Fund and recurrent budget has corresponded to an important assumption "A. Natural disaster / political instability / economic crisis that affect the Project activities do not occur." in 2018, too.

Recent budget constraint has posed an impediment in the Project monitoring with adequate logistics.

1-6 Progress of Actions undertaken by JICA

None.

1-7 Progress of Actions undertaken by Nigerian side

National budget for 2018 was approved in the middle of June 2018, so FCTWB needs to request FCTA for the immediate release of the Counterpart Fund or adequate recurrent budget.

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

Same as the last monitoring, Technical Manager (Head of Commerce) and some Project members were reassigned since August 2017.

FCTWB needs to consider his/her experiences in the Project and assure transfer of information, knowledge and lessons learned in the Project activities to his/her successor and other members.

(2) Delay in Release of 2018 Counterpart Fund

As mentioned above, though national budget for 2018 was approved in the middle of June 2018, FCT budget for 2018 is still in the process of the approval. Accordingly, 2018 Counterpart Fund has not yet been released. 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) Preparation for FCTWB Autonomy

As of September 2017, JICA Expert Team suggested establishing a preparatory committee, listing up and scheduling preparatory activities in expectation for autonomy. Following enactment of enabling law for autonomous FCTWB in December 2017, JICA Expert Team assisted FCTWB in financial data collection, calculation of unit cost, price and profitable tariff, then financial analysis including profit-loss statement and cash flow until 2023 in accordance with the medium-term strategic plan for NRW reduction.

In preparation for full transition of FCTWB to an autonomous agency, FCTWB should utilize these deliverables to advance step by step as scheduled.

(4) Administrative Complication with respect to Commerce Operations

Same as several times of the past monitoring, mixture of customer categories, meter types, reading divisions and water tariff, and irregular billing cycle and also lagged billing reflection of payment record, etc. have caused inefficiency in commerce operations affecting NRW reduction, which leads to financial losses of FCTWB and customer dissatisfaction. JICA Expert Team suggests FCTWB to solve the issues in consideration of streamlining, simplification and uniform management among relevant Units.

In preparation for full transition of FCTWB to an autonomous agency as well as implementation of NRW reduction according to the medium-term strategic plan and annual plans, these issues should be seriously discussed among governing Board and management FCWTB based on lesson learnt from the Project.

(5) Project Vehicle

As a result of condition check of the project vehicle damaged by the traffic accident in Lokoja in March 2017, FCTWB concluded impossibility of repair and will purchase a new vehicle by using Counterpart Fund. Process of procurement is ongoing.

All project vehicles for NRW reduction should be used strictly for implementation of the medium-term strategic plan for NRW reduction.

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

2-1 Detail

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

Through monitoring of bulk and zonal flow meter reading (ultrasonic meters) for system input volume, the Project found out that data acquisition is not always available due to non-full flow of water at bulk flow meters in the previous monitoring, which results in difficulty in calculating/monitoring system input volume as well as NRW ratio of the whole water supply system.

(2) Customers' Zonal and PMA Coding (Output-1)

Customers' zonal and PMA coding is still ongoing (80% completed) as a fundamental condition for water distribution management and NRW monitoring, and FCTWB has faced in difficulty in identifying their locations.

(3) Irregular Billing Cycle (Output-1)

Same as the previous monitoring, from the fact that bills were issued at 6 times in the past 12 months, meter reading and billing has not been done in regular intervals, which causes difficulty in calculation/monitoring of billed water consumption.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) System input volume to Zone 5 is not measurable for NRW monitoring.
- b) Also, system input volume to PMAs in Jabi and Garki I are not measurable or recordable for NRW monitoring.
- c) Prepaid meter payment record in Gudu PMA has not been submitted regularly from Metering Unit to NRW Unit.

2-2 Cause

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

Based on the Project Team's preliminary investigation, FCTWB and FCDA identified

PM Form 3-1 Monitoring Sheet Summary

interference along trunk mains by water flow from new water treatment plants (Phases 3&4) to water flow from old plants (Phases 1&2) at the upstream side of bulk flow meters as a cause of non-full flow of water and also overflow from water treatment plants (Phases 3&4).

(2) Customers' Zonal and PMA Coding (Output-1)

Some customers lack address information in billing system database, so zonal coding has slowed down.

(3) Irregular Billing Cycle (Output-1)

The inability of regular billing is attributed to operational challenges such as dearth of billing paper and non-constant power supply which are caused by funding problem.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) Solar panel for zonal meter located at roof-top of Tank 5 was stolen in February 2018.
- b) A mechanical meter in Jabi PMA is not functioning, and data from an ultrasonic PMA meter seems to have not been transferred to portable data logger in Garki I PMA.
- c) Existing prepaid meter software cannot create data sheets.

2-3 Action to be taken

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

Since the previous monitoring, the Project estimated system input volume based on available and reliable data which the Project can obtain, and continue to do it.

As a result of discussions and close collaboration between FCDA and FCTWB about water flow interference at an injection point along a trunk main by water flow from new water treatment plant (Phases 3&4) to water flow from old plant (Phases 1&2) at the upstream side of bulk flow meters, FCDA started relocation works of the injection point from the upstream side to the downstream side in June 2018, and will complete it by the end of July 2018.

(2) Customers' Zonal and PMA Coding (Output-1)

Customers' address information should be clarified one by one and efficiently, then zonal and PMA coding should be completed by the second week of July 2018.

(3) Irregular Billing Cycle (Output-1)

Any possible measures and efforts are taken to ensure regular meter reading and billing.

The issue should be escalated properly to not only management of FCTWB but also governing Board and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary funding.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

PM Form 3-1 Monitoring Sheet Summary

- a) The solar system should be recovered by utilizing spare panels from other solar systems by the end of July 2018, and those spare panels will be restocked later.
- b) A PMA mechanical meter in Jabi PMA should be replaced, and data transfer failure from an ultrasonic PMA meter to data logger in Garki PMA should be solved by the end of July 2018.
- c) Prepaid meter payment record in Gudu PMA should be submitted regularly from Metering Unit to NRW Unit by utilizing an alternative data source.

2-4 Roles of Responsible Persons/Organization

[Nigerian Side]

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

NRW Unit continues to estimate system input volume based on available and reliable data which the Project can obtain.

As soon as FCDA completes relocation works of the injection point from the upstream side to the downstream side by the end of July 2018, FCDA and FCTWB will work on cabling works, then FCTWB will monitor bulk and zonal flow meter reading (ultrasonic meters) for system input volume as originally designed.

(2) Customers' Zonal and PMA Coding (Output-1)

- Relevant Units such as MIS, billing, AMR and NRW as task team identify list of customers whom address information is unclear for zonal coding.
- By customer category, relevant Units such as major consumers and Area Office cooperate with task team for clarification of address information.
- Then, task team completes immediately zonal coding by clarified information as well as PMA coding based on pilot project customer list.

(3) Irregular Billing Cycle (Output-1)

NRW Unit and Billing Unit escalate the issue to management of FCTWB, then from FCTWB to Board members and FCTA to address importance of regular billing for improvement in calculation of billed water consumption, and to obtain their understanding and necessary budget allocation.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

- a) Both NRW Unit and Facility & Electro-Mechanical Unit work on solar panel installation and supervision.
- b) Process of procurement of a mechanical meter is ongoing. NRW Unit, Pipeline Unit and Area Office replace the mechanical PMA meter by new one in Jabi. NRW Unit and Facility & Electro-Mechanical Unit investigate situation of data transfer from ultrasonic PMA meter

logger in Garki I, then take necessary measures.

- c) Metering Unit obtains prepaid meter payment record from Revenue Unit, then submit it in suitable format to NRW Unit monthly.

[Japanese Side]

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

JICA Expert Team provides necessary supports to FCTWB, particularly NRW Unit to continue estimating system input volume based on available and reliable data which the Project can obtain, and provides necessary and possible assistance for relocation works of the injection point.

(2) Customers' Zonal and PMA Coding (Output-1)

JICA Expert Team provides necessary supports to FCTWB.

(3) Irregular Billing Cycle (Output-1)

JICA Expert Team provides necessary supports to FCTWB.

(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA

JICA Expert Team provides necessary supports to FCTWB.

3 Modification of the Project Design Matrix and Project Implementation Plan

3-1 Project Design Matrix and Plan of Operation

As a result of this monitoring, the Project Team confirmed process and suggests revision of PDM (PDM₄ to PDM₅) as below, as well as Plan of Operation (PO₄ to PO₅).

(1) FCTA's Approval Process of the Medium-term Strategic Plan for NRW Reduction

The draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval as the indicator "3a" for Output-3, and then the approval shall be done by the end of the Project as the indicator "a" for Project Purpose. For this approval process, the Nigerian side confirmed that governing board of FCTWB authorized by FCTA takes responsibility of the approval.

(2) Incorporation of Annual NRW Reduction Plan (2019) to FCTWB's Annual Recurrent and Capital Budget Plan (2019)

FCTWB prepares annual recurrent and capital budget plan in October in recent years, so annual NRW reduction plan (2019) is not likely to be incorporated to annual recurrent and capital budget plan by September 2018, the end of the Project.

PM Form 3-1 Monitoring Sheet Summary

The Nigerian side requested to modify the indicator 3b for Output-3 as below, as a revision of the present PDM₄.

Before modification (PDM₄): "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."

After modification (PDM₅): "3b. An annual NRW reduction plan (2019) is incorporated in FCWTB's annual recurrent budget plan (2019) or committed on its incorporation by the General Manager of FCTWB for submission to FCTA for review and approval."

3-2 Other modifications on detailed implementation plan

None.

4 Preparation by Nigerian side toward after completion of the Project

- Follow up for incorporation of the annual NRW reduction plan (2019) to FCTWB's annual recurrent budget plan (2019)
- Follow up for modification of FCTWB's budget templates
- Standing imprest either monthly or quarterly basis for routine activities
- Set up staffing, office and equipment storage
- Monitoring of NRW ratio and related data (the whole system, zones and PMAs)
- Preparatory survey on zones
- Regular reporting to Management and governing Board of FCTWB

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

Annex

Annex-1: Participants in Preparation of Project Monitoring Sheets and Photos

Annex 1: Participants in Preparation of Monitoring Sheets and Photos

Participants in Preparation of Draft Monitoring Sheets

Day 1: 20st June 2018 for Draft Project Monitoring Sheets

S/N	NAME	POSITION
1	Nahucho A.A	General Manager (Project Manager)
2	Aliyu Ahmad Usuman	Asst. Director
3	Lawal Abolade R.	Head [Special Projects] (Coordinator)
4	Dikko Musa	Head [PL/WC]
5	Adeyemi A. Taiwo	H.O.D Commerce
6	Rabiu M.Kabir	Head [NRW]
7	Fabikun Adedeji Kehinde	Head [MIS]
8	Shehu Suleiman	Head [GIS]
9	Abdullahi Masaud	Area Manager Gwarinpa
10	Abubakar Ubale	S.E Civil
11	Igbinosa Courage	NRW
12	Abdulrahman Shehu Sani	Head Metering
13	Muhammed Dauda	Pipeline Unit
14	Sulaiman A Muhammed	Area Manager Jabi
15	Abdul Ozumi	AAM[Dist.] Gudu
16	Mohammed E Gana	AAM[Dist.] Garki I
17	Izegaegbe A. Ayo	AAM[Com.] Garki I
18	Bashir Adamu	AAM[Com.] Gudu
19	Abdul Yusuf	Superintendent, Gudu
20	Ezeh Hillary	Surveyor/ GIS
21	Abubakar Danladi	Senior Foreman
22	Titus Dawan	Commerce, Garki I
23	Ibrahim Yauri	Senior Foreman
24	Akinori Miyoshi	CA, JICA Expert Team

Day 2: 27th June 2018 for Draft Project Monitoring Sheets

S/N	NAME	POSITION
1	Nahucho A.A	General Manager (Project Manager)
2	Aliyu Ahmad Usuman	Asst. Director
3	Lawal Abolade R.	Head [Special Projects] (Coordinator)
4	Pheobe Ocheja	HOD [Admin&Supply]
5	Hasfat Ahmed Lawi	HOD [Finance and Account]
6	Lola Okobi	HOD [Quality Control]
7	Dikko Musa	Head [PL/WC]
8	Bamidele Olatunji	Head [International Cooperation]
9	Rabiu M.Kabir	Head [NRW]
10	Fabikun Adedeji Kehinde	Head [MIS]
11	Shehu Suleiman	Head [GIS]
12	Abdullahi Masaud	Area Manager Gwarinpa
13	Abubakar Ubale	S.E Civil
14	Abdulrahman Shehu Sani	Head [Metering]
15	Rose Akpan	Head [Billing]
16	Yahaya O. Kuike	Head [Audit]
17	Dada	Commerce
18	Abdulrahman Mohammed	NRW
19	Akinori Miyoshi	CA, JICA Expert Team

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Version 4
Dated 24 Aug. 2017
Monitoring: 27 Jun. 2018

Project Monitoring Sheet I (Revision of Project Design Matrix)

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>1. Level of NRW of both the service area of FCWTB and water distribution areas is monitored and estimated.</p>	<p>a. NRW reduction operations are carried out according to the medium-term strategic plan for NRW reduction (2019-2023).</p> <p>b. The medium-term strategic plan for NRW reduction (2019-2023) is approved by FCTA by the end of the Project.</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 is monitored.</p>	<p>a. Report of NRW reduction activities and monitoring by NRW Unit (NRW ratio, records of leakage defect on, repair, disconnection of illegal connections, etc.).</p> <p>b. Date of approval of the plan</p> <p>c. Results of joint assessment based on the criteria set by the Project</p> <p>d. Record of NRW ratio kept by NRW Unit</p>	<p>A. Policy support for NRW reduction is not discontinued. Policy support for NRW reduction is not discontinued</p> <p>B. Natural disaster/ political instability/ economic crisis that affect the service area of FCTWB do not occur</p> <p>C. Activities to implement the medium-term strategic plan are not discontinued or delayed</p>	<p>Net yet.</p> <p>Indicator 3: Not yet.</p> <p>Indicator 3: Follow-up capacity development have been done in Phase-2 of the Project.</p> <p>Indicator 2: Partially monitored.</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>a. Record of NRW ratio is kept by NRW Unit.</p> <p>b. NRW ratio of the service area of FCTWB is reported to its Joint Management Meeting.</p> <p>c. NRW ratio of the service area of FCTWB is reported to Management of FCTWB.</p> <p>d. 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 submitted by NRW Unit</p> <p>1b. Periodic records of data on water distribution management</p> <p>2a. Record of NRW ratio kept by NRW Unit</p> <p>2b. Date of approval of the manuals</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&b&c: NRW ratio was estimated because of data deficiency at bulk meters and meters and recorded/reported.</p> <p>Indicator 1d: Water flow has been recorded by zonal meters although data deficiency.</p> <p>Indicator 2a: Not successful for SMA-2 of Garki I due to difficulty in identifying the installed pipeline but indicator was generally achieved in all three PMAs.</p> <p>Indicator 2b: Reviewed and updated. Approval process is ongoing.</p>	
<p>3. A medium-term strategic plan of FCTWB for NRW reduction is developed, utilizing the results of Output 1-2 (*)</p>	<p>a. Draft medium-term strategic plan for NRW reduction (2019-2023) is submitted by FCTWB to FCTA for review and approval.</p> <p>b. 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.</p> <p>c. A planning manual for NRW reduction is approved by the Director of FCTWB.</p> <p>d. Framework of water distribution management is established.</p>	<p>3a&b. Date of official letter submitting draft strategic plan and annual recurrent and capital plan</p> <p>3c. Date of approval of the manual</p> <p>3d. Implementing structure and workflow of water distribution management</p>		<p>Indicator 3a&b&c: Not yet.</p> <p>Indicator 3d: Ongoing but delayed due to delay in Activity 1-7 and 2-8.</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).

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Activities	The Nigerian Side	Inputs	The Japanese Side	Important Assumption
<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/es/malon</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/3</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/throughflows 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 leakages, 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>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: HD for Administration and Supply/FCTWB 4. Technical Managers (Also Leaders of NRW Management Team): HD for Distribution and HD for Commerce/FCWB 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 (HD) and officers of the Distribution Department, Commerce Department, and Administration and Supply Department 6. Heads of other relevant Departments and Unit of FCTWB: HD for Finance, HD for Production, HD 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 (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 PMAs/SMAs. 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 PMAs 2. Administration and operational costs, including cost for local travel for the Project Personnel, demurrage at local customs point, licensing cost of radio meter(s) and water pressure sensor(s) 3. Other costs mutually agreed upon as necessary 	<p>The Japanese Experts</p> <ol style="list-style-type: none"> 1. Chief Advisor / NRW Reductor Planning / Water Distribution Management 1 2. Deputy Chief Advisor / NRW Reductor Planning / NRW Reduction Operations Management 3. NRW Reduction Operations Technology 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 Installation / Training 12. Financial Analysis / Organization 13. Other experts mutually agreed upon as necessary <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 and PMA 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>Pre-Conditions</p> <ol style="list-style-type: none"> 1. Furnished offices for Japanese Experts are secured at the Headquarters and each Pilot Area Office of FCTWB. 2. Project Personnel is assigned with the finalized list. 	<p>Issues & Countermeasures</p> <p>(1) Data Acquisition by Bulk and Zonal Flow Meters (Output-1) Issue: Data acquisition is not always available due to non-full flow of water at bulk flow meters. The Nigerian side identified interference along trunk mains by water flow as a cause of non-full flow of water and also overflow from plants. Countermeasures: FCDA started relocation works of the in-leak point in June 2016, and will complete it by the end of July 2016.</p> <p>(2) Customers' Zonal and PMA Coding (Output-1) Issue: Customers' zonal and PMA coding is still ongoing and FCTWB has faced in difficulty in identifying their locations. Some customers seek address information in billing system database, so coding has slowed down. Countermeasures: Customers' address information should clarified one by one and efficiently, then coding should be completed by the second week of July 2016.</p> <p>(3) Irregular Billing Cycle (Output-1) Issue: Meter reading and billing has not been done in regular intervals. The inability is attributed to operational challenges such as dearth of billing paper and non-constant power supply which are caused by funding problem. Countermeasures: The issue is escalated properly to not only management of FCTWB but also governing Board and FCTA to address importance, and to obtain their understanding and necessary funding.</p> <p>(4) Monitoring of NRW Ratio and/or related Data in Zone and PMA Issue: a) System input volume to Zone 5 is not measurable because of solar panel problem. b) System input volume to PMAs (in Jabi and Garki) are not measurable or recordable because of meter or data transfer failure. c) Prepaid meter payment record in Gudu PMA has not been submitted regularly from Metering Unit to NRW Unit. Countermeasures: a) Solar system should be recovered by the end of July 2016. b) The meter in Jabi PMA should be replaced, and data transfer failure in Garki PMA should be solved by the end of July 2016. c) Prepaid meter payment record in Gudu PMA should be submitted regularly by utilizing an alternative data sources.</p>

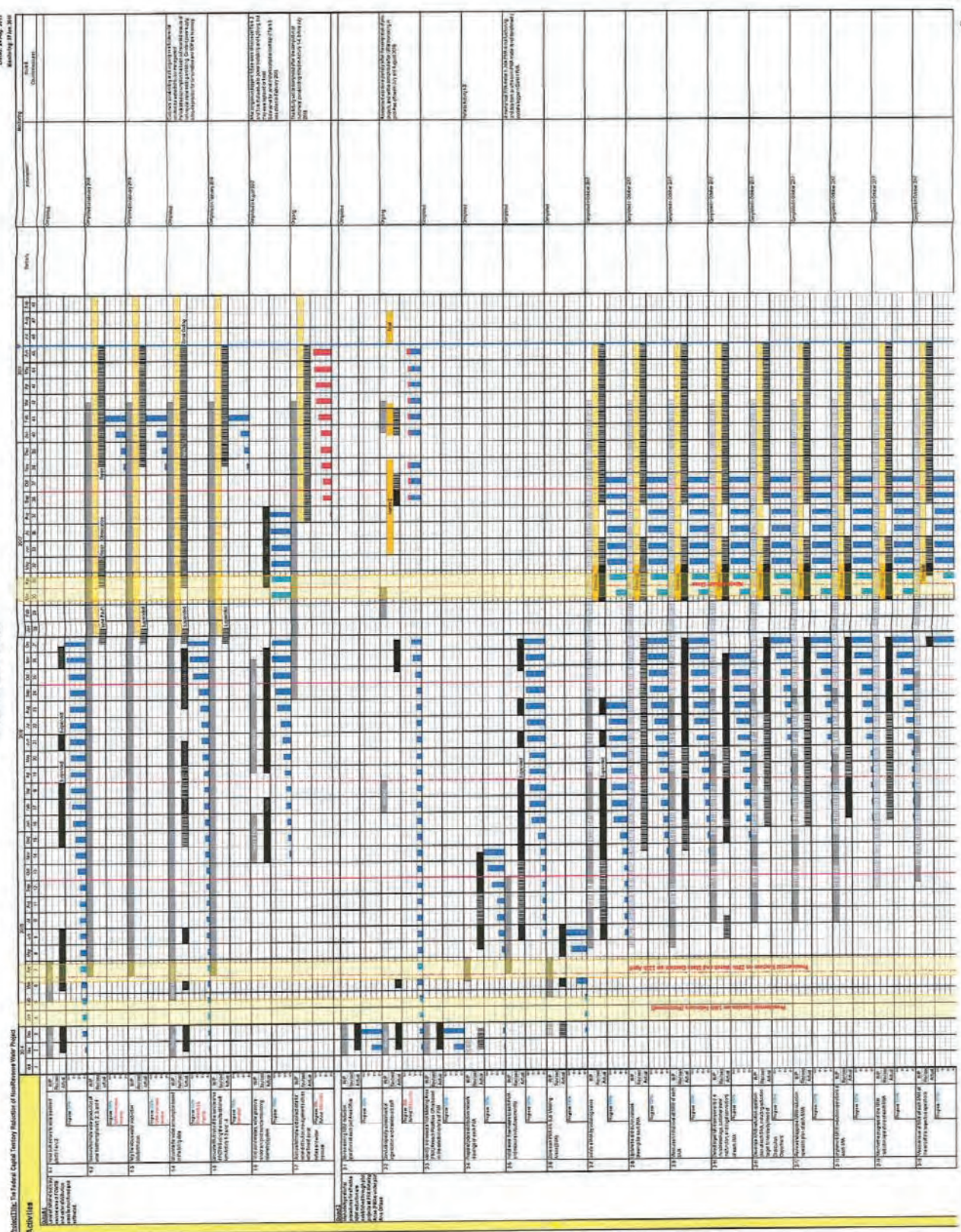
Note (*) Selection criteria of PMA are as follows: (i) Safety for night works is secured in measuring minimum night flow; (ii) Distribution network is separated and it is easy to isolate it; (iii) NRW ratio is supposedly high.

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., Head of Finance Dept., and members of NRW Management Team

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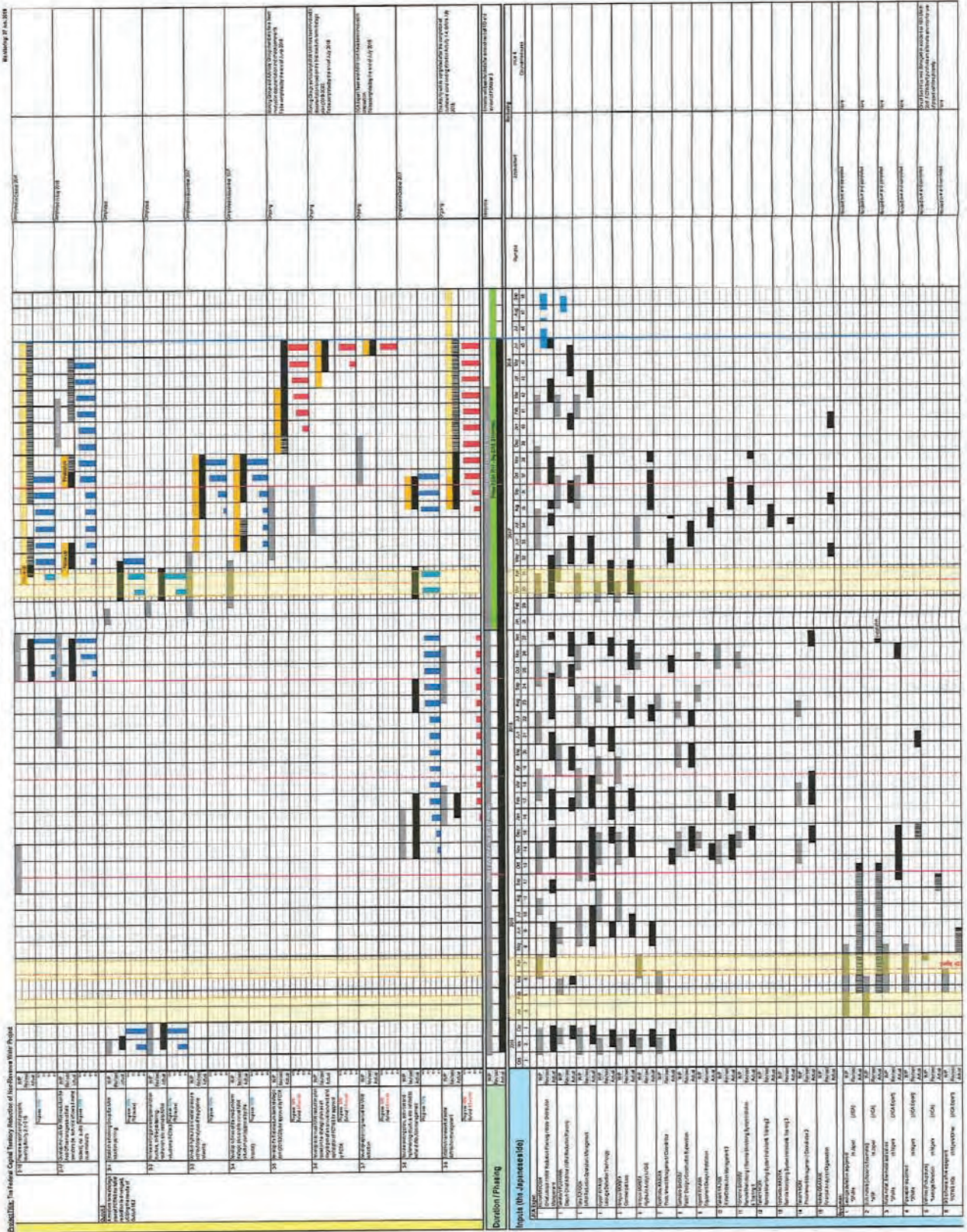
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Project Monitoring Sheet II (Plan of Operations)
 Bar of Schedule and Actual Work Effort



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