

別添 8. プロジェクト運営会議（PIC）議事録

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION

MINUTES OF THE FIRST PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/02/15 (Wednesday) 09:00 - 10:30
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<ul style="list-style-type: none"> • <u>Communication from the Chairperson</u> The Chairperson, Eng. S.A.O. Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the first PIC meeting of the project. He thanked all the project members for their continued efforts to make the project successful. • <u>Introductions</u> All the members introduced themselves and their organizations. • <u>Remarks by JICA representative</u> Mr. Miyagawa Masahito (JICA Kenya Office Representative) also thanked members for their continued efforts. He explained that in order to ensure the success of the project, the members should use the monthly PIC meeting to confirm the progress against PO and thus plan accordingly how to achieve all the outputs in time. He also mentioned that JICA is also supporting NRW activities in neighbouring countries such as Rwanda and Tanzania. He said that since Kenya is more advanced in NRW reduction, JICA is looking to share the results of this NRW reduction project with other countries in order to achieve NRW reduction in the region. • <u>Presentation and discussion of roles and functions of PIC - Mr. Mabonga</u> Mr. David Mabonga (MWI, NRW Unit) gave a presentation highlighting the roles and functions of the PIC meeting. During the discussion, it was agreed by all members that the PIC meeting should be held every third Wednesday of the month at the Ministry of Water and Irrigation Boardroom, starting at 10:00 am. It was also agreed that in case some members cannot physically attend, the meeting could also be held via SKYPE. • <u>Reporting about progress of baseline study – JICA Experts Team Leader</u> Mr. Igawa Masayuki, the JICA Expert Team Leader, gave an overview of the

progress of baseline survey from its commencement in October 2016 until January 2017.

- Presentation of JICA's project monitoring sheet - Mr. Mabonga.

Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project.

During the discussions, it was agreed that :

- The MoU with WASPA should be finalized and be ready for signing within one week
- The JICA Experts should assist CPs and their institutions to finalize a detailed plan of activities with deadlines indicated in order to achieve the relevant outputs. This plan should be presented at the next PIC.
- Mr. Igawa asked whether the Technical Note to finalize the selection of the 2 Leading WSPs and 7 Pilot WSPs will be signed between the MWI and JICA and if the Project would need signature from the Council of Governors (CoG). Mr. Alima confirmed that CoG does not need to sign the Technical Note, but the Project should inform the CoG about the baseline survey results and criteria of selecting the WSPs.
- JICA Expert team and MWI NRW Unit will explore ways to collaborate with KEWASNET (a national organization of NGO's working in water and sanitation) in order to utilize their experiences and network in sensitization of the public and Counties about NRW reduction activities.
- The JICA Expert Technical Team will carefully consider how to work with other donor organizations based on their activities in each pilot WSP in order to avoid duplication or overlapping of activities.

- Presentation of before and after project figures – Mr. Taguchi

Mr. Taguchi Masayuki (JICA Expert Team) gave a presentation on the current situation of the project and the image after project completion. He also urged the various institutions to use this as a draft and also input their thoughts about how they can better improve the project activities in order to achieve the various outputs.

- Schedule of next PIC meeting

The next meeting will be held on Wednesday the 15th March, 2017 at the MWI Boardroom starting at 10:00 am.

	<ul style="list-style-type: none">• <u>AOB</u> • The JICA Expert Technical Team will carefully consider how to work with other donor organizations based on their activities in each pilot WSP in order to avoid duplication or overlapping of activities.• JICA Expert team and MWI NRW Unit will explore ways to collaborate with KEWASNET (a national organization of NGO's working in water and sanitation) in order to utilize their experiences and network in sensitization of the public and Counties about NRW reduction activities.• Mr. Mori (JICA Expert Team) asked Eng. Alima whether the WSBs would disappear under the New Water Act 2016 and also what would happen to the non-revenue water departments in WSBs. Eng. Alima answered that the duties of WSBs will be handed over to WWDA (Water Works Development Agency) and the WSB will disappear three years after the transition period (from November 2016 when the Water Act was approved, till November 2019). However, with regard to the non-revenue water unit, Eng. Alima said that MWI will need to make organization studies and a detailed transfer plan before deciding.• The JCC will be held in mid to end of April but the date has not been decided yet.• All members were urged to ensure that they join the Google Group created to ensure smooth communication and sharing of information.• Lastly, Eng. Alima thanked all the members who attended and urged the members to continue in their efforts
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THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-
REVENUE WATER REDUCTION

MINUTES OF THE SECOND PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING

Date	2017/03/15 (Wednesday) 14:00 - 15:30
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<p><u>1. Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The Chairperson, Eng. S.A.O. Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the second PIC meeting of the project. He thanked all the project members for their continued efforts.</p> <p><u>3. Remarks by JICA representative</u> Mr. Miyagawa Masahito (JICA Kenya Office Representative) also thanked members for their continued efforts. He introduced all the JICA Expert team members and their respective roles for each output. He mentioned that JICA recently had a meeting with the National Treasury (Kenya) and his opinion is that it will be important to liaise with the CoG (Council of Governors) in any kind of project going forward. He also wanted to know whether a budget for the NRW unit activities were included in MWI's budget since the deadline for submission of the budget this year is in March (usually it is in June) due to the general elections to be held in August. Eng. Alima confirmed that MWI had already submitted a budget of KES 65 million for the activities of the NRW Unit for the next fiscal year.</p> <p><u>4. Confirmation of previous minutes</u> Mr. David Mabonga (MWI, NRW Unit) presented the minutes from the first PIC meeting held on 15th February, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Mr. Onesmus Mwangi (MWI, NRW Unit) and seconded by Mr. Walter Moseti (KEWI)</p> <p><i>Matters Arising:</i></p> <ul style="list-style-type: none"> • The minutes should include an attendance list • The PIC meeting is scheduled for the third Wednesday of every month at

10:00 am, but for this meeting only the time meeting was changed to 2:00 pm following a request from MWI.

- The MoU between MWI and WASPA is under discussion and will be concluded soon.
- Detailed Work plans for each output will be carried over to the next PIC meeting.
- The transition period for the Water Act 2016 would not be between November 2016 to November 2019 (as mentioned in the minutes for the first PIC meeting), but rather 3 years from the date that the Water Act 2016 becomes operational through a notice placed in the gazette by the Cabinet Secretary in the near future.
- The new members and other who had not joined the google group should ensure that they do so as soon as possible to enable smooth communication.

5. Presentation of project monitoring sheet (Attached)

Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project.

During the discussions, it was agreed that :

- It was agreed that the next monitoring sheet should include an expected date of finalizing the activities that have not yet been achieved. The monitoring sheet should also be printed out for all the members during the next PIC meeting.
- Regarding Output 2-1 (WASREB conducts survey of the usage of current NRW reduction standards), WASREB confirmed that they have already engaged a consultant to implement this survey.

6. Matters to be discussed:

i. Joint Training of KEWI: Mr. Moseti

- KEWI has scheduled the first trial training program in May, 2017. Mr. Moseti provided a brief breakdown of the trial training program which will feature 3 main parts;
 - a) Workshop for sensitization of the WSP's Top Management (1 day)
 - b) NRW classroom training at KEWI (5 days)
 - c) NRW On the Job Training at a Leading WSP (6 days)
- KEWI has submitted a budget for the estimated cost of the trial training program in to MWI. Afterwards, based on the experience of the trial training program, KEWI will review and improve on the syllabus and practical training methods in order to introduce a. new course on NRW reduction.

KEWI will charge a certain fee to WSPs for their staff to attend the course.

- On the question about whether WSPs can afford the training fees, it was suggested that the WSPs can put the training fees in their next budget. Also, WASREB approves a budget specifically for NRW reduction in the tariff structure during the tariff review process. It was also suggested that the WSPs could earmark some of the money meant for NRW reduction to be used as the training fee for the new NRW reduction course to be introduced at KEWI.
- It was noted that apart from the on-site trainings at the leading WSPs, KEWI should also have a training field at their campus where they can provide practical hands-on training such as leak detection to their students.
- The target for KEWI trainings are the staff in WSPs who are in charge of day to day operations.

ii. Participation of World Water Day: M/S Mwangi and Sugimoto

On the issue of sensitization, it was agreed that 3 members from the project will attend Murang'a WSP's World Water Day on March 22 which will focus on Non-Revenue Water. Meanwhile, MWI will hold the main event in Nyamira County on the same day.

iii. Presentation of the current scenario of the Project and after implementation: Mr. Taguchi.

Mr. Taguchi (JICA Expert Team) gave a presentation on the current situation of the project and the image after project completion. He also urged the various institutions to use this as a draft and also input their thoughts about how they can better improve the project activities in order to achieve the various outputs.

iv. MoU with WASPA : Mr. Mabonga

Mr. Mabonga presented the draft MoU. He explained that they are in negotiations with WASPA about the Specific areas of cooperation/collaboration under the MoU. It was suggested that one of the areas of cooperation should not be limited to supporting JICA activities only but should cover a wider range of activities. A meeting to work out the details to be held on March 16, 2017 at 9:00 am.

v. Meeting with CoG : Mr. Mabonga

It was agreed that a meeting with the CoG will be held on March 21, 2017 at a venue to be confirmed. The members to attend the meeting will be decided after consultations between MWI and the CoG secretariat. Mr. Mabonga to follow up.

The members to attend the meeting with the CoG should come from WASREB,

	<p>KEWI, WASPA, MWI and the JIC team. There will be 3 presentations as follows:</p> <ol style="list-style-type: none"> 1. WASREB to make a presentation about the current situation of NRW in Kenya. 2. MWI to make a presentation about the history of the project, starting with Phase 1 of the NRW Project (2010-2014) up to date. 3. JICA team to make a presentation about the current project and the results of the baseline survey for the selection of Pilot WSPs. <p>7. Schedule of next PIC meeting</p> <ul style="list-style-type: none"> • Due to the absence of Japanese Expert Team from Kenya for about one month (leaving on March 22 but the return date is not decided yet), it was agreed that the next PIC meeting will be held on May 10, 2017 and the 2nd JCC meeting will be held on May 17, 2017 <p>8. A.O.B.</p> <p>There being no other business to discuss, Eng. Alima closed the meeting and urged the members to continue in their efforts.</p>
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ATTENDANCE:

No.	Name	Institution
1	Eng. S.A.O. ALIMBA	MWI (Ministry of Water and Irrigation)
2	DAVID N. MABONGA	MWI
3	MARY W. MWANGI	MWI
4	ONESMUS N. MWANGI	MWI
5	DAVID NGETICH	KEWI (Kenya Water Institute)
6	WALTER M. MOSETI	KEWI
7	Eng. PETER NJAGGAH	WASREB (Water Services Regulatory Board)
8	DANIEL M. NGUGI	WASREB
9	EDDAH WAMBUI	WASPA (Water Service Providers Association)
10	PATRICIA WANJERI	WASPA
11	MASAHITO MIYAGAWA	JICA (Japan International Cooperation Agency) Kenya Office
12	JOHN N. NGUGI	JICA Kenya Office
13	MASAYUKI TAGUCHI	JICA Expert Team
14	HIROKO SUGIMOTO	JICA Expert Team
15	SHOZO MORI	JICA Expert Team
16	SHINICHI SEKIMOTO	JICA Expert Team
17	NAOKI HARADA	JICA Expert Team
18	CHARLES MAINGI	JICA Expert Team
19	EVANS KUNYUGA	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-
REVENUE WATER REDUCTION

MINUTES OF THE THIRD PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/05/19 (Friday) 09:00am - 10:30am
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<p><u>1. Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The Chairperson, Eng. SAO Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the third PIC meeting of the project. He explained the importance of the project and the main targets and reiterated that there are high expectations for this project. He encouraged the team to continue with their efforts to ensure that the Project is successful.</p> <p><u>3. Confirmation of previous minutes</u> Mr. David Mabonga (MWI, NRW Unit) and Mr. Gitahi (JICA Expert team) presented the minutes from the second PIC meeting held on 15th March, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Mr. Ngugi (WASREB) and seconded by Ms. Mary Mwangi (MWI, NRW Unit).</p> <p><i>Matters Arising:</i></p> <ul style="list-style-type: none"> • Min 6 (ii): Concerning the project members' participation in Murang'a WSP's World Water Day on March 22, it was found unnecessary to hold a parallel water day in a different venue from the national event held in Nyamira on the same day. Therefore, the project members did not participate. • It was noted that the confirmed Minutes of PIC should also be signed by the Chairman and thus a space for that should be prepared. <p><u>4. Presentation of Project Monitoring Sheet</u> Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project. During the discussions, it was agreed that :</p>

Output 1

Output 1-1: It was agreed that the NRW unit should have a strategic meeting to discuss the contents, design, persons in charge as well as the date (or month) when the Annual Report should be expected every year. The results of the above discussions should be presented at the next PIC meeting.

Output 1-2: Four sensitization meetings with county government officials are planned. One Sensitization meeting will be held in early June.

Output 1-3: The dates and budgets for workshops should be decided as soon as possible.

Output 1-4 and 1-5: Future plans but expected dates should be indicated

Output 2

Output 2-1: WASREB and SNV (providing financial support) have already chosen the consultant to carry out the survey of NRW Standards usage by WSPs. However, they are still in consultation about budget adjustments, but this should be concluded soon and the signing of the contract expected in early June.

Output 2-2 to 2-5: Future Plans

Output 3

Output 3-1: KEWI has finalized studies about the current status of the NRW reduction courses and identified challenges. KEWI were asked to share the results of this study with the rest of the PIC members.

Output 3-2: A plan to enhance the training course content has been developed

Output 3-3: KEWI in collaboration with the Leading WSPs is currently developing manuals to be used in the coursework for the new NRW training course as well as handbooks for the field training. These should be ready by early June after which the first course will be scheduled.

Output 3-4 to 3-6: Future Plans

Output 4

Output 4-1: Baseline survey conducted and 9 Pilot WSPs(including 2 Leading WSPs) selected

Output 4-2 to 4-4: Pilot WSPs have formulated their NRW reduction plans and are currently receiving advice from the JICA Expert team to finalize these plans. Once they are finalized, they will be shared with the PIC members.

Output 4-5 to 4-7: Future plans, to be implemented after Pilot WSPs start

implementing their NRW reduction plans.

Output 4-8: The regular meetings by Pilot WSPs should start as soon as they start implementing their annual plans. The monthly reports from the WSPs about their NRW reduction activities should be sent to WASREB who will act as the custodian of reports.

Output 5

Output 5-1:

- Dates should be set for regular meetings with other organizations.
- Small counties should be included in the sensitization meeting in the next year (Next Phase)
- Sensitization of county government officials will target the Chief Officers and Technical experts. About CECs, who are political appointees who are likely to leave office after the general election in August, the Project should consult with the CoG secretariat's CEO office.

6. Matters to be discussed;

(i) Progress of preparation for KEWI's Joint Training - Mr. Moseti

The manual and handbook for the Joint training is almost ready. The final programme will be circulated to the PIC members. KEWI expects to hold 2 trainings every year.

(ii) MoU with WASPA - Mr. Mabonga

MoU signed by 2 of 3 parties (MWI and JICA Expert Team) and WASPA expected to sign within a week.

(iii) Sensitization of county governments on NRW Reduction – Ms. Mwangi

The schedule and Budget for sensitizations have been prepared and will be presented for approval by the Permanent Secretary.

(iv) MoU with Leading and Pilot WSPs – Mr. Mabonga

Sample of the MoU will be presented to the Chair for comments

(v) Procurement of equipment – Mr. Mabonga & Mr. Taguchi

- Tendering for equipment to be imported from Japan has been done and are expected in September.
- Letter to request tax exemption has been submitted to Treasury, and now awaiting reply.
- Items to be procured in Kenya have been approved by the Permanent Secretary and now awaiting the Procurement department action.

	<p>7. Schedule of next JCC meeting and PIC meeting</p> <ul style="list-style-type: none"> • Second JCC meeting will be held on May 29 (Monday) 2017. The venue and budget will be decided in the next one week. Proposal was Silver Springs Hotel for a half-day meeting. • Due to Management Training in Japan in early June, Fourth PIC meeting will not be held on third Wednesday as planned, but was proposed for 29th June, 2017. To be confirmed later. <p>8. A.O.B. There was no other business for discussion.</p> <p>9. Closing Remarks Mr. Miyagawa from JICA Kenya Office noted that there will be many activities within the next one month such as KEWI's training, Management team training in Japan, Sensitization of county government as well as NRW reduction activities in the Pilot WSPS, and is looking forward to hear the results in the next PIC. Eng. Alima made the closing remarks and emphasized that all the activities should have the expected dates of completion clearly indicated as this a good monitoring tool. He thanked everybody for their efforts and for attending the PIC.</p>
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ATTENDANCE:

No.	Name	Institution
1	Eng. S AO ALIMA	MWI (Ministry of Water and Irrigation)
2	DAVID N. MABONGA	MWI
3	MARY W. MWANGI	MWI
4	ONESMUS N. MWANGI	MWI
5	WALTER M. MOSETI	KEWI
7	DANIEL M. NGUGI	WASREB
8	PATRICIA WANJERI	WASPA
9	MASAHITO MIYAGAWA	JICA (Japan International Cooperation Agency) Kenya Office
10	MASAYUKI IGAWA	JICA Expert Team
11	MASAYUKI TAGUCHI	JICA Expert Team
12	HIROKO SUGIMOTO	JICA Expert Team
13	EVANS KUNYUGA	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION

MINUTES OF THE FORTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/06/29(Thursday) 09:00am - 10:30am
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<p><u>1. Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The Chairperson, Eng. SAO Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the fourth PIC meeting. He mentioned that he was glad to see the project was progressing in a good way but urged members to assess themselves critically to ensure that what has not been achieved yet will be achieved in the expected timelines. He expressed his gratitude for the recent management training course in Japan and hoped that the members who participated in the course will apply the knowledge they learnt in the progress of the project. He also mentioned that the training course scheduled for the technical training course in Japan next year should be planned early enough for the purpose of selection for candidates and budgeting.</p> <p><u>3. Confirmation of previous minutes(Annex 1)</u> Mr. David Mabonga (MWI, NRW Unit) and Mr. Gitahi (JICA Expert team) presented the minutes from the third PIC meeting held on 19th May, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Ms. Mary Mwangi (MWI, NRW Unit) and seconded by Mr. W. Moseti (KEWI).</p> <p><u>4. Presentation of Project Monitoring Sheet(Annex 2)</u> Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project. During the discussions, the following matters were referred:</p> <p>Output 1 <i>Output 1-2:</i> Four NRW sensitization meetings with county government officials are planned. The NRW Sensitization meeting is planned for 6th and 7th July in Naivasha. The approval has been completed but since the financial year ends in June, the</p>

workshops will be carried out in the beginning of the next financial year i.e. early July, and the financial commitment will be confirmed by the Chairperson as soon as possible. It was also suggested that the group should commit themselves to finalize the sensitizations by end of August.

Output 4

Output4-8: The regular meetings by Pilot WSPs were only held in Eldoret and Nyahururu WSPs. The other WSPs should start holding regular meetings within July 2017, after they start implementing their annual NRW reduction plans.

Output 5

It was noted that WASPA was not included in the reporting in the PIC meetings so far.

4. Matters to be discussed

i.) Report on KEWI's Joint Training - Mr. Moseti (Annex 3)

Mr. Moseti gave a comprehensive presentation about the recent Joint Training Course held in conjunction with Embu and Meru WSPs (Annex).

One of the challenges encountered concerned the lack of capacity in data collection and interpretation as some WSPs employees had only a basic understanding of NRW issues. The chairperson suggested that the training may require extension to ensure that the trainees are NRW experts with better than just a basic understanding of NRW. He challenged KEWI to ensure that the employees can effectively interpret, integrate and use the data collected to enhance NRW reduction upon completion of the training course. It was also suggested that NRW Units/Teams should be established in all the WSPs to ensure that they all (from meter readers to billing staff) know the value of accurate data collection and interpretation. There was also concern about the level and capacity of the trainers at KEWI and it was suggested that KEWI should also explore if and how the trainers could improve their capacity to train on NRW.

ii.) Sensitization of county governments on NRW Reduction – Ms. Mwangi and Ms. Sugimoto

This was covered under the Presentation of the Monitoring Sheet (Minute 4: Output 1-2 above)

iii.) Procurement of equipment (Tax exemption) – Mr. Mabonga

Mr. Mabonga informed the members that the necessary letter had been written to the

Treasury department and was now awaiting reply.

iv.)Draft plan of Annual NRW Report – Ms. Mwangi & Mr. Gitahi (Annex 4)

Ms. Mwangi gave a presentation of the draft plan for the Annual NRW Report to be published by the MWI. There was a discussion on the objective of the plan as well the scope and method of data collection. Some members felt that the MWI Annual Report should utilize raw data from all the WSPs countrywide (including community WSPs etc.), while some felt that the same data provided to WASREB could be utilized for the MWI’s Annual Report. It was agreed that there needs to be further consideration and discussion about the purpose, scope and method of data collection in order to come up with a concrete action plan. (To be convened by the Ministry as soon as possible).

v.)Report on Management Training in Japan –Training participants (Eng. Alima)

The chairperson gave a summary of the management training in Japan, especially noting the differences with the water supply system in Japan and Kenya. He mentioned that the water, sanitation and sewerage coverage in Japan was over 97% and the NRW ration in Tokyo is below 3%. He noted that it is possible for Kenya to achieve such targets through a concerted effort by various stakeholders to improve water and sanitation, just as in Japan where the situation was terrible a few decades ago with water borne diseases being a problem in that country. He also mentioned that water treatment in Japan is now much more technologically advanced through the use of new methods such as ozone treatment while there is also total training on NRW reduction issues for all water supply employees. He also noted that other practices such as Japan’s daily water production is about 1.5 times higher than the demand, and the extra water is stored for emergencies. Old pipelines are not removed but rather twinned to ensure alternatives in case of emergencies. He also noted that adherence to standards is very strict, for example according to the law old meters are replaced every 8 years. He also observed that the Water Association in Japan is very powerful especially in matters of policy introduction and regulation.

6. Schedule of next PIC meeting

The 5th PIC meeting will be held on 21st July, 2017. This is tentative, to be confirmed later.

7. A.O.B.

There being no other business to be discussed, the meeting ended at 10:30 am.

ATTENDANCE:

No.	Name	Institution
1	Eng. SAO ALIMA	MWI (Ministry of Water and Irrigation)
2	DAVID N. MABONGA	MWI
3	MARY W. MWANGI	MWI
4	ONESMUS N. MWANGI	MWI
5	DAVID NG'ETICH	KEWI
7	WALTER M. MOSETI	KEWI
8	DANIEL M. NGUGI	WASREB
9	PATRICIA WANJERI	WASPA
10	HIROKO SUGIMOTO	JICA Expert Team
11	SHOZO MORI	JICA Expert Team
12	CHARLES MAINGI	JICA Expert Team
13	EVANS KUNYUGA	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-
REVENUE WATER REDUCTION

MINUTES OF THE FIFTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/07/28 (Friday) 09:00am - 10:30am
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<p><u>1. Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The Chairperson, Eng. SAO Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the fifth PIC meeting. He apologized for the postponement of the PIC meeting from the 21st and the short notice given for this meeting. He reminded the members that Phase one of the project would end in September and it was important to ensure that all the activities planned should be completed by then.</p> <p><u>3. Confirmation of previous minutes (Annex 1)</u> Mr. Evans Gitahi (JICA Expert team) presented the minutes from the fourth PIC meeting held on 29th June, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Ms. Mary Mwangi (MWI, NRW Unit) and seconded by Eng. D. Ngugi (WASREB).</p> <p><i>Matters Arising from the Previous Minutes</i></p> <p>1. The NRW sensitization workshops that were planned for July were postponed due to budgetary issues. They are now planned to take place in August. The representative from JICA was concerned whether this will be possible due to the elections. Eng. Alima expressed his hope that there would be no major distraction after the election and he also confirmed that the sensitization workshops will target the county officers and directors who are not political appointees and therefore will not change after the elections.</p> <p>2. On the issue of WASPA, it was noted that their role in the project is during the latter phases where they will be involved in knowledge sharing. Eng. Alima enquired whether the WASPA members (MDs of 9 Pilot WSPs) who went to Japan have shared their experiences during the monthly WASPA meetings. WASPA responded that this has not been achieved but they will invite some MD's to do this at the next WASPA meeting.</p> <p>3. Concerning KEWI's joint training and the difficulties experienced, this was</p>

consequently discussed further during the presentation (Below)

4. On the issue of MWI's Annual report, Eng. Alima said that a meeting will be convened on Monday, July 31st at 3:00pm.

4. Presentation of Project Monitoring Sheet (Annex 2)

The monitoring sheet was presented to the meeting. The progress made so far in the project for the various outputs was presented.

During the progress reports, the following matters were discussed and agreed upon:

Output 2

WASREB reported that the Kick-off meeting with the consultant to carry out a survey of NRW Standards usage was held on July 24th, 2017. The commencement date was agreed to be on 14th August 2017 and Inception report and revised work plan are expected by 28th August, 2017.

Output 3

Final Report on KEWI's Joint Training – Mr. Moseti

Mr. Moseti from KEWI gave a presentation on the findings of the final report that was compiled after the first joint training in June, 2017 at KEWI and Embu in collaboration with Embu and Meru WSPs (Annex 4 Presentation at 5th PIC Meeting) Final Report to be shared after August 18, 2017.

During the discussions,

- It was agreed that EPZ should not be included as participants in the report as it is not an official WSP.
- It was noted that there were no NRW units within the WSPs, and the members agreed that creation of these units should be prioritized during the project.
- The lack of Metering guidelines to guide the WSPs was also discussed. It was agreed that KEWI, WASREB, WASPA and MWI should collaborate to come up with a policy on this to guide WSPs. The chairman emphasized on the importance of such a policy and also added that that it could be included as a new output in the NRW project.
- The new CEO of WASPA was also of the opinion that they should be included in future WASPA training as they have experience working with various WSPs.
- It was noted that the staff sent to KEWI for training are sometimes not the best candidates. WASPA mentioned that they could also utilize their

experience with various WSPs to enable KEWI get the best candidates for the training.

- It was also noted that participation of MEWASS (Meru WSP) during the Joint training was not sufficient. It was suggested that this could be due to the fact that they don't have a Technical Manager at the moment. Eng. Alima offered to follow up with the MD of MEWASS to ensure full participation in future.

Output 4

Report on Recent Activities of Output 4 in Embu and Meru – Mr. Maingi

Mr. Maingi from the JICA expert team gave a presentation on the recent activities that he and Mr. Mori (JICA Expert) had undertaken in 3 weeks in Embu and Meru, mainly in GIS training and Water Pressure management (Annex 4).

During the discussions,

- It was noted that Meru had finalized their Annual NRW reduction plan, but not their Mid-Term plan. The process was deemed to be lagging mainly due to the lack of a Technical Manager to head the activity. However, they gave a final date for the completion of their Mid-Term Plan as 1 month.
- Embu WSP had finalized their Mid-Term Plan but were working on their Annual plan. They gave a final date for the completion of their Annual plan as within 3 weeks.
- Mr. Charles took the members through the different mobile GIS free softwares that can be used for pressure mapping purposes. They include; SW Maps, GeoODK, GPS Essentials, Water Project Calculator, MAPinr and QField. He also took them through a mobile data collection form they had developed with Mr. Mori that can be used for pressure measurement and meter testing exercise while using the calibrated bucket.
- Engineer Alima enquired whether it was possible to merge the pressure maps with the leakage maps so that it could be easier to note the relation between the two. This was clarified by Mr. Moseti who said that it can be done.
- The members agreed that all the WSPS should be introduced to the calibrated bucket which have shown good success for testing customer meters since they are cheap and easy to use.

Procurement of equipment from Japan side (Tax exemption)

The treasury had written to the Ministry of Water and Irrigation clarifying that the master list of the equipment to be procured should be included in the main body of the letter requesting for tax exemption. This was duly done by the MWI and delivered to the Treasury, and now awaiting reply from the Treasury.

Eng. Alima mentioned that the MWI NRW Unit would fast track the process to ensure the letter was obtained in time.

Procurement of equipment from the Kenyan side

Eng. Alima informed the members that the funds from the previous fiscal year were distributed to the relevant WSBs to procure water meters. This was KES 5million for each WSP (For example, in the case of Tana WSB, KES 10million was forwarded to cater for Embu and Meru WSPs which fall under one WSB). Lake North WSB was not provided with the funds but this would be availed in the next fiscal year. However, the challenge faced was that the specifications were later forwarded and thus it is not yet clear whether the WSBs have successfully finished the procurement process for the correct equipment. MWI NRW Unit were tasked with following up with the WSBs to ensure the required meters have been procured. Mr. Maingi confirmed that he had been in contact with Mavoko WSP and it was confirmed that through Tanathi WSB the necessary water meters had been procured.

For the next fiscal year, the MWI NRW Unit will ensure that the specifications for the new equipment will be delivered to the relevant WSBs in time for procurement. The JICA representative wanted to know whether the disbursement of funds in the new fiscal year would be done in time to ensure procurement is done before the JICA Expert Team is back in the country. Eng. Alima assured the members that he would personally follow up on the procurement issue to ensure smooth implementation of the planned project activities.

6. Schedule of next PIC meeting

The 6th PIC meeting will be held on 30th August, 2017. This is tentative, to be confirmed later.

7. A.O.B.

There being no other business to be discussed, the meeting ended at 10:30 am.

ATTENDANCE LIST:

No.	Name	Institution
1	Eng. SAO ALIMA	MWI (Ministry of Water and Irrigation)
2	MARY W. MWANGI	MWI
3	ONESMUS N. MWANGI	MWI
4	Dr. LEUNITA SUMBA	KEWI
5	WALTER M. MOSETI	KEWI
6	DANIEL M. NGUGI	WASREB
7	MASAHITO MIYAGAWA	JICA Kenya Representative
8	ANTONY AMBUGO	WASPA
9	EDDAH WAMBUI	WASPA
10	PATRICIA WANJERI	WASPA
11	CHARLES MAINGI	JICA Expert Team
12	EVANS KUNYUGA	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT
IN NON-REVENUE WATER REDUCTION**

MINUTES OF THE SIXTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/12/14 (Thursday) 11:00 am - 1:00 pm
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes - Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation and discussion about Progress Report 1: By JICA Expert Team ii. Explanation and discussion about Work Plan 2: By JICA Expert Team iii. Confirmation of the progress of the Project by referring to the Project Monitoring Sheet: By MWI NRW Unit iv. Discussion on issues related to each Output of the Project: By Each C/P <ol style="list-style-type: none"> a) Timeline for producing Annual Report of NRW reduction: MWI NRW Unit b) Confirmation of schedule for sensitization for County Governments: MWI NRW Unit c) Progress of the Survey for use of the Current NRW Standards: WASREB d) Proposal for forming a committee for Revising NRW Standards: JICA Expert Team e) Progress of Activities at Leading Pilot WSPs: Embu and Meru WSPs v. Clarification and discussion on the current PDM of the Project: By JICA Expert Team 5. Discussion about Draft Agenda for the 3rd JCC Meeting: JICA Expert Team 6. Schedule of next PIC meeting 7. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p>

2. Communication from the Chairperson

The Chairperson, Eng. SAO Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the 6th PIC meeting. He mentioned that Phase 1 of the project ended in September, and Phase 2 started in November 2017 and will run for 2 years. He reminded the members that due to the long election period, some of the activities that were planned for Phase 1 had been postponed. He urged all the members to redouble their efforts to ensure that all the pending activities in Phase 1, as well as the planned activities in Phase 2 are accomplished in good time. He also mentioned that the NRW Policy was ready but needed finalization.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) presented the minutes from the fifth PIC meeting held on 28th July, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Dr. Leunita Sumba (Director, KEWI) and seconded by Mr. W. Moseti (KEWI).

Matters Arising from the Previous Minutes

1. The NRW sensitization workshops that were planned for August were postponed due to the political situation in the country after the Presidential elections. The sensitization workshops are now planned for February, 2018.

With

2. The annual report by MWI was also delayed and was now planned in May 2018, as explained subsequently by Mr. Mabonga (MWI).

3. The survey on NRW standards usage by WASREB was delayed but ongoing, as explained subsequently by Eng. Ngugi (WASREB).

4. On the issue of combining pressure maps and leakage maps, Mr. Maingi mentioned that the Output 4 team and KEWI are looking into how this could be achieved.

5. Procurement of equipment from Japan was successfully done and the equipment delivered to Maji House. The JICA Expert Team in conjunction with the MWI NRW Unit inspected and tested the equipment and found them satisfactory for use. However, on the issue of software for the Ultrasonic Flow meter, Mr. Sekimoto informed Eng. Alima and the members that he will confirm its necessity based on the data handling ability of the users through the activities since it was not very necessary.

6. Procurement of Equipment on the Kenyan side by WSBs experienced some problems with some WSBs not purchasing the equipment according to specifications. Mr. Mabonga and the NRW Unit were tasked with the role of following up with the WSBs to ensure the required equipment have been procured.

7. Embu and Meru WSPs have completed both their Mid-term and Annual Plans.

4. Matters to be discussed

i. Confirmation and discussion about Progress Report 1: By JICA Expert Team
JICA Expert Team said that they have received comments about Progress Report 1 from MWI NRW Unit and WASREB and asked any other members who may have comments to forward them to the team as soon as possible. (Not later than 20th December 2017).

ii. Explanation and discussion about Work Plan 2: By JICA Expert Team
Mr. Taguchi, Chief Advisor JICA Expert Team, presented a summary of the Draft Work Plan 2 to all the members. He focused on the priorities for assistance for WSPs in Phase 2 as well as the expert team's schedule. He asked the members, especially the WSPs to utilize the limited time with the experts to ensure that all the outputs are achieved. He also asked the members to send their comments about the Draft Work Plan by 20th December, 2018.

iii. Confirmation of the progress of the Project by referring to the Project Monitoring Sheet: By MWI NRW Unit
Mr. Mabonga presented the Project Monitoring Sheet (Annex 2) comparing the progress at the 5th PIC meeting in July and the current status on 14th December, 2018.

iv. Discussion on issues related to each Output of the Project: By Each C/P
a) Timeline for producing Annual Report of NRW reduction: MWI NRW Unit
Mr. Mabonga explained that the Ministry's NRW Unit had written to all the relevant institutions for the necessary data and articles for the NRW Annual Report. Currently, the unit is reviewing, verifying and compiling the information. The draft report will be ready by March 2018, and the final publication is planned for May, 2018. Subsequently, the Annual report will be published in May every year.

b) Confirmation of schedule for sensitization for County Governments: MWI

NRW Unit

The Sensitization Workshops planned in August were delayed due to the political situation in the country. Currently, the Ministry is planning to hold the first sensitization workshop in February 2018. The target will be the CEC's and Chief Officers in charge of Water in the various counties, and the Ministry is liaising with the C.O.G. to ensure the workshop is successful.

c) Progress of the Survey for use of the Current NRW Standards: WASREB
The survey is currently ongoing, and the consultant presented the initial findings to WASREB on 6th December, 2017. The draft report is expected in mid-January and the validation workshop is planned for February, 2018, after which the final report will be published.

d) Proposal for forming a committee for Revising NRW Standards: JICA Expert Team

Mr. Taguchi proposed that a committee for Revising NRW Standards should be formed to undertake this task in Phase 2. He suggested that the members should discuss more about the details such as membership, timelines etc. early in 2018.

e) Progress of Activities at Leading Pilot WSPs: Embu and Meru WSPs

The representatives of the two Pilot WSPs briefly explained the progress at the WSPs. Mr. Gitonga from Embu WSP explained that they had prepared a new pilot area for training called Mugoko which is bigger than the previous one, and they are also undertaking pressure management in the area. Mr. Miruri from Meru WSP explained that the NRW Unit team is in place with 5 members and NRW reduction activities are on-going. However, the activities in Meru have been disrupted due to water shortage and road construction of the by-pass on-going around Meru town.

v. Clarification and discussion on the current PDM of the Project: By JICA Expert Team

Mr. Taguchi presented the PDM where the points and wording that need clarification were highlighted. He asked the members to go through the PDM and think of suggestions about how to clarify those issues. A discussion with the relevant counterpart organisations will be held in early 2018 to clarify these issues.

	<p><u>5. Discussion about Draft Agenda for the 3rd JCC Meeting: JICA Expert Team</u> Mr. Taguchi explained that the 3rd JCC meeting is planned for 25th January, 2018. During the 3rd JCC meeting, Work Plan 2 will be finalized. The members were asked to send their comments about the Draft Work Plan 2 by 20th December, 2018 to Mr. Taguchi and Mr. Mabonga.</p> <p><u>6. Schedule of next PIC meeting</u> The 7th PIC meeting will be held on 21st February, 2018. This is tentative, to be confirmed later.</p> <p>7. A.O.B. There being no other business to be discussed, the meeting ended at 10:30 am.</p>
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ATTENDANCE LIST:

No.	Name	Institution
1	Eng. SAO ALIMBA	MWI (Ministry of Water and Irrigation)
2	DAVID N. MABONGA	MWI NRW Unit
3	ONESMUS N. MWANGI	MWI NRW Unit
4	WILFRED OPUNDO	Intern, MWI NRW Unit
5	Dr. LEUNITA SUMBA	Director, KEWI
6	WALTER M. MOSETI	KEWI
7	ROBERT K. MIRURI	Acting General Manager, MERU WSP (MEWASS)
8	RICHARD MWIRIGI	Technical Services Manager, MERU WSP (MEWASS)
9	CHRISTOPHER GITONGA	Acting Head of Technical Services, EMBU WSP (EWASCO)
10	DANIEL M. NGUGI	WASREB
11	MASAHITO MIYAGAWA	JICA Kenya Representative
12	WATARU TAKASHIMA	JICA Kenya Representative
13	MASAYUKI TAGUCHI	Chief Advisor, JICA Expert Team
14	SATOSHI SHIBAZAKI	JICA Expert Team
15	SHINICHI SEKIMOTO	JICA Expert Team
16	CHARLES MAINGI	JICA Expert Team
17	EVANS GITAHI	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE SEVENTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2018/3/28(Wednesday) 9.00am -11.30am
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes - Mr.Gitahi 4. Introduction and roles of the new NRW Unit members – Mr. Mabonga 5. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the Project by referring to the Project Monitoring Sheet: By MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Timeline for producing Annual Report of NRW reduction: MWI NRW Unit b) Confirmation of schedule for sensitization for County Governments: MWI NRW Unit c) Progress of the Survey for use of the Current NRW Standards: WASREB d) 2nd joint training: KEWI e) Progress of Activities at Leading Pilot WSPs: JICA Experts team, & Embu and Meru WSPs iii. Progress of Procurement of equipment 6. Schedule of next PIC meeting 7. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p>

2.Communication from the Chairperson

The Acting Chairperson Dr. Leunita Sumba (Director KEWI) called the meeting to order and began by informing the members that she was chairing the meeting on behalf of the chairperson, Eng. SAO Alima (Director of Water, Sewerage and Sanitation Development, MWI) who was out on official duties. She congratulated the members for observing time and pointed out that it showed how much they had owned the project. She also informed the members that during the Cabinet Secretary's (CS) handing over ceremony, the new CS underscored that NRW is a big challenge and thus showed that he was in support to see the project move forward.

3.Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) presented the minutes from the sixth PIC meeting held on 14thDecember, 2017. A few corrections were highlighted and the minutes were confirmed as a true and accurate record of the meeting. The minutes were proposed by Mr. David Mabonga (NRW Unit) and seconded by Mr. Masayuki Taguchi (Chief Advisor, JICA Experts team).

Matters Arising from the Previous Minutes

i)The ultrasonic Flow meter, that was procured lacked the software that would make it compatible for use. Mr. Mabonga was requested to liaise with Mr. Sekimoto to know how far he had gone on this.

ii)Sensitization of county representatives on NRW management will be done during the upcoming Kenya Water Summit in Naivasha.

4.Introduction and roles of the new NRW Unit members

Mr. Mabonga introduced the new MWI NRW Unit members and their roles as follows:

- i) Mr. Anderson Kioi – Will handle WASREB and KEWI
- ii) Ms. Patricia Mutua – Will follow up on procurement and annual NRW report
- iii) Ms. Mercy Njung'e – Will handle sensitization teaming up with Ms. Sugimoto Hiroko
- iv) Mr. David N. Mabonga – Will handle general coordination of the project
- v) Mr. Onesmas Mwangi – Will Assist Mr. Mabonga on general coordination

There were other new members in the meeting who were also introduced as follows:

- i) Mr. William Oduor - KEWI
- ii) Ms. Kellyjoy Gakii – Secretary, JICA Expert team

5. Matters to be discussed

i) Confirmation of the progress of the project by referring to the project monitoring sheet: By MWI, NRW Unit

Mr. Mabonga presented the project monitoring sheet (Annex 2) comparing the progress as at the 6th PIC meeting held in December 2017 and the current status on 21st February 2018. However, Mr. Miyagawa, JICA Kenya office, suggested that during the subsequent meetings the monitoring sheet be circulated to the members in advance and key issues be presented in order to save time during the meeting.

ii). Discussion on issues related to each output of the project by Each C/P:

a) Timeline for producing Annual Report of NRW reduction: MWI NRW Unit

The officer in-charge Ms. Patricia Mutua, MWI NRW Unit, informed the meeting that they had received some data and held a meeting as a unit in conjunction with the JICA Experts Team and assigned tasks to each member. She further explained that their main target will be the general citizen in their reporting and therefore the report will not be technical. Mr. Miyagawa, JICA Kenya office, suggested that the NRW annual report be considered to target the water sector stakeholders like the annual water sector review rather than the general citizen and to separate it from sensitization activities. The ministry answered that further discussions were needed with the project director to finalize on the target of the annual report.

Ms Mutua also reported that they had planned to have the first draft of the report ready by end of March 2018 and have the final report published by end of May 2018. A suggestion was made by one member (Mr. Anthony Ambugo, WASPA CEO) to have the NRW reduction Annual report committee expanded by including WASPA. They were also advised to share the report early enough so as to give room for comments by the rest of the committee before final draft was published.

b) Confirmation of schedule of sensitization for county Governments: MWI NRW Unit

Mr. Anthony Ambugo, CEO WASPA, confirmed at the meeting that this was well planned and communicated through writing to the concerned. A request to the procurement office on the venue had also been sent. Members were informed that they should be ready to adjust in case the communicated venue changes based on the procurement office's advice.

c) Progress of the survey for use of the current NRW standards: WASREB

Mr. Francis Maluki (Technical Officer, WASREB) informed the meeting that the

survey was still on going. The consultant was not able to submit the findings as earlier planned i.e. draft report in mid-January. Instead, the consultant requested for an extension to end of March 2018 which was approved. Mr. Francis added that on the previous day, they were also in receipt of a further extension request by the consultant to end of April 2018. In WASREB's opinion, this move could come with a cost on their side, and the extension had not been approved. WASREB suggested that the consultant be allowed to submit partial reports per WSP as soon they are done, rather than waiting for a report of all 9 WSPs. However, there was no report received so far.

d) 2nd Joint Training: KEWI

Mr. Walter Moseti, (Trainer and NRW Coordinator, KEWI) informed the meeting that the pre-training trace study had already been done and the 2nd Joint Training is scheduled for 26th Feb to Mar 17th, 2018. He further informed the meeting that they had extended invitation to other WSPs who were not part of the pilot WSPs. Their response was positive and they were ready to take care of their expenses during the training. The expected participants for the training were between 20 – 25 persons.

In addition, he informed the meeting that the evaluation report of the 1st Joint Training was already complete and that hard copies were disseminated to the relevant counterpart organizations. A soft copy would also be sent to members who needed it. However, evaluation on follow up was still on-going and will be reported during the next PIC.

e) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu and Meru WSPs

Mr. Charles from JICA Experts Team (Output 4) made a presentation to the members on the progress of activities at the leading pilot WSPs. The representatives from the two leading WSPs confirmed at the meeting that the presentation was true based on the work on the ground with the experts.

Mr. Miyagawa, JICA Kenya Office, proposed that the representatives from the two leading WSPs prepare some presentation in collaboration with the experts during the subsequent meetings. This will help them to understand more as they prepare and also during the presentation.

iii) **Progress of procurement of equipment**

Mr. Mabonga informed the meeting that they had submitted a list of equipment together with the right specifications to the procurement office and the head of procurement promised to expedite the process in order to ensure that they are delivered by April, 2018 as agreed in the 3rd JCC meeting. He was requested to make

a follow up on the same.

6. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 28th March 2018 tentatively.

7. A.O.B.

- KEWI requested to use the new equipment procured from Japan during the 2nd Joint training. The JICA Experts team agreed and promised to liaise with KEWI on this during the OJT in Embu from 12th to 17th March, 2018.
- MWI would write a letter to encourage WSPs to use the World Water Day (March 22nd) to promote NRW reduction through events such as holding public barazas, customer open day, school visits, invite schools to tour the water facility, walks or rallies, one-day meter reader whereby a client accompanies the staff to do the meter reading, road shows, send SMS, printing small brochures etc.
- WASPA CEO suggested that a tentative yearly calendar for PIC and JCC meetings be drawn and shared to members so that they can plan in advance and avoid missing the meetings. He also encouraged members to embark on peer-to-peer learning whereby the leading WSPs share milestones with the rest of WSPs especially during the bi-monthly benchmarking workshops.
- Mr. Miyagawa, JICA Kenya office, enquired from the members on the Ministry's current name i.e. change from Ministry of Water and Irrigation to Ministry of Water and Sanitation. Mr. Mabonga responded that there will be an official communication from the Director's office in this regard.

There being no other business to be discussed, the meeting ended at 11:30 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	Dr. LEUNITA SUMBA	Director, KEWI
2.	MASAHITO MIYAGAWA	JICA Kenya Representative
3.	DAVID N. MABONGA	MWI NRW Unit
4.	ONESMUS N. MWANGI	MWI NRW Unit
5.	ANDERSON KIOI	MWI NRW Unit
6.	PATRICIA MUTUA	MWI NRW Unit
7.	MERCY K. NJUNGE	MWI NRW Unit
8.	FRANCIS MALUKI	WASREB
9.	WALTER M. MOSETI	KEWI
10.	WILLIAM W. ODUOR	KEWI
11.	ANTHONY AMBUGO	WASPA
12.	ROBERT K. MIRURI	Acting General Manager, MERU WSP (MEWASS)
13.	CHRISTOPHER G. KAMURANA	Acting Head of Technical Services, EMBU WSP (EWASCO)
14.	MASAYUKI TAGUCHI	Chief Advisor, JICA Expert Team
15.	SATOSHI SHIBAZAKI	JICA Expert Team
16.	HIROKO SUGIMOTO	JICA Expert Team
17.	NAOKI HARADA	JICA Expert Team
18.	CHARLES MAINGI	JICA Expert Team
19.	EVANS GITAHI	JICA Expert Team
20.	KELLYJOY GAKII	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION**

MINUTES OF THE EIGHTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2018/5/02(Wednesday) 9.00am -10.40am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the Project by referring to the Project Monitoring Sheet: By MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of Annual Report of NRW reduction: MWS NRW Unit b) Activities of sensitization for County Governments & campaign for consumers: MWS NRW Unit c) Progress of the Survey for use of the Current NRW Standards: WASREB d) 2nd joint training: KEWI e) Progress of Activities at Leading Pilot WSPs: JICA Experts team, & Embu and Meru WSPs f) Kenya Water Summit and Progress afterwards: WASPA iii. Progress of Procurement of equipment 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1.Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2.Communication from the Chairperson</u> The chairman Eng. SAO Alima called the meeting to order at 9.15am and confirmed the participants present as per the list outlined in the agenda. He further thanked the members present for attending the meeting and also the entire team for being effective on the project. The chairman also informed the meeting that it was important for the team to</p>

follow up on the issues raised at the JCC during the PIC meetings to ensure that they are all done. On this he pointed out on the particular activities that were already complete as per the previous JCC, such as the disbursement of Kshs. 5 million to KEWI for their project activities.

However, he acknowledged that new young staff had not been assigned to the NRW Unit and promised to follow up with the MWS and the PSC (Public Service Commission). He also pointed out on the issue of procurement of equipment for assisting Pilot WSP activities that there was a budget cut that was done in the 4th quarter, and this affected the procurement of the equipment. The procurement of the equipment has now been carried forward as the first priority in the early stage of the next fiscal year 2018/2019. He also informed the meeting that there were some WSBs who had not yet spent their budget allocations and so the NRW Unit should do a follow up to make sure that they procure the right equipment.

3. Confirmation of previous minutes(Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Moseti (KEWI) and seconded by Ms. Sugimoto (JICA Experts team).

Matters Arising from the Previous Minutes

i) Mr. Mabonga informed the meeting that Mr. Sekimoto who was away was to liaise with the company that sold the Ultrasonic Flow meter on the issue of software and would give a report on the same when he is back in the country.

ii) The meeting agreed that the Ministry would be sending invitation letters to WSPs to attend various water events in the future;

iii) The chairman confirmed that the ministry's name had been changed from Ministry of Water and Irrigation (MWI) to Ministry of Water and Sanitation (MWS).

iv) Mr. Taguchi informed the meeting that the JICA Experts team will work on a tentative yearly calendar by the next PIC meeting.

4. Matters to be discussed

i) Confirmation of the progress of the project by referring to the project monitoring sheet: By MWI, NRW Unit

Based on the discussion and agreement that the monitoring sheet be sent to the members earlier before the meeting, Mr. Mabonga gave the key highlights on the project monitoring sheet (Annex 2) comparing the progress as at the 7th PIC meeting held in February 2018 and the current status on 2nd May 2018.

ii). Discussion on issues related to each output of the project by Each C/P:

a) Progress of Annual Report of NRW reduction: MWI NRW Unit

The officer in-charge Ms. Patricia Mutua, MWI NRW Unit, informed the meeting that

they were finalizing on the first draft of the report and that they will submit it to Eng. SAO Alima's office. They also confirmed that this will be done as per the timelines.

b) Activities of sensitization for County Governments & campaign for consumers: MWI NRW Unit

Mr. Mabonga and the NRW Unit reported that this was also covered in the Kenya Water Summit held in Naivasha on March 1st and 2nd, 2018. It was agreed that a new plan for sensitization activities in different regions of the country should be prepared for the next fiscal year.

c) Progress of the survey for use of the current NRW standards: WASREB

Eng. Ngugi WASREB reported that the report of the survey was tentatively complete and that they reviewed and shared it with the JICA experts and other related C/Ps for their comments. He also reported that WASREB will hold a meeting with the consultant and SNV (the facilitator of the survey) on Friday the 4th May, 2018 and that they are yet to decide on the date to disseminate the report. However, he pointed out that according to the findings the level of the usage of the standards was quite low and not encouraging.

The chairman, Eng. SAO Alima, advised that WASREB should ensure that an NRW Unit is formed in each registered utility. He also advised that WASREB should seek to understand the reasons as to why the WSPs are not using the standards.

Eng. Ngugi WASREB also informed the meeting that they were intending to anchor the standards to the tariff review and licensing since this way it would be easier to enforce the use of NRW standards on the WSPs.

Ms. Sugimoto also suggested that the best way to learn would be through peer-to-peer learning. The editorial committee for the review of NRW Standards was also tasked on finding the best ways of improving uptake and usage of NRW Standards.

d) 2nd Joint Training: KEWI

Mr. Walter Moseki, (Trainer and NRW Coordinator, KEWI) informed the meeting that the 2nd joint training was successful both for the classroom and OJT and the report on evaluation was on going.

He also reported that the 3rd classroom training was also done from 23rd to 2nd April, 2018 and the turn up was good. 3 Pilot WSPs, namely Kisumu, Ruiru-Juja and Eldoret participated, but Kilifi-Mariakani and Nakuru did not send any representatives. The OJT is yet to be held due to the on-going rains which make it difficult for field activities to be undertaken but would be scheduled for Mid-May to early June when the weather is favourable. He added that the key issue in NRW reduction was constituting an NRW team / unit in the various WSPs, which was not taken seriously, since the WSPs only organized a team when there was an event or training programme and disbanded it immediately thereafter. He added that the top management in the various WSPs also lacked commitment in the NRW management activities and allocating budgets. Lastly, he said that a number of WSPs had equipment for NRW but they are reluctant or did not know how to use them and hence are kept in the stores.

Mr. Taguchi (Chief Advisor JICA Experts) gave an opinion that KEWI should have a meeting to review the 2nd Joint Training as soon as possible. The training held from April 23rd to April 27th was not organized as the 3rd Joint training but rather a part of the regular NRW short course, and also because there review for 2nd Joint Training has not been held. Therefore, KEWI needs to organize a review meeting with the various stakeholders in order to identify challenges and ways of improving the training which will be implemented in the 3rd Joint training.

Mr. Miyagawa suggested that at the completion of the training there should be something to show for the trainees e.g. a certificate. Dr. L. Sumba reported that this was elective at 3rd year but not yet a certifiable course.

Eng. Ngugi WASREB suggested that in order to attach some significance in NRW it would be important if KEWI had a course on NRW so as to have specialists in this field. This would enhance its continuity even after the project is complete.

Eng. SAO Alima also informed the meeting that he would liaise with the Commissioner of Higher Learning to have NRW designated as an independent course at KEWI and even be introduced in the universities. Dr. Sumba requested for assistance with the formation of a team to look into this matter and Eng. Alima pledged to do so.

Ms. Sugimoto sort to know how KEWI was capacity building itself in as much as it did to the WSPs.

e) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu and Meru WSPs

Mr. Charles from JICA Experts Team (Output 4) gave an introductory remark on the progress of the activities in Output 4. He then gave a chance to the two leading WSPs to make their own presentations. Mr. Miruri, the Ag. GM MEWASS, made a presentation on his part and informed the meeting that NRW has become an everyday activity with or without the experts.

Mr. Christopher Gitonga (EWASCO) also informed the meeting that Embu had been facing some challenges but they were able to reconstitute the NRW Unit and it was well equipped for the task. He also reported that they were undertaking a clean-up exercise on their billing system and they would present the results at the next PIC meeting.

Mr. Kioi highlighted that during the OJT at the 2nd Joint training, he had noticed some disconnect between the commercial and technical departments and therefore sought to know how EWASCO is addressing this issue. Responding to this Mr. Gitonga informed the meeting that they had brought all the parties on board when forming the NRW unit.

Mr. Kioi also sought to know how they were creating awareness to the customers. On this note Ms. Sugimoto informed the meeting that they had a chance to meet students from various schools during their visit to Mukangu treatment plant and had a chance to talk to them on the water conservation. They also requested them to pass over the information to their parents which they did and later wrote essays on water treatment and conservation.

Mr. Gitonga also informed the meeting that they also held Community Barazas especially in those areas where there is a lot of illegal connections to inform the community on the importance of NRW reduction.

Mr. Miyagawa sought to know how Embu and Meru WSPs were handling the new software introduced by the JICA experts for NRW management and if they would sustain it without the experts.

The representatives from both WSPs informed the meeting that based on the training they have received, they are now working on making it routine in their activities and they have confidence that they would sustain the use of these software applications.

f) Kenya Water Summit and progress afterwards: WASPA

Ms. Patricia informed the meeting that she was not at the meeting during the Kenya Water Summit and so did not have a report but would make a follow up and report during the next meeting.

iii) **Progress of procurement of equipment**

Eng. SAO Alima informed the meeting that as he had earlier pointed out, there were budget cuts in the 4th quarter and this affected the procurement of the equipment. However, the equipment will be procured during the next fiscal year and regarding the WSBs that had not spent their budget allocations, a follow up would be made by the NRW Unit to ensure that they procure the right equipment.

6. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 30th May 2018.

7. A.O.B.

- Mr. Miyagawa sought to know the status of the NRW policy document. Eng. SAO Alima informed the meeting that the policy was still not finalized but pointed out this needed to be worked on before GIZ winds up in December 2018.
- Dr. Sumba requested to have a team to work on the curriculum on NRW. Eng. SAO Alima agreed to assist this activity.
- Mr. Mabonga requested the Embu WSP to incorporate customer care in the NRW unit.
- Ms. Patricia (MWS) requested the Meru WSP to quantify the gains in order to understand the progress in NRW reduction in numbers.
- Eng. Alima also recommended that the presentations from the Leading WSPs should include more specific information of the NRW reduction activities being undertaken on a daily basis and the challenges faced by the WSPs during the implementation of their activities.
- Eng. Ngugi sought to know the progress of the water policy. Eng. SAO Alima responding to this informed the meeting that the policy had not yet been finalized.
- Ms. Patricia (WASPA) informed the meeting that they had a good presentation from the JICA Expert team during their benchmarking meeting in the previous month. She further pointed out that WASPA was planning to visit the leading WSPs during the next benchmarking meetings e.g. in July they intend to have a team

	<p>activity instead of a classroom set up. The JICA team responded that they can have a discussion about this after the PIC meeting. Mr. Miyagawa suggested that in future, the leading WSPs should make the presentations at WASPA's seminars.</p> <ul style="list-style-type: none"> • Mr. Mabonga also informed the meeting that since the equipment were not bought for the next activity as per the work plan, the Experts have resolved to borrow them from the WSPs since a schedule for the other expert was already in place. • Mr. Miyagawa suggested that the indicators of the PDM should be re-set for the next JCC meeting, and therefore it means a discussion should start early in this case. • The editorial committee meeting for revision of NRW standards was scheduled for Monday 7th May 2018 starting from 10.00am. There being no other business to be discussed, the meeting ended at 10:40 am.
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ATTENDANCE LIST:

No.	Name	Institution
1.	ENG. SAO ALIMA	Director, Water Sewerage and Sanitation Development
2.	MASAHITO MIYAGAWA	JICA Kenya Representative
3.	WATARU TAKASHIMA	JICA Kenya Representative
4.	JOHN GITAU MUNGAI	JICA Kenya Representative
5.	DAVID N. MABONGA	MWI NRW Unit
6.	ONESMUS N. MWANGI	MWI NRW Unit
7.	ANDERSON KIOI	MWI NRW Unit
8.	PATRICIA MUTUA	MWI NRW Unit
9.	MERCY K. NJUNGE	MWI NRW Unit
10.	ENG. DANIEL M. NGUGI	WASREB
11.	Dr. LEUNITA SUMBA	Director, KEWI
12.	WALTER M. MOSETI	KEWI
13.	PATRICIA WANJERI	WASPA
14.	ROBERT K. MIRURI	Acting General Manager, MERU WSP (MEWASS)
15.	CHRISTOPHER G. KAMURANA	Acting Head of Technical Services, EMBU WSP (EWASCO)
16.	MASAYUKI TAGUCHI	Chief Advisor, JICA Expert Team
17.	HIROKO SUGIMOTO	JICA Expert Team
18.	CHARLES MAINGI	JICA Expert Team
19.	EVANS GITAHI	JICA Expert Team
20.	KELLYJOY GAKII	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE NINETH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/5/30 (Wednesday)
Time:	8.30am - 09:50am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the Project by referring to the Project Monitoring Sheet: By MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of Annual Report of NRW reduction: MWS NRW Unit b) Formation of the Editorial committee & Kick off meeting- MWS NRW Unit c) 3rd Joint Training: KEWI d) Progress of Activities of output 4 at leading pilot WSPs: JICA Experts Team, & Embu and Meru WSPs e) Achievements of Kenya Water Summit: WASPA iii. Procurement of equipment iv. Annual Schedule of the project v. Change of PDM and targets 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairman Eng. SAO Alima called the meeting to order at 8.33am and confirmed the participants present as per the list outlined in the agenda. He further welcomed the members present and informed them that he believed that each output is</p>

committed to deliver in their target and that the WSPs are committed in reducing the Non- Revenue Water as they gain knowledge, plan and implement. He also stated that it was important for them to realize that non- revenue water management was not a one-day event neither was it a week's event but a continuous event throughout the utility.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Anderson Kioi (MWS Unit) and seconded by Mr. Christopher Gitonga (EWASCO).

Matters Arising from the Previous Minutes

- i) The chairman sought to know where about of the new Expert so that he can introduce him to the meeting. Mr. Taguchi explained that a new expert from Japan by the name Junichi TAKAHASHI had arrived in Kenya but he had already started work in the field.
- ii) Eng. Ngugi reported that WASREB had not finalized on the findings of the NRW Audit with the consultant but they would be holding an exit meeting later in the afternoon.

4. Matters to be discussed

- i) Confirmation of the progress of the project by referring to the project monitoring sheet: By MWI, NRW Unit

Mr. Evans Gitahi informed the meeting that since the progress by each counterpart is discussed later, it had been agreed that there was no need to go through the Project Monitoring Sheet as it is a repetition. He also informed the meeting that during the next meetings this part will not be included as part of the agenda.

- ii). Discussion on issues related to each output of the project by Each C/P:

- a) Progress of Annual Report of NRW reduction: MWI NRW Unit

The officer in-charge Ms. Patricia Mutua, MWI NRW Unit, informed the meeting that they had finalized on the report and thanked all the institution who did the write-ups. She further informed the meeting that they had submitted the report to the Director's office for approval. The chairman requested that the report be circulated to other counterpart organizations so that they can go through it and raise their comments before approval. The chairman agreed that the unit should form a team with an Information Communication Technology (ICT) Expert to take care of the

graphics in the report. However, he stated that there was no need to seek approval from the communication department.

The chairman informed the meeting that the printing of the report will be possible in July when there will be availability of funds.

Mr. Takashima requested to know the timeline of the annual report and he was given the timeline as below:

Draft Report – May

Finalize – June

Printing – July

b) Formation of the Editorial committee & kick off meeting: MWI NRW Unit

The chairman sought to know why the Editorial committee took so long to kick off. In this regard he requested Mr. Kioi to present the ministerial communication to his office later in the day so that the kick off meeting will be held in the coming week.

c) 3rd Joint Training: KEWI

Mr. Moseti reported that they already did the classroom training for the 3rd Joint Training in the month of April 2018 but the OJT was rescheduled due to the rains and will therefore be held from 4th – 9th June 2018.

The chairman sought to know the participants of the classroom training which were: Narok, Kisumu, Eldoret, Ruiru-Juja and two participants from MWS. He also wanted to know if the participants were from the same WSPs as in the 1st and 2nd Joint training and Mr. Moseti answered that they were not.

Mr. Taguchi informed the meeting that the evaluation for the second training was not done but would be done together with the 3rd joint training. He also pointed out that the 3rd Joint training had not been officially recognized, and therefore the project still has to conduct 3 more Joint training courses in Phase 2.

Mr. Takashima sought to know the components of the OJT. Mr. Moseti informed the meeting that OJT was the practical work using the leak detection equipment.

The Chairman wanted to know about the progress of the training platform at KEWI and Mr. Moseti reported that the procurement of materials for the construction of the training platform had been initiated and would be completed in the next two weeks.

d) Progress of activities of output 4 at leading pilot WSPs: JICA Expert team, & Embu and Meru WSPs

Mr. Charles JICA Experts Team informed the meeting about some of the activities going on in Embu and Meru, and that they have also included Nyahuru and Nakuru WSPs on board. He gave a sample presentation on the data analysis in Nakuru's

billing systems and based on the presentation he explained that the WSPs are concentrating on the physical losses and leaving out the commercial losses which also should be a key part of the NRW management process. The results showed that most of the WSPs use a lot of estimated values. He further informed the meeting that they presented the data to Nakuru's commercial unit and the members were shocked indeed because they had not imagined such a worse fact. It is informed that the team would do the same to members of management class of Nakuru WSP on 31st May 2018. In this regard, the chairman suggested that WASREB should also be included in discussions with the WSPs. Based on the presentation Eng. Ngugi requested that the WSPs should have data analyst in the future.

The chairman also requested that the Output (4) team to train the WSPs in data analysis from the beginning so that they can get the concept and be able to practice in future. He also emphasized that the WSPs should check the status of the meters.

The leading WSPs (Embu and Meru) also made their presentations and the chairman requested them to work on elimination of the estimated billing. He also advised them to use the best pipes that will help in the management of the NRW. Mr. Charles and the members of pilot WSPs agreed that HDPE pipes were the best in this case. Eng. Ngugi requested that the WSPs needed to contextualize the presentations and be specific on the actuals i.e. what they were doing as far as the project was concerned.

Mr. Richard (MEWASS) requested that communication be done on time so that they can plan on time and be able to present the best as requested.

Mr. Takashima corrected that the rate of NRW in Japan was not 4% as it was recorded in one of the presentations but was 10% on average and around 4% in Tokyo.

The chairman pointed out that MEWASS should pull up their efforts so that they do not go back in terms of their NRW ratio. He also informed the meeting that Nyahururu WSP would also be making a presentation in the next meeting.

Mr. Ambugo, (WASPA CEO) stated that the utilities should focus on commercial losses and also monitor and evaluate the systems since this would assist in decision making.

Mr. Charles reported that the WSPs did not know where to begin on tackling the commercial losses but with the analysis that they are doing they hope that they will be able to get the start points and embrace the changes.

e) Achievements of Kenya Water Summit: WASPA

Mr. Ambugo reported that the Kenya water summit was a great success and the milestone was the signing of the inter-governmental water sector coordination framework. He reported that they agreed to be holding meetings twice per year i.e. in the month of June and December.

He also informed the meeting that the sensitization for NRW was covered during the summit.

iii) Procurement of equipment

Mr. Taguchi informed the meeting that a letter was sent from the JICA Kenya office to the Principal Secretary on the procurement of the equipment and that he would be seeing him in this regard to ascertain that the procurement of equipment from the Kenyan side would be assured at the beginning of the fiscal year.

iv) Annual Schedule of the project

Mr. Taguchi presented to the meeting a tentative calendar for the meetings in the remaining part of the year. The meeting unanimously agreed to adopt it for the next meetings of the year i.e. PIC, JCC and joint trainings.

6. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 27th June 2018.

7. A.O.B.

- Mr. Taguchi also informed the meeting that he held a meeting with the MD of Ruiru-Juja and the C.O. of Water in Kiambu County regarding clustering of WSPs in Kiambu County. He reported that they were both very supportive of the project and assured that the clustering would not interfere. Also, after discussions with WASREB, he reported this JICA Kenya Office and it was suggested that the project in Ruiru-Juja should go ahead in the planned timelines and this PIC meeting should affirm this. This was also supported by Eng. Ngugi (WASREB) who stated that Kiambu County have to follow the WASREB's guidelines.
- Mr. Taguchi raised an issue of revision of the current PDM. He pointed out portions to be amended in the table prepared by him. He also emphasized that the issue will be discussed and finalized at the next JCC to be held by end of July. He requested the CPs members to consider the points raised in the table until the next meeting.
- There being no other business to be discussed, the meeting ended at 09:50 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	ENG. SAO ALIMA	Director, Water Sewerage and Sanitation Development
2.	WATARU TAKASHIMA	JICA Kenya Representative
3.	ANDERSON KIOI	MWI NRW Unit
4.	PATRICIA MUTUA	MWI NRW Unit
5.	ENG. DANIEL M. NGUGI	WASREB
6.	WALTER M. MOSETI	KEWI
7.	ANTONY AMBUGO	WASPA
8.	PATRICIA WANJERI	WASPA
9.	ROBERT K. MIRURI	Acting General Manager, MERU WSP (MEWASS)
10.	RICHARD MWIRIGI	Manager in charge NRW reduction (MEWASS)
11.	CHRISTOPHER G. KAMURANA	Acting Head of Technical Services, EMBU WSP (EWASCO)
12.	JOSEPH I. MAINA	Head of NRW unit (EWASCO)
13.	PETER MWANGI	Technical manager (NYAHUWASCO)
14.	MASAYUKI TAGUCHI	Chief Advisor, JICA Expert Team
15.	HIROKO SUGIMOTO	JICA Expert Team
16.	CHARLES MAINGI	JICA Expert Team
17.	EVANS GITAHI	JICA Expert Team
18.	KELLYJOY GAKII	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE TENTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/07/04 (Wednesday)
Time:	8:30am – 10:30am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Preparation for 4th JCC <ol style="list-style-type: none"> a) Draft Agenda (Date, Venue, Participants) : MWS NRW Unit b) Preparation for the JCC Presentations: JCC : JICA Expert team ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report: MWS NRW Unit b) Updates from the Editorial committee: WASREB c) Updates & Preparation of next Joint Training: KEWI d) Progress of Activities at Leading Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu & Nakuru WSPs e) Next WASPA's Benchmarking: WASPA f) Preparations for the Procurement of equipment – MWS NRW Unit 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairman Eng. SAO Alima called the meeting to order at 8.46am and confirmed the participants present as per the list outlined in the agenda. He further welcomed the members present and thanked them for attending the meeting. He also appreciated their effort to make the NRW project successful. He pointed out that NRW reduction was very important to the Ministry of Water and Sanitation and Kenya at large, and much more than it was of importance to the JICA Experts and even JICA itself. Therefore, he explained that it is necessary for the utilities and the counterparts to learn as much as possible from the JICA experts and make sure the project is sustainable in the future. He also emphasized that NRW reduction is a process and not a one-day event and so if the people in charge lose focus, the NRW ratio would</p>

go up again. On this note he insisted that the participants should make efforts to ensure that the NRW ratio keeps reducing.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Mr. Charles Maingi (JICA Experts)

Matters Arising from the Previous Minutes

- i.) Mr. Kioi requested to know if Mr. Takahashi was present so that he could be introduced to the meeting as agreed previously, but Mr. Gitahi informed the committee that Mr. Takahashi was not available since he was still in the field with the WSPs.
- ii.) The chairman informed the meeting that procurement of equipment will start in this fiscal year and, in this regard, he advised the NRW Unit to start early on the preparations so that by the following week the necessary documents could be ready for signing at the PS office.

4. Matters to be discussed

i) Preparation for 4th JCC

a) Draft Agenda (Date, Venue, Participants): MWS NRW Unit

Mr. Mabonga took the meeting through the draft agenda for the JCC. Ms. Sugimoto suggested that assignments given in the agenda should focus on a particular institution rather than individuals as was the case in the draft. The committee agreed that 10 minutes for the introduction of the project monitoring sheet would not be enough. This was amended so that the introduction for the Project Monitoring Sheet would take twenty minutes and the presentations for each institution would take 15 minutes, and therefore the lunch hour would start from 1.00pm instead of 12:30 as it appeared in the draft. This was agreed by all the members.

Mr. Evans presented to the members a draft registration form that was to be used during the JCC. He informed the meeting that the same form would be sent early enough to all the C/Ps and that they were expected to fill in the names of the members who will be attending the JCC from their particular entities early enough, in order to save time and reduce congestion at the registration desk.

He also requested that the MWS should confirm the date, venue and if the PS would be attending the meeting as early as possible. On this note Mr. Gitau from JICA Kenya office informed the committee that the suggested date for the meeting,

31st July 2018, would be very convenient for them as an office and would appreciate if it was adopted as the actual date.

The committee agreed that Mr. Mabonga should follow up on the invitation letters so that they can be sent to the counterparts by the following week. The meeting agreed that every invited entity should send a maximum of three participants for the meeting.

b) Preparation for the JCC presentation: JCC: JICA Expert team

Mr. Evans JICA Expert took the meeting through the expected JCC presentation format so as to give guidance to the C/Ps on the expectations during their presentations.

The meeting agreed that in order to be sure of the standards of the presentations, all the outputs should send in the 1st draft to the JICA team by 13th July 2018 and, after consultations/editing, the final draft to be produced by 20th July 2018.

ii). Discussion on issues related to each output of the project by Each C/P:

a) Progress of Annual Report of NRW reduction: MWI NRW Unit

Ms. Sugimoto reported on behalf of Ms. Patricia who was on leave that they had corrected the final draft but had few editorial issues which they would be working on during the week and then submit it to the project manager, Eng. Alima. She also informed the committee that Ms. Patricia had presented the budget to Mr. Mabonga who forwarded it to the Director and that they would be procuring the graphics designer and printing services once it is approved.

b) Updates from the Editorial committee: WASREB

Eng. Ngugi reported that the inception meeting was conducted on 6th June 2018 and was chaired by Eng. SAO Alima. Members present were given draft terms of reference (TOR) and questionnaires and they were requested to add their input. He also reported that Eng. SAO Alima requested the committee to prepare a work plan and budget so that it can be considered in the current fiscal year. He also informed the meeting that they would be meeting before the next PIC when he will be reporting their progress.

c) Updates & preparation of next joint training: KEWI

Mr. Mosesti reported that the OJT was held from 4th to 9th June, 2018 in Embu WSP and that the turn up was good. KEWI is currently preparing for the training to be held in August 2018. He further informed the meeting that now with the JICA Expert in charge (Mr. Shibazaki) back in Kenya, they will be meeting to discuss on the evaluation of the 2nd Joint training which he would also invite the PIC members.

Mr. Kioi raised concern on the ongoing NRW trainings with the WSPs by Mr.

Takahashi and Mr. Sekimoto without involvement of KEWI. His main concern was that it may lead to contradictions amongst the WSPs especially on the trainings that they had received from KEWI earlier. Mr. Mori responded by informing the meeting that, what the two Experts were offering was more advanced but based on what KEWI was offering and so they are not in any way contradictory.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu & Nakuru WSPs

The two leading WSPs Embu and Meru made their presentations.

(Presentations available on Google Drive created by Mr. Evans Gitahi)

Ms. Sugimoto enquired to know how Embu WSP handle their customers in the case when the bill suddenly increases and if the customers are usually willing to pay the high amount of money. Mr. Maina, who made the presentation for Embu, answered that they usually give a detailed explanation to the customer and they have not had a case where by a customer had refused to pay the bill. In the case where they have had over registering they offset in the billing for the next months.

Mr. Mutai from Nakuru WSP reported that they were currently replacing several meters that were found faulty based on the billing analysis and also servicing others to avoid estimated readings. He also reported that they were working on leak detection. On this he gave an example of a Midnight Flow Measurement exercise they did from 1:00am to 3:00am and realized that they were losing 27cubic meter per hour. This was an awakening call considering the amount of water that was likely to be lost in a month. He further assured the meeting that they were expecting to give a good report at the next PIC meeting.

Mr. Mwangi from Nyahururu WSP also made an oral presentation on the work that is being done at their utility. He reported that they started by preparing an annual draft NRW reduction plan. Using the calibrated buckets, they have already tested over 3,000 customer meters and were able to realize that some of the meters were not accurate, which they are working on replacing. He also informed the meeting that their staff members participated in the OJT training organized by KEWI and also their management team participated in the managers training in Japan and that they were putting into practice what they learnt in the training. Using the listening sticks, they have been able to detect the invisible leaks. Through the training by Mr. Takahashi using the UFM, they also discovered that some of their bulk meters were not accurate.

On commercial losses, they are currently working (servicing, checking the accuracy

and replacement of water meters) on the stopped and estimated meters from the results of their WSPs customer meter billing analysis which was conducted by the JICA Experts (Mr. Mori and Mr. Charles) which is helping them to prioritize by starting with the most urgent meters, with great impacts, as they eventually roll out to all the other connections.

The MD also reported that within a span of 6 months NYAHUWASCO has been able to reduce the NRW ratio from 43% to 39.6%.

e) Next WASPA's Benchmarking: WASPA

Ms. Patricia who was representing WASPA informed the meeting that they usually hold three benchmarking activities in a year. This is a platform whereby utilities come together and share their challenges and best practices. She further reported that this year they will have field activities in three categories; Customer care will be held in Kisumu in July, Pro-poor activities will be held in Nyeri in August, and in September they will have NRW reduction activities in one of the two leading WSPs.

f) Preparations for the Procurement of equipment: MWS NRW Unit

The chairman requested Mr. Mabonga to work in collaboration with Mr. Evans so that all the preparations on procurement of equipment can be ready for presentation to the PS by the following week.

5. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 29th August 2018.

6. A.O.B.

- Eng. Alima apologised for not concentrating on the meeting due to other urgent matters arising. He also enquired from Nakuru if they had received any equipment from Rift Valley water service board. Mr. Mutai, representing NAWASSCO, reported that they were promised to be given some equipment but they had not yet received them. The chairman requested Mr. Mabonga to share with Mr. Mutai the specifications for the equipment.
- Mr. Harada requested the committee to ensure that the counterparts' presentations for the JCC were clear and in the case whereby they had difficulties in the preparations, they should consult the Experts who are willing to assist. He also emphasized that they should be prepared early enough in case of corrections so that there would be enough time for that.
- There being no other business to be discussed, the meeting ended at 10:30 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	ENG. SAO ALIMA	Acting Water Secretary
2.	WATARU TAKASHIMA	JICA Kenya Representative
3.	JOHN GITAU MUNGAI	JICA Kenya Representative
4.	DAVID MABONGA	MWI NRW Unit
5.	MERCY NJUNGE	MWI NRW Unit
6.	ANDERSON KIOI	MWI NRW Unit
7.	ENG. DANIEL M. NGUGI	WASREB
8.	WALTER M. MOSETI	KEWI
9.	PATRICIA WANJERI	WASPA
10.	RICHARD MWIRIGI	Supervisor NRW Unit (MEWASS)
11.	SILAS NDATHO	Head NRW Unit (MEWASS)
12.	JOSEPH I. MAINA	Head of NRW unit (EWASCO)
13.	BERNARD MWAURA	Managing Director (NYAHUWASCO)
14.	PETER MWANGI	Technical manager (NYAHUWASCO)
15.	LEONARD MUTAI	NRW In-charge (Nakuru Water)
16.	NAOKI HARADA	JICA Expert Team
17.	HIROKO SUGIMOTO	JICA Expert Team
18.	SHOZO MORI	JICA Expert Team
19.	SATOSHI SHIBAZAKI	JICA Expert Team
20.	CHARLES MAINGI	JICA Expert Team
21.	EVANS GITAHI	JICA Expert Team
22.	KELLYJOY GAKII	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE ELEVENTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/09/05 (Wednesday)
Time:	9:20am – 10:40am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Report from the 4th JCC: MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report: MWS NRW Unit b) Updates from the Editorial committee: WASREB c) Updates from the 4th Joint Training: KEWI d) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu & Nakuru WSPs e) Sensitization and Benchmarking: WASPA f) Budget arrangement – MWS NRW Unit <ol style="list-style-type: none"> i. Procurement of equipment ii. Exhibition at the Nairobi International Trade Fair 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairman Eng. SAO Alima confirmed the members present as per the Agenda. He then thanked the members for availing themselves for the meeting in good numbers and also for continuously making efforts on management of Non-Revenue Water. He further acknowledged some of the activities that have already been done in the course of the project like sensitization and monitoring commercial losses and informed the meeting that these excises will assist in management of NRW. He</p>

further informed the leading pilot WSPs and the other pilot WSPs that since they are part of the project, they are expected to be role models for other WSPs. He also reminded the members of the training in Japan which will be for the technical staff. In this regard, he advised the WSPs to select staff who are directly involved in the NRW activities. He also pointed out that sending the right staff for the trainings was important since they will practice and bring valuable change to their organizations and this will enable the WSPs and the ministry to move in the right direction.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Anderson Kioi (MWS NRW Unit) and seconded by Mr. Gilbert Mutai (Nakuru WSP).

Matters Arising from the Previous Minutes

- i.) Ms. Sugimoto pointed on a correction on minimum night flow measurement and not Midnight flow Measurement as was indicated in the minutes.
- ii.) Ms. Eddah (WASPA) informed the meeting that WASPA Benchmarking meeting was not held in August like it was reported in the previous meeting but was moved to October 2018.
- iii.) Eng. Alima informed the meeting that stage one of procurement of equipment was already done and the documents were handed over to the supply chain for procurement. He further said that it was expected that the equipment will be available between the month of October and November 2018.
- iv.) Eng. Alima enquired from Nakuru WSP if they had received any equipment from Rift valley water service board. Mr. Gilbert Mutai responded by informing the meeting that they had received single jet meters and were yet to receive volumetric metres and listening sticks. In this regard Eng. Alima regretted that the WSP did not receive the equipment that the MWS expected to be bought by the water board and so he informed him that WSPs will get equipment which are under procurement directly by the MWS.

4. Matters to be discussed

- i) Report from the 4th JCC: MWS NRW Unit

Mr. Evans Gitahi JICA Experts team informed the meeting that the report that was expected to be given on the signing of the JCC minutes. Eng. Alima

responded by informing the meeting that the minutes were in the PS's office and would be signed in the course of the day.

ii). Discussion on issues related to each output of the project by Each C/P:

a) Progress of Annual Report of NRW reduction: MWI NRW Unit

Ms. Patricia NRW Unit informed the meeting that they had finalised incorporating comments from various counterparts and they were working on comments from the project manager after which the document will be presented to the procurement office. Eng. Alima requested to see the document before it was taken to the procurement office. Ms. Patricia also informed the meeting that the necessary budget was presented to Eng. Alima and was approved. She assured the members that the report will be to Eng. Alima by Friday the 7th September 2018.

b) Updates from the Editorial committee: WASREB

Eng. Ngugi informed the meeting that he regrets that they were not been able to meet since the inception meeting because he has been busy working on the dissemination of NRW audit report which was now in the past and that they have scheduled a meeting on 18th September 2018 and that they will be reporting on their progress during the next PIC meeting.

c) Updates & preparation of next joint training: KEWI

Mr. Mosei reported that the 4th Joint training was held as follows: MD sensitization was held on 13th August 2018, Classroom training was held from 14th to 18th August 2018 and the OJT was held from 27th August to 1st September 2018. The target WSPs were Nakuru, Ruiru-Juja, Kilifi-Mariakani and Kisumu, but Kisumu didn't attend.

He further informed the meeting that they will be holding a meeting later on 6th September 2018 at KEWI to deliberate on the challenges and way forward.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu & Nakuru WSPs

The two pilot WSPs i.e. Nyahururu and Nakuru made their presentations about their NRW activities and results and the two leading WSPs i.e. Embu and Meru made oral presentations. (These presentations will be made available for access to by the counterparts as soon as possible).

Nakuru WSP pointed out that the equipment that they temporarily received from the JICA Expert team were very essential for them and they are now using them daily and that they might not be able to release them after the two months period that they were assigned the equipment lapses. In this regard, they requested that the

procurement of equipment be hastened so that they can be able to continue with the good practices since they have discovered the much they were losing through leakages.

Mr. Christopher (Embu WSP) reported that they were currently concentrating their efforts on stalled meters. He also pointed out on one major challenge that they have especially now that they are approaching the dry season is with miraa irrigation. He further informed the meeting that to curb this they will have a meeting with the local magistrate and the media to discuss on how to punish people involved in illegal connections and make it known to the public the charges involved. He also informed the meeting that they were partnering with a private company in order to acquire smart meters.

Mr. Silas (Meru WSP) reported that they were involved in intensive patrolling exercise and when they come across any leakage or burst they report using the NRW section data collection ODK form. The combination of patrolling and leak detection ODK forms will assist them to develop leakage pattern maps which in return can help in pipe replacement due to age.

e) Sensitization and Benchmarking: WASPA

Ms. Eddah from WASPA reported that the data template was updated and sent to WASPA members to fill in and send back to them by November 2018, validation was set to be done in January 2019. Benchmarking task group meeting was scheduled for 17th -18th October 2018 and the pro-poor meeting will be done in early October 2018.

f) Budget arrangement: MWS NRW Unit

i). Procurement of equipment

Mr. Kioi who was sitting in for the chairman, Eng. Alima, informed the meeting that Eng. Alima had already reported on this but to elaborate further he informed the meeting that a budget was done and they were given a certain ceiling and that is what they worked on and presented to the procurement office and are waiting for the tendering process to kick off since this is a huge procurement.

ii). Exhibition at the Nairobi International Trade Fair

Mr. Kioi reported that they had sent a letter to Nairobi Water and Sewerage Company requesting them for a space in their booth to exhibit during the trade fair. He also reported that they had prepared promotional materials with the help of Ms. Sugimoto to use during the day and that they had made a budget for the same which will be presented to Eng. Alima later in the day for approval.

5. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 26th September 2018.

7. A.O.B.

- Mr. John Gitau JICA Kenya office informed the meeting that the information shared today was comprehensive. He suggested that the presentations from the WSPs should be in a set format to make it easier for the participants to understand. Mr. Evans JICA Expert team was tasked with sending the format to the WSPs and guiding them in future presentations.
- Mr. Taguchi, the Chief Advisor, JICA Experts Team informed the meeting that a letter was sent from the MWS to 6 pilot WSPs and other C/Ps asking them to nominate the members of staff to attend training in Japan in December 2018. He also informed the members that some WSPs had already sent back the names while others are yet to send. He requested the WSPs to nominate the right members of staff that who would benefit to their WSPs after the training.
- Ms. Sugimoto informed the meeting that in August they went to Nyahururu made a good educational video of field activities such as measuring of customer accuracy meters using calibrated buckets in collaboration with Nyahururu WSP. She said that she hopes to share the video during the next PIC.
- Mr. Moseti informed the meeting that the activities being promoted by Output 4 JICA experts and not very different from what KEWI teaches during their training courses. Therefore, he urged WSPs to be more aggressive in attending the courses at KEWI and applying what they learn there in their own WSPs.
- Eng. Ngugi emphasized on the WSPs taking KEWI's trainings seriously and sending the right members for the courses. He also encouraged the WSPs to ensure a dedicated NRW team is in place to carry out activities consistently in order to continuously manage NRW. He also requested that the JICA Experts team to share the billing data analysis with WASREM to ensure they can also benefit from the results. He also expressed his hope that the use of NRW Standards would be incorporated as a condition for licensing in future and urged the WSPs to familiarize themselves with the use the NRW standards.
- Ms. Patricia Mutua also encouraged the members to realize the importance of what they learn during the KEWI training courses, and also urged them to work as a team in order to achieve more than they can achieve individually.
- There being no other business to be discussed, the meeting ended at 10:40 am with a word of prayer.

ATTENDANCE LIST:

No.	Name	Institution
1.	ENG. SAO ALIMA	Acting Water Secretary
2.	MASAHITO MIYAGAWA	JICA Kenya Representative
3.	JOHN GITAU MUNGAI	JICA Kenya Programme Officer
4.	MASAYUKI TAGUCHI	JICA Expert Team Chief Advisor
5.	ANDERSON KIOI	MWS NRW Unit
6.	PATRICIA MUTUA	MWS NRW Unit
7.	ENG. DANIEL M. NGUGI	WASREB
8.	WALTER M. MOSETI	KEWI
9.	FREDRICK MURIITHI	KEWI
10.	EDDAH WAMBUI	WASPA
11.	ROBERT K. MIRURI	Acting General Manager (MEWASS)
12.	SILAS NDATHO	Head NRW Unit (MEWASS)
13.	CHRISTOPHER KAMURUANA	Acting Head of Technical Services
14.	BERNARD MWAURA	Managing Director (NYAHUWASCO)
15.	PETER MWANGI	Technical manager (NYAHUWASCO)
16.	GILBERT K. MUTAI	Distribution Manager (Nakuru Water)
17.	HIROKO SUGIMOTO	JICA Expert Team
18.	SATOSHI SHIBAZAKI	JICA Expert Team
19.	CHARLES MAINGI	JICA Expert Team
20.	EVANS GITAHI	JICA Expert Team
21.	KELLYJOY GAKII	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE TWELVETH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/09/26 (Wednesday)
Time:	9:00am – 10:40am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report and preparations for the Nairobi International Trade Fair (1st-7th Oct 2018): MWS NRW Unit b) Updates from the Editorial committee: WASREB c) Updates from the previous Joint Training and its review meeting: KEWI d) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu & Nakuru WSPs e) Next WASPA’s Benchmarking: WASPA f) Procurement of equipment – MWS NRW Unit g) Brief schedule of JICA Experts: JICA Experts Team 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p>

2. Communication from the Chairperson

The presiding Chairperson, Dr. Leunita Sumba, called the meeting to order at 9:00am and requested Ms. Patricia NRW Unit to say a word of prayer before starting the meeting. She further informed the meeting that she was standing in for Eng. Alima who was away on official duty.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Mr. Anderson Kioi (NRW Unit).

Matters Arising from the Previous Minutes

i.) Mr. Kihara (KEWI) raised a concern on how serious the WSPs were when it came to trainings. In his opinion the WSPs should emphasize on sending the right personnel for trainings and ensuring that they follow up by practicing what they learn from the trainings. Dr. Sumba requested Mr. Moseti to handle the concern and present a report on the training impact on both trainee and WSPs during next meeting presentation.

4. Matters to be discussed

i) Confirmation of the Progress of the Project referring to the Project monitoring sheet:
MWS NRW Unit

Members agreed that there was no need to go through the Project Monitoring Sheet as it is a repetition since the progress by each counterpart is discussed later in the meeting.

ii) Discussion on issues related to each output of the project by Each C/P:

a) *Progress of NRW Annual Report and preparations for the Nairobi International Trade Fair: MWI NRW Unit*

Ms. Patricia NRW Unit informed the meeting that they had finalised incorporating comments from the project manager and they are waiting for the approval of the procurement of the printing process. She also reported that the Ministry is co-exhibiting with Nairobi City and Sewerage Company and so far, they had their first planning meeting and agreed on the exhibits. They also showed them samples of their exhibition materials which they also presented to the committee.

b) *Updates from the Editorial committee: WASREB*

Eng. Ngugi informed the meeting that the editorial committee met on 19th September 2018 and they formulated a work plan, Terms of Reference and a budget which they

will Submit to the Ministry of Water and Sanitation.

c) Updates from the previous Joint Training and its review meeting: KEWI

Mr. Moseti reported that the 4th Joint training was held as follows: MD sensitization was held on 13th August 2018, Classroom training was held from 14th to 18th August 2018 and the OJT was held from 27th August to 1st September 2018. The target WSPs were Nakuru, Ruiru-Juja, Kilifi-Mariakani and Kisumu, but Kisumu didn't attend.

He further informed the meeting that they held three review meetings i.e. 6th, 10th and 25th September 2018. In the review meetings they agreed the questionnaires given to the trainees should be restructured to be clearer. They also agreed that a normal NRW short course will be implemented on 22nd October 2018. Its curriculum is to be as same as the newly formulated Joint Training course but it will not be recognized as the project-base Joint Training.

They also agreed that the contents of the course should include the output obtained by trainings conducted by Output 4 team. Topics like Ethics of staff in handling NRW, NRW standards and ODK tools will be taught as much as possible in the next training. The next joint training will be conducted in January or February 2019 and for the course to attract more trainees it was agreed that KEWI advertise the training and make a timetable in order to incorporate the challenges raised in the review meeting into the next Joint Training. The methodology of group discussions and interactive sessions will be employed as much as possible.

The following proposal was made on how to handle Non-NRW Joint Training:

Sensitization for MDs of WSP would be sought to be held in collaboration with WASPA's bi-monthly meetings. Indicate clearly in the invitation letters to WSPs the proper kind of staff expected to attend the Joint Training.

Time allocation and lecturer's competent for the curriculum should be enhanced in the next Joint Training course.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu & Nakuru WSPs

Mr. Charles JICA Experts team informed the meeting that the training on new NRW reduction template was already done on all the WSPs and that he expected that the WSPs would submit their plans by 26th September 2018.

MEWASS and EWASCO WSPs made presentation to the meeting. (These presentations will be made available for access by the counterparts as soon as possible).

Nyahururu reported that they were working on the calibrated buckets and so far they had done around 3000. They were also testing pressures along the pipelines, GIS mapping was also at 65% and they were targeting to map all even in rural areas.

The MD Nyahururu sought to know if WASREB or the Ministry would provide in-depth analysis or feedback from regular meetings held or even the presentations made by the Pilot WSPs. Eng. Ngugi responded by informing the committee that inputs from the meeting with relevant information will be considered during the ongoing NRW review editorial task.

There was a disconnect between the WSPs and WASREB i.e. information was not flowing down and was stuck within the three senior persons in the WSPs. Eng. Ngugi responded by informing the committee that the new planning tool issued by WASREB was to encourage a participatory approach and will cascade to utility operators. He urged the WSPs to ensure they maintain a unit that is consistent in matters of NRW.

Mr. Gilbert from Nakuru WSP reported that they were dealing with both physical and commercial losses. 30% of meters were read accurately, they had replaced some of the large customer meters and the replacement was still going on. Their NRW ratio was at 31% and they were aiming to reduce it to the acceptable 25% by the end of this year.

e) Sensitization and Benchmarking: WASPA

Ms. Patricia from WASPA reported that Bench marking task group meeting was scheduled for 18th -19th October 2018 and the pro-poor meeting will be done in early October 2018.

f) Procurement of equipment: MWS NRW Unit

Ms. Patricia NRW Unit reported that the procurement process was still on and that the procurement office had already sent invitations for tender, after which they will select the appropriate bidder.

g) Briefs schedule of JICA Experts: JICA Experts Team

Mr. Taguchi informed the committee that he would be flying out of the country on 27th September 2018 and will be coming back in January 2019. He further introduced Mr. Takahashi to the members and informed them that he would be around for one and half months. He also informed the members that Mr. Sekimoto will also be arriving on 21st October 2018 and will also be around for one and half months, Mr.

Mori will arrive on 3rd October 2018 and work for two months, Mr. Harada would arrive on 15th October 2018 and work for one and half months and also Mr. Kano will arrive on 5th November work for 2weeks. He also reminded the members that he will be waiting to receive trainees who will be attending the training in Japan in December 2018.

5. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 31st October 2018.

6. A.O.B.

- Mr. John Gitau JICA Kenya office congratulated the WSPs for the nice presentations and requested that in future the font size for the same should be bigger for visibility purpose. He also suggested that if the WSPs felt that there was a gap in the monitoring sheet then they can come up with their own monitoring sheet to bridge the gap.
- Mr. Mabonga proposed that KEWI should allocate one lecturer to go with the experts in the field so that they can also learn what the WSPs are learning.
- Mr. Mabonga was requested to share Mr. Takahashi's itinerary with KEWI. He was also requested to share the required travel documents in preparation for the training in Japan.
- Madam Sugimoto requested that the number of participants attending the PIC be limited to 3 per institution.
- There being no other business to be discussed, the meeting ended at 11:20 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	DR. LEUNITA SUMBA	Director KEWI
2.	MR. MASAHITO MIYAGAWA	JICA Kenya Representative
3.	MR. JOHN GITAU MUNGAI	JICA Kenya Programme Officer
4.	MR. WATARU TAKASHIMA	JICA Kenya Representative
5.	MR. DAVID MABONGA	Coordinator MWS NRW Unit
6.	MR. ANDERSON KIOI	MWS NRW Unit
7.	MS. PATRICIA MUTUA	MWS NRW Unit
8.	MR. ENG. DANIEL M. NGUGI	WASREB
9.	MR. WALTER M. MOSETI	KEWI
10.	MR. WILLIAM W. ODUOR	KEWI
11.	MR. BERNADDATTE MAUNDU	KEWI
12.	MR. KIHARA KIBUCHI	KEWI
13.	MS. NYAKUDI EVERLYNE	KEWI
14.	MR. FREDRICK MURIITHI	KEWI
15.	MS. PATRICIA WANJERI	WASPA
16.	MR. ROBERT K. MIRURI	Ag General Manager (MEWASS)
17.	MR. SILAS NDATHO	Head NRW Unit (MEWASS)
18.	MR. CHRISTOPHER KAMURANA	Ag Head of Technical Services (EWASCO)
19.	MR. JOSEPH I. MAINA	NRW Head (EWASCO)
20.	MR. BERNARD MWAURA	Managing Director (NYAHUWASCO)
21.	MR. PETER MWANGI	Technical manager (NYAHUWASCO)
22.	MR. GILBERT K. MUTAI	Distribution Manager (Nakuru Water)
23.	MR. LABAN MWANIKI	Technical Manager (KIRIWASCO)
24.	MR. MASAYUKI TAGUCHI	Chief Advisor, JICA Expert Team
24.	MS. HIROKO SUGIMOTO	JICA Expert Team
25.	MR. JUNICHI TAKAHASHI	JICA Expert Team
26.	MR. CHARLES MAINGI	JICA Expert Team
27.	MR. EVANS GITAHI	JICA Expert Team
28.	MS. KELLYJOY GAKII	JICA Expert Team

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE THIRTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/11/07 (Wednesday)
Time:	8:30am – 10:50am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress Activities of NRW Unit, MWS <ol style="list-style-type: none"> i) Printing of NRW Annual Report ii) Procurement of equipment for Pilot WSPs iii) Sensitization activities: Nairobi International Trade Fair (1st-7th Oct 2018) and others b) Progress of the Editorial committee: WASREB c) Plan of preparation for the 5th Joint Training and progress of its implementation: KEWI d) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu, Nakuru, Kisumu & Ruiru-juja WSPs e) Activities of WASPA: WASPA f) Training in Rwanda: JICA Experts team g) Preparation of Training in Japan: JICA 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The presiding Chairperson, Dr. Leunita Sumba, called the meeting to order at 8:30am. She further informed the meeting that she was standing in for Eng. Alima who was away on official duty. She informed the meeting that she expects the counterparts and the WSPs to continue with their work so as to move ahead with the</p>

project. She also requested the members to continue applying more efforts to meet their outputs target. She further appreciated the secretariat for making the documents for the meeting available in good time.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Anderson Kioi (NRW Unit) and seconded by Eng. Ngugi (WASREB).

Matters Arising from the Previous Minutes

i) Mr. Kioi (MWS NRW Unit) requested to know if KEWI was able to send a representative to join the experts when they are in the field, as requested in the previous meeting. Mr. Moseti explained that they had financial constraints and that it was not possible to send someone but they discussed the same with Mr. Mabonga who was in return supposed to talk to Eng. Alima to see how the MWS can help on the issue and get back to Mr. Moseti.

4. Matters to be discussed

i) Confirmation of the Progress of the Project referring to the Project monitoring sheet:
MWS NRW Unit

Members went through the monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output.

ii) Discussion on issues related to each output of the project by Each C/P:

a) Progress of Activities of NRW Unit

i) *Printing of the NRW Annual report:*

Mr. Kioi (MWS NRW Unit) informed the meeting that the procurement for the printing of NRW Annual report was approved and the process was expected to commence soon. Dr. Sumba requested Kellyjoy to share the draft with members. Eng. Ngugi (WASREB) also requested that the process be hurried up since the report needed to be launched as soon as possible. He also informed the meeting that WASREB will be launching the next impact report between the month of April – May 2019. That means after the launch of the impact report preparations for the next year's NRW annual report should start.

ii) *Procurement of equipment for Pilot WSPs*

Mr. Kioi informed the meeting that the process was in its final stage and that they

had sent an order to the winning bidder and they are awaiting delivery of equipment. Mr. Mori requested that they be issued with a copy of the order that was given to the supplier and also that they be allowed to see the equipment that will be delivered before they are issued to the WSPs. This was agreed by all the members.

iii) *Sensitization activities: Nairobi International Trade Fair (1st – 7th Oct 2018) and others.*

Ms. Sugimoto reported that the NRW Unit and the Experts team participated in the Nairobi International Trade Fair and as it was reported earlier, they were hosted by the Nairobi Water and Sewerage Company in their stand. They used posters, which can be availed to the WSPs. They also had an NRW quiz with 5 simple questions and if a participant got three of the questions right, they were given either a wrist band or candy. They also had children hats for colouring and they were also expected to make a pledge on how they will conserve water. She also suggested holding a training to the customer care persons in WSPs on NRW management. Dr. Sumba requested if that can be done in collaboration with KEWI since they have that in their curriculum.

b) Progress of the Editorial committee: WASREB

Eng. Ngugi informed the meeting that the editorial committee formulated a work plan for consideration, Terms of Reference and a budget which was submitted to the Ministry of Water and Sanitation and are waiting for approval of the budget. He also said that he was still reviewing the questionnaires and incorporating the comments raised by members of the editorial committee after which the questionnaires will be administered to the WSPs to respond.

c) Plan of preparation for the 5th joint training and progress of its implementation: KEWI

Mr. Moseti reported that after the 4th joint training, they have identified the improvements needed in their trainings design and delivery. He also reported that he was working on an action plan but he was not able to finalize it yet, since he was waiting to receive some feedback from the MWS on their financial support, especially about having one of the KEWI lecturers joining the experts during their field visits. He also informed the members that 5th joint training would be held in either late January or early February 2019.

Dr. Sumba also pointed out that there was need to work towards making KEWI courses attractive so that even after the project WSPs can still join them for further trainings.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu, Nakuru, Kisumu and Ruiru-Juja WSPs

Mr. Mori reported that most of the pilot WSPs did not submit their revised mid-term and annual NRW reduction plans by the extended deadline of 26/9/2018. Therefore, JICA experts have been continuing to support their preparation of the plans. At the end of October, Kisumu and Mavoko had prepared detailed plans while Meru, Ruiru-Juja & Nyahururu WSP had prepared simple plans. The remaining 3 WSPs are still working on the formulation of plans using the new template.

He further reported that Embu had updated its GIS pipeline data as a preparation for better pressure management in Zone 2 where high pressure is causing frequent leakages. Inaccuracy of a production bulk meter (possibly due to air intrusion, effect of a throttled gate valve, or mechanical malfunction at a high flow rate) is being further investigated.

Meru WSP is trying to improve on utilizing existing billing system (M@jics) by incorporating in a new custom-made NRW monitoring software module into their system for accurate and timely calculation of NRW volume and ratio in each distribution zone and DMA. Embu WSP also uses M@jics and is currently working to realize its own NRW monitoring system after the installation of missing zonal & DMA bulk meters. Their experiences with this NRW monitoring software module would help the three pilot WSPs to be supported mainly in Phase 3 of the Project. In order to support their NRW monitoring in Phase 3, JICA experts started helping Mavoko and Eldoret WSP in improving their zoning of distribution systems.

Nyahururu & Nakuru WSP are continuing their efforts to reduce leakage by using ultrasonic flow meters, listening sticks, leak detectors, etc. Nyahururu is also improving their pressure mapping for entire service area by taking more pressure measurements.

Ruiru-juja WSP has recently started minimum night flow measurements with step test for leak reduction and is currently trying to improve their commercial losses related activities by utilizing mobile GIS on which they visualize their detailed customer identification survey results and navigate their field staff for efficient implementation of activities.

Kisumu WSP has prepared a draft preliminary plan for improving the zoning of their distribution systems for better NRW monitoring. Kisumu is about to select an area where they will have on-site leak detection trainings with the JICA experts.

He also pointed out that Based on experiences with the recent successful organizational rearrangement (i.e. establishment of dedicated NRW Section) at Embu WSP, JICA experts are now supporting other WSPs (e.g. Eldoret, Nakuru and

Kisumu) to improve their organizational structure and demarcation of NRW-related duties between different departments and sections.

Presentations from Nyahururu and Nakuru WSPs were further made to the members. Mr. Peter Mwangi (NYAHUWASCO) pointed out that in their case after the analysis they noted they were over estimating on the customers' bills and that this might have some implications but they were ready to work on the actual billing. Mr. Gilbert Mutai (NAWASSCO) reported that in their case they were under estimating and they were also willing to work with the actual billing. Mr. Mori enquired from the two if they knew of their trends of either over estimation on meter readings or under estimations. Mr. Peter Mwangi reported that they knew that they were over estimating on the bills and this happened in the case whereby they visited the customer to read the meters and the gates were locked. Giving them a high bill would make them visit the WSP for complaints and there they would raise their concern of the locked gates that hindered them to reach the meters for actual readings.

Dr. Sumba further enquired to know if the WSPs can attribute their progress to the project. NYAHUWASCO responded by saying yes, they did and also pointed out that NRW was not just about the physical and commercial losses but the leadership of a WSP was also very key in the management of NRW.

Mr. Mutai (NAWASSCO) also reported that in the case a customer's gate is locked for 3 consecutive months they disconnect water from outside.

Mr. Moseti informed the meeting that during the next scheduled training, KEWI will be doing demonstrations on the wrong and right ways of installing meters in their new test field. Mr. Ngugi suggested that WSPs should send their staff to KEWI for training on the matter of meters specifications and installation. Mr. Mutai also pointed out that in most WSPs most of the meter readers are untrained and they are involved even in installation of meters and that is why poor workmanship in meter installation is found. After a lengthy deliberation on the matter of meter reading the meeting found it necessary for the issue to be addressed as an urgent matter so as to avoid discrepancies leading to commercial losses. The meeting agreed on the importance of WSPs sending Trainer of Trainers (TOTs) to be trained in KEWI and have them train other members in the various companies or even request a lecturer from KEWI for a day or two and have their various employees trained on the same matter.

Mr. Mutai reported that NAWASSCO will be holding an inhouse training in the coming week with their representatives who attended the WASPA training in Embu.

Mr. Mori also informed the meeting that the Experts are coming up with a simple

meter test bench which is still at test stage and in Ruiru-Juja they did a customer identification survey to help in identifying meter location which will help in their billing.

e) Activities of WASPA: WASPA

WASPA had not sent any representative but Ms. Sugimoto reported that they had an NRW Management Forum in Embu which had over 100 participants including the MWS PS and CAS. The Forum Consisted of 1-day High Level Panel Meeting on NRW with exhibitions, and 3 days of NRW Management Field Training.

However, the members felt that it was important to have a clear-cut boundary on the WASPA's forums i.e. they be given a different name such as field demonstrations, but not training, since as far as the project was concerned, KEWI is the one mandated to do the trainings. Mr. Moseti gave an example of a mix up that happened when they invited the WSPs for the 4th training and they said they will not be attending since they will attend the upcoming WASPA's training. Ms. Sugimoto also enquired to know when WASPA will be carrying out their benchmarking activities since they were charging on their previous training which to her that meant that it was not a part of the benchmarking.

The meeting agreed that there should be a meeting between WASPA, MWS and the Experts to clarify this issue.

f) Training in Rwanda: JICA Experts team

Mr. Gitau (JICA Kenya) informed the members that there was a study tour in Rwanda and Mr. Sekimoto, Mr. Miyagawa and two members from Embu WSP were attending from 5th to 9th November 2018.

g) Preparation of Training in Japan: JICA

Mr. Gitau informed the members that they received approval for 8 participants who are going to Japan for the training and in the coming week they will be working on their visas. He further informed the members that they were on point as far as the timelines were concerned.

5. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 28th November 2018.

6. A.O.B.

- Mr. John Gitau JICA Kenya office informed the members that when he visited Nyahururu WSP and he saw a lot of enthusiasm in the NRW team as they worked with the equipment together with the Experts but it was

	<p>important to note that some of the activities they were doing then could not be possible in the absence of the experts because of lack of the equipment. He therefore asked the MWS to ensure the promised equipment were procured as soon as possible.</p> <ul style="list-style-type: none"> • Mr. Kano introduced himself to the members and informed them that he was back to work on reduction of commercial losses and also to prepare curriculum for meter readers. Dr. Sumba informed the meeting that they will be working together with him on the curriculum. • Mr. Harada informed the meeting that he had talked to Mr. Taguchi and he requested them to continue working together. • There being no other business to be discussed, the meeting ended at 10:50 am.
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ATTENDANCE LIST:

No.	Name	Institution
1.	DR. LEUNITA SUMBA	Director KEWI
2.	MR. JOHN GITAU MUNGAI	JICA Kenya Programme Officer
3.	MR. WATARU TAKASHIMA	JICA Kenya Representative
4.	MR. ANDERSON KIOI	MWS NRW Unit
5.	MR. ENG. DANIEL M. NGUGI	WASREB
6.	MR. WALTER M. MOSETI	KEWI
7.	MR. PETER MWANGI	Technical manager (NYAHUWASCO)
8.	MR. GILBERT K. MUTAI	Distribution Manager (Nakuru Water)
9.	MR. JOB LIECH	NRW (KIWASCO)
10.	MS. HIROKO SUGIMOTO	JICA Expert Team
11.	MR. TOSHIO KANO	JICA Expert Team
12.	MR. SHOZO MORI	JICA Expert Team
13.	MR. NAOKI HARADA	JICA Expert Team
14.	MR. CHARLES MAINGI	JICA Expert Team
15.	MR. EVANS GITAHI	JICA Expert Team
16.	MS. KELLYJOY GAKII	JICA Expert Team

Apologies

- MEWASS

Absent with no Apology

- RUIRU-JUJA
- EWASCO
- WASPA

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE WATER REDUCTION

MINUTES OF THE FOURTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2018/11/28 (Wednesday)
Time:	9:00 – 11:20am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes - Mr. Gitahi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress Activities of NRW Unit, MWS <ol style="list-style-type: none"> i) Printing of NRW Annual Report ii) Procurement of equipment for Pilot WSPs b) Progress of the Editorial committee: WASREB c) Plan of preparation for the 5th Joint Training and progress of its implementation: KEWI d) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu, Nakuru, Kisumu & Ruiru-juja WSPs e) Activities of WASPA: WASPA f) Training in Japan: JICA 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairperson Eng. Alima thanked the members for attending the meeting on time and also for their efforts in the project. He said that he believed the WSPs were making progress and with commendable impact. He pointed out that the WSPs should always remember that they are the pilot in the project and must do things well since others will learn from them. NRW is a challenge and the country was losing</p>

funds that could be used for other developments through it. However, we should start small and should never lose focus, make serious commitments so that others can learn from you since you are expected to give the rest of the WSPs the expertise you are acquiring from the experts. He further acknowledged that Nyeri was doing a good job but the pilot WSPs can bypass them. Also, he gave an example of Malindi who was once at 17% but they are now at 31%. He encouraged them to have NRW as a lifestyle to know how and where they are distributing water to everyday. The experts have come to assist and so they should take the exercise seriously. He said that the country relies on the pilot WSPs and should therefore take the exercise with all the seriousness that it deserves.

3. Confirmation of previous minutes (Annex 1)

Mr. Evans Gitahi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Walter Moseki (KEWI) and seconded by Ms. Sugimoto (JICA Experts Team).

Matters Arising from the Previous Minutes

i) Ms. Sugimoto requested that KEWI be added to the meeting that was proposed between the MWS, Experts and WASPA during the previous meeting.

4. Matters to be discussed

i) Confirmation of the Progress of the Project referring to the Project monitoring sheet:
MWS NRW Unit

Members went through the monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output.

ii) Discussion on issues related to each output of the project by Each C/P:

a) Progress of Activities of NRW Unit

i) *Printing of the NRW Annual report:*

Ms. Patricia (MWS NRW Unit) informed the meeting that like it was reported in the previous meeting the procurement for the printing of NRW Annual report was approved and the process had already commenced. She further informed the members that they had agreed with the in-charge procurement department that the printer who wins the bid will be advised to bring a draft copy of the report to the

NRW team for prove reading and also to agree on the final copy design before printing the entire work.

ii) Procurement of equipment for Pilot WSPs

Ms. Patricia informed the meeting that the MWS had sent an order to the winning bidder and they are awaiting delivery of equipment which they are optimistic that it would be in the course of the week. Members were however concerned that the equipment were taking longer than expected and, in this regard, Mr. Mabonga requested that the experts and even the WSPs should be a bit patient since the procurement by the government had to take the entire process as required. Mr. Sekimoto requested that now that he will be away during the arrival of the equipment Mr. Charles and Mr. Moseti be a part of the committee that will be receiving the equipment so as to access the specifications. He also raised his worry in the initial training of the WSPs on the use of the equipment. Members agreed that the MWS can propose during the next JCC on the coming back of Mr. Sekimoto to do the training on the usage of the equipment.

Mr. Moseti pointed out that some WSPs had the right equipment but were not using them since they did not know how to use them. He gave an example of the coastal water services where all the WSPs had the right equipment but kept them in the stores since they did not know how to use them.

b) Progress of the Editorial committee: WASREB

Eng. Ngugi informed the meeting that he had finalised on the questionnaires and that he had already sent it to the editorial committee. He further reported of a planned meeting with some of editorial committee members to go through the finalized questionnaires later after the PIC.

c) Plan of preparation for the 5th joint training and progress of its implementation: KEWI

Mr. Moseti reported that they were planning to hold the 5th joint training between the month of January and February 2019. He also reported that he had received communication from the expert in-charge of their output and that they will be meeting in Japan and he will give progress during the next PIC meeting.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu, Nakuru, Kisumu and Ruiru-Juja WSPs

Mr. Mori informed the members that they were testing the cheap equipment with the WSPs and he also showed them some pictures with the equipment in the field.

He also reported that as of November 22, Kisumu and Mavoko had prepared detailed plans while Meru, Nyahururu, Nakuru & Ruiru-juja had prepared simpler plans. Embu & Eldoret are still working on the formulation of plans using the new template. The progress of Kilifi-Mariakani had not been confirmed yet. The status of planning above was shared with WASREB on November 19.

Highlights of activities from November 1st to 22nd are shown below.

Embu WSP has recently conducted another investigation on its largest production meter by measuring flow with UFM's under various conditions. Back flows through the production meter was observed. As a result, a new chamber will be constructed for installing new production meters downstream to replace this problematic production meter.

JICA Expert Team supported Meru WSP to conduct hydraulic analyses to plan the improvements required to divide existing Zone 3 into two distribution zones while solving low pressure problems at small hills in the lower area of Zone 3.

Nyahururu, Nakuru, Ruiru-Juja & Mavoko have been setting up hand-built meter test benches with support from JICA Expert Team.

Nakuru, Kisumu & Ruiru-juja have been preparing significant scale-up of their commercial loss management including accuracy test of large customer meters by using low-cost ultrasonic flow meters and mobile GIS software.

Meru, Embu, Nyahururu, Nakuru, Ruiru-juja and Kisumu have received trainings on meter reading and meter standards, etc.

Eldoret, Mavoko, Kisumu & Nyahururu have roughly calculated their total financial losses caused by NRW and potential financial gains from reducing the NRW by half.

Ruiru-Juja has re-selected a new pilot area, where JICA experts will support their leak detection, after the minimum night flow measurement at the area previously selected for the leak detection failed due to its intermittent water supply conditions.

Kisumu had selected a new relatively-large pilot area and conducted the first trial of step testing with JICA Expert Team.

Ruiru-Juja is currently trying to improve the coordination between the different sections involved in NRW reduction (e.g. meter reading, meter installation, distribution, billing, NRW & GIS) and the chains of command related to NRW Section.

Kisumu (after intensive discussions between its Technical Department including NRW Section, Commercial Department including Zone Coordinators and Internal Audit) is currently going through a trial to increase the responsibility of its NRW

Section over customers having 3/4” meters or those consuming more than 50m³/month on average, in addition to their existing duties of dealing with very large customers having 1” or larger water meters.

EWASCO and MEWASS did their presentation to the members. Mr. Silas later raised his concern in the governance of their WSP especially in the top management. Eng. Ngugi responded by saying WASREB was aware of the turbulence in governance in some WSPs and that they were attempting to do their best but members should be aware of the boundaries between the politicians and the technical people. However, there are times that they are forced to allow the court to take over and they follow the ruling of the court. Ms. Sugimoto informed the members that the Experts are planning to have a meeting with MEWASS new CEO when Mr. Taguchi returns in the country. Members agreed it was also important to involve the CEC the General Manager and the Technical Manager in the meeting.

Mr. Mwangi (Nyahururu WSP) reported that they were proceeding with the main activities mainly the meter testing. He also reported that they got the simplified meter testing, they were working on the pressures and also the pipelines i.e. leak detections using the listening sticks. He said they were also planning to complete the simple plans but they were not as simple as the name may appear.

Mr. Gilbert (Nakuru WSP) reported that they had noticed tremendous changes in their NRW ratio since the month of August which was at 37.9%, dropped to 35.6 in September and at October it was at 31.1%. He also reported that as at now they can be able to calculate the NRW ratio for all their zones. Further to this he said they had noted that they had 8 county estates that were not metered and did not pay for the water they received. These estates were their main contributor of NRW. However, they are working on disconnecting the estates and giving them new lines and also forcing them to open accounts. He also reported that they were targeting to have 100% individual meters by the end of the year in the southern zone. He also said they were key in the quality of the meters they were receiving from the suppliers. In this the acting chairperson congratulated all the WSPs for emphasizing on quality meters from the suppliers.

Ms. Mary Mwangi (RUIRU-JUJA) reported that they were above 35% in NRW ratio. They were working on selecting the DMAs and mapping. They were able to know that the main contributor to NRW in their WSP was commercial losses which were caused by either illegal connections or non-billed customers. They had finished working on the planning tool.

e) Activities of WASPA: WASPA

Ms. Patricia (WASPA) informed the members that WASPA had a training calendar and that is what they were implementing during the High-level Panel Meeting. Eng. Alima pointed out that WASPA should have involved KEWI during the trainings since they are the ones mandated by the project to train. Ms. Sugimoto enquired to know when WASPA was

planning to undertake their benchmarking activities since they were charging the attendees during the training in Embu. Ms. Patricia responded by informing the members that even for the benchmarking the attendees are expected to pay only that they pay a little amount of money and they pay it annually. Members agreed to have a meeting tentatively in the following week to discuss this matter further. She also reported that they were having a review to incorporate the right specifications in the smart meters especially now that they are coming in.

f) Training in Japan: JICA

Mr. Charles, JICA Experts Team, reported to the members that in the previous year JICA had sponsored the management team to attend a training in Japan and in this year's, they were targeting the technical team. This year's training will start from 1st – 16th December 2018. He reported that it was expected that the knowledge gathered by the members attending the training will be transferred to the rest of the members who were not attending. He informed the members that the attendees were expected to carry their laptops and also prepare presentations from their various organisations.

5. Schedule of the next PIC meeting

The meeting agreed to hold the next PIC meeting on 16th January 2019.

6. A.O.B.

- Eng. Ngugi requested that Ruiru-Juja and Kisumu WSP be marked for subsequent presentations. He also informed the members that provisions of NRW will be secured in the licensing of the WSPs
- Utilities in the pilot should not have an issue of driving the project ahead
- They should capitalize in making the losses less everyday
- Only Nyahururu had been compliant in submitting the NRW report. He encouraged the WSPs to start submitting their reports using the new plan
- He further encouraged them to sustain their results consistently
- Mr. Mosei informed the members that KEWI has a 5days short course on the use of the leak detection equipment and therefore WSPs should make effort and take the course
- Members suggested that the 5th JCC be held on 6th February 2019 tentatively
- There being no other business to be discussed, the meeting ended at 11:20 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	Eng. SAO ALIMA	MWS
2.	MR. DAVID MABONGA	MWS NRW Unit
3.	MS. PATRICIA MUTUA	MWS NRW Unit
4.	ENG. DANIEL M. NGUGI	WASREB
5.	MR. WALTER M. MOSETI	KEWI
6.	MS. PATRICIA WANJERI	WASPA - NRW Specialist
7.	MR. BERNARD MWAURA	NYAHUWASCO
8.	MR. PETER MWANGI	Technical Manager (NYAHUWASCO)
9.	MR. GILBERT K. MUTAI	Distribution Manager (Nakuru Water)
10.	MR. MICHAEL GITAU	Head of NRW RUJWASCO
11.	MS. JANE NGUGI	Technical RUJWASCO
12.	MS. MARY MWANGI	TM RUJWASCO
13.	MR. SILAS NDATHO	Head NRW
14.	MR. JOSEPH I. MAINA	Head NRW
15.	MR. FELIX G. MUTUURA	HTS EWASCO
16.	MS. HIROKO SUGIMOTO	JICA Expert Team
17.	MR. SEKIMOTO SHINICHI	JICA Expert Team
18.	MR. SHOZO MORI	JICA Expert Team
19.	MR. CHARLES MAINGI	JICA Expert Team
20.	MR. EVANS GITAHI	JICA Expert Team
21.	MS. KELLYJOY GAKII	JICA Expert Team

Apologies**1. JICA Kenya office****Absent without Apology**

- Kisumu

**THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN
NON-REVENUE WATER REDUCTION**

**MINUTES OF THE FIFTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2019/01/23 (Wednesday)
Time:	8:30 – 11:00am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Preparation for 5th JCC <ol style="list-style-type: none"> a) Draft Agenda (Date, Venue, Participants, etc): MWS NRW Unit b) Preparation for the JCC Presentations: JCC: JICA Experts team ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report: MWS NRW Unit b) Procurement of equipment for Pilot WSPs: ditto c) Progress of the Editorial committee: WASREB d) Updates on the Preparation for the 5th Joint Training: KEWI e) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu, Nakuru, Kisumu and Ruiru Juja WSPs f) Activities of WASPA: WASPA g) Report of Outputs acquired through Training in Japan: An appointee of trainee members 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u></p> <p>The chairperson Eng. Alima welcomed the members to the 15th PIC meeting. He pointed out that it was worth noting that we have had these meetings since the project began and that he believed that WSPs are making effort at institutional level to implement what they learnt after they attend the meetings so that others can learn from them.</p> <p>Eng. Alima requested to know the progress of the procurement of equipment for the WSPs. Mr. Mabonga responded by informing the members that the supplier had not yet supplied the equipment and that he has been postponing the delivery dates. In</p>

this regard the chairman Eng. Alima made a call to the in-charge procurement and he emphasized on having the equipment delivered by the end of the week. He also requested to know if the experts gave the right specifications for the equipment so as to avoid back and forth after the equipment were delivered. Mr. Taguchi, JICA Experts team Chief Advisor, responded by informing the members that the team gave out the right specifications to the Procurement Dept. of MWS and that they are very worried since there has been no notable progress in this regard. Mr. Miyagawa also pointed out that he hoped that the equipment would be delivered before the next JCC to avoid mentioning the same issue again before the senior members of the ministry. Mr. Mabonga also informed the members that an inspection committee which comprises of the KEWI, JICA Experts and other members would be formed to receive the equipment.

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Expert team) informed the meeting that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Eng. Ngugi (WASREB).

Matters Arising from the Previous Minutes

i) Mr. Taguchi raised a concern about the meeting that was to be held between the MWS, JICA Experts, KEWI and WASPA and was not held. The chairman requested that the said meeting be held in the coming week.

4. Matters to be discussed

i) Preparation for the 5th JCC

a) Draft Agenda (Date, Venue, Participants etc): MWS NRW Unit

Mr. Taguchi, JICA Experts Team Chief Advisor, informed the members that the JCC meeting was very important for the project since it helps to monitor the progress of the project. He further informed them that the coming JCC is very key since we are coming to the end of the 2nd phase of the project (i.e. September 2019) and therefore it is important to know how the progress of the various counterparts, and if there is need for change of approach in specific areas. He further presented to the members a tentative agenda for the 5th JCC meeting and explained the two sessions therein. Mr. Miyagawa requested to know if the Permanent Secretary would be present at the JCC meeting. Eng. Alima responded by informing the members that he would do a brief note for the PS to go through so as to be aware of what the meeting was all about. He further

informed the members that the PS cannot attend the meeting for the whole day and therefore it was very important for the members to be able to adjust the programme so that key issues are handled first in his presence before he leaves the meeting. Mr. Taguchi agreed to change the sequence of the presentations in the tentative agenda for the JCC meeting.

b) Preparations for the JCC presentations: JCC: JICA Experts team

Mr. Taguchi also explained to the members his expectations in terms of evaluation and challenges to be addressed during the remaining period of the Phase 2 of the project as issued for the discussion in the next JCC. He pointed out that its main purpose is to assess the achievement of each Output with regards to promoting the NRW reduction activities in the various WSPs and counterpart organisations. He however stated that the sheet that he presented to the members had room for further adjustment to make it better for the next JCC meeting.

ii) Discussion on issues related to each output of the project by Each C/P:

a) Progress of Activities of NRW Unit

i) *Printing of the NRW Annual report:*

Mr. Mabonga presented to the members the draft printing of the first version of the NRW annual report was submitted. He further explained to the members that they were going through the report identifying the necessary corrections to be worked on before the final version was printed. Ms. Patricia (MWS NRW Unit) informed the members that they had not designed the right cover page and in this regard the chairman requested members if there could be any of them with a very nice picture that can fit to be used for the cover page to forward it to Mr. Mabonga. Mr. Miyagawa also pointed out that it was worth noting that the annual report would be a progressive report and not a one-time report

ii) *Procurement of equipment for Pilot WSPs*

This was discussed at the beginning of the meeting in the communication from the chairperson i.e. agenda no. 2.

b) Progress of the Editorial committee: WASREB

Eng. Ngugi informed the members that they had a meeting between the MWS NRW Unit and representatives from the JICA Experts team and they agreed on the set of questions to be used for the questionnaires. He further prepared the questionnaires and before he came for the meeting, he had sent a link to the members on how to access the questionnaires for trial. He also requested the members to make comments on the link and thereafter it would be sent to the WSPs. Eng. Ngugi also informed the members that he was planning to call for a meeting on either 30th or 31st of January. Mr. Taguchi enquired to know if the TOR, budget and workplan that had been prepared earlier were approved. Mr. Mabonga responded by saying that

they were approved by the PS and that a memo was written by the PS for funds to be released.

The chairperson requested that the committee should see to it that they were making good progress and gave a timeline of 6th February 2019 for the committee to hold the meeting.

c) Updates on the preparation for the 5th joint training: KEWI

Mr. Moseti informed the members that KEWI was progressing well in the preparations for the 5th joint training. He said that the classroom training would be held on 4th – 8th March 2019, and OJT would be on 18th – 23rd March 2019. He further stated that the dates were subject to review on some issues highlighted during the reviewing of the 4th joint training and that they were holding a meeting to discuss the issues on Friday, January 25th 2019. Mr. Taguchi requested to be sent a report on the agreed issues the following week i.e. (after the mentioned meeting).

Mr. Moseti further informed the members that the invitation for the 5th Joint training would be made a month before. The chairman suggested that they go through WASPA to send the invitations so as to get a wider communication. Mr. Moseti also requested that the WSPs to send different people who have not attended their trainings there before since it's the same things that were taught before. This will help in empowering more personnel in the WSPs. He also requested if the pilot WSPs can be allowed to send 2 people for the training since there are only 2 training courses remaining. He also said it was worth noting that all the pilot WSPs have so far participated fully in the trainings. Mr. Irungu informed the members that the OJT held in Embu were very beneficial to them and he suggested if it could be possible to have it held in any other WSP for them to benefit also. The members agreed that since the training can only be conducted in the leading WSPs, the 5th OJT course will be held in EWASCO but the members will consider holding it in MEWASS in the future so as to give KEWI enough time to prepare Meru for hosting the training. Mr. Ndatho expressed his enthusiasm and goodwill to hold the OJT in MEWASS in the future, but pointed out that MEWASS doesn't have a good water meter test bench. Mr. Liech from Kisumu WSPs also expressed his willingness to hold the OJT course in Kisumu in the future.

d) Progress of activities at leading pilot WSPs: JICA Expert team, & Embu, Meru, Nyahururu, Nakuru, Kisumu and Ruiru-Juja WSPs

Mr. Charles gave a brief highlight on the activities going on at the WSPs.

In Embu WSP, plans are underway to have the faulty production meters replaced.

They have so far collected and uploaded pressure data from 30no. pressure points in zone 2 using ODK which will later be useful for the pressure management

exercise in the zone. They have also started the exercise of procuring pressure reduction valves for the same. They have also developed and adopted meter standard specifications for R-200 meters to be used for procurement and have so far tested 40 new meter samples.

Large and small customer meter survey on stalled and mal-functional meters is ongoing and have so far tested 174no.small customer meters, replaced the faulty ones and netted 4no. illegal connections and the appropriate action taken.

Nyahururu, Nakuru, Ruiru-Juja & Mavoko have been setting up improvised meter test benches which he is to start training them on their usage.

Kisumu WSP has been working on the Hydraulic Zoning where so far, the desktop review is complete and is now awaiting acceptance by the management for implementation to commence. Minimum Night Flow measurements are also on going where they recently worked on the 8” Chiga pipeline. As a result, mapping and repair of the physical leaks found is complete and the active underground leakage detection exercise is scheduled to start in January 2019.

Meru, Nyahururu, Nakuru and Ruiru-juja are mainly concentrating on large customer monitoring, Step testing and Minimum Night Flow measurements (e.g. Zone 4 lower in Meru, Bondeni Estate in Nakuru, and Rwathia and Agostino lines in Nyahururu).

Kilifi – Mariakani is mainly dealing with customer meter servicing, testing and replacement of the mal-functional meters.

In conclusion he notified the members that the project encourages WSPs to adopt and use improvised apparatus temporarily if sophisticated and expensive equipment is not available to ensure no delays their NRW reduction activities.

Highlights from the WSPs

MERU

Mr. Ndatho began by thanking the MWS and JICA for according him a chance to attend the training in Japan. He further informed the members the various activities that they were undertaking as a WSP which included the following:

Intensive patrolling using the ODK, night flow measurement, meter calibration and in particular started this in zone 8. He further informed the members that they have a budget for the replacement of the pipelines, old tertiary lines and also for procuring new meters for replacing the faulty ones.

EMBU

Mr. Irungu informed the members that they were involved in under taking the following activities:

Checking large customer meters and testing the customer meters. He pointed out that they had prepared a draft metering policy. He also informed the members they were ready to carry out the second billing data analysis so that they can monitor their progress in commercial losses. Mr. Charles however responded by informing him that results from the data analysis keep on varying and it is advisable to have it on either annual or semi-annual basis so that the WSP can review the changes over a wider span of time. They however agreed that since they already had a difference of more than 6 months since the previous analysis was done, they can work on the 2nd analysis.

Mr. Irungu also informed the members that they had formed a task force that meets on monthly basis to review the NRW status and give a way forward. He also informed the members that the task force was comprised of the technical people but they would be incorporating the key people from other department in the future. Mr. Charles enquired about the progress made by EWASCO on the planning template. Mr. Irungu responded by informing the members that they had completed $\frac{3}{4}$ of the template and the reason as to why they were taking longer was because they are going through it in a detailed manner and that they are hoping to complete and submit it soon.

Ms. Patricia, WASPA, informed the members that WASPA was aware that there was a component of smart meters that is failing and she requested the WSPs with the challenge to forward them to WASPA so that they can work on the specifications again.

KISUMU

Mr. Liech informed the members that in Kisumu they did analysis and realized that 22 accounts that were major were being billed on average. Out of the analysis he reported that a bigger percentage of their connections totalling to 51% was billed on estimation. He also said that they are currently testing all the customer meters in Milimani DMA and replacing the ones found to be faulty. Currently, they have tested 200 out of the current 2000 connections using either the calibrated buckets, portable test meters or the main test bench. So far, they have realized a 1% decrease in NRW ratio in this DMA and expect further decrease in the near future over the entire service area.

He also reported that they were monitoring pressures remotely using digitalized pressure loggers, they also realized theft of air valves and have so far done four plastic replacements that are working well. They are also working towards proper protection of their air valves since most of the vandalism cases are at the air valves.

Mr. Liech further reported that the WSP had realized a decrease of 3% in their NRW ratio over 4 months, and that they are now at 31%. Their billing also had increased by over 3million per month and he thanked JICA Experts Team for their efforts in training them.

Eng. Ngugi proposed that the WSPs should control the quality of materials and workmanship for new connections so that after a customer pays the connection fee, he/she is connected using the materials specified by the company and also the work is done by the company staff.

NYAHURURU

Mr. Muthami reported the activities that they were undertaking in Nyahururu as follows:

Meter testing using calibrated buckets, ODK and smart phones

They have so far tested a total of 2,477 meters and replaced the faulty ones. They have spread the use of the listening sticks and have so far found and repaired many leakages where a lot of water was being lost. Mapping of their entire area using GIS is almost complete. They have drafted a metering and materials policy. They have also formed a committee on NRW from technical, commercial and public relations departments. The committee will conduct trainings for other departments so that they can learn about NRW reduction. He also pointed out that they had a major challenge with their bulk meters, especially their location, but they had identified appropriate areas to install them and also want to replace them with Electro-magnetic meters. He also reported that as of December 2018 their NRW ratio was 39%. Mr. Kioi enquired whether they had obtained assistance from other project activities apart from the training by the JICA Experts. He responded by saying that training from KEWI was also very important to them and it had assisted them greatly.

RUJWASCO

Ms. Mary Mwangi reported the following activities from Ruiru-Juja WSP:

They are currently testing customer meters and replacing the malfunctioning ones with high accuracy meters. So far about 500 customer meters have been replaced. They are also relocating customer meters in a bid to curb illegal water usage and theft. On zoning, she reported that they have now completed the zoning and sub-zoning exercise together with the installation of the respective zonal and sub-zonal meters. She also reported that mapping of the entire distribution area is nearing completion having done about 70%. They are currently tackling the physical losses by repairing the physical leaks by using the UFM and the listening sticks to identify the underground leakages. She also reported that after calibration of 15 sub-zonal meters, only one was within the acceptable range and so there is need to have them replaced. They are majoring on best practices like: use of HDP pipes for replacement and extensions, and inspection work for illegal connections. Their NRW ratio as of December 2018 was 35%.

NAKURU

Mr. Mutai reported the following activities that are being carried out in Nakuru WSP:

They have so far isolated 5 zones from the initial 3 zones. They had realized a drop in NRW ration from 35.7% in June 2018 to 31% as of December 2018. They had also noted that some of their bulk meters were under registering. The margin of error ranged up to 14% for some bulk meters, meaning the production volume was not accurately recorded.

The chairman pointed out that during the JCC, presentations should not only be showing the activities undertaken by various WSPs but also figures and percentages in terms of NRW reduction as well as revenue increase will be of great importance.

e) Activities of WASPA: WASPA

Ms. Patricia (WASPA) informed the members that after the 14th PIC, WASPA did not have so many activities but they held a meeting in December with various chairpersons of the tasks force and discussed what went well or wrong in the course of their activities in the course of the year and the calendar of activities was also agreed upon.

1st meeting -Data Validation workshop (February 2019)

2nd meeting – 15th& 16th April 2019 (Development of Performance Improvement Plans)

3rd Meeting – July (Best/ Leading Practices)

She further thanked JICA and the MWS for involving WASPA in the training in Japan where she learnt that Japan had an organization similar to WASPA called Japan Water Works Association (JWWA) and from them they learnt the following:

- Quality is key and WASPA should bring other partners like KEBS on board for quality checks
- Retired water experts were retained so as to share their experiences with other upcoming experts
- Other lessons learnt would be shared in the other forums of WASPA

Mr. Miyagawa enquired to know the consistency in the items of planning (NRW reduction plan). Eng. Ngugi requested the WSPs to work closely with WASREB and WASPA so as to converge issues in NRW reduction plans to make it simpler for the utilities.

Mr. Felix Mutuura, EWASCO, suggested that there should be a way of sanitizing the pipes after repairs have been undertaken, as well as have a standard way of doing the plumbing work for all the WSPs under WASPA. He also suggested that there should be a way whereby a customer who needs a meter installed in her home can have something to show that the plumbing work in his/her house was done by a licensed or qualified plumber. This is because it had come to their knowledge that WSPs lose a lot of water due to poor plumbing works especially within the

customers' premises.

Eng. Ngugi also pointed out that it was the mandate of all members to bring order in the water sector.

f) Report of Outputs acquired through training in Japan: An appointee of trainee members

Mr. Moseti informed the members that they had 8 representatives from various counterpart organizations and one local Expert of the JICA team who attended training in Japan. The training took place between 1st and 16th December 2018. The training was administered through the following ways:

Lectures, visit to manufacturing companies that manufacture materials such as meters and pipes, as well as practical sessions using the NRW equipment.

Mr. Moseti also pointed out the following;

- ✓ The materials used in the network were of high quality
- ✓ Satisfying customers was also very key in Japan and that complaints were taken very seriously
- ✓ Knowledge transfer at whichever level was also highly embraced
- ✓ Data management in term of monitoring, documenting etc was also very key i.e. data helps to build a history on how a solution was formulated and the current stage
- ✓ Japan also embraced supervision of the workers by a senior employee

The chairman concluded by suggesting that following the training in Japan, the members should include their commitments and the way forward in the JCC presentations.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on 26th February 2019.

6. A.O.B.

Mr. Taguchi requested the members to send the names of three persons from their utilities to attend the JCC so as to prepare the attendance sheet in advance.

Mr. Mabonga suggested if the WSPs can start tendering for the plumber services so as to get qualified plumbers.

There being no other business to be discussed, the meeting ended at 11:00 am.

ATTENDANCE LIST:

No.	Name	Institution
1.	ENG. SAO ALIMA	Ag. Water Secretary (MWS)
2.	MR. MASAHI MIYAGAWA	JICA Kenya office
3.	MR. BERNARD MWAURA	Managing Director (NYAHUWASCO)
4.	MR. DAVID MABONGA	MWS NRW Unit
5.	MS. PATRICIA MUTUA	MWS NRW Unit
6.	MR. ANDERSON KIOI	MWS NRW Unit
7.	ENG. DANIEL M. NGUGI	WASREB
8.	MR. WALTER M. MOSETI	KEWI
9.	MS. PATRICIA WANJERI	NRW Specialist (WASPA)
10.	MS. MARY MWANGI	Technical Manager (RUJWASCO)
11.	MR. FELIX G. MUTUURA	HTS (Head of Technical Services) EWASCO
12.	MR. PAUL MUTHAMI	Head of NRW (NYAHUWASCO)
13.	MR. JOB LIECH	Head of NRW (KIWASCO)
14.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
15.	MR. MICHAEL GITAU	Head of NRW (RUJWASCO)
16.	MR. SILAS NDATHO	Head NRW (MEWASS)
17.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
18.	MR. MASAYUKI TAGUCHI	Chief Advisor, JICA Experts Team
19.	MR. NOBORU SAITO	JICA Expert Team
20.	MR. CHARLES MAINGI	JICA Expert Team
21.	MR. EVANS GITAHI	JICA Expert Team
22.	MS. KELLYJOY GAKII	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**
MINUTES OF THE SIXTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING

Date:	2019/02/26 (Tuesday)
Time:	9:00 – 11:40am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Mr. Anderson Kioi for Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Feedback of Project Achievement: JICA Expert Team ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report: MWS NRW Unit b) Procurement of equipment for Pilot WSPs: ditto c) Progress of the Editorial committee: WASREB d) Preparations for the 5th Joint Training: KEWI e) WASPA Activities schedule: WASPA f) Progress of Activities at Pilot WSPs: JICA Experts team; & Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja and Kilifi-Mariakani WSPs iii. Discussion among Participants 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairperson Mr. Anderson Kioi began by informing the members that he was sitting in for Eng. Alima who was held up in other official duties. He therefore welcomed the members to the 16th PIC meeting. He pointed out that it was worth noting that there were several achievements that had been realized in the project from various outputs but the WSPs were very key in the project since their progress was the main determinant of success in the project.</p>

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed the members that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Bernard Mwaura (Nyahururu) and seconded by Ms. Patricia Mutua (MWS NRW Unit) and therefore confirmed as the true record of the meeting.

Matters Arising from the Previous Minutes

i) The meeting between MWS, JICA Experts, KEWI and WASPA was not held. Members agreed that the MWS should articulate on a clear agenda for the said meeting and have it held then give feedback during the next PIC meeting.

4. Matters to be discussed

i) Feedback of Project Achievement: JICA Experts Team

Mr. Taguchi (Chief Advisor, JICA Experts Team) presented to the members a document showing feedback of the project achievement on the indicators of each output. In his conclusion he said in comparison to the indicator there were commendable achievements so far in some areas in various outputs but still in other areas there was work to be done.

ii) Discussion on issues related to each output of the project: By Each C/P

a) Progress of NRW Annual Report: MWS NRW Unit

Mr. Mabonga reported that the 1st contractor for the printing services was below their expectations and in view of this they had secured a new contractor. He said that the new contractor had already finished working on the content of the report and was working on the cover page. He was therefore expected to deliver the 1st draft in the course of the day for prove reading and corrections.

b) Procurement of equipment for pilot WSPs: MWS NRW Unit

Mr. Mabonga further reported that the supplier had brought some brochures of the equipment to the ministry but they were rejected since they lacked the right specifications. The ministry on its part sought for the right sample brochures and forwarded them to the supplier, who further promised to deliver some of the equipment in 3 days and the rest later after he gets them from Japan.

c) Campaigns and sensitization

Ms. Patricia reported that the unit was taking campaigns to the primary schools near the pilot WSPs. This exercise commenced in the previous year in Embu and Meru WSPs and now is being rolled out to the rest of the pilot WSPs. Alongside the technological approach to fight the NRW monster it is planned to give a social approach to the fight. She said the exercise will target pupils in classes 6 -7. The aim is to have children in the WSPs service areas aware of the importance of water conservation and reduction of NRW; and nurturing the young water users

to be aware of their responsibility on water use. She further presented a draft county sensitization programme which will start with a workshop at Nakuru county on 28th March 2019 in Nakuru. Mr. Felix (EWASCO) suggested that the Reduction of NRW from WASREB i.e. in relation to the program, be made clear to the members on how the pilot WSPs are performing, amount of money lost and the various NRW efforts being made. Eng. Ngugi pointed out that the zeal for reducing the NRW is not as much as it is in infrastructure development among the WSPs and therefore it was important for awareness to be created to all the concerned parties so as to have them come together to fight the NRW. He further pointed out that the NRW Standard is the right instrument to help do the work and therefore will be included in their presentation as WASREB. Members also agreed that the draft program be circulated for their opinion.

d) Progress of the Editorial committee: WASREB

Eng. Ngugi reported that the 3rd NRW Standard editorial committee meeting was held on 4th February 2019. The meeting agreed on the contents of the revised NRW standard and allocated each committee member specific chapters and/or issues within the three (i.e. guideline, manual and hand book) volumes of the standard to review. He also reported that 25 WSPs had made responses to the questionnaires on the NRW Standard review and that he was pursuing the rest of the WSPs to get their responses. He said that he hopes the committee will catch up on the lost time. The Editorial committee had set 13th March 2019 as the day of the 4th meeting.

e) Updates on the preparation for the 5th joint training: KEWI

Mr. Moseti informed members that KEWI was preparing for the 5th joint training. He said that the classroom training will be held from 4th – 8th March 2019 in KEWI, and OJT from 18th – 23rd March 2019 in Embu. He pointed out that the project will sponsor 2 participants per WSP while the WSPs will sponsor any ones. He also reminded Meru to prepare for the 6th OJT early enough to avoid changing its venue at the last minute. He informed that this time, 3rd party evaluators will be involved to help in reviewing the course. They have suggested MWS, JICA Experts, WASREB and JICA Kenya as 3rd party evaluators to give feedback. He said that official communication to the above will be sent by close of business. He also enquired on the budget facilitation from the ministry and Mr. Mabonga agreed to make follow up on the same with the account's office.

f) WASPA Activities schedule: WASPA

Mr. Ambugo reported that WASPA was planning to have a lot of NRW activities this year the most recent one being the international conference and EXPO which will be held from 2nd – 4th April 2019 at the KICC Nairobi. Further, WASPA will host at least three regional NRW forums among others activities. The calendar will be communicated to the members soon.

g) Progress of activities at the leading pilot WSPs: JICA Expert team, Embu, Meru, Nyahururu, Nakuru, and Kilifi–Mariakani WSPs (NB: Kisumu & Ruiru–Juja WSPs did not send representatives)

Mr. Charles (JICA Experts Team), informed members that the mandate of the Experts in the project was to train or knowledge sharing. He gave the example of the analysis on billing and meter reading that was done for all the pilot WSPs and said the experts were waiting to receive feedback on the WSPs progress after the analysis. He said that it was the mandate of the management of the various WSPs to take-up after the various activities done by the Experts and to see to it that it is consistently practiced and observed. He encouraged the managers present to have systems in place for sustenance even after the end of the project. He said that for them to be the leading WSPs, they will have to excel in the various field.

Highlights from the WSPs

EMBU

Mr. Maina reported that EWASCO had done the following key activities:

- Customer meter billing analysis: So far they had tested 78 in January mainly C3 upwards and 128 in February. They were monitoring the large customer meters e.g. car washes and construction sites on weekly basis. Started on the accuracy testing using the bucket and portable UFM

Upgrade of the NRW management module of the billing system: he reported that they had encountered a challenge but had engaged the developer who was working on it.

MERU

Mr. Ndatho reported on the various activities that MEWASS was undertaking as a WSP which included the following:

- Connected 98 customers and updated them on GIS with latitudes and longitudes.
- 63 pressure measurement
- Meter calibration – so far they had worked on 300 customer meters in zone 8.
- Started testing and monitoring customer meters and so far have worked on 39 meters. In the case of broken seals a fine of Ksh. 5,000 is imposed on the particular customer. Over flow from BPTs is being controlled and NRW has gone down to 26%.

- Intensive patrolling using the ODK after night flow measurement is being done.

Mr. Miruri pointed out that the ongoing road construction for bypasses in Meru was posing serious challenges due to the heavy water loss caused by the pipeline damages.

The chairperson pointed out that it was important for the WSPs to report on the revenue gained after undertaking these activities.

NYAHURURU

Mr. Muthami reported the activities that they were undertaking in Nyahururu as follows:

- Have so far tested 2,507 meters and replaced 23 which were either under registering, over registering or dormant.
- Pressure management is continuing and 40 points had been checked earlier. 30 points were to be re-tested and so far 8 have been retested.
- A new pilot area (Manguo) had been incorporated.
- They also did benchmarking at Nanyuki WSP and they are advancing in the use of the toolbox (Kobo collect).
- All water kiosks have been mapped.
- New zonal meters have been installed at the right positions, trained on improvised meter testing bench and so far, found 4 illegal connections. There is also an ongoing training by a consultant called Smart People Africa for meter readers, billing clerks, scheme managers, commercial manager and the NRW unit.

NAKURU

Mr. Mutai reported the following activities that are being carried out in Nakuru WSP:

Their NRW ratio as at January was 30.9%

They were interconnecting the overflow with the inlet pipes so that in case of overflow the water will go to the customers.

They were working on the Central Business District (CBD) which has 9000 accounts where they were losing between 38 - 40% of the water. They were planning to create 4 territories, relocate consumer meters to the main line and have them protected to avoid damage or cases of theft. They were also monitoring the southern zone and have established a good network to the 2 remaining zones which is easy to understand and to work on.

KILIFI-MARIAKANI

Mr. Munga reported the following activities that are being carried out in Kilifi-Mariakani WSP:

They had received 160 bulk meters from the Coast Water Services Board (CWSB) which they do joint meter reading with the CWSB. Some of the bulk meters are

stalled while others are inaccurate, and although they have severally requested for their replacement to CWSB nothing has been done so far. The WSP is therefore planning to replace them on their own.

They are adopting smart metering on about 100 households because they are usually locked during meter reading exercise.

They are sensitizing the staff members and residents to report leaks and are also in the process of procuring GIS system.

They have so far found 50 illegal connections leading to the sacking of 6 staff members involved in the illegal connections. The revenue has increased by Ksh. 10 million and they are investigating whether the sackings are the reason.

They have also serviced 300 meters and replaced 200 meters and are in the process of buying additional meters for both new connections and for replacements.

The NRW ratio currently stands at 46%.

Mr. Bernard Mwaura (MD NYAHURURU) raised a concern that if the bulk meters were not accurate Kilifi–Mariakani will never get right NRW ratios. In this regard he requested to know how the ministry can intervene. Mr. Mabonga responded by informing the members that the issue of CWSB was brought to the attention of the ministry and a letter was written to them and if they had not worked on the issues raised in the letter then the ministry would revisit the issue with them.

Mr. Gitonga (EWASCO) recommended that WSPs provide WSBs with their preferred meter specifications through the ministry for a better relationship.

Eng. Ngugi also informed the members that the relationship between WSPs and WSBs should be good but it was good practice to allow the WSPs to give their specifications for the bulk meters. He also encouraged the WSPs to be more proactive and do their own meter testing and with the facts on the inaccuracy of the bulk meters then it was easier to engage the regulator. On the same note he said that the water regulations are soon coming on board and the relationship between the various institutions will be well defined. In view of this he encouraged the WSPs to play their role well when the regulations are dispatched and flag out issues so that the regulator can work on them.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on 27th March 2019.

6. A.O.B.

Mr. Taguchi appreciated the participation of Kilifi–Mariakani in the PIC. He also gave a tentative timetable for dispatching the JICA experts as follows:

Mr. Taguchi will leave on 9th March 2019 and come back in early April, and stay for 1.5 months.

Mr. Shibazaki arrived on mid-February and will be around for 2 months

Mr. Mori will arrive in early April and stay for a month and come back next time in June.

Mr. Sekimoto will arrive in mid-April and be around for one month.

Mr. Takahashi will arrive in mid-May and be around for one and half months.
Mr. Harada will arrive in June and be around for one month.
Mr. Saito will arrive in August and be around for one month.
Mr. Kioi recommended that the soft copy of the timetable be circulated.

Eng. Ngugi encouraged the WSPs to continue practicing the pair attendance to the PIC meetings since this will help the information to stream down to the rest of the members in the WSP.

Members agreed to invite the rest of the pilot WSPs i.e. Eldoret and Mavoko to the PIC meetings. Mr. Taguchi agreed to send letters to the two WSPs inviting them to attend the subsequent meetings.

Members agreed to have the management of Kisumu WSP explained the importance of the PIC meeting so as to allow a representative attend the subsequent meetings. Mr. Taguchi informed the members that he will be visiting them in the coming week and would discuss the same with them.

Mr. Taguchi also informed the members that it was important to have the PIC on monthly bases since this would help in monitoring the progress and also getting feedback from the WSPs on the month's activities.

Mr. Charles encouraged the WSPs to prepare their own Standard Operating Procedures (SOP) since this would ease their work flow and for efficient record keeping. Eng. Ngugi in this regard also said that the documentation would help to bridge the gap in the technical side.

Ms. Patricia (MWS NRW Unit) also encouraged the members to participate in the coming world water day that will be observed on 22nd March 2019 by creating awareness even at WSP level especially in the NRW management issues.

The chairperson thanked the members for their fruitful participation in the meeting.

There being no other business to be discussed, the meeting ended at 11:40 am.

ATTENDANCE LIST

No.	Name	Institution
1.	MR. DAVID MABONGA	MWS NRW Unit
2.	MS. PATRICIA MUTUA	MWS NRW Unit
3.	MR. ANDERSON KIOI	MWS NRW Unit
4.	MS. LEUNITA A. SUMBA	Director KEWI
5.	MR. WALTER M. MOSETI	KEWI
6.	ENG. DANIEL M. NGUGI	WASREB
7.	MR. ANTONY AMBUGO	WASPA
8.	MR. BERNARD MWAURA	Managing Director (NYAHUWASCO)
9.	MR. PAUL MUTHAMI	Head of NRW (NYAHUWASCO)
10.	MR. FELIX G. MUTUURA	HTS (Head of Technical Services) EWASCO
11.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
12.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
13.	MR. JOHN WACHIRA	NRW (NAWASSCO)
14.	MR. ROBERT K. MIRURI	GM (MEWASS)
15.	MR. SILAS NDATHO	Head NRW (MEWASS)
16.	MR. R.N. MUNGA	NRW - O (KIMAWASCO)
17.	MR. MASAYUKI TAGUCHI	Chief Advisor, JICA Experts Team
18.	MR. SATOSHI SHIBAZAKI	JICA Expert Team
19.	MS. HIROKO SUGIMOTO	JICA Expert Team
20.	MR. GEORGE KARANJA	JICA Expert Team
21.	MR. CHARLES MAINGI	JICA Expert Team
22.	MS. KELLYJOY GAKII	JICA Expert Team

Apologies

- JICA Kenya office
- Ruiru -Juja

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**
MINUTES OF THE SEVENTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING

Date:	2019/03/26 (Tuesday)
Time:	8:30 – 11:30am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes - Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Discussion on issues related to each Output of the Project: By Each C/P: <ol style="list-style-type: none"> a) Progress of NRW Annual Report: MWS NRW Unit b) Procurement of equipment for Pilot WSPs: ditto c) Progress of the Editorial committee: WASREB d) Update on the 5th Joint Training: KEWI e) WASPA Activities schedule: WASPA f) Progress of Activities at Pilot WSPs: JICA Experts team, & Embu, Meru, Nyahururu, Nakuru, Kisumu, Eldoret, Mavoko, Kilifi- Mariakani and Ruiru - Juja WSPs iii. Discussion among Participants 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p><u>1. Self-introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The chairperson Eng. Alima welcomed the members to the 17th PIC meeting. He pointed out that it was worth noting that the project has never missed any of the PIC meetings as it was earlier planned and this should continue. He also said that he was hopeful that members were improving on the various areas discussed on during the meeting since that was one of the main reason as to why the meetings were being held consistently. He also said that it was the duty of the pilot WSPs to pass the</p>

learnt knowledge to their neighboring WSPs and to the counterparts also they were expected to complete their various tasks given unto them for the success of the project. He also acknowledged the participation of the NRW Unit during the world water day held in Kakamega on 22nd March 2019.

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed the members that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Eng. Daniel Ngugi (WASREB) and seconded by Mr. Walter Moseti (KEWI) and therefore confirmed as the true record of the meeting.

Matters Arising from the Previous Minutes

i) Mr. Mabonga informed members that the meeting between MWS, JICA Experts, KEWI and WASPA was not held due to the unavailability of Dr. Sumba on the scheduled date. Members recommended that the meeting be held in the 1st week of April to enable Mr. Taguchi, who will be back from Japan, to attend.

4. Matters to be discussed

i) Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit

Mr. Mabonga took the members through the project monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output:

ii) Discussion on issues related to each output of the project: By Each C/P

a) Progress of NRW Annual Report: MWS NRW Unit

Mr. Mabonga presented to the members a copy of the printed annual report and explained that they were waiting for the signatures from the CS, CAS and the PS. Eng. Alima however requested the concerned members to work on the colours appearing at the cover page of the report so that they are colours with a meaning. In this regard he gave an example of the unit members using the WASREB colours instead of using other colours for the report.

Mr. Miyagawa also suggested that it was important to have the JICA logo appearing at the back of the cover page of the annual report.

The MD Nyahururu suggested that the unit should also consider using the pilot WSPs to give their good practices in the annual report since they are the direct beneficiaries of the project. Ms. Sugimoto responded by saying this would be put in place in the subsequent annual reports.

b) Procurement of equipment for pilot WSPs: MWS NRW Unit

Mr. Mabonga reported that the supplier had brought some brochures of the equipment to the ministry which were rejected since they lacked the right specifications. The ministry however assisted the supplier and the procurement department to get in touch with Mr. Sekimoto who further directed the supplier to manufacturing companies in Japan that could sell him equipment with the required specifications. He further reported that the equipment were already in the country but had to be passed by the Kenya Bureau of Standards to prevent entry of counterfeit goods. The ministry was hopeful that the equipment will be released in the next two weeks.

c) Campaigns and sensitization

Ms. Patricia reported that the MWS NRW Unit participated in the world water day held in Kakamega as part of their campaigns and that they will be holding a county sensitization meeting in Nakuru on 28th March 2019.

The unit is also planning to roll out NRW school campaigns and introduce students to meter reading in Nakuru Water and sanitation co. Consultative planning is still on going

d) Progress of the Editorial committee: WASREB

Eng. Ngugi reported that the 4th NRW Standards review editorial committee meeting was held on 13th March 2019. Members reviewed the progress of the revisions as allocated to each member earlier. To enhance effectiveness of the review, the specific topics were re-allocated to more than one individual but with a focal person taking the lead. As at the day of the meeting 25 WSPs out of the 66 WSPs that received the questionnaire had responded and this number has since risen to 35 WSPs who already sent their response to WASREB that makes the 50% target that the editorial committee members wanted to at least use for the survey. Members also had agreed not to miss on the monthly meetings so as to catch up on the lost time in the initial stages.

e) Updates on the preparation for the 5th joint training: KEWI

Mr. Moseti informed members that the 5th joint training was done as proposed there before. He said that the classroom training was held from 4th – 8th March 2019 in KEWI, and OJT from 18th – 23rd March 2019 in Embu. He pointed out that the WSPs participated as shown below:

- ✓ Ruiru-Juja sent 2 participants
- ✓ Meru sent 2 participants
- ✓ Nyahururu sent 2 participants

- ✓ Narok sent 1 participant
- ✓ Nakuru sent 3 participants
- ✓ Eldoret sent 4 participants
- ✓ Naivasha sent 2 participants

Mr. Moseti further stated that the outcome of the evaluation questionnaire showed improvement in course delivery and understanding of the course content. Average score for the classroom training was 73% and the OJT was 76%. He also reported that KEWI was working on the evaluation report of the training. He also informed members that Trace study of NRW reduction course participants is scheduled to take place after the 5th Joint training and 2 participants per pilot WSP that have attended the training will be involved. He also pointed out that it was important for the WSPs to note that the selection of the participants will be random and in view of this KEWI will be visiting the WSPs for the exercise.

f) WASPA Activities schedule: WASPA

There was no representative from WASPA.

g) Progress of activities at the leading pilot WSPs: JICA Expert team, Embu, Meru, Nyahururu, Nakuru, Kilifi–Mariakani, Eldoret, Mavoko and Ruiru-Juja WSPs (NB: Kisumu did not send a representative nor an apology)

Mr. Charles (JICA Experts Team), informed members that the Experts had managed to revisit all the WSPs except for Eldoret which they will be visiting on 27th March 2019 and Mavoko but plans are underway. Their main reason for the visits was making follow ups on the plans done by the WSPs, achievements realized from the plans and if they had it right as far as the implementation was concerned.

He also reported that after the meter reading analysis the experts had guided the WSPs on the areas to work on and they had started working on them.

He also said the WSPs had started to realize the importance of customer identification survey and that they were also updating the missing data realized after conducting checks on the ground or the customer identification survey on to their billing systems. The experts also were encouraging the WSPs to harmonize their various units which the WSPs were now practicing and they had minutes of their various meetings held as proof to this. Mr. Charles further invited representatives from all the WSPs present to make their verbal presentations to the members:

EMBU

Mr. Maina from Embu WSP reported that they were done working on the plan and that they would be sharing it in the course of the week. He also reported that

the management together with the key head of departments had a meeting and worked on the skeleton part of the standard operating procedures (SOPs) which will be shared with rest of the members.

He also reported that they had done the customer meters testing and replacement as follows:

Zone 1 and 2 – 89 meters were replaced

Zone 3 – 20 meters were replaced

Zone 5 – 37 meters were replaced

New customer meters – currently they have around 2000 meters

Large customer meters – these are meters using 100M3 and above. So far they have replaced 50% of the meters that were faulty and they are planning to procure the remaining ones. They are also checking on them on a weekly basis.

Mr. Maina also reported that the training with KEWI was successful and in the particular DMA where they were carrying out the training, they had maintained the NRW ratio of 10% and below consistently.

Pressure management – EWASCO corrected the pressure data and they will be working on it with Mr. Mori when he arrives in the country in early April.

The NRW ratio so far at the urban area stands at 25% and in the rural areas in January was 55% and in February 41%.

Reason for the drop in the NRW ratio in the rural areas;

- a. Illegal connections identification
- b. Air valves repairs and main line closure at night
- c. Community tasking where by they appreciate the community members who report illegal connections
- d. Customer meter survey i.e. clean up

Mr. Kamurana also reported that EWASCO was privileged to host Dr. Muto who is a director in Tokyo.

MERU

Mr. Ndatho began by introducing the Meru CEO and the GM to the members. He then reported that MEWASS was currently undertaking the following activities:

- ✓ Updating the new connections and undertaking the customer survey. As of last month, they had a total of 92 connections all mapped and updated in the GIS system.
- ✓ Daily zonal meter reading, schedules made on weekly basis.
- ✓ Pressure measurement on 63 connections had been done since last month Their targets is 150 connections in zone 4 lower especially D4 -23 which has been having no water since 2017 because of the road bypass constructions.
- ✓ Meter testing – more than 3000 connections were tested and 45 meters were found faulty, and replaced by customer connection section

- ✓ Monitoring of large customer – monitoring of car wash, hotels and construction sites
- ✓ Checking the status of the meter whether stopped or faulty and taking the necessary action
- ✓ Illegal consumption detection
- ✓ Seal status check for the sealed connections
- ✓ Meter readings accuracy check

The above started in the previous week and more than 69 of the connections are done, 15 were faulty but were serviced and 2 dead meters were replaced

- ✓ Monitoring of C1 and C2 customers – C1 and C2 has 141 customers where by C1 has 21 and C2 has 120.
- ✓ So far they have checked 118 connections and 16 were found faulty and serviced and 6 out of the 16 were totally dead and were replaced.

In February the revenue went up by almost 0.5m and the NRW decreased from 23% to 21%

The CEO Mr. Joseph Mberia – explained to the members that he had a meeting with the JICA Experts team and that is why he decided to come for the meeting upon their invitation. He reported that the meeting had a case study of EWASCO that had increased their revenue out of good practices to manage NRW. He also explained that MEWASS management was in full support of the NRW reduction activities and in this regard the management will be going out every month to visit a minimum of 10 key accounts starting with the very large consumers.

NYAHURURU

Mr. Muthami reported the activities that they were doing in Nyahururu as follows:

- i) There was a significant drop in production of 7,672m³ in Nyahururu CBD area and 17,022 M³ combined which was attributed to the following factors:
 - ✓ Dry season
 - ✓ Better burst/leak management. 148 leaks recorded in January and 184 leaks recorded in February
- ii) There was an increase in billing by 1626M³ in Nyahururu CBD and 1699M³ combined as a result of the increased efficiency which has been brought about by:
 - ✓ Enhancement of meter reading by including photo of meter screen and taking of customer point GPS coordinates
 - ✓ Timely reporting, testing and replacement/servicing of faulty meters
 - ✓ Ongoing meter installation orientation rectification exercise. i.e. vertical to horizontal

The volume sold did not change materially as compared to drop in production although volumetric billing was increased by 1626M³ in Nyahururu and 1699M³

combined. Billing increased by Ksh. 205,844 considering the increase in volume billed was mainly from domestic consumers.

iii) Meter testing using the calibrated bucket, portable meter and GEODK collect app – 38 customer meter tests have been conducted during the month. Total tested 2545 customer meters. Total tested C3- C1 53 out of 335 customers.

iv) Pressure testing and mapping – 11 consumer points measured using red pointer mechanical gauges and mapped using QGIS. Close monitoring ongoing 11 more points yet to be measured.

v) Flow measurements using UFM – Measurements done at: Manguo tank line, Agostino line, Rwathia scheme, KCC and raw water intake – measurement in the above listed is used to determine accuracy and to conduct step test for leak detection.

Also flow measurements using portable UFMs so far 7 customer meters have been tested as trial and staff training is ongoing

vi) Leak detection – step tests and listening sticks - 2 leaks were detected in Manguo zone. Patrols are done on a daily basis and leaks are booked through the system

vii) New DMA- Manguo – 3month implementation plan has been prepared – a customer identification survey is ongoing using the Kobo Collect.

viii) 3 members of staff attended NRW Training in KEWI and in Embu, one from NRW, Revenue and Patrol and also 6 staff members from meter reading attended meter reader training at KEWI.

NAKURU

Mr. Mutai reported the following activities that are being carried out in Nakuru WSP:

- ✓ Their current NRW ratio is 28.2%
- ✓ They have 3 DMAs at the CBD
- ✓ Procurement of bulky meters is under way
- ✓ Mapping of consumers meters (GIS) is a continuous exercise
- ✓ Are using NRW self-assessment template
- ✓ Have already replaced 40 no. of faulty meters
- ✓ They also have realized an increase in billing from 21million to 23.7 million in central zone

Ruiru – Juja

Mr. Gitau reported the following NRW activities that are going on in Ruiru-juja

- i) Zoning and installation of zonal meters
- ii) GIS mapping of distribution network and customer water meters
- iii) Leak detections and repairs
- iv) Testing for accuracy of customer meters and bulk meters
- v) Inspections of illegal connections
- vi) Relocations of consumer meters to enhance meter reading efficiency

vii) Replacing faulty and stuck water meters with high accuracy meters R200 to minimize estimated billing

Based on the frequent occurrence of illegal water uses in Juja scheme, a system to monitor all the high consumers in all the zones in the schemes has been developed

- ✓ Selected 2 no DMA's within Ruiru supply system- Membley 3 and varsity ville estate
- ✓ Consists of 704 active connections
- ✓ Mapping of connections and distribution network is complete
- ✓ Minimum night flow and leak detection activities are in progress

Kilifi-Mariakani

Mr. Ngatata reported on the following activities from Kilifi Mariakani

- ✓ No dedicated NRW team in place but management is working hard to establish one soon.
- ✓ Received UFM, Improvised meter testing bench and GPS from JICA Expert team which will be put into use from April, 2019.
- ✓ Installed master meter to a small pilot zone of about 250 accounts, did zero reading on 15/3/019 for all meters.
- ✓ Did an LPO to supplier to supply bulk meters to replace stalled ones.
- ✓ Did an LPO to supplier to supply GIS equipment.
- ✓ Started pipeline identification from primary-secondary- tertiary 2 and plan to have network sketch by May 2019.
- ✓ NRW ratio for Jan 46% and Feb 52%. The rise is attributed to an increase in production by 5000m³ daily from a new 24" pipeline commissioned in late January.

Eldoret

Mr. Maiyo reported the following from Eldoret WSP

Started by thanking the JICA Experts team and WASREB for their support especially in ensuring that they had a NRW Unit. Initially they had only 2 members and currently they have a team of 41 staff members.

- ✓ Pressure – they have mapped 500 connections
- ✓ They are in the process of installing sectional valves
- ✓ Are developing sub DMAs out of their current which are very huge
- ✓ Commercial losses – they are targeting to test 1000 in this quarter and so far they are at 500
- ✓ Testing and replacing faulty meters – they are testing and replacing at least 40 meters per week
- ✓ They are in the process of procuring leak detection equipment because some of their pipes are very old and might need replacements
- ✓ Consumers with 100m³ and above are being monitored daily
- ✓ They did meter resizing in a certain hotel whose consumption was 40m³/month and after the replacement its consumption rose to 200m³/month
- ✓ They are also monitoring illegal connections and in case they get them they are penalizing the consumers.

Challenges

- ❖ Road construction which are especially done on the weekends when they are not in the office

Mavoko

- ✓ Have started to use the smart phone for meter reading which are working well for them.
- ✓ They have learnt on their own that it was possible to reduce the NRW
- ✓ They agreed with the consumers to have hotline numbers for the consumers to help in reporting leaks
- ✓ So far, their NRW ratio is at 35% though they realized that when they have insufficient water supply their NRW goes down and when they have sufficient or enough water, their NRW goes up

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on 24th April 2019.

6. A.O.B.

- ❖ The Ag. Chairman Eng. Ngugi requested that Kisumu WSP be followed up to know why they were not consistent in attending the meetings.
- ❖ Mr. Mabonga requested to know why the officer in Embu (Mr. Mugendi) who was sent for the training in Japan had never attended the NRW meetings and a lot on him had been said previously especially on his strengths as far as NRW was concerned.
- ❖ Members agreed that personalities that goes overseas for trainings should be considered as national assets and be utilized for the benefit of all.
- ❖ Mr. Kioi requested that the CEO Meru share the news on NRW with the rest of the WSPs under him.
- ❖ Members agreed that the management should support their technical teams to execute their duties in NRW
- ❖ Mr. Mosei thanked the WSPs for sending the right staff for the 5th joint training.
- ❖ CEO Meru advised the members to be supporting their case study with documentation e.g. weekly report for the management will help them to realize what they are losing through NRW and what they are gaining through its management
- ❖ Eng. Ngugi encouraged all the WSPs to document all their activities
- ❖ Ms. Sugimoto raised a concern on the general management of the meetings. She requested that members be careful on time management and that very lengthy talks that are time consuming may not have any impact because people easily lose their concentration.
- ❖ The NRW Unit will have their 1st regional sensitization in Nakuru and Ms. Sugimoto requested Nyahururu and Kisumu to prepare a success story for the same.

	<p>❖ Mr. Maina raised a challenge that they have with an irrigation scheme that is draining all the water from river Rupingazi until they are forced to close their connections. In this he requested the intervention of the ministry.</p> <p>There being no other business to be discussed, the meeting ended at 11:40 am.</p>

ATTENDANCE LIST

No.	Name	Institution
1.	Eng. SAO ALIMBA	MWS
2.	MR. DAVID MABONGA	MWS NRW Unit
3.	MS. PATRICIA MUTUA	MWS NRW Unit
4.	MR. ANDERSON KIOI	MWS NRW Unit
5.	MS. LEUNITA A. SUMBA	Director KEWI
6.	MR. WALTER M. MOSETI	KEWI
7.	ENG. DANIEL M. NGUGI	WASREB
8.	MR. MASAHITO MIYAGAWA	JICA Kenya
9.	MR. BERNARD MWAURA	Managing Director (NYAHUWASCO)
10.	MR. PAUL MUTHAMI	Head of NRW (NYAHUWASCO)
11.	MR. CHRISTOPHER G. KAMURANA	O&M
12.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
13.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
14.	MR. JOHN WACHIRA	NRW (NAWASSCO)
15.	MR. JOSEPH MAIYO	WD&NRWM (ELDOWAS)
16.	MR. JOSEPH MBERIA	CEO (MEWASS)
17.	MR. MICHAEL GITAU	NRW TECHNICIAN (RUJWASCO)
18.	MR. ZADRIAN ANGWENYI	NRW TECHNICIAN (RUJWASCO)
19.	MR. ROBERT K. MIRURI	GM (MEWASS)
20.	MR. SILAS NDATHO	Head NRW (MEWASS)
21.	MR. R.N. MUNGA	NRW – O (KIMAWASCO)
22.	MR. MICHAEL MANGELI	MD (MAVUWASCO)
23.	MR. SATOSHI SHIBAZAKI	JICA Expert Team
24.	MS. HIROKO SUGIMOTO	JICA Expert Team
25.	MR. GEORGE KARANJA	JICA Expert Team
26.	MR. CHARLES MAINGI	JICA Expert Team
27.	MS. KELLYJOY GAKII	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**
MINUTES OF THE EIGHTEENTH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING

Date:	2019/04/24 (Wednesday)
Time:	8:40 – 11:50am
Venue	Ministry of Water and Sanitation (MWS) Staffroom, Nairobi
Agenda	<p>1. Self-introduction</p> <p>2. Communication from the Chairperson - Eng. SAO Alima</p> <p>3. Confirmation of previous minutes -Mr. Charles Maingi</p> <p>4. Matters to be discussed;</p> <p style="padding-left: 40px;">i. Highlighting the remarkable progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit</p> <p style="padding-left: 40px;">ii. Issues related to each Output of the Project: By Each C/P</p> <p style="padding-left: 80px;">a) Progress on sensitization activities: MWS NRW Unit</p> <p style="padding-left: 80px;">b) Revision of the NRW Guidelines: WASREB</p> <p style="padding-left: 80px;">c) Review of the 5th joint training and way forward: KEWI</p> <p style="padding-left: 80px;">d) WASPA Activities & timelines: WASPA</p> <p style="padding-left: 40px;">iii. Progress of Activities at Pilot WSPs</p> <p style="padding-left: 80px;">a) Summary of achievement and way forwards: JICA Experts team</p> <p style="padding-left: 80px;">b) Presentations or reports from Pilot WSPs</p> <p style="padding-left: 120px;">The order of presentation; Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja, Kilifi- Mariakani, Mavoko and Eldoret</p> <p style="padding-left: 40px;">iv. Discussion among Participants</p> <p>5. Schedule of next PIC meeting</p> <p>6. A.O.B.</p>
Content	<p>1. <u>Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. <u>Communication from the Chairperson</u></p> <p>The meeting was chaired by Mr. Anderson Kioi who was requested by the members to sit in for Eng. Alima who was away on official duties. Mr. Kioi welcomed the members to the meeting and informed them since PIC was a forum to exchange Non-revenue water reduction experiences among the pilot WSPs and members</p>

should be learning from each other. He also extended apologies from Eng. Alima and Dr. Sumba who were away on official duties.

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed the members that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Silas Ndatho (MEWASS) and seconded by Mr. Paul Muthami (Nyahururu) and therefore confirmed as the true record of the meeting with amendment.

Matters Arising from the Previous Minutes

Mr. Mabonga informed members that:

- the meeting between MWS, JICA Experts, KEWI and WASPA was not held due to the unavailability of the counterparts but he was hopeful that the meeting would be certainly convened.
- the raised suggestion for the annual report were incorporated in the report and that printing was complete and it was delivered at the ministry of water and sanitation stores. However, he could not get a copy to share with the members during the meeting due to stores procedures but he will be sharing the report after the meeting.
- Mr Mabonga informed the meeting of the substantial progress and efforts being undertaken by all parties to ensure timely delivery of the NRW equipment being procured by the MWS.
- Members regretted on the absence of Mr. Mugendi from Embu WSP whom they had requested to be joining the projects meetings. Mr. Maina, EWASCO, responded by informing the members that Mr. Mugendi was a bit busy working in the field but he would be attending some of the PIC meetings.

4. Matters to be discussed

i) Confirmation of the progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit

Mr. Mabonga took the members through the project monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output. However, there were matters arising at point 4-8 of the monitoring sheet whereby the GM-MEWASS pointed out that the situation at Meru had greatly improved and therefore the challenge raised in that clause had been overcome. Mr. Mori, JICA Experts Team, responded that he appreciated very much the GM's opinion and that the Experts team was still concerned with the

present situation on the organizational relation. The experts would therefore be observing future improvement of MEWASS.

ii) Issues related to each output of the project: By Each C/P

a) Progress on sensitization activities: MWS NRW Unit

Ms. Patricia Mutua reported that the 1st regional County sensitization workshop was conducted successfully as scheduled in Nakuru County with four of the invited 5 counties attending the workshop. Uasin Gishu County did not attend as they had a County event during that period.

Planning for the next workshop which is scheduled to be held in Laikipia County is on-going in consultations with the COG. The following Counties together with the chairpersons and MDs of their eleven (11) WSPs are expected to participate:
- Laikipia, Isiolo, Meru, Garissa and Nyeri.

Ms. Sugimoto reported that from the experience of the 1st sensitization workshop, only people with background in water attended thereby causing worry especially if the others who failed to attend assumed that NRW is a WSP only issue. She said there was a challenge on how to improve the participation.

Eng. Ngugi enquired on the report from the previous sensitization. Mr. Mabonga responded that a draft report was done and shared with the Water Secretary who in return gave his suggestion for future sensitization workshops.

b) Revision of the NRW Guidelines: WASREB

Eng. Ngugi reported that 41 out of 66 WSPs to whom the survey questionnaire had been sent responded. He also reported that the 5th NRW Management Standard Review Editorial committee met on 17th April 2019. To fast track the finalization of the revision work of the standards, the team revised the work plan with indication of potential launch date of the standards as September 2019, the end of phase II of the project. The editing of the allocated chapters is in progress with a target to have a draft by June 2019.

He also enquired whether the ministry had released the money that was to be used for the exercise. Mr. Mabonga responded that the financial documentation were prepared for approval by authorizing officers in reference to workplan and budget. He advised KEWI and WASREB to liaise with their account section to confirm whether the expected funds were credited.

c) Review of the 5th joint training and way forward: KEWI

Mr. Moseti informed members that the 5th joint training was conducted in April 2019 as planned. Follow up survey of the previous trainees was also conducted in Nyahururu and Nakuru WSPs. Evaluation for the 5th joint training was going

on and would be shared when complete. The 6th joint training is scheduled for June 2019. Kisumu, Kilifi- Mariakani, Mavoko and Embu will be the main target. KEWI also hopes to publish the course one month before the training commences.

d) WASPA Activities and timelines: WASPA

Mr. Taguchi reported that WASPA had informed him that they were conducting their benchmarking workshop in Kakamega on 24th and 25th April 2019. He also reported that WASPA was currently busy preparing for its International conference and Expo which will be held on 8th to 10th May 2019.

Members raised concern over WASPA's benchmarking which coincided with the PIC meeting. After lengthy deliberations members agreed that the ministry should take charge in regards to harmonizing the activities of WASPA and the project. They also raised concern on the low attendance by the WSPs for KEWI trainings and suggested that there should be adequate time for the WSPs to prepare in between WASPAs benchmarking and KEWI's trainings. KEWI was also requested to do more advertising of their courses so as to attract more attendees.

Mr. Miyagawa, JICA, requested Mr. Taguchi to share information about the SNV forum that he had attended on 17th April 2019. Mr. Taguchi informed members that SNV was in the process of establishing a 'new water academy'. He then gave the members briefs as follows:

- SNV considers the institution currently existing to have inadequate level for training WSPs staff.
- SNV is making a survey on the need of a new academy and they will complete it by July this year.
- Some MDs from various WSPs who participated were not sure if they would support the SNV's plan. They suggested that the urgent challenge was the lack of proper management by the top of WSP instead of establishment of a new academy.

iii) Progress of activities at the leading pilot WSPs:

a) Summary of achievement and way forward: JICA Experts Team

Mr. Charles (JICA Experts Team), informed members that so far only Eldoret had not submitted their annual plans but will obtain the reason during a visit scheduled on 25th April 2019. He further made a presentation to the

members using a plan made by Embu WSP. He then gave highlights on the improvement on NRW ratio from some WSPs. He then welcomed individual WSP to make their oral presentations.

b) Presentations or reports from Pilot WSPs: Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja, Kilifi-Mariakani, Mavoko and Eldoret
EMBU

Mr. Maina from Embu reported on the following:

➤ The Draft NRW reduction plan is complete and the budget harmonized with the annual budget for the year 2019/2020 awaiting approval. However there has been cuts on GIS (1million) with proposal to start using QGIS which is a free software. Priority is on master meters for accurate NRW recording.

➤ The drafts of SOPs are now complete and formulation of workflows is ongoing.

➤ Weekly monitoring of large customers consumption still ongoing and the following categories have been added to the list due to their high risk of commercial losses.

- Large miraa farms
- Construction works
- Car washes (47)

➤ 103 customer meters were replaced and 97 tested.

➤ Pressure management data was collected in zone 2 and reduction planning complete. Procurement of PRVs has commenced and readjustment of the existing ones is to commence immediately.

➤ On illegal water usage, a proposal to start **Water Integrity Committees** in the rural areas is on course aimed at reduction of water theft.

➤ After reorganization of NRW unit (with JICA input), there is increase in revenue collection.

➤ Monthly Monitoring meetings are being held.

➤ A Budget proposal for improving the meter test bench has been done awaiting approval. The testing flows will be stabilized by rehabilitating the old elevated tank and installing a booster pump.

MERU

Mr. Ndatho reported that MEWASS was currently undertaking the following activities:

➤ Survey for and installation of new connections.

➤ In the previous month a total of 99 connections were installed and all were mapped and updated in GIS and billing system.

➤ Schedule of daily zonal meter readings is made on weekly basis

- Pressure measurements have been done on 78 connections Since January to date.
- Customer meter calibration exercise using the 20litre bucket has partially been done in zone 8.
- 350 meters have been tested out of which 48 faulty ones serviced and 15 unserviceable replaced. This exercise will be replicated in other zones.
- Monitoring of carwashes, hotels and construction sites is done every two weeks
- The NRW team unearth an illegal consumer on a construction site and a fine of Ksh.100,000 imposed
- 18 out of 21 C1 and 128 out of 141 C2 meters were found to be faulty and serviced. 9 out of the 18 were unserviceable and were replaced.
- In two months they are expecting some changes in revenue collection out of the above interventions.
- Over all NRW ratio remained at 21% in the month of March
- More than 1105 bursts and leaks were reported in the previous month and attended to. Response time is 1hour for bursts and 24 hours for the leaks.
- A total of 3000m of 63mm dia. pipelines have been replaced with 110mm dia at a cost of Ksh. 3 million with a view of meeting water demand in Zone 1 and 2.
- Kobo Tool Box has be adopted for data collection and analysis on pressure measurement, mapping and leakage detection instead of ODK due to some challenges.

NYAHURURU

Mr. Muthami reported ongoing NRW activities in Nyahururu as follows:

- There was a significant increase in production of 1,132m³ in Nyahururu Scheme and a drop of 3,743m³ combined production in overall area.
- Billing increased by 2,144m³ in Nyahururu and 445 m³ combined which is due to increased efficiency in meter reading and billing. This resulted in an increase of billing by Ksh. 1,775,955.

Measures taken in Nyahururu town are:

- Immediate confirmation of abnormal meter readings using meter reader's photographs and site visits by meter reading/NRW supervisor
- Analysis and action on exceptions report
- Timely reporting, testing and replacement/servicing of faulty meters
- Meter relocation exercise to the nearest main
- Ongoing meter installation orientation rectification exercise i.e. vertical to horizontal
- Three NRW meetings were held during the month:
 - ✓ NRW team and scheme managers meeting
 - ✓ Monthly section heads meeting
 - ✓ NRW – JICA Team meeting

NAKURU

Mr. Mutai reported the following ongoing NRW reduction activities in Nakuru WSP:

- Laying of new pipe network in Flamingo and Kimathi County estates (appro.7.71 km) and advocating for individual connections to reduce unauthorized unbilled consumption is ongoing
- Decommissioned pipelines in central zone with the aim of minimizing illegal water consumption
- Testing and replacement of customer meters Illegal water consumption reduction – 31 illegal cases reported and Ksh.182,000 paid as penalties
- Modified meter testing bench is 80% complete
- Inter-departmental meeting on NRW reduction strategy will be held on 2nd May 2019 and headed by the managing director
- QMNG measurement will be conducted on 7th and 8TH May 2019 to quantify physical losses.
- Current NRW ratio is 29%

RUIRU-JUJA

Mr. Gitau reported the following ongoing NRW reduction activities in Ruiru-juja

- Billing analysis – 500 meters have been relocated from customer premises
- 10 customer meters have been tested using test bench and calibrated bucket
- 65 meters have been relocated based on billing analysis to avoid estimated billing.
- Following many complaints of low pressure 10 pressure, point have been created on trunk mainlines in order to monitor pressure during rationing program.
- Introduction of digital pressure monitoring system by a JKUAT Masters student is ongoing.
- Five illegal connections have been netted and charged guided by the tariff.
- A redesign of the Juja network has been done to ensure hydraulic zones, pending implementation.
- JICA NRW equipment has been widely used by NRW water technician.
- Step testing using UFM.
- Sounding using acoustic stick.
- Burst registration.
- Mobile meter reading has been embarked and is on initial stage
- Mapping of both distribution pipe network and customers meter has been on going and is 80% complete.
- Current NRW ratio is 35%

Challenges

- Frequent burst.
- Billing estimates.
- Vandalism of DMA meters.
- Interconnection of water by private borehole.
- Illegal connection by carwash.
- Low production of water due to droughts condition

Overall impact result

- Increase in billing hence increase in revenue collection

ELDOROT

Mr. Maiyo reported the following from Eldoret WSP:

- Customer meter testing: 192 meters have been tested
- Illegal connections: 5 so far identified illegal connections, penalized the customers and reconnected them well
- Leakages – 443 identified 443 leakages and all were repaired
- They intend to do connections up to customer point so as to avoid poor workmanship which is one of the major cases of leakages

Challenges

- They have 4 water sources and 2 were almost dry and this led to a lot of rationing

KISUMU

Mr. Job Liech reported the following ongoing NRW reduction activities in the WSP:

- 7no. remote pressure loggers have been installed within the network
- NRW has reduced on average from 36% to 29%. This has enhanced revenue increase from 64,000,000 to 71,000,000 Ksh.
- Consumption volume has increased from 480,000m³ to 600,000m³
- Increase meter testing and calibration activities from 50 to 200 per month
- Over 1000 meters have been so far replaced
- They are able to question the accuracy and efficiency of China meters which do not give accurate volume
- A good working relationship has been created between the technical and commercial departments
- Minimum night flow and step test have been carried out in two identified lines
- Improved on their analysis which has positively contributed to reduction in apparent losses
- They are able to extend their meter testing to meters below 1” as a result of good working cooperation
- 90% of their consumers have been mapped

Challenges

➤ In the recent past they have had serious bursts on major transmission pipelines and this has led to huge physical loss

vi) Discussion among participants

➤ The chairman requested Mr. John Wachira to prepare a progress report on digital pressure monitoring, a program that Ruiru-juja is undertaking together with a master's student in Jomo Kenyatta University of Agriculture and Technology (JKUAT) and present it to the members during the next meeting

➤ Mr. Liech, KIWASCO, also reported that the ultrasonic smart meter is accurate for Kisumu WSP and they are currently using it. In this regard members requested Mr. Liech to prepare a report on cost benefit on the use of the smart meter and share it with the members during the next meeting

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on 29th May 2019.

6. A.O.B.

- ✓ Ms. Patricia Mutua, MWS NRW Unit, informed members that the unit was in its initial stages of preparing the 2nd version of the annual report and so she requested members to cooperate with them and prepare their contributions as they will be required. She also pointed out that they were hopeful to have the 1st draft by July 2019. She said that the unit was working on a template for reporting to avoid long reports from members that might not be very necessary
- ✓ Eng. Ngugi enquired on the launching plans for the NRW Annual report. He further explained that this would be important so as to disseminate it to the rest of the WSPs and the public at large. Mr. Mabonga responded that the MWS was working on the launching modalities.
- ✓ Mr. Maina enquired to know when the bulk meter bought by JICA will be installed. Members agreed that the JICA Expert team would arrange on that.
- ✓ Mr. Miruri enquired to know if the 6th OJT would be held in Meru as earlier proposed. Mr. Taguchi responded that they had a meeting with KEWI and the ministry and they agreed that the preparation period was quite short and therefore the OJT will be held in Embu but Meru would still be considered in the future.
- ✓ Mr. Gitau JICA Kenya office, congratulated the members on the reports that they made that were quite positive. He hence requested members to continue working hard in the project. He further informed members that JICA was complementing NRW Courses in Japan and currently they were making applications for two nominees from Nyahururu and Eldoret to join the training.

	<ul style="list-style-type: none"> ✓ Mr. Mabonga enquired to know when the brief notes will be made available. Ms. Sugimoto responded that the translation will be made available on 25th April 2019. ✓ Mr. Taguchi shared with the members a plan of the Experts schedule in the country. ✓ Mr. Miyagawa enquired to know the status on the signing of the amended Record of Discussion and minutes of the 5th JCC meeting. Mr. Mabonga was requested to follow up on the same. ✓ Mr. Miyagawa further requested the WSPs to prepare a simple format summarizing outcome from the pilot WSPs for reporting during the PIC meeting and to ensure the key areas of their activities were well captured. ✓ Mr. Kioi, the chairman, concluded the meeting by informing the members that the main importance of the project outcome was how the project was making impact to the entire country <p>There being no other business to be discussed, the meeting ended at 11:50 am.</p>

ATTENDANCE LIST

No.	Name	Institution
1.	MR. ANDERSON KIOI	MWS NRW Unit
2.	MR. DAVID MABONGA	MWS NRW Unit
3.	MS. PATRICIA MUTUA	MWS NRW Unit
4.	MR. WALTER M. MOSETI	KEWI
5.	ENG. DANIEL M. NGUGI	WASREB
6.	MR. MASAHI TO MIYAGAWA	JICA Kenya
7.	MR. JOHN GITAU	JICA Kenya
8.	MR. PAUL MUTHAMI	Head of NRW (NYAHUWASCO)
9.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
10.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
11.	MR. JOHN WACHIRA	NRW (NAWASSCO)
12.	MR. JOSEPH MAIYO	WD&NRWM (ELDOWAS)
13.	MR. MICHAEL GITAU	NRW TECHNICIAN (RUJWASCO)
14.	MR. ZADRIAN ANGWENYI	NRW TECHNICIAN (RUJWASCO)
15.	MR. ROBERT K. MIRURI	GM (MEWASS)
16.	MR. SILAS NDATHO	Head NRW (MEWASS)
17.	ENG. JOB LIECH	NRW – Engineer
18.	MR. MASAYUKI TAGUCHI	JICA Expert Team
19.	MS. HIROKO SUGIMOTO	JICA Expert Team
20.	MR. SHOZO MORI	JICA Expert Team
21.	MR. GEORGE KARANJA	JICA Expert Team
22.	MR. CHARLES MAINGI	JICA Expert Team
23.	MS. KELLYJOY GAKII	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**

MINUTES OF THE 19TH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2019/05/29 (Wednesday)
Time:	8:40 – 11:20am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Highlighting the remarkable progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Issues related to each Output of the Project: By Each C/P <ol style="list-style-type: none"> a) Progress on sensitization activities: MWS NRW Unit b) Revision of the NRW Guidelines: WASREB c) Preparations for the 6th joint training: KEWI d) WASPA Activities & timelines: WASPA iii. Progress of Activities at Pilot WSPs <ol style="list-style-type: none"> a) Summary of achievement and way forwards: JICA Experts team b) Presentations or reports from Pilot WSPs; Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja, Kilifi- Mariakani, Mavoko and Eldoret iv. Discussion among Participants 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p>1. <u>Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. <u>Communication from the Chairperson</u></p> <p>The meeting was called to order by Eng. Alima the project manager. He welcomed all the members to meeting and informed them that the PIC meetings had been held consistently every month and also the JCC every quarter. He also commended the 9 pilot WSPs for the good progress they were making. He sampled a few WSPs to give their progress in terms of the NRW ratio and they gave as follows:</p>

Nyahururu 34% from 43%

Kisumu 29% from 37%

Nakuru 29% from 40%

Eng. Alima emphasized that fighting NRW needs commitment at all times and from all the members of the organization. Other WSPs in Kenya will learn from the pilot WSPs. He gave an example of Nyeri WSP that was doing very well in terms of maintaining their NRW ratios. He also informed the members that the equipment for the WSP had arrived in the Ministry and the Experts will now be able to use them to assist the WSPs. He also informed that the Public Service Commission had given the ministry go ahead to recruit young engineers and that the jobs had already been advertised. After the recruitment the ministry will place some of them in the NRW Unit for sustainability of the project activities even after the project face out.

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed the members that as agreed in the previous meeting, the minutes were sent to the members a week earlier and therefore the chair only had to guide the members in case there were matters arising. The minutes were proposed by Mr. Joseph Maina (EWASCO) and seconded by Ms. Patricia Mutua (MWS NRW Unit) and therefore confirmed as the true record of the meeting.

Matters Arising from the Previous Minutes

- ✓ Mr. Mabonga enquired to know if the brief notes were ready as it was reported in the previous PIC. Ms Sugimoto responded that the brief notes were ready and that they will be circulated to the members.
- ✓ Eng. Alima also informed that the NRW annual report was ready and that it will be launched on 20th June 2019 together with another report. He also thanked all the members who participated in the compiling of the report.
- ✓ The chairman also informed that there are budget cuts and therefore some activities will have to be suspended till July 2019.

4. Matters to be discussed

i) Confirmation of the progress of the project by referring to the Project

Monitoring Sheet: MWS NRW Unit

Mr. Mabonga took the members through the project monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output.

ii) Issues related to each output of the project: By Each C/P

a) Progress on sensitization activities: MWS NRW Unit

Ms. Patricia Mutua reported that the report for the 1st workshop was ready and will be circulated soon. She also informed the members that the NRW Unit was preparing the format for submitting articles for 2018/2019 annual report which will be circulated to members as soon as it is ready.

b) Revision of the NRW Guidelines: WASREB

Mr. Kioi who was reporting on behalf of Eng. Ngugi who was absent informed the members that the Editorial committee had their 6th NRW Standards meeting on 23rd May 2019. The members went through the content of the revisions each chapter at a time as earlier allocated. As at the day of the meeting the members were at 70% completion rate. However, the members were concerned since funds had not yet been released to WASREB and therefore requested the intervention of the chairman. On the WASREB NRW Editorial revision funds disbursement, the chairman informed the meeting of the water sector approved financial year 2018/19 budget cut that may adversely affect NRW planned activities.

c) Preparations for the 6th joint training: KEWI

Mr. Mosesti informed that the 6th Joint training was scheduled for 3rd – 7th June 2019 (Classroom in KEWI) and the OJT will follow thereafter in Embu WSP. He further informed that all the WSPs were invited and some had responded. From the pilot WSPs he reported that Embu, Mavoko, Kisumu and Kilifi-Marikani will be participating. He also requested Mr. Job Liech (KIWASCO) to take up to it so that they have representatives from Kisumu WSP since they had not been available during the other trainings.

d) WASPA Activities and timelines: WASPA

Ms. Patricia (WASPA) apologized for the benchmarking workshop held in April that collided with the PIC meeting. She then informed that the next benchmarking workshop will be in July 2019 at a date to be communicated later. She also thanked members for participating during their 3rd WASPA International Conference & Expo 2019 held at KICC from 8th to 10th May 2019.

iii. Progress of activities at the leading pilot WSPs:

a) Summary of achievement and way forward: JICA Experts Team

Mr. Charles (JICA Experts Team), informed that output 4 is involved in the revision of the current NRW standards. He further shared with the members the table of content that was adopted by the members of the Editorial committee, the improved planning template and the monthly NRW monitoring template that was to be introduced to the WSPs after the meeting at JICA Experts Team office. He then welcomed individual WSPs to make their oral presentations.

b) Presentations or reports from Pilot WSPs: Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja and Eldoret

EMBU

Mr. Maina from Embu reported on the following:

EWASCO has developed a rapid results Initiative plan to reduce NRW from 43% to 35% in 100 days. The initiative will focus on both commercial and physical losses reduction. A task force has been formed with appointment from all key departments.

Weekly monitoring of large customers is still ongoing and the following categories has been added to the list due to their high risk of commercial losses.

- Large miraa farms
- Construction works
- Car washes (47)

Customer meter sizing: Most of the large customer meters are wrongly sized. Correct sizing will be rolled out to all connections that require the upgrade.

Customer meters survey: The NRW unit has been conducting door to door visits and out of the exercise they were able to realize the following results:

Pressure reduction: Pressure management data was collected for zone 2, analysed and pressure reduction planning completed. Procurement of the PRVs has commenced. Further, the following prvs were serviced and adjusted to the designed levels:

- Dallas area 29
- Blue valley pilot area.

- ZONE 2 - Kivue around booster PRV
- ZONE 2 - Soko mjinga around methanol (needs to be replaced)
- PI - Murinduko line

Illegal water usage: Door to door illegal detection exercise was conducted in zone 53 and 9 illegal connections detected, disconnected and penalized.

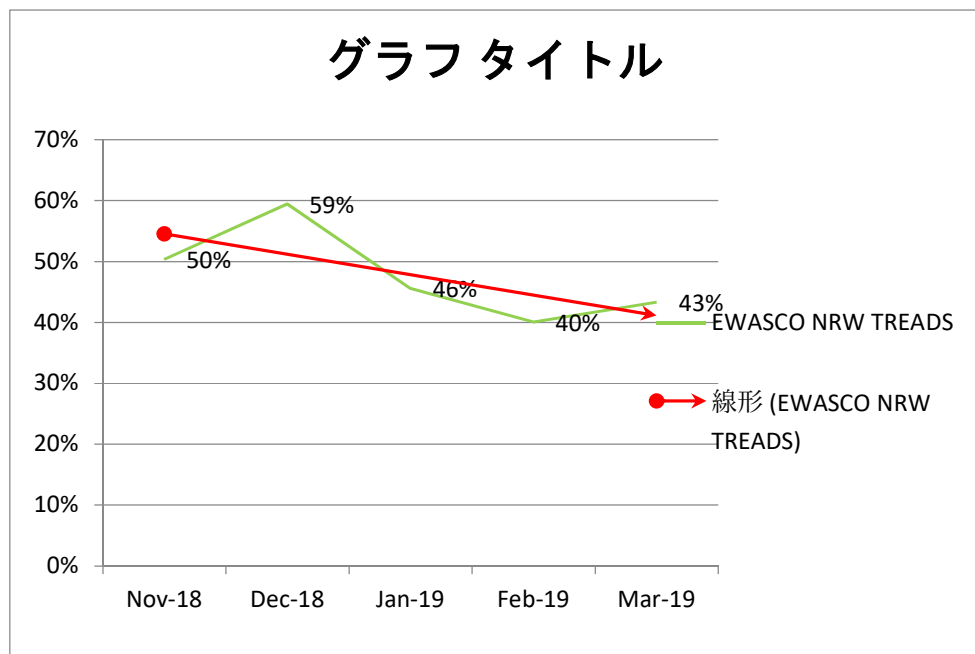
Joint NRW Monthly Monitoring meetings are being held:

Yes, the meetings include the 3 key department (Technical, Commercial & Human Resource)

Master meter accuracy test and replacement:

- During the month JICA donated a DN 300 master meter for zone 2 which has been successfully installed.
- EWASCO has procured and installed 2 no DN 300 master meters on the distribution pipelines at mukangu. This will improve data accuracy for NRW calculation and monitoring.

NRW trends: The NRW trend has been on decrease as shown in the graph below.



Meter testing: During the period 66 customer meters were tested where 39 failed and were replaced.

MERU

Mr. Ndatho reported that MEWASS was currently undertaking the following activities:

- ❖ Updating of new connections
- ❖ Installation of new connections and customer survey
- ❖ Coordinates for new connections
- ❖ In the previous month a total of 96 connections were installed and all were mapped and updated in GIS system.
- ❖ Daily zonal meter reading are scheduled and made on weekly basis
- ❖ Pressure measurements and mapping in zone 4 lower using Kobo tool box application in the following pipelines: D4-07; D4-08; D4-09; D4-11; D4-23 & J-04-01.
- ❖ For the last 3 months pressure measurements were done on 63 connections and 13 in May (150 connections are targeted for pressure measurement and mapping in zone 4 lower).
- ❖ Customer meter calibration exercise using 20 ltr bucket has partially been done in zone 8. 350 meters were tested out of which 48 were serviced and 15 replaced. The same exercise will be replicated in other zones.
- ❖ Bi-weekly monitoring of car wash, hotels and construction sites is ongoing. The tasks includes:-
 - ✓ Checking the status of the meter
 - ✓ Possibility of Illegal consumption/connections
 - ✓ Seal status of the meter and where tampered, ksh. 5,000 fine imposed.
- ❖ One illegal consumer on a construction site was found and a fined ksh.100,000 imposed.

NYAHURURU

Mr. Mwangi reported NRW activities in Nyahururu as follows:

- ✓ Meter testing using calibrated bucket, portable meter and GEODK collect app:-14 customer meters tested a month after the last PIC. Total tested is 2592, total replaced 10 (C3-C1) and 61 (C4-C6).
- ✓ Leak detection (patrols and using listening sticks) done daily and leaks booked through the system. 199 leaks and 14 bursts were reported.
- ✓ Customer identification – 6801 customer location coordinates acquired for mapping, comprehensive report on findings is being compiled. 3218 customer location coordinates acquisition is targeted in the next meter reading cycle.
- ✓ Water theft – 10 cases of water theft were found and respective accounts penalized.

- ✓ Two NRW monthly meetings were held- NRW team; and scheme managers/section heads meeting.
- ✓ Data collection form for leaks and bursts has been commissioned using Kobo collect app and is being rolled out to all the schemes.

NAKURU

Mr. Mutai reported NRW reduction activities in Nakuru WSP as follows:

- ✓ The NRW ratio has stabilized at 29% (January – April 2019) from 40.6% in July 2018
- ✓ Interdepartmental meeting on NRW headed by MD held.
- ✓ New pipe laying at flamingo and Kimathi county estates is 50% complete and sensitization for individual connections ongoing
- ✓ Overflow pipes for 2 reservoirs receiving borehole water interconnected with the outlet pipe so that overflow water can be channelled to customers to curtail physical losses from overflows.
- ✓ Decommissioning of old lines and relocation of customer meters to next to the premises perimeter walls is ongoing.
- ✓ Modification of the meter testing bench is complete and the target is to test 40 meters daily.
- ✓ Step testing to reduce physical and commercial losses in southern zone is ongoing.

RUIRU-JUJA

Mr. Gitau reported NRW reduction activities in Ruiru-juja as follows:

- ✓ Current NRW ratio is 35.5%
- ✓ Recorded 148 leakages
- ✓ 42 large consumer meter relocated
- ✓ 20 large consumer meter tested (All Passed)
- ✓ 10 customer meters tested on customer request - all were accurate
- ✓ 82 old AWVB metallic meters replaced
- ✓ 5 No. illegal connections identified- 3 legalised while the other two are still in the process of legalization
- ✓ Development of zones/DMA's is complete
- ✓ Digital pressure management (with a JKUAT student) in Juja is ongoing.
- ✓ Planning for MNF exercise and step test in Juja is underway
- ✓ Data clean up based on the CSI survey previously conducted is ongoing.
- ✓ Tested 2 master meters (DN 500mm) and found accurate.

ELDORET

Mr. Maiyo reported the following from Eldoret WSP:

1) Large consumers (Over 300m³)

118 Accounts consume over 300m³/month and 21 were dealt as follows in April 2019 (In total 53 accounts dealt so far).

- ✓ **Water Meter testing:** 15 meters tested using bucket- 3 were faulty.
- ✓ **Replacement:** 21 meters replaced
- ✓ **Resizing:** 13 meters out of the 21 above.
- ✓ **Relocation:** 6 meters relocated.

Monitoring by meter reading is done weekly to monitor the progress even though the result will be seen after two billing cycles.

2) Establishment of DMA (Action estimate)

2150m HDPE pipeline has been laid at Action replacing shallow leaking PVC pipes to enable Sub-DMA installation area.

3) Upgrading and Replacement of Service Line

Replacement of leaking aged 160mm asbestos pipe with 315mm HDPE in progress- 2100m completed.

4) Relocation of Consumer Water Meters

74 meters for small consumers' relocated (1m from premises boundary)

5) Water Meter Testing

40 large (C1) meters tested and 5 found to be defective.

6) Bursts and Leakages

806 Leakages and bursts repaired April. Those that re-occurred more than once replaced with HDPE pipes for permanent solution.

KISUMU

Mr. Job Liech reported NRW reduction activities as follows:

- ✓ Installation of 2 Isolation/control valve. This has reduced hydraulic pressure surge thereby reducing the frequency of bursts on main transmission pipeline.
- ✓ An incentive of Ksh.10,000 was introduced to anybody who reports a meter thief to curb such cases that have become rampant recently.
- ✓ Arrested a scrap metal dealer with stolen meters with the assistance of CID
- ✓ The company has resolved to install plastic meters henceforth.

- ✓ Managed to conduct MNF and step test in a zone with the help of Mr. Sekimoto (JICA Expert Team). Resolved to continue the exercise in other areas zones.
- ✓ Inspection and testing of all customer meters in progress
- ✓ Commissioning of RIAT project which targets about 2000 customers will be done on 31st May 2019. This will require increase in production which may impact negatively on service.

vi) Discussion among participants

- ✓ Mr. Liech (KIWASCO) reported that they are using smart meters and they are accurate (an instrumentation engineer has been employed and is helping to overcome challenges meter accuracy).
- ✓ Ms. Patricia (WASPA) informed that WASPA will investigate on the part of the smart meter that is failing. She also enquired to know if the suppliers were offering after-sale service to WSPs. Members agreed that the main advantage of smart meters is its ability to relay information directly to the server. WSPs who were using the meters were encouraged to report to WASPA on the challenges they are encountering with the use of the smart meters.
- ✓ Mr. Charles (JICA Experts team) reported that the main challenge with smart meters is mobile network transmission which is costly.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on 26th June 2019.

A.O.B.

- ❖ Mr. Takashima (JICA Kenya office) requested the WSPs be sending their reports to the Experts before the meeting to enable sharing with JICA office well in advance.
- ❖ Mr. Karanja requested members to expedite responses to queries raised from the minutes to ensure smooth coordination of the project.
- ❖ Mr. Mugendi requested members to be wary of smart meters because the supplier might be in business and not caring of what happens with them later. He also pointed out that Japan was not using the said smart meters.
- ❖ Mr. Job Liech informed that their leak detector had failed and therefore requested that they be issued with a new one
- ❖ Mr. Maiyo requested the Experts to be visiting their WSP often for knowledge transfer.
- ❖ Mr. Maina informed that their bulk meter obtained from JICA was not working properly and requested the Experts to visit Embu and check on the same.
- ❖ Mr. Karanja requested the WSPs to use simple reporting formats for PIC meetings.
- ❖ Mr. Sekimoto informed that he will join the ministry staff and other selected members on 31st of May 2019 to inspect the procured NRW equipment. He

	<p>also informed that Mr. Takahashi will arrive on 4th June 2019 and will visit Embu WSP to check on the bulk meter. He further requested Ruiru-juja WSP to provide data from the pressure gauges so that the experts can assist with pressure zoning.</p> <ul style="list-style-type: none"> ❖ Members agreed that the WSPs expecting meters from the WSBs be notified by the Ministry ❖ Ms. Sugimoto informed members about the loss of 4 No casual workers in Mavoko WSP while in their line of duty. Mavoko being one of the pilot projects, members were deeply concerned and requested the chair to send their condolences to the WSP on their behalf. ❖ Mr. Karanja informed that Meru WSP worked with JICA since 2002 and one of the values they learnt was self-reliance. In this regard he advised WSPs to strive to procure their needs using their own funds and avoid begging. He also informed that KEWI inhouse training are very effective in quickening coverage of large staff numbers and therefore encouraged members to try them out. ❖ Mr. Gilbert informed that the meters that they received from the WSB were of the right specifications. Members requested him to share the specifications they had given to the WSB. ❖ Patricia (NRW Unit) advised the WSPS to liaise with their counterpart Water service boards in order to ensure that the meters procured from the funds dispatched from the ministry are according to their specifications <p>There being no other business to be discussed, the meeting ended at 11:20 am.</p>
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ATTENDANCE LIST

No.	Name	Institution
1.	ENG. SAO ALIMA	MWS
2.	MR. WATARU TAKASHIMA	JICA Kenya
3.	MR. DAVID MABONGA	MWS NRW Unit
4.	MR. ANDERSON KIOI.	MWS NRW Unit
5.	MS. PATRICIA MUTUA	MWS NRW Unit
6.	MR. WALTER M. MOSETI	KEWI
7.	MS. PATRICIA WANJERI	WASPA
8.	MR. PETER MWANGI	TM (NYAHUWASCO)

9.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
10.	MR. CYRUS MUGENDI	TECHNICAL OFFICER (EWASCO)
11.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
12.	MR. JOSEPH MAIYO	WD&NRWM (ELDOWAS)
13.	MR. MICHAEL GITAU	NRW HEAD (RUJWASCO)
14.	MR. ZADRIAN ANGWENYI	NRW UNIT (RUJWASCO)
15.	MR. SILAS NDATHO	Head NRW (MEWASS)
16.	ENG. JOB LIECH	NRW – Engineer (KIWASCO)
17.	MR. SATOSHI SHIBAZAKI	JICA Expert Team
18.	MS. HIROKO SUGIMOTO	JICA Expert Team
19.	MR. SHINICHI SEKIMOTO	JICA Expert Team
20.	MR. GEORGE KARANJA	JICA Expert Team
21.	MR. CHARLES MAINGI	JICA Expert Team
22.	MS. KELLYJOY GAKII	JICA Expert Team
23.	MR. KEN OTIENO	SUPPORTING STAFF, JICA Team

Apologies

1. MR. ROBERT MIRURI – G.M MEWASS

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**

MINUTES OF THE 20TH PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date:	2019/07/03 (Wednesday)
Time:	8:40am – 12:10pm
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Highlighting the remarkable progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit ii. Issues related to each Output of the Project: By Each C/P <ol style="list-style-type: none"> a) Progress on sensitization activities: MWS NRW Unit b) Revision of the NRW Guidelines: WASREB c) Feedback from the 6th joint training: KEWI d) WASPA Activities & timelines: WASPA iii. Progress of Activities at Pilot WSPs <ol style="list-style-type: none"> a) Summary of achievement and way forwards: JICA Experts team b) Presentations or reports from Pilot WSPs; Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja, Kilifi- Mariakani, Mavoko and Eldoret iv. Discussion among Participants 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p>1. <u>Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. <u>Communication from the Chairperson</u></p> <p>The meeting was called to order by Eng. Alima the project manager. He welcomed all the members to the 20th PIC meeting. He pointed out that members have held meetings every month and they have been monitoring efforts for the sustainability of the project. He said that the Ministry of Water and Sanitation has been keen to work on its part e.g. procurement of equipment was complete and the remaining equipment for the next phase would be made available for the WSPs. He informed</p>

members that the positions for young engineers were advertised and that Eng. Njeru had been brought on board so as to grow the NRW Unit into a department. He requested the NRW Unit members to work hard so as to implement the work plan. He also requested Eng. Njeru to follow up on the money that was to be disbursed to KEWI and WASREB.

3. Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed members that the minutes were sent to the members a week earlier as agreed in the previous meeting, and therefore the chair only had to guide members in case there were matters arising. The minutes were proposed by Mr. Job Liech (KIWASCO) and seconded by Mr. Silas Kirimi (MEWASS) and therefore confirmed as the true record of the meeting.

Matters Arising from the Previous Minutes

- ✓ On AOB, Eng. Alima pointed out the need to assist WSPs by developing standards for smart meters since they are already in use (in Kisumu, Eldoret and Embu). Eng. Ngugi warned that it was important for WSPs know that suppliers are in business and hence handle smart meters with care to ensure sustainability.
- ✓ Mr. Liech reported that there was notable increase in revenue collection in Kisumu after using Electromagnetic (EMF) and Ultrasonic (UFM) Flow Meters compared to mechanical meters since they are not easily tampered with. Other meters being used and performing well are Insertion Meters though they require competent technicians to install.

4. Matters to be discussed

i) Highlighting the remarkable progress of the project by referring to the project Monitoring Sheet: MWS NRW Unit

Ms. Patricia took the members through the project monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output.

ii) Issues related to each output of the project: By Each C/P

a) Progress on sensitization activities: MWS NRW Unit

Ms. Patricia Mutua reported that the proposed Nanyuki County Sensitization Workshop was not held by close of financial year as scheduled. A meeting will be held with the CEC Laikipia county in the coming week on the same. It is planned to hold the workshop by end of August. Further, there are plans to roll out children campaigns in Nakuru by end of July (i.e. before the schools close

for August holiday). Ms. Sugimoto informed members that letters had been sent to various WSP heads to submit articles to be used in the NRW report for the year 2018/2019. Plans are underway to send the same to directly to contact persons who will be sending back the articles.

b) Revision of the NRW Guidelines: WASREB

Eng. Ngugi reported that the 7th NRW Standards editorial committee met on 14th June 2019.

During the meeting, WASREB proposed that Performance Based Contracts (PBCs) be included in the new guideline as an innovative way of dealing with NRW challenges. This is informed by the new innovative approach being advanced through Performance Based Financing (PBF) project under WASREB within the Water and Sanitation Development Program (WSDP).

He also reported the committee's observation that Output 4 will have significant lessons which if well documented in the new guideline, will enhance the guideline's usage by WSPs compared to the current situation. Such lessons are in GIS, billing analysis and, use of simple and cheap equipment for data collection and analysis, among others. To this end, the editorial committee felt that they had a capacity gap in coming up with the guideline envisaged. They therefore proposed that Mr. Mori be formally engaged to give support to the NRW Std editorial team and facilitate putting into perspective and logically the content of the new NRW guideline and hence output 2. Eng. Alima informed members that the matter would be discussed with Mr. Taguchi when he comes back from Japan. Eng. Ngugi informed members that the editorial committee members have been meeting in WASREB boardroom and working on the guideline individually which is prone to interruptions; hence the ministry needs to facilitate a workshop to consolidate the document.

Ms. Sugimoto requested WASREB to share the analysis of the responses to the NRW Std usage questionnaire with the PIC members.

c) Feedback from the 6th joint training: KEWI

Mr. Mosei informed that the 6th Joint training was conducted from 3rd – 7th June 2019 (Classroom in KEWI) and the OJT thereafter in Embu WSP from 17th – 23rd June 2019 as scheduled; whereby 18 staff from total 8 WSPs (including 2 Pilot WSPs) participated. This being the last training in Phase 2, KEWI is therefore in the process of consolidating and analysing data from the 1st to 6th joint training so as to highlight the impact the training has had on the WSPs. He also reported that KEWI had conducted inhouse training in Nyahururu and Thika WSPs on request; and was preparing to do the same for Eldoret WSP. Eng. Njeru

requested WSPs to participate in the training offered by KEWI. Mr. Moseti was requested to share the report of the evaluation (expected by early August) with the counterparts once it is ready.

d) WASPA Activities and timelines: WASPA

Ms. Patricia reported that WASPA will hold its bimonthly meeting in Kakamega Golf Club, Kakamega on 12th July 2019. She said that WASPA will hold discussions with the JICA Experts to agree on the project activities to be included for benchmarking and the dates. She also said that WASPA in collaboration with SNV was documenting leading practices which will be shared once done. Ms. Sugimoto informed that they are planning the thematic workshop back to back with the JCC and that Unauthorised Water use is proposed as the theme for the workshop. This is proposed as a one-day workshop in Nairobi with further details being provided later.

iii. Progress of activities at the leading pilot WSPs:

a) Summary of achievement and way forward: JICA Experts Team

Mr. Charles (JICA Experts Team), informed members that output 4 group was tasked to come up with new ideas or activities and to pass the same to the WSPs. In this regard he shared with the members a graphical presentation on the monthly NRW monitoring at the 9 pilot WSPs. He then invited individual WSPs to make their own oral presentations

b) Presentations or reports from Pilot WSPs: Embu, Meru, Nyahururu, Nakuru, Kisumu, Ruiru-Juja Mavoko, Kilifi-Mariakani and Eldoret
Presentations from the WSPs were made as per the attached reports from the WSPs.

vi) Discussion among participants

- ✓ Mr. Mori informed members that they are coming with new ideas as game changers such as customer identification survey. He also informed that he will be collaborating with KEWI on GIS and that the new ideas will be included in the NRW guidelines. He also suggested that procurement of equipment by and for WSPs should be based on each WSP's NRW level, e.g. mostly starting with listening stick and the UFM.
- ✓ Mr. Silas suggested that WSP that are not very familiar with various activities can have a benchmark with the ones that are ahead of them e.g. Meru was doing well in meter test bench and he invited other WSPs to go and learn from them.

- ✓ Mr. Kemboi suggested using GI elbows for meter stands instead of PPR elbows for service connection. However, members warned that PPR is not suitable for external environment since it is affected by UV light.
- ✓ Members agreed that Mr. Mori can share a template which WSPs can use for PIC meetings. He also emphasized the need for members to share their reports with their MDs as they share with the JICA experts.
- ✓ Eng. Njeru encouraged the WSPs to not only identify their needs in the NRW management but also to come up with ways of self-financing on these activities. He pointed out that this was important since water services is a devolved function. He however stated that the ministry will follow up with county governments to ensure that the NRW functions were factored in their annual budgets.
- ✓ Mr. Gitau (JICA Kenya office) informed that this project was a follow up intervention after the Narok infrastructure project and that after the project JICA and the ministry will discuss on the way forward.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on **31st July 2019**.

A.O.B.

- ❖ Mr. Karanja informed that some WSPs sent their monthly reports on time as while others did not. He encouraged timely sending of the reports to ensure timely sharing with JICA Kenya office, the ministry and the JICA Experts. Members agreed that the reports for the month of June should be sent by 21st July 2019.
- ❖ Mr. Mabonga informed that the procured equipment will be issued to the concerned WSPs after the meeting.
- ❖ Mr. Mori raised concern on when the outstanding equipment and those for Phase 3 will be procured. Eng. Njeru responded that he will give a response after further consultations.
- ❖ Eng. Njeru informed that the most important thing was for the WSPs to learn from each other and to implement the best practices in their various WSPs. In this regard the experts were requested to share the reports of various WSPs with all the members after receiving them.
- ❖ He also requested the WSPs who were receiving the procured equipment to put them to use otherwise it will mean they didn't need them.
- ❖ Members were further advised to copy what others are doing instead of taking more time inventing their own ways.

There being no other business to be discussed, the meeting ended at 12:00pm.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. SAO ALIMA	MWS
2.	MR. WATARU TAKASHIMA	JICA Kenya
3.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
4.	ENG. VICTOR C. N. NJERU	HEAD OF NRW UNIT
5.	MR. DAVID MABONGA	MWS NRW Unit
6.	MR. ANDERSON KIOI	MWS NRW Unit
7.	MS. PATRICIA MUTUA	MWS NRW Unit
8.	MS. PATRICIA WANJERI	WASPA
9.	MR. WALTER M. MOSETI	KEWI
10.	MR. JAMES K. NYAUMA	NRW OFFICER (MAVWASCO)
11.	MR. ANTHONY MWANGI	AG. NRW IN-CHARGE (NYAHUWASCO)
12.	MR. JOSEPH GITAU M.	OPERATIONS ENG. (NYAHUWASCO)
13.	MR. JOSEPH I. MAINA	Head NRW (EWASCO)
14.	MR. CYRUS MUGENDI	TECHNICAL OFFICER (EWASCO)
15.	MR. GILBERT K. MUTAI	Distribution Manager (NAWASSCO)
16.	MR. ALEX KEMBOI	AG. Distribution Manager (ELDOWAS)
17.	MR. HEZEKIAH N. MWARUA	MD (KIMAWASCO)
18.	MR. EMMANUEL KARAVINA	T.O.M (KIMAWASCO)
19.	MR. ERNEST CHEA	CBDM (KIMAWASCO)
20.	MR. ROBERT NGATATA	NRW OFFICER (KIMAWASCO)
21.	MR. MICHAEL GITAU	NRW HEAD (RUJWASCO)
22.	MR. ZADRIAN ANGWENYI	NRW UNIT (RUJWASCO)
23.	MR. JOSEPH MBERIA	CEO (MERU WATER)
24.	MR. CHRIS KABERIA	TM (MERU WATER)
25.	MR. SILAS NDATHO	Head NRW (MEWASS)
26.	MR. JOB LIECH	NRW Engineer (KIWASCO)

27.	MR. NAOKI HARADA	JICA Expert Team
28.	MS. HIROKO SUGIMOTO	JICA Expert Team
29.	MR. SHOZO MORI	JICA Expert Team
30.	MR. GEORGE KARANJA	JICA Expert Team
31.	MR. CHARLES MAINGI	JICA Expert Team
32.	MS. KELLYJOY GAKII	JICA Expert Team

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 21ST PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2019/11/28 (Wednesday)
Time:	8:40am – 12:30pm
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. SAO Alima 3. Confirmation of previous minutes -Mr. Charles Maingi 4. Matters to be discussed; <ol style="list-style-type: none"> i. Program and timeline of the 3rd Phase: JICA Expert team ii. Progress of the project by referring to the Project Monitoring Sheet: MWS NRW Unit iii. Issues related to each Output of the Project: By Each C/P <ol style="list-style-type: none"> a) Report on the previous sensitization activity: MWS NRW Unit b) Revision of the NRW Guidelines: WASREB c) Updates on NRW regular training: KEWI d) WASPA Activities & timelines: WASPA iv. Efficient use of Annual NRW Reduction Planning Template as a suggestion for reviewing the NRW reduction activities: JICA Expert team v. Progress or challenges on and around Activities at Pilot WSPs (Discussion among all members) <ol style="list-style-type: none"> a) Achievement, difficulties or way forward b) Suggestions for the 3rd Phase of the Project: 5. Schedule of next PIC meeting 6. A.O.B.
Content	<p>1. <u>Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p>

2. Communication from the Chairperson

The meeting was called to order by Eng. Ngugi who informed the members that Eng. Alima had requested him to chair the meeting on his behalf since he was held up with other official duties. Eng. Ngugi reminded members that the last PIC meeting was held in July and subsequently the JCC held in August 2019. The JCC marked the end of Phase 2 of the project and the days meeting was ushering in the 3rd phase of the project. He mentioned that it was his believe that in the 3rd phase members will be proactive in their activities so that the objectives of the project can be realized. He specifically singled out output 2 and 4 and urged them to be more aggressive this time since they are very key in the project performance.

Confirmation of previous minutes (Annex 1)

Mr. Charles Maingi (JICA Experts team) informed members that the minutes were sent to the members a week earlier as agreed in the previous meeting, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Ms. Patricia Mutua (MWS) and therefore confirmed as the true record of the meeting.

Matters Arising from the Previous Minutes

- ✓ Ms. Sugimoto enquired on the results of the analysis of the responses to the NRW Std usage questionnaire. Members agreed that since the analysis had been shared with the members of the editorial committee and all the counterparts are well represented Mr. Taguchi should be the best person to share the analysis with Ms. Sugimoto.

4. Matters to be discussed

i) Program and timeline of the 3rd phase: JICA Experts team

Mr. Taguchi informed members that the project is now at the starting point of phase 3, having been in progress for the last 3 years as phase 1 and 2. He said that phase 3 is scheduled to run for another 2 years. He also pointed out that it was important to note that the project's support for KEWI ended with phase 2 and that they will henceforth undertake training on their own. He also said it was important for the members to start thinking and discussing dissemination of the project activities to the rest of the WSPs in the country. He further did a PowerPoint presentation explaining the timelines allocated for the project.

ii) Progress of the project by referring to the project monitoring sheet: MWS NRW Unit

Ms. Patricia Mutua took members through the project monitoring sheet and discussed their output as indicated below in the discussions on issues related to each output.

iii) Issues related to each output of the project: By each C/P

- a) *Report on the previous sensitization activity: MWS NRW Unit*

Ms. Patricia Mutua reported that the Second County sensitization workshop was held in Nanyuki, hosted by Laikipia County on November 14th 2019. Two counties (Laikipia and Meru) with Nine (9) WSP representatives participated out of the invited 11 WSPs. The discussion was focused on the issues dealing with County government. The challenge was the low participation from the County governments. Ms. Sugimoto suggested that there was a need to re-strategize the activity to enhance the participation of counties since the CECs, when contacted to rope in other relevant county staff, they seem very supportive; but actually don't do much after hence the low turnout during the sensitization workshop. Mr. Gitonga suggested that the MWS&I NRW Unit invite the boards of directors of various WSPs for a meeting and since the Counties are usually represented through two chief officers (in-charge of water and in-charge of finance) it will be easier to pass the information on the importance of managing the NRW at the WSPs level and also encourage them to sensitize the county government to attend the workshops.

Ms. Patricia Mutua also reported that the MWS&I was in the process of collecting data for the annual NRW report version 2. She further requested members to share articles for the report with the Unit. She informed that an official letter requesting the same will be sent to all WSPs.

Mr. Gitau (JICA Kenya office) enquired about the progress of procurement of the equipment. Ms. Patricia responded that the budget and list of equipment was sent to the PS for approval and allocation of funds. She also stated that the ministry was working hard to ensure that the equipment are available by end of March 2020. She further requested KEWI to formally request for the funds for renovation of the leak detection training platform.

Mr. Taguchi also informed that through the request made by JICA Kenya office, the Experts are in the process of returning the equipment borrowed from Kapsabet and Narok WSPs since the two WSPs also wish to use them.

b) Revision of the NRW Guidelines: WASREB

Eng. Ngugi reported that the Editing work of the NRW Standard is ongoing. Completion of the work is planned by May 2020. Monitoring and evaluation on the usage of the revised NRW standards will commence after dissemination.

c) Updates on NRW regular training: KEWI

Mr. Moseti informed that like Mr. Taguchi had reported earlier, KEWI undertook 6 joint trainings in phase 1 and phase 2 of the project as scheduled and this marked the end of the trainings scheduled for the pilot WSPs. However, during the 6 trainings the challenge of low trainees turn out was encountered. He further reported that KEWI was currently undertaking trainings related to NRW even though it is outside the short courses calendar. He also reported that the WSPs are currently requesting for onsite training and cited Nyahururu WSP case where 46 participants were trained, Thika WSP 15 participants,

Mombasa WSP 28 participants; KEWI has sent a proposal to Lodwar WSP's request; while Meru WSP has shown interest. He also reported that after the training, KEWI normally presents the report of the participants to the management in a forum and clearly indicates on their progress.

Mr. Taguchi requested Mr. Moseti to document the proceeds of the Tailor made (request basis) trainings for presentation in the 7th JCC. Mr. Moseti also informed that NRW management is now part of the water engineering curriculum in KEWI. Eng. Ngugi requested the WSPs to ensure that their TORs are clear and specific as they request for these trainings so that the various issues that affect the WSPs are addressed during the trainings.

Mr. Liech informed members that it was quite unfortunate that the NRW management aspect is yet to be incorporated in the university curriculum. Mr. Gitonga suggested that the MWS&I should invite the various heads of departments from various universities and sensitize them on the importance of incorporating the element of NRW management in their curriculum.

d) WASPA Activities and timelines: WASPA

Ms. Patricia reported that WASPA's bench-making workshop was held from 19th to 22nd, November 2019 in Nyeri. 70 participants from 25 utilities attended the meeting. She also reported that the billing analysis presentation made by the JICA Experts team; the MNF and leak detection from KEWI stood out. She also reported that WASPA will be holding its annual AGM in Mombasa on 29th November 2019 and a retreat on 4th – 5th December 2019 in Nakuru. The next WASPA calendar will be communicated after the AGM and the retreat.

iv) Efficient use of Annual NRW Reduction planning Template as a suggestion for reviewing the NRW reduction activities: JICA Experts team

Mr. Charles reported that all the 9 pilot WSPs had reviewed their annual and mid-term NRW reduction plans through the proper templates. He reminded all the WSPs that they are expected to have reviewed their 1st quarter achievements and obstacles. The 2nd quarter is ending on 31st December 2020 and hence should be reviewed before the JCC meeting to be held in early February 2020. Mr. Charles further invited the pilot WSPs to make their comments as shown below:

a) Embu WSP

Mr. Irungu reported the progress in Embu WSP as follows:

- a) EWASCO had developed and adopted a 100 days **Rapid Results Initiative (RRI)** aimed at reducing non-revenue water to below 30% focusing on both commercial and physical losses reduction.

The proposal has the following 7 milestones: -

1. Baseline survey - completed and documented
2. Replaced/serviced 50% of all stalled meters identified
3. Disconnect all accounts with over Kshs.50,000 balance
4. Disconnect from the main all dormant accounts and accounts that have stayed over 3 months from date of disconnection
5. Repair all vandalized air valves and construct chambers
6. Give amnesty for illegal water users and waiver 50% of all outstanding bills above 20,000
7. Clean up accounts data in South West (Gachoka) and South East (Kiritiri) areas

The estimated budget for the RRI is Ksh. 3,537,657

b) Illegal water usage /Customer meters survey

Door to door illegal detection exercise was conducted in sections indicated below. Cases of illegal connections and meter tampering were detected, disconnected and charged. This led to increase in revenue and authorized consumption. (these sections are in rural miraa farming zones.)

	Jun-19	Jul-19	Aug-19
MBEERE SECTION	CONS(m³)	CONS(m³)	CONS(m³)
44	19,822.00	21,099.00	28,254.00
45	11,893.00	13,837.00	21,552.00
46	34,280.00	38,482.00	51,398.00
47	21,102.00	14,502.00	18,743.00
48	9,172.00	10,800.00	13,380.00
Increased revenue from customer investigative survey			
45	1,124,800	1,220,205	1,707,154
46	704,036	797,366	1,307,117
47	2,141,742	2,393,835	3,338,448
48	1,250,845	895,921	1,126,921
49	537,013	651,622	832,683
Total (ksh.)	5,758,436	5,958,949	8,312,323
Increase (ksh.)	2,553,887	2,353,374	

c) Joint NRW Monthly Monitoring meetings are being held

A joint NRW monitoring and reduction task force has been constituted. The members were drawn from all key sections that directly affect NRW reduction.

d) Meter testing

During the period 356 no customer meters were tested- 164 failed and were replaced.

e) Large customers monitoring

Weekly monitoring is still ongoing and the following categories have been added to the list due to their high risk of commercial losses.

- Large miraa farms
- Construction works
- Car washes (47)
- hostels

f) Master meter accuracy test and replacement

Procurement of master meter has commenced to replace faulty ones. This will enable realizing accurate flow data for NRW computation. Priority was given to the production and zonal meters.

NRW status

The NRW ratio for the 3 months was **44%**. Through the RRI initiative the water losses are projected to be below 30% in 100 days.

Weakness area that needs urgent action

- Faulty and inaccurate master meters
- Meter tampering and illegal connections.
- Air valve vandalism.
- Pressure management in zones 1,2 and 3
- System clean-up for commercial losses reduction.

Meru WSP

Mr. Silas reported the following activities at Meru WSP in the period:

- ✓ All inactive customers were visited to know where they obtain their alternative source of water and also understand why they had not been reconnected. This is help curb the illegal water usage.
- ✓ Customers with high outstanding debts were approached to make arrangements while using our water
- ✓ Around 30 dormant customers were revived through customer satisfaction survey.

- ✓ an average of 104 connections installed, mapped and updated in the customer database in the last 4 months.
- ✓ Large customer monitoring is done weekly. Tasks include: checking meter status, possibility of illegal consumption/connections, meter seal status with a Ksh. 5,000 fine imposed where tampered
- ✓ 48 out of 144 meters in both C1 and C2 were found faulty and serviced with 27 being replaced.
- ✓ Checking of C3 meters is planned to start from 3rd quarter of this financial year
- ✓ MEWASS has requested KEWI to carry out both theory and OJT trainings on NRW reduction activities in their utility so as to incorporate NRW, O&M, production, meter readers and customer care.
- ✓ The NRW team detected 967 bursts and leaks in the last 4 months which were all repaired
- ✓ Two MNF measurements were carried out since July
- ✓ 2 GIS staff members were trained in Mombasa
- ✓ 3 GIS staff members were also trained at KEWI

Challenges

- ❖ Road construction along the by-pass uprooting of pipelines causing financial loss to the company
- ❖ Large customers in C1 and C2 are the main customers tampering with meters
- ❖ Overflows from BPTs
- ❖ Heavy rains hence high turbidity in treatment works leading to no water

Ruiru-Juja

The WSP undertook the following NRW activities:

- NRW calculation for Juja Elevated Tank DMA: it was found that the DMA had an NRW of 42.13%.
- From the data obtained, 130 customer meters were confirmed as stalled and recommended for replacement
- A total of 427 faulty customer meters were replaced in August to October period
- A total of 329 bursts and leakages were identified and repaired in August to October.
- GIS & Map: Mapping of the water network is at 95% completion.
- Additionally, 20,000 customer locations have been mapped, an increase of 33%
- A total of 1,174 high consumer accounts are continuously monitored for anomalies.
- Customer meter accuracy testing is an ongoing exercise

Challenges

- a) Using kobo collect app has been a challenge since the data collection forms are unavailable in the app.
- b) Frequent bursts caused by ongoing road construction works and sewer

extensions.

- c) Vandalism of customer meters and DMA bulk meters.
- d) There is a huge difference in billing between wonderkid and Majisoft

Kilifi-Mariakani WSP

The company undertook the following NRW activities:

- Meters serviced-296
- Meters replaced- 60-50,000 impact
- GIS – the hardware components including two desktops and two flat screens were purchased
- Meter relocation – 20 meters which were under gate locks
- 10 illegal connections were unearthed. This was as a result of formation of an inspection team equipped with motor bikes for the exercise
- Management approved the increase of staffing in the NRW team
- Rolling out of maji voice system 90% for reporting of burst and complain
- It was ensured that specifications are adhered to in procuring materials usually done quarterly.
- Sensitization meetings in Bamba where the CC and board members were in attendance, where vandalism is rampant –meeting led to reduction of NRW by 5% in the area.
- Formation of a committee to formulate standard Operating procedures; - which is underway
- Collaboration with KEWI to map Kiwandani as a pilot project for both meters and network to ascertain NRW levels and creation of DMAs - 20,000,000 is being lost
- The company is also procuring pipes and fittings under WSDP project to facilitate in the formation of DMAs by eradicating spaghetti connections
- The company has developed data capturing tools for standard data capturing.
- The company plans to replace stalled 300 meters by the end of December 2019.
- The board of directors are positive on NRW reduction after engagement by the management and have requested to be taken for short courses on NRW. KEWI has been contacted on this awaiting response
- Relocation of Bofa pipeline under WSDP programme which is passing through customer's premises
- The company plans of purchase 3500 meters under WSDP project to replace stalled meters

Challenges

- Intermittent water supply
- Aged pipeline
- Lack of meters for replacement
- Road grading – in five months 10km DN 100mm has been damaged

Kisumu WSP

The WSP undertook the following NRW activities:

- ✓ Public sensitization and awareness on meter theft
- ✓ Leak detection being undertaken on various pipe networks - 6.2 Km of covered during the period under review. 2.9km out of the 6.2kmpipeline was recommended for replacement.
- ✓ Minimum night flow and step test has been carried out in various DMAs Including: Gudka, Arina and Kenya- Re.
- ✓ Tank level remote monitoring sensor installed hourly data updates through sms
- ✓ Baseline survey for newly isolated CBD DMA
- ✓ Installation of multijet meter in areas prone to silt. Already 364 meters installed with a target of 1500 by end of 3rd quarter.

Challenges

Introduction of new billing software system has affected billing process thus contributing to increase in NRW.

Way forward

Customer data base clean up

Mavoko WSP

NRW - 34%, Average production 55,000m³/month, Total water connections 7612

The WSP undertook the following NRW activities:

- Cumulatively 887 meters have been replaced since January 2018 with 78 being in the reporting period. A sample analysis of 60 meters replaced showed at least 66% improvement in billing on average.
- Mobile meter reading has been introduced and effectively deployed after successful piloting
- Master and bulk meter testing done once every quarter
- Introduction of disconnection stickers on meters to reduce illegal reconnections



- GIS mapping of all water connections completed. Continuing updating for new water connections
- Mapping of meter reading anomalies (as generated from billing system) on GIS is currently being done
- Installation of three strainers on at least DN 90mm pipes to reduce meter stops due to silt
- NRW monthly review joint participatory meeting between Commercial and technical departments

- Billing system improvement in progress to achieve zonal/sub zonal NRW analysis
- Enhancing data analysis on distribution to track zonal NRW trends
- Focus on disconnected accounts with data cleaning and actions to disconnect from mains for the outstanding

Challenges

- Policy on disconnection from mains is not available
- Customer meter tampering still persists
- Vandalism of infrastructure in some areas
- Management of accounts disconnected in the system but not on ground not completed (25% of the connections)

Low volumes of water and impeding interruption due to Nairobi Expressway project (37% of connections not receiving water)

v) Progress or challenges on and around activities at Pilot WSPs

Discussion among participants

Members requested WASREB to share with the WSPs guidelines on particular policies that needs to be adopted by the various WSPs

Members also agreed to suggest and send to the secretariat the various polices that they felt were missing and were quite useful for their WSPs

Mr. Maina Embu WSP suggested that the experts should visit even the 6 pilot WSPs even though they are not part of phase 3 of the project and help them in working with the techniques that were developed and introduced to them earlier on e.g. the kobo collect and the ODK, zonal monitoring system and billing analysis. Mr. Charles responded by informing the members that the experts will be visiting the 6 WSPs to finalize on the Kobo collect and share it as best practice; zonal monitoring will also be done on the current phase for all WSPs and; billing analysis will be redone for WSPs but on the basis of the availability of an analysis unit since it requires lots of dedication. Mr. Maina also requested WASREB to conduct audit on the various WSPs since some of the WSPs have imaginary NRW Units. Eng. Ngugi responded by informing members that it was a requirement in the licencing to have functional NRW Units in all WSPs in the country. However, WASREB will monitor the implementation of the licence among the WSPs.

Mr. Gitonga suggested a research be carried out to ascertain the effectiveness of smart meters in fighting the NRW. Mr. Moseti was requested to take the challenge and have the research conducted by KEWI and inform the sector on the effectiveness of the smart meters in fighting NRW. Patricia (WASPA) pointed out that smart meters do not guarantee a return on investment and that there is research by World Bank with the first phase already done awaiting the second phase.

Mr. Charles informed members that smart meters are just the ordinary meters but smart enabled. They are also tamper-proof and cannot be repaired hence expensive.

	<p>Mr. Gitau (JICA Kenya) requested that the suggestions from phase 3 of the project be documented and sent to JICA for future use.</p> <p><u>5. Schedule of the next PIC meeting</u></p> <p>It was agreed that the next PIC meeting will be held on 22nd January 2020.</p> <p><u>A.O.B.</u></p> <p>Mr. Taguchi informed members that there was an executive forum in Rwanda from 13- 14 November 2019 attended by himself and MDs from Embu, Kisumu and Nakuru WSP. The forum was a benchmark on collaboration between Kenya, Rwanda and Malawi. Ms. Patricia Wanjeri was requested to liaise with Christopher and Njiru for more information and share the knowledge with the rest of the WSPs.</p> <p>There being no other business to be discussed, the meeting ended at 12:30pm.</p>
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ATTENDANCE LIST

No.	Name	Institution
1.	ENG. DANIEL NGUGI	WASREB
2.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
3.	MS. PATRICIA MUTUA	MWS NRW UNIT
4.	GODFREY KIGWEI	NRW -INTERN
5.	MS. PATRICIA WANJERI	WASPA
6.	MR. WALTER M. MOSETI	KEWI
7.	ENG. JESSE AMBUNDO	TECHNICAL MANAGER
8.	MR. PAUL MUTHAMI	NRW IN CHARGE
9.	MR. FELIX G. MUTURA	HTS
10.	MR. JOSEPH I. MAINA	HEAD NRW (EWASCO)
11.	MR. JOSEPH K. MAIYO	WATER DISTRIBUTION & NRW MANAGER
12.	MR. HEZEKIAH N. MWARUA	MD (KIMAWASCO)
13.	MR. PASCAL JIRA	AG. T.O.M
14.	MR. ROBERT NGATATA	NRW OFFICER (KIMAWASCO)
15.	MR. MICHAEL GITAU	NRW HEAD (RUJWASCO)
16.	MR. ZADRIAN ANGWENYI	NRW ENGINEER (RUJWASCO)

17.	MR. SILAS NDATHO	HEAD NRW (MEWASS)
18.	MR. JOB LIECH	NRW ENGINEER (KIWASCO)
19.	MR. MASAYUKI TAGUCHI	JICA TEAM
20.	MR. NAOKI HARADA	JICA EXPERTS TEAM
21.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
22.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
23.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
24.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

Nakuru WSP

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 22ND PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2020/01/24 (Friday)
Time:	8:30am – 11:00am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<p>1. Self-introduction</p> <p>2. Communication from the Chairperson - Eng. SAO Alima</p> <p>3. Confirmation of previous minutes -Mr. Charles Maingi</p> <p>4. Matters to be discussed;</p> <p style="margin-left: 20px;">✓ Progress of the project by reporting from representatives of each CPs</p> <p style="margin-left: 20px;">a) Activities of MWS NRW Unit (NRW Annual report, County Sensitization, Campaign in WSPs, Procurement of Equipment, etc.)</p> <p style="margin-left: 20px;">b) Activities of WASREB (NRW Managing Guidelines and Handbook)</p> <p style="margin-left: 20px;">c) Activities of KEWI (Implementation of NRW Short Course, etc.)</p> <p style="margin-left: 20px;">d) Activities of WASPA’s program (Bi-monthly meeting, Seminar or forums, etc.)</p> <p style="margin-left: 20px;">e) Activities of Output 4 in Pilot WSPs to be summarized by Project team.</p> <p>ii) Preparation of 7th JCC meeting: JICA Expert team</p> <p style="margin-left: 20px;">Issues to be discussed in the next JCC meeting.</p> <p style="margin-left: 20px;">a) How to disseminate NRW reduction activities in Kenya after the Project. (Launching & seminars about NRW Managing Standards are not enough for WSP → Supporting mechanism is needed for WSPs to start, continue and be rooted to the actual activities → Who/What organization will be responsible, by what measures)</p> <p style="margin-left: 40px;">• Discussions and decision to be made by the heads of CPs (MWS&I, WASREB, KEWI), then Ordering appointed working team to make plan for dissemination. → Authorizing the group for implementing the work with budgetary by MWS&I.</p> <p style="margin-left: 20px;">b) Feedback of utilization of the NRW Annual plan</p> <p style="margin-left: 40px;">• Do you make quarterly reporting to WASREB by using your plan which has columns for reviewing the activities?</p> <p style="margin-left: 40px;">• How do you evaluate your achievement against the annual targets activities selected specially after the last JCC?</p>

	<p>c) Measures for ensuring procurement of leak detecting Equipment for Phase 3</p> <p>5. Schedule of next PIC meeting</p> <p>6. A.O.B.</p>
Content	<p>1. <u>Self-introductions</u></p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. <u>Communication from the Chairperson</u></p> <p>The meeting was called to order by the Chairman, Eng. Alima, who later welcomed the members to the 22nd PIC meeting. He later informed members that he was happy with the attendance though some WSPs had not yet showed up for the meeting but he was hopeful that they will soon join the meeting. He also thanked members for the efforts they had so far employed in the project and further informed them that now that the project was in its 3rd phase it is very critical. He said it is the best point for the WSPs to reflect on where they are coming from, where they are and where they are headed to. He also acknowledged receipt of quite encouraging reports from the PIC meetings and noted that the good reports have kept the project going.</p> <p><u>Confirmation of previous minutes (Annex 1)</u></p> <p>Mr. Charles Maingi (JICA Experts team) informed members that the minutes were sent to members a week earlier as agreed in the previous meeting, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Mr. Paul Muthami (NHAHUWASCO) and therefore confirmed as the true record of the meeting.</p> <p><i>Matters Arising from the Previous Minutes</i></p> <p>✓ There were no matters arising from the previous minutes.</p> <p>4. <u>Matters to be discussed</u></p> <p>i) Progress of the project by reporting from representatives of each CPs</p> <p>a) Activities of MWS NRW Unit (NRW Annual report, county sensitization, campaign in WSPs, procurement of equipment, etc)</p> <p>Mr. Kioi reported on the following activities by the MWS NRW Unit:</p> <p>They have received input from members for the annual report and they are hopeful the write up will be ready by the month of March 2020.</p> <p>They are currently planning for another county sensitization workshop which will be held in Kisumu county by the month of March 2020. Eng. Ngugi requested the Unit to consider a</p>

suggestion made in the previous meeting by Mr. Felix Gitonga (EWASCO) of holding a sensitization workshop and inviting some of WSP's board members, who belong to the County government sent to the WSP, instead of directly inviting the members of the County government for the workshop. This will improve the current difficulty in the attendance.

They are also planning for another thematic workshop dates and venue to be communicated

On the NRW reduction equipment, the meeting was informed that the procurement process is still ongoing fairly. NRW unit informed the meeting of anticipated challenge they had encountered during the market survey whereby they got a quotation that was way too high compared to the previous financial year procurement. However, they were procuring with a competitive budget within. Mr. Taguchi urged the MWS&I to be precise and timely in their procurement to avoid the explanations as in the previous JCC meeting and no progress had been realized since then.

Eng. Alima, as a result of another meeting that was to be attended by the presiding chairman, he proposed Eng. Ngugi to continue chairing the meeting.

b) Activities of WASREB (NRW Managing Guidelines and Handbook)

Eng. Ngugi reported that the editorial committee has been holding their meetings promptly except for the month of December and January. However, they will be holding the next meeting in February 2020 and expect to finalize the work by May- June 2020. In view of this he requested the ministry to consider its facilitation in order to realize the workplan. He also said that the committee was still in need of an expert's input into the document. Mr. Taguchi responded by informing members that he is part of the committee and that results were being realised so far.

c) Activities of KEWI (Implementation of NRW short course, etc)

Mr. Moseti reported that there has not been much change from the last meeting's report. However, short courses calendar is out and they have advertised the new structure NRW courses. The training is planned to start in March. He also reported that they had received requests from some WSPs like Meru, Kilifi and others for onsite training. He also promised to giving a report on the trainings in the next meeting. Eng. Ngugi enquired whether KEWI has reach out to the WSPs themselves for the trainings or what is happening. Mr. Moseti reported that most WSPs consider it cost effective to hold the trainings onsite using their own facilities instead of coming to KEWI. Mr. Taguchi enquired about the number of the participants into the short courses in this year. Eng. Ngugi suggested that Mr. Moseti report in terms of parameters in future so as to show the participants in the regular courses and those in the customed courses. Mr. Gitau (JICA Kenya office) suggested that non-pilot WSPs showing interest in the courses can be encouraged by being invited by their neighbouring pilot WSPs during the onsite trainings. Mr. Taguchi explained that the purpose of the onsite training are for particular WSPs specific area of weakness. Mr. Moseti also clarified that training in a WSP was not per head but as a group as long as they have a maximum number of 25 persons.

d) Activities of WASPA's program (Bi-monthly meeting, Seminar or forums, etc)

This item was not reported on since WASPA had not sent a representative.

e) Activities of output 4 in pilot WSPs to be summarized by project team

Mr. Charles (JICA Experts team) reported that there would not be presentations by individual WSPs but he will give a summary on the WSPs' progress as follows:

Embu WSP: - collecting and uploading of pressure data from the selected pressure points in zone 2 using ODK was done which will later be useful for pressure management exercise in the zone. They were waiting for procurement of PRVs for installation in the designated places. He enquired from Mr. Gitonga on the progress of the procurement. Mr. Gitonga responded that the tenders were not responsive and they might be forced to repeat the process by end of February. They have also planned to conduct Minimum Night Flow measurement in zone 2 by the end of January to establish the amount of water loss.

Survey on stalled, opaque and mal-functioned large and small customer meter meters was on-going. They have bought 2000no.meters for the exercise and had replaced 400 No meters which were found to be faulty after servicing and testing. Data clean-up was is-ongoing and had started with those accounts that had ~~have~~ not been billed for over 6 months.

They were ~~are~~ in the process of procuring Air valves for replacement and this was ~~is~~ after they noticed that they are losing a lot of water on leaking air-valves along main and service lines. Nyahururu, Nakuru, Ruiru-Juja and Kilifi-Mariakani WSPs reported that they had set up their improvised meter test benches which they are currently using to test meters after the training by the JICA expert team.

Nyahururu WSP was currently conducting a customer Identification Survey in Rumuruti scheme which is meant to assist in data clean-up, location and identification of customer meters which will assist to improve on billing.

Eldoret WSP had recently acquired some new leak detection equipment which they are to start using soon after training on how to use by the JICA team.

They are also concentrating on meter testing, resizing, relocation and replacement of stalled and faulty meters, prioritizing the large consumers which seems to be yielding some good results with improvement in billing of at least 3 to 4 times on the acted-on connections.

Meru, Nyahururu, Nakuru, Kisumu and Ruiru-Juja are concentrating mainly on large customer monitoring, Step testing and Minimum Night Flow measurements (e.g. Nyalenda and Dunga areas in Kisumu, Zone 8 lower in Meru, Naka Estate in Nakuru and Manguo Estate in Nyahururu). Kilifi-Mariakani is mainly dealing with customer meter servicing, testing and replacement of mal-functioned meters. So far 95 of the planned 300 customer meters have been replaced as at end of December 2019. Replacement of some of their old dilapidated AC pipes is ongoing with World Bank funding replacement of service pipeline to customer premises mainly in BOFA area.

Mr. Taguchi appreciated Eldoret WSP for their efforts in procuring the NRW reduction equipment. He also informed them that Mr. Takahashi will be visiting them for training on use of the equipment on 5th -7th February 2020. Eng. Ngugi also encouraged the WSPs to plan for procurement of NRW equipment since this shows how seriously a particular WSP has taken the matters of NRW management

Mr. Kioi raised concern on the reporting not appreciating the effort (investment) by the MWS&I and how the procured equipment had assisted them to NRW reduction objectives. Eng Gitonga (EWASCO) reported that using the pipe locator bought procured and issued to Ewasco by the MWS&I, they were able to locate a case where a customer had tapped their water and built houses on top of the pipe line and directed the water into a pit from where he was pumping like an underground water source. This was one of the many achievements realized from the WSPs after they got the equipment. Mr. Karanja requested for photos of such cases.

Mr. Miyagawa (JICA Kenya office) enquired to know how many of the WSPs had submitted their reports using the new planning template that is being piloted. Eng. Ngugi responded by reporting that only Kisumu WSP had submitted their reports using the new planning template. He further enquired the challenges that the WSPs were facing while using the template. Mr. Gitonga reported that the reason failure to use the template could mostly be the tendency of the WSPs updating the old template and sending it to WASREB, which they are used to. Members further agreed there was no clear communication for them to be using the new template. Eng. Ngugi explained that it was unfortunate that the pilot WSPs were not using the template to submit their reports yet this was the best way to evaluate the template. He therefore requested all utilities to be using the new template for reporting but excused the three WSPs which joined the project in phase 3 since they were currently learning on how to use it.

ii) Preparation of the 7th JCC meeting: JICA Experts team

Issues to be discussed in the next JCC meeting

a) How to disseminate NRW reduction activities in Kenya after the project

(Launching and seminars about NRW management standard are not enough for WSP:- supporting mechanism is needed for WSPs to start, continue and be rooted to the actual activities- who/what organization will be responsible, by what measures,)

Mr. Taguchi presented to the members a draft agenda and minutes of the forthcoming JCC meeting. He expressed his concern in the support mechanism that is required for the dissemination of the project to the rest of the country and sustainability of the project activities after the project is complete. He proposed establishing a reliable system to disseminate NRW reduction activities to other WSPs. He also stated that a working group should be organized in order to make real action plans on how to disseminate the activities on the recognition of the present poor situation. Real steps for dissemination of the project need to be taken by the 3 C/Ps i.e. MWS&I, KEWI and WASREB.

Mr. Karanja also enquired to know who will be in charge of the activities introduced now after the project for sustainability. Members agreed that follow-up was very key. Mr. Gitonga

suggested borrowing the idea of dissemination used by National Aids Control Council, whereby they roped in the ministry of health to ensure that trainees acquired the required knowledge through introduction in their regular courses. In the same way the MWS&I can rope in universities to incorporate NRW reduction courses in the engineering course curriculum so that Engineers do not have to learn NRW management from their junior staff trained in KEWI. He also suggested that peer to peer intervention can be a workable way for dissemination whereby the pilot WSPs are paired with another WSP that was not in the project so that they journey together. He said this is possible if mechanisms are set by the national institutions.

Mr. Ambundo (Mavoko WSP) suggested that a benchmarking approach from the MWS&I and other water sector partners can be of use. Regular reporting framework can be employed in benchmarking and someone or a team that is conversant with NRW activities to journey with the WSPs in terms of listening and providing opinions and guidance.

Mr. Charles also suggested that if the NRW Unit in the MWS&I is well strengthened they could be of great help in the dissemination. KEWI and WASREB should also be brought on board in the whole process.

Mr. Mabonga suggested that JICA in their reporting can include the need for the NRW Unit to be adequately strengthened.

b) Feedback of utilization of the NRW Annual plan

Mr. Charles reported that like Mr. Miyagawa had raised concern on the feedback on utilization of the NRW Annual Planning Template, the experts had received the plans from the 9 WSPs based on the new template. However, Eng. Ngugi informed members that only Kisumu WSP had submitted their report using the new template. Mr. Charles also pointed out that even though they received the plans, none of the WSPs had submitted any feedback in regards to its quarterly evaluation. He therefore requested the WSPs to do evaluation for their quarterly plans and share with both WASREB and the experts. He also requested them to review the priority activities they came up with in their analysis and determine what was achieved and what was not achieved. Mr. Taguchi requested the WSPs to submit the evaluated template before the forthcoming JCC scheduled on 5th February 2010. Members agreed that the evaluation reports should be sent to Mr. Charles by 31st January 2020.

Eng. Ngugi also informed the members that there could be a risk in the usage of the template whereby a utility fails to continue using the template in a case where the members of staff who are familiar with it leaves the organization or are promoted and the incoming staff do not know how to use the template.

Mr. Ambundo informed members that there was no clear communication whether utilities should use the template to submit their plans to WASREB. Their idea was the template was still being piloted.

Mr. Pascal (Kilifi-Mariakani WSP) enquired if there is a way the template can be simplified since as it stands it has lots of formulas. Mr. Charles responded that Mr. Mori was working on simplifying the document further but he will help Kilifi-Mariakani further so that they are well conversant with the template in its current state. He also encouraged the WSPs to use the document so that they make progress even before the more simplified version is made available.

Mr. Mabonga also pointed out that there may be NRW reduction staff turn-over in some WSPs thus posing challenges to the current staff.

Members agreed that the following WSPs will make presentations in the forthcoming JCC meeting: Eldoret, Nakuru and Mavoko WSPS.

c) Measures for ensuring procurement of leak detecting equipment for phase 3

Eng. Ngugi (chairing the meeting in place of Eng. Alima) informed members that this issue was already dealt with together with the ministry activities. However, Mr. Kioi added that in the procurement plan, they had factored in the equipment for the WSPs which were left out in the previous procurement.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on **26th February 2020**.

A.O.B.

Mr. Gitau JICA Kenya office informed members that Phase 2 reports were ready except for Meru and Embu and that WSPs should collect them after the meeting. He also suggested the importance of the MWS&I to prepare a presentation on the technical assessment on the phase 2 of the project since a representative from the COG, Embassy of Japan and JICA headquarters will be in the meeting. Members agreed the JCC agenda be amended to incorporate the presentation by the MWS&I.

Mr. Maina (EWASCO) reported that the first bulk meter donated by JICA had mechanical issues and also the second one that was brought to replace it. The supplier was however supposed to send their expert on the ground but this has not been done yet. Mr. Gitau responded by informing members that he was working on the issue and will get back to EWASCO.

Mr. Miruri reported that MEWASS was using the new template.

Mr. Miyagawa informed members that the 22nd PIC is his last since he is leaving the country in the first week of February 2020. However, he encouraged members to continue with the activities of the project even after the project is over.

Eng. Ngugi thanked Mr. Miyagawa for his support in the project.

Mr. Karanja requested members to send the names, organization and position held for the members who will attend the JCC to Ms. Kellyjoy for prior preparations. Each organization was requested to send a maximum of three representatives.

	<p>Eng. Ngugi thanked members for their participation in the days meeting and encouraged them not to give up on NRW reduction.</p>
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There being no other business to be discussed, the meeting ended at 11:00am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. SAO ALIMA	WATER SECRETARY
2.	MR. DAVID MABONGA	NRW CO-ORDINATOR
3.	MR. ANDERSON KIOI	NRW OFFICER
4.	GODFREY KIGWEI	NRW -INTERN
5.	ENG. DANIEL NGUGI	WASREB
6.	MR. MASAHITO MIYAGAWA	SENIOR REP. (JICA, KENYA)
7.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
8.	MR. WALTER M. MOSETI	KEWI
9.	ENG. JESSE AMBUNDO	TECHNICAL MANAGER
10.	MR. PAUL MUTHAMI	NRW IN CHARGE
11.	MR. FELIX G. MUTURA	HTS (EWASCO)
12.	MR. JOSEPH I. MAINA	HEAD NRW (EWASCO)
13.	MR. ALEX KEMBOI	AG. WATER DISTRIBUTION & NRW
14.	MR. PASCAL JIRA	AG. T.O.M
15.	MR. ROBERT NGATATA	NRW OFFICER (KIMAWASCO)
16.	MR. ZADRIAN ANGWENYI	NRW ENGINEER (RUJWASCO)
17.	MR. ROBERT K. MIRURI	GM (MEWASS)
18.	MR. WILLIAM MWENDA	NRW UNIT
19.	MR. GILBERT MUTAI	DM (NAWASSCO)
20.	MR. JOHN WACHIRA	O&M SUPT
21.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR (JICA EXPERTS)
22.	MR. NABORU SAITO	EXPERT
23.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
24.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
25.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

WASPA

Absent without apologies

Kisumu WSP

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 23RD PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2020/02/26 (Thursday)
Time:	8:30am – 11:00am
Venue	Ministry of Water and Sanitation (MWS) Boardroom, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - MWS&I (5 min.) 3. Confirmation of MM of 23rd PIC and monitoring activities after the Covid-19 from April to September (JICA team, 5 min.) 4. Matters to be discussed; (70 min. in total) <ul style="list-style-type: none"> ✓ Information and notices to be shared a) Project implementation policy (JICA representative, 5 min.) b) Rescheduling of the Project implementation (Expert team, 15 min.) c) Progress of editing NRW Management Standards, Guidelines and Hand-book) (Mr. Karanja, 10 min.) d) Activities of Output 4 in Pilot WSPs to be summarized by Project team. (Mr. Charles, 10 min.) e) Notices or remarks from WASREB, KEWI, WASPA (Rep×5min.) <p>Questions and Answers (15min.)</p> <ul style="list-style-type: none"> ii) Discussions on how to strike the Covid-19 (1 hr.) <ul style="list-style-type: none"> a) Presentation of good examples from Pilot WSPs <ul style="list-style-type: none"> • How to recover the revenue collection (KIMAWASCO, 10 min.) • Importance of collaboration with stakeholders (ELDOWAS 10 min.) b) Discussion by the participants (30 min.) c) Requests or opinion to the project activities (10 min.) 5. Schedule of next JCC meeting (3 min) 6. A.O.B.

Content	<ul style="list-style-type: none"> • <u>Self-introductions</u> <p>All the members introduced themselves and their respective organizations.</p> <ul style="list-style-type: none"> • <u>Communication from the Chairperson</u> <p>The meeting was called to order by Mr. Taguchi who confirmed if the members had all the annexes for the meeting. He then invited Eng. Njeru to make his remarks on behalf of Eng. Alima. Eng. Njeru welcomed members to the 24th PIC meeting. He said that the meeting was very important both for the project WSPs and the ministry and that he hoped that they were using the knowledge acquired in their various areas of work. He also informed the members that the ministry expects that the project WSPs will be great partners in the spreading of the knowledge acquired during the project period to the rest of the country. He also reported that he was aware that the WSPs had been struggling during the current pandemic period to provide the essential commodity to the public. However, he was grateful to JICA for not only offering knowledge but also donating chemicals for the pilot WSPs. He informed the members that the WSPs were expected to embrace the technology they were acquired from the experts so that they will spread the knowledge to the rest of the WSPs in the country. He also acknowledged the efforts made by all the counterparts in ensuring that the project was running smoothly and also a communication platform from JICA experts despite the pandemic.</p> <p>Mr. Taguchi further requested the members to endorse Mr. Karanja as the chairperson of the meeting on behalf of the ministry.</p> <p><u>Confirmation of previous minutes (Annex 1)</u></p> <p>Mr. Karanja (JICA Experts team) informed members that the minutes were sent to members a week earlier as agreed in the previous meeting, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseti (KEWI) and seconded by Mr. Joseph Maina (EWASCO) and therefore confirmed as the true record of the meeting.</p> <p><i>Matters Arising from the Previous Minutes</i></p> <ul style="list-style-type: none"> ➤ Mr. Taguchi however, informed members that since the previous meeting was held in February it was hard to confirm each item in the minutes of previous meeting but there were pending matters that were very key to the project like the formulation of the working group like was agreed in the JCC meeting. He also informed the members that the Working group was formulated and had their first sitting whereby they agreed to formulate the action plan and other activities. ➤ Mr. Taguchi also highlighted on some matters that were discussed by the participants in the previous meeting that members did not have a chance to implement/ work on
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them but he considered them important for members to be reminded about them. There were no matters arising from the previous minutes.

4. Matters to be discussed

i) Progress of the project as per the reports from representatives of each CPs

a) Activities of MWS&I NRW Unit (NRW Annual report, County Sensitization, Campaign in WSPs, Procurement of Equipment, Progress in formulating a Working Group, etc.)

Mr. Taguchi informed the members that the MWS NRW Unit was in their last stage of printing the annual report and will be released soon.

The unit was compiling articles for the annual reports and was currently working on the children's Corner and would be visiting Murang'a the following week to collect children articles. The first draft of the report was expected to be ready by mid-March 2020. Eng. Alima encouraged the editorial team of the annual report to be meeting often for them to meet the deadline.

The unit was then planning for another county sensitization workshop in Kisumu county by end of March. Eng. Alima enquired to know the target number of workshops. Ms. Patricia reported that the target was to hold 8 workshops in 3 years. Eng. Alima suggested that the number be revised to 8 workshops in 1 or 2 years.

School campaigns – she reported that school campaigns were held in Murang'a WSP on 3rd and 4th February 2020 while Nyahururu WSP planned to hold theirs on 27th and 28th February 2020. A letter agreeing to support Mathira WSP was also written.

b) Activities of WASREB (NRW Management Guidelines and Handbook)

Mr. A. Kioi represented Eng. Ngugi who was absent due to other official duties. He reported that the editorial committee held its 12th meeting on 18th February 2020. He said the committee was proceeding very well with its mandate but it had a challenge with appropriation of funds to conduct an open forum. Mr. Karanja also informed that the committee was finalizing on the various chapters to ensure they are easily understandable.

c) Activities of KEWI (Implementation of NRW short course, etc)

Mr. Moseti reported that the NRW course had been incorporated in the short course calendar. He said that the upcoming course would be held in March 2020 and 15 participants had already confirmed their attendance for both the OJT and Classroom training; and requests from more WSPs were still being accepted. He also said that MWS&I and WASREB will be invited to oversee and review the course.

d) Activities of WASPA's program (Bi-monthly meeting, Seminar or forums, etc)

Ms. Patricia Wanjeri reported that WASPA will hold their Benchmarking meeting on 16th and 17th April 2020 in Nairobi and the bimonthly meeting on 20/03/ 2020 in Eldoret. She also

reported that other WSPs who are not in the project had shown a lot of interest in the billing analysis after Mr. Charles did a presentation during one of their meetings in Nyeri.

e) Activities of output 4 in pilot WSPs to be summarized by project team

Mr. Charles (JICA Experts team) reported that Mr. Takahashi was currently working with the WSPs on MNF and step testing. He also reported that they were currently reviewing the 1st version of the planning template having received feedback from 8 of the WSPs. Kilifi-Mariakani WSP, which had not given feedback will be visited by the Experts in the coming week. He also reported that he was working with the 3 WSPs in phase 3 on data analysis and planning as well as making follow up with the 6 WSPs.

He then requested the WSPs to make their presentations which proceeded as follows:

Embu WSP:

During the period the NRW/ RRI team concentrated on commercial losses mostly with meter issues with the following activities being carried out.

➤ **Stalled and opaque meters.**

A total of 635 meters were attended to as shown below.

Section	31	29	32	15	30	45	35	33
No. of meter serviced/ replaced	115	64	19	16	14 3	70	36	26
Section	26	22	27	28	25	43	8	Total
No. of meter serviced/ replaced	26	36	14	36	13	11	10	635

- All accounts with over Ksh. 50,000 balance were disconnected
- Disconnection was effected for customers who did not respond to the demand notice given.
- All dormant accounts and accounts that had stayed more than 3 months from date of disconnection were disconnected from the main
- The exercise was still ongoing having fully covered section 47 and 44.
- Accounts data was cleaned-up for South West (Gachoka) and South East (Kiritiri) areas
- Data collection for Accounts without complete customer details was ongoing.

5. Weekly review meetings were being held with representation from both commercial and technical departments.

Illegal Water Usage/Customer Meters Survey

The activity was carried in zone 2 and was still ongoing. This followed a QMNF and later a step test that indicated high water losses suspected to be illegal use in section 37/38 .

Joint NRW Monthly Monitoring Meetings

A joint NRW monitoring and reduction task force had been constituted. Members were drawn from all key sections that directly affect NRW reduction and are active members in the RRI TEAM.

Meter Testing

During the period 81 customer meters were tested and necessary actions taken.

Meter tested		
pass	38	
fail	43	All were replaced

10% of new meters were also tested before acceptance.

Large Customers Monitoring

Weekly monitoring was still ongoing and the following categories had been added to the list due to their high risk of commercial losses.

- Large miraa farms
- Construction works
- Car washes (47)
- Hostels

Master Meter Accuracy Test and Replacement

Procurement process to replace faulty master meters was complete and awaiting awarding. This will enable realizing accurate flow data for NRW computation. Priority was given to production and zonal meters.

QMNF in Zones 2

EWASCO team had undertaken 3 QMNF measurements in zone 2, areas of high-water leakage and illegal water usage identified. Currently the team was conducting door to door leakage survey and had discovered a bypass to another WSP pipeline.

Planned activities

- PRVs installation in zone 2
- Large customer meters sizing
- QMNF and step tests in zone 2 (with Eng. Takahashi)
- Air valve installation and securing
- Data clean up
- Master meter installation

- In house NRW training for field officers

MERU

Members were informed that Meru did not have a report as of the day of the meeting since there had been a change in the NRW head. However, the representative was requested to try and catch up with the project activities so that he will be in a position to give a report in the coming meetings.

KISUMU

- Installed 1750 plastic seal on domestic meters within Migosi area.
- Replaced of 782 volumetric meters with multijet meters in Kajulu area which is prone to silting.
- Carried out minimum night flow and step test on Nyalenda line (underground leakage discovered and flows dropped from 37 to 16.6 m³/h) and the 6” Dunga pipeline.
- Installed of 5 digital pressure gauges within the network.
- Installed 2 Non-Return valves on 14” Rising main from Dunga. This had reduced the number of bursts on the pipeline.
- 423 faulty meters replaced during the period under review. This was done after carrying out field meter testing and servicing.
- Installed tank level sensors in all the tanks within the network. Currently tank level alerts were being received hourly through the phones. This had help in reduction of overflows especially at night.

RUIRU-JUJA

Step test – this was conducted on a total of 2,187 customer accounts. The obtained results are as follows:

- A total of 58 accounts were duplicated i.e. same account labelled on 2 different plots
- 44 meters were found to be buried
- 14 gate valve leakages
- 10 meter liner leakages
- 5 meter leakages
- 131 connections were not labelled
- 12 stalled meters
- 6 cases of meter tampering

Replacement of stalled meters – a total of 60 stalled customer meters were replaced

Identification and repair of bursts and leakages – a total of 260 bursts and leakages were identified and recorded to have been repaired

Challenges

- Self-reconnection of disconnected customers
- Duplicated accounts

KILIFI-MARIAKANI

NRW% - 61%, System input Vol. 1,053,802m³, Billed Vol. 415,532m³

Billed Amount KSh. 41,898,124.00

NB: Bulk meters along Mzima line were read 4 days past the planned day thus affecting NRW.

The following NRW reduction activities were undertaken:

- Joint bulk meter reading with the Bulk supplier was conducted
- 21 Bulk meters were found stalled and recommended for replacement, so far 3 were replaced.
- 167 stalled meters were serviced, 150 were within the required error while 15 were unserviceable and replaced. Meter servicing and testing was an ongoing exercise.
- 165 meters which were replaced in December increased billed vol. by 619m³ and Ksh. 63,138.00 (74 accounts were under-estimated, 53 accounts were over-estimated while 34 accounts were correctly estimated).
- 50 dormant accounts were disconnected from the off-take point
- GPS Coordinates for all 169 bulk meters were captured
- Initiated procurement process for delivery of pipes and fittings to establish pilot DMAs
- Received 3,500 meters from a world bank project.

Challenges

- Vandalism of infrastructure in some areas so as to water livestock
- Damage of pipelines due to road construction works
- Staff complacency
- Lack of adequate transport
- Inadequate repair kit

Way forward

- GIS & Mapping: Mapping of the water network with the help of JICA expert team and by contracting GIS specialist.
- Developing TOR for engaging a consultant to carry out Customer Identification Survey.
- Developing pilot DMAs
- Expecting delivery of 2 Pickups and 15 Motor bikes from WSDP by early March, 2020 to boost our fleet.
- Expecting repair kit from WSDP in the 4th quarter of FY 2019/20 to enhance leak repair

ELDOWAS

NRW activities: 2 production meters (for Kapsoya and Chebara T works) are faulty. Procurement of replacement meters is complete waiting delivery from supplier

Customer meters: 66 category C4 meters were meters were tested using portable meter tester- 12 were found to be defective and 15 had leakages after the meter. All 12 faulty meters were replaced.

Pipeline replaced: (m) – excavation, laying and backfilling of the remaining pipeline was done awaiting connection from main and relocation of consumer connections.

PRVs – mapping of high-pressure zones was done and procurement of PRVs was in progress.

4 Illegal connections were identified by meter readers during their normal routine work (meter reading)

Other activities

- Permanent solutions to areas affected by frequent leaks and bursts. A distance of 5600m using HDPE pipe was replaced and consumer meters relocated as per the company policy
- Large consumer meters monitoring of C1 and C2 category were carried out. A total of 200 were either resized, replaced, serviced and/or relocated
- A total of 644 leaks and bursts were repaired with permanent solution being priority.
- New connections done up to consumer point using HDPE pipe.
- Created sub-DMAs in Action and Chepkanga estates.
- A total of 400 water meters relocated at chepkanga and town Centre.
- Adoption of auto bill and instant billing. This has reduced the estimated accounts.
- Introduction of toll-free line of which all issues related to our services can be reported by customers.

Meter replacement impact report

A total of 198 water meters were replaced and relocated with impact as shown below

BEFORE			AFTER		
Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
6,493m ³	5,519m ³	5,579m ³	6,298m ³	7,448m ³	7,263m ³
Average	5,864 m ³		7,003 m ³		

Challenges

- ❖ Intermittent water supply (water rationing)
- ❖ Aged pipeline.
- ❖ Human activities (Pipeline damage during upgrading of roads and laying of fibre optic)
- ❖ Pressure management.
- ❖ Illegal water consumption (lack of proper procedure to deal with illegal connections)

- ❖ Lack of water meters for replacement category C3, C4 and C5 (still at procurement stage).

MAVOKO

NRW ratio as at January 2020 was 39%, production at 69,093m³.

NRW Activities

- Meter servicing- a total of 73 meters have been serviced in the past one month.
- Meter testing and Replacement- 15 meters tested 4 replaced (have inadequate meters for replacement)
- Bulk and large consumer meter testing done -1 4'' meter tested
- NRW monthly review joint participatory meeting between Commercial and technical departments-held on 23rd January.
- Disconnection from mains for dormant accounts ongoing-70 accounts disconnected and some are paying (A total of Ksh. 2million collected)
- QMNF was done with technical assistance from the JICA team-for Kinanie line and already we are working on the area for better results (The flow rate during the day was almost the same as night flow which is abnormal at (37m³/h)

Challenges

- Low volumes of water supply-there is no supply in Mlolongo and Syokimau.
- Financial constraints hence making it difficult for procurement of some NRW materials

e) Current status of bulk meter procured for Embu WSP by JICA Kenya office

Mr. Gitau reported that he was still in contact with the manufacturer and hope something will be done as soon as possible.

g) Discussion among the participants

Mr. Taguchi informed members that the experts will be training the WSPs more on the billing analysis.

Ms. Patricia Wanjeri encouraged Kilifi-Mariakani to own up their data and work towards reducing the NRW

Eng. Alima suggested that the lessons learnt from Nakuru WSP be shared with the NRW Unit so that they can be incorporated in the annual report.

ii) Feedback from 7th JCC meeting: JICA Experts team

Mr. Taguchi reported that the JCC was successful in terms of the discussions and the attendance by the members. Amongst the items that were discussed in the JCC were the formation of the working group which the members agreed should involve the MWS&I,

KEWI, WASREB and WASPA. Members in the JCC had agreed to hold the first meeting in February 2020 but up to the day of the PIC meeting this had not been done. Mr. Chemeril responded by informing the members that the meeting would be held in the coming week.

- Summary of issues discussed in the meeting
- Feedback about the half year review on the NRW Annual plan reported by each Pilot WSPs for better use of the template
- Discussion by the participants

Ms. Sugimoto enquired to know how much the NRW Unit were committed in helping the WSPs. She further emphasized on them understanding what the experts were doing and owning it up so that they can help the WSPs. She challenged them to move out and learn what the experts were doing so that they will be able to pass over the information to the WSPs.

Mr. Chemeril responded by informing members that the members of the unit were committed in helping the WSPs e.g. they were currently working to come up with a structure for the county on the roadworks. This would prevent the many damages that were being experienced through the roadworks

Eng. Alima also advised the NRW Unit to bring the structure up for further discussions at the PS meeting.

Mr. Pascal, KIMAWASCO, enquired if the MWS&I was in a position to procure customer meters for the WSPs.

Mr. Gitau suggested that the WSPs should come up with articles that they will share via the social media on how to reduce NRW in preparation for the World water day.

Eng. Alima further emphasized on the NRW Unit to take the challenge and do something that will be of impact in the project.

5. Schedule of the next PIC meeting

It was agreed that the next PIC meeting will be held on **25th March 2020**.

A.O.B.

There being no other business to be discussed, the meeting ended at 11:30am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. SAO ALIMA	WATER SECRETARY
2.	MR. CHEMERIL CHEPYEGON	MWS&I NRW OFFICER
3.	MR. ANDERSON KIOI	MWS&I NRW OFFICER
4.	MS. PATRICIA MUTUA	MWS&I NRW OFFICER
5.	GODFREY KIGWEI	NRW -INTERN
6.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
7.	MR. WALTER M. MOSETI	KEWI
8.	MS. PATRICIA WANJERI	WASPA
9.	MR. JAMES NYAUMA	MAVOKO
10.	MR. LEONARD MUTAI	NAWASCO
11.	MR. PAUL MUTHAMI	NYAHUWASCO
12.	MR. FELIX G. MUTURA	EWASCO
13.	MR. JOSEPH I. MAINA	EWASCO
14.	MR. JOSEPH MAIYO	ELDOWAS
15.	MR. PASCAL JIRA	KIMAWASCO
16.	MR. ROBERT NGATATA	KIMAWASCO
17.	MR. ZADRIAN ANGWENYI	RUJWASCO
18.	MR. MICHAEL GITAU	RUJWASCO
19.	MR. JOB LIECH	KIWASCO
20.	MR. FRANKLINE THURANIRA	MEWASS
21.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR (JICA EXPERTS)
22.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
23.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
24.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
25.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 24TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2020/10/09 (Friday)
Time:	8:30am – 11:00am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - MWS&I 3. Confirmation of MM of 23rd PIC and monitoring activities after the Covid-19 from April to September JICA team, 4. Matters to be discussed; <ul style="list-style-type: none"> ✓ Information and notices to be shared <ol style="list-style-type: none"> a) Project implementation policy JICA representative b) Rescheduling of the Project implementation Expert team c) Progress of editing NRW Management Standards, Guidelines and Hand-book Mr. Karanja d) Activities of Output 4 in Pilot WSPs to be summarized by Project team. Mr. Charles, e) Notices or remarks from WASREB, KEWI, WASPA <p>Questions and Answers</p> <ol style="list-style-type: none"> ii) Discussions on how to strike the Covid-19 <ol style="list-style-type: none"> a) Presentation of good examples from Pilot WSPs <ul style="list-style-type: none"> • How to recover the revenue collection KIMAWASCO • Importance of collaboration with stakeholders ELDOWAS b) Discussion by the participants c) Requests or opinion to the project activities 5. Schedule of next JCC meeting 6. A.O.B

Content	<ul style="list-style-type: none"> • <u>Self-introductions</u> <p>All the members introduced themselves and their respective organizations.</p> <ul style="list-style-type: none"> • <u>Communication from the Chairperson</u> <p>The meeting was called to order by Mr. Taguchi who confirmed if the members had all the annexes for the meeting. He then invited Eng. Njeru to make his remarks on behalf of Eng. Alima.</p> <p>Eng. Njeru welcomed members to the 24th PIC meeting. He said that the meeting was very important for both the pilot WSPs and the ministry and that he hoped that they were using the knowledge acquired in their various areas of work. He also informed the members that the ministry expects that the pilot WSPs will be great partners in the spreading of the knowledge to the rest of the country. He also reported that he was aware that the WSPs had been struggling during the current pandemic period in providing the essential commodity to the public. He was very grateful to JICA for not only offering knowledge but also donating chemicals for the pilot WSPs. He informed the members that the WSPs were expected to embrace the technology they acquired from the experts so that they will spread the knowledge to the rest of the WSPs in the country. He also acknowledged the efforts made by all the counterparts in ensuring that the project was running smoothly and also appreciated JICA Experts for creating a communication platform despite the pandemic.</p> <p>Mr. Taguchi further proposed to the members to endorse Mr. Karanja as the chairperson of the meeting on behalf of the ministry. Eng. Njeru concurred with the proposal.</p> <p><u>Confirmation of previous minutes (Annex 1)</u></p> <p>Mr. Karanja (JICA Experts team) informed members that the minutes were sent to members a week earlier as agreed in the previous meetings, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseki (KEWI) and seconded by Mr. Joseph Maina (EWASCO) and therefore confirmed as the true record of the meeting.</p> <p><i>Matters Arising from the Previous Minutes</i></p> <ul style="list-style-type: none"> ➤ Mr. Taguchi, informed members that since the previous PIC meeting was held in February it was hard to confirm each item in the minutes of previous meeting. However, there were pending matters agreed in the JCC meeting that were very crucial to the project like the formulation of a Working Group. He also informed that the Working Group was formulated and had their first sitting whereby they agreed to formulate the action plan and other activities.
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- Mr. Taguchi also highlighted on some matters that were discussed by the participants in the previous meeting that members did not have a chance to implement/ work on them due to the pandemic but he considered them important for members to be reminded about them.

4. Matters to be discussed

Mr. Taguchi briefly took members through the various activities achieved by each counterpart as per the days' monitoring sheet. He then requested counterparts in charge of each output to give further explanations.

i) Progress of the project as per the reports from representatives of each CPs

a) Activities of MWS&I NRW Unit

Ms. Patricia (NRW Unit) reported that the NRW Unit was planning the thematic workshop which will be held by January 2021. She also reported that they were planning to have it virtually for 2 days, each day a 3 hours session. The topic will be on metering like was proposed in the last JCC meeting. She also encouraged the members to give areas on metering that they wanted to cover during the workshop. She said the focus of discussion will be meter classifications, installations, accuracies, pros and cons of smart meters, meter reading, billing analysis, meter theft and how to prevent errors during meter reading, . She also stated that they will welcome more proposals from the members.

She also reported that they were working on how to approach the county sensitization but welcomed the members to make comments regarding the same.

b) Activities of WASREB (NRW Management Guidelines and Handbook)

Eng. Ngugi reported that the next editorial committee meeting was slated for 22nd October 2020. He said that the committee was targeting to come into a consensus before subjecting the books to the stakeholders. After the meeting on 22nd the committee will be able to come up with a better plan for public consultation so that everybody will feel being part of the process. Eng. Ngugi reported that the first group of the stakeholders was expected to be consisting of the pilot WSPs since they are in the project then this can be disseminated to the rest of WSPs in the country. Mr. Karanja also reported that the committee had a successful meeting on 3rd September 2020 and he had incorporated the comments in the handbook and will be sharing it in due course but this would be after the meeting on 22nd October 2020. He also urged the editorial committee to continue going through the guideline so that they can give their comments on the forthcoming meeting.

c) Project implementation policy (JICA representative)

Mr. Gitau (JICA) reported that JICA had reached an agreement and signed the minutes of meeting and amended the Project Design Matrix (PDM) to increase the number of activities in Output 5, whereby they had agreed to support the WSPs with donation of

chemicals. This was done by dividing the WSPs into 3 groups and subsequently 3 phases of chemical supply. Phase 1 was for the WSPs which had completely depleted their chemicals and phase 2 was for the WSPs which were almost exhausting their chemicals and phase 3 the remaining WSPs so as to reach all the 9 WSPs. So far 7 WSPs had received their chemicals except Kisumu and Eldoret which will be receiving the chemicals by the coming week. He thanked the Ministry, the Experts and the WSPs for their cooperation.

d) Rescheduling of the Project implementation

Mr. Taguchi took the members through the rescheduling of the tentative plan of project activities considering the impact of the pandemic. He explained that the experts will assist the WSPs remotely for the coming 6 months until next year April when they expect to come back in the country and resume the normal activities. However, the period that the project will run after they resume the normal activities will be determined by JICA after their negotiations.

e) Activities of output 4 in pilot WSPs to be summarized by project team

Mr. Charles (JICA Experts team) reported that despite the pandemic the experts had been working with and supporting the WSPs virtually. He reported that they had been circulating the questionnaires and the purpose was to understand what was happening in the WSPs since it was not possible to travel to the WSPs because of the restrictions to curb the virus. He also reported that they were currently on questionnaire no. 6. Through the questionnaires, they were able to realize the financial challenges, that the WSPs were facing, in that they were unable to meet some of their needs like purchasing of chemicals, stopping their revenue decrease, etc. Through this, JICA came in to assist the WSPs in procurement of some of the chemicals being used in water treatment process. However, the circulation of the questionnaires was expected to continue until the experts resume in the country in the coming year. He also urged the WSPs to continue to cooperate in this so that the experts can understand their needs on Output 4 activities.

He also reported that they had assisted the WSPs in reviewing their NRW reduction annual plans for the financial year that ended in June 2020. He encouraged the WSPs to plan their new year's activities. After the planning they are expected to evaluate them quarterly. He also shared with the members a sample from one of the WSPs plan for them to better understand the use of the PDCA cycle which the experts had introduced to the WSPs. He further urged the WSPs to evaluate their plans quarterly and report the results to the JICA Experts. He also reported that the activities of Output 4 shared with the WSPs were transferred as good practices to the editorial committee of NRW Management Standards in order to enrich the guideline and the handbook. Mr. Mori requested to have a short meeting with the WSPs who had not completed their annual plans and any other WSP which needed the support of the experts after the meeting.

f) Activities of KEWI (Implementation of NRW short course, etc)

Mr. Moseti reported that they did a regular NRW short course training in March 2020 but after the classroom session was completed in the KEWI campus the pandemic broke out and the OJT session was suspended.

He also reported that KEWI received a new CEO, Prof. Hayombe, to whom he made a briefing on the project. He reported that the CEO appeared very interested in the project. Mr. Moseti also reported that the MWS&I had given KEWI Ksh. 3million for reconstructing the training platform and they had bought all the materials and were planning to start excavation work in the coming week in readiness to start the modification process. KEWI was also being involved in activities of the editorial committee of NRW management Standards.

g) Activities of WASPA's program (Bi-monthly meeting, Seminar or forums, etc)

Ms. Patricia Wanjeri reported that WASPA held their Benchmarking meeting on 15th April (?) 2020 virtually and JICA team participated. Next benchmark was planned for 15th-16th October 2020 at Nakuru and Mr. Charles will be taking the participants through the billing analysis. The bimonthly meeting was postponed from March to 24th – 25th September 2020. One of the best practices learnt from Japan was tree planting which they did at Arboretum in Eldoret. Annual general meeting will be held on 27th November 2020 in Mombasa. She further thanked JICA for the chemical donation and also the national government who did a funding and procurement process was done through the Water Sector Trust Fund (WSTF) and most of the WSPs got the chemicals by (whom?). She encouraged the pilot WSPs that were not participating in the upcoming benchmark.

ii) Discussions on how to strike the Covid-19

a) Presentation of good examples from Pilot WSPs

➤ How to recover in revenue collection (KIMAWASCO)

Mr. Mutai requested Mr. Charles to share a presentation with the members on the activities that KIMAWASCO has been undertaking in their WSPs since Covid-19 begun as below:

- Joint bulk meter reading with Coast Water Works Development Authority (CWWDA) this has helped them to ascertain accuracy in their billing.
- Meter replacement / servicing and testing
- Formed the unit with 11 members of staff
- 3 days sensitization to the community by public address
- Staff sensitization

This has led to increment in revenue.

Challenges

- Lack of enough fittings for meter replacement

- Inadequate repair kits
- Vandalism of pipes
- Lack of adequate transport
- Damage of service lines due to road works
- Lack of adequate members of staff

Mr. Mori enquired to know how they were dealing with replacement and servicing of customer meter; and balancing between the large and small consumer meters

Mr. Mutai responded that they prioritised the large meters and even if they replaced the small consumers, they were prioritizing them based on their consumption trends. Even when replacing or servicing, keenness was exercised especially on consumers whose consumption was high and undertook weekly monitoring and in case of anything happening the staff were always ready to attend to them very quickly. They had a team working on the NRW and monitoring with the assistance of area manager so that the team can make prompt and appropriate decisions and action.

➤ **Importance of collaboration with stakeholders (ELDOWAS)**

Mr. Alex gave the following report as the activities they have been undertaking;

No	Strategy	Activities	Impact	Remarks
1.	Consumer meter monitoring (a) Large consumer meter monitoring.	<ul style="list-style-type: none"> ✓ Weekly meter reading ✓ Meter resizing ✓ Meter servicing ✓ Meter relocation ✓ Meter replacement ✓ Provision of 10D,5D rule 	<ul style="list-style-type: none"> ✓ Increase in billing. ✓ Reduction of customer complaints. ✓ Reduction of illegal connections 	<ul style="list-style-type: none"> ✓ Annex 1 ✓ Replaced 20 in number large consumer meters with ultrasonic meters. ✓ Awaiting supply of the 30 in number inline electromagnetic meters
	(b) Domestic water meters	<ul style="list-style-type: none"> ✓ Replacement and servicing of stopped meters in anomaly sheet generated by the billing system ✓ Analysis of category C3,C4 & C5 resulted to discovery of zero billing almost 8000 accounts of which replacement and servicing ongoing 	<ul style="list-style-type: none"> ✓ Replaced all the meters in 8/1, 8/2 and 8/3. 	<ul style="list-style-type: none"> ✓ Average NRW 3.82% ✓ Replaced a total of 300 water meters category C3,C4 & C5.
2.	Permanent solutions to areas prone	<ul style="list-style-type: none"> ✓ Replacement of problematic 	<ul style="list-style-type: none"> ✓ Reduction of physical losses-No 	<ul style="list-style-type: none"> ✓ 980M done.

		to frequent leaks and bursts	<p>pipelines with HDPE pipes</p> <ul style="list-style-type: none"> ✓ Lowering of exposed sections. ✓ Installation of isolation valves. 	<p>reported leakages on replaced sections.</p> <ul style="list-style-type: none"> ✓ Reduction of operational expenditure 	
3.	Dilapidated and aged pipeline replacement. (Projects)	<ul style="list-style-type: none"> ✓ Replacement of pipeline using HDPE pipes. 	<ul style="list-style-type: none"> ✓ No report on physical losses. 	<ul style="list-style-type: none"> ✓ 21km HDPE done. 	
4.	Replacement of deteriorated service connections.	<ul style="list-style-type: none"> ✓ Relocation and replacement of service connection using HDPE pipes. 	<ul style="list-style-type: none"> ✓ Reduction of physical losses-No reported leakages. ✓ Elimination of illegal connections. 	<ul style="list-style-type: none"> ✓ Relocated a total of 659 water meters with new service lines HDPE. ✓ Work in progress for meter relocation at langas, CBD (West indies), chepkanga 	
5.	Leak detection	<ul style="list-style-type: none"> ✓ Line patrols ✓ Underground leak detection using NRW equipment. ✓ Leak detection at meter points using acoustic bars. 	<ul style="list-style-type: none"> ✓ Leak detection at pioneer, asis and Elgon view. ✓ It enabled the identification of pipeline for replacement. ✓ Identification of leaking consumer 	<ul style="list-style-type: none"> ✓ Engaged 5 in number line patrollers ✓ Leaking meters and gate valves -38 in number ✓ 19 -surface leaks. ✓ 6- underground leaks ✓ Leakage after the meter 7 in number were discovered. 	

					connections.	
6.	Establishment of Sub-DMAS within the service areas	Kipkorgot Sub-DMA S.	<ul style="list-style-type: none"> ✓ Established 9 zones and routes with sub-Dmas to monitor inflows. NRW percentage calculated monthly ✓ Installed 592 smart meters which are read remotely and cloud based. 	<ul style="list-style-type: none"> ✓ NRW below 5 percent ✓ No leak repaired up to date. ✓ Minimal customer complaints. 		
		Chepkanga Sub-DMA S	<ul style="list-style-type: none"> • Minimum night flow measurement done using clamp on ultrasonic flow meter • Step test carried out and problematic lines established for replacement 	<ul style="list-style-type: none"> • Problematic pipelines replaced using HDPE pipes • Elimination of illegal connection after relocation of customer meters. 		

			CBD Sub-DMA S <ul style="list-style-type: none"> • Replacement of aged pipeline • Monitoring of daily inflows in comparison to meter readings • Relocation of customer meters as per the company policy 	<ul style="list-style-type: none"> • Elimination of more than 100 illegal connections • No reported leaks and bursts • Daily monitoring of consumer meters. 	
		West Indies (Kok was)			Elimination of illegal connections and removal of spaghetti connections.
		Pioneer Sub DMA s			Replacement of aged pipeline and 100% replacement of customer meters a total of 150 water meters.
7.	Zoning of distribution system	Hydraulically zoning of service areas		Creation of hydraulically separated DMAS for each service area	Southern service area complete, created 7 in number DMAs
8.	Mapping of customer meters, problematic lines and leaks and bursts.	Establishment of geographical location of water meters and pipelines		Easy tracing and accessibility of consumer meters	Captured a total of pipeline. A total of consumer meters captured.
9.	Internal standardization of pipes, fittings, customer meters ,	Checking the quality of pipes and water meters supplied as per the specification		Quality control	

	production meters and quality control	Standardization of service connection. Develop specification of water meters as per our water quality and pressure	Improved workmanship Reduce leakages	
10.	Pressure management	Mapping of high pressure zones/areas Installation of PRVS.	Reduction of pressures to manageable levels.	Identified areas for PRVS installation. Procured PRVS and awaiting delivery from supplier
11.	Illegal water use	Surveillance Arrest, prosecution and fine of illegal water users. Develop procedure to curb illegal water use in progress.	Deterrence to illegal water use Hefty fines to illegal water users	Few cases of illegal water use reported. Company to pay whistle blowers to motivate them Need to amend the existing by-law 4 in number cases arrested in western service area and southern.
12.	Production meters	Replacement of production meters with EMM Insertion and inline meters for all the treatment works.	Accuracy of production volume	Replaced Chebara and kapsoya T works Awaiting deliver of the remaining Sosiani, Naiberi and kesses.
<p>• Good Practices Implemented by ELDOWAS</p> <ol style="list-style-type: none"> 1. Standardisation of service connections (all connections done by the company using HDPE pipes) 2. Smart metering of production, large consumers and domestic water meters 3. Use of sub- DMAs approach in Non-revenue water monitoring i.e. town centre, pioneer municipal houses, Action estate. 4. Work plans with targets for individual players in NRW reduction activities 				

5. Training of artisans on Pipe laying, good workmanship, Standard meter connection, metering policy, pipe repairs, integrity issues, Provision of 10d 5d rule, meter resizing, butt fusion and electro fusion.

• **Effects of Covid 19**

1. Increase in leaks and bursts
2. Reduction in billing mostly large consumers
3. Increase in illegal water consumption
4. Reduction of revenue collection
5. Reduction of company work force to 25%

Mr. Karanja requested the WSPs to share their best practices especially now in the pandemic so that they can be used in the enrichment of the Standards.

b) Discussion by the participants

Mr. Muthami enquired to know when the WSPs should expect to receive the equipment from the ministry. Ms. Patricia responded that this will be done in due course and plans were under way to ensure that the same was done.

Mr. Joseph, Nyahururu WSP, enquired to know if the MWS&I would help the WSPs to renew their networks since some were old and dilapidated.

Eng. Njeru responded that the responsibility on water services was devolved to the counties government and the improvement of the systems was also left to be done by the county. Though there were some activities being undertaken by Water Works Development Agencies (WWDA) which were not many. Therefore, the ministry had no budget for those activities.

Mr. Gitau enquired if all the equipment were bought. Ms. Patricia responded that the equipment that were not bought were carried forward to the 3rd phase and their procurement was expected to be complete by end of March 2021. The Unit was working on the specs currently.

5. Schedule of the next JCC meeting

Mr. Taguchi informed the members that the project was expected to hold the JCC meeting every 6 months which was subject to discussions and agreement between JICA and the Ministry. In the last JCC meeting it was proposed that the next (8th) meeting be held in August 2020 but this was not possible due to the pandemic. He therefore proposed to have the JCC meeting on 4th November 2020.

It was agreed that the next meeting will be a JCC instead of PIC.

A.O.B.

	<p>Ms. Sugimoto informed the members that 15th October 2020 was world hand washing day, she further shared 2 posters advocating for the day. She also informed the members that she will be sharing the posters with the WSPs so that they can customize them to fit their specific WSPs. She further requested the WSPs to share the posters on their face book pages.</p> <p>Ms. Patricia requested the members to share ideas on how to undertake the county sensitization and also input on the WSPs areas of concern on metering. Members agreed that Ms. Patricia send her request to the members via email for them to respond directly to her.</p> <p>Mr. Moseti suggested to members the OJT be held on 9th of November 2020</p> <p>Mr. Gitau (JICA) informed the members that Ms. Yoshii san was in the country but she was not able to attend the meeting since there was another meeting that she was attending. He also informed the members that JICA was committed to the project and wanted to recover the lost time during the pandemic by extending the project and the discussions were almost complete.</p> <p>There being no other business to be discussed, the meeting ended at 11:30am.</p>
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ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT
2.	MS. PATRICIA MUTUA	NRW OFFICER, MWS&I
3.	MR. ANDERSON KIOI	NRW OFFICER, MWS&I
4.	MR. BONIFACE	NRW OFFICER, MWS&I
5.	MR. GEORGE	NRW OFFICER, MWS&I
6.	MR. GODFREY KIGWEI	NRW INTERN, MWS&I
7.	MR. JOHN GITAU	PROGRAM OFFICER, JICA KENYA
8.	MR. WALTER M. MOSETI	KEWI
9.	MS. PATRICIA WANJERI	WASPA
10.	MR. JESSE AMBUNDO	MAVOKO
11.	MR. LEONARD MUTAI	NAWASCO
12.	MR. PAUL MUTHAMI	NYAHUWASCO
13.	MR. JOSEPH I. MAINA	EWASCO
14.	MR. ALEX KEMBOI	ELDOWAS

15.	MR. C.K. MUTAI	KIMAWASCO
16.	MR. PASCAL NJIRA	KIMAWASCO
17.	MR. MARY MWANGI	RUJWASCO
18.	MR. JOB LIECH	KIWASCO
19.	MR. FRANKLINE THURANIRA	MEWASS
20.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
21.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
22.	MR. NAOKI HARADA	JICA EXPERTS TEAM
23.	MR. SOZO MORI	JICA EXPERTS TEAM
24.	MR. NABORU SAITO	JICA EXPERTS TEAM
25.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
26.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
27.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 24TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2020/12/10 (Thursday)
Time:	9:30am – 12:00am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - Eng.Alima, MWS&I (5 min.) 3. Confirmation of MM of 24th PIC by JICA team (5 min.) 4. Report about the activities and Notices to share (60 min.) <ol style="list-style-type: none"> a) Project implementation Schedule by JICA team (10 min.) b) On Output 1 / Working Group by NRW Unit (15 min.) c) On Output 2 by WASREB (or Mr. Karanja, 10 min.) d) On Output 4 by JICA team (Mr. Charles, 10 min.) e) Other issues from KEWI, WASPA, others (5min. each) 5. Presentation of good examples from Pilot WSPs (60 min.) <ol style="list-style-type: none"> a) Activities implemented in the 1st Quarter <ul style="list-style-type: none"> • Best Practices to improve on revenue collection during Covid19 by Meru WSP (15 min.) • *)WURP MEETING by Embu WSP (15 min.) b) Discussion or Requests, etc. by the participants (30 min.) 6. General comment by JICA Kenya office (5 min) 7. A.O.B. <ul style="list-style-type: none"> • Date of the Next PIC meeting in February 2021 • Others

*) WURP ; Water Utility Regional Partnership: Workshop on peer to peer learning among three water companies in Kenya, Rwanda, and Malawi.

Content	<ul style="list-style-type: none"> • <u>Self-introductions</u> <p>All the members introduced themselves and their respective organizations.</p> <ul style="list-style-type: none"> • <u>Communication from the Chairperson</u> <p>The meeting was called to order by Eng. Njeru who informed the members that he was standing in for Eng. Alima who he expected would join the meeting later and hence make his remarks.</p> <p><u>Confirmation of previous minutes (Annex 1)</u></p> <p>Mr. Charles (JICA Experts team) informed members that the minutes were sent to members a week earlier as agreed in the previous meetings, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseki (KEWI) and seconded by Mr. Paul Muthami (NYAHUWASCO) and therefore confirmed as the true record of the meeting.</p> <p><i>Matters Arising from the Previous Minutes</i></p> <p>There were no matters arising from the minutes of the previous meeting.</p> <p><u>4. Matters to be discussed</u></p> <p>Mr. Taguchi briefly took members through the various activities achieved by each counterpart as per the days' monitoring sheet. He further explained that PIC meeting was not held in November because the JCC meeting was held in the same month. He also echoed the proceedings of the JCC meeting and informed the members that both the experts and JICA were satisfied by the meeting. He enumerated the countermeasures that the experts had been employing during the half-year from March to August 2020 for the project not to stall due to the pandemic . These were the distribution of questionnaires, distribution of chemicals, sensitization tools for water use, procurement of equipment in Japan which are expected to be delivered by March 2021 and, finally, physical loss reduction exercise under Mr. Takahashi (the expert in charge, who was in the process of preparing a special program comprising of 20 questions on physical loss reduction technology). The program will soon commence, probably late this month or the following month. He then requested the counterparts in charge of each output to give further explanations.</p> <p>i) Progress of the project as per the reports from representatives of each CPs</p> <p>a) On Output 1 / Working Group by NRW Unit</p> <p>Ms. Patricia (NRW Unit) reported that the NRW Unit was still working on the publishing of the Annual NRW Report version 2. She also reported that the drafted table of content for version 3 was ready and were in the process of requesting for contents from the WSPs. She also reported that the unit had conducted inspection of</p>
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the procured NRW equipment ready for distribution to the WSPs in due course. Planning for the scheduled thematic workshop with the theme “customer meters” focusing on meter accuracies and smart meters was ongoing and they were currently soliciting for potential presenters for the same. She also reported that they were working on upscaling the project activities including dissemination of the NRW standards through the Working Group. She welcomed suggestions from members on how to approach county sensitization.

b) Output 2 by WASREB

Mr. Karanja represented Eng. Ngugi, (WASREB) and reported that the activity of editing the NRW Management standards (which consists of the NRW Guideline and the NRW Handbook) had been completed and shared with the editorial committee members despite the pandemic. The committee was now waiting for guidance on printing, stakeholder consultations and dissemination from the Working Group.

c) Output 4 by JICA team

Mr. Charles reported that output 4 activities were greatly affected by the Covid-19 situation. However, the expert team had been assisting the pilot WSPs virtually. He reported that they had assisted Ruiru-Juja and Kilifi-Mariakani so far; and were currently preparing to assist Eldoret after confirming the dates with them. He also reported that they had been supporting the WSPs to review the previous year’s annual plans.

The experts had realized that the WSPs had problems with the annual review table from their reports and after consulting with WASREB, they agreed to simplify it. They are currently training the WSPs on how to use the more simplified table. He reported that after the end of the previous financial year, all the WSPs were expected to formulate new annual and medium term plans for the current financial year. The experts realized that the WSPs had prepared the annual plans but left out the medium term plans. The experts had therefore been assisting the WSPs and had so far received feedback from 7 WSPs and were waiting the same from the other 2. Mr. Charles also reported that since the first quarter of this financial year was over, the experts were working with WSPs on reviewing it and hope to have reviewed the 2nd quarter by January 2021. They had received reviews from 5 WSPs so far and were following up on the remaining 4 WSPs.rest. He also thanked the WSPs for their cooperation in sending their feedbacks on the questionnaires that the experts had been distributing.

He further reported that the experts were also involved in the preparation of the 3 countries’ (Malawi, Rwanda and Kenya) regional workshop with Kenya being represented by EWASCO. The experts were also involved in the editing of the NRW Management Standards reported earlier by Mr. Karanja.

d) Other issues from KEWI, WASPA and others

Mr. Moseti reported that KEWI had conducted a classroom training in March 2020 but did not proceed with OJT due to the pandemic. They conducted another classroom

training in November 2020 during which the two classroom batches were combined for OJT training on 23rd -28th November 2020. KEWI has also been participating in the review of the NRW Standards and the in the Working Group meetings.

5. Presentation of good examples from Pilot WSPs

a) Improvement on revenue collection during Covid-19 by Meru WSP

Mr. Charles invited Mr. Frankline Thurania, Meru WSP, to make their presentation as attached.

b) Introduction on WURP Meeting by Embu WSP

Mr. Charles also invited Mr. Cyrus Mugendi to make their presentation as attached.

c) Discussions or Requests, etc. by the participants

Ms. Sugimoto enquired to know how many customers Meru WSP was able to approach via phone as reported in their presentation. Mr. Frankline responded that he did not have the actual numbers but he would be sending the data once he receives it from the customer care desk.

She also wanted to know from Embu WSP whether they had categorised the types of illegal connections reported on. Mr. Mugendi responded that the categories of illegal connections found were bypasses, meter tampering and a minimal number commercial use theft. He also clarified that the most popular illegal connections were bypasses especially in the rural areas due to khat (Miraa) farming

Another member enquired how both Embu and Meru dealt with the road contractors and the “Kazi kwa Vijana” (Employment for the Youth Programme) guys. Mr. Mugendi responded that this was a big challenge for EWASCO but they were able to follow up with the road contractors who offered compensation in monetary value or re-did the trenches and replaced the damaged pipelines. He gave an example of a road constructed by KENHA (Kenya National Highways Authority) in Gachoka that destroyed the pipes and disconnected around 800 customers. This was a big problem between them but with the help of the county commissioner, the contractor paid the damages and they were able to reconnect the customers. For the “Kazi kwa Vijana” he said it was difficult to follow up since it is a programme under the National Government and for this reason, the WSP just repairs the pipes whenever they are punched.

Mr. Frankline responded that they were experiencing the same challenges and he had seen some documents whereby MEWASS had been compensated for the damages caused by contractors and also an agreement whereby a contractor would relay the pipes under MEWASS’ supervision. For roads under Kenya Urban Roads Authority, they had always stated that they had Ksh. 200,000 budget for relaying damaged pipeline which is quite minimal even for the labour alone. For roads under the county government, he reported that contractors never pre-inform the WSP of their activities that could probably affect the water supply and it is up to the NRW section to notice a rise in water consumption in some areas and find the cause the following day. He requested the MWS&I to assist in this issue.

Mr. Taguchi also added on the background of the WURP workshop. He stated that his idea is to invite the pilot WSPs to participate in the WURP workshop to be held in Kenya next year.

Mr. Karanja also reminded members that the project will soon be ending and it is therefore important that the pilot WSPs start utilizing the new NRW reduction strategies this early so that they can be assisted by the experts in case of difficulties. This is very important since it is expected that the pilot WSPs are the ones to disseminate the ideas to the rest of the WSPs in the country after the project. A good example is to start utilizing the introduced universal NRW monitoring graph and segregating the effects of seasonal NRW fluctuations from those of the NRW reduction activities on the NRW Ratio. This will be more effective in NRW management unlike the current trend where WSPs just draw the simple NRW graph which does not really help to reduce NRW.

6) General comment by JICA Kenya office

JICA Kenya office was not present for the meeting.

7). A.O.B.

• Date of the Next PIC meeting in February 2021

Mr. Taguchi proposed that the PIC be held in February 2021 since Christmas is approaching and not much progress is expected over Christmas and early January 2021. The date will be communicated later after consultations with the experts and the MWS&I in January next year.

• Others

Mr. Mori informed that since he had some free time before Christmas, he will have an online meeting with the MWS&I NRW Unit so that he can understand what they want to learn from the WSPs and hoped that Mr. Charles or Mr. Karanja will be able to help the unit more effectively.

He also pointed out that regarding the help that the WSPs wanted from the experts on meter reading and billing data analysis, the experts can only help in analysing one or two months data instead of the whole year or larger data. Nevertheless, they will discuss with WSPs and give priority on need basis. He also encouraged the WSPs to send their requests to Mr. Charles in case they need a check on their data so that the experts can include them in their schedule.

Members agreed that Mr. Mori and Eng. Chemerir should agree on a date for the online meeting. Mr. Charles also insisted that the WSPs who had not sent their Quarter-1 plan review to do so before Christmas to enable them concentrate on Quarter-2 plan review in January 2021.

Mr. Taguchi also informed that he had already distributed the monthly questionnaire. In the questionnaire he requested the WSPs to respond on the remaining volume of chemicals donated by JICA. He reported that there is a possibility for JICA to provide another chemical donation hence he will send another questionnaire to obtain clear information in this regard.

Eng. Njeru thanked members for attending the meeting and their collaboration with the project. He said that he hoped for more cooperation so that the project can have more impact on the WSPs in the country. He also stated that the MWS&I was very committed to spread the knowledge gained from the project and keen to acquire more knowledge from the experts, and see the NRW ratio in the country go down.

There being no other business to be discussed, the meeting ended at 11:30am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT
2.	MS. PATRICIA MUTUA	NRW OFFICER, MWS&I
3.	MR. BONIFACE	NRW OFFICER, MWS&I
4.	MR. GEORGE	NRW OFFICER, MWS&I
5.	MR. GODFREY KIGWEI	NRW INTERN, MWS&I
6.	MR. WALTER M. MOSETI	KEWI
7.	MR. JESSE AMBUNDO	MAVOKO
8.	MR. JOHN WACHIRA	NAWASCO
9.	MR. JOSEPH GITAU	NYAHUWASCO
10.	MR. PAUL MUTHAMI	NYAHUWASCO
11.	MR. CYRUS MUGENDI	EWASCO
12.	MR. C. K. MUTAI	KIMAWASCO
13.	MR. FRANKLINE THURANIRA	MEWASS
14.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
15.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
16.	MR. SHOZO MORI	JICA EXPERTS TEAM
17.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
18.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
19.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

WASREB

ELDOWAS

Absent without apology

KIWASCO

RUIRU-JUJA

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 26TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2021/02/12 (Friday)
Time:	9:30am – 12:00am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson – Eng. Alima, MWS&I 3. Report about the activities during last 3 months and information to be shared 4. <ol style="list-style-type: none"> a) Project implementation Schedule by JICA team b) On Output 1 / Working Group by NRW Unit c) Other issues from KEWI, WASPA, others 5. Presentation of good examples from Pilot WSPs <ol style="list-style-type: none"> a) Activities implemented in the 1st Quarter <ul style="list-style-type: none"> • Summary and Feedback of activities of WSPs in the 1st Quarter from JICA team – Mr. Charles • Key contents of “NRW Management Guideline” from JICA team – Eng. Karanja b) Discussion or Requests, etc. by the participants 6. General comment by JICA Kenya office 7. A.O.B. <ul style="list-style-type: none"> • Date of the Next PIC meeting in March 2021 • Others

Content	<ul style="list-style-type: none"> • <u>Self-introductions</u> <p>All the members introduced themselves and their respective organizations.</p> <ul style="list-style-type: none"> • <u>Communication from the Chairperson</u> <p>The meeting was called to order by Eng. Njeru who informed the members that he was standing in for Eng. Alima who was unavailable because of other official duties.</p> <p><u>Confirmation of previous minutes (Annex 1)</u></p> <p>Mr. Charles (JICA Experts team) informed members that the minutes were sent to members a week earlier as agreed in the previous meetings, and therefore the chair only needed to guide members in case there were matters arising. The minutes were proposed by Mr. Walter Moseki (KEWI) and seconded by Mr. Paul Muthami (NYAHUWASCO) and therefore confirmed as the true record of the meeting.</p> <p><i>Matters Arising from the Previous Minutes</i></p> <p>There were no matters arising from the minutes of the previous meeting.</p> <p>3. Report about the activities during last 3 months and information to be shared</p> <p>4. a) Project implementation Schedule by JICA team</p> <p>Mr. Taguchi, JICA expert team, reported that he had come to Kenya in order to inspect the current situation of Kenya and the pilot WSPs and to grasp the need for the resumption of the project after the Covid-19 pandemic. He also informed that he will visit all the pilot WSPs to collect information on the real situation because the project period will be reviewed and extension decided based on the information he will have collected during his stay in Kenya.</p> <p>b) On Output 1 / Working Group by NRW Unit</p> <p>Ms. Patricia (NRW Unit) reported that the NRW Unit had received a draft copy of the 2nd version of the annual report from the printer and that they were proof-reading and giving corrections on the same. She also reported that the draft table of content for version 3 was ready and they were in the process of requesting for contents from the WSPs. She also reported that the unit was working on the scheduled stakeholders' meetings to be held in Nakuru and Machakos. The 2 meetings are aimed at obtaining comments from the stakeholders on the developed NRW standards. She also reported that the MWS&I was preparing for the thematic workshop with the theme "Smart metering and Billing analysis". She also reported that the ministry was working on the school campaigns but with the ban of school activities, they were instead working on sensitization videos focusing on areas like water quality and water conservation. She also pointed out that the ministry will be contacting various WSPs for their comments on the same. Ms. Patricia also reported that the ministry was spearheading the working group activities on dissemination of the NRW standards and that they had prepared a budget and forwarded it to the PS for approval. She also reported that the ministry will be calling for a working group meeting in the coming week to prepare the workshop</p>
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program. Ms. Patricia also reported that the ministry was in the process of procuring the leak detection equipment and that she hoped the said equipment will be available in the shortest time possible.

c) Output 4 by JICA team

Mr. Charles reported on the following activities that had been carried out by the output 4 members during the reporting period.

All the pilot WSPs had prepared both their annual and midterm plans. He also reported that the WSPs were currently evaluating their quarter 2 plans and that he had received feedback from 4 WSPs and expecting to receive from the remaining 5 WSPs. Mr. Charles also reported that 7 of the 9 WSPs had sent their mid-term plans except from Eldoret and Kilifi-Mariakani who were still being assisted by the experts. He also reported that the WSPs were trying to undertake the NRW management activities which were manageable following the Covid-19 restrictions imposed by the government.

d) Other issues from KEWI, WASPA and others

KEWI

Mr. Moseti reported that KEWI had released a short course calendar and NRW training for the month of April 2021. He also reported that WASPA had organized a field training in Kakamega in March 2021 and KEWI will be participating. Mr. Moseti also informed the members that KEWI was looking into ways of conducting theory classes online.

WASPA

Ms. Patricia reported the WASPA calendar as follows:

- ✓ Bimonthly meeting on 12th March 2021 - venue to be communicated.
- ✓ Annual NRW field training from 23rd – 26th March 2021 in Kakamega
- ✓ Youth and women conference on 26th – 28th May in Naivasha
- ✓ Benchmarking meeting in April - date and venue to be set and communicated

5. Presentation of good examples from Pilot WSPs

a) Activities implemented in the 1st Quarter

• Summary and feedback of activities of WSPs in the 1st Quarter

Mr. Charles reported on the following activities that had been carried out by the output 4 members during the reporting period.

The experts through Mr. Mori had formulated a new form for bulk meter monitoring of abnormal flows which when inputted with the meter readings automatically computes the consumption and gives a coloured indicator whenever the consumption is above or below the normal daily flow. This will help in quick detection of bursts and leakages whenever they occur. He added that they are currently conducting a pilot on the use of the new form with Nyahururu WSP which if it works well will be spread out later to the other pilot WSPs.

They are also assisting Eldoret WSP virtually to improve on the distribution network zoning.

Regarding the regular NRW reduction meetings he informed the members that due to the current pandemic it was not possible for the WSPs to hold their regular meetings but do so virtually on need basis. Mr. Charles further shared a presentation with the members on the remote support the experts offered to the WSPs and thereafter invited Mr. Mori to make his presentation on the hydraulic zoning.

Mr. Mori also encouraged the WSPs to reach out to him and Mr. Charles in case they need their help.

• Key contents of “NRW Management Guideline” from JICA team

Mr. Karanja, JICA Experts team made a presentation on the need for the WSPs to be innovative. He also demonstrated to the WSPs the locally fabricated meter spanner and how it is used to easily open a meter for servicing without having to hit the meter, a very common trend with WSPs, which damages meters.

Mr. Mori echoed the presentation made by Mr. Karanja and encouraged WSPs to buy the idea of being innovative. He mentioned that the fabricated float valves in both Meru and Embu were working well and were less expensive compared to the ones installed in Meru by JICA. He encouraged them to also consider reusing the repaired water meters as this will reduce the cost of purchase.

Mr. Cyrus Mugendi, Embu WSPs gave a case scenario of what happens in Embu as follows: they take the customer meters to their workshop; repair and test it; and if it passes the accuracy test, return the same meter to the customer; if it fails, replace it with a new meter. Mr. Mori enquired whether Embu WSP repairs some parts of customer meters and interchange the repaired meters from one customer to another. Mr. Mugendi replied that they currently do not have meter spare parts so they take the whole meter from a customer in case a meter is broken.

Mr. Nyauma, Mavoko WSP reported that Mavoko allows the interchange customer meters from one customer to another in case a meter fails to work well due to some reasons for one customer and can work for another.

Mr. Karanja also encouraged the WSPs to be salvaging meter spare parts from the unserviceable meters in case they do not have meter spare parts. He also informed that Nairobi Ironmongers sell spare parts and WSPs can organize and procure where necessary.

Mr. Charles suggested that the likely hindrance to WSPs repairing or reusing repaired meters could be having meter casings with different serial.

Mr. Maina, Embu WSP gave the 3 reasons preventing repairing of meters as follows:

- ✓ Challenge in obtaining meters of the same class i.e., the damaged meter is class A while the supplier provides e.g., class B spare parts.
- ✓ Cost of spare parts is almost the same as cost of a new meter
- ✓ Duplication of serial numbers to more than one customer.

Mr. Maiyo, Eldoret WSP informed that they are replacing the mechanical meters with ultrasonic and electromagnetic meters which are not normally repairable. However, they do reuse meters for accounts that had been closed.

Mr. Muthami, Nyahururu WSP also informed that they do reused meters from the disconnected accounts by taking the last reading of the meter to be reused as the new reading for the new installation.

Mr. Mugendi, Embu WSP enquired the best class of electromagnetic flow meter since they were facing challenges with what they have. Mr. Mori sort for responses from other WSPs that use the same kind of meters on reuse of the same meters.

6) General comment by JICA Kenya office

Mr. Taguchi registered JICA Kenya office's apologies for leaving the meeting before its adjournment.

7) . A.O.B.

- **Date of the Next PIC meeting in March 2021**

Mr. Taguchi proposed that the next PIC be held on 12th March 2021. This was subject to further confirmation.

- **Others**

Mr. Charles requested the WSPs that had not completed the review of the 2nd quarter of their annual NRW reduction plans to do so and share with the experts. Also, the WSPs that had filled-in the questionnaire distributed by Mr. Takahashi to do so and share with the experts too.

Mr. Moseki expressed the need to have Mr. Takahashi's questionnaire and Mr. Karanja's presentation shared with for the purpose of capacity building.

Eng. Karanja appreciated members for their progress despite the pandemic. He gave credit to JICA Expert Team for their remote assistance despite the pandemic and further requested the WSPs to emulate the same from the experts. He also echoed the need to further the discussion on meters through a workshop that will be called by the ministry and requested members to try and participate in the workshop in large numbers.

There being no other business to be discussed, the meeting ended at 11:50am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT
2.	MS. PATRICIA MUTUA	NRW OFFICER, MWS&I
3.	MR. BONIFACE	NRW OFFICER, MWS&I
4.	MR. GEORGE	NRW OFFICER, MWS&I
5.	MR. WALTER M. MOSETI	KEWI
6.	MR. JESSE AMBUNDO	MAVOKO
7.	MR. NYAMAI	MAVOKO
8.	MR. JOHN WACHIRA	NAWASCO
9.	MR. JOSEPH GITAU	NYAHUWASCO
10.	MR. PAUL MUTHAMI	NYAHUWASCO
11.	MR. CYRUS MUGENDI	EWASCO
12.	MR. JOSEPH IRUNGU	EWASCO
13.	MR. C. K. MUTAI	KIMAWASCO
14.	MR. FRANKLINE THURANIRA	MEWASS
15.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
16.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
17.	MR. SHOZO MORI	JICA EXPERTS TEAM
18.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
19.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
20.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION**

**MINUTES OF THE 27TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2021/04/21 (Wednesday)
Time:	9:30am – 12:00pm
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Communication from the Chairperson - Eng. Njeru, MWS&I. 3. Report/Information about the project activities after the last PIC on February 12, 2021 <ol style="list-style-type: none"> a) Report from NRW Unit, MWS&I b) Report from WASREB, KEWI, WASPA 4. Report/Feedback from the Expert team <ol style="list-style-type: none"> a) Report about visits to the Pilot WSPs implemented by JICA expert team - Mr. Taguchi b) Summary and Feedback of activities of WSPs - Mr. Charles c) Progress of editing of the NRW Standards - Eng. Karanja 5. Discussion, opinions or requests – All the participants 6. General comment - JICA Kenya office 7. A.O.B. <ul style="list-style-type: none"> • Date of the Next PIC meeting in May 2021 • Others

Content	<p>1. Self-introductions</p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. Communication from the Chairperson</p> <p>Eng. Njeru thanked the members for joining the meeting. He also pointed out that Kenya as a country had very strict guidelines in regard to meetings and travel due to Covid 19 thus the reason they could not hold a face-to-face meeting. He also assured the members that the day’s agenda will be managed effectively and conclusively. He informed the members that he was standing in for Eng. Alima who was unavailable because of other official duties.</p> <p>3. Report/Information about the project activities after the last PIC on February 12, 2021</p> <p>a) Report from NRW Unit, MWS&I</p> <p>Ms. Patricia (NRW Unit) reported on the following:</p> <ul style="list-style-type: none"> a) Production of the 2nd version of the NRW Annual report: - final proofreading was done and the document was returned to the printing company for the final printing. b) version 3 of the NRW annual report; the unit had sent official letters requesting for submission of the articles by the counterpart institutions. The unit was also working on their articles as they await for submissions from the counterparts. c) Sensitization on NRW: - since the school campaigns were suspended due to covid 19 the NRW unit together with Ms. Sugimoto embarked on an educational video touching on 4 themes namely: water treatment, water quality, water conservation and water use. She also reported that they held a meeting with a video producing company to discuss ways of improving the professional look of the video program before the shooting. Ms. Sugimoto also reported that they will be engaging Kisumu, Eldoret and Nakuru WSPs; and will also visit them when the cessation of movement is lifted. d) Thematic workshop: - it had been agreed on “<u>Sharing the best practices on use of smart metering and Ultrasonic flow meters</u>” as the theme for the next thematic workshop. She also reported that the workshop would be held virtually for at most 3 hours in May 2021 and will target the TMs, CMs and the heads NRW as the participants. She further informed that she will share the day’s draft program in due time. e) MWS&I support to the WSPs; procurement of leak detection equipment by the ministry was underway to support target WSPs in the project. f) NRW Working group: - the working group was steering the upscaling of the project activities i.e. dissemination and promotion of NRW reduction activities among all the WSPs countrywide. The ministry had prepared a stakeholders consultation workshop on the revised draft standards which was to be held on 29th and 30th March 2021 in Nakuru. However, this was not possible due to the
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presidential decree on cessation of movement in some counties and the ban on gatherings.

b) Report from WASREB, KEWI, WASPA

Mr. Moseti, KEWI, reported that the top management in KEWI had advised that any course that could be done online especially in the prevailing circumstances should be conducted as they await to undertake the practical bit later. Considering this they decided to revise their short course program and pushed the online classroom training towards the end of May so that they could incorporate more participants as they await to conduct the OJT in June 2021.

Ms. Patricia, (WASPA) reported that WASPA was at the beginning of their benchmarking cycle after having done the validation workshop. She also reported that all the 9 pilot WSPs had joined the membership for benchmarking, raising the number from 33 to 41. She also reported that the bimonthly meeting was held on 11th March 2021 while the water loss management conference was held in Kakamega on 23rd – 26th March. Participants were found to be interested in topics on culture change and data analysis; apart from the usual physical and technical water loss causes. She also reported that WASPA was planning to hold another training on MS Excel to enable them carry out billing and meter reading analysis. However, all physical meetings had been suspended due to covid 19 pandemic with the next benchmark meeting postponed to early June 2021.

4. Report/Feedback from the Expert team

a) Report about visits to the Pilot WSPs implemented by JICA expert team - Mr. Taguchi

Mr. Taguchi reported some points that he observed during his visit to the 9 WSPs in the month of February 2021. According to his assessment the covid 19 status was stabilizing and this led them to plan for restarting the experts' physical assistant works in May or June 2021. However, he 3rd wave of the pandemic hit and is currently on going.

He then presented some particular examples of interest gathered from Mavoko, Ruiru-Juja, Nakuru and Kisumu during his assessment of the WSPs and based on his report paper shared with the members in advance. He then welcomed Mr. Takahashi to make his comments on the on-going questionnaire exercise on water pressure and leakage detection.

Mr. Takahashi explained that in January to March 2021 he had come up with an online training schedule that included three main phases 1) questionnaire, 2) answers and description, and 3) methods of water network renewal planning. The target group was 26 members from the 9 pilot WSPs. He reported that he had sent the questionnaire in

January but was very disappointed since he had only received replies from only 2 out of the 26 members. He informed members that he hopes to train the WSPs on the same when he comes to Kenya in the month of June 2021.

Mr. Mori informed the members that on Friday 30th April 2021 he will virtually meet with Eldoret WSPs to discuss on zoning of their distribution system. He further welcomed the other pilot WSPs to the meeting. He did a presentation to explain what the WSPs should expect to learn during the meeting.

b) Summary and Feedback of activities of WSPs - Mr. Charles

Mr. Charles reported that despite the fact that the experts cannot visit the WSPs due to the pandemic they were still working with the WSPs and some of the activities they were undertaking are: follow up on NRW reduction plans. The experts had come up with a template for the NRW reduction plans and had shared the same with the WSPs. The WSPs were expected to review the former year, under take self-analysis of where they stand and then come up with the annual plans. After the self-analysis they were to come up with what they intend to do on the particular year (annual reduction plan) with a budget for the same and also extend the same to 5 years (mid-term planning). After planning they were expected to implement (PDCA Cycle). Currently they were in the 4th quarter which will end by June 2021. The pilot WSPs are now reviewing the progress from the quarter 3 plans. He also reported that he had received feedback from 4 out of the 9 WSPs these are Kilifi- Mariakani, Nyahururu, Kisumu and Ruiru-Juja. He further encouraged the rest to share their results and in case they had challenges the experts were ready to offer assistance.

He also reported that the WSPs had shown a lot of interest in the universal NRW monitoring sheet that was developed by the experts. He explained that the most important thing for the WSPs to learn out of this was the NRW trend over a long period of time, keep track on reasons for the NRW fluctuations hence they can get the way forward. This will help them in making their action plans may be monthly, quarterly or annual plans. The experts were involved in the review of the NRW management standards which was at the public participation stage.

They were also working with the WSPs on the meter reading and billing analysis. They were coming up with a procedure on how to carry out a simplified one month analysis and this will be shared with all the WSPs.

Mr. Mori also reported that he had received a report from Eldoret WSP with a graph from the universal NRW monitoring sheet. Their report showed an improvement on the average tariff. This is the total billed amount divided by the billed volume. He further informed the members that if WSPs target the large customers well, the average tariff increases which in turn may increase the total billing and hence reduce the NRW as is the case with Eldoret.

c) Progress of editing of the NRW Standards - Mr. Karanja

Mr. Karanja informed the members that the editorial committee had completed editing the standards and had shared the draft with the stakeholders and especially the 87 WSPs which are recognised under WASREB. He also reported that from the previous four volumes the editorial committee came up with two volumes namely the Draft NRW management Handbook and the Draft NRW management Guidelines. Mr. Karanja also informed members that the two drafts documents were shared with the stakeholders in order for them to give their views on the same. The MWS&I had planned to hold the first consultative workshop on 29th and 30th March 2021 in Nakuru but this did not happen due to the presidential announcement on the cessation of movement and banning of gatherings due to the 3rd wave of the Covid 19. He also pointed out that it was evident that only a few WSPs had read the Standards despite having been given adequate time to do so since December 2020. Mr. Karanja also gave several other challenges faced by the committee in regards to the workshop and possible recommendations for the same.

5) Discussion, opinions or requests – All the participants

The chairman welcomed the members to discuss the reasons behind the WSPs not sending their comments and their readiness to attend the stakeholder’s consultation meeting.

Ms. Sugimoto enquired why the editorial committee had not considered sending the document in an editable format rather than the PDF.

Mr. Mori suggested that the management of WSPs be involved so that the WSPs can commit some time and some staff to read through the standards.

Mr. Karanja pointed out that time allocated for the review was too short considering the WSPs had other matters to attend to.

Mr. Mori suggested that the WSP while giving their feedbacks should be critical about the material given including how it has been arranged in the document. Also, the presentations containing important information regarding the standards can be sent to the website for general knowledge of the WSPs.

Eng. Njaggah suggested that the WSPs be innovative and form dedicated teams to read and come up with comments. He also reported that WASREB is following up with WSPs to ensure that they have a functional NRW Units that is headed by a staff member in at least level 3 of the management as a licensing requirement. They are also embedding in the license the requirement that staff working under the NRW unit must have undertaken a KEWI NRW course.

Mr. Taguchi suggested to have a timeline for the submission of the feedback from the pilot WSPs. Members agreed to submit within 3 weeks.

Mr. Ambugo (WASPA CEO) suggested the following: - hold a virtual meeting with a summarized presentation on the key areas and agree on a timeline to make response. Sensitization on the existence of the standards and the areas that had been revised. WASPA to assist in bringing the WSPs together especially those not under the project.

6) General comment by JICA Kenya office

Mr. Gitau reported that JICA was aware that some project activities were delayed due to the pandemic and that 6 pilot WSPs had attained more than 60% of their planned activities despite the negative effect of the pandemic. In view of this JICA and the experts are in discussion to find a solution so that some of the activities are completed during the timeline of the project or if they agree, grant some extension to the project

7) . A.O.B.

• Date of the Next PIC meeting in May 2021

Mr. Taguchi proposed that the next PIC be held on 26th May 2021.

Others

Mr. Charles suggested to bring on board the management of WSPs to unlock the obstacle regarding the standards.

Mr. Taguchi thanked the members for the participation in the meeting. He further emphasized to the WSPs to send their comments before the next meeting.

Ms. Patricia thanked the counterparts and the WSPs for the cooperation and team work.

Eng. Njeru thanked all the participants for their participation in the meeting.

There being no other business to be discussed, the meeting ended at 12:00pm.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT, MWS&I
2.	MR. CHEMERIR CHEPYEGON	NRW OFFICER, MWS&I
3.	MS. PATRICIA MUTUA	NRW OFFICER, MWS&I
4.	MR. GEORGE BOKESIA	NRW OFFICER, MWS&I
5.	ENG. PETER NJAGGAH	WASREB
6.	MR. YATOR NEVILLIE	WASREB
7.	MR. WALTER M. MOSETI	KEWI
8.	MR. JESSE AMBUNDO	MAVOKO
9.	MR. JAMES NYAUMA	MAVOKO
10.	MR. LEONARD MUTAI	NAWASCO
11.	MR. PAUL MUTHAMI	NYAHUWASCO
12.	MR. JOSEPH MAIYO	ELDOWAS
13.	MR. CHUMBA	ELDOWAS
14.	MR. JOB LIECH	KIWASCO
15.	MR. CYRUS MUGENDI	EWASCO
16.	MR. JOSEPH IRUNGU	EWASCO
17.	MS. MARY	RUIRU JUJA
18.	MR. FRANKLINE THURANIRA	MEWASS
19.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
20.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
21.	MR. NABORU SAITO	JICA EXPERTS TEAM
22.	MR. JUNICHI TAKAHASHI	JICA EXPERTS TEAM
23.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
24.	MR. SHOZO MORI	JICA EXPERTS TEAM
25.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
26.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
27.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 28TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2021/06/11 (Friday)
Time:	9:30am – 11:40am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - Eng. Njeru, MWS&I (5 min.) 3. Report/Information about the project activities after the last PIC on 21 April, 2021 (25 min.) <ol style="list-style-type: none"> a) Report from NRW Unit, MWS&I (10 min.) b) Report from WASREB, KEWI, WASPA (15 min.) 4. Report/Feedback from the Expert team (65 min.) <ol style="list-style-type: none"> a) Summary and feedback of a series of Questionnaire survey from the pilot WSPs conducted from April to December 2020 - Mr. Taguchi (15 min.) b) How Nakuru WSP coped with Covid-19 and acquired its new working style through the experience - Mr. Leonard Mutai, NAWASCO (25 min.) c) A good example for improving meter reader's performance using a smart phone application. – Ms. Mary Wachira, RUJWASCO (25 min.) 5. Discussion, opinions or requests – All the participants (30 min.) 6. General comment - JICA Kenya office (5 min) 7. A.O.B. (5 min.) <ul style="list-style-type: none"> • Date of the Next PIC meeting in June, 2021 • Others

Content	<p>1. Self-introductions</p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. Communication from the Chairperson</p> <p>Eng. Njeru thanked the members for joining the meeting. He also informed the members that he expected their active participation during the meeting for its success.</p> <p>3. Report/Information about the project activities after the last PIC on February 12, 2021</p> <ul style="list-style-type: none"> • Report from NRW Unit, MWS&I <p>Ms. Patricia (NRW Unit) reported on the following:</p> <p>2nd version of NRW Annual Management report 2018/2019</p> <ul style="list-style-type: none"> • Printing of the Report was accomplished and some copies were distributed to participants in Nakuru during the review of the NRW standards. • The report to be uploaded on the Ministry’s website by end of June 2021. <p>3rd version of the NRW Annual Management Report (2019/2020)</p> <ul style="list-style-type: none"> • NRW Unit is working on the articles awaiting submissions by other counterparts • Report to be made more appealing to the readers by featuring additional NRW related articles including highlights of WSPs’ activities. • NRW Unit is working on strategies to sustain production of NRW Annual report by MWSI even after the lapse of the JICA NRW management improvement project. <p>School campaigns were halted at the onset of Covid -19 pandemic</p> <ul style="list-style-type: none"> • Instead, an educational video is under development to educate school-going children on water use and conservation. • The video concept will have 4 themes: <ul style="list-style-type: none"> • Water Treatment • Water Quality • Water Conservation • Water use • An online meeting was held with the producer & Embu water staff and plans to film the video on water treatment by July 2021 finalized. • EWASCO MD agreed to host the filming • Remaining themes to be done in Eldoret, Kisumu and Nakuru respectfully subject to availability of funds. • The Ministry had procured phase 3 equipment’s for use by some pilot WSPs during FY 2020/2021. • The equipment are awaiting inspection.
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- A team comprising of the MWSI, JICA Expert Team and NRW unit will be undertaking the inspection before the end of June.

NRW Thematic Workshop

- The workshop was held virtually on 8th June 2021 focusing on smart metering. The theme was: “is smart metering really smart?”
- The target participants were TM, CM and NRW staff of WSPs. 42 participants attended
- KIWASCO and ELDOWAS shared experiences, successes and challenges on use of the smart metering technology in NRW reduction
- JICA Experts Team gave an account of the progress made towards ongoing smart metering project in Japan
- Through the discussion, WSPs were able to share experiences, knowledge and ideas on smart metering
- The following thematic areas were proposed for consideration in future workshop discussions:
 - Water safety planning
 - Meter quality & standards (procurement guidelines)

The Working Group

The WG is gearing to upscale, disseminate and promote the NRW reduction activities to all WSPs countrywide through:

- Dissemination of NRW Standards to all WSPs countrywide via Output 2 activities
- Dissemination of best practices and emerging solutions
- Follow up (exchange) visits at WSP level (Visit WSPs most challenged with NRW reduction)
- Planned two stakeholders consultation workshop on the revised draft standards in Nakuru and Machakos
- Held its 1st stakeholder’s consultation workshop on the revised draft standards (Handbook & Guideline) in Nakuru town on 27th and 28th of May 2021. The workshop aimed at engaging stakeholders on the revised NRW standard drafts to gather comments for improvement before publishing. The turnout was 13 WSPs, 1 county water director and 1 NGO (VEI). The highlights of the standards were done and the WSPs were able to come up with positive input on the draft document regarding the relevant areas for addition, Irrelevant areas for deletion; interrogated the write up to see whether they address the specific topics and gave additional recommendations. WSPs were given until mid-June 2021 to forward any additional comments to MWI&S.

b) Report from WASREB, KEWI, WASPA

Mr. Yattor informed members that WASREB was also involved in the stakeholders meeting that was held in Nakuru and they are looking forward to having the documents integrated as standards for the NRW management.

Mr. Moseti (KEWI) reported that they also participated during the stakeholder's workshop in Nakuru. He also informed members that they were not able to hold the online joint training that was supposed to be held on 31st May to 4th June 2021 and will do so when it will be suitable for a physical meeting.

Ms. Patricia, (WASPA) reported that WASPA participated in the stakeholder's workshop that was held in Nakuru. However, they could not participate in the thematic workshop since she was on transit to Nanyuki on official duties. Ms. Patricia also reported that meter quality is under WASPAs procurement regulations and that could make a nice workshop topic like was proposed by NRW Unit in their presentation. She also pointed out that WASPA was in the process of reviewing their standards because they were done years back and needs to be updated. She also mentioned that they will be inviting the standards regulator (KEBS) and other stakeholders to make their contributions. Ms. Patricia also reported that their bimonthly meeting was running concurrently with the PIC meeting and some members of their staff were already in Mombasa for the same. The next bench marking meeting will be held by mid-July.

4. Report/Feedback from the Expert team (65 min.)

a) Summary and feedback of a series of Questionnaire survey from the pilot WSPs conducted from April to December 2020 - Mr. Taguchi

Mr. Taguchi made the presentation below on feedback of the monthly circulation of answers for questionnaire as a means of communication between the pilot WSPs and the JICA expert team.

Covid-19 broke out in Kenya in March 2020. Since it was gradually spreading out from January in Japan, JICA suspended the dispatch of experts to other countries. The 23rd Project Implementation Committee (PIC) meeting was held in Kenya in February 2021, while he was in Kenya in his 2nd dispatch period of the 3rd project term. However, no more PIC meetings were held thereafter. Since then, the experts tried to know the situation of the Pilot WSPs under the Covid-19 through communication with the local staff. But the volume and quality of the information were quite limited and it was difficult to grasp the real issues which the Pilot WSPs were facing. While the various restrictions that were being imposed against Covid-19 in the daily life of the citizens, the number of working staff of WSPs and the opportunity of meetings or discussion among them were restricted. The Project team lost proper measures for communication with the Pilot WSPs after the last PIC meeting held in February and it was imagined that all the staff of the Pilot WSPs were busy trying to manage the Covid-19 monster but unfortunately, we could not assist them. The situation led him to introduce interactive communication by circulating questionnaires and answers about conditions of each Pilot WSP, which might be able to enhance the sense of unity of the project members created in the monthly PIC meeting before by sharing among the members that they were dedicated to retaining sustainable water service delivery to the citizens though struggling with various difficulties in their respective WSPs. This was

to encourage the members of the Pilot WSPs to continue their everyday efforts. Based on the idea, the questionnaires generally consisted of the following items.

1. General Situation under Covid-19
 - a) Percentage of the staff coming to the office per total number of the WSP staff
 - b) Possibility of purchasing basic goods in the market.
 - c) Problems encountering for the daily life in the city
 - d) Is the public transportation system functioning or not?
2. Activities on NRW reduction
 - a) Is water supply service kept as usual?
 - b) What activities are prioritized in the NRW reduction field now?
 - c) Are the O&M staff prepared or able to handle emergencies cases like a pipe-burst on a main line?
3. What is urgently needed by the WSP such as goods, equipment, apparatus etc. regardless of the relation with the NRW reduction project,
4. What support is needed from the expert team after Covid-19 calms down
5. Opinions or suggestions for this questionnaire & answers circulation

The frequency of the circulation of answers for the questionnaire was monthly. And this continued for 9 times in total from April to December 2020 as shown in Table-1, although the last distribution was done in February 2021. The expert team made short comments for each Pilot WSP in every circulation as the feedback from the experts in consideration for increase of the interactive communication efficiency.

Table-1 Progress of circulation of questionnaire and answers

No .	Date of delivering Questionnaire/summary of the answers	Topics focused	“Performance of the month” award
1 st	Apr. 29/May 6, 2020	-	
2 nd	May 6/June 8, 2020	Some WSP requested financial support to JICA team	
3 rd	June 8/July 6, 2020	-	
4 th	July 6/August 7, 2020	This activity was presented among a workshop of JICA projects and given a high praise.	
5 th	Aug. 7/September 4, 2020	Signs were seen in recovering their financial situations. Monthly award was started.	Kiwasco, Nawasco
6 th	Sep. 4/October 14, 2020	Stronger Recovering trend was seen in some WSPs.	Rujuwasco, Eldowas, Mavowasco
7 th	Oct.14/November 18, 2020	All the pilot WSPs were used to cope properly with Covid-19.	Ewasco
8 th	Nov. 18/December 15, 2020	-	
9 th	Dec. 15, 2020/February 1, 2021	-	

Summary sheets of answers were distributed already to all the members. Observation of these summaries was very helpful for the experts to understand the difficulties that the WSPs were facing in executing their day-to-day activities and the relative increase or drop of their finances on a monthly basis. One of the remarkable achievements of this activity is that the information was quite useful and effective for JICA and they managed to support the Pilot WSPs by donating chemicals for water treatment with 3-month consumption volume last year. PIC meetings then resumed in October last year and are continuing on a monthly basis. This activity however stopped due to reduction of its efficiency of information sharing. One thing remaining is to award “Performance of the month” to the nominated Pilot WSPs as mentioned in the above table. This has not been achieved yet so please expect that I will prepare the award to the nominees before the completion of the Project in May 2022” said Mr. Taguchi. He then expressed his sincere thanks to all of the project members for their kind cooperation on the project activities.

b)How Nakuru WSP coped with Covid-19 and acquired its new working style through the experience - Mr. Leonard Mutai, NAWASCO

Mr. Charles reported that despite the pandemic and the working from home experience a lot has been happening in the WSPs. He further informed the members that the WSPs have been undertaking reviews for their plans, considering that the financial year was coming to an end and a new financial year starting in July. He said it was expected that the WSPs would do their final NRW reduction plans, fourth quarter review, and the annual reviews to check their performance (strengths and weaknesses), carry out self-assessment and have new plans for the coming financial year starting in July. He then encouraged the WSPs to contact him or other experts in case they have a need regarding the reviews or even the plans. He also reported that they were still continuing with the online training, for example, Mr. Mori was training Eldoret WSP on improving their GIS and mapping and; Mavoko WSPs to undertake their billing analysis. In the process, they are also learning new things which they will soon be sharing. He said that the Covid-19 pandemic had created a platform for each member to learn and even the WSPs have come up with new ways to cope with the pandemic.

He then welcomed Mr. Mutai and Mr. Erastus (GIS specialist in Nakuru) to make a presentation on how Nakuru overcame Covid-19 challenges and another on customer accounts field navigation.

c) A good example for improving meter reader’s performance using a smart phone application

Mr. Charles then invited Ms. Elizabeth from Ruiru Juja to make her presentation on GIS data collection and utilization procedures.

5) Discussion, opinions or requests – All the participants

Eng. Njeru welcomed members to give their opinion regarding the presentations and encouraged the WSPs to borrow a leaf from the presentations on use of the GIS since it is a free and easily available app in smart phones.

Mr. Mori informed members that he had been working with the WSPs on need basis and will be visiting Kenya soon so as to be more efficient. He pointed out that he had noted some challenges that the WSPs were experiencing especially on the use of the kobo collect, zoning and distribution system especially in Embu WSP. He also informed members that most of the soft-ware are free and can be downloaded from play store and are quite useful. He gave an example of SW Maps soft-ware that is free and quite efficient. He also informed members that he is available to offer assistance on these soft-wares so that WSPs can avoid unnecessary expenses while using other expensive soft-wares.

Ms. Patricia (WASPA) informed members that WASPA was very much interested in the meter reading and billing analysis which they were discussing during their benchmark meetings and were thinking of how utilities can be shown a simplified calculation using excel sheet, since one has to interrogate data in order to get the desired output. She also pointed out that they do not have estimated consumption in their KPIs but will include it as suggested by Mr. Mori.

Mr. Yator (WASREB) also pointed out that most WSPs had low metering ratio and were not able to estimate the water that goes to the customers. These utilities were encouraged to continue metering so as to get to a substantial metering ratio in order for them to undertake a meter reading and billing analysis to determine the accounts billed on estimation. However, all WSPs were encouraged to consider lowering the number of accounts billed on estimation immediately.

Mr. Taguchi appreciated the presentation made by Nakuru WSPs on the measures they undertook due to Covid-19 last year. He pointed out that other WSPs should learn from what Nakuru WSPs did since even after being directly affected by the pandemic they took measures to ensure that they did not lose revenue completely and at the same time they remained relevant to the community through supplying the most essential commodity that is water. Use of electronic system of paying bills and maintaining a vibrant communication platform between the customers and the company like was adopted by Nakuru WSP proved to be very effective and should be embraced by all.

6) General comment by JICA Kenya office

Mr. Gitau informed the members that they did not have comment for the members.

7) . A.O.B.

Mr. Taguchi informed members that in the month of July there shall be no PIC meeting but instead there shall be JCC meeting at a date to be confirmed later.

Ms. Patricia (WASPA) informed members that they were organizing a youth and women conference in Naivasha from 30th June to 2nd July and all are welcome.

• **Date of the Next PIC meeting**

To be communicated later.

Eng. Njeru thanked all the participants for their participation in the meeting.

There being no other business to be discussed, the meeting ended at 11:40am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT, MWI&S
2.	MS. PATRICIA MUTUA	NRW OFFICER, MWI&S
3.	MR. GEORGE BOKESIA	NRW OFFICER, MWI&S
4.	MR. YATOR NEVILLIE	WASREB
5.	MR. WALTER M. MOSETI	KEWI
6.	MR. JAMES NYAUMA	MAVOKO
7.	MR. LEONARD MUTAI	NAWASCO
8.	MR. ERASTUS MAINA	NAWASCO
9.	MR. PAUL MUTHAMI	NYAHUWASCO
10.	MR. JOSEPH MAIYO	ELDOWAS
11.	MR. ALEX KEMBOI	ELDOWAS
12.	MR. JOSEPH ORIA	EWASCO
13.	MS. MARY WACHIRA	RUIRU JUJA
14.	MS. ELIZABETH NDUTA	RUIRU-JUJA
15.	CORNELIUS MUTAI	KIMAWASCO
16.	MR. FRANKLINE THURANIRA	MEWASS
17.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
18.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
19.	MR. NABORU SAITO	JICA EXPERTS TEAM
20.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
21.	MR. SHOZO MORI	JICA EXPERTS TEAM
22.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
23.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
24.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

**THE PROJECT FOR STRENGTHENING CAPACITY IN
NON-REVENUE WATER REDUCTION
MINUTES OF THE 29TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2021/09/22 (Wednesday)
Time:	9:30am – 11:40am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - Eng. Mary W. Wainaina, MWS&I (5 min.) 3. General Remarks - JICA Kenya office (5 min) 4. Report/Information about the project activities after the last JCC on 9th July, 2021 (20 min.) <ol style="list-style-type: none"> a) Report from NRW Unit, MWS&I including WG activities (10 min.) b) Report from WASREB, (5 min.) c) Report from KEWI on the progress of formulation of new training courses (5 min.) d) Report from WASPA (5 min.) 5. Report/Feedback from the Expert team (55 min.) <ol style="list-style-type: none"> a) Progress and way forward of editing the Guideline and Handbook of NRW managing Standards - Eng. George Karanja (15 min.) b) Challenges or way forward for the pilot WSPs to manage strengthening capacity in non-revenue reduction during the remaining period of the Project until May 2022. – Eng. Mori, JICA Expert (25 min.) 6. Discussion, opinions or requests – All the participants (20 min.) 7. A.O.B. (5 min.) <ul style="list-style-type: none"> • Date of the 30th PIC meeting in October, 2021 • Others 8. Closing Remarks –Eng. Mary W. Wainaina, MWS&I (5 min.)

Content	<p>1. Self-introductions</p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. Communication from the Chairperson</p> <p>Eng. Njeru thanked the members for joining the meeting. He also informed the members that Eng. Alima and Eng. Wamaita were out of Nairobi on official duties and therefore he was chairing the day’s meeting. He said the purpose of the PIC meeting was to review the progress of the project activities, achievement, constraints and everything pertaining to the project; the main mandate being to manage the NRW in the country. He said that the PIC is closely looking at what the WSPs are doing in their own areas. WSPs had by then done the analysis on their NRW in their facilities and they knew what plans they had put into place to be able to beat the NRW monster. WSPs are supposed to document their successes so that others can learn from them.</p> <p>3. General Remarks - JICA Kenya office</p> <p>Mr. Gitau, JICA Kenya office Representative informed the meeting that JICA had supplied 50% of the water treatment chemical stock they had promised to donate to the pilot WSPs. He said that it was expected that the exercise would end by the end of the month. He also encouraged the WSPs to report to JICA office in case of challenges.</p> <p>Mr. Taguchi also informed the members that Kilifi-Mariakani WSP had requested their donation to be form of customer meters instead of chemicals since they do not have a treatment plant. He said the the procurement process was ongoing and the meters would be delivered to the utility once procured.</p> <p>The Chair thanked JICA Kenya office for the chemical donations and requested them to provide the rest of the chemicals before the expected rainy season.</p> <p>4. Report/Information about the project activities after the last JCC on 9th July, 2021 (20 min.)</p> <p>a) Report from NRW Unit, MWS&I including WG activities (10 min.)</p> <p>I. Report from NRW Unit, MWS&I</p> <p>Ms. Patricia, Ministry’s NRW unit reported the following:</p> <p>a) Production of NRW Annual Management Report</p> <ul style="list-style-type: none"> • Distribution of the printed copies for 2nd version of NRW Annual Management Report was ongoing. • The NRW Unit and the counterpart institutions were working on the draft contents of the 3rd version of the NRW report 2019/2020 and the draft would be ready by end of October 2021. <p>b) Schools’ sensitization on NRW</p>
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- JICA had financed the production of short videos on NRW for school sensitization. Filming was complete and the videos were being edited. Video production was at 90% completion
- Physical activities had been suspended due to the COVID-19 pandemic.
- The main objective was to orientate the young ones so that they grow being responsible on how to use and conserve water.
- The concepts for the educational videos touched on 4 themes as below

S/No.	THEMES	FILMED AT/ SCHOOLS INVOLVED
	Water Use	Nyahururu WSP/ 91 Municipality Primary School
	Water Treatment	EWASCO/ Iveche Primary School
	Water Quality	ELDOWAS/ Sosiani Primary School
	Water Conservation	NAWASCO/ Mwariki Primary School

c) Working Group (WG) Activities & Way Forward

- The WG team comprises of the MWSI, WASREB, KEWI, WASPA, JICA Experts and the CoG
- The WG Activities include: Dissemination of the revised NRW standards and advocating for their use via output 2, and Dissemination of best practices and emerging solutions emanating from the NRW project via output 4.
- The most recent Achievement of the WG was the 2nd stakeholders' workshop held in Machakos on 29th – 30th July 2021.
- The workshop offered a good opportunity for the team to emphasize on the need for WSPs' to adopt the NRW standards in their day - to - day operations and receive valuable input from the stakeholders.
- A stakeholders' validation consultative meeting is planned to be held in Nakuru on 14th October, 2021.
- The invitees will be all the participants that participated in the review process of the standards so that can validate the incorporated comments gathered from Nakuru & Machakos workshops.

II. Report from WASREB

Mr. Yator reported on the following:

- WASREB being part of the working group participated in the NRW stakeholders meeting held in Machakos on 29th and 30th July 2021.

- Stakeholders' comments were collected and noted for integration into the NRW guideline and handbook.
- The team noted that the guideline and handbook were fairly good and should be put into use by WSPs as it is finalized and subsequently adopted.
- The WG has integrated all the comments and input from the WSPs collected in the Nakuru and Machakos into the guideline and handbook.
- A national validation workshop was planned for October 2021 to disseminate the two documents and highlight to the stakeholders the integration of the comments.
- The adoption and use of the guideline by the WSPs would greatly reduce the NRW and potential loss of national revenue amounting to Ksh. 11.61 billion annually.
- WASREB conducted a NRW performance review workshop post-Impact 13 released on the 28th of July 2021 in Machakos.
- WASREB invited a select 16 WSPs to attend the workshop whose theme was to publicize the release of NRW performance results.
- The target participants were the TM, CM and NRW head where 37 participants attended.
- The workshop highlighted the importance of NRW reduction and gave a presentation of the best practice on reduction of NRW.
- WASREB built capacity of the WSP on performance-based contracting on NRW management.
- A highlight of the lost potential revenue due the NRW was given and the WSPs urged to improve performance and tap this revenue in order to increase water coverage and level of service.
- WASREB promoted the use of NRW guideline and handbook to the WSPs attending the workshop.
- WASREB had planned a NRW performance review workshop post-Impact 13 release for the Western Region in October 2021.

III. Report from KEWI on the progress of formulation of new training courses

Mr. Mosei informed members that KEWI is continuing in implementing the revised NRW course where the following is the progress to date.

1. KEWI conducted a NRW Classroom and OJT in July/August, 2021 respectively where 18 staff from Nairobi, Nakuru Rural and Githunguri WSPs participated
2. KEWI as a member of the Working Group participated in the Nakuru and Machakos stakeholder workshops on NRW Standards review and is continuing in supporting the process
3. From 19th to 23rd July, 2021, KEWI with other counterparts (MWS&I, WASREB) were trained by the JICA expert team on the proposed new high level NRW course that is intended to be included in the reviewed NRW Standards.

4. The already reviewed course run by KEWI is viewed as basic and suitable for NRW operators in the field. For decision makers, a high level one is necessary.

The areas proposed for this course are :-

- i. Annual NRW Planning template
- ii. Universal Monitoring Sheet
- iii. Billing and meter reading analysis
- iv. KOBO collect Tool Box

Thereafter, the course will be test-run with selected Water Service Providers to be identified in due course.

5. Report/Feedback from the Expert team

a) *Progress and way forward of editing the Guideline and Handbook of NRW managing Standards - Eng. George Karanja*

- The way forward was highlighted regarding the draft Guideline and Handbook of NRW standards whereby the consolidated comments from Stakeholders' workshops held in Nakuru and Machakos had been integrated in the documents and shared with the Working Group members.
- The Working Group is scheduled to meet on **28th September 2021** for further review of the Standards to confirm the incorporation of all the comments.
- On **29th September 2021** the NRW standards will be dispatched to the stakeholders for review before the validation workshop to be held on **14th October 2021**.
- Final polishing up after the Validation Workshop is to be completed by **21st October 2021**.
- Publishing of the first manuscript is scheduled to be done by **28th October 2021**.

b) *Challenges or way forward for the pilot WSPs to manage strengthening capacity in non-revenue reduction during the remaining period of the Project until May 2022.*

Presentation attached as annex 2

6. Discussion, opinions or requests

WSPs enquired how they could access the educational videos prepared by the ministry's NRW Unit. Ms. Patricia said that the videos would be uploaded in the Ministry's website once it is complete.

Other WSPs requested Mr. Mori to visit them for more interactive sessions especially regarding his presentation.

Mr. Moseti explained that the new training (high level training) was targeting the management level to help them in decision making as compared to the OJT that is meant for the technical group.

Mr. Taguchi also explained that the new training was also related to the new NRW standard especially on the new tools introduced to the WSPs by the output 4 of the project (e.g. NRW annual planning, universal analysis of NRW ratio, KOBO toolbox

and GIS). The tools are recommended to be in used as a licencing condition by WASREB for WSPs in the country.

Mr. Charles thanked the WSPs for forwarding the annual review. He stated that from the review, some WSPs had improved and others were abit behind. He encouraged them to raise their concerns during the experts' upcoming visits so that they can be assisted where necessary. He also mentioned that the WSPs had not submitted their annual plans except for Embu WSP and thus it was important for them to reach out to the experts for assistance in case they were facing challenges.

7. A.O.B.

Members agreed that the next PIC meeting be held on **27th October 2021**.

WSPs thanked JICA for the chemical donation.

Mr. Gitau requested the WSPs after receiving the chemical deliveries to mail by courier the hard copy of inspection certificate to JICA.

Ms. Mary Njoki wanted to know the position of the questionnaire they had responded to from Mr. Takahashi.

Eng. Njeru thanked members for availing themselves for the meeting and their contributions. He thanked JICA for the support to the project especially to the pilot WSPs with efficient materials and equipment that the WSPs were receiving. He encouraged the WSPs to make use of the equipment and to take challenge thrown to them since the project is coming to an end by May 2022.

There being no other business to be discussed, the meeting ended at 11:40am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT, MWI&S
2.	MS. PATRICIA MUTUA	NRW OFFICER, MWI&S
3.	MR. GEORGE BOKESIA	NRW OFFICER, MWI&S
4.	MR. YATOR NEVILLIE	WASREB
5.	MR. WALTER M. MOSETI	KEWI
6.	MR. EDWIN NJUE	EWASCO
7.	MR. CYRUS MUGENDI	EWASCO
8.	MR. JOB LIECH	KIWASCO
9.	MR. JAMES NYAUMA	MAVOKO
10.	MR. LEONARD MUTAI	NAWASCO
11.	MR. ERASTUS MAINA	NAWASCO
12.	MR. PAUL MUTHAMI	NYAHUWASCO
13.	MR. JOSEPH GITAU	NYAHUWASCO
14.	MR. JOSEPH MAIYO	ELDOWAS
15.	MR. ALEX KEMBOI	ELDOWAS
16.	MS. MARY NJOKI	RUIRU JUJA
17.	MR. CORNELIUS MUTAI	KIMAWASCO
18.	MR. FRANKLINE THURANIRA	MEWASS
19.	MR. THURANIRA KINOTI	MEWASS
20.	MR. JOHN GITAU	PROGRAM OFFICER (JICA, KENYA)
21.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
22.	MR. NABORU SAITO	JICA EXPERTS TEAM
23.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
24.	MR. NAOKI HARADA	JICA EXPERTS TEAM
25.	MR. SHOZO MORI	JICA EXPERTS TEAM
26.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
27.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
28.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

WASPA

**THE PROJECT FOR STRENGTHENING CAPACITY INNON-REVENUE WATER
REDUCTION**

**MINUTES OF THE 30TH PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2022/03/23 (Wednesday)
Time:	9:00am – 11:30am
Venue	Virtual meeting
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - Eng. Victor Njeru MWS&I (5 min.) 3. Report on the achievement of the project activities after the last JCC on 1st December, 2021 (40 min.) <ol style="list-style-type: none"> a) NRW Unit, MWS&I (10 min.) b) WASREB, especially on how to make the licensing condition (5 min.) c) KEWI, (5 min.) d) WASPA, on the activities for dissemination of NRW Reduction (5 min.) e) Feedback of the achievements based on the Indicators of the PDM (15 min.)- by Eng. Taguchi, JICA Expert 4. Feedback and suggestions on the activities done, Expert team (30 min.) Progress, challenges or way forwards on the activities done in the pilot WSPs towards the completion of the project. By Eng. Mori, JICA Expert 5. Discussion, opinions or requests – All the participants (20 min.) 6. A.O.B. (10 min.) <ul style="list-style-type: none"> • Date of the 31th PIC meeting in April, 2022 • Workshop of 3 countries water service companies to be held on May. • Others 7. Remarks or comments from JICA Kenya office (5 min.) 8. Closing Remarks – Eng. Victor Njeru, MWS&I (5 min.)

Content	<p>1. Self-introductions</p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. Communication from the Chairperson</p> <p>Eng. Njeru thanked the members for joining the meeting. He informed them that the project was coming to an end at the end of May 2022. In view of this, he advised that it is important to reflect on what the project has achieved this far regarding management of NRW. He also requested the WSPs to reflect on what they had gained from the project and, actualize the concepts learnt and fight to reduce the NRW even after the project.</p> <p>He pointed out that it is important the WSPs make use of the equipment procured by the Ministry and JICA and, continue sending their staff to KEWI for more training since this will help in sustaining the fight against NRW. He further urged member to continue making use of the NRW Guideline and Handbook since these are the tools to help in reducing the NRW. He stated that the main indicator that can demonstrate the effectiveness of the project is by providing the customers with water. He thanked the JICA Experts for their assistance this far.</p> <p>3. Report on the achievement of the project activities after the last JCC on 1st December, 2021 (40 min.)</p> <p>a) NRW Unit, MWS&I (10 min.)</p> <p>Eng. Njeru reported the following:</p> <ul style="list-style-type: none"> ✓ The Ministry held a non-revenue water sensitization workshop in Kisumu on 10th February 2022 targeting 10No. western region counties governments of Kisumu, Kisii, Siaya, Migori, Homabay, Busia, Kakamega, Eldoret and Kericho together with their respective WSPs. ✓ A second workshop was held in Mombasa on 24th February 2022 targeting the county in the eastern and coastal regions where 6 counties and 9 WSPs attended out of the 14 counties and 20 WSPs invited respectively. ✓ Short videos were developed to replace the physical school campaigns during the COVID-19 pandemic period. A video on water treatment was shown during the Kisumu and Mombasa sensitization workshops to solicit views on its improvement. ✓ Through exhibitions, the NRW Unit participated in the World Day for Water marked in Kitui on 22nd March 2022 and made video presentations on the efforts the WSPs are making to sustain good water services. ✓ The zero draft of the 3rd version of the Annual NRW report is ready and the procurement of publication services is ongoing. ✓ Equipment to assist in NRW reduction were purchased and distributed to the beneficiary WSPs. ✓ Pre-printing verification of the NRW standards was in progress. The sensitization forums in Kisumu and Mombasa were also used to disseminate
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the standards.

b) Report from WASREB

Mr. Yator reported as follows:

- ✓ WASREB was waiting for the finalization and publishing of the standards by the Ministry to kick-start their dissemination. The launching date will be communicated by the ministry.
- ✓ WASREB has been promoting the use of the revised NRW guidelines with four workshops being scheduled in the first week of April. The workshops will be region-based – Western, Central, Coast and the low performing WSPs. The workshops are scheduled to be done.

c) Report from KEWI on the progress of formulation of new training courses

Mr. Moseti informed members that KEWI is continuing in implementing the revised NRW course and the following is the progress to date.

- ✓ KEWI conducted NRW classroom training from 7th to 11th March 2022 and the OJT will follow on 4th to 9th April 2022.
- ✓ KEWI has organized to conduct a test course on the new formulated management level training to include 4 training areas. However, the test-run training session planned for 21st to 25th March, 2022 did not take off after the proposed WSP declined to share their meter reading and billing data with KEWI citing lack of an MoU. The MOU was not ready on time because it had to be approved by KEWI governing council. In this regard therefore, KEWI is discussing with a different WSP that can provide the required data for the course test-run in April, and thereafter conduct the 1st training course on the same before end of Project.

d) WASPA, on the activities for dissemination of NRW Reduction (5 min.)

Ms. Patricia reported that JICA team participated in WASPA's Bi-monthly meeting held in Kilifi in March during which WSPs MDs discuss and share on issues happening among the WSPs society. The JICA team had done a presentation on the new NRW Management Guideline and Hand book; and the project activities.

e) Feedback of the achievements based on the Indicators of the PDM (15 min.)- by Eng. Taguchi, JICA Expert

Mr. Charles, JICA Experts reported as follows:

All the 9 Pilot WSPs had formulated annual NRW reduction plans for Year 2021-22 (based on their capacity self-assessment and annual activity review of the previous year) and all of them had continuously updated their annual and medium-term NRW reduction plans for the last 5 years. The average completion ratio of planned activities among the 9 WSPs had improved from 55% in 2016-17 to 75% in 2020-21.

All the 9 Pilot WSPs had been implementing new activities by adopting various skills newly introduced with help of the expert team (including the prioritization of large customers for commercial loss reduction). All of the survey equipment procured by JICA and the Ministry for the pilot WSPs had been distributed. Although newly adopted night-time step tests had contributed to find major leaks in 8 pilot WSPs, the listening sticks should be used more regularly and extensively for house-to-house leak survey in most of the WSPs.

Taking the yearly universal NRW ratio for 2016-17, 2017-18 and 2018-19 as the baselines for Phase 1, Phase 2 and Phase 3 WSPs respectively (apart from Ruiru-juja's 2018-19 figure due to unreliability of the previous year data and, Kilifi-Mariakani's 2019-20 figure due the delayed assistance from the project), their monthly universal NRW ratio has dropped by about **7%** (currently around 17%) in Meru, about **20%** (currently around 34%) in Ruiru-Juja, about **8%** (currently around 28%) in Kisumu, about **5%** (currently around 30%) in Nakuru, about **3%** (currently around 41%) in Eldoret, about **4%** (currently around 37%) in Mavoko and **7%** (currently around 41%) in Kilifi-Mariakani. Although the pandemic made the reduction of NRW more difficult, these WSP have successfully lowered their universal NRW ratio (e.g., by targeting large customers that are spread over their entire service areas, and the pipelines that have frequent bursts). However, Embu's universal NRW has been rather stagnant at around 40% for the last 12 months since the installation of the new bulk meters to accurately measure the production (the previously estimated universal NRW ratios of Embu were not credible).

Nyahururu has also become stagnant at around 40% although their yearly NRW ratio once went down from 42% to 37% before the pandemic. The main reason for stagnation in Embu and Nyahururu is the high NRW ratio (around 70%) in their large remote zones (i.e., Zone 2 and Marmanet respectively) due to widespread and abundant leaks and illegal water use. These large remote zones are being targeted for intensive activities such as pressure reduction, step tests and CIS while the other WSPs have been targeting multiple medium size areas for leak detection. Due to the Covid-19 pandemic, each Pilot WSP had to stop or reduce regular or routine inter-departmental meetings on NRW-related issues. Since the pandemic is currently subsiding, the pilot WSPs are gradually re-starting and making it a routine to hold such meetings to enhance their awareness and effective coordination for better NRW reduction activities.

**4. Feedback and suggestions on the activities done, Expert team (30 min.)
Progress, challenges or way forwards on the activities done in the pilot WSPs
towards the completion of the project. By Eng. Mori, JICA Expert**

Mr. Mori made a presentation on the progress, challenges and way forward on the activities done in the pilot WSPs. (Presentation attached as annex2)

5. Discussion, opinions or requests – All the participants (20 min.)

Mr. Karanja requested the WSPs to confirm the correctness of Eng. Mori's presentation especially with regard to the estimated revenue increase over the project period. All the WSPs agreed that the presentation was true and accurate since it was evident that a drop in NRW causes an increase in billing. Ms. Sugimoto suggested that as a way of spreading the knowledge acquired from the project, the

next annual report could focus on the activities undertaken during the project. That means that the NRW unit should work extra-hard and gather all the necessary information from the experts before the project period comes to an end. Eng. Njeru also informed members that the publishing of the NRW standard was to be done before the end of the project and that the unit will share the schedule in the coming week.

6. A.O.B.

Members agreed that the next PIC meeting be held on **27th April 2022.**

Workshop of 3 countries water service companies to be held on May.

Mr. Mugendi reported that the 3-country workshop will be held from 10th May 2022. He also informed the members that the plan is to start the program in KEWI and the participant thereafter proceed to Embu for the rest of the program.

7. Remarks or comments from JICA Kenya office (5 min.)

JICA Kenya office was not present during the meeting

8. Closing Remarks – Eng. Victor Njeru, MWS&I (5 min.)

Eng. Njeru thanked members for availing themselves for the meeting and their contributions. He also pointed out that the WSPs had made commendable progress in regards to the project activities but there was still a lot that needed to be done so as to achieve the original target. He also encouraged them to make routine use of the equipment that they had received during the project and also those that they had bought. He thanked the JICA Experts for their dedication to the project activities.

There being no other business to be discussed, the meeting ended at 11:30am.

ATTENDANCE LIST

No.	Name	Institution
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT, MWI&S
2.	MR. GEORGE BOKESIA	NRW OFFICER, MWI&S
3.	MR. JOSEPH MWANGI	NRW OFFICER, MWI&S
4.	MS. PATRICIA WANJERI	WASPA
5.	MR. YATOR NEVILLIE	WASREB
6.	MR. WALTER M. MOSETI	KEWI
7.	MR. CYRUS MUGENDI	EWASCO
8.	MR. JOB LIECH	KIWASCO
9.	ENG. JESSEE AMBUNDO	MAVOKO
10.	MR. JAMES NYAUMA	MAVOKO
11.	MR. LEONARD MUTAI	NAWASCO
12.	MR. GILBERT MUTAI	NAWASCO
13.	MR. PAUL MUTHAMI	NYAHUWASCO
14.	MS. MARY NJOKI	RUIRU JUJA
15.	MR. PETERSON MURITHI	RUIRU JUJA
16.	MR. CORNELIUS MUTAI	KIMAWASCO
17.	MR. FRANKLINE THURANIRA	MEWASS
18.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
19.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
20.	MR. NAOKI HARADA	JICA EXPERTS TEAM
21.	MR. SHOZO MORI	JICA EXPERTS TEAM
22.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
23.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
24.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

WASPA

**THE PROJECT FOR STRENGTHENING CAPACITY IN NON-REVENUE WATER
REDUCTION**

**MINUTES OF THE 31ST PROJECT IMPLEMENTATION COMMITTEE (PIC)
MEETING**

Date:	2022/04/27 (Wednesday)
Time:	9:00am – 11:30am
Venue	Boardroom, Maji House
Agenda	<ol style="list-style-type: none"> 1. Self-introduction (5 min.) 2. Communication from the Chairperson - Eng. S.A.O Alima MWS&I (5 min.) 3. Report on the achievement of the project activities after the last PIC on 23rd March, 2022(40 min.) <ol style="list-style-type: none"> a) NRW Unit, MWS&I (5 min.) b) WASREB, especially on how to make the licensing condition (5 min.) c) KEWI, especially on the formulation of the new training course coping with the above licensing condition (5 min.) d) WASPA, on the activities for dissemination of NRW Reduction (5 min.) e) Achievements of the Project based on the Indicators of the PDM (5 min.)- by Eng. Taguchi, JICA Expert 4. Pilot WSPs’ opinions based on their feedback of the activities (50 min.) On achievement, progress, challenges or way forward of the pilot WSPs towards the completion of the project. – 5min. per WSP 5. Discussion– All the participants (15 min.) 6. Training of Introduction on Q-Field Cloud as an alternative for Web GIS, Kobo Tool Box and Portable GIS. – By Eng. Mori, JICA Expert 7. A.O.B. (5 min.) <ul style="list-style-type: none"> • Proposal of the date of the 11th JCC meeting on 18th May, 2022 • Workshop of 3 countries’ water companies to be held on 10-12th May. 8. Remarks or comments from JICA Kenya office (5 min.) 8. Closing Remarks – Eng. Victor Njeru, MWS&I (5 min.)

Content	<p>1. Self-introductions</p> <p>All the members introduced themselves and their respective organizations.</p> <p>2. Communication from the Chairperson</p> <p>Eng. Alima thanked the members for joining the meeting and commended them for diligently attending meetings from the start even through the pandemic. He informed them that the project was coming to an end at the end of May 2022. In view of this, he advised that it was important to reflect on what the project has achieved this far regarding management of NRW and whether Performance Indicators have been met. He also requested the WSPs to reflect on what they had gained from the project, upscale and actualize the concepts learnt and fight to reduce the NRW even after the project.</p> <p>He urged members to continue making use of the NRW Guideline and Handbook since these are the tools to help in reducing the NRW. He thanked the JICA Experts for their assistance this far.</p> <p>3. Report on the achievement of the project activities after the last PIC on 23rd March, 2022 (25 min.)</p> <ul style="list-style-type: none"> • NRW Unit, MWS&I (5 min.) <p>Patricia reported the following:</p> <ul style="list-style-type: none"> • The Ministry held 2 non-revenue water sensitization workshops: - in Kisumu on 10th February 2022 targeting 10No. western region county governments and; in Mombasa on 24th February 2022 participated by 6No. county governments in the eastern and coastal regions together with their respective WSPs. • Plans are underway to hold another sensitization workshop in Embu in early May and 17 WSPs are set to be invited. • The Ministry had targeted to hold 7 workshops and has held 5 of them so far. • Editing of the 4No. short videos developed to replace the physical school campaigns during the COVID-19 pandemic period is still ongoing. A video on water treatment was shown during the Kisumu and Mombasa sensitization workshops to solicit views on its improvement. Links to the videos will be shared on YouTube for country-wide accessibility once completed. • Version 3 of the Annual Report is in the Procurement process and scheduled to be publish within 4 weeks. Version 4 will be completed within the coming 3 months. • The NRW Guideline and Handbook are also set to be launched in two weeks as they are in the final stages of approval.
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c) Report from KEWI on the progress of formulation of new training courses - by Mr. Moseti

KEWI is continuing in implementing the revised NRW course and the following is the progress to date:

- 14 courses had been done since the beginning of the project in KEWI.
- KEWI conducted NRW classroom training in March successfully.
- KEWI also conducted the test run for a new training course on the new four NRW reduction tools from 11th to 15th April, 2022, where 10 participants (including the Managing Director, Technical Manager, Commercial Manager and Billing Supervisor) from Oloolaiser WSP were trained.
- Plans are underway to conduct the 1st training course from 23rd to 27th May, 2022 for 5 WSPs to be selected by the Ministry, JICA Expert Team, KEWI and WASREB with financial support from the Ministry before the end of the project.
- KEWI contributed in the editing of the NRW Guidelines and Handbook.

e) Feedback of the achievements based on the Indicators of the PDM (15 min.)- by Eng. Mori, JICA Experts:

Most of the Pilot WSPs are now able to successfully identify the distribution pipe branches having significant amounts of leakages or illegal connections by conducting step tests and using listening sticks and other leak detection equipment. Although the Covid-19 pandemic made the reduction of NRW more difficult, the WSPs have successfully lowered their universal NRW ratio.

However, Nyahururu's and Embu's universal NRW have been rather stagnant at around 40% for the last 12 months but a gradual reduction is now being observed.

The main target area for Embu has been Mukangu distribution zone which has around 5500 customers, the main problems being illegal connections and abundant leaks.

As for Nyahururu, the target area has been Marmanet scheme which has 3000 connections and faces issues of widespread and abundant leaks and illegal water use as it is a rural zone. Gatero scheme is also part of the target area.

In regards to Output 4, regular departmental meetings should be held. Due to the Covid-19 pandemic, each Pilot WSP had to stop or reduce regular or routine inter-departmental meetings on NRW-related issues but since the pandemic is currently settling down, the pilot WSPs are gradually re-starting and making it a routine to hold such meetings to enhance their awareness and effective coordination for better NRW reduction activities.

All the 9 Pilot WSPs have been formulating and updating their annual and medium-term NRW reduction plans continuously for the last 5 years and are encouraged to keep updating them even after completion of the project.

4. Pilot WSPs' opinions based on their feedback of the activities (50 min.)

On achievement, progress, challenges or way forward of the pilot WSPs towards the completion of the project. – 5min. per WSP

Kilifi Mariakani

Achievements:

- Inter-departmental meetings were still being held especially after billing to ensure the analysis was done well.
- The equipment received from the Ministry are being used and have gone a long way in helping to identify leaks.
- The NRW unit has been given focus in the WSP as strategic plans on NRW reduction has been developed and is being funded.

Challenges:

- Intermittent water supply since water received twice a week hence supply is low.
- Vandalism and illegal water connections are rampant.

Way forward:

- Operationalization of DMAs is at 80% and expects to operationalize most of the remaining within a month.

Mavoko

Achievements:

- They have managed to map their piped network.
- Their NRW ratio has reduced to 36% and are hoping to drop to 32% by the end of the 4th quarter.
- The equipment received from the Ministry are being used and have made an impact as they've helped in identify leaks.
- Initiation of DMAs is ongoing.
- Inter-departmental meetings are been held monthly and they assist in planning.
- Some smart metres have been installed.
- Water supply has been low but is slowly improving.

Challenges:

- Customer meter tampering is a major issue.

Embu:***Achievements:***

- The NRW unit was well coordinated, established and funded.
- Use of HDPE pipes has been fully adopted.
- The equipment received from the Ministry are being utilized.
- The commercial and billing department is now being involved in NRW issues, mostly on meter readings.
- Use of new technology i.e., KOBO collect was embraced and is being utilized.
- Awareness is being raised in schools on matters concerning water conservation.

Challenges:

- Damage of service pipes by road construction leading to leakages.
- 60% of the customers are in the rural areas. during the dry season, there were issues of illegal connections due to irrigation water needs by customers.
- The digital metering implemented was to be used to relay data to the office and it took a huge investment but most of the meters ended up failing due to electrical short circuiting.

Way forward:

- Embu is working on phasing out all old meters.
- Large consumers are being monitored twice a month to ensure their meters were working properly.

Nyahururu***Achievements:***

- Customer Identification Surveys was done.
- The equipment received from the Ministry are being utilized.
- The GIS system is being used together with smartphones for meter reading and line patrols.
- The elevation differences have been identified within pressure zones so as to know which pipes to use during repairs due to the different pressure ratings so as to minimize recurrent bursts.
- Awareness creation through school campaigns is ongoing.
- Implementation of billing analysis has helped track losses especially in large consumers.
- The Abnormal Flow Monitoring Sheet has been used to help identifying abnormal flows in DMAs hence quick response time.

Challenges:

- Old pipelines and infrastructure still in use and a huge budget is needed to replace it.

Way forward:

- They are approaching the national government and other sponsors for funds to help in replacing the old infrastructure.

Ruiru-Juja

Achievements:

- There's a functional NRW Unit
- 19 DMAs have been established and have further been subdivided to assist in easier identification of anomalies.
- MNF measurement is being carried out frequently.
- Billing data is now monitored and evaluated critically.
- Use of equipment and KOBO collect have assisted greatly.
- 80% of the customers have been mapped through GIS.
- Replacement of old PVC pipes with HDPE is at 80% progress.

Challenges:

- Damage of service pipes by road constructions leading to leakages.
- Customers tampering with meters is rampant but installation of seals will be implemented for protection the same.
- Water shortage is still an issue in some DMAs.

Kisumu

Achievements:

- KOBO collect has assisted in quick bursts repairs.
- MNF measurement and Step tests have helped set priority areas.
- Staff have been trained on use of equipment which has helped in pressure management.
- The hand pumps are being used to identify illegal connections.

Challenges:

- Hydraulic zoning was difficult due to complexity of the network.
- Internal restructuring was an issue as NRW officers are moved to other departments hence losing the required trained and skill workforce.

Meru

Achievements:

- HDPE pipes are in use and all service lines will be replaced by the end of the 4th quarter.
- Air valves have been installed in all storage tanks to increase bulk meter accuracy.
- Customer meters that have been in use for 8 years or more are set to be replaced.
- KOBO collect questionnaires have been incorporated.
- Quality data collection is now a practice and routes have been created to ensure efficiency.
- Customer meters have been sealed to ensure there is no tampering.

Challenges:

- 65 DMAs are set to be created which is quite expensive. Meru Water plans to begin operationalisation of 15 DMAs.
- Technicians keep losing their smart phones and it's expensive to keep getting them new ones.
- There's shortage of raw water for supply but boreholes are being considered as another source of water.

Eldoret

Achievements:

- Over 250km of dilapidated pipelines have been replaced.
- 100 large consumer meters have been replaced with 20 remaining.
- MNF and step tests have helped in identifying lines with issues.
- Over 200km of HDPE Pipes have been installed.
- Pressure valves have also been installed.
- Mechanical production bulk meters have been replaced with electromagnetic ones.
- A legal framework has been set up to curb illegal water users.
- A reward system has been set up for whistle blowers which has assisted in reducing illegal connections.
- Awareness creation in the community on water conservation is ongoing under the #lindamajimtaani.
- Over 50 staff members have been trained on NRW management in KEWI.

Challenges:

- Lack of funds to replace the old lines
- Intermittent water supply
- Illegal connections are still an issue

- Interference by road constructions and fibre optic cable instalment projects.

5. Discussion, opinions or requests – All the participants (15 min)

Mr. Karanja commended the WSPs on utilizing the new technologies and equipment. WSPs were urged to take Chapter 1 of the NRW Handbook seriously. On the issue of funding, WSPs were encouraged to be self-sustaining in that they should be able to finance their own projects seeing that Kenya’s state changed to a middle-income country meaning accessing grant aid funding from JICA and other donors will be difficult. WSPs argued that the revised tariffs were not enough to finance huge infrastructural overhauls. They stated that is need for the National Government, the County Governments, the WWDAs and the WSPs to streamline their activities and have a definitive structure to ensure harmony in projects. They were informed that National Government is holding discussions on the infrastructure overhaul needed in the water sector.

Mr. Sekimoto advised the WSPs to do door-to-door patrols on service lines so as to easily detect leaks that would otherwise be overlooked by bike patrols.

WSPs were encouraged to form a relationship with their customers as most don’t know that they can report illegal connections to the WSPs by either having clinics or forming WhatsApp groups.

Mr. Karanja commended the placement of air valves after bulk meters as it helps water flow fully in the pipes. He advised that bulk meters reading should be within a short timespace and synchronized with customer meter readings during NRW ration analysis.

To avoid loss of skills due to restructuring, it was agreed that all staff be trained on NRW as teamwork is important in fighting NRW.

6. Training of Introduction on Q- Field as an alternative for Web GIS, Kobo Tool Box and Portable GIS

Mr. Mori’s presentation is attached.

7. A.O.B.

Mr. Cyrus Mugendi informed the members on the workshop of the 3 countries’ water companies (Kenya, Malawi and Rwanda) planned for 10th to 12th May 2022 With South Africa attending as an observer. Kenya will be the host with EWASCO acting as the representative. The Pilot WSPs were also invited as it would be a good forum to learn from other countries and share ideas.

Mr. Moseti also invited the members for a NRW symposium that will be held in Mombasa on the 9-10th of May, 2022.

Ms. Sugimoto requested for opinions from members on a planned thematic workshop that will target the commercial departments and will help them

understand their role in curbing NRW. It will be a remote one and be a good chance for the Pilot WSPs to kickstart the training of the other WSPs.

8. Remarks or comments from JICA Kenya office

Mr. Yokota encouraged members to purpose to deliver more water to people by reducing NRW and to ensure that collaboration between the stakeholders are maintained even after completion of the project.

9. Closing Remarks

Eng. Njeru thanked members for availing themselves for the meeting and for their contributions. He also pointed out that the WSPs had made commendable progress in regards to the project activities. He also encouraged them to make routine use of the equipment that they had received during the project and also those that they had bought. He thanked the JICA Experts for their dedication to the project activities.

There being no other business to be discussed, the meeting ended at 11:30am.

ATTENDANCE LIST

No.	Name	Institution
	ENG. SAO ALIMA	WATER SECRETARY
1.	ENG. VICTOR NJERU	HEAD OF NRW UNIT, MWI&S
2.	MR. GEORGE BOKESIA	NRW OFFICER, MWI&S
3.	MR. JOSEPH MWANGI	NRW OFFICER, MWI&S
4.	MS. MARY TURITU	MWSI, INTERN
5.	MR. WALTER M. MOSETI	KEWI
6.	MR. CYRUS MUGENDI	EWASCO
7.	MR. JOB LIECH	KIWASCO
8.	ENG. JESSEE AMBUNDO	MAVOKO
9.	MR. JAMES NYAUMA	MAVOKO
10.	MR. LEONARD MUTAI	NAWASCO
11.	MR. GILBERT MUTAI	NAWASCO
12.	MR. PAUL MUTHAMI	NYAHUWASCO
13.	MS. MARY NJOKI	RUIRU JUJA
14.	MR. PETERSON MURITHI	RUIRU JUJA
15.	MR. CORNELIUS MUTAI	KIMAWASCO
16.	MR. FRANKLINE THURANIRA	MEWASS
17.	MR. MASAYUKI TAGUCHI	CHIEF ADVISOR, JICA EXPERTS TEAM
18.	MS. HIROKO SUGIMOTO	JICA EXPERTS TEAM
19.	MR. NAOKI HARADA	JICA EXPERTS TEAM
20.	MR. SHOZO MORI	JICA EXPERTS TEAM
21.	MR. GEORGE KARANJA	JICA EXPERTS TEAM
22.	MR. CHARLES MAINGI	JICA EXPERTS TEAM
23.	MS. KELLYJOY GAKII	JICA EXPERTS TEAM

Apologies

WASPA

別添 9. NRW 管理基準改定委員会議事録



REPUBLIC OF KENYA
MINISTRY OF WATER AND SANITATION

**MINUTES OF INCEPTION MEETING FOR EDITORIAL COMMITTEE TO REVIEW
NON-REVENUE WATER MANAGEMENT STANDARDS HELD IN DIRECTOR
WATER, SEWERAGE & SANITATION DEVELOPMENT OFFICE 6TH JUNE 2018 AT 7.30
AM**

Present

- | | |
|----------------------|---------------------------------|
| 1. Eng SAO Alima | Ag Water Secretary (Chairman) |
| 2. Masayuki Taguchi | Chief Advisor, JICA Expert Team |
| 3. Daniel Ngugi | WASREB |
| 4. Anderson N Kioi | MW&SNRW Unit (Taking Minutes) |
| 5. Walter Moseti | KEWI |
| 6. Patricia Wanjeri | WASPA |
| 7. Annpatliz Mwihaki | COG |

Apology

David Mabonga

Agenda

1. Preliminaries
2. Chairman address
3. Inception of the NRW Standards review editorial committee
4. Reaction from members
5. AOB

Min 01/6/2018: Preliminaries

The chairman called the meeting to order at 7.35am and welcomed and thanked all participants for keeping time. He informed the meeting that he had scheduled the meeting that early due to his busy days' schedule.

Min 02/6/2018: Chairman's Address

The chairman informed the meeting that he had seen it necessary to kick start the formulated editorial committee meetings to review the NRW Standards under output 2 of the project as

mandated to WASREB. He articulated the roles of WASREB as regulator and the current observations from the JICA Expert team regarding the usage of NRW standards. After explanation of his expectations of the NRW editorial committee and concerns to be addressed, he emphasized that he expected the editorial committee to have regular consultations with other WSPs apart from the current 9No pilot WSPs by JICA. On tracking the progress of the editorial committee, he expected the committee to be submitting monthly reports and the same reports to the PIC meetings.

Min 03/6/2018:Inception of the NRW Standards Review Editorial Committee

After inception of the committee, the chairman informed the meeting that the draft Terms of Reference presented by JICA Expert will act as guideline to kickoff the meeting and expected the editorial committee to refine this TOR and submit to him for approval. Draft TOR for editorial committee review of NRW Standards comprised of existing NRW standards produced in 2014 in four books thus guidelines, manuals, hand book and case studies.

In addition, other contents of the TOR comprise of content, membership, committee mission & responsibilities, timeline and printing including dissemination.

The JICA Expert also presented a model questionnaire to be used for sampling the usage of the current NRW Standards meant to supplement the current NRW audit being undertaken by WASREB. Members appreciated the effort but requested to be emailed the drafts for their input in order to enrich them.

After discussions, the meeting agreed to adhere to the proposed timeline of 15months and handle the activities accordingly.

Min 04/6/Reaction from Members

- Budget to implement the proposed activities
- Involvement of other stakeholders

Min 05/6/2018: Budget for Editorial Committee’s Revision of NRW Standards

The chairman informed the members to prepare and submit to him a reasonable working budget for the implementation of activities by the committee within the given timeline.

AOB

Members promised to work within the given timeline and to liaise with other stakeholders when revising the NRW Standards as appropriate. Members thanked the Chairman for taking time to officiate the editorial committee’s first meeting.

Having no other business to transact, the meeting ended at 9.00 am

Minutes drafted by: ANDERSON KIOI Date:

Secretary

Minutes confirmed by: ENG. SAO ALIMADate:

Chairman

Terms of Reference

Project for Strengthening Capacity in Non-Revenue Water Reduction

Terms of Reference for Editorial Committee on Revision of Non-Revenue Water Management Standards

1. Context

Non-Revenue Water Standards (hereafter referred to as “ NRW Standards”) is an important publication to be used for standardizing the NRW Management activities and outputs of Water Service Providers (WSPs) in Kenya. The current NRW Standards were developed in 2014 and consist of the following set of four documents;

1. NRW Standards Guideline
2. NRW Standards Manual
3. NRW Standards Handbook
4. NRW Standards Case Studies

Due to the ongoing restructuring of the water sector to conform to the Water Act 2016, some of the contents of the NRW Standards may not be suitable to the current Water Service sector situation in Kenya hence the need to revise them for a turn around to be realized in the NRW management.

To provide safe and adequate water to the Kenyan population, and in fulfilment of the progressive realization of the right to water as enshrined in the Constitution, the reduction of NRW is one of the key targets. The Government of Kenya set the target to reduce national NRW level to 25% in line with Vision 2030. However, the dissemination of NRW reduction skills and technologies is a pressing challenge among Water Service Providers and other stakeholders. Therefore, the revision of NRW Standards is included as one of the activities of JICA 's “ Project for Strengthening Capacity in Non-Revenue Water Reduction in Kenya ” (hereafter referred to as the “Project”).

The Editorial Committee (referred hereafter as the “ Committee ”) as constituted by the Ministry of Water and Sanitation aims to provide revised NRW Standards that will guide NRW management day-to-day activities of WSPs to achieve the national goal. The Committee intends

to include in the revised NRW Standards the following concepts;

1. To correspond to the international standards on NRW management practices
2. To incorporate Kenyan's social economic and environmental conditions as the context
3. To provide user friendly contents by using appropriate tools (e.g. ample charts, photos etc) especially for technical guidance and instructions.
4. To incorporate the participation of consumers and stakeholders into NRW reduction activities WSPs and other stakeholders.
5. Continuously emerging issues

2. Objectives of the NRW Standards Editorial Committee

The Committee is expected to undertake the following:

1. To review and evaluate the Key Findings of "NRW Audit of WSPs" conducted by WASREB.
2. To conduct supplementary survey by administering questionnaires to select WSPs and other key stakeholders.
3. To review the draft questionnaire for the WSPs based on the NRW Audit of WSPs by Wasreb
4. To review the current NRW Standards and identify its challenges and potential areas/items to be revised.
5. To review the guidelines and manuals established by WASPA and other organizations in order to facilitate their appropriate content inclusion in the new standards to assist WSPs in the NRW management activities.
6. To establish the components and the respective contents of the revised Standards.
7. To review achievements and/or results of activities implemented in the JICA's Project and/or other projects or activities by WSPs and identify to what extent they can be incorporated into the revised Standards.
8. To create draft revised Standards.
9. To carry out stakeholder consultations on the draft revised NRW Standards
10. To incorporate the comments of stakeholders to the extent possible in the revised NRW Standards to encourage usability
11. To carry out dissemination of the revised NRW Standards

12. To report the progress of the NRW Standards editorial committee's work to Project Implementation Committee (PIC) meetings every month.

3. Members of the NRW Standards Editorial Committee

The Committee consist of members nominated by the organizations involved with NRW reduction activities of Kenya's water service sector under the JICA Project as approved and appointed by Ministry of Water and Sanitation. Additional members may be co-opted if those members are recommended by the committee and approved by the PIC and Ministry of Water and Sanitation.

4. Timeline of the NRW Standards Editorial Committee

The Committee shall fulfill its objectives in approximately fifteen (15) months' time after kickoff meeting which was held on 6th June 2018. The proposed activities with timeliness shall be presented to the Project's PIC meeting for its acceptance and the final timeline and activities will be confirmed upon its acceptance.

5. Printing and dissemination of the new NRW Standards

Printing and dissemination of the new NRW Standards will be implemented by the Ministry of Water and Sanitation with the other organizations as appropriate in accordance with the plan prepared by the Committee during the 3rd Phase of the Project.

6. Outputs

The Committee is expected to give the following outputs;

- i. Acceptable TOR
- ii. Work Plan
- iii. Budget
- iv. Monthly Progress reports to PIC
- v. Draft revised NRW Standards
- vi. Final revised NRW Standards plus soft copy (ies)
- vii. 700 No copies of printed revised NRW Standards

NRW Standards Editorial Committee Proposed Work Plan and Budget:

No	Objectives/Activities	Time frame	Responsible	From.....To	Budget Kshs
1	To review and evaluate the results of NRW Audit of WSPs conducted by WASREB.	2 weeks	Committee	19 th Sept - 3 rd Oct 2018	Nil
2	To conduct supplementary survey by administering questionnaires to select WSPs and other key stakeholders.	1.5 months	Committee	19 th Sept - 25 th Oct 2018	Nil
3	To review the current NRW Standards and identify its challenges and potential areas/items to be revised.	2 months	Committee	19 th Sept - 30 th Nov 2018	1,070,000
4	To review the guidelines and manuals established by WASPA and other organizations in order to facilitate WSPs' activities effectively.	2 months	Committee	19 th Sept - 30 th Nov 2018	Jointly with 3 above
5	To establish the components and the respective contents of the revised Standards.	2 months	Committee	19 th Sept - 30 th Nov 2018	Jointly with 3 and 4 above
6	To review achievement and/or	6 months	Committee	April 2019	1,070,000

No	Objectives/Activities	Time frame	Responsible	From.....To	Budget Kshs
	results of activities implemented in the JICA 's Project and/or other projects or activities by WSP and identify if they can be incorporated into the revised Standards.				
7	To create draft revised Standards.	2 months	Committee	August 2019	2,190,000
8	To carry out stakeholder consultation on the draft revised NRW Standards	1 day	Committee	October 2019	1,000,000
9	Incorporation of stakeholders ' comments into the draft revised NRW Standards	1 month	Committee	November 2019	1,070,000
10	Printing of the newly revised and finalized version of the NRW Standards in readiness for launching and dissemination	1 month	Committee/MWS/WASRE B	December 2019	2,000,000
11	To carry out launching and dissemination of the revised NRW Standards	2 months	Committee/MWS/WASRE B	Project Phase III - January 2020	3,000,000

No	Objectives/Activities	Time frame	Responsible	From.....To	Budget Kshs
12	To report the progress of the edition of the standard to JICA 's Project Implementation Committee (PIC) which is held monthly.	15 months	Team	Monthly	150,000
	Totals	15 Months			11,550,000

Distribution of the Proposed Budget;

1. FY 2018/19 – Kshs 2,230,000
2. FY 2019/20 – Kshs 9,320,000

Kshs 11,550,000

PROPOSED WORK PLAN AND BUDGET WORKINGS

1. To review and evaluate the results of “ NRW Audit of WSPs ” conducted by WASREB - 2 weeks.
 2. To conduct supplementary survey by administering a questionnaire to select WSPs and other key stakeholders based on NRW Audit by Wasreb.
 - Sharing of draft questionnaire - COB by **Charles** (to get responses by Mon 5th Oct 2018) (Responses to **Kelly Joy** of JICA Experts Team)
 - Drafting of questionnaire for other stakeholders (WASPA, KEWI, GIZ, SNV, VEI, MWS, WASREB, COG) - by 5th Oct 2018 - (Responses to **Kelly Joy** of JICA Experts Team)
 - Validating of the questionnaires at a meeting on 8th Oct 2018
 - Administering the 2No sets of questionnaires – Send out by 10th Oct 2018 and expected responses to WASREB by 18th Oct 2018
 - Survey (s) analysis by Wasreb **Daniel**) – by 25th Oct 2018
 3. To review the current NRW Standards and identify its challenges and potential areas/items to be revised;
 - Continuous desk review
 - Week long workshop:
 - Conference costs – 10No people @Ksh 4,000 per day for 5 days=**Kshs 200,000**
 - DSA Committee - 10No people @Ksh 10,000 per day for 6 days=**Kshs 600,000**
 - DSA support team - 4No people @Ksh 10,000 per day for 6 days=**Kshs 240,000**
 - Transport and Stationery – Lumpsum **Kshs 30,000**
- Sub Totaling to Kshs 1,70,000**
4. To review the guidelines and manuals established by WASPA and other organizations in order to facilitate WSPs' activities effectively together with 3 above

5. To establish the framework, components and the respective contents of the revised Standards in forward looking together with 3 and 4 above.

6. To review achievement and/or results of activities implemented in the JICA's Project and/or other projects or activities by WSPs and identify if they can be incorporated into the revised Standards.

➤ Continuous desk review

➤ Week long workshop:

Conference costs – 10No people @Ksh 4,000 per day for 5 days=

Kshs 200,000

DSA Committee - 10No people @Ksh 10,000 per day for 6 days=

Kshs 600,000

DSA support Team - 4No people @Ksh 10,000 per day for 6 days=

Kshs 240,000

Transport and Stationery – Lumpsum **Kshs 30,000**

Sub Totaling Kshs 1,070,000

7. To create draft revised NRW Standards.

➤ 2 Weeks long retreat:

Conference costs – 10No people @Ksh 4,000 per day for 12 days=

Kshs 480,000

DSA Committee - 10No people @Ksh 10,000 per day for 12 days=

Kshs 1,200,000

DSA support team - 4No people @Ksh 10,000 per day for 12 days=

Kshs 480,000

Transport and Stationery – Lumpsum **Kshs 30,000**

Sub Totaling Kshs 2,190,000

8. To carry out stakeholder consultation on the draft revised NRW Standards

A day workshop with conference packaging in Nairobi:

(47No Counties @2No officers + 88No WSPs @2No officers +25No.

Counter Parts officers - approx. 250No people @Kshs 4,000= **Kshs**

1,000,000

9. Incorporation of stakeholder comments into the draft revised NRW Standards

Conference costs – 10No people @Ksh 4,000 per day for 5 days= **Kshs 200,000**

DSA Committee - 10No people @Ksh 10,000 per day for 6 days= **Kshs 600,000**

DSA support team - 4No people @Ksh 10,000 per day for 6 days= **Kshs 240,000**

Transport and Stationery – Lumpsum **Kshs 30,000**

Sub Totaling Kshs 1,070,000

10. Printing of the newly revised and finalized version of the NRW Standards in readiness for launching and dissemination

(90No WSPs@5No copies each+ 30No Stakeholder organizations @3No copies each + 100No copies for adhoc distribution for visibility) = 640 copies, Say 700No copies to be printed @Kshs 2,000 each = Kshs 1,400,000,

Say **Kshs 2,000,000**

11. To carry out launching and regional disseminations of the revised NRW Standards

A day workshop with conference packaging in Nairobi: (47 Counties @2No + 88No WSPs @2No+25No. CP --- approx. 250No@4,000 + DSAs (DSA Committee - 10No people @Ksh 10,000 per day for 12 days
DSA support team - 4No people @Ksh 10,000 per day for 12 days)

= Kshs 1,000,000 + 1,200,000 + 480,000

= Kshs 2,680,000

Say **Kshs 3,000,000**

12. To report the progress of the editorial committee 's work to Project Implementation Committee (PIC) meetings every month.

Tea and lunch for 10 No @ Kshs 1000 for 15 months= **Kshs 150,000**

Workplan in Time-schedule

Year		2018																				2019
Month		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	
		Jun.	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
1	Structuring of the Committee Members	Plan	■	■																		
	Actul.																					
2	To review and evaluate the results of NRW Audit of WSPs conducted by WASREB.	Plan			■																	
	Actul.																					
3	Conduct and Review Supplementary survey to WSPs and other stakeholders through questionnaires based on the results of the NRW Audit	Plan			■	■	■															
	Actul.																					
4	Reviewing Current NRW Standards and identify potential items/areas to be revised	Plan			■	■	■															
	Actul.																					
5	Reviewing of the guidelines and manuals established by WASPA and other organizations in order to facilitate WSPs' activities effectively	Plan			■	■	■															
	Actul.																					
6	To establish the components and the respective contents of the revised Standards.	Plan			■	■	■															
	Actul.																					
7	To review achievement and/or results of activities implemented in the JICA's Project and/or other projects or activities by WSP and identify if they can be incorporated into the revised Standards.	Plan										■										
	Actul.																					
8	Drafting Revised Standards	Plan														■						
	Actul.																					
9	To carry out stakeholder consultation on the draft revised NRW Standards	Plan																	■			
	Actul.																					
10	Printing of the newly revised and finalized version of the NRW Standards in readiness for launching and dissemination	Plan																			■	
	Actul.																					
11	To carry out launching and approximately six regional disseminations of the revised NRW Standards	Plan																			■	
	Actul.																					

MINUTES OF MEETING HELD IN KEWI BOARD ROOM

Project: The project for Strengthening Capacity in Non-Revenue Reduction

Subject: Review of Non-Revenue Water Reduction Joint Training

Date: September 6th and 10th 2018

Attendants Present:

KEWI (Mr. W. M. Moseti)

KEWI (Mr. F. Muriithi)

KEWI (Mr. J. Kihara)

MWS (Mr. D. Mabonga)

MWS (Mr. A. Kioi)

JICA (Mr. S. Shibakazi)

JICA (Mr. M. Taguchi)

Meeting Agenda

1. Reporting on the concluded joint trainings
2. Simple test analysis/ Comment survey questionnaires
3. Comments from 3rd party evaluators
4. Conclusions
5. Next joint training
6. AOB

The meetings commenced at 9:30am at KEWI boardroom.

Min 1. Reporting on the concluded joint trainings

- ✓ Mr. Moseti informed the members that KEWI and leading WSPs have conducted so far 4No NRW Joint trainings
- ✓ Both trainings were conducted using the new structure of both classroom and On-Job Training at site
- ✓ 3rd NRW Joint training was conducted in April and June 2018
 - Participants for the training were invited from (MWS, Eldoret, Ruiru-Juja, Kisumu, Nakuru, and Kilifi-Mariakani as pilot WSPs in the project to join other WSPs that had applied for a regular NRW short course that was scheduled that time)
 - MWS, Eldoret and Kisumu participated both classroom and On-Job training sessions
 - Ruiru-Juja WSP participated classroom session only
 - Nakuru and Kilifi-Mariakani WSP did not participated in any sessions
 - Thika, Kirinyaga, Sijenta participated as independent sponsored WSPs in the training
- ✓ 4th NRW Joint training was conducted in August – September 2018
 - Participants for the training were invited from (Ruiru-Juja, Kisumu, Nakuru, and Kilifi-Mariakani as pilot WSPs in the project
 - The invited WSPs participated in the training apart from Kisumu who did not respond for the training
 - Ruiru-Juja, Nakuru and Kilifi-Mariakani WSPs attended both classroom and On-Job training at site

Min 2. Simple test analysis/ Comment survey questionnaires

- ✓ Simple test is a true or false exam and comment survey questionnaires are administered to participants to test their awareness and understanding about Non-Revenue Water reduction and to get feedback from individuals, that is done before and after the training
- ✓ From the responds analysis of the participants the results were showing participants improvement, drop and in some cases no change to participants and we wanted to know why that was the trend instead of the expected improvement to all the participants.

It was pointed out that these may be the reasons for the trend:-

- Wrong nomination of the participants for the course by the WSPs
- Some questions may not be clear
- Some participants not working along NRW related activities
- Participant different levels of education back ground

Min 3. Comments from 3rd party evaluators

- ✓ Instructors had knowledge on the allocated subjects
- ✓ Time allocation to topics need to be reviewed
- ✓ Objectives needs to be more clear to the participants
- ✓ Improvement of the lesson plans needs to be enhanced
- ✓ Group discussions to be encouraged to participants
- ✓ Time allocation needs to be reviewed for the course
- ✓ ODK be included in the NRW training

Min 4. Conclusions

- ✓ The same revised simple test and comment survey questionnaires format to be used in the 5th Joint training without change
- ✓ Simple test and comment survey questionnaires format will be reviewed
- ✓ Ethic topic to be formulated and included in the next training
- ✓ The WASREB NRW standards topic to be included in the next training
- ✓ ODK tools to be included in the next training
- ✓ Commercial losses be reviewed in the next Joint training and incorporate ODK approach
- ✓ Next course to be advertised to WSPs in time (one month in advance)

Min 5. Next joint training

- ✓ The time of implementation of the next NRW Joint training should be decided in consideration of the progress of the following works
 - Review of the training materials and text materials
 - Evaluation report
 - Challenges are addressed in the next joint training and measures to be taken are shared among the P/Ps members
 - Disbursement of the training budget

AOB

- ✓ Mr. Moseti requested that the JICA expert on NRW equipments should help in activating the pressure data loggers that were supplied by the project for their effective use in the training
- ✓ Mr. Shibazaki asked the training Instructor to review the NRW text book, lesson plans and training materials before the next training
- ✓ Mr. Taguchi insisted that ODK approach to be included in the training materials
- ✓ Instructors be acquainted with output '4' activities to see what they can include in the training
- ✓ KEWI should be aware about idea of the revision of WASREB's NRW Reduction Standards being preceded and sensitize such information to the trainees through the Joint training course.

There being no other business the meeting comes to an end at 12:30pm

Prepared by
W. M. Moseti (KEWI)

**MINUTES OF 3RD NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE
HELD AT WASREB ON 4TH FEBRUARY 2019**

Organizations	WASREB, MWS, KEWI, JICA Experts Team	Action
Date & Time	Monday 4 th February 2019 at 10:00am – 4:30pm	
Venue	WASREB Boardroom	
Participants	Eng. Richard Cheruiyot – WASREB Eng. Daniel Ngugi – WASREB Mr. David Mabonga – Ministry of Water and Sanitation Mr. Anderson Kioi - Ministry of Water and Sanitation Mr. Walter Mosefi - KEWI Mr. Masayuki Taguchi – Chief Advisor JICA Expert Team Mr. Noboru Saito – JICA Experts Team Mr. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii – JICA Experts	
Agenda of the meeting		
<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the previous meeting 3. Dissemination of the questionnaire 4. Revision of the work plan 5. AOB 		
Opening Remarks		
<p>The meeting was called to order by Eng. Ngugi. He welcomed members for the meeting and appreciated them for attending the meeting. He pointed out that it was long since we sat as the editorial committee but it was worth noting that there has been some progress in the work. He said the new standards were not a domain of anybody so what will be agreed on is what will be documented and introduced to the WSPs. He further invited members to introduce themselves and their respective organizations.</p> <p>Eng. Cheruiyot further informed the members that NRW standards are very key for WASREB and they are pushing hard to see to it that the current standards are revised. He said though NRW figures had improved, the WSPs still need to work harder so as to bring this monster down to acceptable levels.</p>		WASREB
<p>Minute 01/02/2019: Review of the minutes from the previous meeting</p> <p>The chairperson requested members to take 2 minutes to go through the previous minutes. He then sought to know from the ministry's side whether the TOR, workplan and the budget that were presented to the ministry were approved. Eng. Ngugi further informed the members that the</p>		MWS

<p>budget that was initially prepared by the committee members was scaled down to 5million. Mr. Mabonga responded by informing the members that the three documents were approved. The budget for the current financial year which was 1.4 million was approved and a memo was done and signed by the PS authorizing the money to be released to WASREB.</p>	
<p>Mr. Mabonga requested to know why it had taken so long for the committee to have their 3rd sitting. Eng. Ngugi responded by informing the members that like he had reported in the PIC meeting there were so many activities which made it impossible for the workplan to be effected but we should appreciate that work has been progressing well though the meeting did not take place.</p>	Wasreb
<p>The minutes were confirmed after being proposed by Mr. Anderson Kioi and seconded by Mr. Charles Maingi.</p>	
<p>Minute 02/02/2019: Dissemination of the Questionnaire Eng. Ngugi informed the members that he had only worked on the questionnaire for the WSPs since in his reasoning he felt that the counterparts were already represented as committee members and therefore they had a chance to give their views or comments during the meetings. He further reported that in the previous week he had prepared a letter to send to the WSPs that were participating in the survey. The letter was supposed to be sent together with the link to the questionnaire but as at the day of the meeting he had not yet confirmed with the IT department whether they had already sent the link. Eng. Ngugi informed the members that he had considered 53 WSPs from the very large, large and medium WSPs to participate in the survey. He also said it was worth noting that all the 9 pilot WSPs are also taking part in the survey. He informed the members that he had given the WSPs a deadline of 15th February 2019 within which they are expected to have sent back their feedback for analysis. Members agreed that after the feedback was received from the WSPs and an analysis done, it would be important to involve other stakeholders. Organizations like Vitens Evides, SNV, World bank and GIZ (informally through Mr. Moseiti) will be invited for a wrap-up meeting so that together with the committee members they can give their comments on the survey's analysis.</p>	WASREB
<p>Minute 03/02/2019: Structure of the new NRW standards The chairman informed the members that the current NRW standard comprises of the Guideline, Manual, Hand-book and a case study.</p>	All

<p>Members agreed that it was important to separate the documents e.g. for the management and the rest of the operational group. They further agreed to merge the guidelines and the manual and have it for the management. They also agreed that the Case Study will not be part of the standards but will be used to back up the good practices independently. The case study will be produced and disseminated annually possibly together with the Impact Report.</p>	All
<p>Mr. Saito suggested to the members that the current Guideline and Manual were well composed generally in comparison with other countries' because they reflect Kenyan technological level and the background of the society. He also said "It was not necessary to revise drastically their component. Therefore, only wordings or descriptions which were not suitable to the present situation after the Water Act was enacted". All the members agreed basically to his opinion.</p>	
<p>Meter categorization has changed recently from the "A, B, ...and E" to "R- " by IWA. However, considering the present situation, the old category is still widely recognized in Kenya. So inter-relation between the two categories is recommended in the new standards for user's convenience. The issues on new tools such as the ODK form (Open Data Kit), template for NRW reduction planning and the analysis of meter-reading/billing-data, which are activities of Output 4, were agreed to be discussed in the subsequent meetings. The members agreed that smart meters will not be addressed in the new standards because their effectiveness is still unclear in Kenya.</p>	Wasreb
<p>Members further went through the guideline, the manual and the hand book and agreed on the parts that would either remain in the new standards, pulled out, merged to the guideline or will be improved to suit in the new standards. They also agreed to use the current results where applicable.</p>	All
<p>Members further shared out responsibilities and agreed that they should give feedback during the next meeting. The responsibilities were as shown below:</p>	
<p>Guideline: Has three chapters i.e. Self-assessment, Basic information and performance indicators. WASREB was tasked with working on the guideline.</p>	
<p>Manual: - has 12 chapters which were shared as below: Chapter 1: Mr. Mabonga Chapter 2: Mr. Charles Chapter 3: Mr. Moseti Chapter 4: Mr. Charles</p>	

Chapter 5: Mr. Karanja
Chapter 6: Mr. Moseti
Chapter 7: Mr. Moseti
Chapter 8: Mr. Charles
Chapter 9: Mr. Charles
Chapter 10: Mr. Charles
Chapter 11: Mr. Karanja
Chapter 12: All the members

The handbook: has 8 chapters which were shared as below:

Chapter 1: Mr. Mabonga
Chapter 2: Mr. Kioi
Chapter 3: Mr. Charles
Chapter 4: Mr. Moseti
Chapter 5: Mr. Moseti
Chapter 6: Mr. Moseti
Chapter 7: Mr. Charles
Chapter 8: Mr. Charles

Min 04/02/2019: AOB

Eng. Ngugi apologized to the members for lack of proper planning in the side of refreshments and promised that this would be looked into in future. He also requested the secretary to remind him to send the invitations for the next meeting on time.

Members agreed that the next meeting will be held on 13/03/2019 tentatively at 10:00am in WASREB boardroom.

There being no other business, the meeting was adjourned at 1630hrs.

MINUTES OF 4TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE HELD AT WASREB ON 13THMARCH 2019

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Wednesday 13 th March 2019 at 10:00am – 12:30pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Daniel Ngugi – WASREB Mr. David Mabonga – Ministry of Water and Sanitation Mr. Anderson Kioi - Ministry of Water and Sanitation Ms. Patricia Wanjeri – WASPA Ms. Annpatliz Mwihaki – CoG Ms. Zipporah Muthama – CoG Eng. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii – JICA Experts Team</p> <p>Absent with Apology Mr. Walter Mosefi - KEWI</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the previous meeting 3. Update on the survey for the usage of the NRW management standards 4. Review of progress in drafting the chapters/contents of the new NRW Standards 5. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Ngugi at 10.30am. He welcomed members for the meeting and appreciated them for attending the meeting. He pointed out that it was his expectation that the members will continually attend the meetings on monthly basis ahead of the PIC for reporting purposes. He further reiterated that was optimistic that all the members were able to get the documents that he shared with them in word version though not all and that the remaining which is the hand book was to be sent to them in the course of the day. However, he informed the members that the handbook was available in power point version which he felt was also helpful to the members.</p> <p>Minute 01/03/2019: Review of the minutes from the previous meeting The chairperson requested members to take 2 minutes to peruse through the previous minutes. Members agreed to be registering</p>	WASREB

<p>members absent with or without apologies in the minutes.</p> <p>Eng. Ngugi enquired to know if the ministry had released the money to WASREB. Mr. Mabonga responded by informing the members that he was not sure of the status but he would be enquiring from the accounts department. Regarding meter categorization that was marked for WASREB in the previous minutes Eng. Ngugi informed members that WASREB had no mandate to endorse a specific meter but can recommend use of specifications that have worked well for certain WSPs.</p> <p>Eng. Ngugi further recommended that since some of the members were not in during the previous meeting it would be advisable to redistribute the tasks so that everyone is involved in the editorial work. Members unanimously agreed noting that some members had been allocated a lot of work and it was wise to try and have equity. They also agreed that for record purposes the secretary should include the number and content on the allocation schedule.</p> <p>The minutes were confirmed after being proposed by Mr. Anderson Kioi and seconded by Mr. George Karanja.</p>	<p>WASREB & MWS</p> <p>ALL</p>
<p>Minute 02/03/2019: Update on the survey for the usage of the NRW Management standard</p> <p>Eng. Ngugi informed members that he had administered the questionnaire to 66 WSPs but only 31 WSPs (about 47%) had sent their responses so far. He further said that they were currently analysing with the received responses though they had not closed receiving the responses from the rest of the WSPs. In his opinion he felt that the reason the WSPs never submitted the responses could be because they do not practice or use the standards. He also said that there were some few questions that were never answered by the respondent but they were working on them. Ms. Zipporah - CoG requested that WASREB do a continuous reminder to the WSPs who had not responded and see if they can get some to respond. Eng. Ngugi replied that they had constantly reminded the WSPs with no success. However, he said he will push it further himself and see if he can get at least 50% plus responses. He also informed members that he was hopeful that by the next meeting the analysis will be complete and that the results will be of use to the team doing the editing of the standards.</p> <p>Minute 03/03/2019: Review of the progress in drafting the chapters/ contents of the new NRW standards</p> <p>The chairman informed the members that like he had said earlier some members had too many chapters to work on and considering</p>	<p>WASREB</p>

<p>they too had other office work, it may end up being a burden to them. Members agreed that it was necessary to involve the members who were not present in the previous meeting by redistributing the work with each task being handled by at least two members for enrichment. The chairman also recommended to have the lead person per task without restricting contribution from either member to make the standards better.</p> <p>In view of this the work was subdivided as follow:</p> <p><u>GUIDELINES:</u>Members agreed that Eng. Ngugi will work on the guidelines</p>	
<p><u>MANUAL:-</u>has 12 chapters which were shared as below: (the 1st person allocated a chapter takes the lead)</p>	Eng. Ngugi
<p>Chapter 1:Basic concept of NRW management - Mr. Mabonga, Ms. Annpatliz and Ms. Zipporah</p>	Mr. Mabonga
<p>Chapter 2:Fundamental measures in NRW management - Mr. Charles and Ms. Patricia</p>	Mr. Charles
<p>Chapter 3:Reduction of physical losses - Mr. Mose tiand Mr. Karanja</p>	Mr. Mose ti
<p><i>Chapter 4:</i>Reduction of commercial losses - Mr. Charlesand Mr. Mose ti</p>	Mr. Charles
<p>Chapter 5:Activities in pilot area - Mr. Karanja, Ms. Annpatriz, Ms. Zipporah and Mr. Mose ti (KEWI teaches this so Mr. Mose ti is very resourceful in this part)</p>	Mr. Mose ti
<p>Chapter 6: Customer meter - Mr. Mose ti and Ms. Patricia</p>	Mr. Charles
<p>Chapter 7:Leakage prevention in construction work - Mr. Mose ti and Ms. Patricia</p>	Mr. Karanja
<p>Chapter 8: Concept of zoning -Mr. Charlesand Mr. Karanja</p>	Mr. Mose ti
<p>Chapter 9:Water pressure management - Mr. Charles, Mr. Mose ti and Mr. Kioi</p>	Mr. Mose ti
<p>Chapter 10: Information management system (GiS) - Mr. Charles and Ms. Patricia</p>	Mr. Charles
<p>Chapter 11: Cost benefit analysis -Mr. Karanja, Ms. Annpatriz and Ms. Zipporah</p>	Mr. Charles
<p>Chapter 12:NRW Reduction plan - Eng. Ngugi, Ms. Annpatriz, Ms.</p>	Mr. Karanja

Zipporah and Ms. Patricia	
HANDBOOK: has 8 chapters which were shared as below: (the 1 st person takes the lead)	Eng. Ngugi
Chapter 1: What is non-revenue water - Mr. Mabonga and Ms. Patricia	
Chapter 2: Understanding the water flow - Mr. Kioi and Ms. Patricia	Mr. Magonga
Chapter 3: Mapping - Mr. Charles and Mr. Mosefi	Mr. Kioi
Chapter 4: Reduction of physical loss – Ms. Patricia and Mr. Mosefi	Mr. Charles
Chapter 5: Quantifying physical losses - Mr. Mosefi and Ms. Patricia	Ms. Patricia
Chapter 6: Construction method - Mr. Mosefi and Ms. Patricia	Mr. Mosefi
Chapter 7: Reduction of commercial losses – Mr. Karanja and Mr. Charles	Mr. Mosefi
Chapter 8: Water pressure management - Mr. Charles, Ms. Patricia and Mr. Kioi	Mr. Karanja
Mr. Charles Maingi JICA Experts Team office reported that most of the content in the current standards were well captured but a bit of changes and editing e.g. in grammar was necessary.	Mr. Charles
Eng. Ngugi also informed that he was aware that there were activities in the project that were very important (e.g. output four activities)and whose ideas should be incorporated in the standards.In this regard Mr. Charles was requested to give some information on meter reading and billing analysis and then members will discuss on how the information will be included in the standards.	
Mr. Kioi also reported that he had noted some repetition in the hand book and the manual which also needed to be removed.	
Min 04/03/2019: AOB	
The secretary was requested to prepare a new WhatsApp group for the members so that urgent matters can easily be discussed in the forum.	
Mr. Kioi suggested that the WASPA meetings and otherfora with WSPs should be used to encourage the WSPs to use the NRW standards.	
Ms. Zipporah requested that a timeline for the events be availed to the members for efficiency. Eng. Ngugi informed that a work plan was formulated during the initial meeting but it needed revision. Members	

agreed this will be included in the next meeting's agenda.

Members agreed that the next meeting will be held on 10/04/2019 tentatively at 10:00am in WASREB boardroom.

There being no other business, the meeting was adjourned at 12:30pm.

MINUTES OF 5TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE HELD AT WASREB ON 17TH APRIL 2019

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Wednesday 17 th April 2019 at 10:30am – 02:30pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Daniel Ngugi –WASREB, Chairman Eng. Peter Njaggah - WASREB Mr. Anderson Kioi - Ministry of Water and Sanitation Ms. Annpatliz Mwihaki – CoG Mr. Walter Mosefi - KEWI Ms. Zipporah Muthama – CoG Mr. Masayuki Taguchi – JICA Experts Team Mr. Shozo Mori – JICA Experts Team Mr. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Ms. Patricia Wanjeri – WASPA Mr. David Mabonga – Ministry of Water and Sanitation</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the previous meeting 3. Report on the survey for the usage of the NRW Management standards 4. Review of progress in drafting the chapters/contents of the new NRW Standards 5. Review of the work plan 6. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Ngugi at 10.20am. He welcomed members for the meeting and appreciated them for attending the meeting. He also apologized for having to postpone the meeting in the previous week and stated that it was due to other assignments that came up urgently. He also welcomed Mr. Taguchi and Mr. Mori to the meeting since they were away during the previous meeting. He said that he had the survey results ready and he would be presenting it to the members and that according to the responses from the WSPs it was evident that what they needed was an easy and user-friendly guideline for their use.</p>	WASREB

<p>The minutes were confirmed after being proposed by Mr. Anderson Kioi and seconded by MS. Zipporah Muthama.</p>	
<p>Minute 02/04/2019: Report on the survey of the usage of NRW Management standards</p>	
<p>Eng. Ngugi informed the members that WASREB had administered the questionnaire to 66 WSPs and so far 41 WSPs, which was an equivalent of 62% had responded which means an additional of 10 WSPs have also sent their responses from the previously reported 31 WSPs. He further made a presentation of the survey report to the members and promised to send it to the members immediately after the meeting.</p>	<p>Eng. Ngugi</p>
<p>From the survey report there were questions which were not responded and he explained that this was due to the IT structuring that made the WSPs unable to respond to the questions as was anticipated.</p>	
<p>Eng. Njaggah in his comments pointed out that it was important for members to think of the right things they can add or remove from the Guidelines so as to make them more effective for use. He gave the following examples that would be useful out of the responses received from the WSPs; governance in the utilities, implementation of NRW Programmes and also other innovative ways of NRW programmes.</p>	<p>Eng. Njaggah</p>
<p>Mr. Mosefi also informed the members that according to the survey done at KEWI after the 5th Joint training, there were some useful ideas that were realized from the WSPs and these can be amalgamated with the current survey to get more valuable ideas and way forward.</p>	<p>Mr. Mosefi</p>
<p>Mr. Mori suggested that it was important to use the basic approaches that are working in the output 4 of the project and incorporate these ideas to the new standards since they are already tested and confirmed to be true.</p>	<p>Mr. Mori</p>
<p>Eng. Ngugi reminded the members that like he had suggested there before, the committee is willing to embrace any workable ideas from any of the members as long as they are realistic and for the improvement of the standards.</p>	<p>Eng. Ngugi</p>
<p>Mr. Mori further presented to the members an example of the basic approach that could work and members agreed that he should prepare a proposal and present it to members for discussion.</p>	<p>Mr. Mori</p>
<p>In conclusion Mr. Taguchi JICA Experts team chief advisor suggested that members should consider incorporating all the good ideas</p>	<p>Mr. Taguchi</p>

shared so as to have the standards that are useful and beneficial to the WSPs. In this regard, he supported the suggestion made by both Mr. Mori and Eng. Njaggah and termed them as useful.

Minute 03/04/2019: Review of progress in drafting the chapters/contents of the new NRW Standards

The chairman went through the chapters as they were allocated to the members. From the response received from the members it was clear that they had progressively worked on the chapters they were allocated but they had not shared their comments with their respective team members. In this regard, members agreed to share the comments with their respective team members before the next meeting. That means during the next meeting the lead person in the various chapters will be reporting on the team comments.

Eng. Ngugi

Minute 04/04/2019: Review of the work plan

The members through the lead of the chairman went through the workplan and revised some areas as shown below:

Eng. Ngugi

- ❖ Reviewing Current NRW Standards and identify potential items/areas to be revised: Should be complete by May 2019
- ❖ Drafting of the revised standards: Should be done by 3rd week of the May 2019
- ❖ To carry out stakeholder consultation on the draft revised NRW Standards: Should be done by end of July 2019
- ❖ Printing of the newly revised and finalized version of the NRW Standards in readiness for launching and dissemination: Should be done by August 2019
- ❖ To carry out launching and approximately six regional disseminations of the revised NRW Standards: Should be done by September 2019

Mr. Charles Maingi of JICA Experts team was tasked with revising the workplan and sharing it with the members thereafter using the Gantt charts in excel sheets.

Mr. Charles

Minute 05/04/2019: Any Other Business

The chairman thanked all the members for attending the meeting and for their patience all through. He also stated that he hoped that the committee will be able to make a difference and be able to recover the time lost so far. He further reminded and requested the

Ministry to help the committee to progress especially by facilitation on the pending activities that require budgetary support.

Members agreed that the next meeting will be held tentatively on Wednesday 8th May 2019 at 10:00am in WASREB's boardroom.

There being no other business, the meeting was adjourned at 02:30pm with a word of prayer from Ms. Kellyjoy.

**MINUTES OF 6TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE
HELD AT WASREB ON 23RD MAY 2019**

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Thursday 23 rd May 2019 at 10:30am – 03:30pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Daniel Ngugi –WASREB, Chairman Mr. Anderson Kioi - Ministry of Water and Sanitation Mr. David Mabonga – Ministry of Water and Sanitation Ms. Patricia Wanjeri – WASPA Mr. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Ms. Annpatriz Mwhaki – COG Ms. Zipporah Muthama – COG Mr. Walter Moseki – KEWI</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the previous meeting 3. Review of the proposed strategic approach to drafting of the revised NRW Standards 4. Review of progress in drafting the chapters/contents of the revised NRW Standards 5. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Ngugi at 10.30am. He welcomed members for the meeting and appreciated them for attending the meeting. He also apologized for having to postpone the meeting twice and stated that it was due to other assignments that involved the members. However, he said that he was keen to make sure the meeting was held on 23rd May 2019 as the members had agreed to hold meetings on monthly basis.</p> <p>Minute 01/05/2019: Review of the minutes from the previous meeting The chairperson requested members to take 2 minutes to peruse through the previous minutes.</p>	<p>WASREB</p> <p>Eng. Ngugi</p>

<p>Eng. Ngugi informed the members that WASREB had not yet received the money from the Ministry. He therefore requested Mr. Mabonga to follow up on the same. Members agreed that even though the money was not yet released they should continue working on their part and be ready for the retreat as they await the funds for this activity.</p>	<p>WASREB & MWS</p>
<p>Eng. Ngugi further requested members to use the survey report findings to enrich their revisions of documents where necessary. He also encouraged them to continue sharing their contents in various chapters with their team members so as to give each member a chance to understand and also to share their views.</p>	<p>Eng. Ngugi</p>
<p>The minutes were confirmed after being proposed by Mr. Charles Maingi and seconded by Mr. Anderson Kioi.</p>	
<p>Minute 02/05/2019: Review of the proposed strategic approach to drafting of the revised NRW Standards</p>	
<p>Mr. Charles JICA Experts team, shared with the members a copy of the table of content for the would-be guideline as shared to members by Mr. Mori. From the document members made the following comments:</p>	<p>Mr. Charles</p>
<ul style="list-style-type: none"> ❖ Instead of naming an activity as e.g. "stage 1 only, members resolved it should be "Stage 1: "<i>name of the stage</i>"". 	
<p>Mr. Charles also shared with the members an improved planning template for the WSPs for which they made the following comments:</p>	
<ul style="list-style-type: none"> ❖ The template to be locked so that it is not editable by the WSPs ❖ The template to have a simplified version for a the base WSPs. ❖ The template to have a manual for the WSPs to know how to use it. ❖ The NRW Guideline and planning template to use the same terminologies e.g. "level" instead of "stage" so as to rhyme with the clustering guidelines on commercial viability criteria by WASREB. ❖ Use simple and understandable English for all the users e.g. in fig 2.1 ❖ Use of the different patterns in figures instead of different colours in anticipation of printing and/or photocopying in black and white. ❖ Eng. Ngugi requested members to review the points-award criteria to various activities so as to ensure balance. ❖ Mr. Charles was also requested to clarify on the percentages of 	

<p>points award system from Mr. Mori</p> <ul style="list-style-type: none"> ❖ Members recommended to have a correlation between the achievements on the annual reporting and NRW levels of a WSP. ❖ Members appreciated the work done by Mr. Mori and agreed to adopt the table of content he had shared with the corrections they suggested. <p>Minute 03/05/2019: Review of progress in drafting the chapters/contents of the revised NRW Standards</p> <p>Eng. Ngugi shared with the members his part of the guideline. Members commended the work done by the chairman on the document. His completion rate was 85%</p> <p>Manual</p> <p>The rest of the members shared the work that they had done on their parts as follows:</p> <p>Chapter 2: Mr. Charles and Ms. Patricia – 80% completion rate Chapter 3: Mr. Mosefi and Mr. Karanja – 80% Chapter 4: Mr. Charles and Mr. Mosefi 80% Chapter 5: Mr. Karanja, COG, Mr. Mosefi - 80% completion rate Mr. Karanja also informed the members that he had also not shared his part with his team members Chapter 6: Ms. Patricia and Mr. Mosefi – 60% completion rate. Ms. Patricia shared with the members what Mr. Mosefi had done and also informed the members that she will be working on her part and share with the members. Chapter 7: Ms. Patricia and Mr. Mosefi – 75% completion rate. Members agreed that Mr. Kioi be included in this team. Chapter 8: Mr. Charles and Mr. Karanja – 80% completion rate Chapter 9: Mr. Charles and Mr. Mosefi – 70% completion rate Chapter 10: Mr. Charles and Patricia – 60% completion rate All the chapters shared by Mr. Charles were not shared with his team members except chapter 8 that was shared with Mr. Karanja. Members agreed that they should amend on the chapters using “Track changes” and should not accept the changes but the entire committee will accept after going through the chapters together.</p> <p>Handbook</p> <p>Some members had worked on this document but in hard copy while others were still working on it. In view of this members agreed that they will give the handbook a priority during the next editorial committee meeting.</p>	<p>Eng. Ngugi</p> <p>All</p>
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<p>Minute 04/05/2019: Any Other Business</p> <ul style="list-style-type: none"> • Members evaluated themselves as per the work done as 70% achievement. • Members agreed to adopt the table of content developed by Mr. Mori • Members agreed that Mr. Kioi and Mr. Mabonga should work together on their chapters <p>The chairman thanked all the members for attending the meeting and for their patience all through. He also appreciated the members for the work they had done so far. However, he regretted that the work plan had to be adjusted once again due to the Ministry's delay in the releasing of the funds to WASREB and also because of the members who had not completed working on their parts.</p> <p>Members agreed that the next meeting will be held tentatively on Friday 14th June 2019 at 09:00am in WASREB's boardroom.</p> <p>There being no other business, the meeting was adjourned at 03:30pm</p>	<p>All</p> <p>Eng. Ngugi</p>
<p>Minutes Confirmed:</p> <p>.....</p> <p>Chairperson, Daniel M. Ngugi Water Services Regulatory Board</p> <p>.....</p> <p>Secretary, Anderson Kioi NRW Unit Ministry of Water and Sanitation</p>	<p>WASREB & MWS</p>

MINUTES OF 7TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE MEETING HELD AT WASREB ON 14TH JUNE 2019 AT 10.30AM

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Friday 14 th June 2019 at 10:30am – 03:30pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Peter Njaggah – WASREB, Chairman Eng. Daniel Ngugi – WASREB Mr. James Origa – World Bank Mr. Anderson Kioi - Ministry of Water and Sanitation Mr. David Mabonga – Ministry of Water and Sanitation Mr. Walter Moseki – KEWI Ms. Patricia Wanjeri – WASPA Mr. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Mr. Shozo Mori – JICA Experts Team Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent without Apology Ms. Annpatliz Mwihaki – COG Ms. Zipporah Muthama – COG</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Performance based contract (PBC) presentation 3. Review of minutes of the 5th committee meeting 4. Review of progress in drafting the chapters/contents of the revised NRW Standards; <ol style="list-style-type: none"> a) Handbook b) Guideline/Manual 5. Review of the adopted table of content for the new NRW Standards 6. Review of approach and procedure of the revision of the guideline 7. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Njaggah who introduced Mr. James Origa from World Bank to the members. He further informed the members that the World Bank together with WASREB were working with some WSPs in Kenya on the NRW management under 2030 Water Resources Group using the innovative approach known as Performance Based Contract (PBC). It was for this reason that he had invited Mr. James so that he could share a presentation with the members on what they are doing and also share success stories from the previous projects that have used the same approach in the globe.</p>	Eng. Njaggah

<p>Minute 03/06/2019: Review of progress in drafting the chapters/contents of the revised NRW Standards;</p> <p>a) Handbook</p> <p>b) Guideline/Manual</p> <p>Members shared their comments as per the chapters shared during the 4th editorial committee meeting as follows:</p> <p>The Manual:</p> <p>Chapter 1: Basic concept of NRW management - Mr. Kioi</p> <p>Chapter 2: Fundamental measures in NRW management - Mr. Charles and Ms. Patricia</p> <p>Chapter 3: Reduction of physical losses - Mr. Mosefi and Mr. Karanja</p> <p>Chapter 4: Reduction of commercial losses - Mr. Charles and Mr. Mosefi</p> <p>Chapter 5: Activities in pilot area - Mr. Karanja,</p> <p>Chapter 6: Customer meter - Mr. Mosefi and Ms. Patricia</p> <p>Chapter 7: Leakage prevention in construction work - Mr. Mosefi and Ms. Patricia</p> <p>Chapter 8: Concept of zoning - Mr. Charles and Mr. Karanja</p> <p>Chapter 9: Water pressure management - Mr. Charles, Mr. Mosefi and Mr. Kioi</p> <p>Chapter 10: Information management system (GIS) - Mr. Charles and Ms. Patricia</p> <p>Chapter 11: Cost benefit analysis - Mr. Karanja</p> <p>Chapter 12: NRW Reduction plan - Eng. Ngugi shared his input on this together with the guideline.</p> <p>The handbook:</p> <p>Chapter 1: What is non-revenue water - Mr. Kioi</p> <p>Chapter 2: Understanding the water flow - Mr. Kioi and Ms. Patricia</p> <p>Chapter 3: Mapping - Mr. Charles and Mr. Mosefi</p>	<p>All</p> <p>Eng. Ngugi</p> <p>All</p>
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<p>Chapter 4: Reduction of physical loss – Ms. Patricia and Mr. Mosefi</p> <p>Chapter 5: Quantifying physical losses - Mr. Mosefi and Ms. Patricia</p> <p>Chapter 6: Construction method - Mr. Mosefi and Ms. Patricia</p> <p>Chapter 7: Reduction of commercial losses – Mr. Karanja and Mr. Charles</p> <p>Chapter 8: Water pressure management - Mr. Charles, Ms. Patricia and Mr. Kioi</p>	
<ul style="list-style-type: none"> ✓ After the presentation by all the members, they further engaged in more discussions on the key areas in the revision of the guidelines. Mr. Mori requested the members to ensure that the content they were giving the WSPs were clear and satisfactory. He also encouraged them to focus on the things that makes a lot of difference for the WSPs e.g. a good solution to avoid many leakages could be the use of the HDPE pipes. ✓ He also pointed out that the guideline can change the reality of things in the WSPs ✓ Mr. Mori also suggested that he could come up with a simpler version of the billing analysis for the WSPs. ✓ Members further agreed that the use of standards and specifications in the WSPs had a huge gap and needed to be addressed in the new guidelines ✓ Mr. Mosefi suggested that the handbook should give a clear highlight and steps to follow in doing various activities ✓ Mr. Charles suggested that the members should embrace the use of the right procedures that are simple in doing various activities. ✓ After a lengthy deliberation among members, they all agreed that despite the effort they had put up so far, there was a gap in the expertise especially in the following areas; CIS, GIS, Pressure management and Billing analysis. They were therefore of the opinion, by consensus, that they needed more help of the JICA Experts to ensure that they deliver well on their task i.e. more time for a JICA Expert Team specialist to help put into a logical perspective the contents of the new guideline. Members were thus in agreement that this missing gap can be addressed by the PIC approving that request. ✓ Members further agreed that the structure of the handbook needed to be redone with the right procedures and the pictures of various activities. 	<p>Mr. Mori</p> <p>WASREB</p>
<ul style="list-style-type: none"> ✓ Mr. Mori also suggested that the members should try and check on the guidelines from various countries so as to get a better picture of what should be done though they vary from country to country depending on their situation. 	<p>All</p>

✓ Members further agreed that they had a difficulty working separately and therefore they needed to be together for further progress especially for consultation purposes on specific subject matters of the content of the new guideline.

Minute 04/06/2019: Review of the adopted table of content for the new NRW Guideline

Mr. Mori, JICA Experts team, shared with the members the edited version of the table of content for the would-be guideline having included the views that were made by the members during the 6th editorial committee meeting.

Handbook

Mr. Mori also took the members through the current handbook table of content for discussions. Members jointly proposed a typical table of content for the proposed new Handbook. They also agreed that Mr. Mori can further develop it from a wholistic approach in view of the discussion among members that gave indication as to the extent of the expected content for the designated caliber of officers expected to make use of it.

Minute 05/06/2019: Review of the approach and procedure of the revision of the guideline

Members were all in agreement that the approach to the new NRW guideline must be very different from that of the old NRW standards if there is expectation that the WSPs shall implement them effectively compared to the low uptake being experienced currently. Members were therefore called upon to critically think of the content being proposed for the new guideline in terms of adaptability and use by WSPs for results.

Members further agreed that Mr. Mori would share more information to inform the new adoptable approach and they would share their opinion and give comments for improvement or otherwise of the new guideline being proposed.

Members agreed that the developed/revised content now required to be amalgamated into a single document that shall now become the first draft of the new NRW guideline. This consolidation shall be done by Mr. Karanja and Mr. Charles both from the JICA Experts team. Members were therefore requested to ensure they submit their individual contents to the duo as soon as was practicable.

It was agreed that the duo will consolidate these contents using the framework that was jointly agreed to be the table of content for the

All

All

All

new guideline. It is from this consolidation that members shall then have a good idea of the need to streamline the contents in joint sittings in a workshop(s) may become a necessity.

Minute 06/06/2019: Any Other Business

Members agreed that the deadline for submitting their final drafts to Mr. Karanja was 18th June 2019.

Members agreed that the next meeting will be tentatively held on Wednesday 17th July 2019 at 09:00am in WASREB's boardroom.

There being no other business, the meeting was adjourned at 03:30pm

MINUTES OF 8TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE MEETING HELD AT WASREB ON 17TH JULY 2019 AT 09:00AM

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Wednesday 17 th July 2019 at 09:00am – 12:30pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Daniel Ngugi – WASREB, Chairman Eng. V.C Njeru – Ministry of Water and Sanitation Mr. Anderson Kioi - Ministry of Water and Sanitation Mr. Walter Mosefi – KEWI Mr. Masayuki Taguchi – JICA Experts Team Mr. George Karanja – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Patricia Wanjeri – WASPA Ms. Annpatliz Mwihaki – COG Ms. Zipporah Muthama – COG</p> <p>Absent with no Apology Mr. David Mabonga</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the 7th editorial committee meeting 3. Review of the consolidated content of the draft new guideline of the revised NRW Standards 4. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Ngugi who further welcomed the members to the 8th editorial committee meeting. He pointed out that members have been careful to hold the meeting as it was planned from the beginning without missing out in any month. Eng. Ngugi further welcomed Eng. Njeru who is the head of the NRW Unit in the MWS. He also said that he hoped that Eng. Njeru would rise up to the occasion and be more vigor in his position so as to help the committee accomplish its mandate.</p> <p>Minute 01/07/2019: Review of the minutes of the 7th Editorial committee meeting Eng. Ngugi requested members to take 2 minutes to peruse through the</p>	Eng. Ngugi

<p>minutes of the 7th Editorial committee meeting.</p> <p>Members reviewed disbursement of funds from the Ministry of Water and Sanitation to WASREB which had repeatedly appeared as matters arising in the previous minutes. Eng. Ngugi took time to explain to Eng. Njeru the need for the budget facilitation since the members had got into a point where they needed to work on the document together. Eng. Njeru responded by informing the members that like he was requested by Eng. Alima during the PIC meeting, he was determined to take up the issue of the budget and see to it that the budget was funded soonest possible. Eng. Ngugi also requested Eng. Njeru to check through the budget and advice where need be.</p> <p>Eng. Ngugi also explained to Mr. Taguchi why the committee required the assistance of Mr. Mori in developing the standards. Mr. Taguchi responded by informing the members that he understood that Mr. Mori's assistance was important in developing the standards especially now that the project was introducing new concept to the WSPs. Members agreed that a meeting between the JICA Experts, WASREB and the MWS should be held soonest possible to discuss this matter before the JCC which will be held on 5th of August 2019 tentatively.</p> <p>Eng. Ngugi also encouraged members to be making comments on the different documents shared to them by various members e.g. Mr. Mori and also Ms. Kellyjoy – Minutes of meeting.</p> <p>The minutes were confirmed after being proposed by Mr. Anderson Kioi and seconded by Mr. Charles Maingi.</p>	<p>WASREB & MWS</p> <p>WASREB & Mr. Taguchi</p> <p>Eng. Ngugi</p>
<p>Minute 02/07/2019: Review of the consolidated content of the draft new guideline of the revised NRW Standards</p> <p>Mr. Karanja did a presentation on the consolidated content of the draft new guideline. He also stated that he and Mr. Charles were at 80% completion rate on the consolidation. He pointed out that the old guideline was missing as part of the table of content. This raised concern to the members and they agreed that was one of the reasons why they needed a rapporteur and also need to work on the document together in a workshop forum</p> <p>Mr. Karanja also informed the members that there were gaps in the table of content that needed to be worked on.</p> <p>Mr. Charles also explained to the members on how output 4 came up with the 33 aspects in the new planning template.</p> <p>Eng. Ngugi also informed the members that there was need to moderate the content so that the volume is not very huge. Members appreciated the work done by Mr. Mori so far in developing the table</p>	<p>Mr. Karanja</p>

<p>of content. Mr. Taguchi pointed out that it was important for the MWS to raise the issue on further engagement of Mr. Mori in the revision of the standards if necessary, during the JCC. He also stated that the committee members should have confidence to be able to analyze how suitable the newly proposed measures, which Output 4 team are implementing, to the staff of Kenyan WSPs. If these measures were a bit high to the staff of normal WSPs, the members should moderate the content to the level that was understandable by them.</p>	Mr. Taguchi
<p>Eng. Ngugi was tasked with calling the informal meeting after agreeing with his director.</p>	Mr. Ngugi
<p>Minute 03/07/2019: Review of the framework of the handbook based on the proposed content: Mr. Karanja further took the members through the handbook and gave justifications as to why it had to be changed. Main reason being to re-organize it so that it is useful to the person on the ground.</p>	Mr. Karanja
<p>Members had allocated task as follows during the 6th editorial committee meeting:</p> <p>1. Targets: All Staff of WSP</p> <p>a. Materials for staff sensitization on NRW (Mr. Mabonga)</p> <p>2. Targets: NRW Field Work Staff</p> <p>a. Procedure of Customer-to-Customer Leak Survey with Acoustic Bars (Mr. Karanja)</p> <p>b. Procedure of Leak Detection using UFM (Ms. Patricia)</p> <p>c. Procedure of Leak Detection using Electric Leak Detector (Mr. Mosefi)</p> <p>d. Procedure of Leak Detection using Leak Noise Correlator (Mr. Mosefi)</p> <p>e. Procedure of Step Test and MNF (Ms. Patricia)</p> <p>f. Procedure of Pressure Measurement (Mr. Charles)</p> <p>3. Targets: O&M Staff</p> <p>a. Procedure of Pressure Test with Hand Pump (Mr. Charles)</p> <p>b. Installation of Customer Meters and Service Connections (Mr. Karanja)</p> <p>4. Targets: Meter Maintenance Staff</p> <p>a. Servicing and Meter Accuracy Test (Mr. Charles)</p>	All
<p>Members agreed that the deadline for circulation to all the members of their contents as assigned would be 2nd August 2019. On receipt members should add their comments on the content.</p>	Eng. Njeru
<p>Minute 04/07/2019: Any Other Business</p>	

<ul style="list-style-type: none"> ✓ Eng. Njeru commented that the committee was doing well but he has noted the challenge that they had in terms of capacity. Since some of the members did not have experience on what works well in the field, Eng. Njeru raised a concern on when or what time was right to have the WSPs come in and assist in the formulation of the guideline. ✓ He also acknowledged the difficulty that the members were facing in their efforts to deliver on their part without the budget facilitation especially now that they need to work on the combined draft document together. ✓ Eng. Ngugi responded by informing the members that WASPA being the umbrella of the WSPs was a part of the committee and also the project and it was expected that they will share what could have come from the WSPs to the committee. ✓ The committee also had engaged the CoG and it was expected that they also represented the public since they are the owners of the WSPs. They also expected that they will be the best platform to engage the public for participation in making the document public. However, Eng. Ngugi pointed out that it was also important to have representatives of water companies one or two committee to be part of the committee to ventilate the document to the WSPs. ✓ Eng. Njeru also informed the members that the thematic workshop would be held on 6th August 2019 tentatively, and the participants will be the 9 pilot WSPs together with other WSPs in the country and their MDs and also the counterparts. A communication on the same was expected to reach out to the members in the course of the week. ✓ Eng. Ngugi raised a concern over the questionnaire survey results that Ms. Sugimoto had enquired on during the 20th PIC meeting. Mr. Taguchi said he would share the result with Ms. Sugimoto. 	<p>Eng. Ngugi</p> <p>Eng. Njeru</p> <p>Eng. Ngugi</p> <p>All</p>
<p>Members agreed that the next meeting will be tentatively held on Wednesday 14th August 2019 at 09:00am in WASREB's boardroom.</p>	
<p>There being no other business, the meeting was adjourned at 12:30pm</p>	

MINUTES OF 9TH NON-REVENUE WATER STANDARDS REVIEW EDITORIAL COMMITTEE MEETING HELD AT WASREB ON 28TH AUGUST 2019 AT 09:00AM

Organizations	WASREB, MWS, COG, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Wednesday 28 th August 2019 at 09:00am – 03:00pm	
Venue	WASREB Boardroom	
Participants	<p>Eng. Daniel Ngugi – WASREB, Chairman Mr. David Mabonga – Ministry of Water and Sanitation Mr. Anderson Kioi - Ministry of Water and Sanitation Mr. Walter Mosefi – KEWI Ms. Patricia Wanjeri – WASPA Mr. Masayuki Taguchi – JICA Experts Team Mr. Charles Maingi – JICA Experts Team Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Ms. Annpatliz Mwhaki – COG</p> <p>Absent with no Apology Ms. Zipporah Muthama – COG</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Review of the minutes of the 8th editorial committee meeting 3. Review of the consolidated content of the new draft NRW guideline based on discussions of the last meeting 4. Review of the content developed for the new Handbook before consolidation based on the allocated tasks in the previous meeting 5. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Ngugi who further welcomed the members to the 9th editorial committee meeting. He apologized for having postponed the meeting twice and explained this was due to other official duties that he had to undertake. He further shared the day's agenda to the members and they confirmed the agenda right for the meeting.</p> <p>Minute 01/08/2019: Review of the minutes of the 8th Editorial committee meeting Eng. Ngugi requested members to take 5 minutes to peruse through the minutes of the 8th Editorial committee meeting.</p>	Eng. Ngugi

<p>Mr. Kioi explained to the members that the editorial committee budget was factored in the year's workplan and also in the procurement plan awaiting the approval by treasury. Eng. Ngugi emphasized on the need for the budget facilitation for further progress of the committee's mandate.</p>	<p>WASREB & MWS</p>
<p>Eng. Ngugi also requested the members to be responding on the documents sent to them by the other members.</p>	<p>Eng. Ngugi</p>
<p>Mr. Taguchi informed the members that before the JCC he raised the need to have Mr. Mori allocated more time in order for him to assist the committee to Mr. Yokota who had been sent from JICA headquarters like the committee had requested in the previous meeting. Mr. Yokota could however not give the clear stand for JICA regarding the same Mr. Taguchi advised the members to have the draft document (Standards) ready and give it to him and he will request Mr. Mori to go through the document and then give the necessary support that the committee requires. He also assured the members that he will give the support that he can in his capacity to them. Mr. Mori can also continue to attend the meetings whenever he is around and also Mr. Charles and Mr. Karanja will continue to attend the meetings as members of output 4.</p>	<p>WASREB & Mr. Taguchi</p>
<p>The minutes were confirmed after being proposed by Mr. Walter Moseki and seconded by Mr. Anderson Kioi.</p>	
<p>Minute 03/08/2019: Review of the consolidated content of the new draft NRW Guideline based on discussions of the last meeting Members agreed that this minute could not be discussed since Mr. Karanja was not in for the meeting, and that like he had reported in the previous meeting him and Mr. Charles had not completed working on the remaining 20% of the Guideline and also the part that was missing in the table of content was still not complete. In this regard members tasked Mr. Charles, Mr. Karanja and Eng. Ngugi to consolidate the draft including the 20% and also incorporate the current guideline in the table of content and have it ready before the next meeting.</p>	<p>All</p>
<p>Mr. Charles was further requested to share the complete draft with the MWS for them to use it to show case the need to have the budget facilitation for the committee to the concerned.</p>	<p>Mr. Charles</p>
<p>Minute 04/08/2019: Review of the content developed for the new Handbook before consolidation based on the allocated tasks in the previous meeting Mr. Charles and Mr. Karanja were tasked with the responsibility of preparing the table of content for the handbook keeping in mind what was in the guideline.</p>	<p>Mr.Charles</p>

<p>Each member further presented what he had worked on according to their allocation in the 6th Editorial committee meeting as shown below:</p>	<p>&Mr. Karanja</p>
<p>1.Targets: All Staff of WSP a. Materials for staff sensitization on NRW (<u>Mr. Mabonga</u>)</p> <p>Comments from members</p> <p>Mr. Mabonga was requested to reorganize his chapter so that the content flows</p>	<p>Mr.Mabonga</p>
<p>2. Targets: NRW Field Work Staff a. Procedure of Customer-to-Customer Leak Survey with Acoustic Bars Since Mr. Karanja was absent during the meeting members agreed that he will present his part in the next meeting</p>	<p>Mr.Karanja in absence</p>
<p>b. Procedure of Leak Detection using UFM (<u>Ms. Patricia</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Enrich on the procedure • Use the set-up procedure and how to get the information from the UFM 	<p>Ms. Patricia</p>
<p>c. Procedure of Leak Detection using Electric Leak Detector (<u>Mr. Mosefi</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Reorganize the procedure in point form and use photographs taken where on the ground where applicable • Include an introduction to leaks • Differentiate on how to detect the simple leaks and the sophisticated leaks • Documents should have maximum of 3 pages • Include parameters/ variables to help calculate the estimated losses. In this regard Mr. Mosefi was requested to work with Mr. Charles 	<p>Mr. Mosefi</p>
<p>d. Procedure of Leak Detection using Leak Noise Correlator (<u>Mr. Mosefi</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Condense the introduction part • Have clear procedure answering: How to mount, what happens when you install, how to collect data and how to dismantle the correlator • Use photographs taken on the ground where applicable 	

<p>e. Procedure of Step Test and MNF (<u>Ms. Patricia</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Members agreed to reorganize the content during the workshop • Avoid abbreviations or give their full wording before using them 	<p>Ms. Patricia</p>
<p>f. Procedure of Pressure Measurement (<u>Mr. Charles</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Use clockwise and anticlockwise instead of below and above • Use a conversion table showing MPA/KPA/BAR and MH • Mention on the installation point • Diversify on gauges that are usable • Include the pressure loggers 	<p>Mr. Charles</p>
<p>g. Bulk meter accuracy testing using the UFM</p> <p>Members tasked Mr. Mosesti to take the lead but work with both Mr. Charles and Ms. Patricia on this.</p>	<p>Mr. Mosesti</p>
<p>3. Targets: O&M Staff</p>	
<p>a. Procedure of Pressure Test with Hand Pump (<u>Mr. Charles</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Include the procedure for both the old and the new hand pumps • Give an introduction first • Have a general procedure then at the end give highlights on specific connections • Include a table on tolerance pressure drops, pipe sizes and number of pipes 	<p>Mr. Charles</p>
<p>b. Installation of Customer Meters and Service Connections (<u>Mr. Karanja</u>)</p> <p>This would be presented in the next meeting when Mr. Karanja comes back</p>	<p>Mr.Karanja in absence</p>
<p>4.Targets: Meter Maintenance Staff</p>	
<p>a. Servicing and Meter Accuracy Test (<u>Mr. Charles</u>)</p> <p>Comments from members</p> <ul style="list-style-type: none"> • Include a definition and why we service meters 	<p>Mr. Charles</p>

<ul style="list-style-type: none"> • Include sealing procedure • • Include the test bench and prefabricated test bench • Include a table <p>Minute 05/08/2019: Any Other Business</p> <ul style="list-style-type: none"> ✓ Mr. Taguchi informed the members that the Experts both local and from Japan will not be working in the month of October 2019 as they have to secure a contract with JICA for phase 3 of the project which is expected to commence in November 2019. However, in the month of September Mr. Karanja and Mr. Charles will be working till the end of the month and they will prioritize on what will be more urgent in their work. In his part he said he was hopeful that the Experts will be back to work early in the month of November 2019. ✓ Members agreed that Mr. Kioi should join in the meeting between Mr. Karanja, Mr. Charles and Eng. Ngugi. ✓ Members agreed to revise the workplan in the next meeting so as to have the document ready by either October or November 2020. <p>Members agreed that the next meeting will be held on Wednesday 25th September 2019 at 09:00am at WASREB's boardroom. There being no other business, the meeting was adjourned at 03:00pm</p>	<p>Mr. Taguchi</p> <p>Mr. Kioi</p> <p>All</p>
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別添 10. ワーキンググループ議事録

WORKING GROUP MINUTES OF MEETING (12TH August, 2021)

Present members

1. Eng. Victor Njeru
2. Eng. Chemerir Chepyegon
3. Eng. Joseph Mwangi
4. Ms. Patricia Mutua
5. Ms. Mary Turitu
6. Mr. Walter Moseti
7. Mr. Masayuki Taguchi
8. Mr. George Karanja
9. Mr. Charles Maingi
10. Ms. Kellyjoy Gakii

Apologies

1. Ms. Patricia Wanjeri
2. Mr. Yator Neville

Agenda

Planning of the work group activities

Eng. Njeru called the meeting to order and requested Ms. Patricia to open the meeting with a word of prayer. He then requested Ms. Patricia to present to the members the days agenda and the members sanctioned it for the meeting.

Members further agreed that they had 4 main activities to undertake before they complete on the editing work of the NRW standards. The activities were as shown below:

1. Incorporation of comments from the stakeholders' meetings – end of August 2021
 2. National validation workshop – mid September 2021
 3. Publishing – end of November 2021
 4. Launching of standard – before 12th December 2021
- ❖ Mr. Karanja was requested to share with the members the consolidated comments from the 3 meetings held earlier i.e., MDs meeting, 1st Stakeholders meeting and 2nd Stakeholder's meeting.
 - ❖ Members to hold a meeting on 17th August 2021, at the same venue starting from 9:00 am. They were expected to have gone through the comments so that in the meeting they will discuss the same.

- ❖ Members agreed to hold the next working meeting on 24th August 2021. In this meeting they would incorporate the comments received from the 2 stakeholders' meetings and the MDs meeting.
- ❖ NRW Unit members were expected on the same day to bring along the preface pages for the members to check and agree on them.
- ❖ The second working meeting would be held on 31st August 2021 in case the committee members will not have concluded the same on the meeting on 24th August 2021.
- ❖ Members agreed to pursue a physical national validation meeting to be held on 16th September 2021. In case a physical meeting was not possible Eng. Chemerir was requested to do further research on the possibility of an effective virtual validation workshop and give feedback during the meeting on 16th September 2021.
- ❖ After incorporation of the comments into the 2 documents members agreed that the two documents should be sent to the people who attended the stakeholders workshop with a cc to their MDs. The 2 documents should be sent by 31st August 2021.
- ❖ In case the validation meeting will be done virtually the participants will be expected to have sent their comments by 16th September 2021.
- ❖ In case the working group will be able to incorporate all the comments during the meeting on 24th August it is expected that they will receive the feedback from the validation workshop by 10th September 2021.
- ❖ After receiving the comments members agreed to take one week to polish up the document. In this view they expect to have the 1st Manuscript by 23rd September 2021. This document should be ready for printing.

AOB

Members agreed to start discussion on dissemination after publishing which will be by the end of November 2021

Members agreed that the MWS&I NRW Unit should come up clearly on what they meant by follow up visit at the WSPs level for further discussion after the publishing of the standards

**MINUTES OF NRW WORKING GROUP ON 17TH AUGUST 2021 AT MINISTRY OF WATER,
SANITATION AND IRRIGATION BOARD ROOM**

Organizations	WASREB, MWS, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Tuesday 17 th August 2021 at 09:30am–12:30pm	
Venue	MWS&I Boardroom	
Participants	<p>Eng. Joseph Mwangi Ms. Patricia Mutua Mr. George Bokesia Ms. Mary Turitu Ms. Patricia Wanjeri Mr. Walter Mosefi Mr. Kihara Kibuchi Mr. Masayuki Taguchi Mr. George Karanja Mr. Charles Maingi Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Eng. Victor Njeru Eng. Chemerir Chepyegon</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Sharing the responsibilities 3. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Joseph Mwangi who further welcomed the members to the meeting.</p> <p>He then requested Mr. Charles to take the members through the minutes of the previous meeting.</p> <p>The minutes were confirmed by Ms. Patricia Mutua and seconded by Mr. Walter Mosefi.</p> <p>Minute 01/08/2021: Sharing of the responsibilities Members agreed to share the responsibility of incorporating the comments as follows:</p>	Eng. Joseph

Have Mr. Karanja leading in incorporating comments from the guidelines and Mr. Mosefi leading in incorporating comments from the handbook.

Below are members who will work together with Mr. Karanja:

Mr. Yator Neville

Ms. Patricia Mutua

Ms. Mary Turitu

Mr. Charles Maingi

Eng. Joseph Mwangi

Eng. Chemerir Chepyegon

Members who will work with Mr. Mosefi in the Handbook

Mr. Kihara Kibuchi

Mr. George Bokesia

Ms. Patricia Wanjeri

Eng. Victor Njeru

- ❖ Members agreed that both the lead persons will agree with their members on how they will work as a group.
- ❖ They should also consider using the track comment in the word document for easy tracking of the changes done on the documents.
- ❖ Members also allocated to each of the members a chapter to work on as shown below:

Guidelines

Chapter 1 – Mr. Yator

Chapter 2 – Ms. Patricia Mutua

Chapter 3 – Mr. Karanja

Chapter 4 – Mr. Charles

Chapter 5 – Ms. Turitu

Chapter 6 – Mr. Charles

Chapter 7 – Mr. Karanja

Chapter 8 – Eng. Chemerir

Chapter 9 – Mr. Karanja

Chapter 10 – Mr. Charles

Chapter 11 – Eng. Joseph

Chapter 12 – Ms. Patricia Wanjeri

Chapter 13 – Mr. Charles

Handbook

Chapter 1 – Mr. Bokesia

Chapter 2 – Mr. Moseti

Chapter 3 – Mr. Moseti

Chapter 4 – Mr. Bokesia

Chapter 5 – Ms. Patricia Wanjeri

Chapter 6 – Eng. Njeru

Chapter 7 – Mr. Moseti / Mr. Kihara

Members agreed to try and make the book professional and more presentable and also try and use the most appropriate headings for the chapters and sub topics

Min 02/08/2021: Any Other Business

There being no other business, the meeting was adjourned at 12:30pm

**MINUTES OF NRW WORKING GROUP ON 23RD AUGUST 2021 AT MINISTRY OF
WATER, SANITATION AND IRRIGATION BOARD ROOM**

Organizations	WASREB, MWS, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Tuesday 23 rd August 2021 at 09:30am–12:30pm	
Venue	MWS&I Boardroom	
Participants	<p>Eng. Joseph Mwangi Ms. Patricia Mutua Ms. Mary Turitu Mr. George Karanja Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Eng. Victor Njeru Eng. Chemerir Chepyegon Mr. George Bokesia Ms. Patricia Wanjeri Mr. Walter Mosefi Mr. Charles Maingi</p>	
Agenda of the meeting		
<ol style="list-style-type: none"> 1. Opening remarks 2. Report from the shared responsibilities 3. AOB 		
Opening Remarks		
<p>The meeting was called to order by Eng. Joseph Mwangi who further welcomed the members to the meeting.</p> <p>He then requested Ms. Patricia to take the members through the minutes of the previous meeting.</p> <p>The minutes were confirmed by Mr. Yator Neville and seconded by Ms. Mary Turitu.</p> <p>Minute 01/08/2021: Reports from the shared responsibilities Mr. Karanja (JICA experts team) informed the members that he had received submissions from Mr. Yator, Ms. Turitu, Eng. Joseph and he had also worked on his part.</p>		Eng. Joseph

He further took the members through what had been done by the members who had submitted their chapters.

Members agreed that Mr. Karanja should share with the members all the comments and submissions from the members via the google drive.

Members agreed that due to the previous presidential decree the validation workshop should be held virtually.

Members who had not yet submitted their comments should do so soonest so as to beat the deadlines

Members should go through the document once it was uploaded in the google drive by so that they will give their comments on 31st August 2021

Have Mr. Karanja leading in incorporating comments from the guidelines and Mr. Mosefi leading in incorporating comments from the handbook.

NRW Unit members to submit the 1st pages of the documents in the next meeting to be held on 31st August 2021.

Min 02/08/2021: Any Other Business

Members agreed that the speed at which they were working was quite low having that they had set deadlines for the completion of work. In view of this the chairman was requested to follow up with the team leader who had not made his submission as of the day of the meeting.

There being no other business, the meeting was adjourned at 12:30pm

**MINUTES OF NRW WORKING GROUP ON 7TH SEPTEMBER 2021 AT MINISTRY OF
WATER, SANITATION AND IRRIGATION BOARD ROOM**

Organizations	WASREB, MWS, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Tuesday 7 th September 2021 at 10:30am–12:00pm	
Venue	MWS&I Boardroom	
Participants	<p>Eng. Joseph Mwangi Ms. Mary Turitu Eng. Chemerir Chepyegon Mr. George Bokesia Mr. Neville Yator Mr. George Karanja Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Eng. Victor Njeru Ms. Patricia Mutua Ms. Patricia Wanjeri Mr. Walter Mosefi Mr. Charles Maingi</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. Report from the shared responsibilities 3. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Joseph Mwangi who further welcomed the members to the meeting.</p> <p>He then requested Mr. George Bokesia to take the members through the minutes of the previous meeting.</p> <p>The minutes were confirmed by Mr. Yator Neville and seconded by Ms. Mary Turitu.</p> <p>Matters arising from the previous minutes of meeting Eng. Chemerir informed the members that hosting the validation workshop virtually appeared to have some challenges since it was impossible for the IT people around to host the same. The other person he targeted to assist was not a member of staff and that meant a</p>	Eng. Joseph

budget for the same was required. However, he suggested that he could approach the water secretary and see if the ministry would cater for the physical meeting. Members agreed on this matter and agreed to hold a virtual meeting on Friday 10th September 2021 to get feedback for the same.

In case the water secretary approves the physical meeting members agreed that the date for the validation workshop will be on 7th October 2021 at Nakuru, Bontana Hotel. They also agreed to target 100 participants for the same.

Ms. Kellyjoy was also tasked to send a link to all the members for the meeting on Friday the 10th of September 2021 at 9:30 am.

Minute 01/08/2021: Reports from the shared responsibilities

Members agreed that waiting for each one of them to work on the chapters they were given was taking a lot of time considering that they had their normal routine work and limited time to complete the editing work. In view of this they agreed to task Mr. Karanja to work on consolidating the two books in communication with Mr. Mosefi and give feedback on 21st September 2021.

Min 02/08/2021: Any Other Business

Members agreed that in case a physical meeting fails they would send the documents to the stakeholders via email and give them time for feedback after which they would hold a zoom meeting to finalize on the document with the stakeholders.

The members of the NRW Unit should send the preface pages to Mr. Karanja before 21st September 2021.

Next work group meeting will be on 21/09/2021.

There being no other business, the meeting was adjourned at 12:00pm

**MINUTES OF NRW WORKING GROUP ON 28TH SEPTEMBER 2021 AT MINISTRY OF
WATER, SANITATION AND IRRIGATION BOARD ROOM**

Organizations	WASREB, MWS, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Tuesday 28 th September 2021 at 10:30am–12:00pm	
Venue	MWS&I Boardroom	
Participants	<p>Eng. Joseph Mwangi Ms. Mary Turitu Mr. Charles Maingi Mr. George Bokesia Mr. Neville Yator Mr. George Karanja Mr. Walter Mosefi Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Eng. Victor Njeru Ms. Patricia Mutua Ms. Patricia Wanjeri Eng. Chemerir Chepyegon Mr. Kihara Kibichu</p>	
Agenda of the meeting		
	<ol style="list-style-type: none"> 1. Opening remarks 2. The Final drafts documents 3. AOB 	
Opening Remarks		
	<p>The meeting was called to order by Eng. Joseph Mwangi who further welcomed the members to the meeting.</p> <p>He then requested Mr. George Bokesia to take the members through the minutes of the previous meeting.</p> <p>The minutes were confirmed by Mr. George Bokesia and seconded by Mr. Yator Neville.</p> <p>Matters arising from the previous minutes of meeting Members confirmed that the planned virtual meeting took place on 10th September 2021, during which members agreed to postpone the meeting that was to be held on 21st September 2021 to 28th September</p>	Eng. Joseph

2021. The postponement meant that all other schedules were to be postponed by one week.

Physical validation workshop was approved by the water secretary. The members of the NRW unit were in the process of seeking approval for the same from the PS. After which the procurement process will begin.

Mr. Mosefi emphasized on the need to have the invitation to the validation directly done to the participants and cc to their MD so that they will have the members who attended the previous workshop attending the validation.

4. Minute 01/09/2021: The Final drafts documents

Eng. Karanja was requested to take the members through the consolidated documents.

Members further agreed on the following:

Mr. Mosefi and Eng. Karanja to prepare a schedule of comments for the 2 books and have them ready for sending to the stakeholders together with the documents on Monday the 4th October 2021.

That the MWS&I NRW unit should send to the participants the consolidated documents plus the comments for them to cross check the documents against the comments which were received during the 2 stakeholder meetings.

Min 02/09/2021: Any Other Business

Members agreed that during the workshop they will project the entire document chapter by chapter so as to give the participants a chance to see the comments incorporated in the document.

The members of the NRW Unit should check the previous standards and agree on how to formulate the preliminary pages.

The NRW Unit members were also to tasked to look for ways in which they can link the two manuals.

The NRW Unit members to ensure that they make follow up calls even after sending the invitations.

Mr. George to share the invitation letter with Mr. Karanja before it was signed.

Next work group meeting will be on 08/10/2021 .

There being no other business, the meeting was adjourned at 12:00pm

**MINUTES OF NRW WORKING GROUP ON 15TH NOVEMBER 2021 AT MINISTRY OF
WATER, SANITATION AND IRRIGATION BOARD ROOM**

Organizations	WASREB, MWS, WASPA, JICA Experts Team and KEWI	Action
Date & Time	Monday 15 th November 2021 at 10:30am–11:20am	
Venue	MWS&I Committee room	
Participants	<p>Eng. Victor Njeru Eng. Joseph Mwangi Ms. Mary Turitu Ms. Patricia Mutua Mr. George Bokesia Mr. Masayuki Taguchi Ms. Hiroko Sugimoto Mr. Sekimoto Mr. Neville Yator – Online Participant Ms. Patricia Wanjeri Mr. George Karanja Ms. Kellyjoy Gakii –JICA Experts Team, Secretary</p> <p>Absent with Apology Eng. Chemerir Chepyegon</p>	
Agenda of the meeting		
<ol style="list-style-type: none"> 1. Opening remarks 2. Validation workshop program 3. AOB 		
Opening Remarks		
<p>The meeting was called to order by Eng. Njeru who further welcomed the members to the meeting.</p> <p>2. Minute 01/11/2021: Validation workshop program Eng. Njeru informed the members that the validation workshop had been approved. He further informed them that the workshop would be held in Nakuru on 25th November 2021 at a venue that would be communicated later. He then presented a draft program for the day to the members to discuss and agree on. Members agreed that the program needed to be adjusted so as to enable the committee to achieve the days target.</p> <p>Mr. Karanja further informed the members that Mr. Mori, JICA Experts, was revising the guideline. Members appointed three members</p>		Eng. Njeru

namely Mr. Karanja, Eng. Mwangi and Ms. Patricia to check through the revised documents before the documents were shared with the other stakeholders on or before the validation workshop.

Members agreed that the moderators of various sections of the day should meet and agree on key areas before the workshop.

Members also agreed to include a presentation on meter sizing in the day's program.

Min 02/11/2021: Any Other Business

Ms. Sugimoto informed the members that she together with the NRW Unit members were intending to undertake more county sensitization activities apart from the 2 that they had conducted earlier. She further informed the members that they were currently planning to hold one in January 2021. Members agreed unanimously to offer the necessary support for the success of these activities.

Ms. Patricia Mutua informed the members that the unit was working on the annual report and they were waiting to receive articles and interviews from the counterparts.

Mr. Taguchi informed the members that the 10th JCC meeting would be held on 1st December 2021 and that it would be a virtual meeting.

There being no other business, the meeting was adjourned at 11:20am

別添 11. ベースライン調査報告書

独立行政法人国際協力機構(JICA)

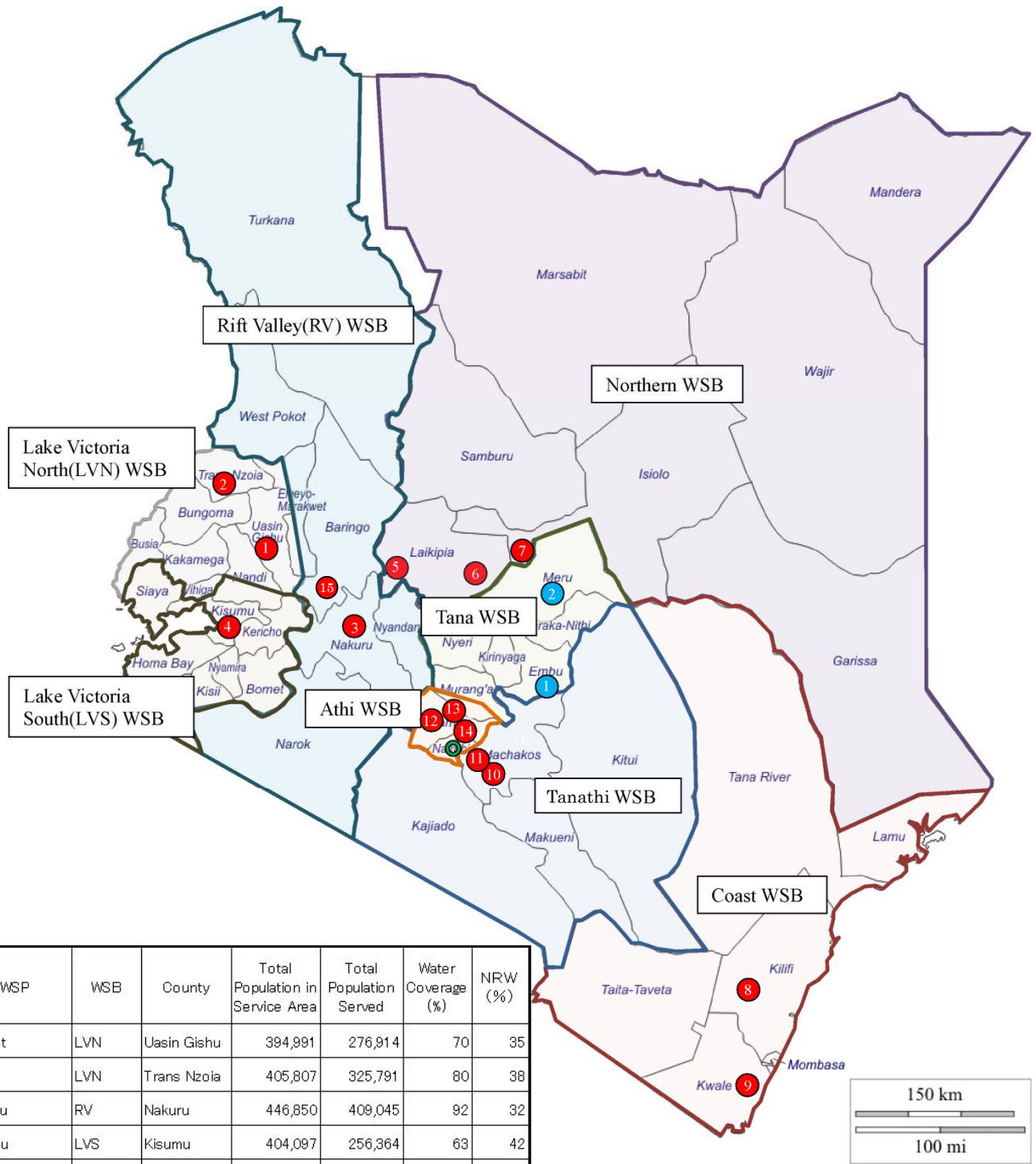
ケニア国

無収水削減能力向上プロジェクト

ベースライン調査報告書

2017年4月

株式会社協和コンサルタンツ
東京水道サービス株式会社
東京水道インターナショナル株式会社



No.	WSP	WSB	County	Total Population in Service Area	Total Population Served	Water Coverage (%)	NRW (%)
1	Eldoret	LVN	Uasin Gishu	394,991	276,914	70	35
2	Nzoia	LVN	Trans Nzoia	405,807	325,791	80	38
3	Nakuru	RV	Nakuru	446,850	409,045	92	32
4	Kisumu	LVS	Kisumu	404,097	256,364	63	42
1	Embu	Tana	Embu	178,910	110,153	62	36
2	Meru	Tana	Meru	133,461	78,643	59	29
5	Nanyuki	Northern	Laikipia	86,768	80,571	93	35
6	Nyahururu	Northern	Laikipia	73,798	57,780	78	49
7	Isiolo	Northern	Isiolo	62,421	33,193	53	35
8	Kilifi Mariakani	Coast	Kilifi	799,788	315,980	40	44
9	Kwale	Coast	Kwale	294,155	194,092	66	32
10	Machakos	Tanathi	Machakos	213,105	114,010	53	26
11	Mavoko	Tanathi	Machakos	182,093	111,132	61	46
12	Limuru	Athi	Kiambu	235,245	108,830	46	32
13	Ruiru-Juja	Athi	Kiambu	184,217	122,354	66	29
14	Kiambu	Athi	Kiambu	98,858	38,453	39	38
15	Chemususu	RV	Baringo	36,040	16,370	45	70

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1. ベースライン調査概要

(1) 目的

ケニア国無収水削減能力向上プロジェクトでは、カウンターパート(C/P)と共に、実施すべき活動の内容をより明確化するため、2016年10月から2017年3月までの間に、合計4ヵ月間、現地でのベースライン調査を実施し、詳細計画策定調査時に明らかにならなかった事項の確認を行った。具体的には、以下に示す本プロジェクトの5つの成果に係わる現地機関の現状を幅広く把握し、課題の抽出及び対策の検討を行うことで、C/Pが実施する今後の活動に対する支援の方向性を明確化することを目的とした。

成果1:水灌漑省(MWI)の無収水対策ユニット(NRW ユニット)による無収水削減活動の促進・調整機能が強化される。

成果2:都市部の水道事業体(WSP)による無収水削減基準の利用が、水道事業監督局(WASREB)により促進される。

成果3:ケニア水道研修所(KEWI)の無収水に関連する研修実施能力が強化される。

成果4:都市部のWSP(合計9ヵ所のパイロットWSP)の無収水削減計画の策定及び実施能力が向上する。

成果5:都市部のWSP間で、無収水削減活動に関する知見や情報の共有が行われる。

貴機構の業務指示書には、プロジェクト開始後約3ヶ月以内に決定する事項として、①パイロットWSPの選定、②供与資機材の決定、及び③本邦研修先の決定が挙げられている。そのため、ベースライン調査では、それらの項目の決定についても重視して行った。また、ベースライン調査の結果は、各成果の発現を評価指標を用いてモニタリング・評価する際に、比較するベースラインとして用いる。

(2) 調査方法

プロジェクトの目標である都市部のWSPが無収水削減活動を継続的に実施するためには、支援体制の確立が必要である。そのため、都市部のWSPだけでなく、支援機関となる水灌漑省(MWI:Ministry of Water Irrigation)の無収水対策ユニット(NRW ユニット)、水道事業監督局(WASREB:Water Service Regulatory Authority)、ケニア水道研修所(KEWI:Kenya Water Institute)等の現状について把握するようにした。調査方法としては、まず、これらの関連機関に対する質問を成果ごとに担当者がまとめて、質問票を作成し、第1回合同調整委員会(JCC:Joint Coordinating Committee)にて了解を得た後、質問票を用いて各機関への聞き取りを実施した。聞き取りは、成果1は無収水管理1、2及び情報管理/広報の担当者が実施し、成果2は無収水管理2及び配水管網、成果3は研修計画・研修管理、無収水管理2、配水管網、成果4は配水管網、流量・水圧・漏水管理及び顧客管理・料金請求、成果5は情報管理/広報がそれぞれ実施した。

また、聞き取りの結果に基づき、支援内容の検討に必要な協議や追加の情報収集を継続し、特に重要なパイロットWSPの選定や機材供与に関しては、テクニカルノートやレターにより、協議の結果を書面に残すようにした。さらに、プロジェクト開始時に開催したJCCに加えて、プロジェクト実施委員会(PIC:Project Implementing Committee)を2度実施することで、ベースライン

調査が効果的に行われるように、関係機関との調整を行った。

ベースライン調査では、C/P との合意形成を図ると共に、C/P の能力向上の一環とすることが重要であったため、各機関への聞き取り調査を、できるだけ主要 C/P である MWI NRW ユニットと共に実施するようにした。しかし、ベースライン調査の期間に、ケニア国では降雨不足による深刻な干ばつが発生したため、水不足の所轄官庁である MWI はその対応に追われて、我々の主要 C/P である NRW ユニットも、その応援に駆り出される状況であった。また、新設された NRW ユニットの事務所の整備が遅れているだけでなく、NRW ユニットが所有する PC が処理速度が極めて遅いデスクトップ 1 台のみの状態がベースライン調査終了間際まで続いた。このような理由から、ベースライン調査では、各関係機関との協議日程の調整や C/P との調査の実施に想定以上の時間が必要であった。

(3) 調査結果

上述したように、MWI NRW ユニットの活動実施体制が十分に整っていなかったこともあり、第二次現地調査の終了時まで、ベースライン調査のための情報収集及び協議を続ける結果となった。しかしながら、下記の主要調査結果に示すように、第二次現地調査中にプロジェクト開始段階で決定する必要がある項目について、ほぼ全て現地側との協議を完了した。

成果 1 については、MWI NRW ユニットと協議することで、彼らの今年度の予算 60 million KSh(ケニアシリング)の費目の見直しを行い、この予算を用いるプロジェクトの活動及び機器等の調達の内容を改善した。また、NRW ユニットが、今後、独自に他の関連機関とのコーディネーションを行えるように、他機関に対する聞き取りだけでなく、それらが開催するワークショップ等にも積極的に参加してもらい、人脈の形成を進めた。また、MWI NRW ユニットからの要請を受け、ケニア国の無収水管理の国家方針書(案)に対して、コメントを出し、問題点を説明することで、その改善に貢献した。さらに、本プロジェクトの活動として実施する無収水削減のための全国キャンペーンの内容を検討するため、関連機関の無収水に係わる広報及び啓発活動の実施状況を調査した。

成果 2 については、WASREB の無収水に関連する様々な活動の状況を調べると共に、WSP への聞き取りなどを通して、現行の無収水削減基準の使用状況及び問題点を把握し、WASREB と共有した。また、無収水削減基準の改定に向けた、今後の取り組みの方針について WASREB と協議した。

成果 3 については、KEWI における無収水及び GIS に関連する研修コースについて、現状把握、課題の抽出等を行った上で、必要となる施設改善、機材調達、研修コースの改善について KEWI と協議した。機材調達については、MWI の NRW ユニットの予算を用いて、漏水探査実習フィールドを整備するための概略設計についても支援した。さらに、無収水削減のための研修コースをより実践的な内容とするため、KEWI 職員の能力向上の一環として、リーディング WSP の協力により実施する合同研修コースの内容の検討についても支援した。

成果 4 については、事前に選定されたリーディング WSP2 カ所、パイロット WSP 候補 15 カ所、及びその他の WSP3 カ所の合計 20 カ所の WSP と、それらを管轄する水道事業地域局 (WSB: Water Service Board) 及びカウンティに対して聞き取り調査を実施した(一部の聞き取りは現地再委託により実施した)。パイロット WSP の選定においては、予め MWI の了解を得た選定基

準を用いて、各パイロット WSP 候補の無収水削減におけるリーディング WSP としてのポテンシャルを評価し、各 WSB 地域において最も高い評価となった 7 ヶ所を新たにパイロット WSP として選定した(内、3 ヶ所は後発パイロット WSP とした)。また、選択した各パイロット WSP を再度訪問し、本プロジェクトにおける支援項目について、各 WSP の C/P と詳細な協議を行った。パイロット WSP の選定及び支援項目の検討においては、他ドナーの活動との調整についても実施した。また、合意した支援項目の内容に応じて、各 WSP において必要となる漏水探査機等の調達についても検討した。選定された合計 9 ヶ所のパイロット WSP については、全国知事会 (CoG: Council of Governors)) にて選定の経緯、結果について説明を行い、了解を得た上で、MWI とテクニカルノートを交わし、パイロット WSP の選定を最終化した。

成果 5 については、関係機関における知見の共有などのナレッジマネジメントの状況について調査した。また、WSP 間の知見の共有において、重要な役目を果たしている水道事業者協会 (WASPA : Water Service Providers Association) と MWI 間での了解覚書 (MOU : Memorandum of Understanding) の締結を支援した。

2. ケニア国における無収水削減の位置づけ、関連法制度、政策及び予算

(1) 無収水削減の位置づけ

ケニア国政府は深刻な水不足を解決するために、水資源の有効活用を図るべく、無収水削減への取り組みを最優先課題として位置づけている。また、各 WSP においてもサービスの向上と経営状況の改善を図るための最重要事項として位置づけ、無収水削減に取り組んでいる。

(2) 関連する法制度と政策

憲法改正(2010年)

2010 年の憲法改正に伴い、ケニア国の中央政府と並列するカウンティ政府が設立され、地方分権化が推進された。その際、全国が 47 のカウンティに分割された。また、水道事業の管轄権も、表 1 に示すように、中央政府とカウンティ政府に分割された。

表 1 水道事業の管轄区分

管轄する政府	管轄内容
中央政府	水利権、水資源の管理、水道利用者の保護、及び国家レベルの事業
カウンティ政府	上下水道サービスの提供、水環境の管理、及びカウンティレベルの事業

水法改定(2016年)

2016 年 9 月に制定された新水法は、2002 年に制定された元水法を 2010 年の憲法改定を踏まえて見直したものである。しかし、CoG は新水法を憲法に抵触しているとして 2016 年 12 月に裁判所へ提訴した。新水法について CoG は、カウンティ政府に十分配慮せず、中央集権的な水道及びサニテーション・サービスの提供及び規制を行う枠組み築くものである、と訴えている。そのため、新水法は、まだガゼット化(官報等への記載)されておらず、その執行は開始されて

いない。以下に、新水法における主要な改定点を示す。

- カウンティ政府は法律上、WSP を設立できるが、水道サービスを提供できるのは、WASREB からライセンスを授与された WSP に限られる。
- WASREB は従来、水道事業のライセンスを各地域の WSB に授与し、WSB はライセンスに基づいて、WSP と水道事業運営契約を結ぶことにより、管轄地区における水道事業を分割して WSP に委託する形式であった。新水法により、WASREB はライセンスを WSP に直接発給することになった。なお、水道料金の制定の許認可権は従来通り WASREB が保持する。
- 現在全国に 8 ヶ所存在する WSB は解体され、その一部の機能は新設される水道事業開発機関(WWDA: Water Works Development Agency)に引き継がれる。WWDA は、2 つ以上のカウンティにまたがる水道施設などの整備・運転維持管理などを担当する。原則、今後 3 年以内に、この改組が行われる。
- WSP が使用する水道資産や債務の譲渡については、カウンティ政府と WWDA もしくは WSP と取り交わす契約に基づくこととなる。
- 従前、MWI の Water Service Trust Fund (WSTF) は、水道・サニテーション事業の施設整備のための基金であったが、新水法では、この基金の対象を水源開発を含む水セクター全体の事業に広げ、Water Sector Trust Fund (WSTF) と改名する。

なお、新水法の体制に移行するための期間は 3 年と定めており、既に MWI は、コンサルタント契約により、新水法を施行するための詳細な解釈の検討や移行のための計画策定を進めている。しかし、前述した CoG による提訴に対する今後の裁判の行方が、この移行の進捗に影響すると懸念されている。また、新水法の改定に伴い、カウンティ政府の水担当部の強化が不可欠となり、WSP の責任範囲も広がるため、人材の拡充、能力強化が必要となる。そのため、MWI や WASREB によれば、現 WSB の職員が、カウンティ政府や WSP に雇用されることが期待されている。

ケニア国の無収水管理方針(2017 年発行予定)

MWI の NRW ユニットのドイツ国際協力公社(GIZ)の協力を得て、ケニア国の無収水管理についての方針書(National Policy)を最終化するための作業を続けている。ベースライン調査中、MWI の NRW ユニットの JICA 専門家チームに対して、この方針書のドラフトを改善するための支援の要請があった。そのため、ドラフトを受け取り、専門家チーム内で検討し、NRW ユニットのコメントを提出した。その後、NRW ユニットのコメントに基づいて方針書を改善した。MWI は、GIZ と共に、ステークホルダーを集めたワークショップを 4 月中に開催し、広くコメントを集めてから、この方針書を最終化する予定である。

(3) 予算

MWI の NRW ユニットの予算は、MWI の水サービス局に割り当てられた予算の中から配分されており、2016/17 年度の予算は 60 million Ksh である。2017/18 年度については、120 million Ksh の申請を行った結果、65 million Ksh の予算が承認された。

中央政府から MWI の下部機関への予算の配分については、KEWI に対しては全収入の約 64% (2015-16 実績) に当たる 225 million Ksh が配賦され、研修設備費用、ワークショップ開催費用などに充当されている。WASREB に対しては、約 12% (2014-15 実績) である約 30 million Ksh が配賦されている。

(4) その他

CoG とのパイロット WSP の選定に係わる合意形成

MWI は、ベースライン調査でのパイロット WSP の選定の経緯や結果を CoG に報告するため、JICA 専門家チームの支援により、CoG の環境・水・森林・採掘委員会の担当者と調整し、3 月 20 日に会議をもった。会議には、パイロット WSP 候補となった 15 カ所の WSP 及び管轄するカウンティからの関係者が参集した。この会議では、パイロット WSP の選定について特に異議がなく、今後の活動についても CoG から積極的な協力が得られることが確認された。

3. 関係機関の概要

(1) MWI 無収水ユニット

水灌漑省 (MWI) は、2015 年 4 月に環境・水・天然資源省が分割され、編成された。図 1 に示す通り、構成は事務局、上下水道・衛生局、水資源局、境界水道局、水道基盤局の 5 つの部局からなり、MWI 無収水対策ユニット (NRW ユニット) は、上下水道・衛生局の運転・調整課に所属する。この NRW ユニットは、ケニア国全土の無収水削減に関する政策・戦略の策定や無収水削減を促進するための活動等の実施をリードするための組織である。2016 年 2 月に、MWI 無収水ユニットの設立が正式に告知され、5 名が配属されることになった。しかし、現在のところ、4 人体制であり、NRW ユニットのための事務所の整備も完了していない。NRW ユニットの長は、上下水道・衛生局の局長であり、本プロジェクトのプロジェクト・マネージャーが兼任しており、その下に NRW コーディネーターと他のユニット・メンバー 2 名が配置されている。

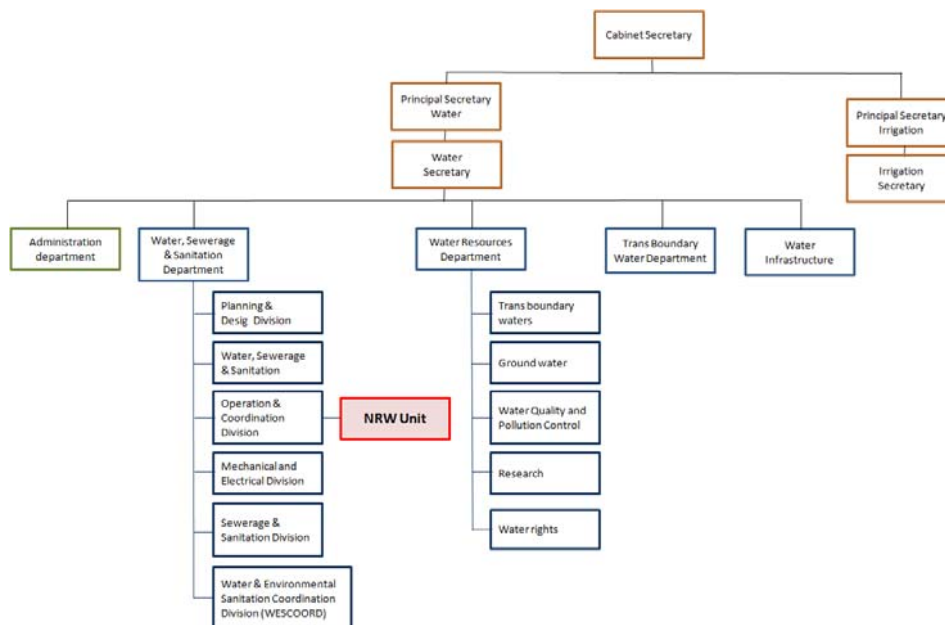


図 1: MWI の組織図

(2) 水道事業監督局 (WASREB: Water Services Regulatory Authority)

WASREB は、水法2002年の施行により、2003年3月に給水及び下水に関する事業の規制・監督機関として設立された公社である。主要業務は、以下の通りである。

- 水道事業の免許(ライセンス)の発行と定期的なモニタリング
- 水道事業関連の各種基準の制定、使用状況のモニタリングと改訂
- 水道料金の制定
- 水道サービスへの苦情の処理及び顧客保護・対応についての助言
- 国家水道戦略の実施状況のモニタリング及び評価
- 水道事業者からの業務指標値の収集、評価、検証及び情報の公開
- 大臣への情報提供及び助言

WASREB の本プロジェクトにおいて改定する無収水削減基準を含む上下水道事業者を規制するためのルールを作成し、それらの順守を各地域の WSB を通して WSP に課している。また、水道事業のライセンスを WSB に発給し(水法2016年の施行により、今後は WSP に発給する)、WSP と WSB から水道事業のデータ(無収水率を含む各種業務指標など)を四半期ごとに収集・検証し、毎年インパクトレポートに取りまとめている。さらに、インパクトレポートの結果から、年間優秀 WSP を顕彰している。

図2に示すように、WASREB の組織は、主に CEO (Mr Robert Gakubia) の下に置かれた技術 (Technical Services) 部、法的執行 (Legal & Enforcement) 部、顧客・広報 (Consumer & Public Affairs) 部及び総務 (Corporate Services) 部の4部門により構成されている。

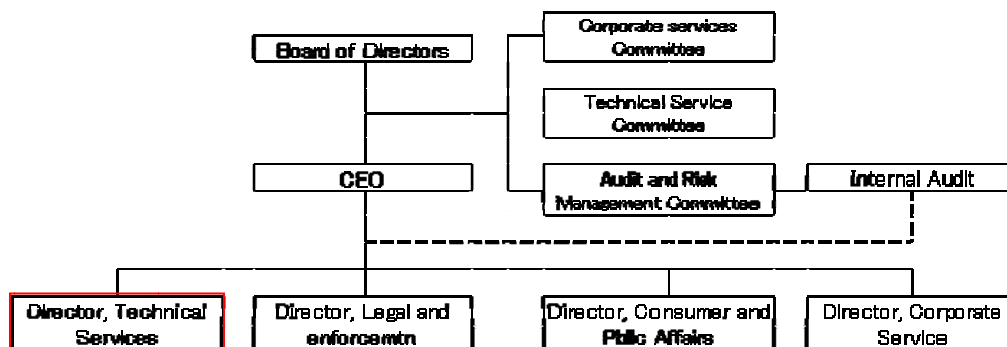


図2: WASREBの組織図

技術部の主な役割は、技術的なガイドラインや水道料金設定のための制度などの策定、水質等の検査業務、及びセクター情報の管理である。法的執行部は、法律施行の保証、モニタリング、評価、促進などを担当する。顧客・広報部の役割は、広報、顧客対応等を含む関係者の理解と参加の促進である。総務は、WASREBの財務、人事などを担当する。2017年3月現在のWASREBの職員数は35名であり、無収水対策に係わる業務は、主に技術部の検査 (Inspectorate Services) 課が担当している。

(3) ケニア水道研修所 (KEWI: Kenya Water Institute)

KEWIは、KEWI Act 2001に基づいて設立された国立の水道及び水資源に関する教育・研究機関であり、水セクターの人材育成、コンサルティング、研究開発を行っている。KEWIの上層部は、所長、3名の副所長、及び3名のマネージャーから構成されている。講師が所属する学部は、技術面から主に、水・排水エンジニアリング課、水資源・環境管理課、電気機械課、ITマネージメント課の4課に分かれている。

KEWI の教育の特徴

- ① MWI 及び教育科学技術省 (MoEST: Ministry of Education Science and Technology) が承認した唯一の「水専門教育機関」である。
- ② 国家の重要課題である無収水削減のため、NRW 研修や GIS 研修を実施している。
- ③ 2年間の Certificate コース、3年間の Diploma コースに加えて、様々な短期研修コースを開催している。
- ④ 卒業率は 84%、就職率は 70~75% 以上である。

NRW チーム

図 3 に示すように、KEWI の NRW チームは、Academic Affairs Directorate 下の Water & Wastewater Engineering Resources Department (Long Courses) と Short Courses Department に属しており、専任講師 3 名と他 7 名で構成されている。専任講師らは、短期 NRW 研修コースだけでなく、長期コースについても担当している。

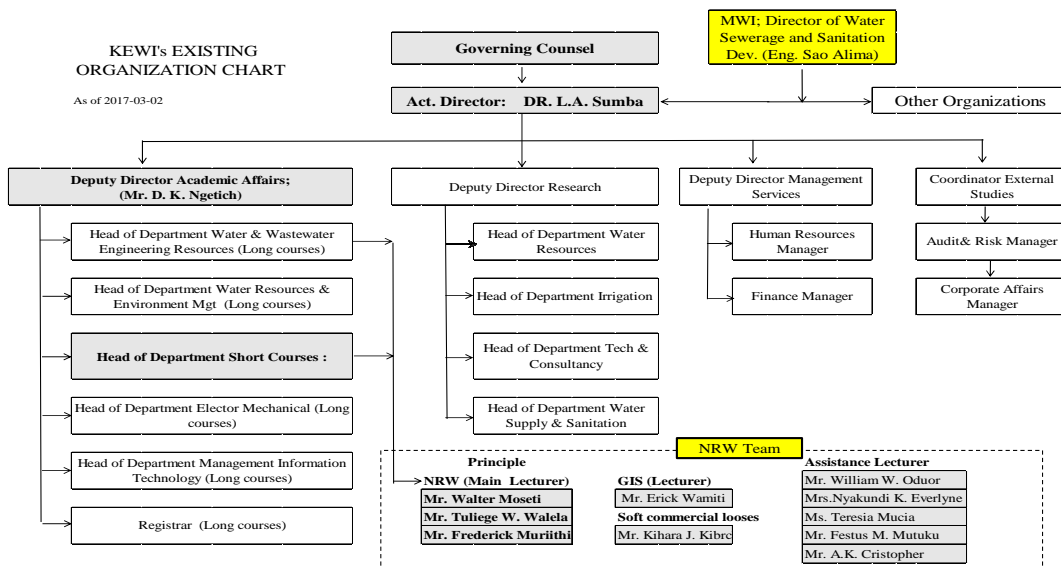


図3: KEWIのNRWチームの組織図

(4) カウンティ (County) 及び全国知事会 (CoG: Council of Governors)

全国 47 のカウンティ政府は、2010 年の憲法改正による地方分権化の流れに沿って、2014 年に誕生した。旧水法の下、カウンティ政府は、村落給水などの小規模水道やオンサイト・サンテーション施設などの整備・運営のみを管轄してきたが、新水法の制定後は、より規模の大きな上

下水道事業の運営・開発についても管轄することになった。そのため、今後は、各カウンティ内の WSP も管轄下となるが、カウンティ政府には WSP を指導できる技術力と経験が十分に無いため、キャパシティの向上が課題となっている。

また、全国のカウンティは、各カウンティを代表する知事による CoG を組織し、ナイロビ市内に事務局を置いて、中央政府との連携・調整業務を実施している。CoG には、18 のセクター別委員会があり、本プロジェクトに関連するのは、環境・水・森林・採掘委員会 (Council for Environment, Water, Forestry and Mining) である。CoG 事務局には各委員会を担当する通常 5 名の委員からなるチームが所属しており、四半期ごとにセクター・フォーラムを開催している。

(5) 水道事業地域局 (WSB: Water Service Board)

2002年の旧水法制定後、全国を8つの地域に分割し、それぞれの地域のWSPを管轄するWSBが設置された。しかし、2016年の新水法では、憲法改正に伴う地方分権化に沿って、WSPの所管をWSBからカウンティ政府に移管することとなった。また、新水法の制定により、WSPが運用している水道施設を含む資産(負債を含む)の保有権、管理権をWSBからカウンティに移管するとしているが、カウンティから利益配当がないとの批判もでていいる。今後3年以内にWSBは廃止されるが、カウンティをまたがる水道施設の整備や運転維持管理などの一部の機能はWWDAに移る。WASREBが発行する水道事業ライセンスは、今後WSBではなく、WSPに直接授与される。これまで、各WSBが担ってきたWSPの能力強化や上下水道施設の拡張計画の策定及び実施等の機能は、カウンティが担うことが期待される。

(6) 水道事業者 (WSP: Water Service Provider)

WSPは、比較的人口が集中した地域において、上下水道サービスの提供と施設の運営・維持管理を行う公共企業である。新水法の施行により、従来のWSBの管理下からカウンティの管理下に入った後は、水道施設等をカウンティから借り受けて、サービスを提供することになる。

(7) 水道事業者協会 (WASPA: Water Service Providers Association)

WASPAは、旧水法の下、WSP同士の協力連携と情報共有による水道事業の活性化を支援するため、2002年に設立された。日本の水道協会に近い業界団体である。WASPAは会員からの会費に加え、オランダ開発機関(SNV)、ドイツ国際協力公社(GIZ)などのドナーからの援助により予算が賄われている。また、Vitens-Evides International (VEI)と連携して、会員WSPの技術向上を目的とした相互学習方式による分科会(無収水対策、GIS、料金徴収、顧客対応等)を定期的で開催している。なお、WASPAは、WSPのマネージング・ダイレクター(MD)や業者の代表者による定例会を2ヵ月ごとに開催し、活動の実施報告、業界のトピック(無収水対策の進捗、水法改定等)、今後の活動方針などを協議し、会員相互の意思疎通を図っている。

4. 他の援助機関による支援活動

ベースライン調査では、他ドナーとの連携により成果の拡大が期待できる分野、重複した支援項目、相乗効果が得られそうな支援項目などについて確認及び調整を行うため、聞き取りなどの情報

収集を行った。以下に、ケニアにおいて、無収水削減支援及び資金調達支援を行っている援助機関の活動の概要を述べる。

(1) Vitens-Evides International (VEI)

VEI は、オランダにおいて最も規模が大きい水道会社 2 社である「Vitens」及び「Evides Waterbedrijf」が国際貢献のため、2006年に設立した非営利団体である。この2社と協力関係にあるオランダの水道会社 4 社が、それぞれの売り上げの 0.05%の出資と社員の派遣により、技術協力を行っている。VEI は、水道事業者パートナーシップ (WOP: Water Operator Partnership) の先駆者であり、ケニアでは Naivasha WSP と WOP を結んでいる。その支援対象国は、十数カ国に及んでおり、主に東アフリカの国々を対象としている。次いで東南アジア、さらに西アフリカ、中南米でも支援活動を行っており、活動範囲を拡げている。

VEI のケニア国での活動は、上述の WOP 以外に、WASPA 及びその会員 WSP と実施している Partnership Performance Enhancement of Water & Sanitation Utilities in Kenya (PEWAK)、10カ所の WSP に対する DMA での無収水削減パイロット事業 (後述の SNV と共に 2015 年まで対象としていた 10カ所の WSP とは異なる)、WSP において Pro-poor を担当する職員の定着化である。これらの VEI の活動は、2019 年末まで継続される。PEWAK は、2012 年から行われており、その主な活動は、会員 WSP の能力向上を目的としたベンチマーキング、MD を対象にした隔月の集会、及び重点分野の分科会 (無収水対策及び GIS 整備の分科会も含む) である。VEI の活動は、本プロジェクトの成果5に特に係わっており、また成果4及び成果2の活動にも係わっている。それらについては、各成果についての調査結果として、より詳しく説明する。

(2) オランダ開発機構 (SNV)

SNV は、1965 年に、オランダ政府の外務省下に、途上国へのボランティアの派遣を主な目的として設立された。しかし、2002 年には外務省から離れ、現在はアジア、アフリカ、中南米の 38カ国で農業、再生可能エネルギー、WASH (水、サニテーション及び衛生) の 3 分野における技術協力を中心に、独自の活動を展開している。資金については、外務省からの補助金を受け続けている一方で、パートナーとする世界銀行、ユニセフなどの様々な国際機関からも資金を得ており、国際 NPO としての側面を持っている。

ケニアでの WASH 分野の支援は、主に WSP に対する無収水削減支援であり、その他、サニテーションの改善するための支援も実施している。SNV の無収水削減支援としては、主に DMA でのパイロット事業を、2016 年からは VEI とは別に、新たに 8~10カ所の WSP を対象として展開している。また、無収水削減のための Performance-based Contract (PBC) の導入支援を 6カ所の WSP に対して実施しようとしている。その他、WASREB がコンサルタントに委託して実施中の無収水削減基準の使用状況調査 (13カ所の WSP を対象) の支援も行っている。また、後述するオランダ政府が設立を支援した Kenya Water Pooled Fund の資金を利用しようとしている 6カ所の WSP の内、2カ所の WSP におけるプロジェクト形成を支援している。これらの無収水削減支援の内容は、成果4及び成果2に係わる調査結果として、より詳しく説明する。また、SNV は KEWI 及び Nyeri WSP と連携して、WSP に対する DMA での無収水削減支援を展開しているため、それについても成果 3 に係わる調査結果として後述する。また、SNV は VEI と共に、2012 年から WASPA の PEWAK を支援しているため、成果 5 とも関連している。

(3) ケニア合同運用水基金 (KPWF: Kenya Pooled Water Fund)

KPWFは、オランダ政府の支援により、2016年に設立された非営利のケニアの組織であり、複数の WSP のプロジェクトに対して、一括して債券を発行することで、資本市場から資金調達を行うことを目的とする。2016年末に、Kisumu WSP(給水分野)、Nairobi WSP(サニテーション分野)、Nyeri WSP(給水とサニテーションの分野)、Embu WSP(給水分野)、Meru WSP(給水分野)及びThika WSP(給水分野)が、それぞれ25~40million Ksh規模の事業のプロポーザルをKPWFに提出した。最初の債券発行は、2017年中旬に予定されている。この基金は、ケニア国市場からWSPの資金調達を支援してきた世界銀行と連携している。

(4) ドイツ国際協力公社 (GIZ)

GIZ はドイツ国の開発援助における技術協力を担当しており、ケニア国では水セクターの組織・制度改革等を長年支援している。最近では、MWI に対し、コンサルタント契約を通じた水法 2016 年の体制に移行するための検討の支援や無収水管理の国家方針書の作成を支援している。この無収水管理の方針書は、本プロジェクトの成果1との関連性が強い。また、WASREB の設立やインパクトレポートの作成についても支援している。最近では、WASREB が各 WSP とカウンティの仲介者となる際、各 WSP の給水区域拡張に係わる検討を支援している。また、ドイツのバイエルン経済職業訓練センター (BfZ) と共に、WASPA を通して、KEWI と協力関係のある Kericho WSP の GIS トレーニングセンターの設立にも協力した。また、Kericho WSP に対しては、後述する KfW と共に、顧客管理、無収水削減、周辺の WSP の吸収などを 5 年間支援している。Oloolaizar WSP に対しても顧客管理の強化などの支援を予定している。また、GIZ は水資源管理機構 (WARMA: Water Resources Mangement Authority) や複数の WSP に対するサニテーション分野の支援も行っている。

ドイツ政府は、水分野における援助方針を変更し、今後は職業訓練や難民対策を重視することになった。そのため、現在 GIZ が実施しているプログラムは 2018 年に終了するが、その後はケニアの水分野から撤退する可能性がある。ただし、撤退について、ケニア政府からの合意は得られていない。

(5) ドイツ復興金融公庫 (KfW)

KfW は、ドイツ国の開発援助における資金協力を担当しており、ケニアでは、給水・サニテーション、農業及び保健の3分野を中心に援助を行っている。給水については、ケニア西部の WSP と Nairobi WSP を主な対象として援助を展開している。西部の Kericho WSP と Kakamega-busia WSP に対する有償資金協力の主な内容は、それぞれ、配水管の改修・拡張と、浄水場の建設である。Nairobi WSP に対しては、主に大口径管の布設のための有償資金協力を行っている。また、Water Services Trust Fund (WSTF)を通じた、貧困層向け及び都市向けの資金援助も行っている。貧困層向けには、無償資金協力を行っている。また、都市向けには、WSP が市中銀行から借り入れたローンでプロジェクトを実施し、成果が出た場合には部分的な無償資金協力を行う Aid on Delivery (AOD)という仕組みを提供している。AOD は市場から WSP に投入される資金額を増やすために、2014年に開始され、2015年には Embu WSP がその仕組みを用いて配水管の拡張を行った。

(6) 世界銀行(WB: World Bank)

世銀は、現在、Athi WSB、LVN WSB 及び Coast WSB とそれらの管轄下の WSP を対象に、Water Supply and Sanitation Improvement Project (WASSIP) の追加資金 (50 million USD) により、複数の事業を行っている。Coast WSB 下の 8 つの WSP に対象にした無収水削減のための長期計画策定や Athi WSP 下の WSP に対する漏水探知器等の供与、LVN WSB 下の WSP に対する無収水対策研修などの支援も、この追加資金により行われている。その他、LVN WSB 下の Eldoret WSP に対する浄水能力拡張や Nzoia WSP に対する無収水削減のための技術支援も実施している。特に、世銀の Coast WSB 下の WSP 及び Eldoret WSP に対する支援は本プロジェクトの成果 4 と関連している。

世銀が 2014 年に始めた Outcome-based Aid (OBA) という成果に基づく資金協力の仕組みは、KfW の AOD と同様に、スウェーデン国際開発庁 (SIDA) からの無償資金を用いるものだが、AOD とは異なり、貧困層向けである。投資の成果を見極めたうえで、WSP の商業銀行からの借入額の半額を世銀が補助するこの仕組みを用いて、Murang'a South WSP、Murang WSP 及び Nol Turesh WSP が事業を行った。Meru WSP については、世銀の調達ルールに従わなかったため、補助が無効となった。世銀は OBA に加えて、Performance for Result (PFR) という、成果が出た現地機関の投資に対して、払い戻しをする仕組みにも取り組んでいるが、水分野ではまだ適用例がない。また、世銀は、WSP の市場からの資金調達を促進するため、WASREB に対して、多くの WSP を対象とした信用度目録報告書 (Creditworthiness Index Report) の作成を支援した。その結果、WASREB が毎年発行するインパクトレポートには、各 WSP の信用力評価が掲載されるようになった。世銀は、水道事業への住民参加や顧客保護を強化するための住民組織 Water Action Group や苦情処理システム Maji Voice の設立・運営などについても過去に支援している。

(7) フランス開発庁(AFD)

AFD は、ケニアでの給水・サニテーション分野の支援を 3 大都市である Nairobi、Mombasa、Kisumu に集中させている。給水については、浄水場、配水施設等の拡張に加えて、無収水削減のための技術協力も行っている。Mombasa WSP 及びその周辺の WSP に対しては、2014 年に浄水場を改修している。また、世銀と共同で、同地域における深井戸や管路の改修も行っている。Nairobi WSP に対しては、浄水場整備と無収水削減のための計画策定及び技術支援を行っている。Kisumu WSP に対しては、これまで取水施設、浄水場、送水管及び配水池の建設、無収水削減のための調査、メータ・テスト・ベンチの供与などを行っている。Kisumu WSP が Kisumu County 内の他の WSP を吸収するための支援も AFD は行っており、今後、欧州連合 (EU) との共同出資により、さらに取水施設、浄水施設、送配水施設を改善・拡張するための、計画・設計・建設プロジェクトを実施する予定である。また、このプロジェクトでは、将来、配水施設を大きく改善・拡張するため、水理モデルを用いた無収水対策などの詳細な検討も行われる。これらの Kisumu WSP に対する支援は、本プロジェクトの成果 4 と関連している。

5. 無収水削減に向けての課題

<MWI 無収水ユニット> (成果1)

(1) 調査の項目と方法

ベースライン調査を通して課題を特定し、対策を検討することで、MWI 無収水ユニットが中心となって、成果1の活動(関連機関との連携や啓発活動など)を効果的に実施できるように支援する必要がある。そのため、ベースライン調査では、主に MWI 無収水ユニットの組織体制、予算確保及び関連機関との連携を含めた業務実施の状況に加えて、関連機関における広報・啓発活動の状況を調査した。以下に、主な調査項目を示す。これらの項目についての調査は、主に質問票に基づいた MWI 無収水ユニット及び関連機関への聞き取りとウェブサイトを含む関連資料のレビューにより実施した。

主要調査項目

- a) MWI 無収水ユニットの MWI 内での位置づけと組織体制
- b) 予算確保の状況
- c) MWI 無収水ユニット内での意思疎通の状況
- d) 活動計画の策定と予算費目の変更状況
- e) 業務の内容と実施状況
- f) 各職員のキャパシティ
- g) 関連機関との連携状況
- h) 他の中央政府機関、援助機関等の広報・啓発活動の状況
- i) WSP における広報・啓発活動の状況

MWI 無収水ユニットが実施する成果1の活動は、MWI の傘下にある WASREB 及び KEWI との連携(各組織の関連活動のレビューと無収水削減年次報告書の作成のため)と、カウンティ及び WSP を対象にした無収水削減のための啓発活動(CoG、WASPA、KEWASNET などとの連携を含む)に大別することができる。上記の主要調査項目の内、項目 a) ~ g) は、WASREB 及び KEWI との連携とカウンティ及び住民を対象とした啓発活動の両方に関連している。それらの項目についての調査結果を(2)に、調査結果から抽出した課題を(3)に、そして課題に対する対応策を(4)にまとめた。項目 h) と i) は、MWI 無収水ユニットがカウンティ及び WSP に対する啓発活動の内容を検討する際に参考とする他機関における啓発活動の実施状況である。そのため、これらの項目の調査結果については、報告書を読みやすくするため、別途(5)に記述している。

(2) 調査結果

1) MWI 無収水ユニットの組織力及び予算確保の状況

MWI 無収水ユニットの MWI 内での位置付け及び人員体制については、既に本報告書の「3. 関係機関の概要」の(1)において説明している。また、MWI 無収水ユニットの予算については、

「2. ケニア国における無収水削減の位置づけ、関連法制度、政策及び予算」の(3)において概略を説明している。以下では、これらの MWI 無収水ユニットの組織力に係わる事項について、より詳細に説明する。

MWI 無収水ユニットの意思疎通の状況

MWI 無収水ユニット内の指示の伝達、情報共有及び共同作業は円滑に行われていない状況である。MWI の水サービス局の局長が本プロジェクトのプロジェクトマネージャーと MWI 無収水ユニットの長を兼任していることもあり、本プロジェクトの実施に必要な MWI 無収水ユニットの予算の確保や MWI 上部から得る承認の取得の面では有利な体制であると言えるが、この水サービス局の局長は多忙であり、MWI 無収水ユニットの活動に係わる協議に頻繁に参加することは難しい。また、この MWI 無収水ユニットの長を兼任する局長と MWI 無収水ユニットの専任職員 3 名が全員別々の事務室で執務していることは、MWI 無収水ユニット内での指示の伝達や情報の共有に深刻な支障をきたしている。本年度の予算には MWI 無収水ユニットと JICA 専門家チームの事務室の整備費として、2 million Ksh (2 百万円程度)が元々計上されているが、その予算を使用できるようになるまでに時間がかかったこともあり、MWI 無収水ユニットの事務室の整備は未だ行われていない。このことは、MWI 無収水ユニット内での意思疎通の悪い状況の主な原因である。また、MWI 無収水ユニットの業務を実施するために必要な PC の購入も遅れ、ベースライン調査の終了間際までの段階では、MWI 無収水ユニットの専任職員の内、1名のみがデスクトップ PC を一台割り当てられている状況であった(処理速度及びインターネットのアクセス速度が非常に遅い旧型)。このことも、MWI 無収水ユニット内での共同作業や情報の共有を非常に難しくしていた。

活動計画の策定と予算費目の変更状況

MWI 無収水ユニットにとって、MWI 無収水ユニット自身が実施する活動のための資金や他の関連機関の無収水削減活動を支援するための資金を確保することは、最も重要な業務の一つである。2016/17 年度の MWI 無収水ユニットの予算 (60 million Ksh) は、本プロジェクトが開始する前に申請されたこともあり、MWI 無収水ユニットが現在検討している活動や他機関への支援の内容と大きく異なる予算費目に基づいているため、このままでは予算の殆どを消化できない状況にある。例えば、本年度の予算の内、35 million Ksh 程度が具体的な機材供与の計画が無いままにパイロット WSP を支援するための顧客メータ及びバルクメータの購入費として計上されており、消化することができない。ただし、前述した事務室の整備費、MWI 無収水ユニットがベースライン調査に同行するために必要な旅費、日当宿泊費などについては、既に承認されている予算の費目に含まれており、予算の消化が進んでいる。

MWI 無収水ユニットにとって、予算計画書を作成する能力及び状況に応じて予算費目を変更する能力は不可欠である。ベースライン調査では、既に承認されている本年度の予算総額をパイロット WSP への技術支援内容や KEWI が必要としている資金援助を考慮し、より効果的に再配分するための協議を MWI 無収水ユニットと繰り返し行った。しかし、これらの協議の結果、MWI 無収水ユニットが今年度の残り期間において直接実施する啓発活動等のための大まかな想定費用額は計上されたものの、単価と数量による費用計算までには至らなかった。MWI 無

収水ユニットの専任職員と合意形成された修正後の予算配分の内容(添付資料の 10.に記載)については、水サービス局の局長及び MWI の主書記官 (Principal Secretary) による承認手続きを行なった後、MWI 調達部によって財務省の予算承認システムに再入力される必要がある。その後、財務省の承認を得た上で修正された予算費目の内容に応じて予算を使うことが出来るようになる。今年度予算(2016/2017)は、2017年8月に実施予定のケニア国大統領選挙を考慮し、調達部における財務相の予算承認システムへの変更等の入力に5月以降行えなくなるため、MWI 無収水ユニットが今後迅速に予算費目変更のための承認手続きを終える必要がある。

また、MWI 無収水ユニットの長を兼任している水サービス局の局長の采配により、MWI 無収水ユニットの来年度の予算 65 million Ksh について既に確保されているとのことであるが、MWI 無収水ユニットの来年度の活動計画に基づいて確保された予算ではない。そのため、この予算額の再配分のために活動計画の策定が必要になると同時に、再来年度の予算申請のための活動計画の準備も必要となる。MWI 無収水ユニットが直接行う活動や関連機関の活動に対する支援についての計画策定及び実施が滞り、承認された予算が消化できなければ、今後において予算額が縮小される可能性があることの懸念がある。そのような状況を避けるためにも、MWI 無収水ユニットの活動計画の策定・実施能力の向上が必要である。

2) MWI 無収水ユニットの業務内容、実施状況及び各職員のキャパシティ

MWI 無収水ユニットの業務の内容と実施状況

2016年1月に与えられた MWI 無収水ユニット設立の通知では、以下の項目を MWI 無収水ユニットが実施すべき業務としている。

業務項目 1: ケニア国の無収水削減のための方針及び戦略の策定

業務項目 2: 関連機関の無収水削減活動のコーディネーション

業務項目 3: カウンティへの啓発活動を含む無収水削減活動のプロモーション

業務項目 4: WASREB の無収水削減基準の全 WSP に対する配布の確保

業務項目 1 については、GIZ が MWI 無収水ユニットによるケニア国の無収水削減のための方針書作成を支援しており、JICA 専門家チームも方針書案にコメントを出し、問題点の説明を行うなどの支援を行った。MWI 無収水ユニットは、方針書の最終化後、ケニア国全体の無収水削減のための戦略についても策定する必要がある。MWI 無収水ユニットが、本プロジェクトにおける他機関との連携や WSP への支援などを通して、徐々に能力向上を図り、効果的な国家戦略を策定できるようになることが期待される。本プロジェクトの活動に含まれる WASREB の無収水に係わる活動と KEWI の無収水関連コースのレビュー及び無収水削減年次報告書の作成は、この国家戦略の策定にも資すると考えられる。

業務項目 2 の関連機関の無収水削減活動のコーディネーションについては、MWI 無収水ユニットは既にベースライン調査を通して、ケニアで無収水削減支援を展開している WASPA、EVI、SNV、世銀などの機関と情報交換を開始している。MWI 無収水ユニットが徐々に関連機関の間に入り、無収水削減支援のコーディネーションができるようになることが今後期待される。

業務項目 3 のカウンティへの啓発活動を含む無収水削減活動のプロモーションについて

は、ベースライン調査の中で、MWI 無収水ユニットは JICA 専門家と共に多くの関連機関及び WSP を訪問し、それらの機関が実施している無収水削減に係わる広報・啓発活動についての理解を深めた。また、パイロット WSP の選定結果について CoG に説明した際、WASREB が無収水対策の概要を説明し、MWI 無収水ユニットの長でもあるプロジェクトマネージャーが MWI による無収水削減支援の経緯を CoG に説明したが、その際には CoG 側からプロジェクトへの積極的な参加の希望があった。これらのベースライン調査の結果を踏まえ、今後、MWI 無収水ユニットが主体的にカウンティ及び WSP に対する啓発活動の計画を策定し、実施できるようになることが期待される。一方で、MWI 内の広報部は少人数で同省全体の広報をカバーしているため、人員に余裕はなく、MWI 無収水ユニットの WSP に対する広報・啓発活動をサポートすることは容易ではないことが分かった。また、WASREB の Maji Voice 及び Water Action Group (WAG) による顧客対応の改善や啓発活動には、限られた数の WSP のみが関わっていることが分かった。このような中、MWI 無収水ユニットは都市部にある多数の WSP における啓発活動に対して、支援体制を構築する必要がある。そのため、MWI 無収水ユニットの限られたリソースで、他の機関とどのように連携して支援体制を実現するか、戦略的に検討する必要がある。

業務項目 4 の無収水削減基準の全 WSP に対する配布の確保は、本プロジェクトにおける MWI 無収水ユニットの活動の一つである WASREB の活動のレビューに関連している。WASREB の無収水削減基準の改定作業の実施は、主に本プロジェクトの第 2 フェーズに予定されており、また改定版の公表及び普及は本プロジェクトの第 3 フェーズに予定されている。現行の無収水策定基準の使用状況については、MWI 無収水ユニットと共に WSP への聞き取りを行っており、WASREB が今後さらに追加調査を実施する予定である。

MWI 無収水ユニットに所属する各職員のキャパシティ

MWI 無収水ユニットに専属している 3 名の職員は、上下水道技術者ではあるが、無収水管理についての実務経験は少ない。ただし、プロジェクトコーディネーターであるマボンガ氏は、以前勤務していた Meru WSP の技術者及び前プロジェクトにおける MWI の C/P として、無収水削減活動に携わった経験を持つ。3 名の個人レベルのキャパシティの向上については、彼らが水サービス局の局長と MWI 無収水ユニットの長を兼任しているアリマ氏との間で交わした Individual Work Plan をベースに、モニタリング・評価及び支援をすることができる。

専任の 3 名は、ベースライン調査期間中、JICA 専門家チームが薦める関連機関のセミナーやワークショップに積極的に参加するようになった。それらの機会を通して、無収水に係わる技術的な能力と関連機関とのコーディネーション能力を同時に改善することが可能であるとする。特に、以前は交流のなかった WASPA が開催する会合 (MD 等の隔月の集会、無収水対策についての分科会、ベンチマーキングのための会議、及び DMA でのデモンストレーションを含む無収水削減研修) に積極的に参加したことは、現時点までの成果の一つと言える。2017 年 3 月には、JICA 専門家チームの薦めにより、MWI 無収水ユニットの職員 1 名が、能力向上と KEWI の無収水研修コースのレビューを兼ねて KEWI の無収水短期研修コースに参加する予定であった。しかし、残念ながら、6 人しか受講希望者数が集まらず、コース実施に最低限必要な受講者 10 名が確保できなかったため、研修の実施が見送られる結果となった。

一方、水サービス局の局長と MWI 無収水ユニットの長を兼任しているプロジェクト・マネー

ヤーのアリマ氏は、管理能力、交渉力、プレゼンテーション力など、優れた能力を持つ人材である。また、同氏は修士号の取得のため、無収水削減に関連する論文の作成にも取り組んでおり、無収水削減への関心が強い。今後も、同氏が中心となり、無収水削減活動の全国展開を図るための支援体制を構築することが期待されるが、同時に、MWI 無収水ユニットの他の職員の能力が、多忙な同氏の代理として十分なレベルまで向上することが期待される。

3) NRW ユニットの他の関連機関との連携状況

関係機関との連携状況

MWI 無収水ユニットは、WSP に対する無収水削減活動の支援に加え、国際援助機関や他の国内機関の無収水削減支援活動をコーディネートする立場であるが、組織間の調整には不慣れであり、消極的である。MWI 無収水ユニットの専属職員は、自らの立場を理解しているものの、まだ調整業務全般について、各作業の開始にその都度時間がかかっている。KEWI の職員を含めた MWI 無収水ユニットの予算の再配分のための打ち合わせにおいても緊迫感に欠け、WASREB との連絡は消極的であり、カウンティとの接触も避けようとする等の積極的ではない対応が繰り返し見られた。これらが、中央政府から命令すれば事が片付くといった、中央政府が持つ特権意識によるものか、個人の資質によるものかの判断はつかない。しかし、MWI 無収水ユニットの専属職員である 3 名が、今後オーナーシップをもって、積極的にケニア国の無収水削減活動支援を牽引するまでには、かなりの時間を要することは明らかである。

しかしながら、ベースライン調査を通して、彼らは関連機関と頻繁に接触するようになり、良好な関係構築を図りつつある。WASREB、KEWI とは、それぞれ数度の協議を実施しており、両機関との連携に対し、徐々に積極的になってきている。例えば、MWI 無収水ユニットは、KEWI の無収水研修コースの改善のため、リーディング WSP との試験的な合同研修の経費の負担や資機材の調達など、KEWI に対する資金面での協力を行う予定である。また、KEWI が提案した MWI 無収水ユニットの予算による漏水探査実習フィールドの整備に対しても、その価値を認め、協力的である。さらに、WASREB と協調して、KEWI の無収水研修コースの受講者を増やす考えも示している。

WASPA との連携については、業務提携に係わる MOU の締結に時間を要しているものの、以前に比べ著しく積極的になったと言える。

プロジェクト実施員会 (PIC: Project Implementation Committee) の開催状況

2017 年 2 月 15 日、プロジェクト・マネジャーであるアリマ氏を議長とした第 1 回 PIC が開催され、MWI 無収水ユニット、KEWI、JICA ケニア事務所、JICA 専門家チームが参加した。3 月 15 日に開催された第 2 回 PIC には、上記の関係者に加え、WASREB と WASPA も参加した。これらの PIC では、アリマ氏がリーダーシップを発揮し、各関連機関に対して、担当するプロジェクト活動の実施計画の作成や関連機関間の連携強化などを求めた。またこれらの PIC では、本プロジェクトを通して、WSP における無収水削減活動に対する支援を本気で全国展開しようとしている同氏の意気込みが、参加した各機関に伝わったように思われた。しかし、MWI 無収水ユニットの専属職員が行った PIC における種々の報告、発表は、資料を棒読みするなど、精彩さに

欠けていた。MWI 無収水ユニットの専属職員が、他の関係機関をコーディネートしつつ、リードできるようになるためには、プレゼンテーション力の強化が不可欠であると考えられる。

(3) MWI 無収水ユニットの課題

以下に、MWI 無収水ユニットに対する現状調査の結果等から抽出した課題を列記する。

- 1) MWI 無収水ユニットの専任職員は、現在のところ3名のみであるが、執務場所が別々であり、意思の疎通に欠け、効率的ではないため、MWI 無収水ユニットのための事務室の整備を早急に完了する必要がある。
- 2) MWI 無収水ユニットの予算の申請及び消化には計画性がないため、今後具体的な活動計画の策定、その計画に基づく予算申請、及び活動の実施が行えるように、能力向上が必要である。
- 3) MWI 無収水ユニットの今年度及び来年度の予算は確保されているが、MWI 無収水ユニットの実際の活動計画に基づいて申請された予算ではないため、その消化のための計画策定が必要である。MWI 無収水ユニットは、予算消化のために必要な費目変更の承認プロセスや機材調達についての基本的な流れは理解しているようだが、どの程度精通しているか疑問である。もし、今年度の予算に対する費目変更及び機材調達が遅れた場合には、各パイロット WSP での研修に必要な漏水探査機などを、MWI 無収水ユニットが調達し、各 WPS に供与するタイミングが遅くなる。その場合には、漏水探査などを担当する JICA 専門家の現地投入時期を遅らす必要がでてくるため、プロジェクト活動の実施への影響が大きい。
- 4) MWI 無収水ユニットの専任職員は、本プロジェクトの活動を含む MWI 無収水ユニットが実施すべき業務を全て行うためには、各個人の能力を大幅に改善する必要がある。特に、無収水に関連する技術力、他機関とのコーディネート力、及びプレゼンテーション力の向上が必要である。
- 5) プロジェクト目標は、都市部の WSP が無収水削減活動を実施するための支援体制を確立することであるが、まだ支援体制を構成する関連機関がプロジェクトの実施体制としておおよそ揃ったばかりである。そのため、今後は関連機関との会合の場を増やすことを心掛けて、連携を密にすることが望まれる。
- 6) MWI 無収水ユニットが、WSP や支援機関にとって役立つ無収水削減年次報告書を作成ができるように、WASREB との連携を強化が必要である。具体的には、WASREB に集められる各 WSP やカウンティの無収水対策に係わる情報が毎年十分に共有される仕組みが必要である。
- 7) MWI 無収水ユニットが、KEWI の無収水研修コースをレビューする際には、改善のために必要な予算処置についても検討し、MWI 無収水ユニットの予算を用いて、どこまで支援する必要があるかを見極める必要がある。本来 KEWI の年度予算は MWI 予算とは独立していることから、今後は本プロジェクトの活動と合同研修予算を自らの予算措置の中で対応する必要がある。

- 8) WASREB は WSP が水道料金を改定する際、無収水削減のための投資と料金収入による投資費用を回収を検討させている。また、WASREB は、過去各 WSP に対して無収水ユニットの設立や無収水削減計画の策定の要求している。このように、WASREB は WSP での無収水削減活動の実施に関して、強制力を持っている。そのため、この強制力により、KEWI の無収水短期研修コースの受講を WSP に求めるなどの支援も一案として考えられる。今後、MWI 無収水ユニット、WASREB、KEWI の三者が連携を強め、無収水研修コースの受講者の確保に窮している KEWI の現状を打破するための対策について、十分に検討する必要がある。
- 9) カウンティ及び WSP に対する啓発活動に係わる課題の一つは、MWI 無収水ユニットが主体的にの啓発活動の計画策定、予算確保及び実施を行えるようになることである。また、MWI 無収水ユニットの限られたリソースにより、他の機関とどのように連携して、全国の都市部 WSP における無収水削減のための啓発活動に対する支援体制を実現するかを戦略的に検討する必要がある。さらに、カウンティに対する啓発・広報活動に、プロジェクトへの積極的な参加を希望する CoG をどのように巻き込んでいくか検討する必要がある。
- 10) WSP 及びカウンティに対する啓発活動の内容を検討する際には、以下の留意点についても考慮する必要がある。これらの留意点は、「(5) 無収水削減の広報・啓発活動に係わるベースライン調査の結果」で説明している関連機関及び WSP における広報・啓発活動の現状に基づいている。
- 今回調査した WSP では、概ね NRW に関する啓発や広報活動を実施していることが確認されたが、Muranga WSP や Kisumu WSP 以外は啓発・広報活動のための専属職員がおらず、顧客サービス担当などが兼任している WSP がほとんどであった。WASREB の広報担当部長は、広報部が存在するのは Nairobi WSP や Mombasa WSP のみであり、Muranga WSP や Kisumu WSP でも担当の職員は若く決定権を持たされておらず、啓発・広報活動が WSP の経営において重要であるとの認識が不足していると指摘している。そのため、今後、MD を始め WSP の経営幹部に対して啓発や広報活動の重要性を知らしめる必要がある。
 - 今回の調査では、ほとんどの WSP で啓発・広報活動に関する計画がないことが確認された。このことは、啓発・広報活動は実施しているが、何のために「目的」と活動の目指すところ「目標」を定めずに活動をしている WSP が多い。啓発・広報活動はその直接的な効果を計測することは容易でないが、広報活動の目的や目標を設定すると、広報の対象が明確になり、その対象にあった効率的な啓発・広報の手法を取り入れることで、効率的な活動をすることが可能になることから、啓発・広報活動に関する計画や戦略を持つ必要がある。
 - NRW の啓発活動を実施するにあたり、対象グループの置かれている社会経済的要素を考慮する必要がある。国連の SDG の中で貧困削減対策の一環として実施されている Pro-Poor プログラムを実施している Nakuru WSP では、Pro-poor の対象となる低所得者地域の方が無収水削減に関する意識も高く、また NRW 率も低いことが指摘されている。Kisumu WSP では低所得者地域での Baraza(会合)の方がその他の地域より参加者が多い。無収水削減に関する広報・啓発活動を実施するにあたり対象となる

グループにおりメッセージや伝達手段を替える必要がある。

- カウンティへの啓発・広報活動にはその対象とするレベルを明確にし、対象グループによって啓発活動の内容を調整する必要がある。Governor や CEC (County Executive Committee) は政治家であり予算や政策に影響力を持っているが、選挙毎に人員が変わる。CEA (County Executive Administration) レベルでは選挙で人員の変化はないが、実務者レベルになるため、政治的な決定権を持っていないことなどを考慮して、啓発・広報活動を実施する必要がある。上述の CoG へのセミナーの結果、CoG からプロジェクトへの積極的な参加が要請されたことを受けて、今後はカウンティに対する NRW の啓発・広報活動に CoG を巻き込んでいく必要がある。

(4) 課題への対応策

- 1) MWI 無収水ユニット内の意思疎通や業務効率の改善を図るために、申請されている MWI 無収水ユニットのための事務室整備 (必要な事務機器や通信機器の設置を含む) の進捗をモニタリングしつつ、早急な整備を促す必要がある (JICA 専門家チームの事務所と同じ階の部屋の確保、もしくは大部屋の確保により JICA 専門家チームと同室にすることを推奨したが、現在のところ別室になることが想定されている)。
- 2) 前述した MWI 無収水ユニットの今年度の予算に対する費目変更の承認が遅れた場合、各 WSP での研修に必要な機材の調達だけでなく、専門家の投入も遅れる可能性がある。そのため、この問題を JICA 専門家チーム全体の最重要課題とし、MWI 無収水ユニットが早急に対応できるように、メールや電話だけでなく、現地のスタッフ 2 名を通して支援している。特に、今年度(2016/2017)は、8 月に予定されている大統領選挙の影響で、費目変更が 5 月以降できなくなるため、一日でも早い費目変更の承認取得を目指すように、MWI 無収水ユニットを促し続けるようにする。
- 3) MWI 無収水ユニットによる無収水年次報告書の作成は、WASREB から情報提供などを受けながら、協働で行う。WASREB 側の承諾は得られている。
- 4) カウンティや WSP に対しての啓発活動、キャンペーンの実施は、MWI 内の広報部、CoG、WASPA、KEWASNET などの協力を得ながら、協働での企画立案、実施することとする。
- 5) KEWI の無収水削減コースのレビュー、WASREB の無収水削減活動のレビュー等については、JICA 専門家チームと協働で対応する。
- 6) MWI 無収水ユニットが比較的連携することに消極的であった WASREB と CoG は、ともに支援体制構築上重要な機関であるため、積極的に連携していくように促す。
- 7) 前述した広報・啓発活動に関する課題や留意点に対応するため、本プロジェクトでは以下の活動案が挙げられる。
 - WSP への聞き取り調査結果を訪問した WSP や関連団体 (WASREB、WASPA、KEWASNET、SNV 等) と共有することで、今後の協力体制について協議するためのベースラインとする。
 - NRW ユニットを中心として、WASREB や KEWASNET、WASPA や他ドナーを含めた啓発・広報活動に関するタスクフォースを形成する。タスクフォースでは、国家レベル

での NRW に関する啓発活動に加えて、現在独自に実施している給水分野での啓発・広報活動をコーディネートし、相乗効果を上げることを目指す。

- WSP への聞き取り調査結果や WASPA のトレーニングニーズ調査の結果より、広報・啓発活動に関する研修・トレーニングについて計画を策定し、関連機関と協議の上、実施する。
- WSP 間で広報・啓発活動のベストプラクティスを共有できる仕組みを確立する。
- NRW に関する啓発活動を活発に実施していない WSP にはスポット的に技術的なサポートを提供する。
- 今後 CoG とカウンティーに対する啓発活動について協議を重ねる必要があるが、CoG がイニシアティブを取り、NRW に関するセミナーやワークショップを開催し、NRW ユニットがセミナーの内容の支援など技術的な部分を担当することが考えられる。

(5) 無収水削減の広報・啓発活動に係わるベースライン調査の結果

1) 広報・啓発活動に関する組織

MWI 省

MWI 省全体の広報関係を一括して担当するのは、同省内の広報局 (Public Communication Directorate) であり、MWI 省の Administration 部門下に所属している。

広報局の主な役割としては、大臣や次官のスピーチ原稿作成、プレスリリース原稿作成及び発信、MWI 省による出版物の校正、メディアへの対応、ホームページのコンテンツの作成である。職員は担当官を含め 3 名の少人数。MWI 省のホームページのコンテンツは広報局で作成されるが、ICT 局 (Information Communication Technology) がその運営を管理している。

担当官への聞き取り調査では、TV やラジオを利用して啓発または広報活動をする方法は二通りあり、①主催者側が TV やラジオ局を招待する方法 (その場合の経費は主催者側負担) ② TV やラジオ局にプレスリリースを送付し、自発的な参加を促す方法。MWI 省は全国及び地方でのメディアのネットワークを持っているので共有することは可能。尚、プレスリリースや出版物が広報局を通すことで MWI 省内の承認許可を同局を通して得ることができる。

啓発活動については、MWI 省内が自発的に行っているのは 3 月 22 日の「世界水の日」のイベントのみのものであり、啓発活動を担当する部署は広報局以外にない。「世界水の日」のイベントは毎年 MWI 省主催で開催されるが、その準備には担当官が指名される。

WASREB

WASREB 内に顧客・広報部 (Directorate of Consumer and Public Affairs) があり、独立部局になっており、顧客及び一般住民に対するコミュニケーションを管轄しており、部長以下広報担当官と顧客サービス担当官がいる。

WASREB は組織内にコミュニケーション計画はあるが、対外的には WSP や WSB に対し、顧客エンゲージメントガイドライン (Consumer Engagement Guideline) を発行し、WSP や WSB が顧客との対話を進めることを奨励している。WASREB による広報・啓発の活動は以下の表 1-1 の通り。

表 1-1 WASREB の広報・啓発活動

活動内容	形態	対象
Consumer Engagement Guideline	ガイドライン・出版物	顧客
TV・ラジオ・新聞による啓発活動	マスメディア	顧客・一般住民
ホームページ		顧客・一般住民
ソーシャルメディア (Facebook, Twitter)		顧客・一般住民
プレスリリース	出版物・電子ファイル	顧客・一般住民
出版物 (例: Impact Report)	出版物・電子ファイル	顧客・一般住民
Water Action Groups	ボランティアグループ	参加 WSP 顧客
Maji Voice	SMS	参加 WSP 顧客

● 顧客エンゲージメントガイドライン

顧客エンゲージメントガイドラインの目的は以下の通り。

- WSP の契約内容と範囲について情報公開し、顧客からの給水サービスへの参加を促す。
- 顧客の苦情の解決を目的とした顧客エンゲージメントに関するアプローチを新たに設定する。
- 市民グループ (Civil Society Organization, CBO) の参加を突発的・一時的ではなく、建設的、持続的なものとする。

● Maji Voice

Maji Voice (Maji とはスワヒリ語で水) は WASREB が世銀の Water Global Practice プログラムの援助を受けて開発した SMS やオンラインで WSP の顧客や市民



が苦情や通報、サービスへのフィードバックをするシステムである。送信した苦情や通報にトラッキングナンバーが表示され、苦情が処理されているか否かを知ることができる。Maji Voice は 2013 年にナイロビ WSP でパイロット試験が実施され、表 1-2 にある WSP で導入されている。ナイロビ WSP でサービス開始当初、苦情やフィードバックの件数が 10 倍に跳ね上がり、そのレスポンス率は 2013 年 7 月から四半期は 46%であったが、2014 年 12 月には 94%まで伸びている。Maji Voice を使用している職員も 2013 年中期の 100 名以下から 2014 年末には 400 名に昇っていることが世銀の報告書で指摘されている。

表 1-2 Maji Voice 参加の WSP

Maji Voice 参加 WSP
Eldoret, Embu, Nairobi, Nakuru, Mathira, Nanyuki, Nyahururu, Muranga, Mombasa, Othaya, Thika

Water Action Groups (WAG)

WAGは顧客からのボトムアップのフィードバックを吸い上げ、WASREB や WSPからのトップダウンの情報を伝達するために組織化されたボランティア市民による草の根グループであり、WASREB によりその活動が監督されている。

WAG 活動ガイドラインで示されている WAG の役割は以下のとおり。

- 顧客への情報の伝達及び啓発活動
- 給水サービス組織(WSP・WSB)への市民参加促進(Baraza=ミーティング開催等)
- 顧客・市民からの苦情の吸い上げとフォローアップ

WASREB 広報部長によると WAG のパイロット活動が 2010 年から開始。WAG メンバーはメディアを通じた公募により採用され、WASREB から活動費用が支給される。現時点での(2017年3月)WAG メンバーは 89 名で、表 1-3 に示す通り全国の参加 WSP の地域で活動している。

表 1-3 WAG 参加の WSP

Water Service Board (WSB)	Water Service Provider(WSP)
Athi	Nairobi
Tana	Muranga South ,Muranga, Embu, Kirinyaga
Tanathi	Mavoko
Rift Valley	Nakuru
Lake Victoria South	Kisumu
Lake Victoria North	Kakamega Busia
Coast	Mombasa
Northern	Garissa

WAG の活動開始当初は WSP の広報・啓発活動とは別に単独で活動を展開していたが、現在は WSP と協調して活動を実施している。4 半期に一回 WAG は WASREB にその活動状況を報告する義務がある。2016 年 10-12 月までの活動の WAG 全体の要約としては、アウトリーチイベント 33 回、カスタマクリニックの開催 19 回、パブリックミーティング 25 回である。

顧客エンゲージメントガイドラインでは、WASREB は将来的には WAG、WASPA を廃止し、各カウンティごとに WAG を設定するとしている。将来的な WAG の設定方法として以下の 2 案が提示されている。A.SPA (Service Performance Contract)の Minimum Service Level (Schedule D) の良くない WSP に対して、コンプライアンスと実施を目的として WAG を設置する。市民グループやコミュニティ、顧客グループによるリクエストベースで WAG を設置する。

マスメディアの利用

WASREB は全国ネットの TV やラジオを通して、水関連の啓発メッセージを定期的に発信している。特に無収水に関する映像やメッセージを作成していないが、盗水や違法接続に関するビデオ、節水や漏水の報告などのメッセージを発信している。WASREB 広報部長は、顧客も含めて一般市民に対する啓発活動にマスメディアを利用することが最も効率がよいと考えており、本

年 3 月 22 日の世界水の日にも TV にてキャンペーンを実施する予定である。

KEWASNET

Kenya Water and Sanitation Civil Society Network (KEWASNET) は 2007 年 8 月に設立された給水衛生サービス(WASH)と水資源管理(WRM)に関連する市民組織(CBO=Community Based Organization)のネットワークであり、「給水衛生セクターのグッドガバナンスを促進する」ことを目的としている。KEWASNET の会員は NGO、CBO、宗教グループ(Face-based organization)、ビジネス、学術・研究機関、水衛生セクターに関連する企業などである。KEWASNET の 2014、2015 年の収支を表 1-4 下記に示す。

表 1-4 KEWASNET の収支(2015/2014 年) (単位:Ksh)

	2015	2014
収入	76,969,901 (会費収入 233,581+ドナー援助 76,736,320)	52,714,028 (会費収入 204,128+ドナー援助 52,509,900)
支出	71,938,106(活動費:53,811,229+経費 18,126,877)	10,552,854(活動費:6,859,114+経費 3,693,740)
差額	5,031,795	42,161,174

KEWASNET の戦略的な目的 4 項目と主な活動内容は以下の通り。

- 給水衛生セクターで活動するメンバーや CBO に対するマネージメント等のキャパシティ向上のための活動。
- 水衛生セクターにおける政策や実施環境の向上。水法や給水衛生セクターに関連する法律へのインプットやポリシーブリーフの作成。政策参加とパートナーシップに関する MoU を MWI と署名。Kisumu, Uashin Gishu, Mombasa カウンティレベルでの WASH セクターのガバナンス強化に関する活動。
- 効率的な水衛生セクター介入のための CSO 間の連携を強化に関する活動。
- 組織開発と持続可能性の強化に関する活動。

また、KEWASNET は活動を全国を次の 3 地域に分けている。

- 地域 1 :ビクトリア湖周辺、西部、Eldored から北部
- 地域 2 :ナイロビ首都圏(Meru, Embu, Isiolo and South Rift を含む)
- 地域 3 :旧イースタン以降旧コースト州

Pro-poor プログラム

今回調査した WSP 多くはそのサービス地域には低所得者層(LIA=Low Income Area)が含まれている。一例では Nakuru では人口 50 万人のうち、その半数が 42 の LIA 地域に居住する

といわれている。¹ LIA は無計画な集落から成り立った居住地域で、電気、上下水道、道路などの基礎インフラが未整備であることが多い。給水サービスに関する問題としては、不十分な給水量や水圧の低さ、断水など給水サービスに関する連絡の不行き届きによる WSP への不信感、警備が手薄であるためパイプなどの破損、無許可で高価な私設の水売りの存在などが挙げられる。KEWASNET や Nakuru WSP の聞き取り調査では、私設の水売りは、その需要を生むために意図的にパイプやメーターを破損し、不法接続による盗水した水を販売することで利益を上げており、マフィア組織が運営していることが多い。そのため、盗水や違法接続の通報者に身の危険が及ぶこともある。

LIA の給水や衛生サービスを向上するため、VITENS の PEWAK プロジェクト²の一環として、WASPA 会員の 10WSP に Pro-poor ユニットや担当者の設置を促し、LIA 地域で無収水削減の啓発活動などを実施している。今回調査した WSP で Pro-poor 担当者がいたのは、Kisumu、Nakuru と Eldoret (兼任)であったが、Nyahururu も Pro-poor ユニットの設置を考慮しているとの回答であった。LIA での活動には、コミュニティオーガナイザーという仲介者を介して行い、オーガナイザーが住民との Baraza を通して、意見や苦情を吸い上げ同時に啓発活動を行う。オーガナイザーが NGO や CBO (Community Based Organization) である場合もある。

Pro-poor プログラムの活動を実施している Nakuru や Kisumu の担当者は、無収水への関心や意識は、以下の理由で LIA 地域の住民の方が高いと答えている。

- CBO やコミュニティオーガナイザーを介した、無収水関連の事項(盗水や違法接続、施設破損)についての啓発活動が行われている。
- 啓発活動を通して、LIA の住民は給水施設破損や違法接続は、自らの水不足や水売りから高い水を買わざるを得ない状況に通じることを理解しているため、漏水や違法接続に関する WSP への報告率は高い。
- 啓発活動は通常、平日日中に実施されるため、日中に人が多い LIA 地域の方が Baraza など人が集まりやすい。

半面 Nakuru や Kisumu の Pro-poor の担当者は、中・高所得者地域での無収水に関する関心の低さを指摘する。Nakuru では、サービス地域のほとんどが時間給水であり、所得のある家庭は水不足を補てんするため、私設の水をタンクなどで購入するため、無収水削減に関する関心は低い。また、Kisumu では啓発活動や Baraza は平日に実施されるために、町中に勤務する住民の参加が限られることが指摘されている。

2) WSP の広報活動の現状調査

本調査期間中にパイロット WSP(9 ヶ所)とその他 WSP(3 か所)の計 12WSP を対象に、WSP の NRW や給水一般に関する顧客や住民への啓発・広報活動の現状について、質問票を用い

¹NAWASCCO Pro-poor Strategy and Action plan for 2013-2017.人口は 2009 年の人口統計の数字

²Performance Enhancement for Performance enhancement of Water Service Providers in Kenya through benchmarking, collective learning and innovative financing (PEWAK)

て聞き取り調査を実施した。質問票は事前に送付し、各 WSP の訪問時に聞き取り調査により回答を収集した。調査を実施した WSP は下表 1-5 に示す通り。

表 1-5 広報活動現状調査実施 WSP

調査対象 WSP	訪問日
Muranga, Embu	February 22, 2017
Meru, Nyeri	February 23, 2017
Nakuru	February 28, 2017
Kisumu	March 1, 2017
Eldoret	March 2, 2017
Nyahururu	March 3, 2017
Ruiru-Juja, Thika	March 8 th
Mavoko	March 13, 2017
Kilifi-Mariakani	質問票による回答

各質問に対する回答及び分析を以下に示す。

①広報活動に関する組織内の体制

広報部・広報担当の有無

訪問した 12WSP 中、Public Affairs や Communication など専門の広報担当がいた WSP は 3 か所であった。(Kisumu, Muranga, Thika) Thika の担当者は数週間前に Corporate Affairs 担当に任命されたばかりであった。それ以外の WSP では、Customer Relations・Customer Care 等の顧客管理担当者がコミュニケーションを担当しているまた広報担当を兼ねている WSP が多かった。

また、顧客管理の一部として、Pro-poor コーディネーターがいる WSP もあり (Nakuru, Kisumu, Eldoret)、Pro-poor コーディネーターは低所得者層に対する啓発活動を管理している。

コミュニケーション規則や計画の有無

コミュニケーションに特化した規則、戦略、計画があると答えた WSP は 3WSP (Muranga, Nyeri, Eldoret) のみであった。カスタマーチャーターはほぼすべての WSP にあり、その中で顧客とのコミュニケーションについて触れているものもあるが、チャーターは対外的なものであり、WSP 組織内でのコミュニケーションや、啓発や広報活動を含む対外的なコミュニケーションを計画的に進めていく指針のようなものではない。TV やラジオ等のマスメディアから問い合わせやインタビューがあった場合の回答は、Managing Director (MD) が対応するという、明記された規則はないが、職員が対応を認識しているようである。

Lake Victoria North WSB の職員は、同 WSB 管轄下の WSP でコミュニケーションに関する規則を持っている WSP はなく、コミュニティーの規則や戦略作りに関するサポートの必要性を指摘している。

②実践されている主な啓発・広報活動

Baraza

Baraza はスワヒリ語で集会、会合を意味しており³ 草の根レベルでの政府関連情報の伝達手段として使われる。WSP でも Baraza を定期的を開催することで顧客や住民とのコミュニケーションを図っている。調査した WSP 中、Ruiru-Juja 以外の WSP は Baraza を定期的実施していると回答している。その方法として、WSP が自発的に開催する Baraza と行政の下部組織であるチーフが開催する Baraza に WSP が参加し、アナウンスメントを行ったり啓発活動を実施したりするパターンがある。WSP 独自の Baraza に加えて、行政組織の Baraza にも参加していると回答した WSP は多かった。

Baraza の回数としては、4 半期または半年に一回、地域別で実施するとしているが、断水やサービス地域拡大など特定地域への情報伝達が必要な場合も Baraza を実施していると回答する WSP が多かった。

Baraza はオープンな集会であることから参加者を限定することはできないが、給水サービス地域の拡張や配管の延長などの対象となる地域(潜在的な新規顧客)に対するアナウンスの目的で Baraza を開催すると回答した WSP は多い。定期的な Baraza の場合は、特にアナウンスがなければ盗水、違法接続や節水に関する啓発活動を行うと答えた WSP は多い。また啓発活動が主目的でない場合も、多くの WSP で必ず無収水に関する項目を Baraza の内容に組み込んでいる。全 WSP で Baraza のトピックは WSP が決定すると回答しているが、顧客サービス係を協議し顧客からのフィードバックなどに基づいてトピックを決定している WSP も多い。Nyahururu WSP では Baraza において参加者が WSP に対し意見や質問ができる場を設けている。Pro-poor プログラムのある Nakuru WSP や Kisumu WSP では、低所得者地域での Baraza には、コミュニティとのリエゾン(仲介者)を通してトピックを選出する。

Baraza は平日(または土曜日)の日中に開催されることが多いことから、低所得者地域での参加者数は多いが、中・高所得者地域では平日・日中は住民が働きに出ているため Baraza の集まりもよくないことを Kisumu WSP は指摘している。

③広報活動の手段

調査した WSP において NRW 削減に関連した啓発・広報活動の手段として、キャンペーン、教育、ポスター、TV やラジオ、インターネット、ソーシャルメディア(SNS)等の利用が確認された。各 WSP の活動手段についての主な回答は下表 1-6 に示す通り。

³ケニアでは主に政治や行政関連の集会や会合の意図することが多い。特に Chief's Baraza とは地方行政の下部組織であるチーフが政府関連の情報の伝達手段として開催する。

表 1-6 WSP の啓発活動手段

WSP	キャンペーン	SMS message	TV ラジオ	Web Site	SNS	その他
Embu		Yes	Radio	Yes	FB	Flyer
Eldoret	Road shows	Yes	Radio (talkshow)		FB/TW	
Kisumu	Customer Clinic	Yes	Radio (talkshow)	Yes	FB/TW	
Kilifi-Mariakani				Yes	FB	
Mavoko	Campaign	Yes		Yes	TW	Poster
Meru		Yes	Radio	Yes	FB	Flyers
Muranga	Customer Clinic	Yes	Radio	Yes	FB	Maji Voice, brochures
Nakuru	Road shows / Customer Clinic	Yes		Yes	FB/TW	Flyers / Maji Voice
Nyahururu		Yes	Radio	Yes	FB	Volunteers
Nyeri	Open day Stakeholder forum Customer clinic	Yes	Radio	Yes	FB/TW	Open day / Stakeholder forum
Ruiru-Juja				Yes	TW	Stakeholder forum /brochure
Thika	Campaign Customer Clinic	Yes		Yes	FB	WAG /Maji Voice

FB=Facebook TW=Twitter

キャンペーン



数か所の WSP はロードショーやカスタマークリニック等のキャンペーンを通して啓発活動を実施していると回答している。ロードショーとは大型トラックの荷台をステージとして、音楽やダンスで注目を集めるキャンペーンで、ケニアで選挙活動や商品のマーケティングなどに利用される。ロードショー用のトラックやスピーカー、音楽・ダンス要員などの経費に係るが、移動可能であり、広範囲に不特定多数に

対してメッセージを発信することが可能である。Eldoret の MD は、ロードショーは選挙や製品のキャンペーンには効果的だが、無収水の啓発活動だとメッセージ性が弱くなる可能性があることが指摘している。これに対して、Eldoret では、節水などのメッセージの垂れ幕(バナー)を WSP の給水車に掲げ、バイク隊を編成してロードショーを実施した経験があり、経費をかけずにロードショーをすることが可能であるとしている。

Mavoko や Muranga では、音声によるキャンペーン活動を実施している。ピックアップトラックに乗せたスピーカーでメッセージを流しながら走る、または市の立つ日に市場付近で放送している。Muranga の場合は定期的に異なるメッセージを録音し放送している。ロードショーと類似の不特定多数に対するメッセージの伝達が可能である。

Customer Clinic は屋外テントや簡易事務所を設置し臨時のカスタマー相談センターで、顧客や住民が WSP 職員に相談できるようにする。Muranga, Kisumu, Nyeri, Thika では Customer

Clinicを設置したと回答している。Murangaの場合は4半期ごとにサービス地域別に設置しており、顧客からの相談だけでなく、メーターの盗難や盗水や違法接続についての住民からの通報が役立ったと回答している。Baraza やカウンティなどのイベントや農業展示会などで Customer Clinic を設置する WSP もある。すべての WSP は、顧客とのコミュニケーション手段として最も有効な手段として回答しており、Customer Clinic は WSP と顧客の対面の機会を提供する有効な手段であるといえる。

Nyeri では毎年世界水の日(3月22日)に WSP を顧客や住民に開放する Open Day を実施している。訪問者は WSP 部署を訪れ、顧客管理や O&M について質問したり学ぶことができる。

SMS

すべての WSP で SMS (ショートメッセージサービス) を介した水道料金の請求書を送っており、Eldoret WSP では水道料金以外にも断水計画や漏水や不法接続の通報に関するメッセージを発信している。SMS は個人の携帯電話に送られるため受信者が読む可能性が高く、しかもメッセージが短いので理解されやすい利点がある。

TV やラジオ

今回訪問した WSP で過去・現在に地元のラジオを通して情報の発信や啓発活動を実施している WSP は Kisumu、Eldoret、Nyahururu、Nyeri、Embu、Meru、Muranga であった。特に Kisumu と Eldoret はラジオのトークショーのロットを持っていた。その他の WSP は、スポット的にラジオ放送を利用したり、ラジオ局からの要請で水関連の情報を提供している。Nyahururu は断水やパイプの破裂などのアナウンスに地元ラジオを利用しているが、そのコストは一日2回の放送で 3,500KSH と高くない。ケニア全土で 2015 年 9 月時点で 575 のラジオ局が放送ライセンスを取得しており、英語とスワヒリ語に加えて、地方にはローカル言語の放送局が多々存在する。ケニアの TV 受信機の普及率が 2015 年では 32% であり、地方部ではラジオが主なメディアであり、WSP サービス地域内でのマスメディアを用いた情報伝達手段としては、利用しやすいようである。Nairobi WSP と WASREB は TV で水に関するメッセージやドキュメンタリーを全国に放映している。

ウェブサイト

すべての WSP は独自のウェブサイトを持っていた。基本的なコンテンツとしては以下の項目が挙げられる。

- 組織・幹部紹介
- ミッション・ビジョン・戦略
- 連絡先(トールフリー・ホットラインを含む)
- 上下水道サービスカバレッジ
- 顧客サービスチャーター
- 水道料金・料金支払い方法
- 上下水道接続サービス

- 申込・申請用紙各種
- 苦情や通告の方法

NRW に関する情報として、Nakuru や Kilifi-Meriacani では節水ガイドを掲載している。Kisumu WSP のウェブサイトには、顧客サービスチャーターにおいて「顧客の責任」として、期日までの水道料金の支払い、違法接続や漏水の通報、節水、給水施設破壊の禁止、水道メーターの確認などが明示されている。Nyeri でも類似の掲載があるが、上述の内容に加え WSP 職員の扱い、上下水道施設上には建造物を建てないことなどが含まれている。調査対象となった WSP のウェブサイトは以下の表 1-7 に示す通り。

表 1-7 調査対象 WSP のウェブサイト

WSP	ホームページアドレス	NRW 関連記載事項
Embu	http://www.embuwater.co.ke/	
Eldoret	http://www.eldowas.or.ke/	節水ガイド
Kisumu	http://www.kiwasco.co.ke/	
Kilifi-Mariakani	http://www.kilifiwater.co.ke/	
Mavoko	http://www.mav-water.org/	
Meru	http://www.mewass.or.ke/	節水ガイド
Muranga	http://muwasco.co.ke/	
Nakuru	http://www.nakuruwater.co.ke/	
Nyahururu	http://nyahuwasco.co.ke/	
Nyeri	http://www.nyewasco.co.ke/	
Ruiru-Juja	http://www.rujwasco.com/	
Thika	http://thikawater.co.ke/	

ソーシャルメディア

ウェブサイトに加えて、Facebook や Twitter を利用して顧客とのコミュニケーションを図っている WSP も多い。11WSP 中、9WSP が組織の Facebook を開設している。6WSP は Twitter のアカウントを設定している。聞き取り調査によると、FB や Twitter の利用者は主に若年者層で、必ずしも顧客でない。FB や Twitter などのソーシャルメディアは、情報発信やレスポンスのため担当者が常時必要である点はデメリットであるが、断水や工事などの情報をタイムリーに、低コストで発信することができるメリットもある。

④啓発活動に最も効果的な手段

すべての WSP が Baraza や Customer Clinic などが最も効果的なコミュニケーション手段として挙げている。顧客や住民と対面で会うため意思伝達がしやすいというのが主な理由である。次に、ラジオや電話 (SMS やスマートフォン) が効果的な手段との回答であった。チラシという回答もあったが (1 件) 対照的に印刷物は読まないのでは効果がないという回答が 2 件であった。

⑤NRW に対する職員及び顧客の認識度

WSP 職員と顧客の何%が NRW を認識しているかとの質問に対し、ほぼ全 WSP で職員に関しては高い認識度であると答えている(95~80%)。ただし、技術部は 100%だが、財務や人事部になると 70-50%と低いと回答した WSP もあった。どの WSP も組織内の NRW 削減に関する認識はある程度高いと考えているようである。

顧客の認識度は、高い WSP では 90%(2 件)、それ以外は 80-40%との回答であった。NRW という言葉は理解していなくても、漏水や盗水、違法接続を見逃すことは、自らの水道料金や給水量に反映されることを顧客が理解していることを前提としている。

Nakuru や Kisumu のように低所得者層に対する活動(Pro-Poor プログラム)を実施している WSP では、低所得者層(LIA)では NRW の意識が、中・高所得者地域より高いと答えている。その理由としては LIA 地域では、盗水や違法接続に加えて、配管網やメーターを人為的に破損することで、住民が違法の水売りから高価な水を購入しなければならない状況を人為的に作り出す場合が多い。Pro-poor プログラムでは、コミュニティと WSP を仲介する Community Organizer を通して、LIA の住民に対し漏水や違法接続を通報することや、パイプやメーターの破損により、違法で高価な水を買わなければならないことへの理解を浸透するための啓発活動を積極的に進めている。その結果、Nakuru では LIA 地域の方が NRW 率が低くなっている。

⑥NRW の啓発活動は NRW 率削減に貢献しているか否か

調査した全 WSP が啓発活動は NRW 削減に役立っていると答えている。NRW が主題でない場合でも、WSP では Baraza において必ず盗水や違法接続、漏水の通報を呼びかけるなど NRW 削減に関連するメッセージを発信していると答えた WSP は多い。しかしながら、顧客へのインパクトなど調査をした WSP はないことから、啓発活動がどの程度効果を生んでいるかを客観的に判断するツールはない。

⑦啓発活動に関するサポートへのニーズ

啓発活動に関する研修・ワークショップへの参加経験

パブリックリレーションズや啓発活動に関連したクラス、ワークショップやセミナーへの参加経験については、Nyahururu、Ruiru-Juja 以外の WSP は、研修やワークショップに参加したことがあると答えている。しかし多くは、カスタマーサービスに関し、パブリックリレーションズや啓発活動などコミュニケーションに特化した研修やセミナーに参加したことがあるのは 4WSP であった。

(Muranga, Kisumu, Meru, Eldoret)

NRW 削減啓発活動のに関してプロジェクトや MWI 無収水ユニットに期待するサポート

NRW 削減に関する啓発活動を効果的に実施する際に、プロジェクトや MWI 無収水ユニットから期待するサポートについての質問に対する回答は以下の通り。

- ソーシャルメディアを利用した啓発活動に関する研修
- WSP のグッドプラクティスや成功例の共有

- 金銭的・物質的(キャンペーン用 T シャツやバナー、チラシなど)サポート
- コミュニケーションポリシーや計画作成のサポート
- 難しい顧客への対処や対応に関する研修
- メディアツール(ビデオなど)の作成サポート
- 受信者が NRW 削減の知識から行動に移すような効果的な啓発活動方法を学びたい
- ロードショーや Baraza の効果的な開催方法

⑧ NGO や CBO の活動への参加

WASREB がサポートする WAG 活動の対象となる WSP は Nyeri、Muranga、Nakuru、Kisumu、Embu、Mavoko であるが、Embu と Mavoko での活動については WSP 側から特に回答はなかった。NGO など外部組織との活動がないと答えたのは Meru、Embu、Ruiru-Juja、Nyahururu であるが、Nyahururu の場合は WSP をサポートする Friends of WSP というボランティアグループがある。Friends は WSP より携帯電話代や交通費が支給され、Baraza への参加や漏水のレポートに協力している。

NGO や CBO の介入が多かったのは Nakuru と Kisumu であり、特に Kisumu では 33CBO とのパートナーシップがあり、加えて衛生関連プロジェクトも含めると多くの国際 NGO やケニア NGO とプロジェクトを実施している。Pro-poor プログラムを実施している WSP (Nakuru、Eldoret、Kisumu) では、LIA での活動を CBO や NGO を仲介して実施することが多い。

⑨ カウンティに対する啓発活動

成果1の活動にカウンティに対する NRW に関する啓発活動の実施がある。2010 年の新憲法発令によりケニアでは、地方分権制度が確立され、その主軸となるのが 47 カウンティである。以下にカウンティ制度について説明する。⁴

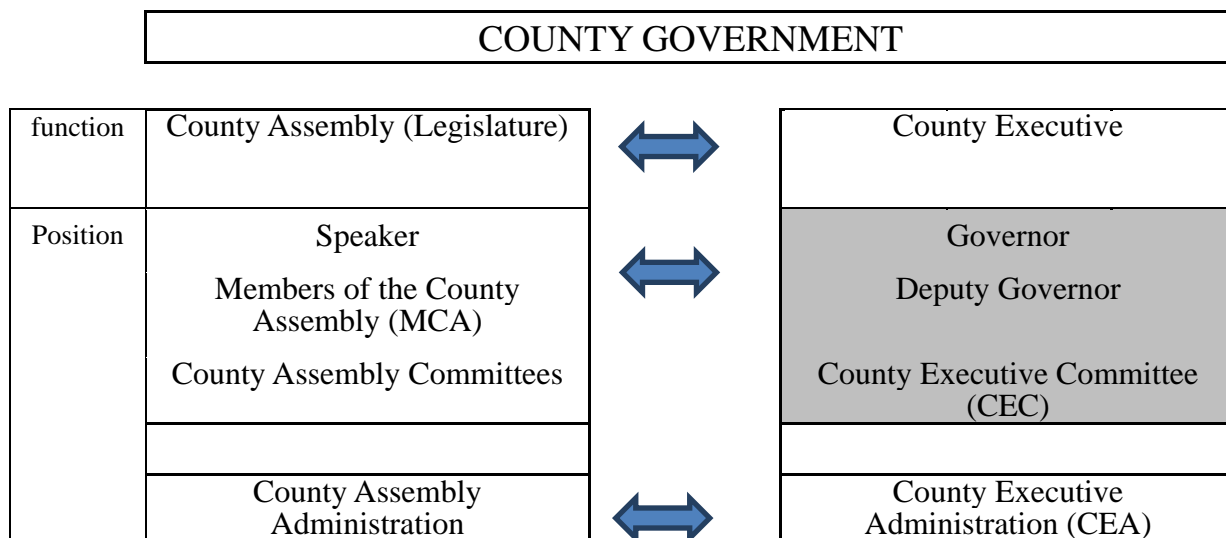


図 1-1 カウンティ制度概略図

⁴ <http://www.tkenya.org/index.php/press-releases/327-the-county-government-and-its-structures> より

抜粋

グレー部分が選挙で選出もしくは知事による任命され、選挙ごとに人員が変わる。County Executive Committee=CEC は知事により任命されたセクター別のチーフであり、知事に対しカウンタビリティを負う。County によりその名称やセクター区別は異なるが、例えば Kisumu County では、CECを大臣 (Minister)と呼んでいる。County Executive Administration (CEA)は、カウンティ職員であり、カウンティの政策の実行部隊である。カウンティへの啓発活動を計画する際に、カウンティのどのレベルを対象にするかが重要なカギとなる。

Council of Governors (CoG)はカウンティ政府間の協議や情報共有、キャンペーン向上、パフォーマンスマネジメントのためのプラットフォームであり、⁵その事務局はナイロビにある。CoGには、各セクターに関する18の Technical Committeeがあり、給水関連の議題は Water, Forestry and Mining Committee に含まれる。2017年3月時点での Committee の委員長は Baringo カウンティの知事で、Committee 委員は以下の表 1-8 に示す通り。

表 1-8 Water, Forestry and Mining 委員会リスト

知事名	カウンティ	委員会役職
H.E Benjamin Cheboi	Baringo	委員長
H.E Joshua Irungu	Laikipia	副委員長
H.E Jackson Mandago	Uasin Gishu	委員
H.E David Nkedianye	Kajiado	委員
H.E Julius Malombe	Kitui	委員
H.E Okoth Obado	Migori	委員

本調査期間中に CoG との協議の上、Baringo カウンティの議長の元、プロジェクトの概要とパイロット WSP の選択に関するセミナーを 3 月 20 日に実施した。その議事録の作成と承認を現時点で進めている。セミナーの主なポイントは以下の通り。

- プロジェクト目標及び成果、パイロット WSP 選択に関する説明と承認
- 道路拡張など他インフラ事業による給水パイプ破損による漏水の問題の提示
- CoG をプロジェクトへの積極的な参加の促進

今後、議事録の承認を受け、CoG のプロジェクトの活動への積極的な参加の方向性を CoG 事務局と協議する。

WSP への聞き取り調査による、カウンティへの啓発活動の内容として以下の点が挙げられている。

現法や規則に沿ったカウンティと WSP との役割や権限についてカウンティ幹部の理解を促進する。中でも、MCA (Members of Council Assembly) は各自選挙区に割り当てられた開発予算

⁵ Mission of CoG: Benchmark of excellence in devolution that is non-partisan; providing a supporting pillar for County Government as a platform for consultation, information sharing, capacity building, performance management and dispute resolution.

を利用して、WSP サービス区域内で給水や水源開発を実施するが、その際に WSP との協議や報告なしで開発を進めた結果、WSP が給水サービス計画の変更を迫られる、または基準以下の工事のため WSP が介入を余儀なくされるケースがある。Eldoret では、MCA7 名の選挙区において、WSP との事前協議を行ったのが 2MCA のみだったが、WSP との協議の上で実施されたプロジェクトは成功していると答えている。

カウンティの他のインフラ整備(道路拡張や構造物建築)において配水管などが破損され、漏水を引き起こすケースがあることから、カウンティ内のインフラ整備担当の部署と十分な連携が必要であることを啓発活動の内容に含める必要がある。

(6) モニタリング指標

以下の表 1-9 に、2017 年 3 月末時点の MWI NRW ユニットに関連する成果 1 (MWI NRW ユニットによる無収水削減活動の促進・調整機能が強化される) のモニタリングの状況(表 1-9)を示す。

表 1-9: MWI に係わる成果 1 の活動の進捗(2017 年 3 月末時点)

Activity	Progress
1-1 MWI NRW Unit, in cooperation with WASREB, produces NRW annual reports which include NRW reduction data.	年次報告書の内容に関する議論が進行中である。
1-2 MWI NRW Unit plans and implements NRW reduction sensitization activities for the Counties.	CoG との協議は進行中である。カウンティへの無収水削減にかかる啓発活動の取組み方法については議論が進行中である。
1-3 MWI NRW Unit plans and implements NRW reduction campaigns.	WSP に対する聞き取り調査を元に、計画を策定中である。
1-4 MWI NRW Unit conducts reviews of KEWI NRW courses.	KEWI の評価は成果 3 のベースライン調査により実施された。
1-5 MWI NRW Unit conducts reviews of WASREB's NRW reduction activities.	WASREB の評価は成果 2 のベースライン調査により実施された。

<WASREB>(成果2)

(1) 調査の項目と方法

1) WASREB に係わる調査項目

ベースライン調査では、課題を特定し、対策を検討することで、成果 2 の活動を効果的に実施するために、主に WASREB に関する以下の項目について調査を行った。

主な調査項目

- a) WASREB の役割、組織、予算、主要刊行物等の基本情報
- b) WASREB の無収水削減の位置付け、組織体制、及びドナーの係わり
- c) WSP による無収水削減基準の使用状況と問題点
- d) WASREB の無収水削減に関連する他の活動の内容

2) 調査方法

ベースライン調査では、主に質問票に基づいた WASREB への聞き取りとディスカッションにより、上記の調査項目についての確認を行った。

ただし、WSP による無収水削減基準の使用状況と使用における問題点については、2カ所のリーディング WSP、15カ所のパイロット WSP 候補、数カ所の WSB、他ドナー等に対して聞き取りを行った。さらに、これらの聞き取りにより得られた回答をまとめて、WASREB と共有した上で、現行の無収水削減基準の問題点や改定する上での課題について WASREB とディスカッションを行った。WSP 等の無収水削減基準に対する意見のとりまとめにおいては、詳細計画策定調査時の聞き取りにより得られた回答についても参考とした。

(2) 調査により把握した現状(現行の無収水削減基準の問題点を含む)

1) WASREB の基本情報

WASREB の主要業務及び組織構成については、本報告書の「3. 関係機関の概要」の(2)において既に説明している。以下では、その他の WASREB の基本情報として、近年の事業費用の移行と主な刊行物について説明する。

① WASREB の事業費用

過去4年間(2011/12年度から2014/15年度まで)の事業決算は表2-1の通りである。過去4年間でみると、事業費の規模は漸増しており、収入と支出は概ねバランスしている(図2-1を参照)。直近(2014/15年度)の事業予算によれば、収入の内、監督料金(WSPの収入の1%を徴収)が64.5%、ドナーからの資金が21.5%、中央政府から配賦金が12.4%を占めている。一方、支出は業務費が64.5%、人件費30.3%を占めている。

表 2-1: WASREB の事業予算

項目	年間事業費の収支 (Ksh)			
	2014- 2015	2013- 2014	2012- 2013	2011- 2012
収入				
政府配賦金	30 245 100	45 735 300	20 735 300	15 735 300
監督料金	156 834 355	139 484 004	133 418 318	131 328 858
雑収入	3 662 507	1 962 216	6 380 934	951 992
ドナーからの資金	52 255 783	18 485 087	16 209 490	17 549 026
収入合計	242 997 745	205 666 607	176 744 042	165 565 176
支出				
人件費	73 850 658	60 534 073	56 192 258	50 590 407
理事会費用	12 675 513	10 987 581	13 175 015	5 149 893
業務費	157 350 327	80 850 993	94 713 637	81 473 522
支出合計	243 876 498	152 372 647	164 080 910	137 213 822
差額	(878 753)	53 293 960	12 663 132	28 351 354

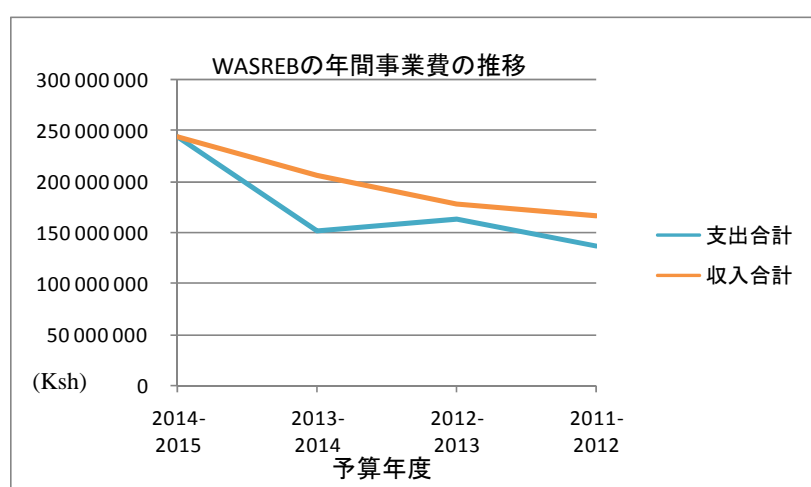


図 2-1: WASREB の年間事業費の推移

②主な刊行物

WASREB は GIZ の協力のもと、2008 年以降、各 WSP 及び WSB のパフォーマンスを示す指標値をまとめたモニタリング・評価のためのインパクトレポートを毎年発行している。また、WASREB のビジョンや財務諸表をまとめた WASREB Annual Report についても毎年発行している。

規制ツールとしては以下の刊行物を発行しているが、今後水法 2016 年の体制に移行するため、多くの規制ツールの改定が必要となる。

- Standards for NRW Management in Kenya (無収水削減基準)
- Drinking Water Quality Guidelines
- 水法2002年を順守させるためのEnforcement and Compliance Strategy
- WSPの料金設定について定めたTariff Guideline
- 水道事業への住民参加を促進するためのConsumer Engagement Guideline
- 給水セクターを対象としたコーポレート・ガバナンスのガイドライン
- WSPのBoard of Directorsに対するモデル倫理規定

- 各WSBの管轄地域に対する水道サービスについてのモデル法規
- WSPの規模分類ごとに、水道事業を担うための条件を示したTechnical Criteria for Appointment of WSPs
- WASREBからWSBに対する水道事業ライセンスの発行承認書の様式
- WSBとWSPの間で結ばれるService Provision Agreementの様式

本プロジェクトを通して改定する現行の無収水削減基準は、マニュアル、ガイドライン、ハンドブック及びケーススタディの4冊から構成されている。

WASREBは、WSPが市中銀行などから商業ベースの貸付を受けやすくするため、各WSPの財務状況等についての評価報告書(Creditworthiness Index Report)、ツールキット(WSP、カウンティ、貸付機関に対し別々に作成されている)及びWSPの財務分析のためのテンプレートを公開している。上記の刊行物や様式は、全てWASREBのホームページ上に公開されている。

2) WASREBの無収水削減の位置付け、組織体制、及びドナーの係わり

①無収水削減の位置づけ

水資源が乏しいケニア国にとって、水源の有効利用は国家の重要課題のひとつである。そのため、WASREBの主な役割である全国における水道事業の推進、利用者保護、適切な水道施設の運用と事業運営の監督等においても、無収水削減は最重要課題と位置付けられている。

②インパクトレポートにおける無収水の扱いなど

また、WASREBがWSBとWSPのモニタリング・評価のため、2008年以降毎年発行しているインパクトレポートでは、無収水率と顧客メータの設置率を含む9つのKey Performance Indicator (KPI)がWSPのランキングに用いられている。これらの業績指標は、WSPが毎年WSBからの事業委託を更新する際に作成するパフォーマンスコントラクトにおける目標値の設定にも用いられている。

WASREBは、インパクトレポートにより各WSPの無収水率などを公開することで、WSP間の競争を促している。無収水率が公開されることにより、顧客、住民及びWSPの役員メンバーから、WSPのマネージメントやその他の職員に対して強いプレッシャーがかかるようになった。インパクトレポート No.9によれば、無収水率の全国平均が前年度から1%上昇し、43%になった。WASREBは、この上昇の主な理由は、カウンティの要求によりWSPの給水区域が、漏水や盗水などの問題の多い周辺地域に拡張しているためであると認識している。

また、WASREBは、各年度の終わりからその年度についてのインパクトレポートが公開されるまでの期間を現在の1年半程度から短縮しようとしている。さらに、インパクトレポート No.9には、33カ所のWSPのガバナンスについてのアセスメント結果も示されている。

③無収水削減に係わる組織体制とC/P等のキャパシティ

WASREBにおいて無収水対策に係わる業務を行っているのは技術部である。以下に、技術部の主要業務を示す。

- 施設の設計や運営に係わるガイドライン等の策定
- 情報収集や水質検査などによるガイドライン等の順守状況のモニタリング
- WSPに対する財務分析及び適正な水道料金についての検討
- PPPなどの資金調達に係わる制度作り
- セクター情報のシステム管理

技術部下の課の構成は流動的であり、現状も変化しつつあるが、無収水対策に関連する業務については主に検査課が担当している。本プロジェクトにおいて、特に技術部長である Peter Njaggah 氏と 2016 年に検査課の技術員を増員するために雇用された Daniel Ngugi 氏の 2 名が中心となって対応している。また、検査課長である Richard Cheruiyot 氏と以前検査課で無収水対策を担当していた技術員である Francis Maluki 氏についても本プロジェクトに係わる協議に参加している。そのため、CEO を含めた合計 5 名が本プロジェクトの主な C/P であるといえる。

技術部長の Njaggah 氏は前プロジェクトにおいても中心的役割を担い、特に無収水削減基準の策定に尽力した。無収水管理を主に担当している技術員の Ngugi 氏は以前 Tana WSB に在籍し、NRW ユニットの上司として、前プロジェクトの際には無収水対策の実践していた。また、彼は現行の無収水削減基準の作成のメンバーとして選抜され、WASREB と共に当時無収水削減基準の作成に尽力した経緯がある。現行の無収水削減基準は前プロジェクトの JICA 専門家の協力により作成されたが、特に取り纏めの際には、彼らが中心になり数ヶ月間集中的な作業を行ったこともあり、彼らのこの基準に対するオーナーシップの意識は高い。本プロジェクトにおいても検査課の Ngugi 氏は既に第 1 回 JCC での WASREB の発表のための資料作成や、パイロット WSP の選定結果を CoG に説明した会議(3 月 20 日)では、無収水管理を促すための発表を担当し、現場での経験に基づいた説得力を発揮していた。今後、彼が無収水削減基準の改定を中心となって行うことが期待され、前述した検査課の他の職員の協力も不可欠である。検査課では WSP から提出された業務指標値が現状に即しているかを確認するために四半期ごとの抜き打ち調査を実施しており、正規職員だけでは対応しきれないために、無収水に係わる経験を持つエンジニアを含む臨時調査員を 5 名程度雇用して対応している。

また、WASREB の技術部には検査課の他に水道料金や規定に係わる業務を担当している課がある。本プロジェクトの活動においては料金や罰金に係わる無収水の側面についてデータ収集をしたり、基準改定を進める際においては適宜技術部長下の関連する職員から支援を受けることができる。メータ購入費用について WASREB に確認したところ、技術部の他の職員から迅速な協力を受けることができた。また、パイロット WSP の選定に必要であった各 WSP の詳細な財務データについても、財務分析を担当している職員から入手することが可能であった。その他、WASREB が WSP とカウンティの間を仲介し、適切な給水区域の境界について検討した結果を示す GIS ファイルについても、技術部内の職員の協力により、迅速に入手することが可能であった。このような状況からも、技術部全体の組織力の高さが窺える。

組織規模については、本調査の詳細計画策定調査点の WASREB 職員数は総裁以下 29 名であったが、約 1 年間の間で 35 名まで増加しており、無収水を主に担当する新たな技術員も加わった。WASREB 全体として、無収水対策に係わる組織的なキャパシティは増加していると言える。

④WASREB に対するドナーからの援助

WASREB に対して支援を行っているドナーは主に GIZ と世銀である。GIZ は WASREB の設立やインパクトレポートの作成を含むセクター改革などを長年支援してきており、最近では WASREB が各 WSP とカウンティの仲介者となり、各 WSP の給水区域の境界を無理のない範囲で拡張するための検討を GIS を用いた調査によって支援を行なっている。一方、世銀は、水道事業への住民参加や顧客保護を改善するための住民組織 Water Action Group や苦情処理システム Maji Voice の設立・運営などを過去に支援を行なっている。また、SNV は WASREB が実施する 13 カ所の WSP に対しての NRW Audit を行うための支援をしている。

3) WSP による無収水削減基準の使用状況と問題点

①無収水削減基準の配布状況

前プロジェクト(2014 年 7 月まで)において作成された現行の無収水削減基準(ガイドライン、マニュアル、ハンドブック、ケーススタディ)は、2014 年 6 月に承認され、8 月に公表された。その後、WASREB が各 WSB の拠点においてセミナーを開催することで、各 WSB が管轄する WSP に対し同基準の普及活動を実施した。この普及活動からおよそ 2 年が過ぎ、現行の無収水削減基準の使用をさらに促進すると同時に、その改定の必要性を明確にし、さらに改定の内容を具体的に検討するため、使用状況の調査が必要になっている。

②JICA 専門家チームが実施した使用状況についての聞き取りの結果

ベースライン調査では、無収水削減基準の使用状況と使用における問題点について、2 カ所のリーディング WSP、15 カ所のパイロット WSP 候補、無収水削減活動への取り組みが先進的なその他の WSP、及び数カ所の WSB に対して聞き取りを行った。15 カ所のパイロット WSP 候補では、無収水削減の担当者が無収水削減基準の存在を知らないためか、明確な回答が得られない場合が多かった。また、詳細計画策定調査時の WSP に対する聞き取り結果やケニアで無収水削減の支援を行っている他ドナーの意見についても確認した上で、無収水削減基準に対する主な意見を以下にまとめた。

<ポジティブなコメント>

- SNV が WSP に対して行っている無収水対策の支援では無収水削減基準の多くの部分を活用している(SNV、2017)。
- SNV と EVI が作成を支援した WASPA の無収水削減のためのロードマップ(DMA における活動の手順書)は参考文献としてシンプルであり、小規模の WSP を対象とする場合には利用しやすいが、規模の大きな WSP を対象とする場合にはより詳細に書かれた無収水削減基準が必要である(SNV、2017)。
- HDPE 管を使用することの重要性を WASREB の無収水削減基準により知った(LVS WSB、2016)。
- 無収水削減基準の 4 分冊の内、写真などが多用されており、現場技術者にとって分かりやすいハンドブックを主に使用している(Mavoko WSP、2015)。

<ネガティブなコメント>

- WASREB の無収水削減基準は WSP において広く使用されるには至っていない (WASPA のベンチマーキング・ワークショップ、2017)。
- 無収水削減基準の幾つかの内容はケニアの WSP の状況を考えると非現実的であるといえる (VIE & WASPA、2017)。
- 無収水削減基準に書かれている方法で無収水削減計画を作成すると多額の費用が必要な活動が計画に多く含まれることになり、非現実的である。そのため、比較的費用が掛からない活動に限定して実施することになる (SNV、2016)。
- SNV では無収水削減基準に書かれている無収水削減計画の策定方法ではなく、主要業務指標 (KPI) を用いた無収水削減のための Performance Improvement Plan (PIP) の策定を推奨している (SNV、2017)。
- 無収水削減基準のマニュアルの内容を十分に実施できる WSP は、無収水削減において先進的な Nyeri WSP、Meru WSP、Embu WSP ぐらいである (Tana WSB、2015)。
- 無収水削減基準の内容は他の多くの WSP にとっては難しい (Embu WSP、2015)。
- 無収水削減基準の内容を実際に適応することは難しい (Mavoko WSP、2015)。
- WASREB の無収水削減基準は 4 分冊からなっており、十分にまとめられていないために使いにくい。そのため、よりシンプルな構成で書かれている世銀、USAID、IWA 等の他の無収水についての参考資料を利用している (Kisumu WSP、2016)。
- USAID と世銀がまとめた Manager's Non-Revenue Water Handbook for Africa (2010) を最もよく利用している (Kisumu WSP、2017)。
- 実際の業務では、給水区域全体を視野に入れて、トップダウンで無収水削減活動を行い、全体として結果を出す必要があるため、小規模の DMA での活動を重視した無収水削減基準は使いにくい (Kisumu WSP、2016)。
- WASREB が無収水削減基準に沿った無収水削減活動の進捗を報告するように求めているが、データ整理の仕方が IWA の方法と違うために報告書提出に苦労している (Kisumu WSP、2016)。
- 特に Water Balance について、WASREB の無収水削減基準は分かりにくい (Kisumu WSP、2016)。
- WASREB が無収水削減基準に沿って Water Balance Table を作成するように求めているが、難しく、作成することができない (Nyahururu WSP、2017)。
- Water Balance 等については USAid と世銀がまとめた無収水削減のハンドブックを参考にしている (Limuru WSP、2016)。
- 無収水削減基準の圧力管理についての説明は不十分である (Meru WSP、2017)。
- 無収水削減基準には自動検針 (AMR) についての記述がない (Nairobi WSP、2017)。

- 現行の無収水削減基準が策定される際に、Nairobi WSP は内容についてコメントを出すことができなかった。無収水削減基準の改定には Nairobi WSP も貢献したい (Nairobi WSP、2017)。

上記の WSP や他ドナー等の意見の殆どは、2017 年 3 月に実施した協議の中で、WASREB の主要 C/P である技術部長以下の 4 名 (CEO 以外) と共有した。

③現行の無収水削減基準に対する JICA 調査団の意見

JICA 専門家チームは上述の聞き取り調査と並行して現行の無収水削減基準の内容について簡易的な初期レビューを実施し、その問題点及び改善方法について検討した。以下に列記している検討結果についても、2017 年 3 月に WASREB の主要 C/P である 4 名と共有している。

- 比較的簡単かつ費用がかからない活動から、比較的難易度が高い、もしくは多くの費用がかかる活動に、段階的に移行していく方法について明確に記述する必要がある。
- 現行の無収水削減基準に記載されたアプローチが小規模の DMA 内での活動に集中し過ぎており、短期間に給水区域全体における無収水の削減が求められることが多い WSP の現状を十分に考慮していない。
- 給水区域全体を視野に入れた配水池や配水ポンプ系統ごとのゾーニングや、大口の顧客に対する集中的な対策などの必要性について十分に記述する必要がある。
- DMA でのパイロット事業を通じて IWA の Water Balance Table を作成し、給水区域全体に対するアプローチを検討するように薦めているが、特定の DMA の水収支で給水区域全体の水収支を代用することは難しいため、その点について配慮が必要である。また、断続給水状態では漏水量の推定に用いることができる夜間最小流量の測定が難しいため、商業的損失についての多くの仮定に基づいて作成した Water Balance Table の精度を確認することが難しい。このような状況下において、Water Balance Table の作成を大前提としている無収水削減活動の戦略的な検討がケニアにおいて実用的であるか十分に検証する必要がある。
- 無収水対策における断続給水の影響について十分に検討する必要がある。
- WASPA の無収水削減のための分科会や EVI が行っている DMA ベースの無収水削減支援などを通して、既に多くの WSP が WASPA の無収水削減のためのロードマップを使用している。そのため、その内容の改善を WASPA 等と共に検討した上で、無収水削減基準に取り込むことについても検討が必要である。
- 世銀が開発した Easy Cal などの IWA の Water Balance Table を作成するためのソフトウェアの使用を改定する無収水削減基準の中でどのように推奨するか検討する必要がある。同様に、VEI が WASPA 会員である多くの WSP に対して使用を薦めている NRW Monitor と呼ばれる無収水削減活動とその成果のモニタリングシステムについても、無収水削減基準の中で推奨するか検討する必要がある。

- 無収水削減基準を構成する4分冊には同じ内容が重複して書かれている箇所が多くあるため、4分冊の構成を見直す必要がある。
- 4分冊の内、ガイドラインは主にWSBに向けて書かれているものの、水法2016年の体制への移行によりWSBが存続しなくなるためにガイドラインの扱い及び内容の見直しを水法2016年の新体制を考慮して行う必要がある。
- 4分冊に含まれるケーススタディには、前プロジェクトの実施後、無収水削減活動の継続等に深刻な問題が起きているWSPにおける事例についても詳細に書かれている。本プロジェクトでは、持続的な無収水削減活動に繋がっている本質的な成功事例など、パイロットWSPを含む全国の多くのWSPから集め、容易に参照することができるように分野別グッドプラクティスの事例集としてまとめることがより有用であると考えられる。
- 無収水削減基準のガイドラインに書かれている無収水に係わる多くの業務指標の内容をケニアでの有用性やデータ収集の難易度なども考慮して見直す必要がある。その際には、WASPAがWSP間のpeer-to-peerラーニングの機会として実施しているベンチマーキングで扱っているNRW関連の業務指標やVEIのNRW Monitorに含まれている業務指標についても、関係者の意見を聞き、無収水削減基準に反映するかを検討する必要がある。
- 無収水削減基準にはUSAid及び世銀がアフリカ用に作成したハンドブックに掲載されているセルフ・アセスメント・マトリックスがそのままコピーされている。このマトリックスにはケニアの現状に合わせて作成されていないなどの問題があるため、改善が必要である。
- 無収水削減基準で薦めているセルフ・アセスメント・マトリックスによる評価結果を用いて簡易的に無収水削減計画を作成する手法の実用性及び柔軟性を検証する必要がある。
- 無収水削減計画の策定方法については、SNVが推奨しているPIPや参加型手法を用いたより柔軟かつ実現性のある計画策定についても検討する必要がある。
- 地下漏水調査を定着させるため、ケニアでの事情を考慮した戦略的な地下漏水調査の方法について、より詳しく説明する必要がある。
- 最近WASPAが発行した水道メータ、管、バルブ及びポンプについての4種類のテクニカルガイドライン、MWIのKenya Water Design Manual 2005、及びKenya Bureau of Standards (KEBS)の水道メータの検査方法や水道管の規格との整合性を確認する必要がある。
- 水道メータのサイズの選定についての説明を十分に記述する必要がある。

④無収水削減基準の使用状況や問題点についてのWASREBの認識

ベースライン調査では上述の聞き取りにより得られた無収水削減基準に対する意見やJICA専門家の認識をWASREBのC/Pと共有した上で、ディスカッションを通してWASREBの認識を確認した。ベースライン調査開始当初は無収水削減基準の普及が十分に進んでいないため、改定の検討を開始するには時期が早いのではないかと意見もWASREBから出た。しかし、

WSP からの意見や JICA 専門家の認識を共有することで、無収水削減基準の問題点について真摯に受け止め、基準の更なる普及だけでなく、内容の改善についても積極的になった。以下にディスカッションを通じて確認した彼らの使用状況及び問題点についての認識を列記する。

- 前プロジェクトの開始当初は無収水が何かを知らない WSP の職員が多かったが、この無収水削減基準の作成と普及を通して、多くの WSP に無収水削減の重要性を認識させることができたと自負している。
- 無収水削減基準が使いにくい、特定の内容について十分に書かれていないとのコメントが幾つかあったが、コメントを出した WSP は少なくとも無収水削減基準を読んでいるので、その点についてはポジティブに受け止めている。
- Water Balance Table の作成方法が書かれていないとの意見があった。これについては、Water Balance Table の作成は難しいので、時期が早いと判断し、故意に無収水削減基準に含めなかった経緯がある。
- WASREB としても、無収水削減基準に含まれるセルフ・アセスメント・マトリックスによる評価結果をベースに直接計画を策定すると、実施に多額の費用を要する活動が多く含まれることになることは認識している。そのため、実際には、WSP は費用が比較的掛からない活動のみを限定的に実施していることについても WASREB は認識している。
- 今後、無収水削減基準を改定する際には、複数のパイロット WSP から具体的な改善内容について意見を聞きたい。
- 各 WSP が置かれている状況が大きく異なるため、ケニア山付近の起伏の多い地域、平坦で乾いた地域、湖周辺の水が豊富にある地域に分けて、議論するのがよいと思われる。
- DMA という小さな地域での活動を重視するのではなく、給水区域全体に対して同時に行うことができる無収水削減活動をより重要視する必要があることを WASREB も認識している。例えば、無収水率を 60% から 40% に下げるとは比較的簡単でありながら、実現できていない WSP も多くある。このような場合には、DMA 構築のような施設投資よりも、先に行えることがいろいろとあると考えられる。
- Kenya Water Design Manual 2005 との整合性については、Design Manual を改定し、無収水対策などを加えることを考慮する。
- また、MWI が作成している無収水管理についての National Policy との整合性を確保するため、当ドラフト版に適切なコメント付けを行う必要がある。

JICA 専門家チームが調査した WSP 等からのコメントや JICA 専門家チームとしてのコメントについて WASREB と共有した結果、WASREB は無収水削減基準の改定の必要性を認識するに至った。また、次に述べる通り、SNV の支援を受けて実施する当基準の使用状況調査(⑤を参照)の結果を補足すれば、改定作業を進めていく上で十分なベースとなる。

ただし、改定作業の中で、さらに関係者の現行基準に対する意見が必要になった場合には、補足調査の実施を考える。

⑤WASREB による無収水削減基準の使用状況についての追加調査

WASREB は今後4ヶ月ほどの間、SNV の支援により現地コンサルタントと契約し、13 ヲ所の WSP に対して WSP における無収水削減基準の使用状況を調査する。WASREB 及び JICA チーム共に、この追加調査を成果2の活動の一環として位置づけ、JICA チームは WASREB の担当者と連携し、調査を支援することになった。なお、この調査の一部として現行の無収水削減基準を改善するための提案を含めることも予定されている。そのため、調査における項目には以下を含めることになっている。

- NRW ユニットの設立状況の確認(組織図、職務記述書、予算書などへの明記を含む)、
- 無収水対策に係わる主な課題の特定、
- 優先的に DMA を整備する地域の特定、
- 必要に応じた夜間最小流量や水圧の測定
- IWA の Water Balance Table の作成
- WSP が WASREB に報告している無収水率などの指標値の精度の確認
- 検針に問題がある顧客に対する水使用量の推定方法の確認
- 無収水に係わる能力開発の必要性の確認
- 有効な無収水削減活動などの PIP に含めるべき内容の提案
- 得られた知見を共有するための全国を対象としたワークショップの開催
- 収集した資料の提出

この調査のためのコンサルタントの選定は 2017 年 3 月上旬に行われ、対象とする 13 ヲ所の WSP は、Nakuru Rural、Gatamathi、Muranga South、Kakamega、Isiolo、Nanyuki、Eldoret、Homabay、Malindi、Mavoko、Thika、Embu、及び Taita Taveta に決まっている。コンサルタントとの契約は 3 月中旬までに締結される予定であったが、若干遅れ 4 月になる見込みである。そのため、コンサルタントが作成する質問票案の内容については、JICA チームが実施した無収水削減計画の使用状況や問題点についての聞き取り調査の結果を踏まえ、WASREB は JICA チームと連携して無収水削減計画の改定と改定後の普及活動に役立つ情報の入手も視野に入れて改訂することになっている。

対象となった 13 ヲ所の WSP は、Mavoko WSP 以外は SNV が無収水削減に係わる何等かの支援を展開している、もしくは展開する予定の WSP である。これら 13 ヲ所の WSP には、本プロジェクトのリーディング WSP の1つである Embu WSP と、後発パイロット WSP である Eldoret WSP 及び Mavoko WSP が含まれている。

なお、SNV は本調査の成果として、対象とした 13 ヲ所の WSP が無収水削減基準に沿って無収水削減の戦略を策定できるようになること、さらに、それらの WSP が DMA を構築し、従来の方法もしくは Performance Based Contract (PBC) により無収水削減を実現できるようになることを期待している。

4) WASREB の無収水削減に関連するその他の活動

ここでは、無収水削減基準の策定と改定、及びインパクトレポートの作成以外の WASREB が実施している無収水に関連する活動について説明する。

①WSP に対する無収水削減活動に関する指示とモニタリング・評価

WASREB は、インパクトレポートとは別に、各 WSP における NRW ユニット設立や無収水削減計画の策定状況についてもモニタリングを実施している。

WASREB は、2014 年に実施した無収水削減基準の配布・普及プロモーションの後、各 WSB を通じて管轄する Urban WSP に NRW ユニートを設立させ、さらに 2015 年 3 月までに無収水削減基準に沿って作成した無収水削減計画(バーチャート)を提出するように指示を出した。その結果、WASREB は、2015 年中に幾つかの WSB から WSP のセルフ・アセスメントの結果と無収水削減計画を受け取っている。2015 年末時点において、WASREB は全 Urban WSP の 71% に NRW ユニートを設けられたことを把握したが、無収水削減計画等を提出した WSP の集計はできていなかった。その後も、同集計及び分析は行なわれてない。

2016 年中旬には、WASREB の無収水対策の担当職員が新たに雇用された Mguji 氏に代わった。彼は、2016 年 7 月から翌年の 1 月にかけて、現行の無収水削減基準に沿ったセルフ・アセスメント及び無収水削減計画の策定、地域ごとの無収水率の分析表の作成、及びそれらの提出を求める新たな業務を各 WSP に対して実施した。この業務では、対象を WSP の規模別に分類し、現在までに半数程度の WSP から何等かのデータ提出があったものの、それらのデータの集計はまだ行われていない。また、WASREB からの指示によりある程度の数の WSP から無収水削減計画を提出されたが、無収水削減基準に規定された方法で策定された計画に沿って、実際に活動が実施された例は無いようである。Ngugi 氏は提出されたデータをレビューし、その結果をレター形式にして適時各 WSP に対して送っており、今後、調査の実施状況のモニタリングをまとめることにしている。また、この調査による WASREB からの指示に対して、どのように WSP が反応するかを見ることで、無収水削減基準の活用状況を確認しようとした。これらの要請は WSP の他に、カウンティの CEC 及び WSB にも同時に通知を入れている。水法 2016 年の体制下で WSB が WWDA に変わった後、WASREB は WSB を通じた WSP への無収水削減の支援とモニタリング・評価がなくなる。そのため、このような WSP への直接の対応は持続性があると考えられる。

②水道料金の設定に関連する無収水対策

2016 年 10 月に承認された新たな水法下でも、水道料金改定の承認は引き続き WASREB が行う。WASREB は水道料金の改定にあたり、無収水削減に必要な費用をできるだけ料金体系に盛り込むことを認めている。ただし、水道料金設定 1 年後には PIR (Post Implementation Review) を WSP に対して行い、予定通り水道メータの購入など投資が行われ、無収水削減効果が出たかを確認している。PIP によって所定の効果の発現が確認できない場合には、ペナルティの他、料金を元に戻すなどの措置がとられることもあり得る。過去に行われたペナルティとしては WSP の管理を WSB の職員に入れ替えることがあった(Nzoia WSP)。このような試みは 3 年以上前から実施されており、新たな水道料金を法令化する際には、水道料金だけではなく、

無収水率等についても一般に公開し、水道の利用者や市民がモニターできるようにしている。

水道料金改定の際には、無収水削減計画の提出を求められておらず、水道料金の設定期間(3～5年)の各年における目標とする無収水率、その達成のために必要な費用項目の各年における支出額などが設定される。料金の改定が行われた後、**WASREB** は改めてこの料金設定期間に対する無収水削減計画の提出を求めている。この計画は、単年度の計画ではなく、料金設定期間全体をカバーする中期計画である必要がある。

ただし、実際には、**WSP** からの水道料金改定の申請書の多くは質が悪く承認できないため、十分な頻度(3～5年毎)で水道料金の改定が行われている **WSP** の数は限られている。

その他 **WASREB** では、無収水率が高いことでどれほどの料金収入が失われたかを計算するなど、**WSP** の料金設定や毎年の財務報告に関連した試みも考えている。

③給水区域の範囲拡張を通じた **WSP** とカウンティとの調整

以前は **WSB** の職員が **WSP** のボードメンバーになっていたが、地方分権化後、2年ほど前からカウンティの水道及び財務担当の局長がボード会議にメンバーとして参加している。そのため、最近ではカウンティ内の他の地域に **WSP** の給水区域を拡張することをカウンティから強く要求される場合が増えている。

当初、カウンティは **WSP** の運営について **WASREB** などの中央政府機関が介入することに抵抗を示していたようだが、既に多くのカウンティは自己の能力不足を自覚しはじめており、水法 2016 年の承認後、カウンティからの抵抗は弱まったようである(ただし、承認された水法 2016 年については **CoG** から異議の申し立てが裁判所に対して行われたため、水法 2016 年の法令化(ガゼット化)は滞っている状態にある)。最近では **GIZ** の支援により、**WASREB** が各 **WSP** とカウンティの仲介者となり、各 **WSP** の給水区域の拡張を検討する際に **GIS** を用いて無理のない範囲での境界の改定を検討している。

前述したように多くの **WSP** は給水区域を水道未普及地域へ拡張すること、もしくはコミュニティ給水などの状況の悪い周辺部を給水区域に取り込むようにカウンティから要求されている。しかし、給水区域を人口密度の低い周辺部に拡張する際には、必要となる費用の割に料金収入があまり増加しないため、**WSP** の財務状況が悪化する可能性が高い。さらに、周辺部では一般に漏水や盗水が頻繁に発生する可能性が高く、給水区域の周辺への拡張は無収水管理上の大きな障壁となる可能性が高い。特に、**Embu WSP** を例として、周辺部の標高が低い地域に拡張された場合には、水道管に高い水圧がかかり、水道管の破裂が頻発する可能性があるために十分注意する必要がある。このような状況であるため、**WASREB** が各 **WSP** とカウンティの仲介者として検討している **GIS** を用いた無理のない範囲での給水区域拡張の提案をすることは、無収水管理の面からも重要な活動であると言える。

④ライセンス契約を通じた無収水削減の促進

水法 2016 年の体制下において、**WASREB** は水道事業のライセンス契約を各 **WSP** と直接結ぶことになる。このライセンス契約では無収水率などについての各年における目標値を設定する。このような形で **WSP** の無収水削減を促すことも **WASREB** の重要な役割となる。

⑤Maji Voice の活用と Water Action Group の運営の促進による無収水の削減

成果1の(5)無収水削減の広報・啓発活動に係るベースライン調査の結果に記述した通り、WASREB は Maji Voice というソフトの利用と Water Action Group (WAG) の運営を行なっている。これらは、無収水の削減を主な目的として実施されているわけではないが、Maji Voice には漏水、盗水、メータの不良等を通報する機能があり、WAG には住民の無収水に対する意識を向上する機能もあるため、WASREB はこれらの活動を通して無収水削減に貢献していると言える。

(3)無収水削減基準の改定に係わる課題と対応策

1) 中小規模の WSP 及び Nairobi WSP への対応

ベースライン調査で行ったパイロット WSP 候補への聞き取りなどの結果から、多くの WSP にとって、現行の無収水削減基準の内容を適用することは困難である可能性が高いと言える。特に接続数が 1 万未満の中規模 WSP や接続数が 5 千未満である小規模 WSP は、職員数が少なく、技術力も比較的低いことが多いため、適用は容易ではないと考えられる。さらに、中小規模の WSP は料金収入などの収益が運転維持管理をどの程度賄っているかを示す O&M コストリカバリー率が 100% 未満の場合が多く、運転維持管理費の確保も難しい状況にある。そのため、例えば DMA を整備するために必要なバルクメータを購入するなどといった自己資金による小規模投資を行うことすら困難な状態である。無収水削減基準の改定においては、このような中小規模の WSP のニーズについても考慮し、通常の運転維持管理の中で、施設投資を行わなくても実施することができる無収水削減活動についても十分に記述する必要がある。

今後 WASREB が実施する NRW Audit (無収水削減基準の利用状況についての追加調査を含む)の対象である 13 カ所の WSP は、主に大規模の WSP であるが、中規模の WSP 3 カ所も含まれている (Gatamathi, Isiolo, Homabay)。そのため、これら 3 カ所の WSP に対して行われる利用状況の追加調査の結果に注目し、中規模の WSP において同基準を使用する場合の難点などを把握することが望まれる。また、本プロジェクトのパイロット WSP 候補であった Limuru WSP と Kiambu WSP は中規模 WSP であり、Eldaman Ravine WSP は小規模 WSP である。これらの WSP はパイロット WSP として選択されなかったものの、ベースライン調査において把握したこれらの WSP の状況を参考にし、小規模施設投資すら難しい中小規模の WSP にとっても改定される無収水削減基準が十分利用価値のある内容となるように努める。前プロジェクトにおいて DMA パイロットプロジェクトを行った小規模 WSP である Narok WSP と Kapsabet Nandi WSP におけるパイロットプロジェクト実施後の状態についても参考にし、より持続発展性の高いアプローチが提案ができるように心がける。

また、本プロジェクトは無収水削減活動の全国展開を目指しているが、数の多い中小規模の WSP を視野に入れるだけでなく、全国の総無収水量に対する削減効果をどのように確保するかについて検討する必要がある。最新のインパクトレポート No.9 にまとめられている全国の総年間無収水量 (185,317,000m³) に占める Nairobi WSP の年間無収量 (77,473,000m³) の割合は 42% である。一方、2 番目に規模の大きい Mombasa WSP の年間無収量 (8,234,000m³) は全体の 4% に過ぎない。つまり、ケニア全国を対象に無収水の全体量を著しく下げるためには、Nairobi WSP の無収水量を削減する必要がある。そのため無収水削減基準の改定に際しては

Nairobi WSP の現状の取り組みにも配慮することが求められる。

2) 無収水削減基準の改定作業開始までの見通し

WSP への聞き取り調査などを通じて既に現行の無収水削減基準の問題点が多く特定され、WASREB と共有された。今後、WASREB は共有された WSP や JICA 専門家からの意見を一つ一つ現行の無収水削減基準の内容と照らし合わせて確認し、5 月に JICA 専門家がケニアに戻った際には、彼らの見解についてフィードバックを行うことになっている。また、WASREB は現行の無収水削減基準の内容を精査し、改善が必要な部分をできるかぎり洗い出し、改定に必要な全体の作業量や難易度、及び改定作業の進め方やスケジュールなどを決める必要がある。しかし、WASREB の主要 C/P である 4 人は前プロジェクトにおいて無収水削減基準の策定に携わっていたため、批評的な視点で自ら同基準の改善すべき点について精査することは難しいと感じている。そのため、JICA 専門家チームに対して、批評的な視点で改善が必要な部分のより詳細な洗い出しをしてもらいたいとの要望が WASREB 側からあった。JICA 専門家チームとしては、今後、問題点を徹底的に洗い出すための時間をどう確保するかの見通しを立てた上で、5 月に再びケニアに渡航する際に、無収水削減基準の改定についてさらに協議することになった。

このような状況の一方で、WASREB が実施する無収水削減基準の利用状況にかかる調査の結果について協議できるのは、2017 年 7 月以降になると想定される。そのため、この調査の結果を基にして改定作業を開始できるのは、本プロジェクトの第 2 フェーズ以降になると考えられる。さらに、WASREB が独自に全国の WSP に対して提出を要求した無収水削減基準に沿ったセルフ・アセスメントの結果、無収水削減計画、及び各ゾーンの無収水率の計算表について、WASREB が集計/分析を終え、それについて協議できるようになるのも数カ月後になると想定される。加えて、JICA 専門家がパイロット WSP を対象に開始した参加型無収水削減計画策定の支援についても、ある程度の結果が出るまでには数カ月ほど時間がかかると考えられる。このような状況から、第 1 フェーズでは、無収水削減基準の改定に向けた情報収集などの準備作業を継続し、第 2 フェーズから改定作業を開始することが考えられる。

3) 無収水削減基準の改定作業の進め方と改定版の普及時期の調整

改訂作業について WASREB との協議の結果、まず WASREB、JICA 専門家及び MWI の NRW ユニットなどが中心となって改定の方向性の検討や大まかな修正作業を行い、ある程度改定作業が進んだ段階で、関連するドナーやパイロット WSP などに改定のための協議に参加してもらおう方針となった。さらに、改定作業の終盤ではステークホルダー会議でより広く意見を収集し、改定版を最終化する。無収水削減基準を改定するために必要な公的なプロセスとそれらのために必要な期間等については、第 2 フェーズにおいて改定作業を開始するまでに確認する。

WASREB は、水法 2016 年の新体制への移行期間が終わる 3 年後を、改定版の無収水削減基準を導入する良い機会であると考えている。水法 2016 年の体制への移行期間は 3 年とされているが、政治的な介入のため 3 年を超えて長引く可能性がある (CoG は裁判所に告訴することで、承認された水法の法令化を妨げている)。WASREB によれば、移行が長期化するとしても

今後 3 年間である程度移行が進むと考えられるため、3 年後を改定の目標にするのがよいとの意見である。さらに、少なくともリーディング WSP と先行パイロット WSP に対する支援活動の結果を基準に反映することができる 3 年後(本プロジェクトの第 4 年次)を目標に基準の改定を完了し、その後、普及活動を行うようにするのが妥当と考えられる。

4) 無収水削減基準に含まれる各分冊の位置づけの整理

本プロジェクトの成果 5 の活動 5.2 では、成果 4 の結果等を踏まえ、WSP の無収水削減に係るグッドプラクティスを取り纏めた事例集を作成する。現行の無収水削減基準には過去に JICA が無収水削減活動の支援を行った 4 ヶ所の WSP における無収水削減活動の事例をまとめたケーススタディが 1 分冊として含まれており、その意図はグッドプラクティスの事例集に近いといえる。そのため、無収水削減基準のケーススタディを改定する場合には、同一プロジェクト内で業務の重複が生じる。このような理由から、改定版の無収水削減基準にケーススタディを含む必要があるかについて今後 WASREB と協議する必要がある。また、改定する無収水削減基準と成果 5 で作成するグッドプラクティスの事例集の違いやそれらの複合的な使用についての方針を明確にする必要がある。

5) 他ドナー等が作成したガイドラインなどとの整合性の確認

WASPA は GIZ 及びドイツのバイエルン経済職業訓練センター(bfZ)の協力を受け、2015 年に水道メータの管理についてのテクニカル・ガイドラインを発行した。また、2016 年には水道管、バルブ、ポンプについてのテクニカル・ガイドラインを発行している。このようなガイドラインの作成は、本来 WASREB が Kenya Bureau of Standards (KEBS)と協力して行う業務である。現在、WASREB は WASPA が発行したこれらのテクニカル・ガイドラインを推奨しようとしている。これらのテクニカル・ガイドラインは WASREB の無収水削減基準との関係性が強いいため、無収水策定基準の改定に際しては、それらとの整合性について注意する必要がある。また、WASPA の無収水削減のためのロードマップについても既に使用している WSP が多いため、その内容との整合性に注意が必要である。その他、KEBS は顧客メータ及びバルクメータの検査サービスについても提供しており、水道メータの要件及び検査方法について基準を制定しているため、それらとの整合性の確保も必要である。また、KEBS は PVC、PPR 及び HDPE 製の水道管についての基準も策定している。

無収水削減基準を改定する際には、WASPA と WSP 会員との間で行なっているベンチマーキングで扱われている無収水関連の業務指標について、WASPA と十分に意見交換を行い、無収水削減基準にそれらの業務指標の説明を加える必要があるか検討することも重要である。WASPA のベンチマーキングを支援している VEI によれば、過去に WASPA が WASREB と業務指標について協議したのは、WASPA のベンチマーキングを立ち上げる際の 1 度のみとのことである。

(4) モニタリング指標

2017 年 3 月末時点の WASREB に関連する成果 2(WASREB により WSP の無収水削減基準の使用が促進される)のモニタリングの状況(表 2-3)を示す。

表 2-2: WASREB に係わる成果2及び成果5の活動の進捗(2017年3月末時点)

Activity	Progress
2-1 WASREB conducts survey on the usage of the current standards for NRW management.	無収水削減基準の使用状況調査は、既に通常業務の中で実施されている。さらに、2017年4月から4ヶ月間をかけて、ローカルコンサルタントを使って調査することになっている。
2-2 Based on the survey result as well as Outputs 4 and 5, WASREB revises the NRW standards.	同基準の改定方法については準備中である。成果4、5の結果を盛り込むため改定は第2期の完了までに実施される。
2-3 WASREB promotes the revised NRW Standards through workshop(s).	同基準改定後(第3期)に普及活動を開始する。
2-4 WASREB incorporates the review results of NRW reduction activities by MWI NRW Unit in their activities.	プロジェクト第1期で実施されるレビューを受けて第2期に開始する。
2-5 WASREB monitors and evaluates the usage of revised NRW standards.	同基準の改定後に普及活動を開始する(第3期)。
5-2 WASREB compiles case studies/lessons learnt about NRW reduction activities.	同基準の改定の一環として実施する(第2期)。

<KEWI>(成果3)

(1)調査項目

実施した調査項目を以下に示す。

- 1) KEWI の戦略計画と無収水削減コースの位置づけ
- 2) 無収水関連コースの現状
- 3) 研修の実施体制
- 4) 設備の状況

(2)調査方法

質問票、回答、聞き取り調査の実施、並びに確認作業(講座状況、機材の保管状況、既設実習施設、実習状況、Syllabus、使用教材の内容)等を実施した。

(3)調査結果

1) KEWI の戦略計画と無収水削減コースの位置づけ

KEWI 戦略計画と無収水削減コースの位置づけは以下の通りである。

STRATEGIC PLAN 2016-2020 (KEWI : June 2016 発行)

KEWI の事業内容は、「水に関する総合教育」その他に「コンサルタントサービス」などで構成されており、中期5カ年戦略計画はKEWI事業を強化するため、トレーニング、応用水研究、技術開発および移転、コンサルティングおよびアドバイザーサービス、顧客重視、制度的能力の強化を重点項目としている。また、戦略目標として、研修プログラムの参加の容易性、研修プログラムの質の向上の改善、研究実施能力/機能の向上、コンサルタント業務とアドバイザー業務の強化、顧客サービスの向上、制度管理システムの強化を挙げている。

無収水削減コースの位置づけ

①NRW ユニットが Water Sector 強化を目的とし、環境、水および衛生部門の Consultancy and Advisory Services の一環として、無収水削減コースを担当している。その活動目標は次の通りである。

- ・NRW 管理/研修能力の強化
- ・既存研修内容、施設の改善

②無収水削減コースの強化は KEWI の重点五項目に包含されている。

③特に、急速な技術の変化に対応できる講師の強化、新技術を採用している水道事業者(WSP)からの研修要請に対応できる水分野の研修コースとして、高度な実習/研修施設の整備の強化が求められている。

2) KEWI の教科

KEWI が教育する科目、コースは WSP を担う中堅技術者及び技能者の育成を目的としている。KEWI の教科には以下の長期コースと短期コースがある。

長期コース

- High Diploma コース (2年間)
- Diploma コース (3年間)
- Certificate コース (2年/1年間)
- Operator コース (1年間)

短期研修コース(定期特定コース、5日間)

- NRW コース
- GIS コース
- Management Information and Technology コース
- Water Resources Management and Tecnology コース
- Water and Wastewater Engineering コース

短期研修コース(非定期コース¹)

- Tailor-made、On-site Service による NRW/GIS 短期コース

3) 就学状況

全校在学生徒数

KEWI は 3 箇所のサテライトキャンパス (Kitui/Kisumu/Chiakariga) を有し、これらを含めた KEWI の在学生徒数は、約 1,150 名である。この内、KEWI キャンパスの在学は 700~800 名、残りは、現場研修と分校に在学している。図 3-1 は 2009 年からの学生数の推移を示している。

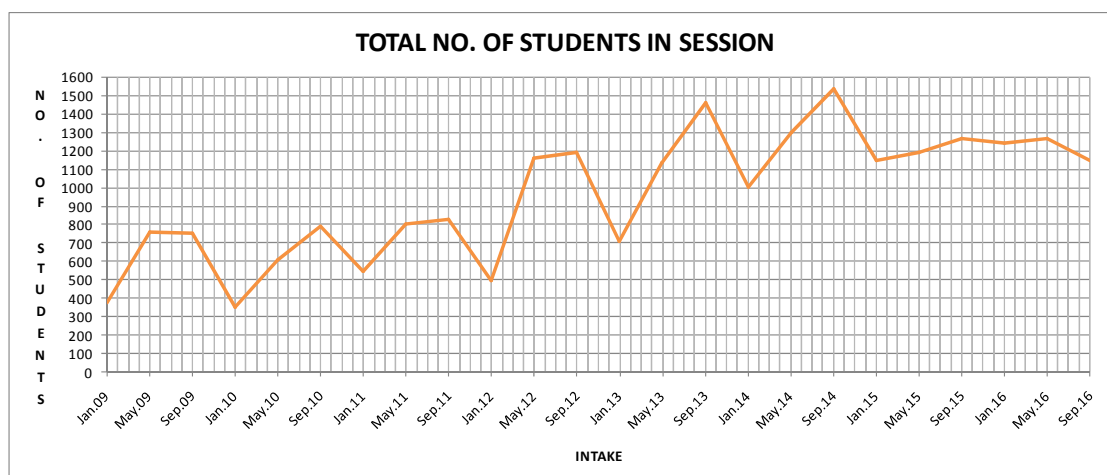


図 3-1 校在学生徒数の変動 (出典: KEWI2017 Feb)

新入生数

KEWI の長期コースの入学制度は「Semester 制 (Aug-Dec と Jan-July)」で、2016 年 9 月の新入生数は約 400 名で全体的に増加傾向を示している。

¹非定期コース: 研修期間が 5 日間以下または 5 日間を超えるコース。(例、顧客の要請ベースによる 4 週間の GIS 研修コース、10 日間の NRW/GIS 合同研修コース等)

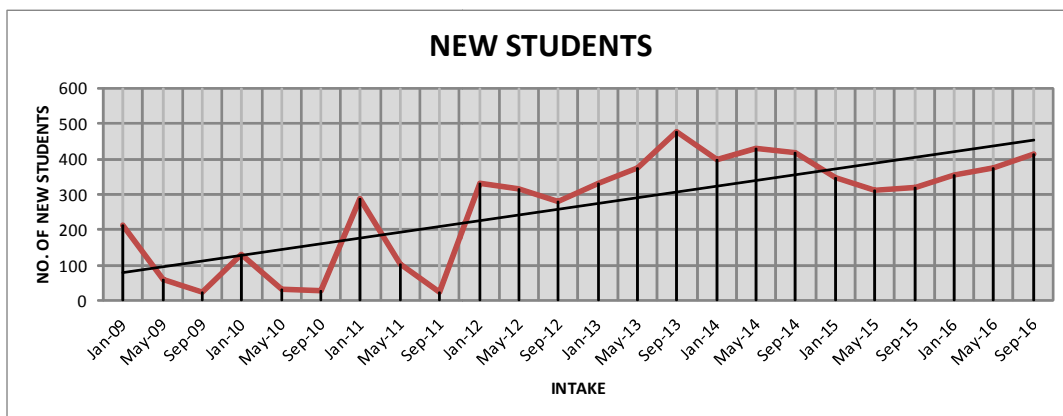


図 3-2 新入学生数の変動 (出典：KEWI 2017 Feb)

卒業生数

2015 年の卒業数は 452 名である。

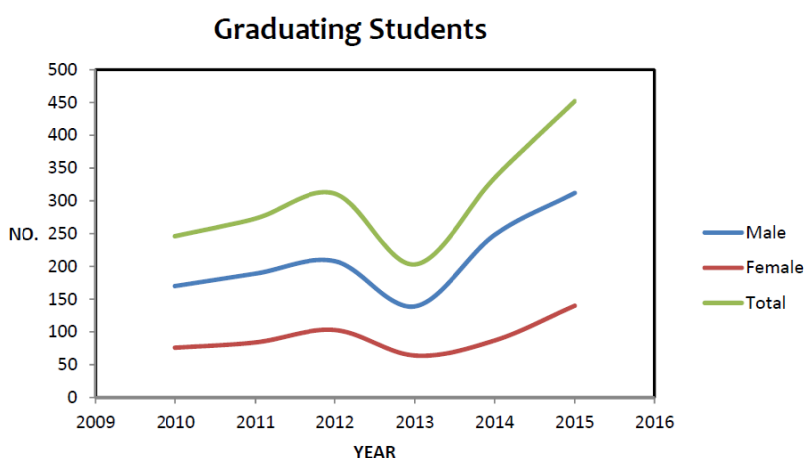


図 3-3 卒業生数の変化 (出典：STRATEGIC PLAN 2016-2020；KEWI June 2016 発行)

人気の高い学科

人気の高い学科は Water Eng. (DWE) / (CWE) と Water Resources Tech. Eng. (DWR) である。一方、Wastewater Lab. (CLT) はまだ下水の普及が遅れているため、ニーズは低い。水道は社会インフラとして不可欠であるが、まだ水道技術者が不足しているため就職率が高い。今後とも、WaterEng. 学科の学生が増加すると予測されている。

表 3-1 平均学科別就学生数 (過去 8 年間) (出典：KEWI 2017 Feb)

SR/N	Name of Class (Jan.2009—Sep.2016)		Total No. (Student)	%	No.of M student	Male (%)	No.of FM student	Female(%)
1	HND	Higher National Diploma	61	1%	51	1.2%	10	0.5%
2	DWE	Diploma in Water Eng.	1636	26%	1,232	28%	404	19.8%
3	DWR	Diploma in Water Resouces Tech & Manage.	1198	19%	707	16%	491	24.0%
4	DLT	Diploma in Wastewater Lab. Technology	40	1%	20	0%	20	1.0%
5	DID	Diploma in Irrigation & Drainage Eng.	629	10%	434	10%	195	9.5%
6	DIT	Diploma in Information & Comm Tech.	28	0%	21	0%	7	0.3%
7	CWE	Certificate in Water Eng.	1017	16%	697	16%	320	15.7%
8	CWR	Certificate in Water Resources	436	7%	269	6%	167	8.2%
9	CLT	Certificate in Wastewater Lab. Technology	14	0%	9	0%	5	0.2%
10	CID	Certificate in Irrigation & Drainage Eng.	266	4%	159	4%	107	5.2%
11	WOC	Water Operator Courses	233	4%	160	4%	73	3.6%
12	BRC	Bridgeig Course	758	12%	518	12%	240	11.7%
13	PLMB	Plumbing & Pipe Fiting	71	1%	66	2%	5	0.2%
Total			6387	100%	4,343	100%	2,044	100.0%

留学生

過去にレソト国、モザンビーク国らの留学生が在籍していたが、最近は南スーダン、ソマリア、エチオピアからの留学生、約 20 名程度が在籍している。

尚、KEWI で取得した資格は、自国で技術者として認知され、水分野の技術分野の発展に貢献している。

4) 財務状況

KEWI の事業収支の概要は以下の通りである。

収入 (@2015/2016)

- 2015/2016 年度の事業予算は、約 349.3 百万 Ksh、主な収入源は、政府からの補助金で全収入の約 64%、225.0 百万 Ksh を占めている。
- 営業収益と補助額
営業収益は約 1.24 百万 Ksh、前年度に比べ、約 12.7%増、反面、政府の補助金は 105 百万 Ksh 削減された。
- 短期コースの営業収益
KEWI の全短期コースからの営業収益は約 12 百万 Ksh、全収入額の僅か **3.5%** である。然し、前年度に比べ、約 23%増加した。

尚、短期コースには以下が含まれる。

- (a) Management Information and Technology (Quarter 毎、6 科目)
- (b) Water Resources Management and Technology (Quarter 毎、7 科目)
- (c) Water and Wastewater Engineering (Quarter 毎、6 科目)
- (d) Tailor-made, On-site Service による NRW/GIS 短期コース (非定期)

ちなみに、各コースの授業料は、以下の通りに設定されている。

①長期コース

- High Diploma Course (2 年間) --25,900 Ksh/Semester
- Diploma Course (3 年間) -- 23,100Ksh/Semester
- Certificate Course (2 年間) -- 21,800 Ksh/Semester
- Certificate Course (1 年間) -- 21,800Ksh/Semester
- Operator Course (1 年間) -- 21,800Ksh/Semester

②短期コース (定期特定のテーマ研修)

- NRW 研修コース (5 日間)-- 30,000 Ksh (R)、22,500 Ksh (NR)
 - GIS 研修コース (5 日間) --30,000 Ksh (R)、22,500 Ksh (NR)
- R: Resident (宿泊費込み)、NR: Non-Resident (宿泊費含まず)

支出 (@2015/2016)

主な支出源は人件費(Compensation of Employees)、52.6%を占めている。人件費の増加率は 2014/2015 年と比較すると給与/保険の見直しで約 7%増加した。

余剰金 (@2015/2016)

余剰金は、政府の補助金が前年度に比べて減少した影響で、余剰率は約 2% (7.7 百万 Ksh) と前年度に比べて、大幅に減少した。

表 3-2 事業収支 (5 カ年間) 出典 KEWI 財務部 2017-02-09

Actual performance on Comparable basis	Notes	Un-Audited Accounts	Ratio	Audited Accounts			
		2015-2016		2014-2015	2013-2014	2012-2013	2011-2012
		Kshs		Kshs	Kshs	Kshs	Kshs
Revenue	22(i)						
Government grants and subsidies		225,004,046.00	64.4%	330,880,000.00	275,880,000.00	162,880,000.00	235,000,000.00
Rendering of services		112,298,873.00	32.1%	99,370,358.00	89,891,579.00	84,864,048.00	73,719,142.00
Short Courses		12,081,862.00	3.5%	9,200,730.00	13,609,810.00	-	-
Total Income		349,384,781.00		439,451,088.00	379,381,389.00	247,744,048.00	308,719,142.00
Expenses	22(ii)						
Compensation of Employees		179,755,611.32	52.6%	166,875,605.00	174,824,347.00	149,302,974.00	136,490,227.00
Finance cost		-	-	-	-	-	-
Rent		3,725,848.00	1.1%	2,058,000.00	5,119,800.00	1,830,000.00	345,000.00
Purchase of W/shop tools		223,790.00	0.1%	522,027.00	150.00	36,200.00	-
Other payments	22(iii)	157,961,998.00	46.2%	143,080,206.00	95,056,169.00	106,775,702.00	136,395,318.00
Total Expenditure		341,667,247.32	100.0%	312,535,838.00	275,000,466.00	257,944,876.00	273,230,545.00
Surplus for the period		7,717,533.68		126,915,250.00	104,380,923.00	(10,200,828.00)	35,488,597.00

Note: Revenue from the shortcourse is included in the other department's costs.

表 3-3 人件費(Compensation of Employees)の推移 出典 KEWI 財務部 2017 Feb. 09

YEARS	2015/2016		2014/2015		2013/2014		2012/2013		2011/2012	
Expenditure	Kshs	Ratio	Kshs	Ratio	Kshs	Ratio	Kshs	Ratio	Kshs	Ratio
Personnel Emoluments										
Basic salary	166,283,228	92.5%	118,992,805	71.3%	128,387,136	73.4%	97,577,017	65.4%	106,628,962	78.1%
House allowance and others	-		34,745,107	20.8%	37,020,305	21.2%	41,215,625	27.6%	29,861,265	21.9%
Gratuity and Pension	13,472,383	7.5%	13,237,693	7.9%	9,416,906	5.4%	10,510,332	7.0%	-	
Total	179,755,611	100.0%	166,975,605	100.0%	174,824,347	100.0%	149,302,974	100.0%	136,490,227	100.0%

無収水短期コースの収支予測

①営業収益 (@2016/2017 : Ongoing)

2017年2月現在、本年度の営業収益は10.3百万(Ksh)に達する見込である。その内、NRW 短期コース (含む特定のテーマ研修) の売上が合計 6.3 百万 (Ksh) と短期コース全体の約 61%を占めている。

この 10.3 百万 Ksh は、2015/2016 年度の全短期コースの売上額 “約 12 百万 Ksh” の約 85%を占めると予測される。

②支出 (@2015/2016)

費用の項目は、日当、交通費、機材の運搬費、車両代など直接費用である。費用率は、収益の約 65%を占め、利益率は 35%程度である。

③短期研修コース (Tailor-made/On-site) の授業料 例として、

- 短期研修コース (5 日間 KEWI で実施) -- 30,000Ksh (宿泊費含まず)
- 現地指導者の派遣費用 (1 日 1 指導者当り) --35,000Ksh

尚、顧客からの費用の振込は、原則として、顧客から直接 KEWI と直接現地研修 WSP に個別に支払われる。KEWI が一括で研修を実施の場合は、KEWI から現地指

導 WSP に支払われる。

表 3-4 短期コースからの営業収益予測

Summary of NRW's Balance Sheet		As of 2017 Feb.								
Short Training Courses		2016/2017			2015/2016			2014/2015	2013/2014	Total
		Kshs	%	Ave/# /Kshs	Kshs	%	Ave/# /Kshs	Kshs	Kshs	Kshs
NRW (TM/On-site)	Number of Implemented	4		1	6		1	2	7	22
	Revenue (Kshs)	3,462,000	34%	865,500	2,866,800	54%	477,800	1,680,000	3,143,000	13,045,101
	Expenses(Kshs)	2,218,000	35%	554,500	1,568,000	61%	261,333	1,008,000	1,810,000	7,799,834
	Balance (Kshs)	1,244,000	32%	311,000	1,298,800	47%	216,467	672,000	1,333,000	5,245,267
NRW Others (特定テーマ)	Number of Implemented	7		1	7		1	0	0	16
	Revenue (Kshs)	2,830,500	28%	404,357	1,768,500	33%	252,643	0	0	5,256,001
	Expenses(Kshs)	1,647,000	26%	235,286	919,800	36%	131,400	0	0	2,933,486
	Balance (Kshs)	1,183,500	31%	169,071	848,700	31%	121,243	0	0	2,322,514
GIS (TM/On-site)	Number of Implemented	2		1	2		1	4	4	14
	Revenue (Kshs)	4,000,000	39%	2,000,000	684,200	13%	342,100	1,447,500	2,070,000	10,543,801
	Expenses(Kshs)	2,560,000	40%	1,280,000	84,000	3%	42,000	804,000	1,320,000	6,090,000
	Balance (Kshs)	1,440,000	37%	720,000	600,200	22%	300,100	643,500	750,000	4,453,801
G. Total	Number of Implemented	13		1	15		1	6	11	52
	Revenue (Kshs)	10,292,500	100%	791,731	5,319,500	100%	354,633	3,127,500	5,213,000	28,844,902
	Expenses(Kshs)	6,425,000	100%	494,231	2,571,800	100%	171,453	1,812,000	3,130,000	16,823,321
	Balance (Kshs)	3,867,500	100%	297,500	2,747,700	100%	183,180	1,315,500	2,083,000	12,021,582

出典：KEWI 2017 Feb 17 現在

5) 研修コース別の NRW/GIS 研修時間

表 3-5 は NRW/GIS 科目の学科及び研修コースの研修時間配分の一覧である。長期コースは 14 週間、短期コース(特定テーマ研修)は5日間、然し、短期コース(Tailor-made/On-site)は、顧客の指示に依り 2 日から 10 日間と研修期間は異なる。尚、短期コース(特定テーマ)の研修講座は定期的(Quarter ベース)(四半期毎)に見直され、応募者が少ない場合は講座がキャンセルされる場合がある。

表 3-5 研修コース別の NRW/GIS 研修時間の現状

研修コース名		科目名		必須受講時間数	
長期 コース	{期待される効果} 学生は専門学科と共に NRW削減に必要な基礎知識を習得し、幅広い知識を持った技術者として次世代のNRW削減に寄与し社会貢献が期待されるプログラムである。	NRW (4 専門科目)	Water Eng. (Diploma Course)	3時間/週/14週間 (毎Semester)	
			Water Eng. (Certificate Course)	3時間/週/14週間 (毎Semester)	
			Plumbing and Pipe fitting とWater supply Operator (Spe. Certificate Course)	2時間の内1時間/週/14週間 (毎Semester)	
		GIS (5専門 科目)	Water Resources Tech (Diploma Course)	3時間/週/14週間 (毎Semester)	
			Management (Diploma Course)	3時間/週/14週間 (毎Semester)	
			Irrigation & Drainage Eng. (Diploma Course)	4時間の内2時間/週/14週間 (毎Semester)	
			Water Eng. (Certificate Course)	3時間の内1.5時間/週/14週間 (毎Semester)	
			Irrigation & Drainage Eng. (Certificate Course)	4時間の内2時間/週/14週間 (毎Semester)	
短期 コース (特定 テーマ 研修)	{期待される効果} WSPが抱えるNRW削減知識を「特定テーマに絞り」集中的にWSP技術者を強化するプログラムである。。	NRW (7 専門科目)	Water Quality Sampling & Testing (Certificate of participation Course)	7時間の内0.35時間/日/5日間 (per Quarter)	
			Water Quality Management (Certificate of participation Course)	7 時間/日/5日間 (Per Quarter)	
			O/M of Water Supply Treatment Plant, O/M of Water Supply Network, Pipe fitting Plumbing and solar Heating (Certificate of participation Course)	7時間/日/5日間 (Per Quarter)	
		GIS (4専 門科目)	Use of Earth Observation Tools & GIS In Support of EIA Information Management (Certificate of participation Course)	6時間の内3時間/日/5日間 (Per Quarter)	
			Use of Earth Observation Tools & GIS in Support of Integrated Water Resources Management (Certificate of participation Course)	6時間の内4.8 時間/日/5日間 (Per Quarter)	
			Use of GIS for Utilities Management for Water Services Providers (Certificate of participation Course)	6時間/日/5日間 (Per Quarter)	
			GIS Short Courses for WSP Staff (Certificate of participation Course)	6時間/日/10日間、他	
			NRW (3種 類)	非定期 Tailor-Made ,SNV/KEWI合同研修 (Certificate of participation Course)	8時間/日/10 日間
				定期On—Site Courses (Certificate of participation Course)	8時間/日/5日間
				定期Tailor-Made (Certificate of participation Course)	8時間/日/5日間
GIS (2種 類)	非定期Tailor-Made. SNV/KEWI合同研修 (Certificate of participation Course)	6時間/日/10 日間			
	非定期On—Site Courses (Certificate of participation Course)	6時間/日/2日間			

2016/2017 年度の各研修コースに費やされた NRW/GIS 研修時間の実績、及び詳細データを表 3-6 に示す。尚、データベースを統一するため研修回数を「年に換算」した。NRW 研修の時間は約 669 時間/年、研修参加者は約 585 名/年であった。また GIS 研修時間は約 639 時間/年、研修参加者は 551 名/年であったと予測される。

表 3-6 NRW/GIS 研修時間の実績一覧表 出典:KEWI 2017 年 Feb

Allocation Table of NRW/GIS's Training Courses																
NRW /GIS 研修コース名 @2016 July/2017 June (Annual Basis) On going	NRW 研修コース								GIS 研修コース							
	開催回数/年		開催日数/年		参加者数/年		研修時間 (Hr.) /年		開催回数/年		開催日数/年		参加者数/年		研修時間 (Hr.) /年	
	合計	%	合計	%	合計	%	合計	%	合計	%	合計	%	合計	%	合計	%
長期コース (学生)	10	48%	700	92%	360	61%	308	46%	12	63%	840	96%	400	73%	378	59%
短期コース (特定テーマ)	7	33%	33	4%	96	16%	159	24%	5	26%	25	3%	100	18%	189	30%
短期コース (Tailor-made/On-site)	4	19%	25	3%	129	22%	202	30%	2	11%	12	1%	51	9%	72	11%
合計	21	100%	758	100%	585	100%	669	100%	19	100%	877	100%	551	100%	639	100%

6) 無収水研修の指導方法と講師の能力

NRW 講師の指導方法

キャンパスで実施する講義は、無収水管理の理論的基礎教育(教科書あり)であり、実習/研修は、キャンパス内の研修設備/保有漏水機器/Pipe workshop/配管設備等を使用した座学(デモンストレーション/展示品の説明)とナイロビ WSP/ThikaWSP での水道メータの管理、漏水探査方法、漏水修理方法の視察が中心となる。

また、実習施設を使った実習は、

- 既存の配水管網実習場整備不足のため、配管施設の座学(展示品の説明/機能説明)として使用している。
- Pipe workshop には、バルブのサンプル品が展示されただけで、実習場として機能していない。配管資材の説明(座学)だけである。
- JICA が供与した漏水探知器は、WSP 現地実習(デモンストレーション)で使用されるが、利用頻度が少ない。研修では、機能/調査方法などの座学である。

GIS 講師の指導方法

①座学/講義

KEWI キャンパスで実施する研修コースの教材は、理論を中心とした基礎教育(教科書あり)である。

②現場研修/実習;

- KEWI キャンパス内で実習は、QGIS デモンストレーション(内部データ活用)、Google の画像を利用し地形図の作成、配管マッピングの作成を実習させている。
- 各 WSP 現場研修は、事前資料の収集及び QGIS デモンストレーションを通じて、Google の画像を利用し地形図の作成、配管マッピングの作成を実習させている。
- 顧客の要求で Leading WSP (Kericho Nyeri) で実習する場合は、GPS での位置情報収集、配管/水道メータ位置情報のマッピング化を実習するトレーニングを中心に実施している。

NRW/GIS 研修で使用する教材

- ① NRW 講座用教科書は、研修生の能力に応じて、WASREB のマニュアルまたは KEWI 改訂版を使用している。
- ② GIS の講座用教科書は、前回(2014 年)作成したマニュアルの改訂版を使用している。(講義では、Aec-10(有料)に代わり、QGIS(無料ソフト)の使用を推奨)
- ③ WSP 現場研修に使用する NRW 用教科書は、未整備である。

講師の能力評価

専任で常勤の NRW/GIS 研修担当者は、4 名(NRW 科目は W. Moseti 氏、GIS 科目は Eric Wamiti 氏が主担当)であるが、その他にサポート講師 6 名、計 10 名体制である。無収水削減研修を担当している講師の資質/能力/経験調査を実施した(表 3-7 参照)。その結果、10 名の講師いずれも基礎座学/実習講座を目的とした講師としての能力は十分であると判断されたが、今後、研修レベルの向上、また実習設備の強化により講師の能力強化が必要となる。

表 3-7 講師の能力評価調査表

List of Staff's Role-sharing Arrangement (KEWI's NRW) R-2

S. N.	Name	Age	Educational background	Position	Experience for Short Training Course							Regulation	Length (years)	
					NRW	GIS	WBal ance	Phy. Loss	Con. Loss	Leak Detec.	Meter/ Test B.			Plum. & Fitting
1	Dr. Leunita Sumba	48	PhD Biology	Director	Director Kenya Water Institute									
2	Mr. D. K. Ngetich	50	M. Sc Geography	D. D. Academic Affairs	Co-ordinates academic/ training affairs in the Institute									
3	Ms. N.K. Everlyne	45	-	Lecturer Act. Head	Co-ordinates training in water and waste water department								5	
4	Mr. W. Moseti	47	BSc Geo Water Eng.	NRW Lecture	○	-	○	○	○		○	○	Staff	25
5	Mr. T. W. Walela	57	Dip W.B.S	NRW Lecture/	○	-	○	○	○		○	○	Staff	35
6	Mr. G. Magondi	48	MSc L.Survey	Senior Lecturer	○	-	-	-	-		-	-	Staff	15
7	Mr. W. Oduor	40	Env Eng.	Lecturer	○	-	○	-	-		-	-	Staff	5
8	Ms. T. Mucia	48		Lecturer	-	-	-	-	-		-	-	Seconded	1
9	Mr. Eric Wamiti	45	M.Sc Statistics	Lecturer	-	○	-	-	-		-	-		5
10	Mr. F. M. Mutuku	45		Lecturer	-	-	-	-	-		-	-	Seconded	1
11	Mr. K. J. Kibuchi	48	BA, B.M	Senior Lecturer	-	-	-	-	○Soft		-	-	Staff	15
12	Mr. F. Muriithi	53	HD Water Eng	NRW Lecturer	○	-	○	○	-		-	-	Staff	35
13	Mr. A.K. Christopher		Civil Eng.	Lecturer	-	-	-	-	-		-○-	-	Staff	5

受講生による研修効果、満足度調査の結果

これまで、KEWI は、Tailor/made, On-site 短期研修コースの受講生を対象に満足度調査を実施している。2015/2016 年のデータ分析(5 日間の短期コースの参加約 330 名の内、回答者約 250 名)の平均評価を以下に示す。

- 現在/将来に役立つとの回答率は、99%以上
- 研修内容は概ね満足との回答率は、99%以上
- 興味があった科目は、漏水(36%)→NRW(28%)→フジカルロス(21%)→ゾーニング(14%)→メータ据付/料金の順位である。
- 「さらに研修に参加」を希望したいとのコメントがあった。

KEWI は、これまでの受講生の評判は満足できるレベルであるとの認識であったが、本プロジェクトにより得られた評判も踏まえ、今後一層、研修内容の充実へ向けた対応をしていくことにしている。過去の満足度調査結果(@2015/2016 年)を資料編に添付する。

研修プログラム(Syllabus)の現状

NRW/GIS 科目の研修プログラムの構成を表 3-8 以下に示す。尚、一覧表の主な記載項目は、研修コース名、研修期間、開催頻度、場所、能力強化科目、内容、参加者数、教材、研修方法である。研修終了時に KEWI から研修参加修了が発行される。

KEWI キャンパスで実施される研修コースは、講義/座学である。現場研修は、KEWI 近郊の WSP (ナイロビ又はティカ) でデモンストレーションの視察となる。表 3-10 のコースの分類は以下の通りである。

- 長期コース (定期、学生対象) : Ser. No. 1
- 短期コース (定期) GIS コース : Ser. No. 2 、同 NRW コース : Ser. No. 3
- 短期コース (非定期、特定テーマ) On-site : Ser. No.4、Tailor Made : Ser. No. 5
- 短期コース (2016/2017 特別研修、SNV 支援) NRW : Ser. No. 6、GIS : Ser. No. 7
- 短期コース (2016 特別研修、GIZ 支援) : GIS : Ser. No. 8

表 3-8 現状の研修プログラム(Syllabus)の一覧表

List of Typical Syllabus			R-10-3		R-11 Eric/Moseti 2017-03-22	AS of 2017 Mar 02					
Name of Courses	Duration	Frequency	Ser.No.	Venue	Subject	Expected Competencies (WSP)	Contents	hrs.	No of participant per time	Textbook (REF #)	Teaching methods
Long-Term Course for Students (3-year/2-year/one-year)	14weeks per Semester	Regular (STD)	1	KEWI campus (Lecture/Field Training)	NRW / GIS	For Example for NRW a) Physical Losses b) Commercial Losses c) Detect and Manage Leaks d) Conduct Water Balance For GIS, Reffer to Regular GIS Contents	Unit-1 Basic Concepts of NRW Management	15-50	K-2/K-20	K-2/K-20	Lecture at KEWI
							Unit-3 Fundamental Measures in NRW Management				
							Unit-4 Water Balance				
							Unit-5 Physical Losses/Commercial Losses				
							Unit-6 Leak Detection and Management Metering System/				
						For Example for NRW a)Estimate Commercial Losses f) Test, Calibrate and Install Water Meters g) Undertake Water Pressure h) Monitoring and Mapping For GIS, Referto Regular GIS Contents	Demonstration Pipe location				Field Training at KEWI or Thika WSP or Nairobi
							Leak Detection/ Repair practice				
							Flow measurement				
							Water Pressure Management				
Short Courses for WSP/NGO	One week (5 days)	Regular (STD)	2	KEWI campus (Lecture/Field Training)	GIS (Renamed Module-3)	a) Capture, Input, Manipulate, Analysis and Present Geographic and Attribute Data of Part of Water Utility or Reticulation System b) Perform Cost-Benefit Analysis of Implementing a NRW Reduction Plan	Unit-1 Basic Geographic Information System (Arc-GIS)	12	10-20	K-6/K-11/K-13	Lecture at KEWI
							Unit-2 Cost-Benefits				
							Unit-3 Mid-Long Term Work Plan For NRW Reduction				
							Unit-4 Institutional/Governance Issues in NRW Management				
							Demonstrations Use of GPS				Field training at KEWI and/or Kericho
							Data collection				
Short Courses for WSP/NGO (Customer request base)	One week (5 days)	Regular (STD)	3	KEWI campus (Lecture/Field Training)	NRW (Combined Module-1 and Module-2)	a) Physical Losses b) Commercial Losses c) Detect and Manage Leaks d) Conduct Water Balance	Unit-1 Basic Concepts of NRW Management	10-20	K-2/K-20	K-2/K-20	Lecture at KEWI
							Unit-3 Fundamental Measures in NRW Management				
							Unit-4 Water Balance				
							Unit-5 Physical Losses/Commercial Losses				
							Unit-6 Leak Detection and Management Metering System/				
						a) Estimate Commercial Losses b) Test, Calibrate and Install Water Meters c) Undertake Water Pressure d)Monitoring and Mapping	Demonstration Pipe location	8-16	10-20	K-2/K-20	Field training at KEWI or Thika WSP or Nairobi
							Leak Detection/ Repair practice				
							Flow measurement				
							Meter Testing & Calibration				
							Water Pressure Management				
Short Courses for WSP/NGO (Customer request base)	One week (5 days)	Regular (STD)	4	WSP's Site	Independent Subject (On site/ Outgoing Service)	Water and waste water Department on site training short courses		10-20	-	-	Lecture/ Demonstrations at KEWI or Thika or Nairobi
						1. Meter Installation of consumer service connections (Water production, Hydraulics, customer care, public relations, meter, etc.)	5 days				
						2. O/M of water supply networks (water production, intake structure, distribution system, meter reading, Hydraulics, etc.)	5 days				
						3. Leak detection and repair techniques(Water production, water distribution system, leakage, meter accuracy, etc.)	5 days				
						4. Meter reading	5 days				
Short Courses for WSP/NGO (Customer request base)	One week (5 days)	Regular (STD)	5	KEWI campus	Independent Subject (Tailor/ Refresher- Made)	Water and waste water Department short courses		10-20	K-4/K-21	K-4/K-21	Lecture/ Demonstrations at KEWI or Thika or Nairobi
						1. Meter Installation of consumer service connections	5 days				
						2. Operation and maintenance of water supply networks	5 days				
						3. Leak detection and repair techniques	5 days				
						4. Meter reading	5 days				

List of Typical Syllabus				R-10-3	R-11 Eric/Moseti 2017-03-22			AS of 2017 Mar 02			
Name of Courses	Duration	Frequency	Ser.No.	Venue	Subject	Expected Competencies (WSP)	Contents	hrs.	Participant per time	Textbook (REF #)	Teaching methods
Short Courses for WSPS staff (SNV-KEWI joint Field Training,)	1 day	Irregular	6	KEWI campus	NRW/GIS Joint Meeting	1) Implementation of training orientation 2) Confirmation of training purpose	Lecture Joint meeting in KEWI (10 NRW and GIS) 1) Review of GIS/NRW curriculum - SNV, VITENS, WASPA 2) Planning meetings 3) Development of the draft manuals - 3 days	1 day	20-30		Lecture
	10 days			KEWI and at 10-WSPs DMA	NRW (Tailor/Refresher-Made)	1) Basic concepts of NRW 2) Analyses NRW in a water utility 3) Main challenges facing NRW management 4) Key steps for conducting water balance 5) Meter accuracy and billing cycle on water balance 6) Water balance for their utilities 7) Basic information on NRW management 8) Water flow in a supply area 9) Implementation of NRW reduction measures 10) Flow meters, customer meters and pressure management 11) Causes & Components of physical losses 12) Methods of quantifying physical losses 13) Physical losses reduction measures 14) Basic concepts of zoning 15) Determining Commercial Losses within a DMA 16) Water pressure management in Distribution System, Pressure Mapping 17) Use Leak detection, equipment and repair technologies 18) Selection, Installation, Maintenance of Meters and Anti Meter-theft Measures.	Lecture Session-1 Lecture at each WSP's Training field for Non-Revenue Water Management 1) Review of the selected DMA NRW management 2) NRW management, DMA for proper isolation in relation 3) Bulk/ DMA water meter Installation Practice, Accuracy testing, 4) Analysis of night flow measurement, Pipe tracing practice, etc..	4 days	20-30	K-11	Lecture at KEWI
							Demonstration Session-2 (NRW) 5) Assessment of available resources, 6) Meter installation practice, Testing for accuracy, reading practice 7) Pressure, Flow, Night flow measurements (Data Collection) measurement 8) Use of leak detecting equipment and detection of illegal connections 9) Leak repair techniques on different pipe materials	5 days			Field Training at each 10 WSP's DMA
	10 days		7	KEWI and at 10-WSPs	GIS (Tailor/Refresher-Made)	1. Develop a work flow for GIS implementation 2. Develop base maps for digitization from various sources 3. Develop a data model in readiness for data creation 4. Apply the model and use the base maps for digitization 5. Work with databases 6. Joint billing data to customer meter and perform analysis 7. Perform various queries and geo-processing functions 1. Asses the resources available in the WSP that can enable GIS data digitization 2. Use the available resources to create initial data sets 3. Develop a data model for the WSP 4. Collect data in the field using a GPS 5. update existing information 6. Join the GIS data sets to Billing and customer information	Lecture Session-1 GIS for Application of Utilities Management in support of NRW 1) Creating of an Inventory of resources, work flows for the WSP 2) Development of a GIS roadmap, composition and Efficient GIS team in WSP 3) Development of Geo-databases, informative pipe network using already developed databases and available base maps 4) Building of GIS data sets using information collected using GPS's. 5) Editing of Non-Spatial and Spatial information 6) Using billing information as an NRW measure in GIS	4 days	20-30	K-13	Lecture at KEWI
						Demonstration Session -2 (GIS) 7) Types, Base maps and Data Collection 8) Preparation for GPS Field data collection and pipeline appurtenances 9) Improvements and updating of existing information. 10) Map creation and graphics from existing and updated data etc.,	5 days	Field Training at each 10 WSP's DMA			

List of Typical Syllabus			R-10-3		R-11 Eric/Moseti 2017-03-22	AS of 2017 Mar 02						
Name of Courses	Duration	Frequency	Ser No.	Venue	Subject	Expected Competencies (WSP)	Contents	hrs.	Participant per time	Textbook (REF #)	Teaching methods	
Short Courses for WSP (Germany-KEWI joint Field Training,)	4 weeks	Irregular	8	KEWI campus	GIS (Tailor/Refresher-Made)	1) Capture of present, 2) Input, 3) Analysis of present, geographic, attribute data of part of Water Utility, 4) Cost-Benefit Analysis of Implementing a NRW Reduction plan, etc.,	Lecture	1) Introduction to GIS	4	5 ~ 10	K-11	Lecture at KEWI (2 weeks)
							2) Requirements for initial GIS dataset preparation	2				
	3) GIS interactive tools	4										
	4) Projections and Geo-Referencing	4										
	5) Vector data preparation: introduction	6										
	6) Standard data model KEWASCO/WASPA for water utilities	2										
	7) Geo-databases	4										
	8) GPS-based data collection	6										
	9) Geo-Spatial Analysis	5										
	10) Joining meter data to billing data)	6										
	11) Development of DMA's and analysis of NRW measures	3										
	12) Data Presentation and reporting	6										
	13) Develop a full GIS system from some given datasets and information using the learnt skills	6										
	14) Examination on Participants will sit for a 2 hours paper	2										
				Field training (Kericho)		1. Asses the resources available in the WSP that can enable GIS data digitization	Demonstrations	1) Introduction to field work GIS	1 day	5 ~ 10		At Kericho (KEICHO) (2 weeks)
					2. Use the available resources to create initial data sets		2) Preparation for data collection	2 days				
					3. Develop a data model for the WSP		3) Meters and appurtenances data collection	3 days				
					4. Collect data in the field using a GPS		4) Pipe network data collection	2 days				
					5. update existing information		5) Geo-Spatial Analysis	1 day				
					6. Join the GIS data sets to Billing and customer information		6) Development of DMA's analysis of NRW measures	1 day				
							7) Data Presentation and reporting					

※) Ser. No. 6、7コースはSNVの支援により10ヶ所のWSPを対象とし、現在進行中のプログラムである。SNVは2014年にも10ヶ所のWSPを対象としてPhase1プログラムを実施した。このプログラムにおいて、NRW対策を先進的に進めているWSPが講師陣に参加していなかったため、十分な成果が上がりなかったという反省から、今次プログラムにおいてはNyeri WSPの技術者を加え、KEWI担当者と共に2名体制で現場研修を実施している。今次プログラムの10対象WSPは、Homabay、Malindi、Nakuru rural、Isiolo、Nanyuki、Gatamaki、Kakamega、Eldoret、Taita Taveta Water及びSewerage Companiesである。

KEWIと Kericho WSP の GIS トレーニングセンターが連携した GIS コースの実施状況

① GIS トレーニングセンターの設立と KEWI との連携

2016 年、Kericho WSP は以前から GIZ の支援を受けていたことを縁として、WASH 分野 (Water, Sanitation and Hygiene) の GIS トレーニングセンターが Kericho WSP に設立されることになった。設立のための資金 (機材供与やカリキュラムの作成費を含む) は、GIZ と協力関係のあるドイツのバイエルン経済職業訓練センター (bfZ) の水道協会パートナーシップ強化プログラム (SWAP bfZ) から、当 GIS センターの設立を支援した WASPA に入っている。2016 年に Kericho WSP の GIS センターで実施された 2 度のトレーニングでは、一人当たりの参加費 (30,000 Ksh) の内、10,000 Ksh が SWAP-bfZ により補填されていた。しかしながら、GIS センターに対する支援プログラムは既に終了している。

KEWI は上記プログラムの実施に参加することにより、Kericho WSP と協力関係ができた。当コースは表 3-8 の Ser. 8 に対応している。このコースでは、KEWI にて 2 週間の GIS の理論や基本的な GIS ソフトのオペレーションなどを教えているが、GIS 経験のある程度持っている受講者は、この期間を 1 週間だけに短縮することができる。KEWI での講習後、さらに 2 週間、Kericho WSP の GIS トレーニングセンターが主催するフィールドワークを含む実践的な GIS トレーニングを受ける。このトレーニングでは、最近 KEWI が改定した QGIS (無料ソフト) を用いた講習マニュアル (Application of GIS for Water Utilities Management) と無収水対策についても考慮したフィールドワークを含むカリキュラムが使用され、模擬的なベースマップの作成、管路情報の入力、モデル DMA 内での GPS によるデータ収集などが含まれている。KEWI における GIS 講習コースは、JICA の前プロジェクトで、JICA 専門家 (諏訪部氏) と KEWI の講師が共同で作成したプログラムが基になっている。KEWI が QGIS を用いた講習マニュアルを作成した際には、WASPA、SNV 及び VEI の支援を受け、Kericho WSP の GIS センターにおける GIS トレーニングのカリキュラムは、KEWI の GIS 講師 (Mr Eric) が、Kericho WSP の GIS 講師 (Ms Emily) を指導しながら共同で作成したようである。

現在、KEWI、Kericho WSP 及び WASPA は GIS トレーニングの実施について MOU を結んでいる。KEWI と WASPA は GIS トレーニングセンターが同 GIS トレーニングを持続的に開催できるように、受講者の確保について責任を持っている。現在、SNV の支援による NRW/GIS 短期コースを実施中であり、Kericho WSP が 2016 年に開催した 2 度の GIS トレーニングでは、毎回 10 人～15 人程度が受講したが、その約半数は SNV が DMA ベースの無収水削減支援の対象としている WSP の職員であった。SNV は、KEWI との委託契約に基づき GIS 講師 (Mr Eric) を 5 日ずつ派遣して、各対象 WSP に、実践的な GIS トレーニングを実施している。Kericho WSP での GIS トレーニングは昨年実施されている。

Kericho WSP で GIS トレーニングを開催するには、最低 10 名の受講者を確保する必要がある。しかし、SWAP-BfZ による受講料の補填が終了していることに加えて、SNV は各対象 WSP において、より本格的な GIS のトレーニングを実施している。このような状況の中、Kericho WSP の GIS センターにおける今後のトレーニング開催の予定はまだ立っていない。Kericho WSP の GIS センターは、KEWI と同様に、十分な受講生を確保するため、同 GIS トレーニングの内容をより魅力的にすることが求められている。

② KEWI と GIS トレーニングセンターの GIS 関連の施設及び機器の保有状況

KEWI には一般パソコン教室と GIS 用のパソコン教室があるが、GIS 用のデスクトップ PC 5 台程度は一般的なパソコン教育を担当している部署から借りている。これらの PC は古く遅いため、GIS の教育には不十分である。また、短期コースでは、受講者にノート PC を持参するよう依頼しているが、WSP によっては古いノート PC しか持たされないため、授業に支障をきたしている。KEWI は高額な ArcGIS のライセンスを保有しているが、トレーニングでは無料かつ高機能である QGIS を使用している。また、トレーニングに使用できるハンドヘルド GPS については 10 台保有している。また、A4 サイズのスキャナしかないため、実習の中で既存の図面をスキャンすることが難しく、また大判用のプロッターもないため、作成した GIS マップを印刷せず、PDF ファイルを作成しているだけである。このような状態であるため、適切なスペックを持つパソコンを含めた関連機器の調達や GIS 用のパソコン教室の機能を改善する必要がある。

一方、Kericho WSP の GIS トレーニングセンターは WSP の敷地内にあるが、GIS コースの実習のためのトレーニングルームは、徒歩で 5 分ほど離れたカウンティ政府の建物内の一室を利用している。このトレーニングルームには、長テーブル一台とデスクトップ PC 2 台が置かれている。受講者は各自ノート PC を持参することになっている。その他の関連機材としては、プロジェクター、TV モニター及び 15 台のハンドヘルド GPS がある。大判用のスキャナ及びプロッターはない。Kericho WSP においても、高額な ArcGIS のライセンスを保有しているが、トレーニングでは無料の QGIS を使用している。

③ KEWI と GIS トレーニングセンターの GIS 講師のキャパシティ

KEWI には GIS の理論を教えることができる講師は十分いるようであるが、経験に基づく実践的なトレーニングを実施できるのは Mr Eric Wamiti だけである。Mr Eric は以前は地理統計を専門とし、6 年前に KEWI で GIS 講師となった。彼は、多数の GIS ソフトを使用した経験があり、KEWI では WSP のための GIS だけでなく、水資源管理のためのリモートセンシングを用いた GIS についても教えている。ただし、KEWI の講師陣には、実務として水理解析ができる講師はいない。そのため、GIS データを用いた水理解析の習得を希望する講師は多いようである。Mr Eric は、2017 年 4 月から KEWI の GIS コースでペアを組んでいる Water Engineer の Mr Patric Muranga と共に、JICA 専門家から水理解析等の高度な GIS の応用について学ぶことを希望している。

一方、Kericho WSP の GIS トレーニングセンターには、GIS 講師の Ms Emily Electine とアシスタント講師の Ms Joan Chepkirui がいる。Ms Emily は前は Geo Map Africa に務め、Ms Joan も他の組織で ICT Manager の経歴を有し、GIS の業務経験もある。Ms Emily は、VEI から GIS データを用いた水理解析についての講習を受けたことがあるが、水理モデルの設定が不完全で、施設改善の検討には至らなかった。このような状況の下、Kericho WSP から、GIS トレーニングセンターに対し、水理解析などの GIS の応用について指導して欲しいと要請されている。

KEWI と Kericho WSP は、水理解析などのより幅広い GIS の応用を学び、GIS コースのカリキュラムに加え、共通で使用している KEWI の QGIS のトレーニングマニュアルの内容をよ

り魅力的にすることで、受講者を増やすことが重要としている。

7) 実習設備の状況

配水管網実習場の施設概要（フランス政府（2006年）から寄贈）

- ① 構造：コンクリート製のピット内(1.0 mW x 1.0 mH)の底部に 2~8”の配管(全管延長距離、約 156m)が据え付けられている。尚、ピット上部には、雨天水/異物混入を防止するため、鋼板製の屋根が被せられている。
- ② 機械設備として、旋回流用ポンプ(3台)がポンプ室に設置されている。
- ③ 配水管網管理に必要な機材として、バルブ/流量計/圧力計/サドル分岐、水道メータ等が整備されているが、ポンプを含むほとんどの器材は修理が必要である。
- ④ 漏水探知、管路探査の実習/体験設備としては、未整備である。

写真 3-1 配水管網実習場の設備と研修風景



漏水探知関連機材

KEWI が保有する漏水探知関連の器材は、WSP 現場研修のデモンストレーション及び展示機材として活用されているが、保管状況は良い。

① 保管場所

主な漏水探知器は、Hydraulic Laboratory (11mW x 20mLx3.5mH :220m²)と Pipe Workshop で保管されている。

② 使用/活用頻度

保管されている多くの機材は JICA 供与機材で、KEWI キャンパス内に漏水体験/実習研修コースが未整備のため、機材の利用頻度は低い。

③ 性能確認

計測機器の精度保証期限が過ぎているが、予算不足で KENAS (Kenya Accreditation Service ケニア認定局) の精度検定を受けていない (計器類の状況は添付資料 13 を参照のこと)。

写真 3-2 漏水探知関連施設



Pipe Workshop 機材/工具

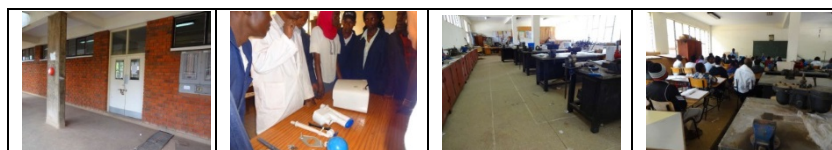
Pipe Workshop は配管接続/分岐方法の実習及び水道メータの精度管理の実習場であるが、現状は以下の研修工具が整備されているだけで、本来の目的には程遠い。

Workshop には配管設備の断面サンプルが展示され、配管設備の構造説明に役立っている。尚、この Workshop は、短期コース(Pipe Fitting Plumbing and Solar Heating)の研修/実習場でもあり、家庭内の給排水設備の分解/組立/鋼管のねじ切り/ヤスリ作業の実習が実施している。

① 保管工具

Workshop (9.0mWx20mLx3.3mH: 150m²) に整備されている機材は、作業台、小口径の鋼管ねじ切り機械、万力、パイプバイス、小口径のパイプ、レンチ類、継ぎ手類である(機材・工具の状況は添付資料 13 を参照のこと)。

写真 3-3 Pipe Workshop 関連施設



② 水道メータ検査試験機

水道メータ検査試験機(フランス政府(2006年)から寄贈)が Hydraulic Laboratory 内に設置されている。一度に1個のメータしか検査できないため、研修の実践効果が小さい。さらに、流量測定精度に限界あるため、実習設備として使用されていない。

【仕様概要】

- ・試験出来る水道メータ口径: 1/2"~1-1/2"
- ・KENAS の精度検定認証が得られていない。

水質分析機材

水質分析室(Bio Laboratory: 242m²)は、長期/短期コースで必修科目に指定されて整備されている。分析室は、学生の実習場の他に外部からの水質分析委託を受け、排水分析(サンプリンから、水質分析、データ評価まで)を実施している。

下水・排水水質分析機器、及び残留塩素濃度測定器、伝導率計、pH計等が整備されている。尚、試薬は鍵付の別棚に整理・保管されている(機材の状況は添付資料 13 を参照のこと)。

写真 3-4 水質分析室



8) WSP が KEWI に期待する研修コースのヒヤリング調査

2017年2月6日(Embu WSP)~7日(Meru WSP)さらに、2017年2月13日 Kericho WSP に於いて「聞き取り調査」を実施した結果を以下に示す。

Embu&Meru 両 WSP からのコメント

- ① KEWI と Leading WSP が実施する現場研修について
 - 現場研修用の DMA はあるが、2～3 日間の研修期間は短い。
 - これまでの現場研修は、ベンチマーキング/デモンストレーションである。
 - 研修者への説明は口頭、Syllabus/教材とも未整備である。
- ② Leading WSP が実施する他の WSP への研修状況について
 - WSP の要請に応じて、無料で 1～2 日間の研修を受け入れている。
 - これまでの現場研修は、ベンチマーキング/デモンストレーションである。(例、漏水管の修理方法、漏水探査/管路探査の方法、メータの精度管理、水量計測方法、ビリング等)
 - 研修効果及びフォローアップ調査は実施していない。
 - 研修を受け入れるメリットは、他 WSP の課題を把握できる。
- ③ Leading WSP が KEWI に期待する NRW 研修コースについて
 - 講義内容はバランスが良い。今後も継続して利用したい。
 - WSP 現場が抱える課題に焦点を合わせた教科書が欲しい。
 - 一部の実習/研修設備は旧式、現場の改善に役立つ知識が得られない。
 - 現場/実習は、デモンストレーションだけ、効果的な OJT が実践できない。
- ④ KEWI-Leading WSP 合同研修の実施体制につて

KEWI との合同研修実施は、全面協力する。

実施体制の協力準備はできているが、運営予算の原資がない。
- ⑤ WSP 上級管理者の「NRW 削減」意識強化を目指した研修について

NRW 削減成果は、上級管理者 (MD, TM, CM, NRW リダー) の意識 (リーダーシップ) に左右されるので「意識改革研修」は必要である。

上級管理者の役割は、例えば、目標設定能力、実行力、管理能力、スタッフの意識改革の促進、予算確保能力等の実践行動である。

研修項目としては事業経営能力の強化、年度目標の策定能力の強化、モニタリング能力の強化、リスク管理能力、広い分野の技術知識の強化等が考えられる。

 - KEWI の指名があれば、喜んで講師になる。

(4) KEWI の課題

1) 研修プログラムの改善

研修後に、研修者が NRW 削減計画を策定できなく、また NRW 削減の実務に成果をあげることができない。また、現場に役立つ実務の基礎/応用力が不足している。よって、現在の理論中心の講義、研修/実習方法(デモンストレーション/視察が中心)を、体験型中心の研修プログラム(含む現場実務者レベルの教材の充実)に変更する必要がある。早急に、既存の研修/実習を整備することで講座と現場体験を組み合わせた研修プログラムに改善する必要がある。

NRW 概論用の教材は、JICA の前プロジェクトで作成されたマニュアルと KEWI 編集の教科書を使用している。しかし、現場用座学教材が不足している。現場用教科書は、出来る限

り身近な課題と対策を簡素に表現、イラスト/写真中心、新技術の紹介を兼ねた初版を作成することが望まれる。定期的に KEWI/WSP が見直す制度を構築する必要がある。

多くの講師の知識は十分あるが、指導方法が「詰め込み講義」に偏っている。「研修者への問いかけ講義」の見直しが必要である。

2) 講師の NRW 削減実施能力の強化

WSPの NRW 削減能力の向上に伴い、WSPが KEWIに期待する研修内容が細部に渡り、より専門的になるため、現状の講師の能力では対応が困難である。また、講師として漏水関連機器の取扱、データ・シート作成能力、データ評価/考察など、現場実務の経験が不足している。将来、NRW 関連の研究発表できる能力/考察力の強化が必要である。

10 名の NRW ユニットの講師は、各専門分野における基礎理論講座を教える能力は十分ある。しかし、WSP の要求の高度化/具体的に対応するため、講師の能力強化や教育環境の変化に追従できるように、10 名の講師の専門分野の範囲拡大を含めた、少数精鋭化、人材の若返りをめざした、人材育成が緊急課題である。

3) 講師の漏水水質管理能力強化

漏水管理の一環として、違法接続水か水道水の漏水か現場で、顧客の前で判断できる水質検査知識が不足している。今後、KEWI の水質分析研究所で訓練が必要となる。

4) 実習/研修設備の改善

NRW 削減研修コースの改善には、講義の他に、WSPの課題解決に役立つ応用力を付けるため、配水網実習場の改善、漏水探査/管路探査/水道メータの品質管理装置の改善で、NRW 管理の基礎教育が体験でき教育環境が欠如している。

実習能力の強化のために、現在不足している実習設備に係る改善計画の策定上の課題を以下に示す。

既存の研修/実習の総合改善

現況調査の結果、現況の実習設備では KEWI の目指す「適正な教育環境の提供」には程遠く、また、WSP が期待する研修/実習場に改善する必要がある。この計画では保有している漏水探知機器の有効活用、及び、既存の配水管網実習場の改善、Pipe workshop の充実を図ることで、NRW 管理の基本である「フジカル・ロス/コマシヤル・ロス」の調査/改善策に係る基本技能の実践が可能な施設に改良する。

水質分析機材

現場で違法接続水か否か、顧客の前で水質源を判断するための携帯式水質分析器具が未整備である。携帯式水質調査機材(残留塩素濃度測定器、伝導率計、pH 計等)を整備する必要がある。

5) 財務収支の改善

施設改善/講師の育成/教材の見直し等に必要な財源の確保であるが、KEWI は年度予算の約 65%が補助金で、人権費の支払などで施設の改善費用が捻出できない。KEWI 所長の Dr. Sumba は、国家プロジェクトの「無収水削減活動」を KEWI 全体でサポー

トすることで、国家の利益/社会貢献/健全な教育環境の整備が出来ると考えている。KEWIは資金確保のため、施設改善効果は長期/短期コースの研修プログラム改善の貢献に不可欠と政府関係者の説得、MWI 資金の傾斜配分を要請している。KEWI としても、現在も実施している所長自らのトップセールスにより、研修/実習設備の改善の取り組み、必要な情報を水業界/政府機関に説明すると共に、WSP へ積極的に広報展開するビジネスモデルをより強力に推進することが重要である。

(5) 課題への対応策

1) NRW 削減戦略

NRW 削減戦略は「戦略計画 2016-2020」計画に基づき、「国家的課題である NRW 削減」を段階的かつ効果的に解決するため、「NRW 削減」に役立つ研修プログラムを強化し、効果的かつ計画的に研修を実施し目標を達成することである。その結果、KEWI の「水」教育機関としての評価が向上し、顧客(学生/WSP/他)数の増加、就職率の向上、営業利益の改善等、国家及び社会から評価される。

以下に、課題の対処療法を示す

講師の能力強化

- ① Leading WSP との合同現場実習に講師の参加を促し、個人の知識/ノウハウの向上と KEWI 組織の実施能力を向上させる。
- ② 広い分野の教科の見直し作業に積極的に参加を促す。
- ③ WSP が KEWI に期待する Syllabus の内容・指導方法の見直し作業に積極的に参加を促す。
- ④ 広い分野の研修コースの講師としての機会を与え、教材を見直しさせる。

指導方法の強化

研修者の集中力/緊張感を持続させるための指導方法を検討させる。

- ① 研修開始時に目標管理シートを作成させ、明確な研修目標を認識させる。
- ② 研修修了証の発行条件を検討させる。(例、研修修了時のテスト合格者のみ発行)
- ③ 視聴覚機材の採用を検討させる。
 - ・ 講義に集中させるため、プロジェクターを活用する。
 - ・ 講義場所が広い場所では、積極的にマイクフォン-を使用する。
 - ・ 現場研修映像等を活用する。

なお、KEWI の研修効率向上のため、表 3-9 に示す機材について調査団が現地で購入し、研修に利用する体制が整えられた。

表 3-9 購入事務機器の仕様/写真

NAME OF EQUIPMENT	UNIT	MODEL (Machine)	NAME OF COMPANY
LAPTOP COMPUTER (W/Microsoft Office & Windows 10)	1	HP 250 Laptop	Office Mart Limited
MULTI-FUNCTIONAL PRINTER (Printer, Copy and Scanner functions W/A3 White and Black)	1	Canon IR-2530i	Office Technologies Ltd
DIGITAL CAMERA (W/ 2.7 inch LCD screen,	1	Sony DSC-WX220	Office Mart Limited
PROJECTOR (W/cable)	1	Epson EB-1776W	Sai Office Supplies Ltd
TOTAL	4		



教材の強化

- ① 既存資料の収集、整理 及び見直し作業を実施させる
- ② 現場が必要とする教材を作成させる。

例えば、水道メータの設置技術、水道メータの読み方、修理方法、小口径配管工事の技術、漏水探知技術、漏水修理データの記録書式

研修プログラムの見直し

講義時間は短く、実習/体験を効果良く時間配分した研修プログラムに改善させる。(例、漏水探知技術、管路探知技術、水バランス作成体験、故障メータの原因説明、水道メータの器差(不感水量)の計測技術、等)

研修/実習施設の強化

- ①機能していない配管網研修場の改善と漏水調査機材の有効活用のため、敷地内に単純な漏水調査及び管路探知実習場を建設する。
- ②この実習場の体験により、NRW 削減の調査手順、機器の維持管理手順、収集データの評価/考察することで、次の行動計画が立案できる。

WSP 管理職の意識改革の強化

- ① NRW 削減活動の成果は、上級管理職の「決意度」によって差がみられる。
- ② Leading WSP の管理者による、成功談を聴く機会を設ける。
- ③ 「できない、やらない」理由を明確化し、阻害因子対策を協議し「啓発活動」の強化プログラムを検討させる。

2)リーディング WSP との NRW 削減合同研修

実施体制

上記の対応策の実施に加え、本プロジェクトにおいて KEWI はリーディング WSP の Embu 及び Meru WSP と連携して、より実践効果を高めた無収水削減コースを実施する準備に入った。

この研修は、KEWI 指導の下、リーディング WSP と協力して実施する初の実務を中心とした

合同現場研修コースである。研修の目的は、今後、現場研修を実施する際、発生する留意点（研修項目、機材の取扱、講師の技量、DMAの選定基準、研修時間の配分/研修日数、目標成果の阻害因子）等を事前に抽出し、その対策を検討するための「NRW Pilot Test Course」プロジェクトである。実施体制を以下に示す。

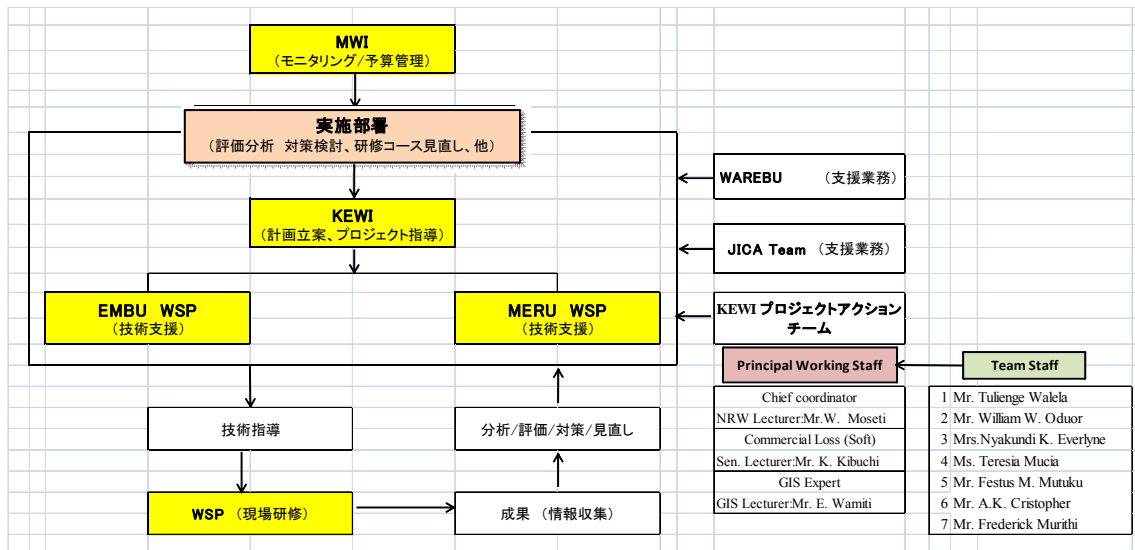


図 3-4 合同研修の実施体制

2017年2月、KEWIはプロジェクトを円滑で効果的に推進するため、特認チームを設立し、チームの責任者に Mr. Walter Moseti (Lecturer) を指名した。このチームの役割は合同現場研修に対する研修/実習設備の改善の検討、研修コースの見直し、教材の見直し、KEWI- Embu/Meru とのプロジェクト促進に係るすべての業務を実施する。

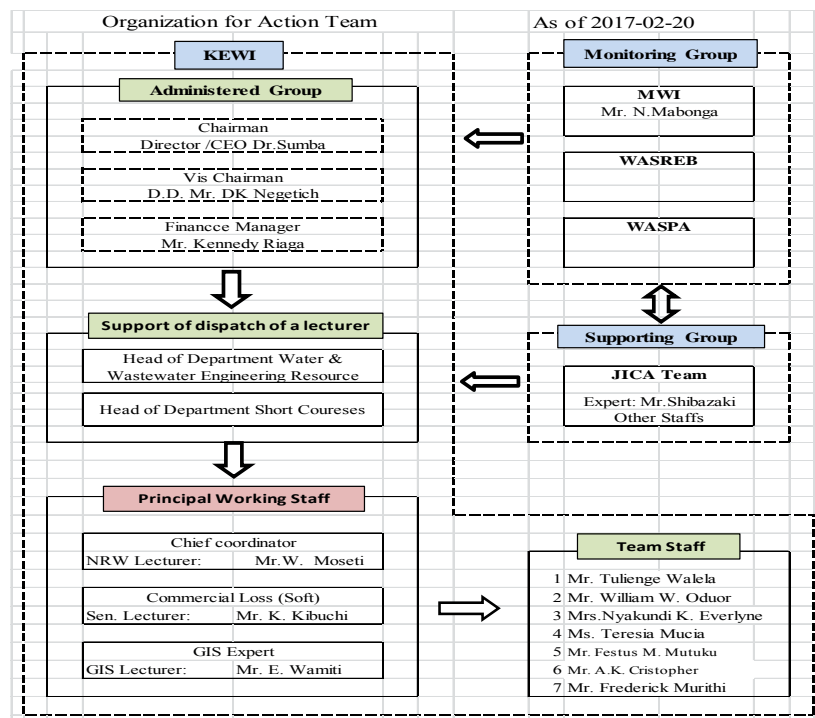


図 3-5 実施部隊の組織

合同研修の実施計画

3者は、これまでに3回の合同協議会議を開き、本年5月に試験的な実施を行うことで合意している。現在プログラム(案)の作成を完了し、今後MWIの予算を確保し実施内容をさらに詳細に詰める予定である。

研修プログラムはの基本方針を以下に示す。

- 各部署が保有する NRW 削減ノウハウ/探査機探を持ち寄り
- これまでの座学中心のデモンストレーション方式から、より具体的/実務的な現場作業を中心とした研修プログラム(Syllabus)を構築することである。

このプログラムは研修実施過程で経験する問題点や留意点(研修項目、機材の取扱、講師の技量、DMAの選定基準、研修時間の配分/研修日数、目標成果の阻害因子)等を抽出し、その対策を共有することにより、あらたに改善策を実施しようとするものである。計画概要(案)は次の通りである。

- 計画研修実施時期;5月中旬
- 現場名;Embu WSP
- 参加 WSP 数;5WSP(含む Embu/Meru)
(残りの3WSPは今後検討する)
- 参加 WSP 上級管理者数;5WSP(MD, TM, CM, NRW リダーから1名/WSPを選出)
- 実務者数(理論講座/OJT):5WSP(2名/WSP: OM/コマーシャル担当)、計10名
- 研修期間と開催場所;
 - (a) 上級管理者の意識改革を促す Workshop(1日)・・・KEWI
 - (b) 実務者向け理論講座(5日間)・・・・・・・・KEWI
 - (c) 実務者向け実践的な OJT の実施(6日間)・・・EMBU WSP
- プロジェクト実務者名
 - (a) KEWI ・・・Mr. W. M. Moseti
 - (b) Embu WSP・・・Mr. J. Maina
 - (c) Meru WSP ・・・Mr. C. Kaume (Planning Engineer)

合同研修プログラム(Syllabus)の概要(案)

合同研修は以下の3部構成で計画されている。上級管理者向けの研修は1日であるが、実務者向けコースに先立って、上級者自らが無収水削減の重要性を理解し、率先垂範を実施することが重要との意図で実施する。実務者向けは KEWI における講義とリーディング WSP における現場研修を実施する。各々のプログラム(案)は以下の通りである。

- ① 上級管理者の NRW 削減の意識改革を促す Workshop(1日間):表 3-10 Table1

講演者:MWI, KEWI, WASREB, Embu WSP(Eng, M. Karugendo)、Meru WSP(Eng. George Karanja)

トピックス:Institutional Issues in NRW Management, Role of KEWI in capacity building on NRW management & Introduction of Strategic Plan, Water Act 2016, NRW standards, Strategies to Reduce and Manage WSP's NRW, Role of MD and Managers in WSP (Leadership behavior, etc.), VTR (Tokyo's NRW activity) .

② 実務者向け(OM 及びコマーシャル担当者)の講座(5日間):表 3-10 Table2

KEWI 講師:Mr. Moseti, Mr. F. Murithi, Mr. T. Walela, Mr. K. Kihara, Mr. W.W. Oduor

トピックス:Basic Concept of NRW Management、Fundamental Measures in NRW Management、Physical Losses、Leak Detection and pipe tracing、Leak Detection and pipe tracing、Commercial Losses、Pilot Area activities(for training、Metering、Consumer service line connection technology、Zoning Concept、Pipeline management (Pressure/ Velocity/ Quality) and etc.

③ 実務者向け(OM 及びコマーシャル担当者)の実践的な OJT(6日間):表 3-10 Table3

現場研修指導者:KEWI Staff, EMBU WSP Staff、MERU WSP Staff

トピックス:DMA preparation survey, Pipe tracing, Listening Devices for water supply, Metering, DMA zonal Bulk meter, Pressure recording, Leak detection on pipeline, Data analysis, Overview and evaluation of the OJT training and etc.

教材の作成は現況の教科書を見直す。

合同研修の評価確認方法としては、今後以下の方法を検討する。

- 対象者:NRW 短期コース修了者(複数)
- 期間:3 カ年(同一人物)
- 調査項目:
 - ✓ 小テストの実施(研修前後の効果の把握)
 - ✓ 現状分析(アンケート調査:評価/改善点の把握)
 - ✓ 自己研鑽計画の把握(研鑽計画と達成度調査)

表 3-10 Proposed Syllabus

R-2NRW Pilot Test Course syllabus (modified)

2017-03-11(Moseti)

Table: 1

WSP's Management Sensitization workshop (1day)				Proposed in may 2017		
a)	Capacity building of WSP management Sensitization workshop for 5 WSPs. (3x5=15) All of the following: MD/ TM/CM					
	syllabus	Topics	Time	Equipment	Presentations	Resource Facilitator
a1	Institutional Issues in NRW Management	Registration Opening Remarks	8:00- 8:15	Conference Hall Laptop Overhead Projector VTR	KEWI MWI WASREB EMBU MERU JICA	KEWI
		Role of KEWI in capacity building on NRW management & Introduction of Strategic Plan	8:15 -9:00			KEWI
		Water Act 2016	9:05 – 9:50			MWI
		NRW standards	9:55 – 10:30			WASREB
		Tea break	1030 – 11:00			Tea break
		Strategies to Reduce and Manage WSP's NRW	11:00 – 12:00			Embu
		Role of MD and Managers in WSP (leadership behaviour, etc)	12:05 – 13:00			MERU
		Lunch Time	13:00- 14:00			Lunch Time
		VTR (Tokyo's NRW activity)	14:00- 15:00			JICA/ KEWI
		Closing Remarks	15:00 – 15:10			KEWI
	Closing	15:30				

Table: 2

b) NRW classroom training at KEWI (5 days) participants: Technical and (1), Commercial participant (1) and (1)Non Revenue head (5WSPsx3=15) at KEWI							
	syllabus	topics	Time	Equipment	Equipment Provider	Text book	Facilitator
b1	Registration Opening Remarks	Role of KEWI in capacity building on NRW management	1 day	<ul style="list-style-type: none"> Lecture room Laptop overhead projector Workshop Demonstration platform Cut models Teaching aids VTR 	KEWI	KEWI	Ngetich
b2	Basic Concept of NRW Management	Definition of NRW Procedure for NRW Reduction Measures				KEWI	Muriithi
b3	Fundamental Measures in NRW Management	Water Balance Flowchart Definition of Water Balance Terms				KEWI	Muriithi
b4	Physical Losses	Components of Physical Losses Quantifying Physical Losses				KEWI	Walela
b5	Leak Detection and pipe tracing	Metallic Pipe locater Integral Non-metallic pipe locater Sounding stick Ultrasonic flow meter Pressure logger and re	½ day			KEWI	Moseti
b6	Commercial Losses	Definition of Commercial Losses Measures to Reduce Commercial Losses Customer care/services Public relation	1 day			KEWI	Kihara
b7	Pilot Area activities(for training)	Selection of Pilot Area DMA Distribution Mapping/ GIS Isolation through Zoning Installation of Flow Meters	½ day			KEWI	Moseti
b8	Metering	Selection of Customer Meters Types of water meters Installation of Customer Meters/	½ day			KEWI	Moseti

		Protection Meter Testing					
b9	Consumer service line connection technology	Standardizing of Pipe and Joint Materials/ methodology Demonstration on Jointing of Pipes/ protection Procedure of Service line connection Main line appurtenances(Stop cock/ check valve)Plugs	½ day			KEWI	walela
b10	Zoning Concept	Planning and Implementation of DMA Advantages of Zoning Zoning criteria's DMA Management Method Approach	½ day			KEWI	Muriithi
b11	Pipeline management (Pressure/ Velocity/ Quality)	Reason for pressure management Water Pressure Mapping Measurement of Water Pressure (PRV/ BPT) Pressure Adjustment by Gravity Flow Method Pressure Adjustment by Pump Boosting Method Smooth flow/ Velocity control/ water quality	½ day			KEWI	Oduor

Table: 3

NRW Field On Job Training at Leading WSP Embu (6 days) 5WSPs x 2 NRW and Commercial								
c)	syllabus	Activity	Outputs	Time	Equipment	Equipment Provider	Text book	Facilitator
c1	DMA preparation survey	DMA background information and field visit for OJT planning	OJT activities planning including timeframe	1 day	Maps/ Field	Lead WSP(1) (1)Embu/ Meru WSP	Provide by WSP	Lead WSP
c2	Pipe tracing	Metallic pipe tracing	Experience on the use of equipment and trace pipes	½ day	Metallic pipe locater	KEWI and lead WSP (2) (1)KEWI (1)Embu(0)Meru	Provide by KEWI/ WSP	KEWI/ Lead WSP
		Non-metallic pipe tracing	Experience on the use of equipment and trace		Non-metallic pipe locater	KEWI and lead WSP (2) (2)KEWI (0)Embu(0)Meru	Provide by KEWI/ WSP	
c3	Listening Devices for water supply	Detecting water flow and possible leaks	Experience on water flow and possible leaks	1 day	Listening stick	KEWI and lead WSP (8) (3)KEWI (3)Embu(2)Meru	Provide by KEWI/ WSP	KEWI
c4		Detecting water flow and possible leaks	Experience on water flow and possible leaks		Time Integral leak detector	KEWI and lead WSP (2) (1)KEWI (1)Embu(0)Meru	Provide by KEWI/ WSP	
c5	Metering	Field accuracy test (5No each group)=10	Experience on field meter accuracy	1 day	Digital test meter	KEWI (2) (2)KEWI (0)Embu (0)Meru	Provide by KEWI/ WSP	KEWI
			Data sheet, Volume diff of CMR & TM, Typ, cust Reg No, Mtr, No, Ser No, Date of pro, Condition					
		Tentatively remove the existing meter and install new one	Experience on correct meter installation practice		Pipe fittings and tools	Lead WSP (set) (yes)Embu(yes)Meru	Provide by WSP	
		Removed meter testing	Data collection of accuracy test procedure		Water meter test bench	Lead WSP(1) (1)Embu (1) Meru	Provide by WSP	Lead WSP
c6	DMA zonal Bulk meter	Meter installation conditions	Observe existing meter installation for comments	1 day	Cleaning tools	Lead WSP(Set) Yes (Set)Embu/ Meru	Provide by KEWI	KEWI
		Field accuracy test	Experience to fill Flow and time data sheet		Ultrasonic flow meter	KEWI (2) (2)KEWI (0)Embu (0)Meru		KEWI
			Data sheet, Volume diff of ZM & UFM, Typ, Size, Mtr No, Ser					
		Night flow measurements	No, Date of pro, Condition, water level gauge Report sheet on flow record over 24hr Experience to fill Flow and time data sheet		Ultrasonic flow meter	Lead WSP(2) (2)KEWI (0)Embu (0)Meru Manual logging		KEWI/ Lead WSP
c7	Pressure recording	Pressure Monitoring and recording	Experience and record sheets on pressure records Pressure on customer tap and connection point, time,	1 day	Pressure data logger	KEWI (2) (2)KEWI Manual logging, (0)Embu (0)Meru	Provide by KEWI	KEWI/ Lead WSP
		Water Quality	Sampling and test of Chl residual, Ph, Turbidity, conductivity(WT and Rsr & C tap)		Sampling bottle, portable water testing devices	KEWI (0)/ Lead WSP(0) YES Chem. Lab. .KEWI/Lead WSP	Provide by KEWI	KEWI/ Lead WSP
c8	Leak detection on pipeline	Leak detection	Experience on leak detection Location data, customer complain information, Chl colour cheque at houses points	1 day	Leak detector	KEWI (2) (2)KEWI (0)Embu (0)Meru	Provide by KEWI	KEWI
		Leak correlator	Experience on leak noise correlation Leak location data sheet, digging ground, how much volume is lost, colour sampling		Noise leak correlator	Lead WSP(1) (0)KEWI (0)Embu (1)Meru		
c9	Data analysis	Computing the NRW state	Water balance sheet Estimate the NRW of the DMA	1 day	Creation of data sheets	KEWI/ Lead WSP	Provide by KEWI/ Lead WSP	KEWI/ Lead WSP
c10	Overview and evaluation of the OJT training	Presentation	Group presentation	½ day		KEWI/ Lead WSP/ Trainees	Provide by KEWI	KEWI

		group)=10	Data sheet, Volume diff of CMR & TM, Typ, custReg No, Mtr, No, Ser No, Date of pro, Condition			(0)Meru	WSP	
		Tentatively remove the existing meter and install new one	Experience on correct meter installation practice		Pipe fittings and tools	Lead WSP (set) (yes)Embu and (yes) Meru	Provide by WSP	KEWI
		Removed meter testing	Data collection of accuracy test procedure		Water meter test bench	Lead WSP(1) (1)Embu (1) Meru	Provide by WSP	Lead WSP
c6	DMA zonal Bulk meter	Meter installation conditions	Observe existing meter installation for comments	1day	Cleaning tools	Lead WSP(Set) Yes (Set)Embu/ Meru	Provide by KEWI	KEWI
		Field accuracy test	Experience to fill Flow and time data sheet		Ultrasonic flow meter	KEWI (2) (2)KEWI (0)Embu (0)Meru		KEWI
			Data sheet, Volume diff of ZM & UFM, Typ, Size, Mtr No, Ser No, Date of pro, Condition, water level gauge		Ultrasonic flow meter	Lead WSP(2) (2)KEWI (0)Embu (0)Meru Manual logging		KEWI/ Lead WSP
		Night flow measurements	Report sheet on flow record over 24hr		Experience to fill Flow and time data sheet			
c7	Pressure recording	Pressure Monitoring and recording	Experience and record sheets on pressure records		Pressure data logger	KEWI (2) (2)KEWI Manual logging, (0)Embu	Provide by KEWI	KEWI/ Lead

3) GIS 研修に関する KEWI と Kericho WSP の対応

対応策(案)

GIS コースについては、それまで KEWI と Kericho WSP とが協力して、合同研修を実施してきた。両者にとっても、これまで整備してきた機材を利用し、研修で培ってきた経験・技術やノウハウを活かすことを希望している。そのことにより、より魅力的な研修を実施できるものと考えられる。そのため、JICA 専門家は GIS コースの初期検討を行い、幾つかの案を彼らに示した結果、以下の案に対して KEWI と Kericho WSP からコースへの取り込みを検討したいので指導してほしいとの希望があった。ただし、[g] と [h] については、[i] に向けた準備的な項目であるため直接希望を確認していない。また、[f] については KEWI からの提案である。

- [a] 最新の衛星画像を希望する解像度でインターネット上からダウンロードし、ベースマップとして容易に位置合わせするための低価格ソフトを使用する。
- [b] 高額かつ維持管理が難しい大判のプロッター及びスキャナの代用品として、インクの詰め替えができる低価格 A3 サイズ複合機(インクジェットプリンター/スキャナ/コピー)を Adobe Acrobat の分割ポスター印刷機能と画像結合ソフトと共に使用する。
- [c] 7インチ(片手で持てる最大の大きさ)の GIS 機能付き低価格タブレットフォンに、無料 GIS ソフトと無料衛星画像のベースマップを入れ、現場での様々な作業に GIS を応用する。
- [d] 最大水圧が記録できる低価格アナログ水圧ゲージを多数用いて、容易に広い地域での夜間最高水圧の分布を測定し、QGIS のプラグインソフトにより、水圧等高線を作成する。また、この結果に基づき、水圧コントロールが必要な地域を特定する。
- [e] MWI の NRW ユニットの予算を用いた機材調達の支援(KEWI では、GIS 用 PC 教室の改善、Kericho WSP の GIS トレーニングセンターではパイプロケーター等の調達を希望。
- [f] 水理解析への利用を考慮した標準 GIS モデルのレイヤー構成や属性データの見直し。

- [g] 水理解析ソフトを使わない、簡易的な GIS による施設改善の検討。
- [h] MS エクセルや無料水理解析ソフト (EPANET2) などを利用した初歩的な水理解析。
- [i] GIS データから変換した水理モデルを用いた本格的な水理解析。

上記の[a] については、KEWI 及び Kericho WSP での GIS コースを受講した各 WSP 職員による GIS 整備の開始を著しく容易にする、もしくは整備中の GIS の著しい改善に繋がる可能性が高い。そのため、上述の内容について聞き取り及び協議を行うため KEWI 及び Kericho WSP を訪問した際に[a]についての指導も合わせて行った。この指導は役に立つと大変好評であった。

[b] については、[e]の機材調達にも関連しており、既に MWI 無取水ユニットの今年度の予算の項目の見直し案に、それら2ヵ所に対する A3 サイズ複合機の調達を組み入れている。[c]については、JICA 専門家の 7 インチ・タブレットフォンを、比較的 GIS 整備が進んでいる数ヵ所のパイロット WSP に貸し出し、トライアルのための準備をしている状況にあり、トライアルの結果が出次第、KEWI 及び Kericho WSP とも共有する。トレーニングに比較的時間がかかる[d]及び[f]～ [i]については、幾つかのパイロット WSP を対象に実施する予定だが、その際、KEWI と Kericho WSP の GIS センターについても巻き込んで、合同トレーニングを実施できるかの検討が必要である。

特に最後の項目である[i]については難易度が高く、トレーニングが長期間になる可能性がある。そのため、今後、他の業務の進捗や専門家投入の残り期間などを考慮し、KEWI と Kericho WSP が関与する内容を柔軟に調整し、トレーニングが途中で終わるような状況にならないように、慎重に対応する必要がある。

KEWI と GIS トレーニングセンターに水理解析の指導を行う場合の留意点

GIS データを用いた水理解析は、送配水計画の策定を専門とするコンサルタントとしても難易度が高い業務である。また、技術を習得した職員がより給与の高い民間会社の職を求めて離職する可能性も比較的高いため、指導する技術の持続発展性を確保するために、十分な配慮と局所的な成果で終わらないような活動の展開についても検討する必要がある。これらの点についても考慮し、水理解析などの幅広い GIS 応用のためのトレーニングについて、KEWI の GIS 講師と協議した結果を以下にまとめる。

- [a] WSP に対して GIS データを用いた水理解析についてのトレーニングを実施する場合、GIS 職員と送配水施設についての経験のあるエンジニアが、ペアになって取り組む必要がある。KEWI や Kericho WSP の GIS 講師がトレーニングに係わる場合にも、同様にそれぞれの組織の水道エンジニアの協力が必要である。
- [b] KEWI は教育機関であり、WSP より先に進んでいる必要がある。そのため、パイロット WSP への水理解析のトレーニングの際に、KEWI の講師が事前にトレーニングのための資料準備に協力し、関連知識を一定程度習得し、トレーニング当日にはアシスタント講師として参加することが理想的である。そうすることで、KEWI の講師が、徐々に学び、プロジェクトが終わるまでに、水理解析の指導がある程度実施できるようになる。

- [c] 水理解析等の幅広い GIS の応用の内、トレーニング中にデータ収集する必要がなく、以前に準備した情報により実施できる部分については、Kericho WSP での実践的な GIS コースではなく、KEWI の GIS コースにも取り入れた方が良い。

次に、上記の意見を参考にして立案した、パイロット WSP 等を対象する水理解析のための合同研修に、KEWI と Kericho WSP の GIS 講師等を巻き込む方法の一案を記述する。これらの内容については、リーディング WSP に対する水理解析についての研修が行える状態になる第1フェーズの終盤までの関係者と調整することが望まれる。

- [a] 第1回の水理解析合同トレーニングをリーディング WSP である Embu WSP のボードルームにて、Embu WSP、Meru WSP 及び Nyeri WSP の職員を対象に行う(Nyeri WSP からは、情報提供などの面で多くの協力を得ているため、彼らの希望に基づき Embu WSP での水理解析トレーニングに招待する。そうすることで、Nyeri WSP で行われている圧力管理の経験から学ぶこともできる)。
- [b] また、第2回の水理解析合同トレーニングを、Kericho WSP の GIS トレーニングルームにて、Kericho WSP、Nakuru WSP、Kisumu WSP 及び Eldored WSP を招いて行う。
- [c] KEWI の講師には、これら2回の合同トレーニングに、アシスタント講師として参加してもらう。Kericho WSP での第2回合同トレーニングでは、Kericho WSP の GIS 講師にも、フィールドワークなどを含む一部の内容についてアシストをお願いする。
- [d] 3回目の水理解析合同トレーニングを、残りのパイロット WSP である Mavoko WSP、Ruiru-juja WSP、Kilifi-mariakani WSP 及び Nyahururu WSP を対象に、KEWI の GIS 用パソコン教室にて開催する。このトレーニングでは、KEWI 及び Kericho WSP の GIS 講師等に、できるだけ多くの内容の直接指導をしてもらう。さらに水理解析に興味がある KEWI の他の講師にも参加してもらうことで、KEWI 全体の水理解析を含む幅広い GIS の応用についての指導能力を向上させる。

今後、他の本プロジェクトの他の活動の進捗を考慮しながら、このような KEWI 及び GIS トレーニングセンターの巻き込みが、限られた専門家の派遣期間の中で実現できるかを慎重に検討する。また、実施することが難しいと判断した場合には、アプローチや巻き込む頻度を変更するなど柔軟に対応する。

(6) 施設の改善及び機材調達計画

既設施設の改善計画①、②、③は、イメージ図と改善フロー図を図 3-6、3-7 に示す。

1) KEWI の施設改善策

配管網実習場の改善

①改善項目

- 配水管網に設置されている流量計、アナログ式水圧計、バルブ類の内、故障機材は 修理/交換する。
- 既存の 8" PVC 管に複数の漏水ポイントを設け、一部分、埋設する。

②研修/実習で体験する項目

- 一部埋設された PVC8”管路で非金属管路探知を体験する。
- 漏水ポイントの漏水量は弁操作で調整し、漏水地点の特定は相関式漏水探知、音聴棒/電子漏水探知等を使用し、漏水地点を特定体験する。
- ピット内の PVC 管に外付け超音波流量計を設置し、時間/水圧/流量変化を計測体験する(DMA の漏水量予測のための計測訓練)。
- 将来、配水量分析するためのデータ収集を体験する。

給水管の漏水探査実習場の新設

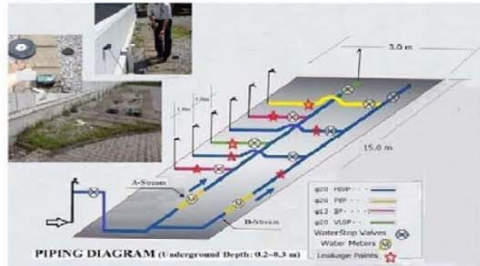
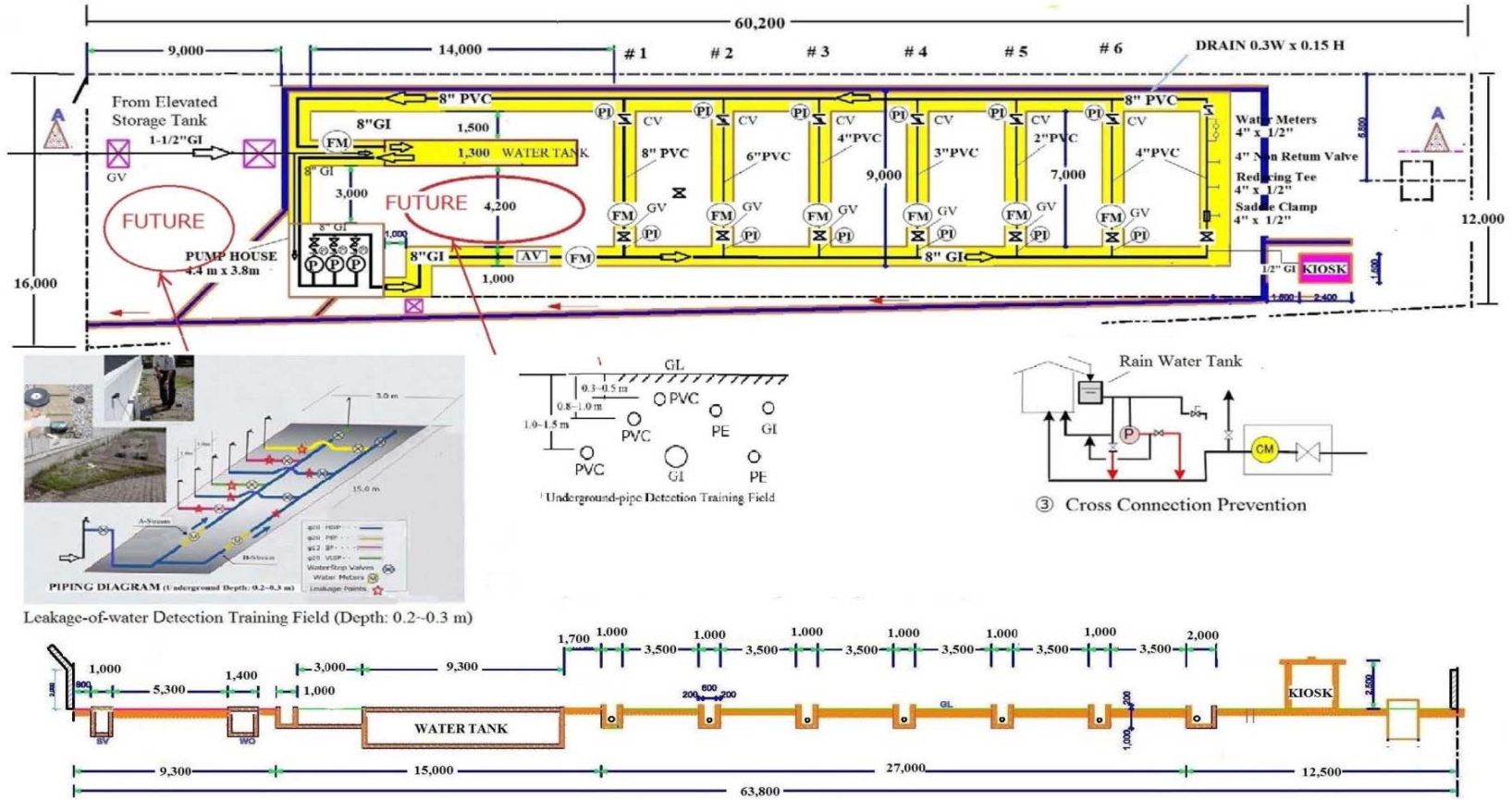
- 既存配管網研修施設内に、給水管の漏水調査の実習場を建設する。
- 使用する漏水探知器は、音聴棒/電子漏水探知器で、機器の特徴、取扱方法、維持管理方法を学習する。
- 各種の探知器で漏水音を聞きながら、漏水音と疑似音の違い、また漏水音が小さいと漏水発見が難しいことを体験する。
- 特定された漏水地点を掘り起こし、洩れ量の予測を体験する。
- 水道メータ/水圧計の読み方、クロスフローに起因するメータの測定誤算を体験する。
- 漏水か否か、残留塩素試薬と伝導率計で水質試験を体験する。
(pH 計/リトマス試験紙、塩素比色法判定試薬 (DPD : Diethyl Para phenylene Diamine)、携帯電気伝導測定器、等)

埋設管路の探査実習場の新設

- 既存配管網研修施設内に、金属管路を調査する実習場を建設する
- 鋼管・樹脂管を埋設し、金属探知機の探知能力を体験する。
例:-埋設された(0.5~1.0 m)小口径の PVC/PE の探知能力の実習
-埋設された(0.5~1.0 m)小口径の鋼管の探知能力の実習

R-1 EXISTING TRAINING PLATFORM
(FRENCH CO-OPERATION, Sep 2006)

Area: About 900 m²
Total Pipe Length : About 156 m
(SCD 8" PVC 8"-2")



Leakage-of-water Detection Training Field (Depth: 0.2-0.3 m)

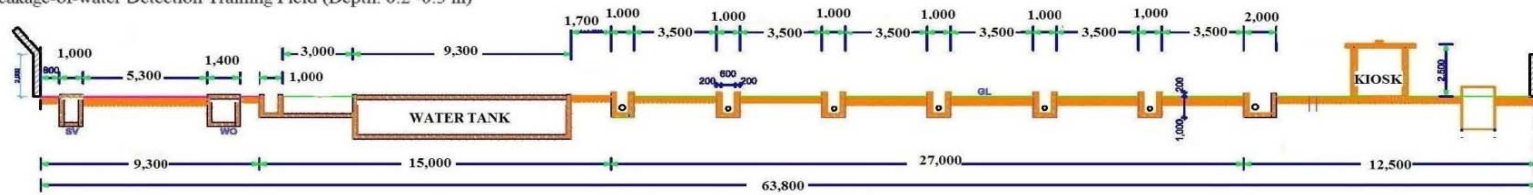
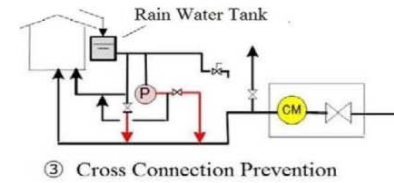
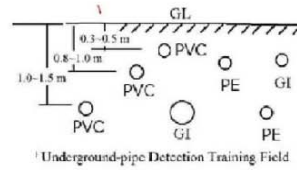


図 3-6 改善イメージ図

DRAFT (KEWI/JICA;2017-01-10)
 Improvement Plan of Existing Training Platform for the Distribution Network

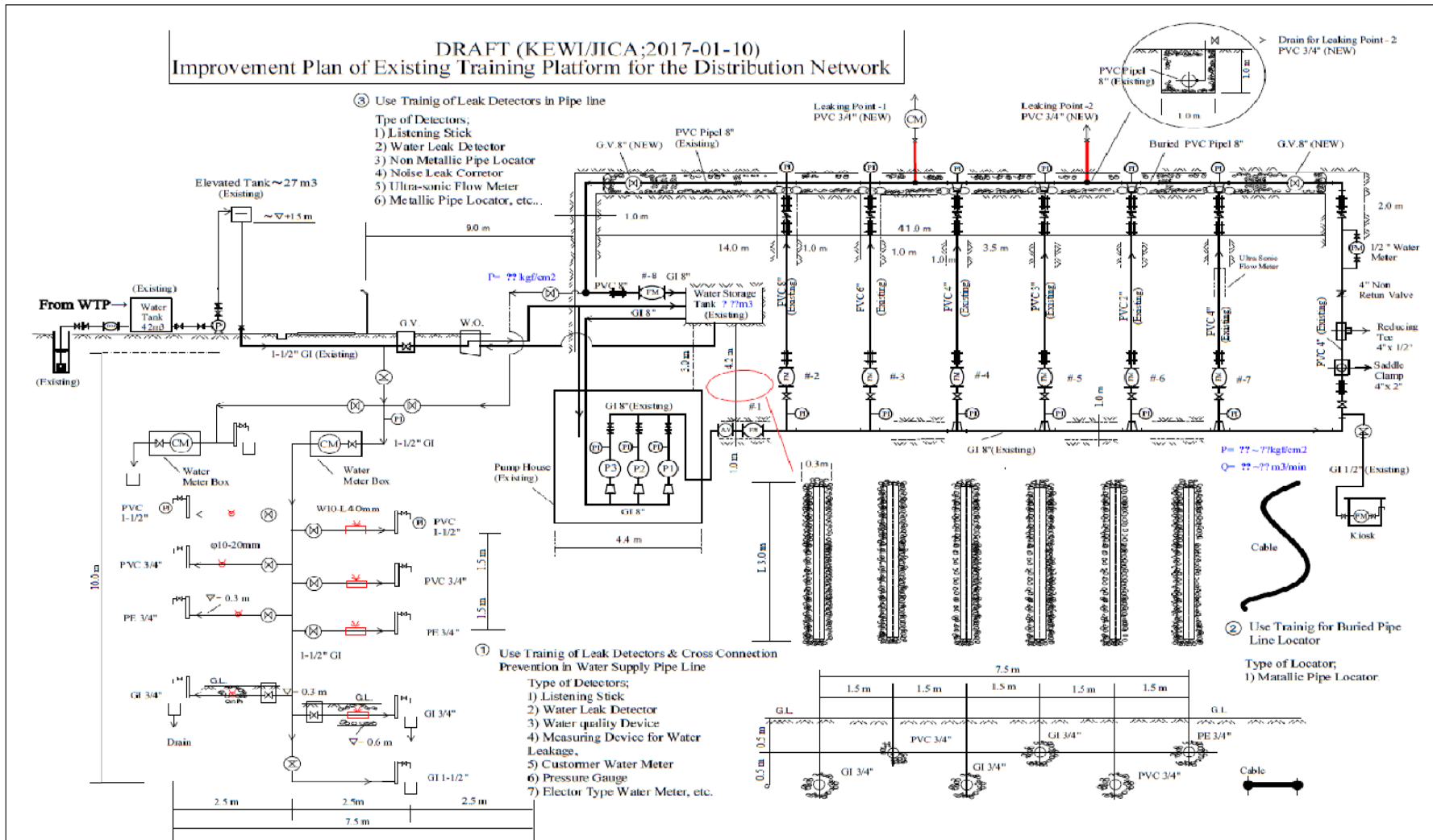


図 3-7 改善フロー図

2) KEWI の機材計画

漏水探知研修機材の改善策の検討

研修/実習場の整備に伴い、使用する漏水探知機材の保管状況は良い。尚、研修中に故障した機材は、早急に修理し、正常な状態で保管することが重要である。

表 3-11 実習で使用する機材

Quantity (EXISTING)	Description	Use for:		
		① Leak Detector in Water Supply pipe, etc.	② Water Pipe Line Locator	③ Leak Detector in Water Pipe Line, etc.
6	Listening Sticks	YES		YES
2	Water Leak Detectors	YES		YES
0	Noise Leak Correlator			YES
3	Electro Type Water Meter Tester	YES		
2	Ultra-Sonic Flow Meter			YES
8	Digital Flow Meter			YES
2	Non Metallic Pipe Locator			YES
3	Metallic Pipe Locator		YES	
15	Digital Pressure Gauges	YES		YES
3	Pumps			YES
	Plug (Stop Valve)			
13	Gate Valve			YES
1	Customer Flow Meter W/ meter Box	YES		

Pipe Workshop 機材の改善策の検討

① 研修機材の改善項目

この Workshop では、配水管接続、サドル分岐、樹脂管の接続、接続管の水圧テスト、水道メータ精度管理を研修できる機材を整備する必要がある。

- 水道メータ精度管理施設の整備
- 老朽/故障水道メータの分解/組立/洗浄場所の整備
- 接続給水管の水圧試験場所の整備、水道メータの圧力損失測定設備の整備
- 将来、各種配水管/給水管の接続技術の研修 (HDPE バット接続装置、他)
- 将来、止水設備の整備 (例、サドル不断水分岐機器備)

水道メータ検査試験機の整備

通水試験台の上に複数の試験水道メータを直列に並べ、ポンプなどで一定流量の水を流し、基準タンクに貯留した水量と試験水道メータの計量値を比較し、各試験水道メータの計量精度 (器差) を算出し、水道メータの性能を検査する装置である。

水道メータ精度管理施設の一環として、水道メータ検査試験機の整備は、商業・ロスの大いなる原因である水道メータの性能管理の不足を補う。

水道メータの精度管理の成否は、NRW 削減効果に大きく左右され、かつ、市民の公平な水道料金負担理念から、WSP はメータ管理の経験を強く望んでいる。

既存の旧式かつ水道メータの検査試験機の更新は重要な改善項目となっている。

研修機種選定上の留意点

KEWI では、基礎的な水道メータの検査試験の手順、器差の評価方法を実習するため、単純かつ、一度に複数の水道メータが検査でき、JISB8570-2013 (相当基準) に定

められている性能試験条件を満たす検査試験機とすることが望ましい。尚、設置場所は Pipe Workshop とする。

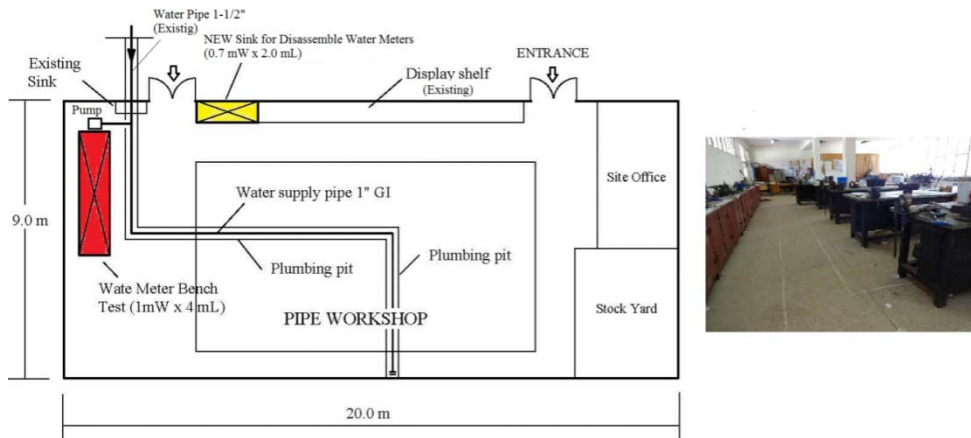


図 3-8 水道メータ検査試験機配置図 (案)

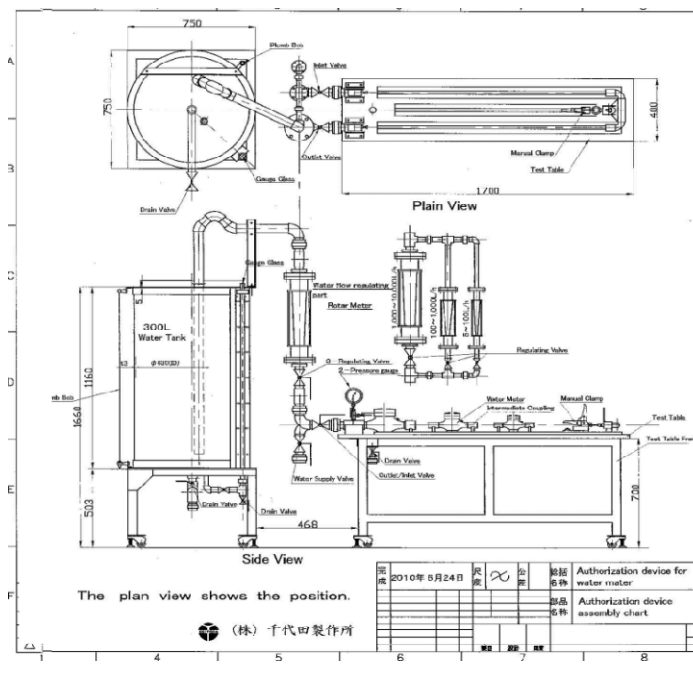


図 3-9 水道メータ検査試験機の例 (Embu 納入機種)

- 検査試験機の仕様 (計画案)
- 設置面積: 約 10m² (4.0mL × 1.0mW × 2.0mH)
- 検査水道メータ口径; 1/2", 3/4", 1", 試験水道メータ数: 10個
- 計測流量範囲: 5L/hr. ~ 10,000L/hr
- 流量計測範囲: φ 15 mm (5~100 L/hr.) から φ 50mm (1,000~10,000 L/hr.)
- 水タンク: 300L 及び加圧用ポンプ: 1 台、
- 材質: SUS304、配管材: SUS304 / ブロンズ

老朽/故障水道メータの分解/組立/洗浄場所の整備

- 各種の老朽/故障を分解し原因を特定する流し台、作業工具を整備する。
- 修理メータは、水道メータ検査試験機で器差試験を実施、器差の計測を体験する。

漏水水質分析機材の改善策の検討

- 水質分析器具の用途を以下に示す。
- 特に、家庭内給水が違法接続/盗水か否か顧客立会での試験を経験する。
- 漏水管の原因調査の一環として土壌 pH 計測を体験する。
- 整備する携帯機材を以下に示す。
- pH 計/リトマス試験紙
- 塩素比色法判定試薬 (DPD: Diethyl Para phenylene Diamine)
- 電気伝導測定器
- ビーカー (50ml/100ml)、メスシリンダー、ガラス棒、純水/水道水、サンプリング器具

3) 調達機材

相関式漏水探知機

従来の漏水探知器(漏水音の路面音聴調査)とは異なり、埋設管の漏水音が伝播している管路上に2箇所(ピップアップセンター)を設置し、漏水点から発生した漏水音がピップアップに到達する時間差の距離を計算し、容易かつ効率的に漏水地点を特定できる機材である。

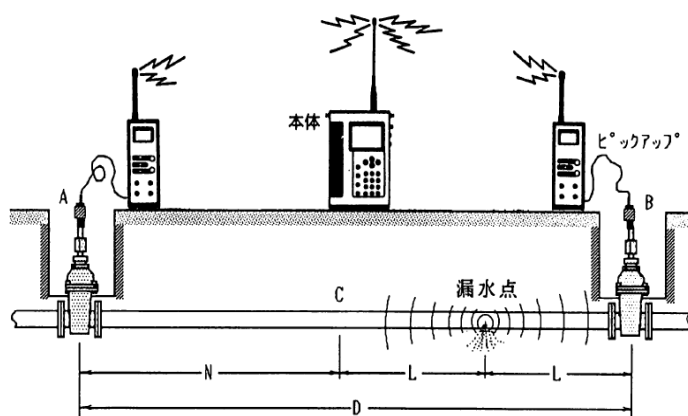


図 3-10 相関式漏水探知機の調査方法

水道メータ検査試験機

1)にて記載した通り。

漏水探知実習場の整備に係る機材

既存の機材は、主に、ポンプ設備、流量計(直読式)、水圧計、バルブ、チェック弁、空気弁などの汎用機材である。この機材はローカルで入手が可能で、現在、ケニアの予算で修理/交換を検討中である。

(7) 対応策の予算確保

ベースライン調査の中で、MWI の NRW ユニットの 2016/2017 年度予算 (60 million Ksh、約6千万円相当) を部分的に KEWI の関連する研修プログラムの改善に用いることが可能であることが分かった。そのため、KEWI は、当初以下の 5 項目について MWI に資金援助の申請を行った。

- 1) リーディング WSP との実践的な無収水合同研修の費用
- 2) 漏水探査実習用のプラットフォーム整備費用
- 3) 実習に用いる相関式漏水探査機 (1 台)
- 4) GIS 用 PC 教室の施設改善費用 (25 台の PC を含む)
- 5) メータテストベンチの調達費用 (10 個以上の 1/2~1”メータを同時に検査できるもの)

しかし、今年度の NRW ユニットの予算では、要請があった全ての項目に対応することはできないため、MWI 側から KEWI に対して要請内容の絞り込みが要求された。その結果、KEWI は上記 5 項目の内、彼らが特に優先度が高いと判断した項目①~③に、JICA 専門家が薦めた少額機器 (音聴棒 10 本と GIS コース用の A3 サイズ複合機) を加えた、合計 10 million Ksh 程度の支援を MWI に対して再度要請した。

MWI 無収水ユニットの今期予算での調達が要請された相関式漏水探知機については、ケニア国内の機材販売業者から調達される必要がある。日本製の漏水探知器等を扱っている業者はケニアには存在しない。そのため、JICA 専門家は、MWI により調達される機器については、ケニア国内に扱っている業者があり、比較的信頼性が高いイギリス製、ドイツ製などの機器が調達されるように現在支援している。なお、④、⑤については、来年度以降の MWI 予算の中で対応することが予定されている。

(8) 対応策の妥当性の評価

KEWI からの本要請に係わる妥当性、実現性の検討結果を以下に示す。

ケニア国の上位計画との位置付け

STRATEGIC PLAN 2016-2020 (KEWI : June 2016 発行) に基づき、KEWI 無収水ユニットは Consultancy & Services の一環として、NRW 削減活動を促進するため、NRW ユニットの人材強化、新研修技術の導入、研修コースのレベルアップ等が義務付けられている。

本要請を実施することで新機材を調達・活用し、NRW 削減/改善への寄与の研修プログラムの改善、研修レベル強化、人材能力は図られることは、ケニア国の上位計画と一致する。

協力要請の概要

NRW 戦略計画に準じて「NRW 削減」を効果的に実施する、研修プログラムを策定するに際し、コマーシャル・ロスに起因する水道メータの精度管理及びフィジカル・ロスの一因である配水管/給水管からの漏水を探知する機材を整備することは、WSP 現場が必要な NRW 削減対策技術を高め、かつ、研修プログラムをより現場/WSP の要請に沿った研修コースが提案できる。KEWI は、以下の機材の調達が不可欠と判断している。

- 1) 相関式漏水探知機、
- 2) 水道メータ検査試験機、
- 3) 漏水探知実習場の整備に係る機材

KEWIはこの機材の内、相関式漏水探知器と水道メータ検査試験機の調達を実施された場合、これらの機材を活用/体験出来る受益者数は、短期コース/長期コース全体で年間 585名、これは全学生の約48%に相当し、その効果は高いと評価している。

他支援機関の関連事業との整合性

- 他支援機関の動き
これまで、2006年にフランス政府による水道メータ検査試験機が供与された経緯があるが、その後、機材の供与は実施されていない。
- 整合性
本要請の実施は、他支援機関による改善事業を補完し、他支援機関の関連事業と相乗効果が得られる。

現地調査結果からの留意点事項

- O/M 予算の確保が不可欠
KEWIの年間、NRW削減機材のO/M予算が全く確保できていない。このため、機材の精度管理、機材の稼働率の向上、施設の改善ができないため年間のO/M予算を確保する必要がある。KEWIの独立性を確保しつつ、今後もMWIとの連携により、予算を確保することが望まれる。
- 機材の測定精度の管理不足
現状の研修/実習設備は常に整備され、正確な計測が困難である。実習設備は、維持補修され、正常に計測/探査が出来るように管理する必要性を研修生に教える必要がある。正確なデータ収集は、データ解析の信憑性/合理性が正しく評価され、事業経営者が指標判断する際、正確なデータの提供が可能となる。教育機関としての施設整備・管理についても実践する必要性が高い。

(9) モニタリング指標

以下に、2017年3月15日に実施された第2回JCCにおいて共有された成果3の活動の進捗(表3-12)のモニタリングの状況を示す。

表 3-12 成果3の活動の進捗(2017年3月時点)

3-1 KEWI studies current status of NRW reduction courses and its challenges.	すでに完了。
3-2 KEWI reviews NRW reduction training strategies and course contents.	すでに完了。
3-3 KEWI, in collaboration with leading WSPs (Embu and Meru, etc.), conducts on-site NRW trainings.	第一回合同研修を5月に試験実施するための協議を3者で進めている。
3-4 KEWI incorporates on-site NRW trainings into NRW course contents and materials.	合同研修により現場研修を実施する。
3-5 KEWI incorporates the results of review by MWI NRW Unit into NRW course contents.	レビュー結果が出次第、研修内容に反映する。
3-6 KEWI conducts trace studies of NRW reduction course participants.	実施に関する計画を策定中。

<WSP、WSB 及び County> (成果4)

(1) 調査項目

1) WSP の現地調査

ベースライン調査では、ケニア国から要請のあった 15 カ所のパイロット WSP 候補と本プロジェクトの詳細計画策定調査時に選定された 2 カ所のリーディング WSP (Embu と Meru) の現状などについて調査した。15 カ所のパイロット WSP 候補の内、11 カ所 (Eldoret、Nakuru、Kisumu、Nanyuki、Nyahururu、Isiolo、Kilifi-Mariakani、Kwale、Mavoko、Limuru 及び Kiambu) は詳細計画策定調査時に候補として選ばれており、他の 4 カ所 (Nzoia、Machakos、Ruiru-juja 及び Chemususu) については詳細計画策定調査後にケニア側プロジェクト関係者によって候補として選定された。このベースライン調査の最大の目的は、15 カ所のパイロット WSP 候補の中から無収水削減の全国展開を考慮し、各 WSB が管轄する地域ごとに、将来他の WSP を支援できる可能性がある比較的パフォーマンスの高い WSP をパイロット WSP として選択することであった。

ベースライン調査での各 WSP に対する主な調査項目を以下に列記する。

各 WSP に対する主な調査項目

- a) 過去の無収水率の推移
- b) 水道普及率、給水時間、接続数などの基本情報
- c) 無収水削減計画の策定及び実施状況
- d) 無収水削減に係わる組織体制
- e) 無収水削減に係わる技術力 (GIS、無収水のモニタリング、水圧管理、漏水探知、管路の維持管理、顧客メータの精度管理、盗水対策などの状況)
- f) 財務状況
- g) 無収水削減に係わる機材の保有状況
- h) 他ドナーの係わり

2) 関連する WSB 及びカウンティの現状調査

このベースライン調査では、パイロット WSP 候補に係わっている 7 カ所の WSB (2 カ所のリーディング WSP を管轄する Tana WSB 以外) と 9 カ所のカウンティ (Kisumu、Nakuru、Baringo、Uasin Gishu、Bungoma、Laikipia、Isiolo、Kilifi 及び Kwale) に対しても現状調査を実施した。それらに対する主な調査項目は以下の通りである。

各 WSB に対する主な調査項目

- a) 他ドナーのパイロット WSP への係わり
- b) WSB によるパイロット WSP への支援状況
- c) WSB 管轄下の WSP に対する無収水削減支援及びモニタリングの状況

各カウンティに対する主な調査項目

- a) パイロット WSP に対する財政面の支援状況
- b) パイロット WSP に対する盗水対策に係わる支援状況
- c) カウンティにおける水関連の政策や条例等の策定状況

(2) 調査方法

ベースライン調査では、表 4-1 に示すパイロット WSP 選定のための評価表を用いた調査対象 WSP の評価・比較に加え、WSP、WSB 及びカウンティのそれぞれに対して作成した質問票に基づいて聞き取り調査を実施した。評価表は事前に JICA 側と MWI 間で合意されたパイロット WSP 選定のための各前提条件及び各選定基準の評価項目に基づいて作成されており、各 WSP を点数で評価し、比較できるようになっている。評価表に示されている通り、9 つの前提条件(他ドナーとの係わり、NRW ユニットの存在、メータ設置率、WSP の規模、治安状況などについての条件)に対する合致状況と 4 つの選定基準(無収水削減計画に基づく活動実施の状況、組織力、技術力及び財務状況)ごとの得点(それぞれ4~7項目の5段階評価に基づく)、ならびに総合得点が計算できるようになっている。このパイロット WSP の選定では、様々な無収水削減状況にある WSP を選ぶため、無収水率については得点の計算に用いていない。

表 4-1: パイロット WSP 選定のための評価表(前提条件及び選定基準の評価項目)(1/2)

Prerequisite Criteria							
Same as the Pre-selection Criteria			1) WSPs that are not receiving other development partner's assistance with similar activities of the Project. (Yes if there has not been recently)				
			2) WSPs that have established NRW units.				
			3) O&M cost recovery is 80% or more.				
			4) Metering ratio is 75% or more.				
			5) Water coverage ratio is 30% or more.				
			6) Water service hours are 10 hour or more.				
			7) Service connections are more than 5,000. (Medium or Larger WSP (number of towns))				
			8) WSPs in location acceptable under JICA's security guidelines.				
Additional Criteria							
			9) Counties, WSBs and WSPs have willingness to sign Memorandum of Understanding (MoU).				
Selection Criteria	Aspect to Evaluate	Weight (note 1)	Level Assessment				
			Level 5	Level 4	Level 3	Level 2	Level 1
1: NRW reduction activities based on NRW plan 【Allocation: 20 Points】	1) Whether the County has a clear water supply development strategy.	1	Strategy/plan of the County includes a pipe replacement plan and mentions about NRW (e.g. in its county integrated development plan)	Strategy/plan of the County does not include a pipe replacement plan but it mentions about NRW.	Strategy/plan of the County includes a pipe replacement plan but it does not mention about NRW.	-	Strategy/plan of the County does not include a pipe replacement plan nor mentions about NRW.
	2) Whether the WSP uses subsidy from the County.	1	The WSP does not use subsidy from the County for its water supply services.	The WSP uses subsidy from the County (excluding payment for services).	-	-	The WSP applies for subsidy to the County but not able to receive it.
	3) Whether the WSP has an NRW reduction plan.	1	The WSP has an annual NRW reduction plan for this year.	-	-	-	The WSP does not have an annual NRW reduction plan for this year.
	4) Whether the WSP has been implementing the NRW reduction plan.	2	The WSP carries out NRW reduction activities along the NRW reduction plan.	The WSP has NRW reduction plan but its NRW reduction activities are not following the plan.	The WSP carries out NRW reduction activities but does not have NRW reduction plan	-	The WSP does not have NRW reduction plan and does not carry out NRW reduction activities.
	5) Whether the WSP periodically reports NRW reduction activities to its Board of Directors	1	The WSP periodically reports its NRW reduction activities to its Board of Directors (in addition to the monthly report to WSB/WASREB).	-	The WSP reports its NRW reduction activities to its Board but not periodically.	The WSP currently does not report the activities to its Board but has a plan to report in the near future.	The WSP neither report the activities to the Board nor have a plan to report in the near future.

表 4-1: パイロット WSP 選定のための評価表(前提条件及び選定基準の評価項目) (2/2)

Selection Criteria 2: WSP's Organization and structures necessary for NRW reduction 【Allocation: 20 Points】	1) Whether the NRW Unit has allocated necessary and adequate staff for NRW reduction activities.	2	The roles of the NRW Unit is clear and sufficient staff is allocated to implement activities.		The roles of the NRW Unit is not clear but sufficient staff is allocated to the Unit.	The roles of the NRW Unit is clear but no prospect of having sufficient staff.	The roles of the NRW Unit is not clear and no prospect of having sufficient staff.
	2) Status of budget allocation for NRW reduction.	1.5	Budget for NRW reduction has been continuously allocated for three years or more.	Budget for NRW reduction has been continuously allocated for two years.	Budget for NRW reduction is allocated this year.		No budget is allocated for NRW reduction this year.
	3) Whether the WSP has an internal capacity building system such as OJT.	1	The WSP has a functioning internal capacity building system sufficient for various NRW reduction activities.	The WSP has an internal capacity building system for NRW reduction but it is not functioning well or not sufficient.	The WSP has internal capacity building system but not specific to NRW reduction.	The WSP does not have an internal capacity building system but it has a plan to develop the system.	The WSP neither have an internal capacity building system nor a plan to develop it.
	4) Whether the WSP has sufficient communication between commercial and technical staff for NRW reduction.	1	Communication between commercial and technical staff are sufficient for effective and efficient NRW reduction activities, which include monthly inter-departmental meetings for NRW reduction and use of information technologies.	Meetings between commercial and technical staff specifically for NRW reduction are held once a month.	Inter-departmental meetings for NRW reduction are not held once a month but NRW reduction activities and NRW ratios are usually discussed in monthly general meetings.	Inter-departmental meetings, where NRW reduction activities and NRW ratios are discussed, are held less frequent than monthly but at least quarterly.	Inter-departmental meetings, where NRW reduction activities and NRW ratios are discussed, are held less frequent than quarterly.
Selection Criteria 3: Technical capacity of WSP on NRW reduction 【Allocation: 40 Points】	1) Whether zoning and bulk meters are functioning.	2	NRW ratios for well-established sub-zones (i.e. DMA) are calculated monthly based on functioning bulk meters.	NRW ratios are partly calculated at sub-zones level every month while NRW ratios of all the distribution zones are calculated monthly based on functioning bulk meters.	NRW ratios of all the distribution zones are calculated monthly based on functioning bulk meters.	A single NRW ratio of all water service areas is calculated monthly based on functioning bulk meters.	A single NRW ratio of all water service areas is not calculated monthly based on functioning bulk meters.
	2) Whether maps of pipeline networks are well prepared and utilized.	2	A full-scale GIS database (including service pipes, customer meters, etc.) has been well-established, updated and well-utilized (e.g. for pipe rehabilitation planning, hydraulic analysis,	A full-scale GIS database (including service pipes, customer meters, etc.) has been established but it has some problems with completeness, update and/or utilization.	A preliminary GIS database has been established (including transmission and distribution branch mains).	Paper drawings are available for transmission and distribution trunk mains, but drawings of branch distribution mains are limited.	Available paper drawings of transmission and distribution trunk mains are limited.
	3) Whether the WSP properly controls the accuracy of customer meters.	2	High-accuracy customer meters (e.g. Class C) are used and systematically exchanged area by area in a cycle of less than 10 years.	High-accuracy customer meters (e.g. Class C) are used, and Customer meters are exchanged customer by customer both proactively (e.g. checking with billing system and field tests) and passively.	High-accuracy customer meters are not used, but Customer meters are exchanged customer by customer both proactively and passively.	Customer meters are only exchanged passively but promptly when found broken or customer complained.	Customer meters are only exchanged passively and not promptly when found broken or customer complained.
	4) Whether the WSP appropriately manages illegal water use.	2	Illegal connections are minimum.	Illegal connections are not minimum but there are no area where illegal connections are found repeatedly.	Illegal connections are found repeatedly in limited areas although proactive control measures are conducted.	Illegal connections are still common in many areas.	Illegal connections are widespread all over its service areas.
	5) Whether the WSP actively makes efforts to reduce leakage.	2	Various measures including step test are conducted for underground leakage detection in accordance to an effective and efficient strategy.	Multiple measures are proactively conducted for underground leakage detection.	Underground leakage detection is conducted rather passively only when the needs arises.	Regular patrol for surface leakage detection is conducted.	Regular patrol for surface leakage detection is not conducted.
	6) Whether the WSP repair leakage promptly	2	Taking less than one day on average to fix leakages once they are reported or detected.	Taking less than two days on average to fix leakages once they are reported or detected.	Taking less than three days on average to fix leakages once they are reported or detected.	Taking less than one week on average to fix leakages once they are reported or detected.	Taking more than one week on average to fix leakages once they are reported or detected.
Selection Criteria 4: Financial status related to NRW reduction 【Allocation: 20 Points】	1) Difference between Cash Flow Available for Debt Service and Total Debt (million KES) (note 2)	3	>50	21-50	11-20	0-10	<0
	> Cash Flow Available for Debt Service (mill KES)	-	-	-	-	-	-
	> Total Debt (mill KES)	-	-	-	-	-	-
	2) Liquidity Ratio (%) (note 3)	1.5	>25%	20-25%	15-20%	10-15%	<10%
	3) Liquidity Reserves as % of annual operating expenses (%)	1.5	>25%	20-25%	15-20%	10-15%	<10%
	4) O&M Cost Coverage Ratio (%)	1.5	>130%	120-130%	110-120%	100-110%	<100%
	> Grants Revenue (mill KES)	-	-	-	-	-	-
	> Grant Dependency for opex (%)	-	-	-	-	-	-
5) Collection Efficiency (%)	1.5	>95%	93-94%	90-92%	85-89%	<85%	
6) Average Tariff Differentia (%) (note 4)	1	>50%	35-50%	20-35%	5-20%	<5%	
7) Revenue Diversification (%) (note 5)	1	<10%	10-30%	30-50%	50-70%	>70%	

Note 1: Score = Weight x Level, and Point for each selection criteria = Total score / Max score x Allocated points; Note 2: Cash flow available to service debt payments (i.e. net operating cash flow + Interest repayments) - Total debt, which indicates utility's ability to service debt; Note 3: Liquidity reserves (i.e. cash & near cash reserves) / Current liabilities; Note 4: (Unit production cost - Average tariff) / Unit production cost; and Note 5: (Residential revenue - Institutional revenue) / Total revenue

ベースライン調査では、限られた調査期間と現地の治安状況を考慮して、Coast WSB 及び Northern WSB 管轄下の 5 カ所のパイロット WSP 候補 (Kilifi-Mariakani、Kwale、Nanyuki、Nyahururu、及び Isiolo) については、ローカルコンサルタントに情報収集業務を再委託した。ただし、これら 5 カ所の内、各 WSB 下のパイロット WSP 候補間の比較によりパイロット WSP として仮選定された 2 カ所の WSP (Kilifi-Mariakani 及び Nyahururu) については、パイロット WSP の選定を最終化する前に、補足調査として JICA 専門家が直接訪問し、現状を再確認した。

(3) 調査・評価結果

1) パイロット WSP の選定

評価表を用いた 15 カ所のパイロット WSP 候補の比較により、各 WSB の管轄地域から 1 カ所ずつ合計 7 カ所のパイロット WSP を選定した。図 4-1 及び表 4-2 に、各選定基準ごとのポイント計算に基づいてパイロット WSP 候補を比較した結果を、事前に選定されたリーディング WSP の評価結果とともに示している。これらの図表に示されているように、各 WSB 下のパイロット WSP 候補の内、最も総合得点が高い合計 7 カ所の WSP を無収水対策の分野における将来の良い見本として他の WSP をリードできようになるポテンシャルが比較的高いと評価し、パイロット WSP として選択した。

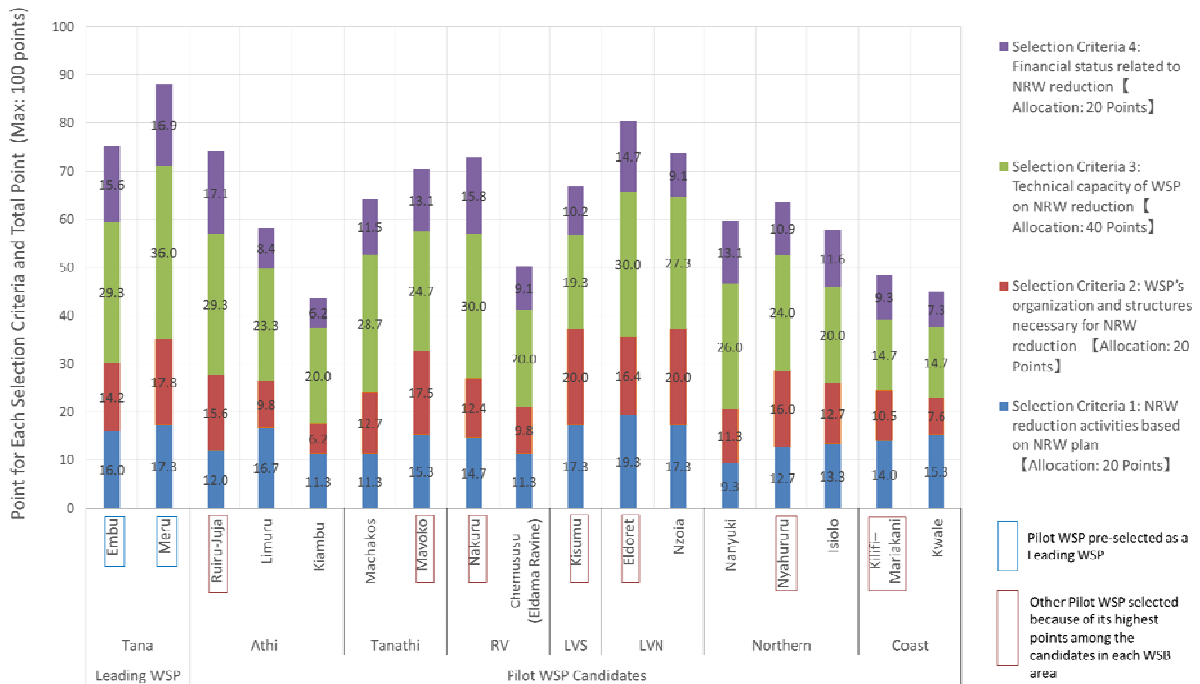


図 4-1: 選定基準ごとのポイントに基づく候補の比較とパイロット WSP の選定

表 4-2: パイロット WSP 選定のための評価結果比較表 (1/2)

Type of WSP in the Project		Leading WSP						Pilot WSP Candidates																	
WSB Area		Tana						Athi					Tanathi					RV							
WSP		Embu		Meru		Ruiru-Juja		Limuru		Kiambu		Machakos		Mavoko		Nakuru		Chemususu (Eldama Ravine)							
NRW Ratio / Difference from the Previous Year (as background information)	2007 / 08	58	-	27	-	31	-	-	-	-	-	-	-	38	-	46	-	82	-						
	2008 / 09	57	-1	28	1	34	3	-	-	38	-	41	-	35	-3	47	1	80	-2						
	2009 / 10	55	-2	23	-5	31	-3	33	-	58	20	48	7	37	2	53	6	80	0						
	2010 / 11	41	-14	23	0	31	0	30	0	37	-21	48	0	39	2	47	-6	69	-11						
	2011 / 12	40	-1	26	3	30	-1	32	2	42	5	62	14	34	-5	48	1	66	-3						
	2012 / 13	41	1	26	0	30	0	34	2	41	-1	57	-5	38	4	46	-2	71	5						
	2013 / 14	36	-5	29	3	29	-1	32	-2	38	-3	55	-2	46	8	32	-14	69	-2						
2014 / 15	49	13	19	-10	28	-1	32	0	35	-3	48	-7	46	0	37	5	70	1							
Prerequisite Criteria		Assessment																							
Same as the Pre-selection Criteria	1) WSPs that are not receiving other development partner's assistance with similar activities of the Project. (Yes if there has not been recently.)	-	Yes	-	Yes	-	Yes	-	Yes	-	Yes	-	Yes	SNV (2014-15)	No	-	Yes	VEI	No	-	Yes				
	2) WSPs that have established NRW units.	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes					
	3) O&M cost recovery is 80% or more.	126	Yes	109	Yes	114	Yes	115	Yes	94	Yes	113	Yes	101	Yes	111	Yes	14	No						
	4) Metering ratio is 75% or more.	100	Yes	100	Yes	100	Yes	100	Yes	100	Yes	100	Yes	94	Yes	94	Yes	35	No						
	5) Water coverage ratio is 30% or more.	68	Yes	57	Yes	77	Yes	45	Yes	37	Yes	57	Yes	66	Yes	90	Yes	45	Yes						
	6) Water service hours are 10 hour or more.	23	Yes	22	Yes	22	Yes	18	Yes	17	Yes	11	Yes	9	No	17	Yes	10	Yes						
	7) Service connections are more than 5,000. (Medium or Larger WSP (number of towns))	Large(2)	Yes	Large(2)	Yes	Large(2)	Yes	Medium (1)	Yes	Medium (1)	Yes	Medium (2)	Yes	Large(1)	Yes	Very Large(4)	Yes	Small(1)	No						
	8) WSPs in location acceptable under JICA's security guidelines.	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes							
Number of the pre-selection criteria which are currently not met.	0		0		0		0		0		1		1		1		3								
Additional Criteria	9) Counties, WSBs and WSPs have willingness to sign Memorandum of Understanding (MoU).				Yes		Yes		Yes		Yes		Yes		Yes		Yes								
Selection Criteria	Aspect to Evaluate	Assessment																							
		Value / Level	Point (note 1)	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point				
Selection Criteria 1: NRW reduction activities based on NRW plan [Allocation: 20 Points]	1) Whether the County has a clear water supply development strategy.	1		1		1		1		1		1		1		5		1							
	2) Whether the WSP uses subsidy from the County.	5		5		5		4		4		4		4		5		4							
	3) Whether the WSP has an NRW reduction plan.	5	16.0	5	17.3	1	12.0	5	16.7	1	11.3	1	11.3	5	15.3	1	14.7	1	11.3						
	4) Whether the WSP has been implementing the NRW reduction plan.	4		5		3		5		3		3		4		3		3							
	5) Whether the WSP periodically reports NRW reduction activities to its Board of Directors	5		5		5		5		5		5		5		5		5							
Selection Criteria 2: WSP's Organization and structures necessary for NRW reduction [Allocation: 20 Points]	1) Whether the NRW Unit has allocated necessary and adequate staff for NRW reduction activities.	3		5		5		2		1		2.5		4		1.5		1							
	2) Status of budget allocation for NRW reduction.	5	14.2	5	17.8	3	15.6	3	9.8	1	6.2	5	12.7	4	17.5	5	12.4	4	9.8						
	3) Whether the WSP has an internal capacity building system such as OJT.	4		4		3		3		2		2		5		2.5		2.5							
	4) Whether the WSP has sufficient communication between commercial and technical staff for NRW reduction.	2		3		4		3		3		3		5		4		3							
Selection Criteria 3: Technical capacity of WSP on NRW reduction [Allocation: 40 Points]	1) Whether zoning and bulk meters are functioning.	3		4		4		2		2		4		2.5		2.5		2.5							
	2) Whether maps of pipeline networks are well prepared and utilized.	4		4		4		2.5		2		3		2.5		4		2.5							
	3) Whether the WSP properly controls the accuracy of customer meters.	4	29.3	4	36.0	4	29.3	4	23.3	3	20.0	3.5	28.7	2.5	24.7	4	30.0	0	20.0						
	4) Whether the WSP appropriately manages illegal water use.	3		5		3		2		1		4		4		3		3							
	5) Whether the WSP actively makes efforts to reduce leakage.	3		5		2		2		2		2		2		4		2							
	6) Whether the WSP repair leakage promptly	5		5		5		5		5		5		5		5		5							
Selection Criteria 4: Financial status related to NRW reduction [Allocation: 20 Points]	1) Difference between Cash Flow Available for Debt Service and Total Debt (million KES) (note 2)	25	4	101	5	62	5	2	2	2	2	6	2	19	3	61	5	3.7	2						
	> Cash Flow Available for Debt Service (mill KES)	96	-	101	-	62	-	2	-	2	-	6	-	19	-	61	-	3.7	-						
	> Total Debt (mill KES)	71	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-						
	2) Liquidity Ratio (%) (note 3)	109	5	116	5	120	5	10	1	2	1	8	4	30	5	20	4	0.5	1						
	3) Liquidity Reserves as % of annual operating expenses (%)	49	5	63	5	43	5	3	1	8.4	2	1	6.2	6	5	11.5	11	2	13.1	9	1	15.8	1.6	1	9.1
	4) O&M Cost Coverage Ratio (%)	126	4	109	2	114	3	115	3	94	1	113	3	101	2	111	3	14	1						
	> Grants Revenue (mill KES)	0	-	0	-	0	-	0	-	11.7	-	2.1	-	0	-	0	-	4.4	-						
	> Grant Dependency for opex. (%)	0	-	0	-	0	-	0	-	11	-	2	-	0	-	0	-	24	-						
	5) Collection Efficiency (%)	89	2	107	5	100	5	92	3	84	1	79	1	92	3	96	5	101	5						
	6) Average Tariff Differentia (%) (note 4)	61	5	17	2	36	4	29	3	22	3	53	5	48	4	43	4	53	5						
7) Revenue Diversification (%) (note 5)	51	2	23	4	72	1	57	2	69	2	80	1	9	5	8	5	54	2							
TOTAL POINT (Max 100)		75		88		74		58		44		64		71		73		50							
Selection as Pilot WSP		Yes (Phase 1 to 2)		Yes (Phase 1 to 2)		Yes (Mainly Phase 2)		No		No		No		Yes (Mainly Phase 3)		Yes (Mainly Phase 2)		No							

表 4-2: パイロット WSP 選定のための評価結果比較表 (2/2)

Type of WSP in the Project		Pilot WSP Candidates																				
WSB Area		LVS				LVN				Northern				Coast								
WSP		Kisumu		Eldoret		Nzoia		Nanyuki		Nyahururu		Isiolo		Kilifi-Mariakani		Kwale						
NRW Ratio / Difference from the Previous Year (as background information)	2007 / 08	59	-	42	-	51	-	46	-	56	-	43	-	38	-	23	-					
	*2008 / 09	62	3	52	10	57	6	46	0	57	1	38	-5	39	1	59	36					
	2009 / 10	50	-12	25	-27	61	4	43	-3	57	0	51	13	39	0	50	-9					
	2010 / 11	49	-1	27	2	52	-9	36	-7	53	-4	48	-3	38	-1	42	-8					
	2011 / 12	50	1	29	2	46	-6	35	-1	51	-2	41	-7	43	5	41	-1					
	2012 / 13	47	-3	32	3	40	-6	33	-2	49	-2	43	2	47	4	38	-3					
	2013 / 14	42	-5	35	3	38	-2	35	2	49	0	35	-8	44	-3	32	-6					
	2014 / 15	49	7	45	10	43	5	35	0	46	-3	34	-1	47	3	46	14					
Prerequisite Criteria		Assessment																				
Same as the Pre-selection Criteria	1) WSPs that are not receiving other development partner's assistance with similar activities of the Project. (Yes if there has not been recently.)	VEI	No	SNV	No	SNV, WB	No	SNV	No	-	Yes	SNV	No	WB	No	WB	No					
	2) WSPs that have established NRW units.	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes						
	3) O&M cost recovery is 80% or more.	104	Yes	105	Yes	97	Yes	104	Yes	110	Yes	93	Yes	101	Yes	83	Yes					
	4) Metering ratio is 75% or more.	100	Yes	100	Yes	78	Yes	90	Yes	100	Yes	100	Yes	91	Yes	98	Yes					
	5) Water coverage ratio is 30% or more.	68	Yes	72	Yes	82	Yes	94	Yes	80	Yes	58	Yes	39	Yes	47	Yes					
	6) Water service hours are 10 hour or more.	24	Yes	15	Yes	22	Yes	23	Yes	20	Yes	11	Yes	14	Yes	8	No					
	7) Service connections are more than 5,000. (Medium or Larger WSP (number of towns))	Very Large(5)	Yes	Very Large(2)	Yes	Large(6)	Yes	Large(1)	Yes	Large(1)	Yes	Medium (1)	Yes	Large(3)	Yes	Large(1)	Yes					
	8) WSPs in location acceptable under JICA's security guidelines.	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes						
Number of the pre-selection criteria which are currently not met.	1		1		1		1		0		1		1		1							
Additional Criteria	9) Counties, WSBs and WSPs have willingness to sign Memorandum of Understanding (MoU).	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes						
Selection Criteria	Aspect to Evaluate	Assessment																				
		Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point	Value / Level	Point					
Selection Criteria 1: NRW reduction activities based on NRW plan [Allocation: 20 Points]	1) Whether the County has a clear water supply development strategy.	1		4		1		1		1		3		1		3.0						
	2) Whether the WSP uses subsidy from the County.	5		5		5		5		4		1		5		4						
	3) Whether the WSP has an NRW reduction plan.	5	17.3	5	19.3	5	17.3	1	9.3	1	12.7	5	13.3	5	14.0	5	15.3					
	4) Whether the WSP has been implementing the NRW reduction plan.	5		5		5		2		5		4		4		4						
	5) Whether the WSP periodically reports NRW reduction activities to its Board of Directors	5		5		5		3		3		3		2		3						
Selection Criteria 2: WSP's Organization and structures necessary for NRW reduction [Allocation: 20 Points]	1) Whether the NRW Unit has allocated necessary and adequate staff for NRW reduction activities.	5		4.5		5		3		3		3		3		3						
	2) Status of budget allocation for NRW reduction.	5	20.0	5	16.4	5	20.0	3	11.3	4	16.0	3	12.7	3	10.5	1	7.6					
	3) Whether the WSP has an internal capacity building system such as OJT.	5		3		5		3		5		3		2		1						
	4) Whether the WSP has sufficient communication between commercial and technical staff for NRW reduction.	5		3		5		2		5		4		2		2						
Selection Criteria 3: Technical capacity of WSP on NRW reduction [Allocation: 40 Points]	1) Whether zoning and bulk meters are functioning.	2.5		4		2.5		3.5		4		3		3		3						
	2) Whether maps of pipeline networks are well prepared and utilized.	4		3.5		4		3		1		1		1		1						
	3) Whether the WSP properly controls the accuracy of customer meters.	4	19.3	4	30.0	4	27.3	4	26.0	4	24.0	3	20.0	1	14.7	1	14.7					
	4) Whether the WSP appropriately manages illegal water use.	1		3		2		3		3		2		2		2						
	5) Whether the WSP actively makes efforts to reduce leakage.	2		3		3		2		2		2		1		1						
	6) Whether the WSP repair leakage promptly	1		5		5		4		4		4		3		3						
Selection Criteria 4: Financial status related to NRW reduction [Allocation: 20 Points]	1) Difference between Cash Flow Available for Debt Service and Total Debt (million KES) (note 2)	4	2	78	5	17	3	24	4	4	2	7	2	-208	1	5	2					
	> Cash Flow Available for Debt Service (mill KES)	8	-	78	-	17	-	24	-	4	-	7	-	7	-	5	-					
	> Total Debt (mill KES)	4	-	0	-	0	-	0	-	0	-	0	-	214	-	0	-					
	2) Liquidity Ratio (%) (note 3)	2	1	17	3	7	1	18	3	9	1	131	5	5	1	4	1					
	3) Liquidity Reserves as % of annual operating expenses (%)	1	1	18	3	14.7	6	9.1	10	1	13.1	3	1	10.9	9	1	11.6	1	9.3	4	1	7.3
	4) O&M Cost Coverage Ratio (%)	104	2	105	2	97	1	104	2	110	3	93	1	101	2	83	1					
	> Grants Revenue (mill KES)	5.5	-	8.3	-	0	-	0	-	0	-	0	-	0	-	22.3	-					
	> Grant Dependency for opex. (%)	1	-	2	-	0	-	0	-	0	-	0	-	0	-	16	-					
	5) Collection Efficiency (%)	94	4	108	5	91	3	93	4	95	5	101	5	98	5	76	1					
	6) Average Tariff Differentia (%) (note 4)	52	5	48	4	45	4	38	4	49	4	29	3	46	4	32	3					
7) Revenue Diversification (%) (note 5)	-23	5	53	2	36	3	-31	5	-17	5	29	5	7	5	4	5						
TOTAL POINT (Max 100)		67		80		74		60		64		58		48		45						
Selection as Pilot WSP		Yes (Mainly Phase 2)		Yes (Mainly Phase 3)		No		No		Yes (Mainly Phase 2)		No		Yes (Mainly Phase 3)		No						

パイロット WSP として選択された WSP は、Ruiru-Juja WSP (Athi WSB 下)、Mavoko WSP (Tanathi WSB 下)、Nakuru WSP (RV WSB 下)、Kisumu WSP (LVS WSB 下)、Eldoret WSP (LVN WSB 下)、Nyahururu WSP (Northern WSB 下)及び Kilifi-Mariakani WSP (Coast WSB 下)である。これらのパイロット WSP の選定は、Council of Governors から異論がないことを確認した上で、2017 年 3 月 20 日に JICA 側と MWI 間でのテクニカルノートを交わすことで最終化された。選定された各パイロット WSP の基本情報を表 4-3 に示す。

表 4-3: 選定された各パイロット WSP の基本情報

	Category of Pilot WSP	Leading Pilot WSP		Preceding Pilot WSP			Following Pilot WSP			
	Timing of Conducting TA	Phases 1 and 2		Mainly Phase 2			Mainly Phase 3			
	WSB Area	Tana		LVS	RV	Athi	Northern	Tanathi	LVN	Coast
	Pilot WSP	Meru	Embu	Kisumu	Nakuru	Ruiru-Juja	Nyahururu	Mavoko	Eldoret	Kilifi-Mariakani
< A > Baseline Information	1) Size in terms of Connection Number (number of towns)	Large (2)	Large (2)	Very Large (5)	Very Large (4)	Large (2)	Large (1)	Large (1)	Very Large (2)	Large (3)
	2) NRW Ratio in 2009/10 (%)	23	55	50	53	31	57	37	25	39
	3) NRW Ratio in 2014/15 (%)	19	49	49	37	28	46	46	45	47
	4) Metering Ratio (%)	100	100	100	94	100	100	94	100	91
	5) Collection Efficiency (%)	107	89	94	96	100	95	92	108	98
	6) O&M Cost Recovery Ratio (%)	109	126	104	111	114	110	101	105	101
	7) Water Supply Hours (hrs.)	22	23	24	17	22	20	9	15	14
	8) Total Point as Potential Leading WSP from the Initial Capacity Assessment (Max 100) [ranking]	88 [1]	75 [3]	67 [7]	73 [5]	74 [4]	64 [8]	71 [6]	80 [2]	48 [9]
	9) Relevant Donor-supported Project	Proposal to KWPF & PBF of WB including Pressure Mgt.	MoU with SNV on PBC for NRW Reduction (targeting illegal use)	VEI for two DMAs & large cust. and AFD/EIB for pipe rehab, etc.	VEI for zoning and commercial losses	KfW's network replacement at a low income area	-	Belgian's WTP (will increase supply hrs., revenue & leakage)	Proposal to SNV for DMA and PBC	WB's NRW Study (including zoning) & MP

上表に示されているように、選定されたパイロット WSP の内、Kisumu WSP、Nakuru WSP 及び Eldoret WSP は、WASREB の Impact Report No.9 において接続数 35,000 以上の Very Large WSP に分類されている。これら以外の 6 カ所全てのパイロット WSP は、接続数 10,000 以上の Large WSP に分類されている。選定された全てのパイロット WSP の O&M コストリカバリーは 100%を超えているため、これらの WSP のカウンティへの財政的な依存度は比較的低いと言える。給水状況については、24 時間給水を行っているのは Kisumu WSP のみであり、その他のパイロット WSP における給水時間は 23 時間～9 時間の間である。つまり、これらの WSP に対する支援においては、連続給水状態と断続給水状態において適用できる無収水削減活動の違いについて考慮する必要がある。

また、選定されたパイロット WSP における 2014/15 年度時点での無収水率は Meru WSP、Ruiru-Juja WSP 及び Nakuru WSP において比較的低く、それぞれ 19%、28%、37%である。しかし、それら以外の 6 つのパイロット WSP の無収水率は、45～49%と非常に高い状態である。図 4-2 に各パイロット WSP における 2007 年以降の無収水率の経年変化を示す。

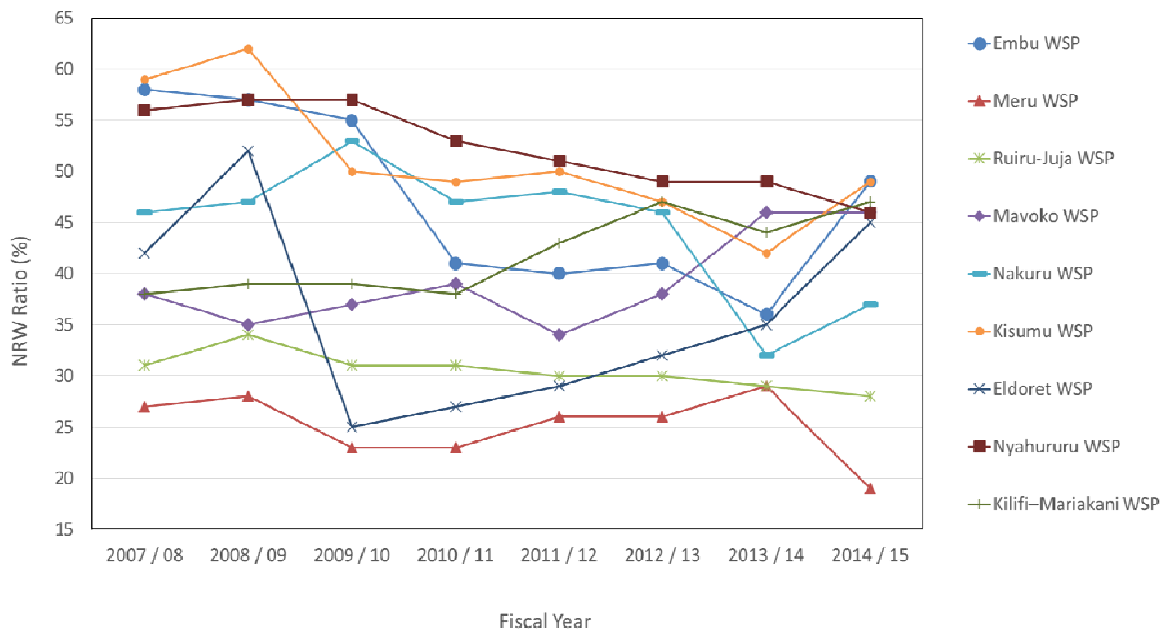


図 4-2: 各パイロット WSP における 2007 年以降の無収水率の経年変化

2016 年以降、SNV、VEI、世銀などの他ドナーが 30 カ所を超える数の WSP に対して無収水に係わる新たな支援をケニアで開始しており、本プロジェクトの詳細計画策定調査時から著しく状況が変化している(「(6) 無収水削減に係わる他ドナーとの援助協調」において詳しく説明)。特に、財務状況が比較的良い、規模の大きな WSP に対してドナーの支援が集中する傾向があり、本プロジェクトのパイロット WSP 候補及びパイロット WSP として選択された WSP の多くも他ドナーから様々な支援を受けている。例えば、パイロット WSP の内、Embu WSP と Eldoret WSP は今後 SNV から無収水削減のための Performance Based Contract (PBC) に係わる支援を受ける見込みであり、Kisumu WSP と Nakuru WSP については既に VEI から無収水に関連する支援を受けている。Kilifi-Mariakani を含む沿岸部の 8 カ所の WSP については、既に世銀の資金によって無収水に関連するコンサルティングサービスを受けている。

ベースライン調査では、主に 2016 年末に行った情報収集に基づいてパイロット WSP の選定を行った。さらにその補足調査として、2017 年 2 月に再度仮選定されたパイロット WSP を訪問し、他ドナーの新たな係わりなどについての最新の状況をより詳しく確認し、必要に応じて他ドナーとの調整を行った。以下に説明する先発及び後発パイロット WSP の選定及び後述する支援項目の検討では、無収水に関連する支援を展開している他ドナーと支援時期及び支援内容ができるだけ重複しないように調整した。

2) 先発/後発パイロット WSP の区分

先発/後発パイロット WSP の区分については、第 1 回 JCC の M/M により合意された先発/

後発パイロット WSP の選別要件である①アクセス面における利便性、②JICA 専門家チームによる効率的な支援や効果等を考慮した。その結果、新たに選定した 7 ヶ所のパイロット WSP の内、Ruiru-Juja、Nakuru、Kisumu、Nyahururu の 4 ヶ所を主に本プロジェクトの第 2 フェーズ(2 年目及び 3 年目)において支援する先発パイロット WSP とし、Mavoko、Eldoret、Kilifi-Mariakani の 3 ヶ所を主に第 3 フェーズ(4 年目及び 5 年目)において支援する後発パイロット WSP とした。この区分についても、Council of Governors において報告した上で、JICA 側と MWI 間でのテクニカルノートによる合意形成が既に行われている。

以下に、後発パイロット WSP とした 3 ヶ所の WSP について、後発とすることで発生する利点を説明する。

Mavoko WSP

Mavoko WSP の現在の平均給水時間は 9 時間程度であるが、今後ベルギーの支援によりダムのリハビリ、浄水場の建設等が行われるため、2018 年中頃には給水量及び給水時間が大幅に増える見込みである。また、この給水量の増加により大口顧客からの収益についても大幅に増加する見込みであり、第 3 フェーズの開始時期(2019 年 10 月)までには、本格的な無収水削減活動の実施に必要な資金を Mavoko WSP 自ら確保できるようになることが期待される。このような理由から Mavoko WSP を後発とした。ただし、Mavoko WSP は職員の無収水削減に対する意識が高いため、先行パイロット WSP への支援の合間に、第 2 フェーズから準備的な支援(MWI の NRW ユニットの予算を用いた顧客メータ提供による不良メータの取り換えなど)を徐々に進めることを考えている。その上で、第 3 フェーズから Mavoko WSP 自身による施設投資を含む、より本格的な無収水削減活動を支援することが効果的であると考え。また、Mavoko WSP は WASREB が SNV の資金により今後 4 ヶ月間程度で実施する NRW Audit の対象にもなっているため、後発パイロット WSP とすることで、NRW Audit を通した SNV の支援と期間の重複を避けることができる。

Eldoret WSP

Eldoret WSP では世銀の支援により 2018 年までに導水管の布設や浄水場の拡張等が行われ、給水量が増加すると共に、配水圧が上昇する見込みである。Eldoret WSP は、水理解析に基づく配水施設のゾーニングや配水圧管理についてのトレーニングを希望しているため、浄水場の拡張等により給水状況が著しく変化した後に配水圧の実測を含むトレーニングを行い、対応策を共に検討することがより有益である。このような理由から、Eldoret WSP についても後発パイロット WSP とした。また、Eldoret WSP は、今後数年の間に SNV から無収水削減のための PBC 等についての支援を受けようとしているため、支援時期の重複を避けるためにも後発パイロット WSP とする。ただし、第 2 フェーズにおいて、Kisumu WSP 等の比較的近郊にある他のパイロット WSP を対象とした漏水探知等についての集合研修を実施する際には、Eldoret WSP についても同時に対象とすることが効率的である。

Kilifi-Manriakani WSP

世銀は、パイロット WSP として選定した Kilifi-Mariakani WSP を含む Coast WSB 管轄下の多くの WSP を対象に、現在、無収水削減のための長期計画策定（水理解析モデルを用いた配水システムのゾーニングや不良顧客メータ取り換えのための計画を含む）と配水システム改善のためのマスタープラン策定を支援している。コンサルタントによる無収水削減のための計画策定業務は 2017 年 8 月に完了する予定である。さらに、世銀は Kilifi を含む Kilifi County 内の 4 つの都市を対象にした水道システムのリハビリと拡張のためのプロジェクト（USD 18million）の形成を行っており、2017 年 4 月頃に承認される予定である。また、Kilifi-Mariakani WSP は選定したパイロット WSP の中でナイロビ市内から最も遠方に位置しており、飛行機での移動が必要であると同時に現在近郊の Malindi の治安が比較的悪いいため、Kilifi-Mariakani WSP を訪問する際には Mombasa 等に宿泊先が限定される。そのため、効率的に支援を行うことが現在特に難しい状況にある。第 2 フェーズでは、2 ヶ所のリーディング WSP と 4 ヶ所の先行パイロット WSP への支援が重なるため、効率的な支援が難しい Kilifi-Mariakani WSP を先行パイロット WSP とすることは困難である。

このような状況であるため、Kilifi-Mariakani WSP を後発パイロット WSP の一つとした。後発パイロット WSP とすることで、第 2 フェーズにおける支援の負荷が過剰にならないように配慮すると共に、無収水対策に係わる世銀からの支援との期間の重複を少なくし、さらに周辺地域における治安状況の改善を待つようにした。ただし、第 2 フェーズにおいても、時間が掛かる GIS 整備のための支援やナイロビ周辺で行う漏水探知等についての合同研修に参加する機会を Kilifi-Mariakani WSP に対してある程度提供できるように検討する。

上記のように、3 ヶ所の後発パイロット WSP への支援の一部を第 2 フェーズから始めることで、第 1 回 JCC において MWI の Water Secretary が示した後発パイロット WSP への支援が不十分になるのではという懸念を軽減する。また、全パイロット WSP を同時に対象とする集合研修等を通して支援全体を効率化するように努める。

(4) 各パイロット WSP の課題 (County 及び WSB との係わりを含む)

1) 9 ヶ所のパイロット WSP における主な課題

ベースライン調査では、図 4-3 に示すように、特に技術支援が必要であると考えられる以下の 6 つの分野（評価基準 1 の第 4 項目及び評価基準 3 の第 1～第 5 項目）についての 5 段階評価の結果を別途グラフにまとめて分析した。

- 分野 1: 無収水削減計画の策定・実施状況
- 分野 2: GIS 整備の状況
- 分野 3: ゾーニング及び無収水のモニタリングの状況
- 分野 4: 漏水対策の実施状況
- 分野 5: 顧客メータの管理状況
- 分野 6: 盗水対策の実施状況

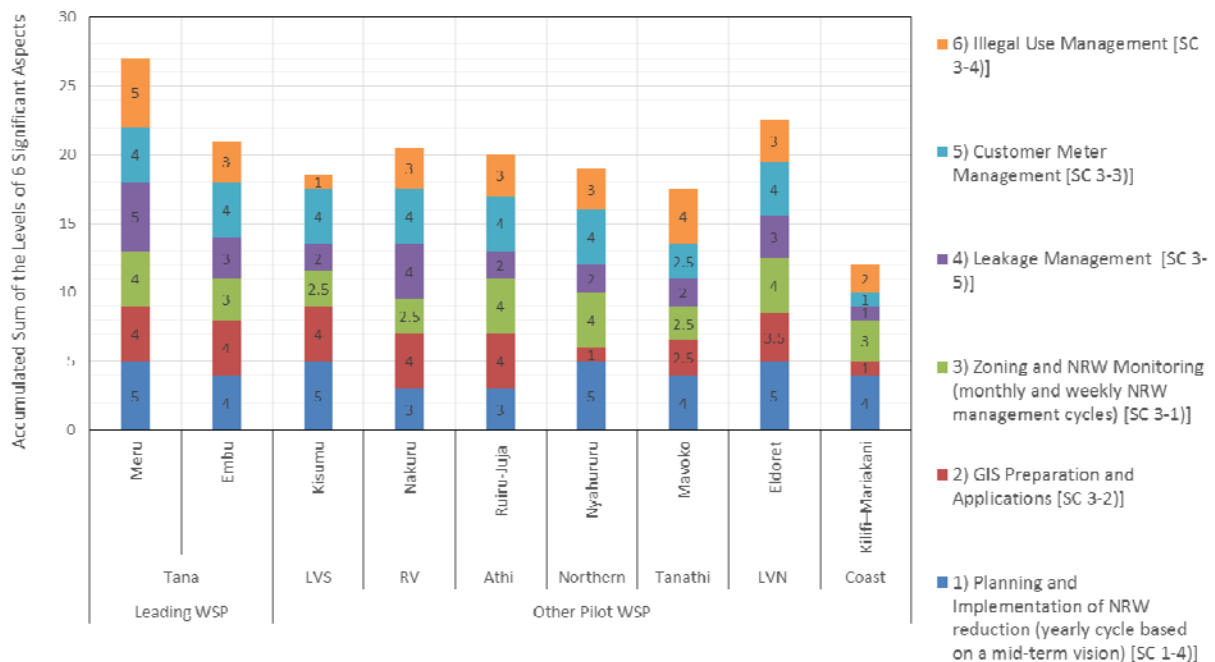


図 4-3: 各パイロット WSP の支援分野として想定している 6 つの評価項目にレベル

パイロット WSP の選定において、4 つの評価基準による総合得点が最も高かった Meru WSP (88 点) は、上図に示す 6 項目による評価においても最も合計点が高く (27 点)、6 分野の全てにおいて、レベル 4 もしくはレベル 5 の高い評価となっている。一方で、選定されたパイロット WSP の内、総合得点が最も低かった Kilifi-Mariakani WSP (48 点) は、6 分野の評価においても最も低い合計点 (12 点) となっており、6 分野の内 3 分野が最も低い評価であるレベル 1 であり、他のパイロット WSP に比べて技術力が著しく低いことが分かる。

全パイロット WSP を見た場合、a) Nakuru WSP と Ruiru-juja WSP などでは NRW 削減の担当者が中心となった無収水削減計画の策定が行われていないこと、b) Nyahururu WSP と Kilifi-Mariakani WSP で GIS 整備が始まっていないこと、c) 多くのパイロット WSP において地下漏水調査が行われていないこと、d) Mavoko WSP と Kilifi-Mariakani WSP では老朽化した不良顧客メータが多く存在すること、及び d) Kisumu WSP と Kilifi-Mariakani WSP では盗水が多量の地域で頻繁に行われていることを特に深刻な課題として挙げる事ができる。以下に、各パイロット WSP における課題についてより詳しく説明する。

2)リーディング WSP の課題

Meru WSP

最新の Impact Report No.9 において公表されている 2014/15 年度の無収水率が 19% である Meru WSP (18% の Nyeri WSP に次ぐ全国第 2 位) では、単年度の無収水削減計画は作成されているものの、中長期の計画は策定されていない。例えば、少なくとも中期的な視点で導入の

検討をする必要がある HDPE 管については、配水管への使用は既に行われているものの、給水管としては使用されておらず、代わりに PVC 管や日光により著しく劣化するポリプロピレン製の PPR 管が給水管として利用されている。

また、Meru WSP では WSP 全体の無収水率が取水量を用いて計算されており、WASREB の無収水率の定義に則していない。そのため、Nyeri WSP 等の他の WSP と無収水率を正確に比較することが難しい状況にある。また、Tana WSB から提供された中国製バルクメータの多くに精度の問題があり、各配水区域での無収水率を正確に把握することが難しい状況である。顧客メータについても大量に調達した中国製メータのカウンターに不具合発生の問題を抱えており、正確に検針を行うことが難しい状況である。

Meru WSP の給水区域は起伏が大きいため配水圧が高くなりやすいが、夜間の減圧が難しい安価な減圧弁を使用しているなどにより水圧管理が不十分な状態であり、また給水管からの漏水を減らすために必要なハンドポンプを用いた圧力テストについても実施されていない。

NRW ユニットがテクニカル部に属していることもあり、コマーシャル部と連携した無収水削減対策の検討及び実施は十分に行われていない。

Embu WSP

近年無収水率が悪化し、2014/15 年度の無収水率が 49% である Embu WSP では、Meru WSP と同様に中長期の無収水削減計画は策定できていない。単年度の計画については作成されているものの、給水地域拡張のために配水管整備などの他の業務にも NRW ユニットが携わっているため、計画された無収水削減活動が十分に実際されず、その大部分の実施が次年度に持ち越されている状況にある。カウンティ政府からの要請を受け、Embu WSP では比較的標高の低い周辺地域に給水区域を拡張し続けており、周辺地域における高い配水圧や頻発する盗水のため、WSP 全体の無収水率が以前に比べて著しく高い状態となっている。洗車場などの大口の顧客による盗水も問題になっており、カウンティ政府による条例の強化による盗水対策についても検討されている。また、盗水が多く発生している周辺地域の一部を対象に、SNV の支援による PBC の導入についても現在検討されている。この PBC では主に商業的損失の削減と水圧管理を行うことが想定されているが、この地域を対象にした水圧管理についてはより広い地域を視野に入れて検討する必要があるため、JICA 専門家による支援の中でも検討してほしいとの要望が SNV からあった。

GIS については、当初精度の低い地形図をベースマップとして整備されたために入力されている施設等の位置精度に問題があり、顧客管理システムに登録されている顧客メータの情報入力も完了していないため、各ゾーンに属する顧客を十分に把握できていない状態にある。一方、配水システムのゾーニングが段階的に行われておらず、主要なバルクメータ (Master Meter) と Sub-zone メータとの区別や各バルクメータがカバーする地域の境界が明確になっていない。また、マスターメータを用いた夜間最小流量の測定やステップテストが計画的に行われておらず、ゾーンごとの無収水率や漏水等の不明水量のモニタリングに基づいた戦略的な無収水の削減

は実現できていない。Tana WSB から提供された中国製メータなどで、使用しているバルクメータの多くが精度に問題があることも給水区域全体を対象にした無収水管理の妨げとなっている。

Meru WSP と同様に、水使用量が少ない夜間における減圧が困難である安価な減圧弁を多用しているため、高水圧により大量の漏水が発生している可能性がある。

テクニカル部に属している NRW ユニットとコマーシャル部との連携についても不十分である。

3) 先発パイロット WSP の課題

Kisumu WSP

2014/15 年度の無収水率が 49% である Kisumu WSP では、配水管網が配水池ごとに分離されていないままに中小規模の DMA の形成を続けており、DMA の水理的な分離ができない、或いは各 DMA を形成するために多くのバルクメータを必要とする(10 個を超える場合もある)などの問題が生じている。水理解析モデルを用いた Kisumu WSP の配水管網の最適化については、フランスの援助機関である AFD が施設改善事業を通して支援することになっている。

NRW ユニットの長を務めていた職員が詳細な無収水削減活動の実施スケジュールを作成していたが、10ヵ月ほど前に離職したため、計画的な無収水削減活動の実施に支障をきたしている。Kisumu WSP では職員が頻繁に離職しており、過去数年ほどの間に、地下漏水探知のトレーニングを受けた職員の多くが離職したため、地下漏水調査の継続的な実施が難しい状況にある。一方で、工場などの大口の顧客が盗水を行っているケースは多いが、最近大口の顧客に対する顧客メータ等の管理を強化したため、WSP 全体の無収水率が低下しつつあるといった取り組み事例もある。

VEI からの支援で Kisumu WSP に対する無収水削減支援を行っているため、援助調整が必要である。VEI との協議の結果、DMA アプローチによる支援と大口顧客の管理に係わる支援については、商業的損失への対応を中心に支援している VEI が行うことになった。LVS WSB は、最近 Kisumu WSP に高性能のメータテストベンチを供与したため、今後 Kisumu WSP における顧客メータ精度管理が著しく改善される可能性がある。

Nakuru WSP

2014/15 年度の無収水率が 37% である Nakuru WSP では、5 つに分かれた配水区域の内、既に 3 つの配水区域を 1,000 接続程度の DMA に細分化している。しかしながら、各 DMA の水理的分離の状況や GIS を用いた境界内の顧客の特定が完了しておらず、DMA ごとの継続的な無収水率のモニタリングは実現できていない。残りの 2 つの配水区域についても、近い内に VEI からの資金援助を受けて、水理モデルによる分析を行わないままに DMA に分割することが予定されている。そのため、分割された全ての DMA をモニタリングに利用できるようにするために必要な現場での事後作業等は長期に及ぶと考えられる。Nakuru WSP に対しては VEI も技術支援の実施を検討しており、彼らとの協議の結果、配水区域を DMA に分割するための資

金援助に加えて、顧客メータ精度管理等の商業的損失に係わる支援についても VEI が担当することになった。

Nakuru WSP では、アスベスト管を含む老朽化した管路からの漏水が多く発生している可能性があるが、他の殆どのパイロット WSP と同様に、継続的な地下漏水調査は実施されていない。現在のところ、水源不足及び給水時間の制限などのため、配水圧が著しく低い。しかし、近い内にダム開発が行われている近郊の WSP からバルク給水を受ける予定があり、今後の給水量及び給水時間の増加に伴って漏水量も増加する可能性があるため、地下漏水調査の実施状況を改善する必要がある。

GIS 上の管路データについては不備が多く残っているものの、GIS 担当者がインターンであることもあり、管路の維持管理に係わる職員等の協力が十分に得られていない。そのため、今後は組織として GIS 整備及びその利用に取り込む体制を強化する必要がある。NRW ユニットについては、組織内での位置付けが明確化されておらず、NRW ユニットのメンバーが無収水削減以外の業務を兼業しているため、無収水削減のための業務が後回しになるなどの問題も抱えているようである。このような状況であるためか、無収水削減計画の策定が行われておらず、MD 及び TM の指示のもと場当たりに無収水削減活動が展開されているようである。

Ruiru-juja WSP

2014/15 年度の無収水率が 28% (9 ヶ所のパイロット WSP の中で 2 番目に低い) である Ruiru-juja WSP では、無収水削減に係わる検討の多くが MD により直接行われている。そのため、今後において無収水削減に係わる職員が無収水削減計画の策定などの意思決定に積極的に係わり、職員のスキル向上だけではなく、エンパワメントも実現して、より充実した内容の無収水削減活動が行われるようになる必要がある。

GIS については、ArcGIS のネットワークライセンスと Online ベースマップを使用しているが、インターネットの接続速度が低く、またイントラネットも不安定なため、業務に支障をきたしている。また、壁などに GIS マップが張られておらず、整備された GIS データの活用がとても限られている状態である。

Ruiru 市の中心部にあった古い管路は既に取り替えられており、また、土質として漏水が地上に現れやすい岩である場所が多く、地上漏水箇所の修理は実施されているため、地下漏水は少ないと考えられている。しかし、最近まで漏水探知機器等を保有していないかったために、地下漏水調査を通して漏水量を確認する必要がある。一方で、無収水の大部分は商業的損失であると考えられており、大口の顧客に対する精度の高いメータの導入やメータを顧客の敷地の外に出すことによる検針率向上・盗水防止などの試みが行われている。また、一部の地域においては送配水施設の構成を変えることで配水圧を下げ、漏水量を減らす案を持っているものの、配水圧の測定や水理計算に基づく検討はできておらず、それらを実施するための支援を必要としている。

Ruiru-juja WSP では、現在のところ給水区域全体を対象にした活動を中心に行っている。既

に給水区域を 5 つの水理的に分離されたゾーンに分けて無収水の管理を実施しているが、連続給水に近い給水状態であるにもかかわらず、夜間最小流量の測定は実施できていない。そのため、漏水等の物理的損失と商業的損失のバランスが十分に把握できていない。今後は各地域の状況の違いをより詳しく把握し、それぞれの地域の特徴に合わせた無収水対策についても検討し、実施していく必要がある。Ruiru-juja WSP は無収水管理の強化のためにリモート・モニタリングシステムの導入についても検討しており、JICA 専門家チームと共同でトライアルを実施したいとの希望があった。

Nyahururu WSP

2014/15 年度の無収水率が 46%である Nyahururu WSP は、他のパイロット WSP に比べ、ドナーからの支援をあまり受けていない。そのためか、本プロジェクトに対する期待が大きく、JICA 専門家チームが訪問する際には、多くの職員が協議に参加している。Nyahururu WSP は Embu WSP と同様に、給水区域を周辺の農村部に拡張しており、灌漑利用のために盗水が繰り返されるリスクが高まることや、創設時に耐圧性能の低い管材料を使用し施工の質が低いコミュニティ水道を取り込むことによって漏水が増加するなどの問題を抱えている。

GIS は整備されておらず、既存水道システムの状況や問題点についての認識があまり共有されていない印象がある。IT の担当者 2 名が今後 GIS 整備を行うことになるが、2 人とも GIS についてのトレーニングを受けたことはなく、また GIS 整備に必要な GPS などの機器も所有していないため、本プロジェクトにおいて重点的に GIS 整備を支援する必要がある。

この WSP では地上漏水が多く残っており、地下漏水調査は始まっていない。また、顧客メータ精度のチェック方法も脆弱である。そのため、多くの課題があり、JICA 専門家による幅広い支援を必要としている。独自に 2 ヶ所で DMA を整備してパイロットプロジェクトを実施しようとしているが、DMA を整備するために必要な機材の購入資金が足りず、その実施が滞っている状況にある。さらに、請求書作成や料金徴収の管理を行うためのシステムに柔軟性がなく、無収水管理に利用することが難しいといった問題も抱えている。

4) 後発パイロット WSP の課題

Mavoko WSP

2014/15 年度の無収水率が 46%である Mavoko WSP の給水区域には、経済特別区があり、比較的高い水道料金を課すことができる大口の顧客が多く存在する。しかし、既存ダムからの取水可能量及び浄水場の能力が限られているため、給水時間は9時間と短く、慢性的な水不足に陥っている。そのため、本来多額の水道料金の徴収が期待できる大口の顧客に十分な給水が行えていない状況である。水源及び浄水量の不足のみではなく、高い無収水率も収益不足の原因となっており、その収益不足により、老朽化し精度の著しく落ちた顧客メータを交換するための資金すら十分に確保できないといった深刻な悪循環を引き起こしている。前述したように、ベルギー政府の協力によるダムの浚渫と浄水場の建設により、1 年半後には、水不足が解

消され、その後本格的な無収水対策を実施するために必要な資金を料金収入により確保できるようになることが期待される。

Mavoko WSP では、本プロジェクトの詳細計画策定時の際に JICA 調査団から無料の QGIS の使用について説明があったことなどがきっかけとなり、10 ヶ月ほど前から GIS 整備に取り組んでいる。しかし、精度の低い地形図をベースマップとして使用したため、無収水対策に役立つ十分な内容の GIS 整備はできておらず、今後新たなベースマップを用いた改善が必要である。

また、この WSP の給水区域にはスパゲッティ・コネクションが多く存在する地域があり、盗水及び漏水の原因となっているため、その解消のための取り組みを続けている。しかし、地下漏水探知については必要な機器を所有しておらず、実施ができていない。ベルギー政府の支援により、給水量が増えて給水時間が長くなれば、配水圧も高まって漏水量が著しく増加する可能性があるため、今後地下漏水探知の重要性がさらに高まると考えられる。

大口の顧客に対しては、メータ精度の経年低下が起きにくい小型超音波流量計を内蔵したスマートメータを 2 年ほど前から合計数十個程度導入しており、料金収入の増加につながっている。一方で、設置後 11 年以上経過し、精度が低下した古い顧客メータが 2,500 個ほど残っている。それらの不良メータや検針のためのアクセスが確保されていない顧客メータが多く存在するために、非常に多くの顧客に対して水使用量の推定が毎月行われており、高い無収水率の主な原因になっていると考えられる。

Eldoret WSP

Eldoret WSP では、2005 年から 2009 年まで行われた世銀による無収水削減支援のために 2009/10 年度には 25%という低い無収水率を記録したが、その後徐々に無収水率が高くなり、公開されている最新の無収水率である 2014/15 年度の値は 45%である。Eldoret WSP では、2015 年に給水区域全体を境界沿いに数多くのバルクメータを設置することで 3 分割し、それぞれの地域のエリア・マネージャーが無収水削減活動の実施にも責任を持つ体制を構築している。3つの地域の内、最も無収水率が高い南部地域では、配水管網を DMA に細分化することで無収水が多く発生している場所を特定しようとしている。しかし、GIS 担当者による各 DMA 内の顧客の特定作業が滞っており、DMA レベルの無収水管理の実現には時間を要する。また、LVN WSB からの支援により、一部の地域を対象にスマートメータを用いたトライアルも実施されている。南部地域を対象として無収水削減のための PBC を導入するために、今後 SNV から支援を受ける可能性もある。

しかし、新しい試みが行われている一方で、まだ地上漏水のパトロールや迅速な修理が十分に行えていない状態であり、また、検針員からのレポート精度にも問題が生じているため、各地域エリアマネージャーの無収水削減に対する意識や無収水削減活動に携わる職員の能力及びモチベーションに問題がある可能性がある。また、現在、浄水場の拡張などのプロジェクトが実施されており、数年後には給水量の増加に伴って給水時間が延び、配水圧が高まることで漏水量が増加するものと考えられる。その対策として、地下漏水探知についても実施できるように各

地域において無収水削減に携わる職員の能力を向上する必要がある。盗水については、低所得者層居住区や周辺の農村で頻繁に発生しているため、カウンティ政府からの協力を得るなどの対応が必要である。

Kilifi-Mariakani WSP

2014/15 年度の無収水率が 47% である Kilifi-Mariakani WSP は、9 カ所のパイロット WSP の中で最も無収水対策が進んでおらず、多くの課題がある。Kilifi-Mariakani WSP では、バルク給水を行っている Coast WSB に対して多額の借金を抱えており、O&M コストカバレッジも 100% を若干超える程度であるため、無収水削減活動を実施するための資金を確保することが比較的難しい状況にある。ただし、今後、水道料金を改定することで、2,000 個程度抱えている老朽化した不良顧客メータを取り換えるための資金について確保しようとしている。

Kilifi-Mariakani では GIS 整備が開始されておらず、既存管路の布設ルートについても明確になっていないため、地上漏水を見つけるためのパトロールすら十分に行われていない。また、供給している水質の影響を受けて水道メータの精度が短期間の内に低下する事象が散見されたが、ポータブル・メーター・テスターの保有及び使用実績は無く、顧客水道メータの精度管理は殆ど行われていない。さらに、多くの地域でスパゲッティ・コネクションなどに起因した盗水が頻発しているが、違法接続を見つけるためにパトロールを実施するなどの積極的な対応はできていない。検針記録については各 10 ヶ所の支所から週 1 回本部に担当者が出向き、本部のみに確立された料金請求システムに入力が行なわれるといった非効率的な運用がなされており、支所への管理システム導入整備が途上であることも見受けられた。Kilifi-Mariakani WSP の給水区域は他のパイロット WSP に比べて広い地域に分散しており、無収水削減活動の実施が遅れている一因であるとも考えられる。

5) WSB に関連するパイロット WSP の課題

計 8 カ所の WSB の中には、Tana WSB や LVN WSB のように NRW ユニットが存在し、管轄下の WSP に対する無収水削減のための支援を積極的に展開している WSB が存在する。また、管轄下の WSP に対してバルク給水を行っている Coast WBS では、深刻な水不足を軽減するため、世銀によるコンサルタント契約を通して、配水システムのゾーニングなどを含む無収水削減のための長期計画の策定を支援している。

しかし、2016 年に承認された水法に従い、今後 WSB が WWDA に移行する際には現在 WSB が担っている WSP に対する無収水削減支援の機能がなくなる可能性がある。このような状況に対し、例えば LVSWSB では、他の WSP に対する無収水削減支援が可能な Kericho WSP と Kisumu WSP をリーディング WSP と認識し、それらの WSP に対して、漏水探知機器やメータ・テスト・ベンチを供与するなど、重点的な支援を展開している。

将来に備え、本プロジェクトの各パイロット WSP が各地域におけるモデル WSP となり、他の WSP に対して無収水削減のための支援を行うことが今後期待される。また、WASPA が主催して

いるベンチマーキングや無収水の分科会においても、それぞれの地域のリーダー的な存在として、他の WSP をリードしていくことが期待される。

6) カウンティに関連するパイロット WSP の課題

カウンティ政府は、村落給水の管理に責任をもっており、その改善に資金をある程度集中させる必要があるため、主に都市部を対象としている規模の大きな WSP に対する支援は限られている。また、WSP に対するカウンティ政府からの支援では、無収水削減のためではなく、給水区域拡張のための事業を優先する傾向がある。Embu WSP、Nyahururu WSP、Kisumu WSP 及び Meru WSP などでは、周辺のパフォーマンスの低い水道を取り込み給水区域を拡張するように、カウンティ政府から求められている。しかし、水道管の管理状況が悪い地域を取り込むことによって増加する無収水への対応や、コミュニティなどによって建設された容量・質に問題がある水道の改修・拡張のための資金確保などの課題がある。

一方で、各パイロット WSP の役員メンバーにはカウンティ政府からのメンバーが 2 名程度含まれており、過去数年の間に、四半期ごとに行われる役員会議の席上で無収水に係わる議論がかなり活発化している。役員会による WSP のマネージメント層の評価においても無収水の削減が重要視されている。しかし、無収水削減のための財政支援や盗水対策のための条例強化などの全面的な協力をカウンティ政府から受けることは簡単ではないようである。

(5) 課題への対応策

1) 各パイロット WSP に対する技術支援の内容

ベースライン調査では、把握した各パイロット WSP における課題に応じた支援項目について、まず JICA 専門家チーム内で検討した。検討した後、各パイロット WSP を再度訪問し、支援に対する要望をより詳しく確認した上で、表 4-4 に示すように各パイロット WSP と共に実施する様々なトライアルの内容(支援項目)について合意形成を行った。この表には、参考として、上述した技術支援に係わる 6 分野についての 5 段階評価の結果を示し、さらに分野ごとに合意した支援項目を示している。5 段階評価の結果が低いにもかかわらず、支援項目が選択されていない、もしくは限られている分野は、パイロット WSP 自身による試みを継続することで改善すると見込まれている、もしくは他ドナーによる支援が見込まれている分野である。以下に、各分野に対する支援の主な特徴について記述する。分野ごとに検討した各支援項目の内容については、次節で詳しく説明している。

[支援分野1]の無収水削減計画の策定及び実施状況の改善については、本プロジェクトの PDM に示された成果4の活動及び評価指標との関係性が強い。また、この分野は、各パイロット WSP が効果的な無収水削減活動を持続的に展開する上で特に重要なため、表 4-4 に示しているように、この分野の支援を全てのパイロット WSP に対して行うことにする。

[支援分野2]の GIS の整備及び活用状況の改善と[支援分野3]の配水施設のゾーニング及び無収水のモニタリング状況の改善については、各パイロット WSP の現状が大きく異なるため、

各パイロット WSP の状況及び希望に合った内容の支援を、選択的に実施するように心がけた。

[支援分野4]の漏水対策の実施状況の改善については、全てのパイロット WSP において大幅に改善できる余地があるため、重点的に支援することになった。地下漏水対策が比較的進んでいる Meru WSP に対しても、地下漏水をより効率的かつ効果的に削減するためのトライアルを実施する。

[支援分野5]の顧客メータ管理状況の改善と[支援分野6]の盗水対策の改善は、パイロット WSP による独自の対応及び他のドナーの支援が比較的進んでいる分野である。そのため、各パイロット WSP に対する支援項目は、その他の分野に比べ、各 WSP の状況に合わせた比較的限定された内容となった。盗水対策などの顧客管理は、日本人専門家の経験が比較的限られている分野であるため、ローカルスタッフを雇用することで効果的な支援を行える体制とした。ただし、顧客及びその他の住民に対する啓発活動については、主に成果1の全国キャンペーンを通して支援することとした。

支援項目として示した、パイロット WSP と共に実施するトライアルの内容は、今後、パイロット WSP の積極性、状況や要望の変化等に応じて柔軟に変更することで、各パイロット WSP におけるニーズに合った成果が発現するように留意する必要がある。

表 4-4: 各パイロット WSP に対する支援項目マトリックス(2017 年 3 月時点)

	Category of Pilot WSP	Leading Pilot WSP		Preceding Pilot WSP			Following Pilot WSP			
	Timing of Conducting TA	Phases 1 and 2		Mainly Phase 2			Mainly Phase 3			
	WSB Area	Tana		LVS	RV	Athi	Northern	Tanathi	LVN	Coast
	Pilot WSP	Meru	Embu	Kisumu	Nakuru	Ruiru-Juja	Nyahururu	Mavoko	Eldoret	Kilifi-Mariakani
< B > Current Level of the 6 Key Aspects of NRW Reduction and Trials to be supported by JICA Experts	1) Planning and Implementation of NRW reduction (yearly cycle based on a mid-term vision)	5	4	5	3	3	5	4	5	4
	Trials									
	a) Participatory planning using sample templates and Google Drive	●	●	●	●	●	●	●	●	●
	b) Plan-do-check-adjust (PDCA) Cycle (mid-term, yearly, quarterly, monthly, weekly, etc.)	●	●	●	●	●	●	●	●	●
	c) Introduction of HDPE pipe and elimination of asbestos pipe, etc.	●	●	●	●	●	●	●	●	●
	d) Setting priority activities to be completed without failure as commitment targets	●	●	●	●	●	●	●	●	●
	e) Inclusion of NRW-related training	●	●	●	●	●	●	●	●	●
	2) GIS Preparation and Applications	4	4	4	4	4	1	2.5	3.5	1
	Trials									
	a) Open source utilization (QGIS, Google Earth, etc.) for fast GIS development and wider access/applications of GIS (including participatory mapping)	●	●	●	●	●	●	●	●	●
	b) Linking GIS with customer/billing data for special analysis on meter problems and illegal connections	●	●	●	-	●	-	-	-	-
	c) Use of GIS for assessing pipe conditions including mapping of leaks, bursts and aged pipes.	●	●	●	-	●	-	-	●	-
	3) Zoning and NRW Monitoring (monthly and weekly NRW management cycles)	4	3	2.5	2.5	4	4	2.5	4	3
	Trials									
	a) Planning of strategic zoning (distribution/pressure zones→flexible DMA division from large to small for tracking down) to monitor NRW ratio of different areas and control pressure based on hydraulic analysis and field measurements	-	●	-	-	-	●	●	●	-
	b) Confirmation of the hydrological isolation and inflow metering of each distribution zone and DMA and the consistency of the existing customers in each zone and DMA between GIS and billing system.	-	●	-	●	-	●	●	●	●
	c) Establishment of easy and sustainable monitoring of NRW ratio, water balance(MNF), and abnormal flow due to burst using billing system, smart meters, remote monitoring, etc.	●	●	-	-	●	●	●	●	-
	d) Periodical analysis and discussions to prioritize areas for different activities	-	●	-	-	-	●	●	●	-
	e) Building capacity for NRW-related analysis at zone level for self-directive development of strategy to encourage inter-zone competition	-	-	-	-	-	-	-	-	-
	4) Leakage Management	5	3	2	4	2	2	2	3	1
	Trials									
	a) Spread of the daily use of listening sticks over many field staff against leakage	●	●	●	●	●	●	●	●	●
	b) Implementation of strategic track down of under ground leakage (zoning→step test→listening stick→USF/leak detector/correlator)	●	●	●	●	●	●	●	●	●
	c) Measurement and optimization of pressure distribution (other than zoning)	●	●	●	-	●	-	-	-	-
	d) Reduction of spaghetti service connections	-	-	-	-	-	-	-	-	●
	e) Pressure tests with hand pump for checking installation quality of service connections	●	-	●	-	●	●	●	●	●
	5) Customer Meter Management	4	4	4	4	4	4	2.5	4	1
	Trials									
a) Achieving 100% in metering ratio	-	-	-	-	-	-	●	-	●	
b) Preparation and implementation of meter replacement/relocation strategies (monitoring of consumption with billing system, accuracy testing with bench, mobile tester and/or bucket, sizing, specifications, etc.)	-	-	●	-	●	●	●	-	●	
c) Focused management of large consumption customers with high accuracy meter, smart meter or additional meter.	●	●	-	-	-	-	-	-	-	
d) Management of large residential buildings with customer identification survey and additional use of master meter.	-	-	-	-	-	-	-	-	-	
6) Illegal Use Management	5	3	1	3	3	3	4	3	2	
Trials										
a) Active patrol for finding illegal water use (including use of chlorine DPD tablets, detecting equipment, etc.)	-	●	●	-	-	●	-	●	-	
b) Inclusion of a penalizing mechanism against water theft in the county's water act	-	●	-	-	-	-	-	●	-	
c) Enhancement of law enforcement against water theft with support from the county	-	●	-	-	-	-	-	●	-	

Note: 1 to 5 : Level of Key Aspect from the initial capacity assessment (5 as the highest level)
 ● : Trial agreed to carry out through discussion between each pilot WSP and JICA experts

2) 6分野の各支援項目の内容

以下に、表 4-4 に示されている 6 分野の各支援項目について、留意点などを説明する。支援分野 3 の支援項目 e) と支援分野 5 の支援項目 d) については、表 4-4 に示しているように、希望したパイロット WSP が無かったため、以下では説明していない。

[支援分野1] 無収水削減計画の策定及び実施状況の改善

支援項目 a) グーグルドライブとテンプレートを用いた参加型計画策定

無収水削減計画の策定は、各パイロット WSP の NRW ユニットに属する職員等にとって貴重な学習、能力向上及びエンパワメントの機会である。また、無収水はテクニカル部だけでなく、コマーシャル部の業務にも関連しているため、関係する職員が広く議論に参加し、無収水削減計画の策定に貢献できるようになる必要がある。そのため、複数の職員が同じ文章の編集作業を同時に行うことができる無料のグーグルドライブを用いて、参加型計画策定の支援を開始した。この試みでは、グーグルドライブを通して、計画策定の参考となる様々な資料を共有すると同時に、各パイロット WSP の職員が他のパイロット WSP で行われる計画策定の状況を適宜参照できるようにすることで、パイロット WSP 間での情報共有及び学習を促進する。また、計画策定用の参考テンプレートを提供することで、計画策定が比較的容易にできるように配慮した。この参考テンプレートには、パイロット WSP 等による計画策定のグッドプラクティスを例として継続的に取り込み、毎年より実用的な内容になるように改善する予定である。

Kilifi-Mariakani WSP 以外の 8 カ所のパイロット WSP に対しては、既にベースライン調査の補足のために再訪問した際に、この参加型計画策定について説明し、支援を開始した。WSP では、通常 4 月から 5 月にかけて次年度の活動を計画しているため、第 1 フェーズでは、2017 年 5 月の再渡航時に、リーディング WSP 及び先行パイロット WSP 等を再度訪問し、無収水削減計画の策定状況を確認すると共に、計画策定のための支援を実施する予定である。

支援項目 b) PDCA サイクルの強化

中期、年間、4 半期、月間、週間等の無収水削減活動及びそのマネジメントの Plan-Do-Check-Adjust (PDCA) サイクルが、無収水削減計画の策定及び実施において考慮されるように支援する。特に、年間無収水削減計画の策定・実施・レビュー、及び毎月の各配水区域もしくは DMA に対する継続的な無収水のモニタリングと結果の活用を重視して支援する。

支援項目 c) 石綿管などの布設替えと HDPE 管の導入

漏水や破裂を頻発している管路の布設替えや、漏水及び盗水の防止効果が高い HDPE 管の導入について、無収水削減の中期計画の中で考慮され、それらの実施に向けた具体的な検討がなされるように支援する。

支援項目 d) コミットメント・ターゲットの設定

現実的な無収水削減計画が策定されると共に、計画された活動の大部分が翌年に持ち越されるといったことを避ける必要がある。特に、NRW ユニットが専属職員により構成されていない WSP では、無収水削減活動が後回しにならないようにするため、確実に達成されるべき明確な目標を設定することは重要である。そのため、各年において最低限実施されるべき優先活動の範囲をコミットメント・ターゲットとして設定すること、及びその達成を支援する。

支援項目 e) 無収水関連のトレーニングに係わる計画

無収水削減計画の中に、無収水削減に繋がる内部及び外部でのトレーニングが組み込まれ、それらが実施されるように支援する。

[支援分野2] GIS の整備及び活用の状況の改善

支援項目 a) 無料のリソースや低価格機器の利用による GIS の整備及び活用の促進

QGIS、Google Earth 等の無料ソフトウェア、ウェブ上に公開されている無料 GIS データ、1 万 Ksh (およそ1万円) 程度で購入できるスマートフォン及びタブレット、2 万 Ksh 程度で購入できる A3 サイズの All-in-one プリンター/スキャナー等の低価格機器を活用し、効率的な GIS の整備と無収水削減のための幅広い GIS マップの活用を促進する。また、無料の衛星画像などを用いた参加型 GIS マッピング(地域によって状況の異なる懸念事項の視覚化等)などにより、マネージメント層と現場職員の現状認識のギャップを減らし、対応策についての議論を活発化させるための支援を行う。

支援項目 b) GIS を用いた顧客情報(メータや水使用量など情報)の分析

主に集計目的で利用されている顧客メータや水使用量等の蓄積されたデータを、Excel 上で条件式や条件付き書式などを用いて分析した後、さらに GIS に取り込んで空間分析や効果的な分析結果の表示を行い、顧客メータの精度管理や盗水対策のための新たな検討が行えるように支援する。

支援項目 c) GIS を用いた老朽管などの分析

漏水及び破裂が発生した管路位置の記録や管路の布設年や腐食状況などの情報を GIS 上で分析することで、管路状態の把握や効果的な管路更新のための検討ができるように支援する。

[支援分野3] 配水施設のゾーニング及び無収水のモニタリング状況の改善

支援項目 a) 戦略的に配水施設をゾーニングするための検討

給水地域全体を配水系統別の配水区域及び減圧弁等を用いたプレッシャー・ゾーンに分割した上で、無収水率もしくは漏水率(夜間最小流量)が高いゾーンから、さらにサブゾーン(DMA)に分割する戦略的かつ無理のないゾーニングの計画及び実施を支援する。この支援では、等高線や配水池の容量を考慮した GIS 上での検討、配水圧等の

実測、及びスマートフォンやExcelを用いた簡易な水理計算に加えて、GISデータを用いたモデルによる配水管網の本格的な水理解析についても時間の許す限り指導する予定である。また、この支援では、配水区域やDMAを形成するための配水管網の水理的分離を比較的容易に行うため、河川や緑地帯などをできるだけ境界として用いるなどの実現性の高い方法を奨めるように留意する。

支援項目 b) 分割された配水区域及びDMAの運用開始

パイロットWSPの中には、Embu WSPやNakuru WSPのように、中小規模のDMAの構築を試みたものの、各DMAの水理的分離状況の確認やDMA内の顧客特定などが滞っており、それらのDMAによる無収水のモニタリングが実現できていないWSPが存在する。また、独自にDMAを用いた無収水削減活動を新たに始めようとしているパイロットWSPもあるため、DMAを用いた無収水のモニタリングを継続的に行うことができるように支援する。

支援項目 c) 容易かつ持続的な無収水モニタリングシステムの構築

Ruiru-juja WSPでは、無収水管理及び水質管理のため、GSMなどのテレコミュニケーションを用いた、配水区域ごとのモニタリングシステムを自己資金により導入することを検討している。この導入はパイロット的な事業であり、JICA 専門家にも係わってほしいとの要望があったため、その検討及び実施を側面支援することになった。

しかしながら、GSMなどを用いた無収水対策のためのリモート・モニタリングシステムは、継続的に発生する通信料金が嵩むため、過去にEmbu WSPのパイロットDMAにおいてその継続を断念した経緯などもある。そのため、本プロジェクトにおいては、特に規模の大きいKisumu WSPやNakuru WSP以外のパイロットWSPに対しては、配水区域及び規模の大きいDMAの流入部に、近年開発が進んでいる比較的低価格なロギング機能付きの超音波流量計(電池で長期間駆動する、管と一体化したタイプ)をバルクメータとして設置することで無収水のモニタリングを改善すること提案する。精度が低下しやすい機械式流量計ではなく、超音波流量計を用いることでバルクメータの持続的な精度管理が容易になり、さらに内蔵されたロギング機能を用いることで夜間最小流量の確認による漏水量の推定が容易になる。各配水区域もしくはDMAにおいて、無収水全体だけでなく、漏水の量や率についても把握できるようになれば、どの地域に対して重点的に地下漏水調査を行うべきかなどをより戦略的に検討できるようになるため、無収水のモニタリングがより効果的になる。また、ロギング機能を用いることで、配水支管を順に締め切りながら夜間最小流量の変化を追い、漏水が多く発生している可能性が高い支管を特定するステップテストの実施を容易化することができる。そのため、ロギング機能付きのバルクメータは、ステップテストを普及させるための一助になると考えられる。その他、ロギング機能により異常流量のモニタリングもしやすくなるため、夜間に行われることが多い盗水などを発見しやすくなると考えられる。

支援項目 d) 地域別のモニタリングの結果を用いた戦略的な活動内容の検討

上記のモニタリングの結果を基に、毎月もしくは毎週、どの地域に対してどのような無収水削減活動を展開するかを戦略的に検討できるように支援する。

[支援分野4] 漏水対策の実施状況の改善

支援項目 a) 日常的な音聴棒の使用による漏水調査の定着化

この支援では、地下漏水探知を効率化し、さらに定着させるため、基本的かつ安価なツールである音聴棒を管路の維持管理に係わる多くの職員に広く配布する。ケニアでは、**WSB** などから供与された高度かつ高額な漏水探知機器を所有しているものの、地下漏水調査を継続的に行っていない **WSP** が散見される。管路の維持管理に係わる多くの職員が音聴棒を使用できるようになることで、日常的に給水管周りの地下漏水の有無や漏水の発生が疑われる配水管についての点検が行われるようにする。これにより高度な機器を用いた漏水探知についても効率的に行うことができるようになり、地下漏水探知の定着に繋がると共に、無収水及び漏水の削減に対する現場職員の意識が向上すると考えられる。

Meru WSP においては、テクニシャンだけでなく、メータ検針員にも音聴棒を持ってもらい、検針時にメータから給水管の漏水などを示唆する異常音がないかをチェックさせる試みを検討している。この試みが成功すれば、**NRW** ユニットが他の機器を用いて効率的に地下漏水の発生場所を特定できるようになると考えられる。

支援項目 b) 段階的な地下漏水発生場所の絞り込み

戦略的かつ効率的に地下漏水探知を行うため、段階的に、ゾーニングやステップテスト(夜間流量を測定しながら配水支管の仕切弁を開閉することで不明水量の分布を明らかにする)により、区域ごとの調査優先順位を設定し、さらに音聴棒を用いた全戸音聴調査により徐々に漏水が発生している場所を絞り込む調査手法修得のための支援を行う。また、全戸音聴調査による絞り込み調査の後、状況に合わせて超音波流量計、電子式漏水探知器(もしくはグラウンド・マイクロフォン)及び相関式漏水探知器を使い分けることで、効率的に漏水箇所を特定するための支援を行う。

支援項目 c) 現場作業等による配水圧の改善

この支援では、最高水圧の記録が可能な安価なアナログ式水圧ゲージやプレッシャー・ロガーを用いて水圧測定調査を実施することで、給水区域内の水圧分布状況を把握し、さらに水圧を最適化するための施設改善などについて検討する。必要な場合には、高水圧が発生している比較的限られた地域を対象にした、**GIS** データを用いた水理解析についても指導することを想定している。また、既存の減圧弁の調整により配水圧の最適化を図り、破裂事故・漏水発生を抑制するなどの施設の運転維持管理の改善についても支援する。

支援項目 d) スパゲッティ・コネクションの削減

配水支管や共用給水管の不足等に起因した長く入り組んだ給水管(スパゲッティ・コネクション)からの漏水(及び盗水)を削減するため、適切な配水管の整備や布設ルートが分からない管路(非金属管を含む)の位置の特定方法について支援する。

支援項目 e) ハンドポンプを用いた給水装置の施工品質の確認

給水装置の施工不良の有無を確認するため、ハンドポンプを用いた圧力テストの導入を支援する。例えば、この支援項目の対象となっている各パイロット WSP が、給水管 100 接続を対象に圧力テストを実施し、施工不良の発生率を WSP 間で比較する。このような試みにより、給水管接続の施工品質の向上に対する各 WSP の意識改善を促進する。また、Ruiru-juja WSP においては、既存給水管に PVC、PPR、HDPE などの異なる管材が用いられているため、各管材の給水管に対して圧力テストを実施し、HDPE 管の漏水削減効果を検証する試みも考えられている。

[支援分野5] 顧客メータ管理状況の改善

支援項目 a) メータ設置率 100%の達成と老朽化した不良メータの取り換え

パイロット WSP の内、Nakuru WSP、Mavoko WSP 及び Kilifi-Mariakani WSP の最新の Impact Report において公開されている 2014/15 年度時点でのメータ設置率は、それぞれ 94%、94% 及び 91% であり、100% に達していない。しかし、Nakuru WSP と Kilifi-Mariakani WSP については、これまでに 100% に達しており、Mavoko WSP は 98.6% まで達しているようである。ただし、Mavoko WSP と Kilifi-Mariakani WSP については、それぞれ 2,500 個程度及び 2,000 個程度の著しく老朽化した不良顧客メータが残っているものの、資金不足のため、それらの取り換えが滞っており、外部からの支援を必要としている。

特に、Mavoko WSP では、予定されたカウンティからの資金援助が遅れ、さらに水源地域の干ばつによる給水量低下に伴って、水道料金収入が減少したため、2017 年になってからは、顧客メータの購入が難しい状態に陥っている。このような状況であるため、MWI の NRW ユニットの 2016/17 年度の予算を用いた Mavoko WSP のための顧客メータ(低流量の計測ができるピストンタイプ)の購入が現在検討されている。一方、Kilifi-Mariakani WSP については、WASREB からの情報により、水道料金表を改定して収入を増やすことで、取り換えのための顧客メータの購入等を行うことが予定されていることが分かった。そのため、Kilifi-Mariakani WSP に対する NRW ユニットの 2016/17 年度の予算を用いた顧客メータの購入支援については見送られた。

支援項目 b) 顧客メータの管理方針・方法の明文化

顧客メータの現実的な検査・交換等の方針・方法が明文化され、それに従って顧客メータの管理が適切に行われるように支援する。具体的には、検査対象とする水道メータの選択方法(例えば、顧客の水使用量のモニタリング結果に基づく)、検査方法(テスト

ベンチ、モバイル・テスター、もしくは目盛り付き容器による)、顧客の種類や水使用量等に応じたメータ選定、及び検針率改善のためにメータを顧客の敷地外に出すなどの方針についての検討、ならびに顧客メータの基礎情報(型式や設置年等)の集積方針についても支援される。

支援項目 c) 大口の顧客に対する集中管理の実施

給水区域全域の特に水使用量が多い大口顧客に注目した検針精度の確保や盗水防止などの管理は、高い費用対効果が期待できるため、最も優先的に行うべき対策の一つである。本プロジェクトでは、特に、高い精度のメータやスマートメータ(データ記録機能、盗水防止機能、遠隔検針機能等がついている)等の導入検討を支援する予定である。

リーディング WSP である Meru WSP と Embu WSP に対しては、既に MWI の NRW ユニットの 2016/17 年度の予算を用いて、それぞれ 10 個及び 20 個の大口顧客用スマートメータ(精度低下の起こりにくい超音波流量計を内蔵したタイプ)を購入することが検討されている。これらのスマートメータは、ラジオ波を用いて水使用量の積算値を発信する機能を持っている。本プロジェクトにおけるトライアルとしては、発信された検針データを専用のラジオ波受信機を介してスマートフォンに取り込み、さらに収集したデータを Wi-Fi などを用いて、まとめて PC に転送する比較的安価なシステムの試験的な導入を予定している。現在、Nairobi WSP は、スマートメータの本格導入を進めているため、その知見を参考に検討を進めている。

[支援分野6]盗水対策の改善

支援項目 a) 機器等を用いた積極的な違法接続のパトロール

水道水中の残留塩素の有無を確認するための DPD 試薬やパイプロケーターなどの機器を用いた盗水の発見を側面から支援する。

支援項目 b) 盗水対策のためのカウンティの条例等の強化

罰金による盗水削減効果が低い大規模な盗水を繰り返す企業、農場、政治家等への対策を強化するため、カウンティの条例に盗水に対する罰則規定(刑務所での拘留を含む)を設けるように促すなど、側面的な支援を行う。

支援項目 c) カウンティと連携した盗水対策の実施

パイロット WSP とカウンティが連携した盗水対策のためのパトロール実施を側面から支援する。例えば、カウンティからの要請に基づき、WSP が給水区域を周辺集落や貧困層居住区等に拡張する際に、特に有効であると考えられる。

3) 各パイロット WSP の機器の保有状況に応じた機材調達計画の策定

MWI の NRW ユニットの予算による調達を予定している機器

ベースライン調査では、各パイロット WSP における漏水探知器等の保有及び使用状況を調査した結果、無収水を削減するために必要な機器を十分に保有していないパイロット WSP が多いことが分かった。地下漏水探知などについての技術支援を開始するためには、早急に各パイロット WSP において不足している機器を調達する必要があるため、MWI の NRW ユニットとの協議の結果、計画されている MWI の 2016/17 年度予算 (60 million Ksh) の費目を変更して、パイロット WSP における漏水調査等のための機器調達 (27 million Ksh 程度) に充当されるように調整することとなった。表 4-5 に、パイロット WSP における機器の保有状況及び MWI の NRW ユニットの予算により調達を予定している成果 4 の研修に必要な機器の数量を示す。

表 4-5: 各パイロット WSP における漏水探知等のための機器の保有状況及び調達予定数量

Equipment		Number of Existing Equipment in brackets () and Required Number for Procurement								
Category	Type of Equipment	Leading WSP Phase 1 and 2		Preceding Pilot WSPs Mainly Phase 2				Following Pilot WSP Mainly Phase 3		
		Meru	Embu	Kisumu	Nakuru	Ruiru-Juja	Nyahururu	Mavoko	Eldoret	Kilifi-mariakani
		Pressure Measurement	Pressure Logger	4	(3+1 with dead battery)	4	(20 mostly with dead battery)	(1)	2	2
Programming Cable for the Logger	1			1			1	1	1	
Flow Measurement	Portable Ultrasonic Flow Meter	(1)	(1)	(1)	(1)	(1)	(1)	1	1 (2 broken)	1
	Portable Meter Tester	1	1	(2)	(2)	(1)	1	(1)	(2)	1
Detection of Leak and Pipe Location	Hand Pump for Leak Check	1	1	1	1	1	1	1	1	1
	Ground Microphone (Leak Detector)		(1)		(1)	1	1		(1 old)	(1)
	Listening Stick	18 (2)	7(3)	8	8	8	8	8	8	8
	Leak Noise Correlator				(1)	(1)	(1)			(1)
	Leak Noise Correlator with Ground Microphone	(1)	1	(1)				1	1	
	Impulse Generator (sound box) for Plastic Pipes	1	1	(1)	(1)	1	1	1	1	1
	Pipe Locator for Metal Pipes + Cable for Plastic Pipes	1	1	(1)	(1)	(1)	1	1	(2 old)	(1)

注: ()内は保有機器数、赤字は調達予定数

各パイロット WSP における機器の使用状況について調査した結果、内蔵電池が充電できない状態のものを含め、地下漏水探知に関する調査機材は殆ど使用されておらず、殆どのパイロット WSP では、基本的な機器使用方法から効率的な漏水探知技術に至る一連のトレーニングが必要であることが分かった。また、JICA 専門家は、各パイロット WSP に対する調達予定機器

の選定のため、市場調査により、現地で調達可能な機器の特徴やそれらの価格を調べた上で、現地の状況にあった仕様及び調達数量を検討した。

予定している現地での機器調達の特徴の一つは、前述した地下漏水探知のためのトライアルを実施するため、音聴棒を多く調達することが挙げられる。Meru WSP においては、メータ検針員による音聴棒を使用した漏水疑似音の戸別調査に前向きな意向が確認できたため、音聴棒の調達予定数を 18 とした。また、ケニアでは、水道管が道路脇の舗装されていないスペースに埋設されている場合が多く、また埋設時の埋め戻し土の締固めがあまり行われていないため、埋設管からの漏水音が地上に伝わりにくい傾向がある。そのため、日本で広く使用されているタイプの電子式漏水探知器による路線調査では、効果的な漏水調査が難しい。このような状況を考慮し、超音波流量計や相關式漏水探知機を用いた漏水箇所の絞り込みに加えて、グラウンドマイクروفोनと呼ばれる漏水探知器により漏水箇所の特定ができるように、調達機器の構成を提案した。さらに、ケニアでは配水管及び給水管に PVC、PPR 及び HDPE などのプラスチック管が多用されているため、非金属管の漏水箇所や布設位置を調べるための機器についても調達予定機器に含めている。

また、各パイロット WSP の状況や選定された支援項目に応じて、調達機器を選択するように心がけた。例えば、Kilifi-Mariakani WSP については、高水圧の問題は起きておらず、水圧管理を支援項目としていないため、水圧ロガーの調達を予定していない。

機器の保有状況については、表 4-5 に示す機器の他に、Embu WSP、Kisumu WSP 及び Eldoret WSP はメーカーにより製造されたメータテストベンチを保有している。Meru WSP と Nyahururu WSP は手作りのテストベンチを使用している。メータテストベンチについては、パイロット WSP がそれぞれ必要に応じて自ら調達することを想定している。

成果4では、前述したように、選定された支援項目(トライアル)を実施するため、以下の機器についても MWI 無収水ユニットの今期の予算により調達することを予定している(合計 13 million Ksh 程度)。

- a) Mavoko WSP に対するクラス C ピストン型プラスチック製顧客メータ 1,000 個
- b) 1. Meru WSP と Embu WSP に対する大口顧客用スマートメータ合計 30 個、
2. ステップテスト等のためのバルクメータ(ロギング可の電池内蔵型超音波流量計)9 台、
3. Meru WSP と Embu WSP に対する精度低下により交換が必要なプロダクションバルクメータ合計 3 台 (機械式及び電磁流量計)
- c) GIS 整備を開始する Nyahururu WSP 及び Kilifi-Mariakani WSP 等に対する GPS10 基、及び A3 サイズのプリンター/スキャナー複合機 2 台

また、MWI 無収水ユニットの事務所整備費、成果 3 のため KEWI を対象に調達する相關式漏水探知機1基、音聴棒 10 本及び GIS トレーニング用の A3 サイズのプリンター/スキャナー複合機 2 基(内1基は Kericho WSP の GIS センター用)の購入費用、KEWI での漏水探知トレーニング・フィールド改築費用、及び会議等の開催費用などの合計額が NRW ユニットの今年度の

予算内(60million Ksh)に収まるように、成果4のための機器調達の内容を調整した。ベースライン調査では、MWIの器材調達プロセスについても、NRWユニットと協議を行い、器材調達が円滑に行われるように対応策を検討した。本年度は、大統領選挙の影響のため、2017年5月以降、予算の費目変更ができなくなる。そのため、迅速にNRWユニットの予算の費目変更に対するMWIの承認が得られるよう、NRWユニットを支援している。

ベースライン調査及び市場調査の結果を踏まえ、MWI無収水ユニットと協議・調整した調達予定器材リストの詳細については、添付資料10「Updated Distribution Plan of MWI NRW Unit's Budget for the Financial Year 2016/17」を参照のこと。

本邦調達器材の見直し

MWIのNRWユニットの予算によるパイロットWSP等のための機器調達が計画されたため、当初予定していたJICAによる本邦器材調達の内容の見直しが必要になった。当初計画では、表4-6に示すように、残留塩素計と電気伝導度計といった水質検査機器とGPSが本邦調達器材リストに含まれていた。しかし、ベースライン調査の結果、これらの機器を本邦調達する必要がないと判断したため、表4-7に示すように、代わりに漏水探知器、相関式漏水探知器、金属探知器、音聴棒を加えた変更案をMWIのNRWユニットに提示し、協議した。ケニア側に供与する本邦調達器材は、プロジェクト実施中、JICA専門家がMWIのNRWユニットと共に使用する予定である。現在、MWIから本邦調達器材の変更についての正式な要請レターが貴機構に提出されるようにNRWユニットを支援している。

表 4-6: 当初計画の本邦調達器材リスト

Item	Quantity	Unit Price	Price
Portable ultrasonic flow meters	5	¥1,189,900	¥5,949,500
Pressure gauge with loggers	10	¥250,000	¥2,500,000
GPS	5	¥32,000	¥160,000
Portable checker of water meters	2	¥250,000	¥500,000
Residual chlorine meters with 1,000 of reagents	9	¥24,100	¥216,900
Portable electric resistivity meters	9	¥29,000	¥261,000
Total			¥9,587,400

表 4-7: ベースライン調査において見直した本邦調達器材リスト

Item	Quantity	Unit Price	Price
Portable ultrasonic flow meter	1	¥1,629,500	¥1,629,500
Pressure logger	10	¥343,000	¥3,430,000
Portable checker of water meters	2	¥250,000	¥500,000
Leak noise correlator	1	¥3,100,000	¥3,100,000
Electric leak detector	1	¥498,000	¥498,000
Metal locator	1	¥185,000	¥185,000
Listening stick (1.5m & 1.0m)	8	¥25,000	¥200,000
Total			¥9,542,500

(6) 無収水削減に係わる他ドナーとの援助協調

ケニアでは、現在多くのドナーが無収水削減のための支援を WSP に対して行っているため、他ドナーとの援助協調は不可欠である。表 4-8 に、ベースライン調査において把握した他ドナーの無収水削減支援の状況を示す。

表 4-8: 他ドナーの WSP に対する無収水削減のための技術支援など

ドナー名	無収水に係わる支援内容及び時期	対象 WSP
VEI (/SNV)	水道の運用維持管理の改善の一環として無収水削減のための支援を行っている(2012年にSNVと共に開始し、現在はVEI単独で支援を継続している)。	Naivasha、Nakuru、及び Kisumu
VEI (/SNV)	無収水に係わる幅広い業務指標などを用いた WSP のベンチマーキング及び無収水削減のための分科会を通じた支援(2012年にSNVと共に開始し、現在も支援を継続している)。	WASPA を通し、WASPA 会員である 60 程度の WSP の内、33 の WSP が参加し、今年度は 27 の WSP がデータを提出した(本技プロのパイロット WSP の内、Nyahururu と Ruiru-juja 以外は、データを提出した)。
SNV/ VEI	DMA を整備し、無収水を削減するパイロット事業(2014～2015年)	Murang'a、Thika、Machakos、Oololaiser、Nakuru Rural、Malindi、Kakamega-Busia、Gusii、Nzoia、及び Siaya Bondo
SNV	DMA を整備し、無収水を削減するパイロット事業の他の WSP への展開(2016～2019年)	Isiolo、Malind、Nakuru Rural、Kakamega、Homabay、Nanyuki、Gatamathi、及び Tabevo (Eldored と Kericho が加わる可能性がある)
SNV	無収水削減のための Performance Based Contract (PBC) の導入支援(2016～2018年)	Embu、Eldoret、Nanyuki、Kericho、Thika、及び Murang'a-South を対象に検討中
SNV	NRW Audit(WASREB の NRW Standards の利用状況調査、Water Balance Table 及び無収水削減のための Performance Improvement Plan (PIP)の作成支援など)(2017年)	Nakuru Rural、Gatamathi、Muranga South、Kakamega、Isiolo、Nanyuki、Eldoret、Homabay、Malindi、Mavoko、Thika、Embu、及び Taita Taveta
VEI	DMA を整備し、無収水を削減するパイロット事業の他の WSP への展開(2016～2019年)	Bornet、Kakamega、Kericho、Kisumu、Malindi、Mathira、Murang'a、Nakuru、Nakuru Rural、及び Mombasa
AFD	大規模な施設投資と合わせた、無収水削減のための技術支援及び施設改善(2014年～)	Nairobi 及び Kisumu
World Bank	無収水削減のためのゾーニングなどの長期計画策定、技術支援、機材供与など(2014年頃～)	Coast WSB 下の 8 つの WSP (Kilifi-Mariakani、Kwale、Malindi、Lamu、Tavevo、Mombasa、Tana River 及び Bulk Water) に対する計画策定、Nzoia に対する技術支援、Athi WSB 下の WSP に対する機材供与、及び VLN WSB 下の WSP に対するトレーニングのための資金援助
GIZ	ケニア国の無収水管理についての方針書の策定支援(2016～2017)	MWI を対象にした支援

前述したように、2016年以降、SNVとVEIは本プロジェクトのパイロットWSP候補を含む

多くの WSP に対して無収水削減支援を展開しており、SNV と VEI が支援対象としている WSP を完全に避けてパイロット WSP を選択することは不可能であった。

そのため、リーディング WSP を含む合計 9 ヲ所のパイロット WSP の内、Kisumu WSP と Nakuru WSP については、VEI と支援の内容が重複しないように調整した。具体的には、Kisumu WSP では、新たに構築する 2 ヲ所の DMA に係わる支援と大口の顧客への対応に係わる支援を VEI が担当し、給水区域全体を対象にした無収水削減計画の策定、漏水探知及び GIS を用いた分析などに係わる支援については JICA 専門家が支援を担当することになった。Nakuru WSP については、VEI が北ゾーン及び東ゾーンを DMA に細分化するための資金援助と商業的損失への対応に係わる支援を担当することになり、JICA 専門家が無収水削減計画の策定、GIS の整備と利用状況の改善、既存 DMA の運用開始、及び地下漏水探知に係わる技術支援を行うことになった。

また、Embu WSP と Eldoret WSP では、SNV が給水区域内の一部の地域を対象にした無収水削減のための PBC の導入を支援する可能性があるが、その事は、本プロジェクトでの WSP 職員に対する技術支援には大きく影響しないことを確認した。SNV は、2017 年に WASREB と共に実施する NRW Audit の対象 WSP の一つとして、Mavoko WSP を選択している。今後 SNV は Eldoret WSP を現在多くの WSP に展開している DMA ベースの支援の対象とする可能性がある。このような状況を考慮し、支援時期や内容について他ドナーとの援助協調に配慮した。

(7) モニタリング指標

以下に、2017 年 3 月 15 日に実施された第 2 回 JCC において共有された成果 4 の活動の進捗(表 4-9)のモニタリングの状況を示す。

表 4-9: 成果4の活動の進捗(2017 年 3 月時点)

Activity	Progress
4-1 The Project team conducts a survey of Urban WSPs and selects pilot Urban WSPs.	15 ヲ所のパイロット WSP 候補に関する調査が実施され、7 ヲ所のパイロット WSP が選択された。
4-2 Each Pilot WSP conducts analyses of current NRW reduction activities and identifies its challenges.	評価結果を共有するためにリーディング WSP とパイロット WSP へ追加訪問が行なわれた。課題と支援項目を特定するための参加型計画策定が進行中である。
4-3 Each Pilot WSP identifies measures to solve challenges and formulates the NRW reduction plan.	
4-4 Each Pilot WSP formulates the annual NRW reduction plan including financial schedule based on the NRWE reduction plan.	2 ヲ所のリーディング WSP と 4 ヲ所の先発パイロット WSP は 2017 年 7 月から年次計画を開始する予定である。
4-5 Each Pilot WSP implements the annual NRW reduction plan.	
4-6 Each Pilot WSP evaluates and analyzes implementation results and revises the plans.	パイロット WSP の実施結果のレビューは 2018 年 4 月頃から開始され、無収水削減計画を改訂し、年次活動報告を作成する予定である。
4-7 Each Pilot WSP produces the NRW reduction activity report annually.	
4-8 Each Pilot WSP holds regular NRW reduction meetings attended by relevant departments of WSP.	無収水削減の定期的な内部会議は 2017 年 7 月からの計画実施開始時から開催される。

<情報管理/広報>(成果5)

(1) 調査項目

1) 情報共有活動に関する組織についての情報収集

本プロジェクトにおける情報共有活動に関連する組織として、WASPA の活動を中心に情報を収集した。

2) パイロット WSP での情報共有活動の実施状況調査

リーディング WSP2 ヲ所とパイロット WSP7 ヲ所を主たる対象として、情報共有の実態把握の調査を実施した。

(2) 調査方法

WASPA に対しては面談による聞き取り調査と関連文献を収集し、本プロジェクトへの協力関係の構築について協議を行った。さらに、上記 9 ヲ所の WSP の他に 3 ヲ所の WSP を加え、質問票を送付し、WSP を訪問して聞き取り調査により回答を収集した¹。なお、調査を実施した WSP は成果1(表 1-4)にて記載している。

(3) 調査・評価結果

1) WASPA におけるプロジェクト成果の情報共有活動

WASPA の使命・目的

WASPA は、会員相互による活発な議論の場を提供することにより、WSP の活動の活性化、持続性の向上を図ることを使命としており、以下の目的に沿って活動している。

- ケニアにおける給水と衛生の商業化を促進する。
- 給水と衛生施設の持続性のある管理と開発を促進する。
- 給水と衛生サービスの供給、開発、管理に関するベスト・プラクティスと基準を奨励・促進する。
- メンバーに有益な情報・データバンクの設立、見学会、ネットワーク、ケニア国内外のイベント等への参加を通して、情報と知見の共有を促進する。
- 他機関と協力し、研修ニーズについて会員にアドバイスをを行い、セクターにおける基準を確立するためのサポート、会員組織開発のための資金獲得の支援を行う。

WASPA 事務局

WASPA の事務局は、事務局長の下、数名のスタッフで編成され、水灌漑省(MWI)内に事務所を置いている。事務局は MWI 幹部(事務次官か副次官(Water Secretary)または部長クラス(Directors)と比較的容易に会合を持つことができるが、一般職員と接触する機会はあまりないようである。

¹Kilifi-Mariacani は質問票送付による回答。

WASPA 理事会は年次総会で選出された会長、副会長、書記、会計を含めた 12 名の会員で構成されている。全会員による定例会合は 2 ヶ月に1回、WSP 会員の持ち回りで会場を移しながら開催され、誰もが自由に発議することができる。それ以外に Capacity Building Committee、Advocacy & Publicity Committee がある。

活動内容(ベンチマーキング活動)

ベンチマーキングは WASREB の無収水削減基準に基づいた業務指標(PI)を含め、独自の指標を加えた 54 の指標に対し、WSP の達成度を推し量ろうとするものである。ベンチマーキングでは指標を時系列で示すため、現時点と過去のデータを比較することにより、各 WAP の活動を自己評価できるようになっている。WASPA のベンチマーキングは 2013 年に開始され、当初 9WSP の参加者から現在 33WSP に増加している。ベンチマーキングへは WASPA のメンバー WSP であれば誰でも参加することができる。

毎年 4 月にベンチマーキングの最終レポートが発表され、その結果を基に各 WSP は活動改善計画(Performance Improvement Planning: PIPs)を作成し、6 月には PIP が予算に反映される。9 月から次年度のベンチマーキングが開始される。ベンチマーキングでは NRW、O&M コストリカバリー、サービスレベルの 3 分科会に分かれている(2017 年 3 月時点)。加えて、Pro-Poor²プログラムに参加している WSP には、Pro-Poor に関する指標も追加されている。

WSP がベンチマーキングに参加するにあたり、WASPA 担当者から、ベンチマーキングの手法とツールに関する事前研修を受ける。また、ベンチマーキングは Peer to Peer ラーニング³を原則としているため、他 WSP を訪問のための予算を予め計上することを義務付けている。ただし、各 WSP がまとめる PI データの信憑性が課題であり、WSP の担当職員が指標の意味を必ずしも十分に理解していない場合もあり、相互学習方法を問題視する指摘もあった。

2)パイロット WSP 内・WSP 間における情報共有

本調査期間中実施した 12WSP での情報共有やナレッジマネジメントに関する現状を以下に記述する。

WSP で使用するコミュニケーションツール

選択肢より選択(複数回答有)

a) 口頭、b) 電子メール、c) 印刷物・書類、d) 電話(回線電話、SMS、Whatsapp⁴)

すべての WSP において社内のコミュニケーションに上述ツールを利用している。中でも Whatsapp は、Mavoko を除くすべての WSP で利用している。調査した WSP では概ね 6 割強の

² 国連 SDG の一環で実施される貧困削減プログラム

³ WSP 会員同士による相互学習方法

⁴ スマートフォンの通信アプリ

職員がスマートフォンを所有していると言われるが、スマートフォンを持たない職員(特に作業員)には、口頭で情報を伝えている。他の WSP においても、全体や部署ごとに Whatsapp グループを設定し、日常業務の連絡に利用している例は多い。

社内会議

Ruiru-Juja 以外の WSP では幹部、部署、課の会議を定期的実施している。定例会議の頻度は週 1 回～月 1 回、隔月と様々である。定例会議の開催日が書面化され全職員に共有されている WSP はなかったが、職員の多くは所属する部や課の会議日程を把握している。Ruiru-Juja では決められた日程はないが、必要に応じて招集されるとのことである。

情報管理の現状

社内の情報管理を担当するのは、IT 担当者(7WSP)、人事部(4WSP)、顧客サービス係(3WSP)、MD 又は MD の秘書(2WSP)、広報担当者(1WSP)、総務部(1WSP)との回答であった(複数回答可)。どの WSP でも必要な情報は担当部署毎に管理されているのが現状である。

情報の保管については、ほとんどの WSP ではハードコピーをファイル保存している。カスタマーチャーター等対外向け書類はホームページから得るとの回答であった。Google Drive や Drop Box などオンライン(Cloud)の情報デポジトリー(貯蔵庫)を利用している WSP はなかった。唯一 Kisumu WSP では、顧客のクレーム伝票を Cloud に格納し、オンラインではないが幹部のための情報のデポジトリーが存在すると回答があった。Nyeri では ISO90012015 で必要とされる情報に関しては、一ヶ所に収納されていると答えている。

以上から、情報の所在・内容が整理され、一ヶ所にまとめられている WSP は存在しない。情報の保管場所については、顧客情報や人事規則などは所在が判り易いため問題ないが、ワークショップやセミナーに参加した際の報告書や技術レポートなどの保管は、各職員の記憶に任せられ、そのつど電子メールや書棚を探すのが現状であり、効率性が悪い。

ナレッジシェアリング

すべての WSP は、職員が社外の研修、セミナー、ワークショップ等に参加した際には、報告が義務付けられている。報告の方法としては、報告書を提出する(7WSP)、社内会議でのプレゼンテーションを実施する(5WSP)、報告書や付属書類をメールで共有する(2WSP)である。ただし、Ruiru-Juja では、報告制度がないため、WSP 内でインフォーマルに内容を伝えているようである。

WSP 間の交流や情報交換

調査した全 WSP において、他 WSP を訪問した又は他 WSP から訪問を受けた経験を有しており、Peer to Peer ラーニングが実施されていることが確認された。訪問する WSP を決定する要素としては以下のとおり。

- WASPA のベンチマーキングの結果より先進的な WSP を選ぶ(例:NRW 率を下げた WSP)
- WSP が導入を計画しているシステムや制度を導入している WSP を訪問する(例:水道料金請求書を SMS で送る、顧客マネジメントシステムを導入している、Pro Poor ユニットを設置している等)
- 施設を訪問する(例:浄水場など)
- 時間や費用の節約にもなることから地理的に近い WSP を訪問する。

また、回答者の中には他 WSP の職員と独自の人的ネットワークを持っている職員が多く、WASPA のセミナー/ベンチマーキングや WASPA が主催する WSP スポーツ大会等で知り合ったのを契機として、その後業務に関する課題や疑問に関して連絡を取り合っているようである。

スキル・知識習得のための効果的な手段

職務上で必要なスキルや知識の効果的な習得方法については、Peer to peer ラーニング(12WSP)、セミナーや研修(10WSP)、専門家やトレーナー(6WSP)、インターネット(4WSP)、映像などメディア(4WSP)、経験(2WSP)、本・出版物(1WSP)【複数回答有】であった。

すべての回答者が、Peer to peer と答えており、他 WSP から現場レベルでのスキルや知識を学ぶことが、最も効果的な習得方法だと考えているようである。セミナーや専門家という回答も多いが、その内容や講師・専門家の質に左右されるという意見もあった。本や出版物は、持ち運びに不便、お金が掛かるなどの理由で評価が低かった。

(4) 課題

WSP 職員がワークショップやセミナー参加した際の成果報告の共有に関するシステムは概ね確立されている。一方、WSP 内の情報が系統的に整理されていない WSP が多い。せっかく報告書、資料等が共有されても、情報のデポジトリーがないため必要な情報がその場限りで、後日活用されずに埋もれてしまう可能性がある。今後、オンライン・デポジトリーも含めて、WSP 内の知識や情報の共有と利用を促進していく必要がある。

また、ベンチマーキングを利用した Peer to peer ラーニングは WSP 間で自発的に行われ、WSP 職員からも Peer to peer で業務に必要な知識や技術を効果的に学ぶことができると高い評価を得ている。本プロジェクトの成果や好事例を WSP に紹介する際に、この Peer to peer ラーニングのスキームを利用することの効果が期待される。一方、Peer to peer ラーニングは効果的な方法であるが、実施する際にはコストや時間が掛かる、予算の関係から限られた職員しか参加できないなどの制約を軽減することが課題である。

(5) 支援活動の内容

上記の課題を解決あるいは軽減する方法として、WASPA の定例会やセミナーをパイロット WSP で行い、プロジェクトにおける成果を発表し、参加 WSP が実例から学ぶ機会を提供する案

が挙げられる。

また、Peer to peer ラーニングの手法を活かしながら、より多くの職員がパイロット WSP も含め、他 WSP から学ぶ方法として、例えば WSP 間でのビデオ会議の実施やプロジェクトの成果を動画により配信することで、より効率的に広めることが可能になる。今後、MWI と WASPA の連携を強化し、関係機関、WSP 間で実現へ向けた方策を策定する。

(6) モリタリング指標

表 5-1: 成果 5 の活動の進捗(2017 年 3 月時点)

Activity	Progress
5-1 MWI NRW Unit organizes NRW related regular meeting in cooperation with other relevant organizations.	PIC が毎月定例会議として開催されている。今後 WSP が参加し、より具体的活動や計画が討議されていく。
5-2 WASREB complies case studies/lessons learnt about NRW reduction activities.	成果 4 の WSP への支援活動の進捗に伴い、情報を蓄積する。無収水削減基準の改訂が Phase3 で実施される。

(7) その他

WASPA と MWI 省との関係の構築

プロジェクト開始時点で、WASPA と MWI 省間に書面による正式な協力関係はなかったことから、本調査期間中に覚書 (MoU) を作成し、本プロジェクトの実施において両機関が協力することに関し、両者において基本合意がなされた。MoU は 3 月中に署名される予定であったが、若干遅れているものの 4 月中には調印するべく準備中である。


ベースライン調査報告書資料

【添付資料】

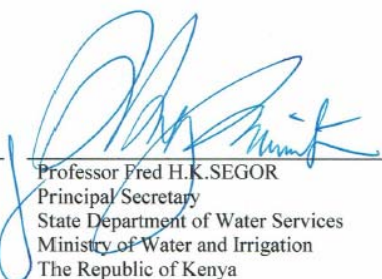
1. 第1回のJCCのM/M(本文のみ)

MINUTES OF MEETING
ON
FIRST JOINT COORDINATION COMMITTEE
ON
THE PROJECT FOR
STRENGTHENING CAPACITY IN NON-REVENUE WATER REDUCTION
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
MINISTRY OF WATER AND IRRIGATION
THE REPUBLIC OF KENYA

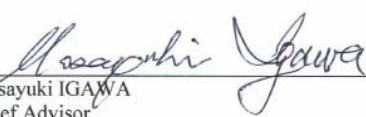
Nairobi, October 19, 2016



Kazuhiro TAMBARA
Senior Representative
JICA Kenya Office



Professor Fred H.K. SEGOR
Principal Secretary
State Department of Water Services
Ministry of Water and Irrigation
The Republic of Kenya



Masayuki IGAWA
Chief Advisor
JICA Expert Team

In accordance with the Record of Discussion (hereinafter referred to as R/D) signed on March 7, 2016, between the Ministry of Water and Irrigation (hereinafter referred to as "MWI") and Japan International Cooperation Agency (hereinafter referred to as "JICA") on the Project for Strengthening Capacity in Non-Revenue Water Reduction (hereinafter referred to as "the Project").

The Government of Japan has already dispatched JICA expert team (hereinafter referred to as "the Team") to Kenya. The Team submitted the Draft Work Plan to MWI and relevant organizations (hereinafter referred to as "Kenyan side"), and the Plan was discussed during the period from 11 to 19 October 2016.

The major points of discussion and agreement are summarized as follows:

1. Contents and Schedule of Draft Work Plan

The Kenyan side confirmed contents and schedule of the Project as indicated in the Draft Work Plan that was prepared and agreed on R/D and Minutes of Meetings (hereinafter referred to as M/M) signed on December 4, 2015. In addition, both sides agreed that the Draft Work Plan will be revised in detail after the completion of Baseline survey.

2. Duration of the Project

Duration of the Project is five (5) years from the date of dispatch of JICA Expert Team as indicated in R/D. The first group of experts have already been dispatched on October 10, 2016, therefore the duration of the Project is run from October 10, 2016 to October 9, 2021. The Project is divided into the following three phases.

Phase 1: From October, 2016 to September, 2017

Phase 2: From October, 2017 to September, 2019

Phase 3: From October, 2019 to September, 2021

3. Major Undertakings by Kenyan Side

Both sides agreed on the contents of the Major Undertaking by Kenyan side indicated in Draft Work Plan. JICA requests that the Kenyan side to timely execute the following input in accordance with R/D and M/M:

(1) Appointment of counterpart members

As indicated R/D, MWI, WASREB and KEWI have already assigned suitable counterpart members for effective implementation of the Project. The list of Kenyan counterpart members has been submitted to JICA Expert Team (Annex-2).



1



Counterpart members of Pilot WSPs (including Embu and Meru) will be assigned after the completion of the selection process of Pilot WSPs.

(2) Provision of office space

MWI and KEWI have prepared office space for the JICA experts with office furniture, telephone line and internet connection. Pilot WSPs will also provide suitable office spaces after the completion of the selection of Pilot WSPs.

(3) Allocation of the budget

MWI, WASREB and KEWI have already secured the budgets such as allowance and traveling costs for the counterpart and administrative personnel, and other running expenses necessary for the implementation of the Project.

4. Selection Process for Pilot WSPs

Kenyan side and JICA confirmed that Embu and Meru have already been selected as the Leading WSPs as indicated in R/D.

In addition, both sides agreed that seven (7) additional Pilot WSPs¹ will be selected out of fifteen (15) candidate Pilot WSPs based on the selection criteria below.

(1) The criteria for selecting Pilot WSPs

1) Prerequisite Criteria

a) WSPs meet the criteria described in the Minutes of Meetings signed on 4th December, 2015 (See Annex-3)

b) Counties, WSBs and WSPs have willingness to sign Memorandum of Understandings (MOU) for implementation of the Project.

2) Selection Criteria

a) NRW reduction activities based on NRW reduction plan

b) WSPs' organization and structures essential for NRW reduction

c) Technical capacity of WSPs on NRW reduction activities

d) Financial status relevant with NRW reduction activities

(2) The Potential Pilot WSPs

1) Athi WSB: Ruiru-Juja, Kiambu and Limuru

2) LVN WSB: Eldoret and Nzoia

¹ In sum, nine (9) Pilot WSPs (Embu, Meru and seven (7) other WSPs) will be selected for the Project.



- 3) LVS WSB: Kisumu
- 4) RV WSB : Nakuru and Eldama Ravine
- 5) Northern WSB: Nanyuki, Nyahururu and Isiolo
- 6) Tanathi WSB: Mavoko and Machakos
- 7) Coast WSB: Kilifi, Mariakani, and Kwale

5. Selection of the First/Second Stage Pilot WSPs

In order to implement the Project efficiently, JICA Expert Team will start the Project activities with the Leading WSPs in Phase 1. Remaining Pilot WSPs will be divided into two stages; 1. Four (4) Pilot WSPs will be further prioritized as the First stage Pilot WSPs in Phase 2; 2. The remaining three (3) Pilot WSPs will be the Second stage Pilot WSPs subject to the review of achievements of First stage Pilot WSPs at Phase 3.

The selection of First and Second stage Pilot WSPs will be taken into consideration of the accessibility and efficient utilization of human resources to secure enough time for the activities for the Second stage Pilot WSPs.

6. Change of the Original Implementation Structure

Both sides agreed that a part of the original Implementation structure has to be changed due to the new organizational structure of MWI as indicated below.

Position of Project Director:

Previous: Director of Water Services, MWI

Current: Water Secretary, MWI

Position of Project Manager:

Previous: Deputy Director Water Services, MWI

Current: Director of Water Sewerage and Sanitation Development, MWI

END

Annex-1: Draft Work Plan (Phase 1)

Annex-2: Counterparts list

Annex-3: Minutes of Meetings (signed on 4th December, 2015)

Annex-4: Record of Discussion (signed on 7th March, 2016)

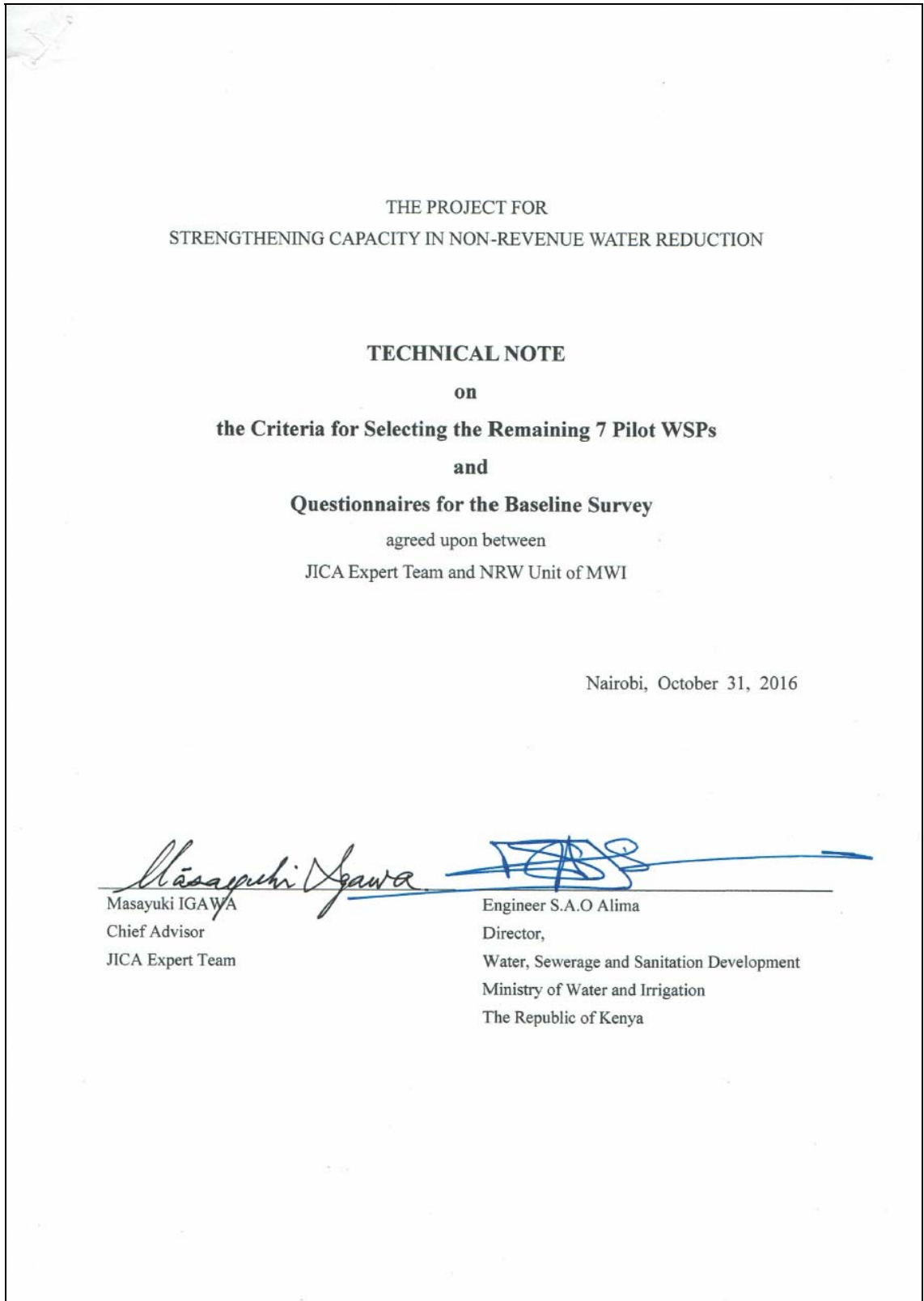


3



2. テクニカルノート 3 通

(1) パイロット WSP 選定基準の承認(本文のみ)



The JICA Expert Team and the NRW Unit of the Ministry of Water and Irrigation (MWI), Kenya discussed and confirmed the contents of the following three documents for starting the baseline survey;

1. Criteria for selecting the remaining 7 Pilot WSPs (see Annex 1).
2. Questionnaires for the Baseline Survey (see Annex 2).
3. Tentative Schedule of the Baseline Survey (see Annex 3).

The contents of these documents may be revised based during the baseline survey if the need arises.



(2) パイロット WSP 選定結果の承認 (MWI 本文のみ)

THE PROJECT FOR
STRENGTHENING CAPACITY IN NON-REVENUE WATER REDUCTION

TECHNICAL NOTE


on

the Baseline Survey Results for Selecting Pilot WSPs

agreed upon between

JICA Expert Team and NRW Unit of MWI

Nairobi, December 5, 2016



Masayuki GAWA
Chief Advisor
JICA Expert Team



Engineer S.A.O Alima
Director,
Water, Sewerage and Sanitation Development
Ministry of Water and Irrigation
The Republic of Kenya

The JICA Expert Team reported the baseline survey results for selecting 7 Pilot WSPs (in addition to Meru WSP and Embu WSP (Tana WSB)) to the NRW Unit of MWI and discussed the contents of the attached tables with the NRW Unit on December 1, 2016. Table 1 shows the details of previously agreed prerequisite and selection criteria used for the selection. Table 2 shows the results of the selection including the scoring for each selection criteria. As a result, Ruiru-Juja WSP (Athi WSB), Mavoko WSP (Tanathi WSB), Nakuru WSP (RV WSB), Kisumu WSP (LVS WSB), Eldoret WSP (LVN WSB), Nyahururu WSP (Northern WSB) and Kilifi-Mariakani WSP (Coast WSB) have been tentatively selected as the 7 Pilot WSPs. Table 3 shows the tentative plan of technical assistance (TA) for each Pilot WSPs. The tentative TA plan has been proposed by the JICA Expert Team in consideration of each Pilot WSP's weakness, requests, etc. based on the findings from the baseline survey. The contents of this table need to be reviewed by visiting each Pilot WSP again at the beginning of 2017.

The NRW Unit of MWI approved the contents of these tables.

ATTACHMENTS

Table 1: Prerequisite and Selection Criteria and Basis of Assessment for Each Aspect for selecting Pilot WSPs.

Table 2: Evaluation Sheet for Selecting Pilot WSPs.

Table 3: Tentative Plan of Technical Assistance (TA) for Each Pilot WSP based on the Results of Baseline Survey.



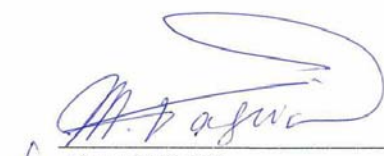
※上記 Table1、2、3 は、本報告書の表 4-1、4-2、4-4 に掲載されている。


(3) パイロット WSP 選定結果の承認 (CoG 本文のみ)

THE PROJECT FOR
STRENGTHENING CAPACITY IN NON-REVENUE WATER REDUCTION

TECHNICAL NOTE
on
the Finalized Selection of Pilot WSPs
agreed upon between
Ministry of Water and Irrigation (MWI)
and
Japan International Cooperation Agency (JICA)

Nairobi, March 20, 2017


for Masayuki IGAWA
Chief Advisor
JICA Expert Team


Engineer S.A.O Alima
Director,
Water, Sewerage and Sanitation Development
Ministry of Water and Irrigation (MWI)
The Republic of Kenya

The JICA Expert Team discussed tentative results of selecting seven Pilot Water Supply Providers (WSPs) out of fifteen candidate WSPs (in addition to the pre-selected two leading WSPs (Meru WSP and Embu WSP under Tana WSB)) with the NRW Unit of MWI at the beginning of December, 2016. After revisiting some of the tentatively selected Pilot WSPs to confirm their conditions, the selection was finalized without changes between MWI and the JICA side. Table 1 shows the details of previously agreed prerequisite and selection criteria used for the selection. Table 2 and Figure 1 show the results of the selection including the scoring for each selection criteria. The candidate WSPs having the highest total point in each WSB area were selected as the seven Pilot WSPs because of their potential as future leading WSPs for NRW reduction in their respective regions and Kenya.

As a result, Ruiru-Juja WSP (Athi WSB), Nyahururu WSP (Northern WSB), Nakuru WSP (RV WSB) and Kisumu WSP (LVS WSB) have been selected as the four Pilot WSPs which JICA experts will support mainly during Phase 2 (2nd and 3rd years) of this project. Mavoko WSP (Tanathi WSB), Eldoret WSP (LVN WSB) and Kilifi-mariakani WSP (Coast WSB) have been selected as the three Pilot WSPs which JICA experts will support mainly during Phase 3 (4th and 5th year) of this project. Figure 2 shows the variation of NRW ratios at the selected Pilot WSPs since 2007. The NRW Unit of MWI and JICA Headquarters approved this finalized selection of the seven Pilot WSPs.

Table 1: Prerequisite and Selection Criteria and Basis of Assessment for Each Aspect for selecting Pilot WSPs (1/2)

Same as the Pre-selection Criteria		Prerequisite Criteria					
		1) WSPs that are not receiving other development partner's assistance with similar activities of the Project. (Yes if there has not been recently) 2) WSPs that have established NRW units. 3) O&M cost recovery is 80% or more. 4) Metering ratio is 75% or more. 5) Water coverage ratio is 20% or more. 6) Water service hours are 10 hour or more. 7) Service connections are more than 5,000. (Medium or Larger WSP (number of towns)) 8) WSPs in location acceptable under JICA's security guidelines. Number of the pre-selection criteria which are currently not met.					
Additional Criteria		9) Counties, WSBs and WSPs have willingness to sign Memorandum of Understanding (MoU).					
Selection Criteria	Aspect to Evaluate	Weight (note 1)	Level Assessment				
			Level 5	Level 4	Level 3	Level 2	Level 1
1: NRW reduction activities based on NRW plan [Allocation: 20 Points]	1) Whether the County has a clear water supply development strategy.	1	Strategy/plan of the County includes a pipe replacement plan and mentions about NRW (e.g. in its county integrated development plan)	Strategy/plan of the County does not include a pipe replacement plan but it mentions about NRW.	Strategy/plan of the County includes a pipe replacement plan but it does not mention about NRW.	-	Strategy/plan of the County does not include a pipe replacement plan nor mentions about NRW.
	2) Whether the WSP uses subsidy from the County.	1	The WSP does not use subsidy from the County for its water supply services.	The WSP uses subsidy from the County (excluding payment for services).	-	-	The WSP applies for subsidy to the County but not able to receive it.
	3) Whether the WSP has an NRW reduction plan.	1	The WSP has an annual NRW reduction plan for this year.	-	-	-	The WSP does not have an annual NRW reduction plan for this year.
	4) Whether the WSP has been implementing the NRW reduction plan.	2	The WSP carries out NRW reduction activities along the NRW reduction plan.	The WSP has NRW reduction activities are not following the plan.	The WSP carries out NRW reduction activities but does not have NRW reduction plan	-	The WSP does not have NRW reduction plan and does not carry out NRW reduction activities.
	5) Whether the WSP periodically reports NRW reduction activities to its Board of Directors	1	The WSP periodically reports its NRW reduction activities to its Board of Directors (in addition to the monthly report to WSP/WASREB).	-	The WSP reports its NRW reduction activities to its Board but not periodically.	The WSP currently does not report the activities to its Board but has a plan to report in the near future.	The WSP neither report the activities to the Board nor have a plan to report in the near future.

※上記 Table1、2、Figure1、2 は、本報告書の表 4-1、4-2、図 4-1、4-2 に掲載されている。

3. モニタリングシート

PM Form 3-1 Monitoring Sheet Summary

TO CR of JICA Kenya OFFICE

PROJECT MONITORING SHEET

Project Title: THE PROJECT FOR STRENGTHENING CAPACITY IN NON-REVENUE WATER REDUCTION

Version of the Sheet: Ver.1 (Term: Oct, 2016 – Jan., 2017)

Name: Masayuki Igawa

Title: Chief Advisor

Submission Date:

I. Summary

1 Progress

1-1 Progress of Inputs (as at the end of January)

Input by Japanese

Experts: Overall 8 experts were dispatched in two terms: First mission (10 Oct, 2016-8 Dec. 2016) Second mission (23 Jan. 2017- 31 Jan. 2017)

Man Month (M/M):

Experts: 13.76M/M (excluding MM in Japan which is 0.5M/M)

Local staff: 3.1M/M

Changes in dispatch of experts during this period.

* Mr. Shibazaki (Training Management) shortened his mission due to illness during first mission (from 60 days to 37days)

* Mr. Nagao (NRW Reduction Specialist) shortened his mission due to illness during first mission (from 20 days to 12 days). Mr. Nagao is replaced by Mr. Saito in the Second mission.

* Miss Sugimoto (Information/Public Relation Management) shortened her mission due to family emergency.

Subcontract: Local consultant to conduct baseline survey (5 WSPs).

Input by Kenyan

Project CPs: Total number of CPs is

The list of CPs is attached to the monitoring sheet.

MWI (6) WASREB (3) KEWI (4) Meru WSP (6) Embu (11)

PM Form 3-1 Monitoring Sheet Summary

Facilities: Project office at MWI and KEWI
 Meeting room
 Vehicles for field visits
 Project implementation costs: First JCC meeting (venue, food, etc.) and traveling costs of MWI staff

1-2 Progress of Activities
 The following tables indicate the activities taken during this reporting term.
 Output 1

Activity	Progress
1-1 MWI NRW Unit, in cooperation with WASREB, produces NRW annual reports which include NRW reduction data.	NRW data is submitted by WSP every 3 month. Past annual report is reviewed and issues are identified.
1-2 MWI NRW Unit plans and implements NRW reduction sensitization activities for the Counties.	Not yet implemented
1-3 MWI NRW Unit plans and implements NRW reduction campaigns.	Not yet implemented
1-4 MWI NRW Unit conducts reviews of KEWI NRW courses.	Assessment of KEWI is conducted as part of Output3 with MWI involved.
1-5 MWI NRW Unit conducts reviews of WASREB's NRW reduction activities.	Assessment of WASREB is conducted as part of Output2 with MWI involved.

Output 2

2-1 WASREB conducts survey of the usage of current NRW reduction standards.	Not yet implemented
2-2 Based on the survey result as well as Output 4 and 5, WASREB revises the NRW reduction standards.	Not yet implemented
2-3 WASREB promotes revised NRW standards through workshop(s).	Not yet implemented
2-4 WASREB incorporates the review results of NRW reduction activities by MWI NRW Unit in their activities.	Not yet implemented
2-5 WASREB monitors and evaluates the usage of revised NRW standards.	Not yet implemented

Output 3

PM Form 3-1 Monitoring Sheet Summary

3-1 KEWI studies current status of NRW reduction courses and its challenges.	Study of current status is conducted by KEWI
3-2 KEWI reviews NRW reduction training strategies and course contents.	Yes. To strengthening the existing training facility, a plan to enhance the training course content has been developed.
3-3 KEWI, in collaboration with leading WSPs (Embu and Meru, etc.), conducts on-site NRW trainings.	Yes, KEWI and Nyeri WSP are conducting a joint training course (NRW / GIS) at WSP site with SNV support funds.
3-4 KEWI incorporates on-site NRW trainings into NRW course contents and materials.	Yes, the emphasis on lectures has been changed to suit the WSPs needs.
3-5 KEWI incorporates the results of review by MWI NRW Unit into NRW course contents.	Review is ongoing by NRW Unit.
3-6 KEWI conducts trace studies of NRW reduction course participants.	KEWI has not carried out this survey so far.
Output 4	
4-1 The Project team conducts a survey of Urban WSPs and selects pilot Urban WSPs.	Surveys on 15 WSPs were conducted and 7 Pilot WSPs (4 preceding ones: Kisumu, Nakuru, Nyahururu, Ruiru-juja - 3 following ones: Mavoko, Eldoret, Kilifi-mariakani) have been selected. Additional survey were done for the leading pilot WSPs (Embu and Meru). Technical Note on the selection is drafted.
4-2 Each Pilot WSP conducts analyses of current NRW reduction activities and identifies its challenges.	Additional visits to above 9 pilot WSPs are done to share the results of the capacity assessment conducted during selection processes. The processes involve with analysis on weaknesses and
4-3 Each Pilot WSP identifies measures to solve challenges and formulates the NRW reduction plan.	
4-4 Each Pilot WSP formulates the annual NRW reduction plan including financial schedule based on the NRWE reduction plan.	

PM Form 3-1 Monitoring Sheet Summary

	improvement measures for the formulation of 5-year and annual NRW reduction plans.
4-5 Each Pilot WSP implements the annual NRW reduction plan.	The 2 leading and 4 preceding pilot WSPs are scheduled to start their implementation of the annual plan from July 2017.
4-6 Each Pilot WSP evaluates and analyzes implementation results and revises the plans.	Reviews of implementation results of above pilot WSPs will start from around March 2018 to revise the NRW reduction plans while preparing their annual activity reports.
4-7 Each Pilot WSP produces the NRW reduction activity report annually.	
4-8 Each Pilot WSP holds regular NRW reduction meetings attended by relevant departments of WSP.	Regular internal meetings for NRW reduction will be held once the implementation starts in July 2017.
Output 5	
5-1 MWI NRW Unit organizes NRW related regular meetings in cooperation with other relevant organizations.	No actions have been taken in this period.
5-2 WASREB compiles case studies/lessons learnt about NRW reduction activities.	
1-3 Achievement of Output	
Output 1: Promotion and coordination of NRW reduction activities by MWI NRW Unit are strengthened.	
1-1 All County representative participate NRW related seminar(s).	Not yet happen
1-2 NRW reduction campaigns are conducted semi annually.	Discussions on campaign have been ongoing
1-3 NRW reduction annual reports are produced.	Existing NRW annual report have reviewed. Discussions on how to improve the report are ongoing
Output 2: Use of NRW reduction standards by Urban WSPs are promoted by WASREB	

PM Form 3-1 Monitoring Sheet Summary

2-1 NRW reduction standards are revised by year X.	Once analysis and evaluation of questionnaire responses are conducted, X will be determined.
2-2 Revised NRW reduction standards are disseminated to all Urban WSPs through workshop(s).	Not yet happen
Output 3: NRW related training capacity of KEWI is strengthened.	
3-1 KEWI conducts NRW reduction courses with contents incorporating on-site trainings and revised course materials.	On-site training materials are not yet prepared, so review of training has not completed.
3-2 Evaluations by the NRW course participants is higher than before the revision of course materials.	This will happen once revisions of the training course materials are completed.
3-3 X % of NRW course participants formulate the work plans.	Not yet happen
Output 4: NRW planning and/or implementation capacity of pilot Urban WSPs is enhanced.	
4-1 More than X of pilot Urban WSPs continuously make the annual NRW reduction plan based on the review of previous years implementation.	2 leading and 4 preceding WSPs will start the repetition of annual planning and implementation cycle with support from JICA experts in February or March 2017. The remaining 3 following pilot WSPs will start the same cycle around one or two years later.
4-2 More than X of pilot Urban WSPs continuously implement the annual NRW reduction plan formulated in 4-1.	
4-3 More than X of pilot Urban WSPs are able to implement skills and activities that pilot Urban WSPs were not able to adopt prior to the Project.	
4-4 More than X of pilot Urban WSPs are able to implement priority activities indicated in the NRW reduction plan.	
4-5 More than X of pilot Urban WSPs train all personnel of NRW reduction section.	
Output 5: Experiences and knowledge of NRW reduction activities are shared among Urban WSPs.	
5-1 Case study and lessons learnt of Output 4 and other NRW activities are compiled and disseminated.	Not yet happened
5-2 Regular meeting(s) of NRW is/are organized three times a year.	Not yet happened
1-4 Achievement of the Project Purpose	
Project Purpose: A NRW reduction support mechanism is established for Urban WSPs to implement NRW	
Indicator: X of pilot Urban WSPs continue achieving target set by the annual NRW reduction plan for two years.	

Selection of pilot WSPs and detailed study on how to support them are ongoing. Number of X will be determined after Oct 2017 when activities on first batch of pilot WSPs (including leading WSPs) are commenced.

1-5 Changes of Risks and Actions for Mitigation

At this moment, there is no risks are identified.

1-6 Progress of Actions undertaken by JICA

JICA has been providing project vehicles. Representative from Kenya office has been attending JCC meetings.

1-7 Progress of Actions undertaken by GoK

MWI has secured the budget for NRW Unit for the year 2016-17 which will be used for the project activities. They have also submitted the budget for 2017-18 for the following year.

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.)

Involvement of other donors to WSPs

Detailed study of selection of pilot WSPs revealed that numbers of interventions by other donors. Thus further coordination of activities at certain WSPs (ex. Kisumu WSP) will be required. The experts in Output 4 will be coordinating the activities in the following reporting phase.

Collaboration with KEWASNET on national campaign

KEWASNET is national network (NGO) with extensive network on civil society working with water and sanitation. Annual national campaign in Output 1 can be conducted through collaboration with KEWASNET to take their experiences in campaign and network. NRW Unit with the expert on information management and public relations explore the possibility of collaboration in the following phase.

Collaboration with Kericho WSP on KEWI's GIS training

KEWI and training experts have already visited leading WSPs (Meru and Embu) to establish collaborative training programs. The team in Output 3 is also considering the

similar training program on GIS with Kericho WSP which is advanced in use of GIS on their NRW activities.

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

2-1 Detail

Delay of activities in Output 3

Due to the health reasons, expert on training management had to shorten his mission in the first dispatch, thus activities in Output 3 is behind the schedule.

Delay of visit to Council of Governors (CoG)

Despite of requests made by the experts, visits to CoG has not happened in the reporting period.

2-2 Cause

Delay of visit to Council of Governors (CoG)

Council of Governors busy schedule. They have not found time to meet the team.

2-3 Action to be taken

Delay of activities in Output 3

Expert on training management plans to extend MM in the second dispatch to catch up the scheduled activities.

Delay of visit to Council of Governors (CoG)

Arrangement to visit CoG secretariat has been made by NRW Unit in 3rd week of Feb.

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

Indicated above.

3 Modification of the Project Implementation Plan

3-1 PO

Schedule of dispatch of experts mentioned in Input will be adjusted in PO.

No further delay or changes have been observed in this reporting period.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities,

and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

No modification has been made in this reporting period.

4 Preparation of GoK Outlook after completion of the Project

It is not possible to address this section as the project is at the baseline study phase. Nevertheless MWI provided enough budget to conduct activities to the newly established NRW Unit that shows the seriousness of MWI on issues on NRW reduction in Kenya.

II. Project Monitoring Sheet I & II is Attached

4. 議事録

(1) 第 1 回 PIC 議事録

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION

MINUTES OF THE FIRST PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/02/15(Wednesday) 09:00 - 10:30
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<ul style="list-style-type: none">• <u>Communication from the Chairperson</u> The Chairperson, Eng. S.A.O. Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the first PIC meeting of the project. He thanked all the project members for their continued efforts to make the project successful. • <u>Introductions</u> All the members introduced themselves and their organizations. • <u>Remarks by JICA representative</u> Mr. Miyagawa Masahito (JICA Kenya Office Representative) also thanked members for their continued efforts. He explained that in order to ensure the success of the project, the members should use the monthly PIC meeting to confirm the progress against PO and thus plan accordingly how to achieve all the outputs in time. He also mentioned that JICA is also supporting NRW activities in neighbouring countries such as Rwanda and Tanzania. He said that since Kenya is more advanced in NRW reduction, JICA is looking to share the results of this NRW reduction project with other countries in order to achieve NRW reduction in the region. • <u>Presentation and discussion of roles and functions of PIC - Mr. Mabonga</u> Mr. David Mabonga (MWI, NRW Unit) gave a presentation highlighting the roles and functions of the PIC meeting. During the discussion, it was agreed by all members that the PIC meeting should be held every third Wednesday of the month at the Ministry of Water and Irrigation Boardroom, starting at 10:00 am. It was also agreed that in case some members cannot physically attend, the meeting could also be held via SKYPE. • <u>Reporting about progress of baseline study – JICA Experts Team Leader</u> Mr. Igawa Masayuki, the JICA Expert Team Leader, gave an overview of the

progress of baseline survey from its commencement in October 2016 until January 2017.

- Presentation of JICA's project monitoring sheet - Mr. Mabonga.

Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project.

During the discussions, it was agreed that :

- The MoU with WASPA should be finalized and be ready for signing within one week
- The JICA Experts should assist CPs and their institutions to finalize a detailed plan of activities with deadlines indicated in order to achieve the relevant outputs. This plan should be presented at the next PIC.
- Mr. Igawa asked whether the Technical Note to finalize the selection of the 2 Leading WSPs and 7 Pilot WSPs will be signed between the MWI and JICA and if the Project would need signature from the Council of Governors (CoG). Mr. Alima confirmed that CoG does not need to sign the Technical Note, but the Project should inform the CoG about the baseline survey results and criteria of selecting the WSPs.
- JICA Expert team and MWI NRW Unit will explore ways to collaborate with KEWASNET (a national organization of NGO's working in water and sanitation) in order to utilize their experiences and network in sensitization of the public and Counties about NRW reduction activities.
- The JICA Expert Technical Team will carefully consider how to work with other donor organizations based on their activities in each pilot WSP in order to avoid duplication or overlapping of activities.

- Presentation of before and after project figures – Mr. Taguchi

Mr. Taguchi Masayuki (JICA Expert Team) gave a presentation on the current situation of the project and the image after project completion. He also urged the various institutions to use this as a draft and also input their thoughts about how they can better improve the project activities in order to achieve the various outputs.

- Schedule of next PIC meeting

The next meeting will be held on Wednesday the 15th March, 2017 at the MWI Boardroom starting at 10:00 am.

- AOB
- The JICA Expert Technical Team will carefully consider how to work with other donor organizations based on their activities in each pilot WSP in order to avoid duplication or overlapping of activities.
- JICA Expert team and MWI NRW Unit will explore ways to collaborate with KEWASNET (a national organization of NGO's working in water and sanitation) in order to utilize their experiences and network in sensitization of the public and Counties about NRW reduction activities.
- Mr. Mori (JICA Expert Team) asked Eng. Alima whether the WSBs would disappear under the New Water Act 2016 and also what would happen to the non-revenue water departments in WSBs. Eng. Alima answered that the duties of WSBs will be handed over to WWDA (Water Works Development Agency) and the WSB will disappear three years after the transition period (from November 2016 when the Water Act was approved, till November 2019). However, with regard to the non-revenue water unit, Eng. Alima said that MWI will need to make organization studies and a detailed transfer plan before deciding.
- The JCC will be held in mid to end of April but the date has not been decided yet.
- All members were urged to ensure that they join the Google Group created to ensure smooth communication and sharing of information.
- Lastly, Eng. Alima thanked all the members who attended and urged the members to continue in their efforts

(2) 第 2 回 PIC 議事録

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION

MINUTES OF THE SECOND PROJECT IMPLEMENTATION COMMITTEE (PIC) MEETING

Date	2017/03/15(Wednesday) 14:00 - 15:30
Venue	Ministry of Water and Irrigation (MWI) Boardroom, Nairobi
Content	<p><u>1. Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Communication from the Chairperson</u> The Chairperson, Eng. S.A.O. Alima (Director of Water, Sewerage and Sanitation Development, MWI) made the opening remarks and welcomed everybody to the second PIC meeting of the project. He thanked all the project members for their continued efforts.</p> <p><u>3. Remarks by JICA representative</u> Mr. Miyagawa Masahito (JICA Kenya Office Representative) also thanked members for their continued efforts. He introduced all the JICA Expert team members and their respective roles for each output. He mentioned that JICA recently had a meeting with the National Treasury (Kenya) and his opinion is that it will be important to liaise with the CoG (Council of Governors) in any kind of project going forward. He also wanted to know whether a budget for the NRW unit activities were included in MWI's budget since the deadline for submission of the budget this year is in March (usually it is in June) due to the general elections to be held in August. Eng. Alima confirmed that MWI had already submitted a budget of KES 65 million for the activities of the NRW Unit for the next fiscal year.</p> <p><u>4. Confirmation of previous minutes</u> Mr. David Mabonga (MWI, NRW Unit) presented the minutes from the first PIC meeting held on 15th February, 2017. They were confirmed as a true and accurate record of the meeting. Proposed by Mr. Onesmus Mwangi (MWI, NRW Unit) and seconded by Mr. Walter Moseti (KEWI)</p> <p><i>Matters Arising:</i></p> <ul style="list-style-type: none">• The minutes should include an attendance list• The PIC meeting is scheduled for the third Wednesday of every month at 10:00 am, but for this meeting only the time meeting was changed to 2:00 pm

following a request from MWI.

- The MoU between MWI and WASPA is under discussion and will be concluded soon.
- Detailed Work plans for each output will be carried over to the next PIC meeting.
- The transition period for the Water Act 2016 would not be between November 2016 to November 2019 (as mentioned in the minutes for the first PIC meeting), but rather 3 years from the date that the Water Act 2016 becomes operational through a notice placed in the gazette by the Cabinet Secretary in the near future.
- The new members and other who had not joined the google group should ensure that they do so as soon as possible to enable smooth communication.

5. Presentation of project monitoring sheet (Attached)

Mr. David Mabonga (MWI, NRW Unit) gave a detailed presentation of the monitoring sheet and the progress made so far in the project.

During the discussions, it was agreed that :

- It was agreed that the next monitoring sheet should include an expected date of finalizing the activities that have not yet been achieved. The monitoring sheet should also be printed out for all the members during the next PIC meeting.
- Regarding Output 2-1 (WASREB conducts survey of the usage of current NRW reduction standards), WASREB confirmed that they have already engaged a consultant to implement this survey.

6. Matters to be discussed;

i. Joint Training of KEWI: Mr. Moseti

- KEWI has scheduled the first trial training program in May, 2017. Mr. Moseti provided a brief breakdown of the trial training program which will feature 3 main parts;
 - a) Workshop for sensitization of the WSP's Top Management (1 day)
 - b) NRW classroom training at KEWI (5 days)
 - c) NRW On the Job Training at a Leading WSP (6 days)
- KEWI has submitted a budget for the estimated cost of the trial training program in to MWI. Afterwards, based on the experience of the trial training program, KEWI will review and improve on the syllabus and practical training methods in order to introduce a new course on NRW reduction. KEWI will charge a certain fee to WSPs for their staff to attend the course.

- On the question about whether WSPs can afford the training fees, it was suggested that the WSPs can put the training fees in their next budget. Also, WASREB approves a budget specifically for NRW reduction in the tariff structure during the tariff review process. It was also suggested that the WSPs could earmark some of the money meant for NRW reduction to be used as the training fee for the new NRW reduction course to be introduced at KEWI.
- It was noted that apart from the on-site trainings at the leading WSPs, KEWI should also have a training field at their campus where they can provide practical hands-on training such as leak detection to their students.
- The target for KEWI trainings are the staff in WSPs who are in charge of day to day operations.

ii. Participation of World Water Day: M/S Mwangi and Sugimoto

On the issue of sensitization, it was agreed that 3 members from the project will attend Murang'a WSP's World Water Day on March 22 which will focus on Non-Revenue Water. Meanwhile, MWI will hold the main event in Nyamira County on the same day.

iii. Presentation of the current scenario of the Project and after implementation: Mr. Taguchi.

Mr. Taguchi (JICA Expert Team) gave a presentation on the current situation of the project and the image after project completion. He also urged the various institutions to use this as a draft and also input their thoughts about how they can better improve the project activities in order to achieve the various outputs.

iv. MoU with WASPA : Mr. Mabonga

Mr. Mabonga presented the draft MoU. He explained that they are in negotiations with WASPA about the Specific areas of cooperation/collaboration under the MoU. It was suggested that one of the areas of cooperation should not be limited to supporting JICA activities only but should cover a wider range of activities. A meeting to work out the details to be held on March 16, 2017 at 9:00 am.

v. Meeting with CoG : Mr. Mabonga

It was agreed that a meeting with the CoG will be held on March 21, 2017 at a venue to be confirmed. The members to attend the meeting will be decided after consultations between MWI and the CoG secretariat. Mr. Mabonga to follow up.

The members to attend the meeting with the CoG should come from WASREB, KEWI, WASPA, MWI and the JIC team. There will be 3 presentations as follows:

	<ol style="list-style-type: none"> 1. WASREB to make a presentation about the current situation of NRW in Kenya. 2. MWI to make a presentation about the history of the project, starting with Phase 1 of the NRW Project (2010-2014) up to date. 3. JICA team to make a presentation about the current project and the results of the baseline survey for the selection of Pilot WSPs. <p>7. Schedule of next PIC meeting</p> <ul style="list-style-type: none"> • Due to the absence of Japanese Expert Team from Kenya for about onemonth (leaving on March 22 but the return date is not decided yet), it was agreed that the next PIC meeting will be held on May 10, 2017 and the 2nd JCC meeting will be held on May 17, 2017 <p>8. A.O.B.</p> <p>There being no other business to discuss, Eng. Alima closed the meeting and urged the members to continue in their efforts.</p>
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ATTENDANCE:

No.	Name	Institution
1	Eng. S.A.O. ALIMBA	MWI (Ministry of Water and Irrigation)
2	DAVID N. MABONGA	MWI
3	MARY W. MWANGI	MWI
4	ONESMUS N. MWANGI	MWI
5	DAVID NGETICH	KEWI (Kenya Water Institute)
6	WALTER M. MOSETI	KEWI
7	Eng. PETER NJAGGAH	WASREB (Water Services Regulatory Board)
8	DANIEL M. NGUGI	WASREB
9	EDDAH WAMBUI	WASPA (Water Service Providers Association)
10	PATRICIA WANJERI	WASPA
11	MASAHITO MIYAGAWA	JICA (Japan International Cooperation Agency) Kenya Office
12	JOHN N. NGUGI	JICA Kenya Office
13	MASAYUKI TAGUCHI	JICA Expert Team
14	HIROKO SUGIMOTO	JICA Expert Team
15	SHOZO MORI	JICA Expert Team
16	SHINICHI SEKIMOTO	JICA Expert Team
17	NAOKI HARADA	JICA Expert Team
18	CHARLES MAINGI	JICA Expert Team
19	EVANS KUNYUGA	JICA Expert Team

(3) CoG 説明会議事録

THE PROJECT FOR STRENGTHENING CAPACITY DEVELOPMENT IN NON-REVENUE
WATER REDUCTION

MINUTES OF THE COUNCIL OF GOVERNORS (CoG) MEETING

Date	2017/03/20(Monday) 10:00 - 12:45
Venue	CoG Office, Delta House, Nairobi
Agenda	<ol style="list-style-type: none"> 1. Self - Introduction 2. Welcoming Remarks from the Chair 3. Presentation from WASREB 4. Presentation of Phase 1 Project 5. Presentation of Baseline Survey 6. Question and Answer.
Content	<p><u>1. Self-Introductions</u> All the members introduced themselves and their respective organizations.</p> <p><u>2. Welcoming Remarks from the Chair</u> The Chairperson, Dr. Kipkorir Sigif from the Council of Governors (CEC, Bomet County) who was the acting chair read the Opening remarks on behalf of the chairman of the Council of Governors Water, Forestry and Mining Committee, H.E. Governor Benjamin Cheboi, EBS, Governor of Baringo County who was in another meeting.</p> <p>(Full Text of the Opening Remarks Attached)</p> <p><u>3. Presentation from WASREB</u> Eng. Daniel Ngugi (Technical Officer, Water Services and Regulatory Board, WASREB) took the members through the WASREB's presentation on behalf of Eng. Njaggah (Director, Technical Directorate, WASREB). The presentation mainly highlighted the work of WASREB in regards to Non-Revenue Water and the main challenges that most Water Service Providers (WSPs) are facing in their fight against NRW which includes;</p> <ul style="list-style-type: none"> ❖ Illegal Connections ❖ Denial ❖ Network Age - Most of the Water Service Providers in the country are operating on a very old network hence the high number of leakages' ❖ Political Interference more so now that water is a devolved function under the county governments. ❖ New Installations Easier - Most of the WSPs and their staff prefer

making new installations rather than maintenance of the old ones.

- ❖ Skills Competence is an issue in most WSPs in the country
- ❖ Intermittent versus Sustained supply - Most WSPs are rationing the little water they have due to scarcity causing intermittent flow which in most cases affects the system.

4. Presentation of Phase 1 Project

Eng. S.A.O Alima (Director, Water, Sewerage and Sanitation Development, Ministry of Water and Irrigation) gave a brief history on the phase 1 of the project in his presentation. He explained to the members how the Ministry saw there was a need to come up with some general standards to be used by all WSPs within the country in a bid to curb Non-Revenue Water (NRW) and this is when JICA was approached to assist in the formulation of the standards marking the first phase of the project.

5. Presentation of Baseline Survey

In his second presentation, Eng. S.A.O Alima explained to the members that after the NRW Standards were set in the first phase of the project, most WSPs were not in a position to use them due to their complexity and also financial problems. Hence, there was need to strengthen the capacity of the management and staff mainly involved in NRW activities so that they can be more prepared and equipped to face the challenge. Therefore, Phase 2 of the Project (Current Project) was formulated and named "The Project for Strengthening the Capacity Development in Non-Revenue Water Reduction in the Republic of Kenya," with the main aim being capacity building rather than infrastructure development.

In his presentation he also took the members through the results of the baseline survey which was conducted by the JICA expert Team and also the selection criteria which were used to select the nine WSPs to be assisted in this Project. The selection criteria included factors like; the O&M ratio, Metering ratio, Hours of Supply, Other Donor Involvement, Existence of a NRW Unit among others.

The nine selected WSPs were;

- Two leading WSPs (Starts in Phase 1: Year 1)
Meru and Embu both from Tana Water Services Board
- Four Preceding Pilot WSPs (Starts in Phase 2: Year 2 & 3)
 - Ruiru-Juja (Athi WSB)
 - Nyahururu (Northern WSB)
 - Nakuru (RV WSB)
 - Kisumu (LVS WSB)

- Three following Pilot WSPs (Starts in Phase 3: Year 4 & 5)
 - Mavoko (Tanathi WSB)
 - Eldoret (LVN WSB)
 - Kilifi-Mariakani (Coast WSB)

6. Question and Answer.

In this session, the main questions asked mainly dealt with the unwarranted destruction of pipes mainly during roads construction but one of the members from UasinGishu county gave an example of how they adopted fortnightly meetings with the relevant stakeholders in the roads construction industry eg. KENHA and KURA whereby they all agreed to work together as a team without destroying any of the existing infrastructure. Other members were also encouraged to adopt such a measure.

The chairman also requested for the inclusion of the Council of Governors under Output 5 since they are key players in the water sector more so now that water is a devolved function which was agreed upon.

There being no other business, the meeting was ended at 12:45pm.

ATTENDANCE:

1. Dr. Kipkorir Sigi (COG/Chief Executive Committee (CEC) Member, Bomet County - Chairperson.
2. Eng. S.A.O Alima (Director - Water, Sewerage and Sanitation Development, Ministry of Water and Irrigation)
3. Dr. Leunita Sumba (Director, Kenya Water Institute)
4. Mr. Masahito Miyagawa (JICA Kenya Office)
5. Mr. John N. Ngugi (JICA Kenya Office)
6. Mr. Joseph Kamau Kinyua (COG Kiambu County)
7. Mr. Mwachitu Kiringi (COG Kilifi County)
8. Mrs. Rose N. Kimeu (CEC, Water, Machakos County)
9. Eng. Daniel Ngugi (Water Services Regulatory Board)
10. Mr. David N. Mabonga (Ministry of Water and Irrigation)
11. Mr. Stephen Osingo (COG)
12. Mr. Augustus Mboya (Machakos)
13. Ms. Winfred Mbai (Machakos)
14. Ms. Edda Wambui (Water Services Providers Association)
15. Mrs. Mary Wambui (Ministry of Water)
16. Mr. Paul N. Muthama (Kenya Water Institute)
17. Mr. Joseph N. Kamau (Kiambu County)

18. Mr. Brian Muthoka (COG)
19. Mr. Moses Nzuki (Machakos)
20. Mrs. Ruth Mutua (Machakos)
21. Mr. Ambundo Jesse (Mavoko WSP)
22. Mr. Stephen Osingo (COG)
23. Ms. Nelly Mwenesi (COG)
24. Ms. Mwihaki Wambui (COG)
25. Mr. Masayayuki Taguchi (JICA Expert Team)
26. Ms. Hiroko Sugimoto (JICA Expert Team)
27. Mr. Shozo Mori (JICA Expert Team)
28. Mr. Naoki Harada (JICA Expert Team)
29. Mr. Shinichi Sekimoto (JICA Expert Team)
30. Mr. Charles Maingi (JICA Expert Team)
31. Mr. Gitahi Kunyuga (JICA Expert Team)

5. 本邦調達機材の内容変更に関するレター



**MINISTRY OF WATER AND IRRIGATION
STATE DEPARTMENT FOR WATER SERVICES**

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DEPARTMENT OF WATER, SEWERAGE
AND SANITATION DEVELOPMENT
MAJI HOUSE
NGONG ROAD
NAIROBI

REF: WD/3/3/1338 VOL. II (47)

DATE: 4th April 2017

Masayuki IGAWA,
The Chief Advisor,
JICA Experts Team,
Maji House,
NAIROBI

**REF: SUBMISSION OF THE LIST OF EQUIPMENT TO BE PROVIDED BY
JAPAN**

Reference is made to the Minutes of Meeting on the First Joint Coordination Committee of the Project Strengthening Capacity in Non-Revenue Water Reduction signed on October 19, 2016 between the Ministry of Water and Irrigation (MWI) and Japan International Cooperation Agency, Annex 1 – Draft Work Plan 1, 8.1 List of Equipment and your letter **Ref. No. KECKEN-13** dated 30th March 2017.

It is agreed that the reviewed and changes made on the type and number of equipment following the results of the Baseline Survey carried out by the JICA Expert Team in collaboration with the MWI is implemented forthwith. In this regard, we would like that the equipment in the proposed list be provided by the Government of Japan for successful implementation of the project.

We appreciate your continued support and cooperation

Eng. SAO Alima
Ag. DIRECTOR WATER, SEWERAGE
& SANITATION DEVELOPMENT

File Copy

Water Secretary

Principal Secretary

} To see for information

"Water is life and your right but conserve it"

6. 要員計画

2017年3月31日時点
契約件名:ケニア国無収水削減能力向上プロジェクト(第1期)

氏名 (担当業務)	格付	渡航 回数	第1期												第1期		
			2016年			2017年									日数合計	人月合計	
			10月	11月	12月	1月	2月	3月	4月	5月	6月	7月	8月	9月			
井川 雅幸 総括/無収水管理1	2	計画	20	30	10	20	10	30							30	150	5.00
		実績	(10/10) 22	30	8 (12/8)	(1/23) 9	21 (2/21)										90
斎藤 昇 無収水管理2 (その1)	3	計画	20			15										35	1.16
		実績	(10/12) 12	10/23		(1/23) 9	14 (2/14)									35	1.16
田口 雅行 無収水管理2 (その2)	4	計画	20	30	10	20	30	10	30	3				30	183	6.10	
		実績	(10/10) 22	30	8 (12/8)	(1/23) 9	28 (2/28)	23 (3/23)								120	4.00
森 正蔵 配水管網(マッピング、 管網解析)	3	計画	20	30	10	20	30	10		30		30		30	210	7.00	
		実績	(10/10) 22	30	8 (12/8)	(1/23) 9	28 (2/28)	23 (3/23)								120	4.00
高橋 順一 流量・水圧・漏水管理 (その1)	4	計画													0	0.00	
		実績													0	0.00	
関元 伸一 流量・水圧・漏水管理 (その2)	4	計画	20	30	10	20	30	10							120	4.00	
		実績	(10/10) 22	30	8 (12/8)	(1/23) 9	28 (2/28)	23 (3/23)								120	4.00
顧客管理/料金請求 (その1)	4	計画													0	0.00	
		実績													0	0.00	
原田 直樹 顧客管理/料金請求 (その2)	4	計画	20	30	10	20	30	10							120	4.00	
		実績	(10/12) 20	30	8 (12/8)	(1/23) 9	28 (2/28)	25 (3/25)								120	4.00
芝崎 智 研修計画/研修管理	3	計画	20	30	10	20	10	15	30	15					150	5.00	
		実績	(10/10) 22	15 (11/8)	19 (11/25)	(1/23) 9	28 (2/28)	7 (3/7)								81	2.70
杉本 寛子 情報管理/広報	4	計画(現地)													7	22	0.73
		計画(国内)				7	15	8							16	46	2.27
	実績(現地)				(2/21) 2	28 (2/28)	3 (3/1,2,3)								6	0.20	
	実績(国内)				(1,23,24,25) 3	13	14								30	1.50	
杉本 寛子 総括支援業務 (自社負担)		計画	10		10	(2/7~2/20, 2/23~2/27)	3 (3/6~10/3)	13~17, 3/20~2/28)	10	10					50	1.66	
		実績	(10/10) 12	0 (10/21)	2 (12/1, 12/2)										14	0.46	
Charles Maingi Wairimu 中級技術者		計画					15	30	30	30	30	30	30	30	225	7.50	
		実績				(2/15)	15	30							45	1.50	
Kunyuga Evans Githahi 秘書/業務調整		計画	20	30	30	30	30	30	30	30	30	30	30	30	350	11.66	
		実績	(10/10) 22	30	15 (12/15)	(1/23) 9	28 (2/28)	30							134	4.46	
Kunyuga Evans Githahi 通訳(自社負担)		計画	20	30	10	20	10	30						30	150	5.00	
		実績	(10/10) 22	30	7 (12/7)	(1/23) 9	20 (2/21)								88	2.93	
小計		計画	190	240	110	192	217	191	120	118	70	100	60	203	1,811	61.08	
		実績	198	225	64	84	254	178	0	0	0	0	0	0	1,003	33.91	

2. 国内業務

国内業務	井川 雅幸 総括/無収水管理1	計画	-	5												5	0.25	
		実績	-	5													5	0.25
	森 正蔵 配水管網(マッピング、 管網解析)	計画	-	5													5	0.25
		実績	-	5													5	0.25
	合計	計画	-	10	0												10	0.50
		実績	-	10	0												10	0.50

▬ 業務従事計画 ■ 業務従事実績 — 自社負担 - - - 業務従事予定

合計	計画	1,821	61.58
	実績	1013	34.41

凡例:

報告書等	業務計画書	▲【第1期】															
	ワークプラン	△					▲【第1期】										
	モニタリング・シート						【Ver.1】▲			【Ver.2】▲				【Ver.3】▲			
	リスク管理・チェックリスト(定期・適宜)																
	JICAプロジェクトブリーフノート																
	コンサルタント業務従事月報		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
業務進捗報告書、プロジェクト業務完了報告書																	▲【第1期】

7. 業務フローチャート

第1期(2016年10月～2017年9月)

		年次		第1期											
		暦年		2016年						2017年					
		年		1st Year											
		暦月		10月	11月	12月	1月	2月	3月	4月	5月	6月	7月	8月	9月
成果1	MWIの無収水対策ユニットによる無収水削減活動の促進・調整機能が強化される。														
	1.1 MWI無収水ユニットがWASREBと協力して、無収水削減に関するデータを含めた無収水削減年次報告書を作成する。														
	1.2 MWI無収水ユニットが、カウンティに対する無収水削減に関する啓発活動を企画・実施する。														
	1.3 MWI無収水ユニットが、無収水削減に関するキャンペーンを企画・実施する。														
	1.4 MWI無収水ユニットが、KEWIの無収水コースのレビューを行う。														
1.5 MWI無収水ユニットが、WASREBの無収水削減活動に関するレビューを行う。															
成果2	Urban WSPによる無収水削減基準の利用が、WASREBにより促進される。														
	2.1 WASREBが現無収水削減基準に関する利用状況の調査を行う。														
	2.2 利用状況の調査及び成果4と5の結果を踏まえて、無収水削減基準の改定を行う。														
	2.3 WASREBがワークショップを通じて、改訂された無収水削減基準の利用を促進する。														
	2.4 WASREBが、MWI無収水ユニットにより実施された無収水削減活動に関するレビュー結果を活動に導入する。														
2.5 WASREBは改訂された無収水削減基準の利用についてモニタリングし、評価結果を取りまとめる。															
成果3	KEWIの無収水に関連する研修実施能力が強化される。														
	3.1 KEWIが、無収水削減コースの現況を調査し、課題を抽出する。														
	3.2 KEWIが、無収水削減研修に関する戦略とコースの内容を見直す。														
	3.3 KEWIが、リーディングWSP(エンブ、メル他)と共同で、無収水削減実務研修を実施する。														
	3.4 KEWIが、無収水削減実務研修の結果を、無収水削減コースの内容や教材に反映する。														
	3.5 KEWIが、MWI無収水ユニットにより実施されたレビューの結果を、無収水削減コースの内容に反映する。														
3.6 KEWIが、無収水削減コースに参加した受講生に対し、トレスタディーを実施する。															
成果4	Urban WSPの無収水削減計画の策定及び実施能力が向上する。														
	4.1 プロジェクトチームが、パイロットWSPを選定するために必要な調査を実施する。														
	4.2 各パイロットWSPは、現在の無収水削減活動についての分析を行い、課題を抽出する。														
	4.3 各パイロットWSPが、課題解決の方法を特定し、無収水削減計画を策定する。														
	4.4 各パイロットWSPが、無収水削減計画に基づく、財務計画を含む無収水削減年間計画を策定する。														
	4.5 各パイロットWSPが、無収水削減年間計画を実施する。														
	4.5.1 リーディングWSP対象 (メル+エンブ)														
	4.5.2【先行】パイロットプロジェクト対象 (4候補WSPs)														
	4.5.3【後発】パイロットプロジェクト対象 (3候補WSPs)														
4.6 各パイロットWSPが、実施結果を評価・分析し、計画を更新する。															
4.7 各パイロットWSPが、無収水削減活動報告書を毎年作成する。															
4.8 各パイロットWSPが、WSP関係部署が参加する無収水削減に関する会議を定期的に行う。															
成果5	Urban WSP間で、無収水削減活動に関する知見や情報の共有が行われる。														
	5.1 MWI無収水ユニットが、他機関と共同で無収水関連の定期会合を開催する。														
5.2 WASREBが無収水削減活動に関するケーススタディーや知見を収集する。															
モニタリング・会議・研修・成果品		参加者													
A	合同モニタリング	MWI,WASREB,KEWI,JICA,コンサル													
B	合同調整委員会(JCC)開催	MWI,WASREB,KEWI,JICA,コンサル	●											●	
C	本邦研修/第三国研修	MWI,WASREB,KEWI,WSP													
D	ワークショップ	MWI,WASREB,KEWI,WSBs,WSPs,JICA,コンサル												●	
E	成果品														
	業務計画書		▲												
	ワークプラン														
	モニタリング・シート														
	リスク管理・チェックリスト														
	業務進捗・プロジェクト業務完了報告書														

8. 行程表(活動表)

2016年10月~12月

Date	Day	Activities related to Outcome No.1/2/5	Activities related to Outcome No.3	Activities related to Outcome No.4				
2016/10/10	Mon		Arriving in Nairobi					
2016/10/11	Tue		AM: Reporting to JICA Kenyan Office and discussion and security briefing. PM: Courtesy call to MWI, NRW Unit and briefing on the work plan.					
2016/10/12	Wed		AM: Internal meeting on preparation for JCC PM: Courtesy call to MWI & its NRW Unit and briefing on the work plan					
2016/10/13	Thu		AM: Internal meeting about the discussions with C/Ps on the first two days. PM: Meeting with PM of MWI, NRW Unit about JCC and M/M.					
2016/10/14	Fri		AM & PM: Preparation work for JCC					
2016/10/15	Sat		AM & PM: Preparation work for JCC					
2016/10/16	Sun		AM & PM: Preparation work for JCC					
2016/10/17	Mon		AM: Preparation for JCC and practice for the presentation. PM: Preparation work for JCC					
2016/10/18	Tue		-ditto-					
2016/10/19	Wed		AM: Holding the first JCC at Hotel Silver Springs PM: Coordination work for the baseline survey and reporting to EOJ					
		Activities related to Outcome No.1/2/5	Activities related to Outcome No.3	Activities related to Outcome No.4				
		Japanese Expert	Transfer / Accommodation	Japanese Experts	Transfer / Accommodation	Local Consultants		
2016/10/20	Thu				National Holiday in Kenya			
2016/10/21	Fri	Discussion with MWI	Nairobi	Discussion with MWI	Nairobi	Discussion with MWI and WASREB	Nairobi	
2016/10/22	Sat							
2016/10/23	Sun							
2016/10/24	Mon	Finalization of the Selection Criteria	Nairobi	Finalization of the Selection Criteria	Nairobi	Finalization of the Selection Criteria	Nairobi	
2016/10/25	Tue	Preparation of Field visit	Nairobi	Preparation of Field visit	Nairobi	Preparation for the field visits	Nairobi	
2016/10/26	Wed	Visiting Tana - Embu WSP	Nairobi→Embu→Nairobi	Visiting Tana - Embu WSP	Nairobi→Embu→Nairobi	Tana - Embu WSP	Nairobi→Embu	
2016/10/27	Thu	Preparation of Baseline survey	Nairobi	Preparation of Baseline survey	Nairobi	Tana - Meru WSP	Embu→Meru	
2016/10/28	Fri	Visiting Tana - Nyeri WSP	Nairobi→Nyeri→Nairobi	Visiting Tana - Nyeri WSP	Nairobi→Nyeri→Nairobi	Tana - Nyeri WSP	Meru→Nairobi	
2016/10/29	Sat							
2016/10/30	Sun							
2016/10/31	Mon	Finalization of the Questionnaires. Signing on Technical Note.	Nairobi	Finalization of the Questionnaires. Signing on Technical Note.	Nairobi	Finalization of the Questionnaires and signing on the Technical Note	Nairobi	
2016/11/1	Tue	Meeting on the organization of MWI	Nairobi	Preparation of Baseline survey.	Nairobi	Athi WSB / Kiambu WSP	Nairobi→Kiambu→Nairobi	
2016/11/2	Wed	-ditto-	Nairobi	Baseline survey at KEWI.	Nairobi	Reporting	Nairobi	
2016/11/3	Thu	study on National Policy of NRW Management	Nairobi	-ditto-	Nairobi	Athi - Ruiru-juja WSP	Nairobi→Ruiru→Nairobi	
2016/11/4	Fri	Meeting with WASPA	Nairobi	-ditto-	Nairobi	Athi - Limuru WSP	Nairobi→Limuru→Nairobi	
2016/11/5	Sat							
2016/11/6	Sun							
2016/11/7	Mon	Compiling of Monthly report. Receiving quotation for subcontract work from Local consultants.	Nairobi	Study of the current state of KEWI campus	Nairobi	Discussion with local consultants	Nairobi	
2016/11/8	Tue		Nairobi		Nairobi	WASPA Workshop	Nairobi	
2016/11/9	Wed	Evaluation of Quotations offered from possible local	Nairobi	Being hospitalized in Nairobi	Nairobi	Tanathi WSB	Nairobi → Kitui → Machakos	
2016/11/10	Thu	Sending notice of the Award of subcontract.	Nairobi	-ditto-	Nairobi	Machakos County / Tanathi - Machakos WSP	Machakos	
2016/11/11	Fri	Signing the Contract for Baseline survey entrusted to a local consultant.	Nairobi	-ditto-	Nairobi	Tanathi - Mavoko WSP	Machakos → Mavoko → Nairobi	Signing of the Contract
2016/11/12	Sat			-ditto-				
2016/11/13	Sun			-ditto-				
2016/11/14	Mon	Meeting with MWI NRW Unit regarding questionnaire for	Nairobi	-ditto-	Nairobi	RV WSB	Nairobi → Nakuru	Coast WSB
2016/11/15	Tue	Participation of a WASPA seminar in Muranga South	Nairobi→Muranga→	-ditto-	Nairobi	RV - Nakuru WSP / Nakuru County	Nakuru	Coast - Kilifi-mariakani WSP
2016/11/16	Wed	Study on collected data from WASREB.	Nairobi	-ditto-	Nairobi	RV - Eldama Ravine WSP / Baringo County	Nakuru → Eldama Ravine → Eldoret	Coast - Kwale WSP
2016/11/17	Thu	-ditto-	Nairobi	-ditto-	Nairobi	LVN - Eldoret WSP / Uasin Gishu County	Eldoret → Bungoma	Reporting
2016/11/18	Fri	Meeting with MWI NRW Unit about participation of Kenya Water Week 2016 conventions.	Nairobi	Being discharged from the Hospital	Nairobi	LVN - Nzoia WSP / Bungoma County	Bungoma → Kakamega → Kisumu	
2016/11/19	Sat						Kisumu	
2016/11/20	Sun						Kisumu	
2016/11/21	Mon	Participation to Kenya Water Week 2016.	Nairobi	Data collection on KEWI and study on them	Nairobi	LVS WSB / LVS - Kisumu WSP	Kisumu	Discussion with Japanese Experts
2016/11/22	Tue	-ditto-	Nairobi	-ditto-	Nairobi	Kisumu County / LVS - Kisumu WSP	Kisumu	Northern WSB
2016/11/23	Wed	Hearing about a new project to be donated by Vergiam to Mavoko Town.	Nairobi	-ditto-	Nairobi	LVS - Kericho WSP	Kisumu → Kericho → Nairobi	Northern - Isiolo WSP
2016/11/24	Thu	Meeting on the organization and role of each member of NRW Unit.	Nairobi	Leaving Kenya	Nairobi	Participation to Kenya Water Week 2016	Nairobi	Northern - Nanyuki WSP
2016/11/25	Fri	Meeting with WASREB	Nairobi	Arriving to Japan	Nairobi	Data Analysis	Nairobi	Northern - Nyahururu WSP
2016/11/26	Sat							
2016/11/27	Sun							
2016/11/28	Mon	Discussion with Local Consultant.	Nairobi			Discussion with the Local Consultant	Nairobi	Discussion with Japanese Experts
2016/11/29	Tue	Reporting	Nairobi			Reporting	Nairobi	Reporting
2016/11/30	Wed	Reporting	Nairobi			Reporting	Nairobi	Reporting
2016/12/1	Thu	Meeting with MWI NRW Unit on the result of selection of pilot WSPs.	Nairobi			Meeting with MWI NRW Unit on the results of selecting pilot WSPs.	Nairobi	Reporting
2016/12/2	Fri	Inventorying the collected data	Nairobi			Embu WSP for planning NRW activities	Nairobi → Embu → Nairobi	Reporting
2016/12/3	Sat					Discussion with the Local Consultant		Discussion with Japanese Experts
2016/12/4	Sun							
2016/12/5	Mon	Meeting with MWI Unit before Departure	Nairobi			Meeting with MWI Unit before departure	Nairobi	Report submission
2016/12/6	Tue	Meeting with JICA Kenya Office.				Meeting with JICA Kenya Office.		
2016/12/7	Wed	Departure from Kenya.				Departure from Kenya		
2016/12/8	Wed	Arriving to Japan				Arriving in Japan		

8. 行程表(活動表) 2017年1月~3月

Date	Day	Management of Study Progress	Activities related to Outcome No.1	Activities related to Outcome No.2	Activities related to Outcome	Activities related to Outcome No.3		Activities related to Outcome No.4		
						Transfer / Accommodation	Transfer / Accommodation	Japanese Experts	Transfer / Accommodation	
2017/1/23	Mon					Arriving in Nairobi				
2017/1/24	Tue				Meeting at JICA Nairobi Office and Internal Meeting					
2017/1/25	Wed	Schedule arrangement of 2nd Field survey	Meeting with MWI NRW Unit			Meeting with KEWI		Drafting the To-Do-List for this survey period		
2017/1/26	Thu	-ditto-	Meeting with MWI NRW Unit			Meeting with KEWI		Initial planning for the procurement of equipment		
2017/1/27	Fri	-ditto-	Meeting with MWI NRW Unit,			Meeting with KEWI		Job interview to a local engineer and discussions with MWI NRW Unit regarding the survey schedule, roles of WSBs, procurement of equipment and coordination with other donors		
2017/1/28	Sat				Internal Meeting					
2017/1/29	Sun									
2017/1/30	Mon	Sharing of Schedule of 2nd Field survey, Meeting with KEWI, WASREB		Meeting with WASREB		Meeting with KEWI/MWI		Internal discussions		
2017/1/31	Tue	Meeting with CoGs				KEWI		Internal discussions		
2017/2/1	Wed		Meeting with MW NRW Unit			KEWI		Nyahururu WSP	Nairobi → Nyahururu	
2017/2/2	Thu		Support for MOU with MWI & WASPA			KEWI		Nakuru WSP & VEI	Nyahururu → Nakuru → Nairobi	
2017/2/3	Fri		Work-shop of WASPA, VEI	Work-shop of WASPA, VEI		KEWI		Workshop of WASPA		
2017/2/4	Sat									
2017/2/5	Sun								Nairobi → Mombasa	
2017/2/6	Mon	Meeting with Embu WSP → Meru				Meeting with Embu WSP	Nairobi→Embu	Kilifi-mariakani WSP	Mombasa → Kilifi → Mombasa	
2017/2/7	Tue	Meeting with Meru WSP → Nairobi			Briefing and internal meeting	Meeting with Meru WSP	Embu→Meru→Nairobi	Move from Mombasa	Mombasa → Nairobi	
2017/2/8	Wed	Sending Draft Technical Note to JICA HQ		Meeting with WASREB	Meeting with WASPA	KEWI		Reporting		
2017/2/9	Thu				Preparation of PIC/Monitoring sheet			Planning additional visits to WSPs		
2017/2/10	Fri				Meeting with MWI Information office	KEWI		Preparation of a planning template		
2017/2/11	Sat									
2017/2/12	Sun						Nairobi→Kericho			
2017/2/13	Mon	Meeting with KEWASNET/ Preperation of Joit Monitoring/ Mr. Saito Leaving			Meeting with KEWASNET	Kericho	Kericho→Nairobi	Meru WSP	Nairobi → Meru	
2017/2/14	Tue	-ditto- / →Mr. Saito Arriving in Japan			Preparation of PIC meeting	KEWI		Embu WSP (support for planning)	Meru → Embu → Nairobi	
2017/2/15	Wed				1st Project Implementation Committee (PIC) & Joint Monitoring Ver.1 (PIC member)					
2017/2/16	Thu		Meeting with MWI on Work plan revision		Organizing meeting results	KEWI		Ruiru-juja WSP	Nairobi → Ruiru → Nairobi	
2017/2/17	Fri		Meeting with MWI on Work plan revision		Meeting with CoG /WASPA workshd	Meeting with KEWI and MWI		Mavoko WSP	Nairobi → Athi River → Nairobi	
2017/2/18	Sat									
2017/2/19	Sun									
2017/2/20	Mon	Mr. Igawa & Mr. Shibazaki Leaving from	Meeting with MWI on Work plan revision		Meeting with GIZ			Kisumu WSP	Nairobi → Kisumu	
2017/2/21	Tue	Mr. Igawa & Mr. Shibazaki Arriving in Japan		Meeting with WASREB on Revision of Standard	Nairobi-Muranga WSP -Embu WSP			Kisumu WSP (support for planning)	Kisumu	
2017/2/22	Wed		Meeting with WASPA on MoU signing	-ditto-	Meru WSP -Nyeri WSP -Nairobi			Kisumu WSP & Kericho WSP	Kisumu → Eldoret	
2017/2/23	Thu	Signing of Technical Note		-ditto-	Meeting at KEWI			Eldoret WSP	Eldoret	
2017/2/24	Fri			Meeting with WASREB on Revision of \$	Planning meeting with CoG			Move from Eldoret	Eldoret → Nairobi	
2017/2/25	Sat									
2017/2/26	Sun									
2017/2/27	Mon		Preparation of Action Plan for this year		Planning for Trip	Embu WSP	Nairobi→Embu	& discussion with MWI		
2017/2/28	Tue		-ditto-		Nairobi-Nakuru WSP -Kisumu	Meru WSP	Embu→Meru→Nairobi	Hydrostandard		
2017/3/1	Wed		-ditto-		Kisumu WSP -Eldoret			Wrold Bank & Danco		
2017/3/2	Thu		-ditto-		Eldoret WSP-Nakuru			Nairobi Water		
2017/3/3	Fri		-ditto-		Nakuru - Nyahururu WSP			SNV		
2017/3/4	Sat				Nyahururu-Nairobi			KEWI & Hydrostandard		
2017/3/5	Sun									
2017/3/6	Mon		Nairobi → Ruiru → Nairobi		Organizing interview results		Leafing from Kenya	Meetings with MWI, WASREB, KEWI and the leading WSPs	Nairobi → Chuka	
2017/3/7	Tue		Nairobi → Embu		Planning meeting with MWI		Arriving in Japan	Meru WSP (supporti for planning)	Chuka → Meru	
2017/3/8	Wed		Embu → Meru		Planning meeting with MWI/KEWASNET			Embu WSP (support for planning)	Meru → Embu → Nairobi	
2017/3/9	Thu		Meru → Nyahururu		Preperation of PIC			Internal discussion and meeting with MWI		
2017/3/10	Fri		Nyahururu → Nakuru → Nairobi		Drafting report			KEBS & Flowmatics		
2017/3/11	Sat							KEWI		
2017/3/12	Sun									
2017/3/13	Mon	Submission of Draft of Baseline Survey	Work Plan Ver.1 compiling, Arranging of		Drafting report			Nakuru WSP (support for planning)		
2017/3/14	Tue		-ditto-		Drafting report			Nyahururu WSP (support for		
2017/3/15	Wed				2nd PIC					
2017/3/16	Thu		-ditto-		Work Plan Ver.1 compiling, Arranging			Discussion with MWI on its budget		
2017/3/17	Fri		-ditto-					KEBS & Nairobi Ironmonger		
2017/3/18	Sat									
2017/3/19	Sun									
2017/3/20	Mon		Reporting & related works	Reporting & related works	Reporting & related works			Presentation at COG & meeting with MWI on the budget		
2017/3/21	Tue		Discussion with WASREB, Reporting to JICA Kenya		Reporting to JICA Kenya			Discussion with WASREB & reporting to JICA Kenya		
2017/3/22	Wed		Leaving from Kenya		Reporting & related works			Leaving from Kenya		
2017/3/23	Wed		Arriving in Japan		Reporting & related works			Arriving in Japan		

9. 主要面談者リスト

S/No.	Name	Organization	Position
Ministry of Water and Irrigation (MWI)			
1	Prof. Fred H.K. Segor	MWI	Principal Secretary
2	Eng. Lawrence N. Simitu	MWI	Water Secretary
3	Eng. Sao Alima	MWI	Director Water, Sewerage and Sanitation Development
4	David N. Mabonga	MWI	Chief Superintendent, Water
5	Mary W. Mwangi	MWI	Senior Superintendent, Water
6	Onesmus N. Mwangi	MWI	Superintend, Water
7	Stephen G. Murithi	MWI	Superintend, Water
8	Jacinta Ncooro	MWI	Secretary
9	Elizabeth W. Kihara	MWI	Chief Superintendent Water and Sanitation
10	Simon Ngatia	MWI	Chief Superintendent Water and Sanitation
11	Dorcas T.A. Otieno	MWI	Chief Superintendent Water and Sanitation
WASREB			
12	Eng. Robert Gakubia	WASREB	Chief Executive Officer
13	Eng. Peter Njaggah	WASREB	Director
14	Eng. Richard Cheruiyot	WASREB	Inspectorate Services Manager
15	Eng. Daniel Ngugi	WASREB	Technical Officer
16	Eng. Francis Maluki	WASREB	Technical Officer
KEWI			
17	Dr. Leunita Sumba	KEWI	Director/Chief Executive Officer
18	David Ngetich	KEWI	Deputy Director
19	Kihara J. Ibrahim	KEWI	Senior Lecturer
20	Tulienge W. Walela	KEWI	Instructor
21	Nyakundi K. Everlyne	KEWI	Lecturer
22	William W. Oduor	KEWI	Lecturer
23	Festus M. Mutuku	KEWI	Lecturer
24	Fredrick Murithi	KEWI	Lecturer
25	Terecia Mucia	KEWI	Lecturer
26	Walter Moseti	KEWI	Lecturer
27	Eric Wamiti	KEWI	Lecturer
28	Paul N. Muthama	KEWI	Lecturer
WASPA			
29	Eddah Wambui	WASPA	Chief Executive Officer
30	Job Kangicu Fundi	WASPA	National Officer
31	Patricia Wanjeri	WASPA	NRW/Data Manager
Tana WSB Area			
32	O.B. Kariuki	Tana WSB	NRW Officer
33	John N. Mbogori	Tana WSB	Technical Services Manager
34	Hamilton M. Karugenzo	Embu WSP	Managing Director
35	Christopher Gitanga	Embu WSP	Ag. Head of Technical Services
36	Doris Njiru	Embu WSP	Finance & Administration Manager
37	Joseph Irungu Maina	Embu WSP	Technical Officer
38	Alice Mwakirie	Embu WSP	Technical Officer
39	Cyrus Mugendi	Embu WSP	Technical Officer
40	Cathrine Mukami	Embu WSP	Technical Officer
41	Obed Mwachathi	Embu WSP	Technical Officer
42	Njiru Aphayard	Embu WSP	G.I.S Officer
43	Justin Mugendi	Embu WSP	Elec/Mech/Metering Officer
44	Emilly N. Mbangua	Embu WSP	Commercial Accountant

S/No.	Name	Organization	Position
45	Eng. George Karanja	Meru WSP	Managing Director
46	Christopher M. Kaume	Meru WSP	Planning & Engineering Officer
47	Matthew Nteere	Meru WSP	Finance Manager
48	Betty N. Robert	Meru WSP	Customer Relations Manager
49	Silas Ndatho	Meru WSP	NRW
50	Albert Gatuta	Meru WSP	Technical Services Manager
51	Lucy N. Mungori	Meru WSP	Meter Reading Services
52	Richard Mwirigi	Meru WSP	
53	Caroline K. Karimi	Meru WSP	Technical Assistant
54	Edward Maingi	Meru WSP	Technician
55	William Mwenda	Meru WSP	Technician
56	Peter M. Gichanga	Nyeri WSP	Managing Director
57	Peter G. Kahuthu	Nyeri WSP	Head of Technical Services
58	Peter G. Kahuthu	Nyeri WSP	NRW Officer
59	Lucy Kibui	Nyeri WSP	Customer Relations
60	Charles Muriithi	Nyeri WSP	Accounts
61	Christopher Gitonga	Muranga WSP	Public Relations Manager
Athi WSB Area			
62	Eng. Joseph Kamau	Athi WSB	Head of Engineering
63	Dickson Ongesa	Athi WSB	Civil Engineer
64	Mr. Joseph K. Kinyua	Kiambu County	CoG member
65	Eng. George Mungai	Ruiru-Juja WSP	Managing Director
66	Mary Mwangi	Ruiru-Juja WSP	Technical Manager
67	Alice Kamande	Ruiru-Juja WSP	Head of NRW Unit (UFW Coordinator)
68	Jane Ngungi	Ruiru-Juja WSP	GIS Officer
69	Jacob Ngari	Ruiru-Juja WSP	Assistant Manager (Juja)
70	Eric Munene	Ruiru-Juja WSP	NRW Unit
71	Dalmas	Ruiru-Juja WSP	NRW Unit
72	Raphael Mulwa	Ruiru-Juja WSP	NRW Unit
73	Peterson Muriithi	Ruiru-Juja WSP	NRW Unit
74	Margaret W. Maina	Limuru WSP	Managing Director
75	Teresia N. Mwaru	Limuru WSP	Technical Manager
76	Charles Wahogo	Limuru WSP	Financial Manager
77	Emily M. Kamiri	Limuru WSP	ICT Officer
78	Boniface M. Kabue	Kiambu WSP	Ag Managing Director
79	Beth Wanjiru Muigai	Kiambu WSP	Technical Manager
80	Mburu Kiemo	Nairobi WSP	Technical Coordinator
81	Elerian Wangui	Nairobi WSP	Data Analyst Coordinator
82	Anthony M. Muchiri	Nairobi WSP	Finance/Commercial Coordinator
83	John K. Otieno	Nairobi WSP	eWater Project Manager
84	Erastus Muturi	Thika WSP	Operation & Maintenance Manager, Water
85	Masha Philip	Thika WSP	Project Inspector
86	Elaine Ngugi	Thika WSP	Corporate Affairs Manager
87	Walter Ngieno	Thika WSP	GIS Officer
Tanathi WSB Area			
88	Jane Sein	Tanathi WSB	Water Services Manager
89	Rose N. Kimeu	Machakos County	CoG member
90	Augustus Mboya	Machakos County	CoG member
91	Moses Nzuki	Machakos County	CoG member
92	Ruth Mutua	Machakos County	CoG member
93	Winfred Mbai	Machakos WSP	Ag. Managing Director
94	Simon Kamangi	Machakos WSP	Ag. Human Resources Administration
95	Issac Musya	Machakos WSP	Technical Manager (Projects/Sewerage O&M)

S/No.	Name	Organization	Position
96	George Ngilla	Machakos WSP	Technical Manager(Water Supply O&M)
97	Michael Y. Mangeli	Mavoko WSP	Managing Director
98	Jesse Ambudo	Mavoko WSP	Technical Manager
99	Stella Ndwiga	Mavoko WSP	Financial/Customer Care Manager
100	Elisha Okode	Mavoko WSP	GIS Officer
101	James Nyauma	Mavoko WSP	NRW Officer
102	John Nzomo	Mavoko WSP	NRW Officer
103	Ndumbuthi Frangs	Mavoko WSP	NRW Officer
RV WSB Area			
104	Bancy Chege	RV WSB	Water Quality Manager
105	Eliakim Mwangi	RV WSB	
106	Carlos Cheluget	RV WSB	
107	Stephen Waweru Njagi	Nakuru County	Deputy city director of Water, Environment, Natural Resources, Water and Energy
108	Dr. Maaru Nelson	Nakuru County	Chief Officer
109	James N. Gachathi	Nakuru WSP	Managing Director
110	Anthony Chege	Nakuru WSP	Technical Manager
111	Gilbert Mutai	Nakuru WSP	Leak Detection Superintendent
112	Leonard Mutai	Nakuru WSP	Illegal Use Superintendent
113	Joel Bett	Nakuru WSP	Operations and Maintenance Foreman/Eastern Zone
114	John Wachira	Nakuru WSP	Operations and Maintenance Foreman/Western Zone
115	Peter Koimbutho	Nakuru WSP	Operations and Maintenance Foreman/Southern Zone
116	David Kibet	Nakuru WSP	Operations and Maintenance Foreman/Central Zone
117	Shadrack Tanui	Nakuru WSP	Operations and Maintenance Foreman/Northern Zone
118	Peter Kimenju	Nakuru WSP	Revenue Enhancement Unit Foreman
119	Zaituni Kanenje	Nakuru WSP	Propoor Program Coordinator
120	Job Tomno	Baringo County	CEC Member Water
121	Hoak. K. Chebii	Eldama Ravine	Managing Director
122	Greg Kiptanui	Eldama Ravine	Technical Manager
LVS WSB Area			
123	Paul Agwanda	LVS WSB	Asset Development Manager
124	Jeremiah Oteng	LVS WSB	Urban WSP Manager
125	Gari Juma	LVS WSB	Monitoring and Evaluation of WSPs
126	George A. Koyier	Kisumu County	Chief Officer Water and Natural Resources
127	Hesbon O.B. Opuko	Kisumu County	Water Dept. Director(Water infrastructure)
128	John Owenga	Kisumu County	Water Dept. Director(Water Services)
129	Reginald O. Olang	Kisumu County	Water Dept. Director(Sewage)
130	Charles Okaka	Kisumu County	Water Dept. (Monitoring & Evaluation officer)
131	Isaiah K. Moturi	Kisumu County	Sub county water officers (Scwo)
132	Ezekiel Kasuku	Kisumu County	Sub county water officers (Nyakach)
133	John Omolo	Kisumu County	Sub county water officers (Kiwest)
134	Dr. Kipkorir Sigi	Bomet County	CoG member
135	Eng. David Onyango, HSC	Kisumu WSP	Managing Director
136	Joshua Oodoro	Kisumu WSP	Network Maintenance Engineer
137	Lawrence Wandeyi	Kisumu WSP	Meterring/Instruments Engineer
138	Joseph O. Odum	Kisumu WSP	Meter manager
139	Vencent Juma	Kisumu WSP	Bulkmeter manager
140	Johanes Ouma Oluoch	Kisumu WSP	Bulkmeter manager
141	Job Rapemo	Kisumu WSP	Bulkmeter manager
142	Ronald Mulaya	Kisumu WSP	Asset technician
143	Georges Aoko	Kisumu WSP	Assistant Technician

S/No.	Name	Organization	Position
144	Geoffrey Odhiambo	Kisumu WSP	GIS Officer
145	Sham Otieno	Kisumu WSP	ICT Manager
146	Harriet Ahoro	Kisumu WSP	PR Manager
147	Kevin Ogonda	Kisumu WSP	Pro-poor Coordinator
148	Eldha Ohiambo	Kisumu WSP	Customer Care Manager
149	Joseph K. Terer	Kericho WSP	Managing Director
150	Emily Electire	Kericho WSP	GIS Trainer
LVN WSB Area			
151	Isaac K. Ruto	LVN WSB	Chief Officer
152	Eng. C. Bwire	LVN WSB	Technical Manager Infrastructure
153	Wafula Frank Owen	LVN WSB	Public Relation Assistant
154	Mary Njogu	Uasin Gishu County	Chief Manager
155	Bob. R. Busungu	Uasin Gishu County	Director Water
156	Simon K. Kemei	Uasin Gishu County	Environment, Energy, Water and Natural Resources, Chief Officer
157	Jimmy Kemboi	Eldoret WSP	Ag. Managing Director
158	Stephen Psiwa Odum	Eldoret WSP	Head of Financial Services
159	Timothy K. Bett	Eldoret WSP	Head of Commercial Services
160	Joseph W. Ileri	Eldoret WSP	Head of NRW Team
161	Arban Wekesa Simiyu	Eldoret WSP	GIS Technician
162	Keriwa Thomii	Eldoret WSP	Accountant
163	Sheila Arusei	Eldoret WSP	Customer Service Manager
164	Lawrence S.M	Eldoret WSP	Sewerage Manager
165	David K. Biwott	Eldoret WSP	Water Technician
166	Joseph Maiyo	Eldoret WSP	Network Manager, Pro-poor Coordinator
167	John Situma Mukhwana	Bungoma County	County Chief Officer
168	P.W. Kuloba	Bungoma County	County Water Director
169	P.W. Munvalo	Nzoia WSP	Managing Director
170	Celsus Shilehwa	Nzoia WSP	Research, Development, Planning
171	Patric Anaswa	Nzoia WSP	GIS Officer
172	Kikeshi Benard	Nzoia WSP	Bungoma blanch manager
Northern WSB Area			
173	Abdikadir N. Osman	Northern WSB	Chief Executive Officer
174	Eng. Shem Nderi	Northern WSB	Technical Manager
175	Eng. J. M. Maina	Laikipia County	County Director, Water
176	Kenneth Gitonga	Nanyuki WSP	Managing Director
177	Simon Njoroge	Nanyuki WSP	Ag. Technical manager
178	Wachira Gakuru	Nanyuki WSP	Commercial and Finance Manager
179	Benard Mwaura	Nyahururu WSP	Managing Director
180	Peter Mwangi	Nyahururu WSP	Technical Manager
181	Margaret Kinyanjui	Nyahururu WSP	Operations Engineer
182	James Mugo	Nyahururu WSP	Commercial and Finance Manager
183	Catherine Kariuki	Nyahururu WSP	Acting Human Resources Officer
184	Paul G. Muthami	Nyahururu WSP	NRW Team Leader
185	Joseph M. Gitau	Nyahururu WSP	Operations Engineer
186	Tabitha Njama	Nyahururu WSP	Personal Assistant to Managing Director
187	David Muigai	Nyahururu WSP	Customer Relations Officer
188	Moses Mundia	Nyahururu WSP	Information and Communication Technology Officer
189	Stephen Ndirangu	Nyahururu WSP	Administration/ICT
190	Moses Mwangi	Nyahururu WSP	ICT Officer
191	David Wamunyu	Nyahururu WSP	NRW Team Member

S/No.	Name	Organization	Position
192	Moses Njoroge	Nyahururu WSP	NRW Team Member
193	Moses K. Mbugua	Nyahururu WSP	NRW Team (Operation & Maintenance Supervisor)
194	Haron Ngatia	Nyahururu WSP	NRW Team Member
195	Henry Gachau	Nyahururu WSP	NRW Team Member
196	Samuel Githu	Nyahururu WSP	NRW Team Member
197	Anthony M. Mwangi	Nyahururu WSP	NRW Team Member
198	Bashir Jillo	Isiolo County	County Director, Water
199	Joseph Wako Guyo	Isiolo WSP	Managing Director
200	Joseph Waciuri Muriuki	Isiolo WSP	Technical Manager
201	Nura Bonaya	Isiolo WSP	Commercial and Finance Manager
Coast WSB Area			
202	Joseph Omwenga	Coast WSB	Ag. Chief Executive Officer
203	Martin Tsuma	Coast WSB	Ag. Technical manager
204	Joachim Macharia	Coast WSB	Engineer
205	Eng. Samwel Ngari Kombe	Kilifi County	County Chief Officer, Water
206	Mwachitu Kiringi	Kilifi County	CoG member
207	Valerie Mkambe	Kilifi Mariakani	Ag. Managing Director
208	Hezekiah Mwarua	Kilifi Mariakani	Technical Manager
209	Virginia Nyambura Mwangi	Kilifi Mariakani	Area Manager
210	Alfred D. Janji	Kilifi Mariakani	I/A Manager
211	Pascal D. Jira	Kilifi Mariakani	SWE
212	Julius Tsuma	Kilifi Mariakani	Commercial Officer
213	Fatuma Mwidadi	Kilifi Mariakani	Human Resources Manager
214	Hon. Hemedi Mwabudzo	Kwale County	Chief Executive Officer, Water
215	Ali Chalala	Kwale County	Ag. County Director, Water
216	Athman Chembea	Kwale WSP	Managing Director
217	Swale Kidzuga	Kwale WSP	Technical Manager
218	Hussein mwavadu	Kwale WSP	Commercial Manager
Other Related Organizaion			
219	Sharon Makena	CoG	Program Director
220	Ken Oluoch	CoG	Support Water Committee
221	Barbara Awuor	CoG	Assitant to Chief Executive Officer
222	Stephen Osingo	CoG	Officer
223	Nelly Mwenesi	CoG	Officer
224	Mwihaki Wambui	CoG	Officer
225	Brian Muthoka	CoG	Officer
226	James N. Karuiru	世界銀行 (WB)	Water-Urban, Implementation Support
227	Lieke Nijk Msc.	VITENS EVIDES	Project Cordinator
228	David G. Wanyoike	SNV	WASH Advisor(Program Manager)
229	Cliff Nyaga	SNV	WASH Advisor(NRW Specialist)
230	Peter N. Karanja	SNV	WASH Advisor(NRW Specialist)
231	Dorris Kirui	ドイツ国際協力公社 (GIZ)	Project Advisor, Water Sector Reforms
232	Patrick Onyango	ドイツ国際協力公社 (GIZ)	Senior Project Advisor, Water Sector Reforms
233	Dennis Moturi	Kenya Bureau of Standards (KEBS)	Head of Department, Metrology
Local Engineering and Supplier			
234	Tripat S. Mangat	Mangat, I.B. Patel & Partners Consulting	Chief Executive Officer
235	Eng. James N. Njoroge	Mangat, I.B. Patel & Partners Consulting	Senior Engineer

S/No.	Name	Organization	Position
236	Paolo Rufini	IncoWest GmbH & Co.,KG	Team Leader, NRW Reduction Expert
237	Jakesh Patel	Nairobi Ironmongers Ltd.	Chief Executive Officer
238	Kanyatte Mwangi	Flowmatics Ltd.	Chief Technology Officer
239	Kennedy Mithamo	Flowmatics Ltd.	Solutions Architect
240	Sachin Dhanani	DANCO Ltd.	Director
241	Suraj Dhanani	DANCO Ltd.	Director
242	Abel Nzimbi	Hydro Standard Kenya Ltd.	Managing Director
243	Jonathan Kinyingi	Hydro Standard Kenya Ltd.	Administrative Accountant, East Africa
244	Ivan De Souza	Coast Industrial & Safety Supplies	Director
Japanese Organizaion			
245	Nobukazu Naniwa	在ケニア日本大使館	First Secretary, Deputy Permanent Representative to UNEP
246	Keiko Sano	JICAケニア事務	Chief Representative
247	Kazuhiro Tambara	JICAケニア事務	Senior Representative
248	Masahito Miyagawa	JICAケニア事務	Representative
249	Masanobu Mayusumi	JICAケニア事務	Regional Project Formulation Advisor
250	John N. Ngugi	JICAケニア事務	Senior Programme Officer (Environment & Water)

10. Updated Distribution Plan of MWI NRW Unit's Budget for the Financial Year 2016/17

March 30, 2017

Updated Distribution Plan of MWI NRW Unit's Budget (60 million KES) for the Financial Year 2016/17

Table 1 shows the updated distribution plan of MWI NRW Unit's budget (60 million KES) for the financial year 2016/17. The breakdowns of each item group are shown in Table 2 to Table 11. Procurement by order is required for Item Groups No. 3 to No.9 of Table 1 because the specified equipment of these Item Groups will be required by August 2017 for JICA Expert Team to start their training sessions targeting pilot WSPs smoothly and effectively in October 2017.

Table 1: Modified Distribution Plan of MWI NRW Unit's Budget (60 million KES) for 2016/17

Item Group No.	Description	Cost (KES) including VAT	Note	Type of Procurement (Time Frame)
1	Office Preparation, NRW Policy Preparation, JCC, Campaign, Workshop, NRW Joint Training of KEWI, Perdium, etc.	12,820,610	including the costs of NRW Joint Training of KEWI specified in Table	-
2	NRW Training Platform Modification at KEWI	4,640,000	Table 3	-
3	NRW and GIS-related Equipment for KEWI	2,369,566	Table 4	Order (to be procured by August 2017)
4	GPSs and A3-size All-in-one Printers for Nyahururu and Kilifi-mariakani WSPs and MWI NRW Unit	508,273	Table 5	
5	volumetric Meters for Small Customers of Mavoko WSP	3,828,000	Table 6	
6	Ultrasonic Smart Meters for Large Customer Meters of Meru and Embu WSPs	3,706,528	Table 7	
7	Ultrasonic Zonal Bulk Meters for Meru and Embu WSPs	3,752,686	Table 8	
8	Mechanical Production Bulk Meters for Meru and Embu WSPs	1,463,239	Table 9	
9	NRW Equipment mainly for Pilot WSPs	26,882,791	Table 10	
	1) Pressure Loggers and Ultrasonic Flow Meters	4,491,938	Table 11 - Package 1	
	2) Potable Meter Testers, Handpump for Leak Check and Gound Microphone	3,079,800	Table 11 - Package 2	
	3) Listening Sticks	3,570,480	Table 11 - Package 3	
	4) Leak Noise Correlator with Ground Microphone and Impulse Generators for Plastic Pipes	3,887,067	Table 11 - Package 4	
	5) Leak Noise Correlators with Ground Microphones	4,401,318	Table 11 - Package 5	
	6) Impulse Generator for Plastic Pipes	4,216,020	Table 11 - Package 6	
	7) Pipe Locator for Metal Pipes + Cable for Locating Prastic Pipe	3,236,168	Table 11 - Package 7	
Grand Total		59,971,692	Remaining: 028,308 (KES)	-

Table 2 shows the costs required for preparing and implementing the Joint Training of KEWI and the Leading WSPs (Embu and Meru). The proposed time frame of the activities listed in this table will be adjusted once the updated distribution plan of the budget is approved. The total cost in Table 3 includes the material and labour costs required for modifying the existing platform of pipe network at KEWI for practicing the detection of leaks and pipe location, etc. Table 4 shows NRW and GIS-related equipment required at KEWI and the GIS center of Kericho WSP which has been collaborating with KEWI. KEWI needs more listening sticks for more students to experience simple ways of leakage detection using them while providing opportunities to use advanced equipment such as leak noise correlator. Since majority of WSPs cannot afford a plotter and scanner of large size for GIS development and applications, the procurement of low-cost A3-size all-in-one inkjet printer (scanner/copier) is proposed for teaching how to scan and digitize existing drawings and how to print a map over multiple pages (tilling) at both KEWI and the GIS center.

Table 2: NRW Joint Training of KEWI with the Leading WSPs

Description of Activity	Proposed Time Frame	Estimated Price (KES)
OJT training manual development at Naivasha	March 27th - April 8th, 2017	932,600
Pilot WSP management sensitization workshop for senior managers (3 staff x 5 WSPs = 15 No)	April 10th, 2017	103,760
NRW classroom training at KEWI (3 staff x 5 WSPs = 15 No)	April 11th -16th, 2017	450,000
Practical field training OJT at Embu WSP	April 24th - 29th, 2017	945,200
Total without VAT		2,431,560
VAT (16%)		389,050
Total including VAT		2,820,610

Table 3: NRW Training Platform Modification at KEWI

Description of Cost Item	Estimated Price (KES)
Modification of KEWI Training Platform (without VAT)	4,000,000
VAT (16%)	640,000
Total including VAT	4,640,000

Table 4: NRW and GIS-related Equipment for KEWI

Description of Product	Quantity	Unit Price without VAT (KES)	Estimated Price (KES)
Leak Noise Correlator: HWM - Touch Pro	1	1,710,000	1,710,000
Listening Stick: HWM - ST20 (1m)	10	34,200	342,000
A3-size Inkjet Printer with scan and copy functions: HP Officejet 7612 (including one for the collaborating GIS center at Kericho)	2	21,983	43,966
VAT (16%)			273,600
Total including VAT			2,369,566

Table 5 shows the costs required to procure handheld GPSs and A3-size all-in-one printers. Nyahururu WSP and Kilifi-mariakani WSP are the only WSPs which have not developed GIS database of water supply facilities among the 9 pilot WSPs. Therefore, especially these WSPs need handheld GPSs and A3-size printers with scan functions. MWI NRW Unit also needs some handheld GPSs to understand water supply systems of different WSPs well by reviewing their location when and after visiting them to support WSPs' NRW reduction activities.

Table 5: GPSs and A3-size All-in-one Printers for Nyahururu and Kilifi-mariakani WSPs and MWI NRW Unit

Type of Equipment	Model	required main specifications	Required Quantity				Price (KES)	
			Nyahurur	Kilifi-	MWI	Total	Unit	Estimated
Handheld GPS	Garmin GPSMAP 64s	- sunlight-readable color screen - High-sensitivity GPS and GLONASS receiver - 3-axis compass with barometric altimeter	3	3 (1)	3	9	43,800	394,200
Inkjet Printer	HP Officejet 7612	- A3 size print, scan and copy - Printing speed equal to or more than 15ppm black and 8ppm colour - Wireless connection	1	1	0	2	21,983	43,966
Total without VAT								438,166
VAT (16%)								70,107
Total including VAT								508,273

Note: Number of existing equipment is shown in brackets () above.

Table 6 shows the cost for procuring 1,000 plastic volumetric (piston type) customer meters for Mavoko WSP. Mavoko WSP has not reached 100% in metering ratio (98.6% as of February 2017) and has around 2,500 old customer meters which are more than 11 years old. Mavoko WSP currently has difficulties to procure customer meters by itself due to the delayed provision of planned subsidy from the county government and low water production resulting from drought and resulting in low revenue.

Table 6: volumetric Meters for Small Customers of Maboko WSP

Product Description		Quantity	Note	Unit Price without VAT (KES)	Price (KES)
Product	Required Main Specifications				
Kent Volumetric Plastic Meter (V110) of 1/2 inch	Compliance with Standards: ISO4064 Class CPer	1,000	About 45% of required 1/2" meters (about 85% of required 2,633 meters (133 new + 2,500 replacement))	3,300	3,300,000
VAT (16%)					528,000
Total including VAT					3,828,000

Table 7 to Table 9 show the costs of procuring ultrasonic smart meters for large customers, ultrasonic bulk meters for trunk distribution mains and mechanical bulk meters for measuring production at Meru WSP and Embu WSP which are the leading pilot WSPs of this project. The ultrasonic smart meters with radio emitter, devices for data transfer and software (to be installed in both smartphones and PCs) shown in Table 7 will be used for various trials of focused management of large customers in these two WSPs. These smart meters will be installed initially in series with the existing mechanical customer meters for comparison. The existing mechanical bulk meters having more than 5% errors (mostly made in China) will be replaced with the ultrasonic bulk meters with logging function shown in Table 8. These ultrasonic bulk meters, which are significantly cheaper than electromagnetic flow meters, will be used to make the step test for locating leakage (i.e. continuously measuring minimum night flow while closing branch distribution mains one by one) much easier to conduct regularly and more effectively. As seen in Table 9, two existing faulty production bulk meters on transmission lines (over registering by 8% and 23%) will be replaced with new mechanical bulk meters to start calculating the overall NRW ratio of Meru WSP properly based on the measurement of production. Another existing faulty production bulk meter of Embu WSP (over registering by around 15%) will be replaced with a relatively low-cost electromagnetic flow meter to improve the calculation of NRW ratio based on accurate measurement of production.

Table 7: Ultrasonic Smart Meters for Large Customer Meters of Meru and Embu WSPs

		Product							Quantity			Price (KES)		
Category	Product Name	Nominal Diameter (mm)	Permanent Flow Q3 (m3/h)	Minimum Flow Q1 (m3/h)	R: Q3/Q1	Max cut-off (m3/h)	Length (mm)	Accuracy Class	Meru WSP	Embu WSP	Total	Unit Price	Estimated Price	
Customer Meters for Large Consumers	Ultrasonic Smart Meters (868 MHz)	Kamstrup Multical 21	20*	4	0.016	250	8.5	130	OIML R49 Class 2 (±5% Q1 ≤ Q ≤ Q2 & ±2% Q1 ≤ Q ≤ Q2 when ≤ 30°C)	4	0	4	27,273	109,092
			25**	6.3	0.06	100	11	260		2	2	4	35,900	143,598
		Kamstrup Flow IQ 3100	32**	10	0.10	100	30	300		1	10	11	44,755	492,301
			50	16	0.16	100	45	270		2	4	6	91,640	549,843
			65	25	0.25	100	76	300		1	2	3	119,452	358,357
			80	40	0.40	100	91	300		0	2	2	138,100	276,200
	Sub Total									10	20	30	-	1,929,391
	Data Transfer from the Meters	READY Manager/App (software with one year license) with one READY Converter (up to 100 meters)								1	2	3	158,903	476,710
		Bluetooth optical head with charger and brackets								1	2	3	84,125	252,376
		READY Concentrator with plastic box								0	1	1	236,797	236,797
		READY Repeater 5								0	1	1	20,009	20,009
	Commissioning of the System including Training									2 man-days	2 man-days	4 man-days	70,000	280,000
Total without VAT													3,195,283	
VAT (16%)													511,245	
Total including VAT													3,706,528	

Note: * including couplings, check valve & strainer, ** including couplings, check valve, AFM gaskets for threaded sensor & strainer

Table 8: Ultrasonic Bulk Meters (Distribution/Zonal) for Meru and Embu WSPs

		Product							Quantity			Price (KES)		
Category	Product Name	Nominal Diameter (mm)	Permanent Flow Q3 (m3/h)	Minimum Flow Q1 (m3/h)	R: Q3/Q1	Length (mm)	Accuracy Class	Meru WSP	Embu WSP	Total	Unit Price	Estimated Price		
Bulk Meters for Distribution	Ultrasonic Bulk Meters with logging	ELIS FLOMIC	100	100	0.32	315	250	±5% Q1 ≤ Q ≤ Q2 & ±3% Q1 ≤ Q ≤ Q2	4	0	4	215,921	863,686	
		FL5024 (single beam)	150	250	0.79	315	300		2	1	3	269,201	807,602	
			200	400	1.27	315	350		1	0	1	364,543	364,543	
		FLOMIC FL5034 (single beam)	300	1000	2.5	400	450	0	1	1	510,360	510,360		
	Sub Total									7	2	9	-	2,546,191
	Options	SVAO Set for downloading of archive dates (Soft with standard optical probe and Spare Battery (LSH20))								1	1	2	243,029	486,057
								9	3	12	5,236	62,826		
Commissioning for System including Training									1 man-day	1 man-day	2 man-days	70,000	140,000	
Total without VAT													3,235,074	
VAT (16%)													517,612	
Total including VAT													3,752,686	

Table 9: Mechanical and Electromagnetic Bulk Meters (Production/Transmission) for Meru and Embu WSPs

		Product						Quantity			Price (KES)		
Category	Product Name	Nominal Diameter (mm)	Nominal Flow Qn (m3/h)	Minimum Flow Qmin (m3/h)	Overload Flow Qov (m3/h)	Length (mm)	Accuracy Class	Meru WSP	Embu WSP	Total	Unit Price	Estimated Price	
Bulk Meters for Production	Kent Helix H4000 (Mechanical)	200	700	4	Qov: 1,000	350	ISO 4064 Class B	2	0	2	155,000	310,000	
	ISOIL Isomag MS2500 with ML255 (Electromagnetic)	400	Measuring Range: 0~4,500			600	OIML R49 Class 2 (≤ 250mm)	0	1	1	850,000	850,000	
		Spare Battery (Size D Non-rechargeable Lithium Battery (e.g. LSH20))							0	6	6	5,236	31,413
		Commissioning for System including Training							0	1 man-day	1 man-day	70,000	70,000
Total without VAT													1,261,413
VAT (16%)													201,826
Total including VAT													1,463,239

Table 10 shows the costs required to procure various equipment for pressure measurement, flow measurement and detection of leaks and pipe location for the 9 pilot WSPs. This table includes 9 listening sticks for MWI NRW Unit to promote their use in other WSPs. Moreover, this table shows the existing number and additionally-required number for each type of equipment at each pilot WSP on the right side. Table 10 also shows the coloring for separating items into 7 procurement packages which are further described in Table 11.

Table 10: NRW Equipment mainly for Pilot WSPs

Equipment			Quantity		Price (KES)		Number of Existing Equipment in brackets () and Required Number for Procurement with Coloring for Grouping into Procurement Packages								
Category	Type of Equipment	Selected Product	Recipients	Total Num.	Unit Price	Estimated Price	Leading WSP		Preceding Pilot WSPs				Following Pilot WSP		
							Phase 1 and 2		Mainly Phase 2				Mainly Phase 3		
							Meru	Embu	Kisumu	Nakuru	Ruiru-Juja	Nyahururu	Mavoko	Eldoret	Kilifi-mariakani
Pressure Measurement	Pressure Logger	LoLog - Vista with Hose & Connector (RADCOM)	Selected Pilot WSPs	14	82,740	1,158,360	4	(3+1 with dead battery)	4	(20 mostly with dead battery)	(1)	2	2	2	
	Programming Cable for the Logger	Programming Cable for LoLog	Selected Pilot WSPs	5	62,800	314,000	1		1			1	1	1	
Flow Measurement	Portable Ultrasonic Flow Meter	IFX-P210 (ISOFLUX)	Selected Pilot WSPs	3	800,000	2,400,000	(1)	(1)	(1)	(1)	(1)	(1)	1	1 (2 broken)	1
	Portable Meter Tester	Potal Testing Station with Y290 (Elstar)	Selected Pilot WSPs	4	320,000	1,280,000	1	1	(2)	(2)	(1)	1	(1)	(2)	1
Detection of Leak and Pipe Location	Hand Pump for Leak Check	Prufpumpe RP 50 (PIPETECH)	All Pilot WSPs	9	35,000	315,000	1	1	1	1	1	1	1	1	1
	Ground Microphone (Leak Detector)	Xmic (RADCOM)	Selected Pilot WSPs	2	530,000	1,060,000		(1)		(1)	1	1		(1 old)	(1)
	Listening Stick	ST20 (HWM) - 1m	All Pilot WSPs (81) + MWI NRW Unit (9)	90	34,200	3,078,000	18 (2)	7(3)	8	8	8	8	8	8	8
	Leak Noise Correlator	Touch Pro (HWM) only for KEWI	-	0	0	0				(1)	(1)	(1)			(1)
	Leak Noise Correlator with Ground Microphone	SeCorrPhon AC06 (SEWERIN)	Selected Pilot WSPs	3	1,897,120	5,691,360	(1)	1	(1)				1	1	
	Impulse Generator (sound box) for Plastic Pipes	Combiphon (SEWERIN)	Selected Pilot WSPs	7	726,900	5,088,300	1	1	(1)	(1)	1	1	1	1	1
Pipe Locator for Metal Pipes + Cable for Locating Plastic Pipes	UtiliTrac R130 (SEWERIN)	Selected Pilot WSPs	4	697,450	2,789,800	1	1	(1)	(1)	(1)	1	1	(2 old)	(1)	
Total without VAT						23,174,820	Note: Number of existing equipment is shown in brackets () above.								
VAT (16%)						3,707,971									
Total including VAT						26,882,791									

Table 11: Procurement Packages of NRW Equipment for Pilot WSPs

Procurement Package No.	Products	Total without VAT	Note	VAT (16%)	Total including VAT
Package 1	Pressure Loggers and Ultrasonic Flow Meters	3,872,360	= 1,158,360 + 314,000 + 2,400,000	619,578	4,491,938
Package 2	Potable Meter Testers, Handpump for Leak Check and Gound	2,655,000	= 1,280,000 + 315,000 + 1,060,000	424,800	3,079,800
Package 3	Listening Sticks	3,078,000	= 90 x 34,200	492,480	3,570,480
Package 4	Leak Noise Correlator with Ground Microphone and Impulse Generators for Plastic Pipes	3,350,920	= 1 x 1,897,120 + 2 x 726,900	536,147	3,887,067
Package 5	Leak Noise Correlators with Ground Microphones	3,794,240	= 2 x 1,897,120	607,078	4,401,318
Package 6	Impulse Generator for Plastic Pipes	3,634,500	= 5 x 726,900	581,520	4,216,020
Package 7	Pipe Locator for Metal Pipes + Cable for Locating Prastic Pipe	2,789,800	= 4 x 697,450	446,368	3,236,168
Sum		23,174,820	-	3,707,971	26,882,791

11. 活動写真

(1) 全体活動

表敬訪問



第1回 JCC



第1回 PIC



第2回 PIC



CoG 会議



(2)各成果に係る活動

(2)-1 無収水管理/情報管理/広報(成果1・2・5)

第1回 Kenya Water Week

		
開会式、Water Sector Report の開封、配布の様子	Opening Panel Discussion の様子	Research Capacity Building & Communication 分科会、KEWI の Director によるプレゼンの様子

WASPA ワークショップ(無収水分科会)

		
WASPA ワークショップ会場 (Milele Guest House)	JICA 専門家チームによる本プロジェクトの概要説明	グループワークの様子

(2)-2 研修計画・研修管理(成果3)

KEWI 既設施設の調査及び研修状況

		
漏水探査デモンストレーションプラットフォームでの研修	漏水探査デモンストレーションプラットフォームでのインベントリー	配管/継ぎ手実習場での講義

KEWI 合同研修の事前準備状況

		
Meru WSP/KEWI 合同研修の打合せ(その1)	Meru WSP/KEWI 合同研修の打合せ(その2)	Kericho WSP/KEWI の GIS 合同研修調査

(2)-3 配水管網/流量・水圧・漏水管理/顧客管理・料金請求(成果4)

パイロット WSP 選定のための評価調査インタビュー状況

		
Kiambu WSP	Ruiru Juja WSP	Limuru WSP
		
Machakos WSP	Mavoko WSP	RV WSB
		
Nakuru County	Nakuru WSP	Eldama Ravine WSP
		
Uain Gishu County	Bungoma County	LVN WSB
		
Eldoret WSP	Nzoia WSP	Kisumu County
		
LVS WSB	Kisumu WSP	Meru WSP (Leading)



パイロット WSP における無収水削減計画策定 (参加型) の支援状況



12.資機材写真

パイロット WSP の保有機材状況

		
<p>水道メーター検査試験機 (Meru WSP)</p>	<p>水道メーター検査試験機 (Embu WSP)</p>	<p>水道メーター検査試験機 (Kisumu WSP)</p>
		
<p>水道メーター検査試験機 (Eldoret WSP)</p>	<p>超音波流量計 (Kisumu WSP)</p>	<p>漏水探知機 (Kilifi-Mariakani WSP)</p>
		
<p>電磁流量計 (Kisumu WSP)</p>	<p>パイプロケータ (Kisumu WSP)</p>	<p>相関式漏水探知機 (Kisumu WSP)</p>
		
<p>ポータブル水道メーター検査器 (Mavoko WSP)</p>	<p>ポータブル水道メーター検査器 (Kisumu WSP)</p>	<p>ポータブル水道メーター検査器 (Ruiru Juja WSP)</p>
		
<p>スマートメータ(トライアル中) (Eldoret WSP)</p>	<p>一般顧客用メータ(在庫品) (Kisumu WSP)</p>	<p>大口顧客用メータ(在庫品) (Kisumu WSP)</p>

支援項目(トライアル)実施のための現場調査状況









		
既存水道メータ設置箇所 (Meru WSP)	既存水道メータ(φ200)その1 (Meru WSP)	既存水道メータ(φ200)その2 (Meru WSP)
		
既存水道メーター設置箇所 (Embu WSP)	既存水道メータ(φ400) (Embu WSP)	故障水道メータ(φ15) (Mavoko WSP)

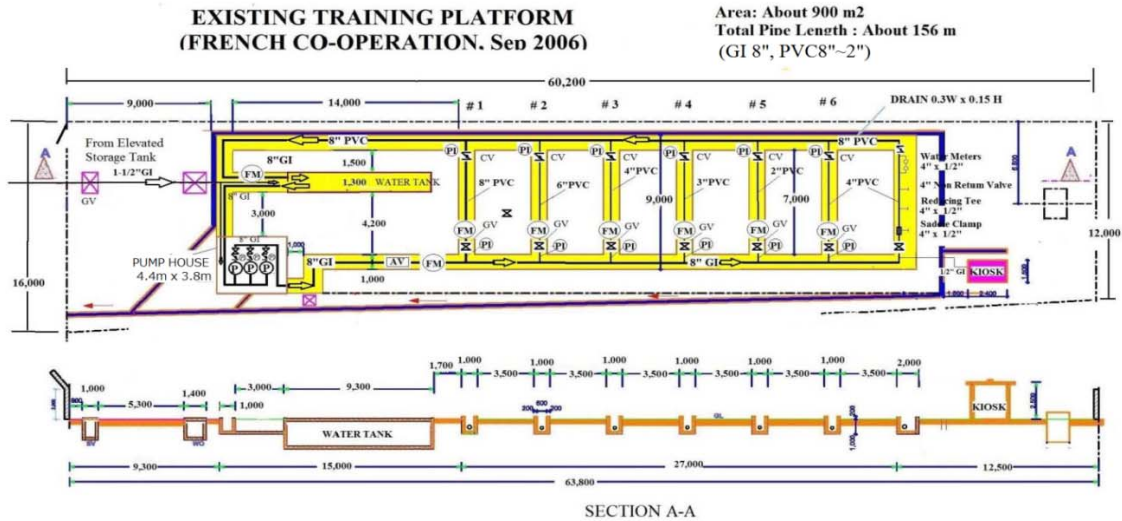
関連機関および資機材の市場調査状況

		
水道メーター検定装置その1 (Kenya Bureau of Standards)	水道メーター検定装置その2 (Kenya Bureau of Standards)	第三者機関(ドイツ)校正証明書 (Kenya Bureau of Standards)
		
スマートメータ(デンマーク製) (Flowmatics 社)	テスト用ハンドポンプ(中国製) (Nairobi Ironmonger 社)	HDPE 管(現地生産品) (DANCO 社)

13.KEWI 関連資料

配水網管理の Training Platform 機材一覧表

Item	Description	Specification/Model/Manufacturer	Unit	Quantity	Storage Location	In Good Working condition	Capital Source	Remarks	Photo
1	ELEVATED RESERVOR w/Water Tank-1	27 m ³ , FRP x 17.5 m H (water tank 42m ³)	Set	1	On the periphery	1	KEWI		
2	ELEVATED RESERVOR w/Water Tank-2	7 m ³ , FRP x 9.0 m H (water tank 42m ³)	Set	1	On the periphery	0	KWEI	Leakage	
3-1	PUMP HOUSE	4.4m x 4.0m	Structure	1	In LDDP	1	France		
3-2	PUMPS	DAVIS & SHIRTLIFE 5.5HP (1) x 1,435 rpm 10HP (1) x 2,900 rpm 25HP (1) x 2,930 rpm	Sets	3	In LDDP	1 10Hp (7.5kw)	France		
4	PIPE LINE	8" GSP x 45m 8" ~2" PVC	long	160 m	In LDDP	160	France		
5	GATE / SLUCE VALVES	8" ~2"	No	7	In LDDP	In Good Working condition	France		
	BULK WATER METERS	8" ~2"	No	6					
	FIRE HYDRANT	8" ~2"	No	1					
	AIR VALVES	8" ~2"	No	1					
	CHECK VALVES	8" ~2"	No	6					
	PRESSURE GUAGES		No	10					
	SLEEVE JOINTS	8" ~2"	No	17					
6	COVERS FOR OPEN CHANNEL (Metal)		Set	1	In LDDP	1	France		
7	KIOSK	2.4 m x 1.5m No Water Meter installed	Structure	1	In LDDP		France	On display	









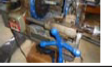












既設の配水網管理研修施設の概要 (着色部分はピットを示す)











漏水探知関連機材の一覧表











Item	Description	Specification/Model/Manufacturer	Unit	Quantity	Storage Location	In Good Working condition	Capital Source	Remarks	Photo
1	LISTENING STICK	FUJITECOM	No	6	In Hydraulic Laboratory	6	JICA		
2	WATER PRESSURE TEST PUMP (Manual),	KYOUWA, PAT No. 1559537,) small size	No	2	In Hydraulic Laboratory	2	JICA		
3	PRESSURE REDUCING VALVES (Manual)	1½" dia, 2" dia, 3" dia	No	5	In Hydraulic Laboratory	5	JICA		
4	PRESSURE DATA LOGGERS	TYPE NO. RDL512LF/64V	No	3	In Hydraulic Laboratory	1	JICA	No software for it	
		SERIAL NOS. 23427, 23427, 23427	No	3					
5	WATER LEAK DETECTOR	FUJI TECOM, HG-10A II SERIAL NOS. 006251, 006249	No	2	In Hydraulic Laboratory	2	JICA		
6	NOISE LEAK CORRELATORS			0	In Hydraulic Laboratory	0			
7	NON METALLIC PIPE DETECTOR	RADIODETECTION 01/TS2954L21NT/01	No	2	In Pipe Workshop	2	JICA		
8	ELECTRO TYPE WATER TESTER	Aichi tokei TR II, Ser nos. 138/970695, 139/970696,140/970697	No	3	In Hydraulic Laboratory	3	JICA		
9	ULTRA SONIC FLOW METER	HYDREKA CHRONO FLO 430, Serial nos. 31070, 31072 (Both needs calibration)	No	2	In Hydraulic Laboratory	0	JICA	One Charging Terminal missing	
10	TIME INTEGRAL LEAK DETECTOR	S/N T762028-D042	No	1		1	JICA		?
11	GPS (High performance)	S/N 5050424656, 5049424088	No	2	In Water Information System Room	1	JICA		
12	GPS (Basic)		No	10	In Water Information System Room	10	KEWI		
13	METALLIC PIPE LOCATOR		No	10	In Pipe Workshop	3	KFW		
14	WATER METER TEST BENCH	SENSUS co., Only one meter, for 1-1/2"- 1/2", 2006	Set	1	In Hydraulic Laboratory	1	France		
15	OPEN CHANEL (PARSHALL -FLUME)	0.5m ³ /sec, Flow measuring device	Set	1	In Hydraulic Laboratory	1	KEWI		

Pipe Workshop 関連機材/工具の一覧表














Item	Description	Specification/Model/Manufacturer	Unit	Quantity	Storage Location	In Good Working condition	Capital Source	Remarks	Photo
1	WORKING TABLE S (wooden)	0.9W x 2 L x 0.9H	Sets	6	In Pipe Workshop	6	KEWI		
2	VICES		Units	11	In Pipe Workshop	11	KEWI		
3	WHEEL CUTTERS (For Pipe)		No	6	In Pipe Workshop	6	KEWI		
4	BENDING MACHINE		No	1	In Pipe Workshop	1	KEWI		
5	SHEARING TOOL		No	1	In Pipe Workshop	1	KEWI		
6	ANVIEL		No	1	In Pipe Workshop	1	KEWI		
7	CHAIN WRENCHS		No	6	In Pipe Workshop	6	KEWI		
8	PIPE VICES		No	3	In Pipe Workshop	1	KEWI		
9	PIPE THREDDING MACHINE	RECORD 0.75Kw, 1/2"~4"	No	1	In Pipe Workshop	1	KEWI		

10	BENCH GRAINDER	300W	No	1	In Pipe Workshop	1	KEWI		
11	DESKTOP ELECTRIC DRILL		No	1	In Pipe Workshop	1	KEWI		
12	ELECTRIC WELDING MACHINE		Set	1	In Pipe Workshop	1	KEWI		
13	GAS WELDING MACHINE		Set	1	In Pipe Workshop	1	KEWI		
14	BUTTERFLY VALVE	100 mm	No	1	In Pipe Workshop	-	KEWI	On display	
15	VICTAULIC JOINTS		Sets	3	In Pipe Workshop	-	KEWI	On display	
16	SLEEVE COUPLINGS		Sets	3	In Pipe Workshop	-	KEWI	On display	
17	MULTISAGE WELL PUMP	40 mm	No	1	In Pipe Workshop	-	KEWI	On display	
18	HAND PUMP		Set	1	In Pipe Workshop	-	KEWI	Cutaway on display	
19	GATE VALVE	100 mm	No	1	In Pipe Workshop	-	KEWI	Cutaway on display	

20	PRESSURE REDUCINGVALVE (Auto)	60 mm	No	1	In Pipe Workshop	-	KEWI	Cutaway on display	
21	PRESSURE REDUCINGVALVE (Manual)	1-1/2"	No	1	In Pipe Workshop	-	JICA	On display	
22	BALL VALVE		No	1	In Pipe Workshop	-	KEWI	On display	
23	AIR VALVE		No	1	In Pipe Workshop	-	KEWI	Cutaway on display	
243	COMBINED BULK METER	80 mm	No	1	In Pipe Workshop	-	KEWI	On display	
25	BULK METER	32 mm	No	1	In Pipe Workshop	-	KEWI	On display	
26	CUSROMER METER		No	1	In Pipe Workshop	-	KEWI	On display	
27	CUSTOMER METER (Old)	1/2 "	No	1	In Pipe Workshop	-	KEWI	Cutaway on display	
28	CUSTOMER METER (Single Jet Type)	ISO R100-Type 13mm	No	0		0			
29	STEEL PIPE		Set	1	In Pipe Workshop	1	KEWI		
30	PVC PIPE		Set	1	In Pipe Workshop	-	KEWI	On display	

31	FITTING (STEEL)		Set	1	In Pipe Workshop	1	KEWI		
32	FITTINGS (PVC)		Set	1	In Pipe Workshop	1	KEWI	On display	
33	UNION JOINTS		Sets	2	In Pipe Workshop	-	KEWI	On display	
34	WATER PRESSURE TEST PUMP (Manual),	KYOUWA,	No	1	In Pipe Workshop	1	JICA		
35	T- KEY OPNER		No	1	In Pipe Workshop	-	KEWI	On display	
36	FURNACE		Set	1	In Pipe Workshop	1	KEWI		
37	BLOW LAMP		Set	1	In Pipe Workshop	1	KEWI		
38	DEWATERING PUMP (ENGINE TYPE)		Set	1	In Pipe Workshop	1	KEWI		
39	OTHER TOOLS		Set	1	In Pipe Workshop		KEWI		
40--1	IN TOOL BOX		Set	1	In Pipe Workshop		KEWI		

水質分析機材の一覧表

Item	Description	Specification/Model/Manufacturer	Unit	Quantity	Storage Location	In Good Working condition	Capital Source	Remarks	Photo
1	TURBIDITY METER	HACK	No	1	In Biological Laboratory	1	KEWI		
2	CONDUCTIVITY METER & pH METER	ELE & HANNA instrument	No	1	In Biological Laboratory	1	KEWI		
3	BOD ⁵ INCUBATOR		No	1	In Biological Laboratory	1	KEWI		
4	COD ANALYZATION		No	1	In Biological Laboratory	1	KEWI		
5	JAR-TEST		Set	1	In Biological Laboratory	1	KEWI		
6	CHLORINE METER		Sets	3	In Biological Laboratory	2	KEWI		
7	REFRIGERATOR		No	1	In Biological Laboratory	1	KEWI		
8	OVEN FOR DRYING & HEATING	MEMMENT Co.,	No	1	In Biological Laboratory	1	KEWI		
9	DESICATOR & WEIGHT SCALE		No	1	In Biological Laboratory	1	KEWI		
10	DRAFT CHAMBERS		Sets	3	In Biological Laboratory	3	KEWI		
11	BACTERIA INCUBATOR		Set	1	In Biological Laboratory	1	KEWI		
12	STORAGE LOCKER		Set	1	In Biological Laboratory	1	KEWI		
13	OTHERS		Set	1	In Biological Laboratory	1	KEWI		

Leading WSP (EMBU/MERU) へ聞き取り書式

Leading WSP が実施する KEWI の現場研修の現状調査 (Embu/Meru)

日時：2月6日エンブ、2月7日 Meru

Leading WSP (Embu : MD was on leave) & (Meru MD) との協議/ヒヤリング項目とコメント

質問項目	Embu コメント (調査日：2017年2月6日実施)	Meru コメント (調査日：2017年2月7日実施)
1 研修実施体制の整備状況について		
1-1 KEWI の短期コースとして Leading WSP が実施する現場研修について		
1) DMA での NRW 削減現場研修 (2~3 日間) は、有意義と思われるか？	a) 研修可能な DMA は幾つかある。 b) 有意義であるが、期間が短い。 c) 5 日間は必要	a) 研修可能な DMA は 4-5 箇所ある。 b) 有意義であるが、期間が短い。 c) 研修生は、自己啓発が必要
2) DMA での NRW 研修 syllabus があるか？	a) No, b) KEWI が作成後コメントを入れる。	No, 今後、作成する。
3) 「もし Yes の場合」現場実習の Syllabus の内容は何か？	N/A	N/A
4) 研修用の教材はあるか？	a) No b) 必要な場合、KEWI の資料、WASREB が作成した、Case-Study を使用する。 c) WSP 視察者はベンチマーキングなので、経験を説明している。	a) No b) 今後、操作手順と記録シートが必要となる。 c) WSP 視察者はベンチマーキングなので、経験を説明している。
5) これまでの WSP 現場研修は、効果的に実施されているか否か？	a) No b) 現場研修はデモ程度である。	a) No b) 現場研修の機材は予算で整備できない

6) 「もし No の場合」改善すべき点は何か？	a) KEWI はキャンパス内の実習設備を強化し、現場研修効果を高めるべきである。(整備項目例、漏水探知、管路探査、メータ test bench)	a) Tech. Manager は指標を管理し、必要機材を整備すべきである。
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1-2 Leading WSP が実施する他の WSP への研修状況調査		
1) 研修を実施しているか？	a) Yes b) WSP が希望するベンチマーク目的の短時研修を受け入れている。	a) Yes b) WSP が希望する改善手順調査とベンチマーキング目的の短時研修を受け入れている。
2) もし Yes の場合 2-1) なぜ、WSP へ研修を実施しているか？ (例、NRW 削減技術の普及、収入源の拡大、自己研鑽、他)	a) 他の WSP の課題の情報を収集する。 b) NRW 削減技術の普及のためである。	a) 他の WSP の課題の情報を収集する。 b) NRW 削減技術の普及、収入源の拡大 c) 情報から、NRW 削減対策の策定/現場対応能力向上に役立っている。
2-2) 2 年間の実績情報		
① 研修を実施した WSP 名	Nyeri, Nakuru, Malindi 他 WSP	多数ある。
② 研修を要請された理由/目的	WSP が抱える課題の対策の勉強	WSP が抱える課題の対策の勉強
③ 研修の実施頻度	研修要請に応じて、実施している。	研修要請に応じて、実施している。
④ 研修の対象者	現場技術者	現場技術者、最大 20 名/回
⑤ 研修日数	短期間	一日
⑥ 研修内容 (Syllabus)	a) 現地研修は実施していない。 b) ベンチマーク (漏れ検知器/探査方法)	a) 研修生の課題に応じてベンチマーク研修を変えている。 b) 修理方法、水道メータの精度管理方法、夜間水量の測定方法、漏水探知方法、他、
⑦ 研修経費の充当方法	無料 (Embu WSP の NRW 対策予算から充当)	無料 (Meru WSP の NRW 対策予算から充当)
3) 研修後の研修評価を実施しているか？	a) 特に実施していない。 b) 全体の雰囲気などで効果を判断している。	a) 特に実施していない。

4) 研修後の卒業生を対象にフォローアップ調査を実施しているか?	a) 特に実施していない。	a)特に実施していない。
5) WSP 講師の強化は、どのように実施しているか?	a) 特に実施していない。 b) プレゼンテーション資料作成による強化を期待している。 c) KEWI 研修コース及び各種研修・セミナーへの参加で強化している。	a) 特に実施していない。 b)検討と実践から強化している。 c) KEWI 研修コース及び各種研修・セミナーへの参加で強化している。
6) (NRW 削減) 目標達成上の課題はあるか? (KEWI の研修コースの評価)、	a) 公衆による破壊行為(例、違法接続、水道メートル・パイプの破損、パイプの老朽化、パイプ敷設工事、効率の悪い給水地区の拡張 等潜在的な課題がある。 b) KEWI の座学に満足しているが、実習/研修設備が不十分、WSP 能力強化が不十分である。	a) 資金不足で目標/達成目標の見直しが必要となっている。尚、 b) KEWI の座学に満足しているが、実習/研修設備が不十分、WSP 能力強化が不十分である。
7) その対策方法	a) 今後、地域団体との風通しの強化、予算確保、老朽化配管の更新、違法接続の罰則強化、スマートフォンによる検針の促進などの対策を強化したい。	a) 他の水道分野の研修の強化、検針精度のモニタリングの強化を促進したい。
8) WSP 研修の将来展望/方向性は何か?	a) 継続して NRW 削減活動を強化する。 b) NRW の 46%から 20% @2020 までに達成 c) EMBU の人材育成を図ため、KEWI/EMBU の合同現場研修計画を支援する。	a)6,000 m ³ /d を有効活用するため、継続して NRW 削減活動を強化する。 b) KEWI/MERU との合同現場研修計画を支援する。 c) 慢性的な給水量不足、増加を促進したい。

1.3 Leading WSP が KEWI に期待する NRW 研修コースの調査

1) KEWI の研修に対する評価/コメント		
①講座の選定	a) KEWI の短期研修コース(基礎教育)は、WSP が必要とする研修をバランス良く提供している。 b) KEWI は新技術の情報を得るため水業界と連絡を取って欲しい。 c) WASPA に研修コースを紹介して欲しい。 d) KEWI での短期研修コース(基礎知識の習得)は、非常に有効である。 e) 今後も継続して KEWI の研修コースで人材強化を図る。	a) KEWI の基礎教育を実施している短期研修コースは、良い。 b) KEWI での研修効果は、WSP 研修生の態度「学習意欲/意識が低い」が悪いので、大きく左右される。 c) NRW 短期コースを 2~3 名、受講している。 d) 今後も継続して KEWI の研修コースで人材強化を図る。
②教科書	a) KEWI の NRW 基礎教育教科書としては Phase-1 で作成された教科書で「問題ない」。 b)他の WSP に実施している研修はベンチマーキングだけなので、Phase-1 で作成されたマニュアルは使用できない。 c) 各 WSP の現場が抱える課題対策に焦点を合わせた教科書が欲しい。	同左
③教授方法及び④教室環境	a) KEWI の実習設備の一部は、旧式、WSP で役に立つ実習設備が不足している。 b) 整備された OJT 設備と WSP 現場研修の組み合わせが出来ると研修が効果的となる。 c) 教室環境は良いが、特にコメントなし。	a) ③/④については特に注文はない。 b) 教室環境は OK、特にコメントなし。
⑤KEW の実習設備	a) KEWI キャンパスでの実習/現場研修は、デモンストレーションだけで、効果的な実習や OJT が実践できない。	a) 現状でしようが無い。 b) 実習設備が整備されると KEWI での研修効果が上がる

4) 研修後の卒業生を対象にフォローアップ調査を実施しているか？	a) 特に実施していない。	a) 特に実施していない。
5) WSP 講師の強化は、どのように実施しているか？	a) 特に実施していない。 b) プレゼンテーション資料作成による強化を期待している。 c) KEWI 研修コース及び各種研修・セミナーへの参加で強化している。	a) 特に実施していない。 b) 検討と実践から強化している。 c) KEWI 研修コース及び各種研修・セミナーへの参加で強化している。
6) (NRW 削減) 目標達成上の課題はあるか？ (KEWI の研修コースの評価)、	a) 公衆による破壊行為(例、違法接続、水道メートル・パイプの破損、パイプの老朽化、パイプ敷設工事、効率の悪い給水地区の拡張 等潜在的な課題がある。 b) KEWI の座学に満足しているが、実習/研修設備が不十分、WSP 能力強化が不十分である。	a) 資金不足で目標/達成目標の見直しが必要となっている。 尚、 b) KEWI の座学に満足しているが、実習/研修設備が不十分、WSP 能力強化が不十分である。
7) その対策方法	a) 今後、地域団体との風通しの強化、予算確保、老朽化配管の更新、違法接続の罰則強化、スマートフォンによる検針の促進などの対策を強化したい。	a) 他の水道分野の研修の強化、検針精度のモニタリングの強化を促進したい。
8) WSP 研修の将来展望/方向性は何か？	a) 継続して NRW 削減活動を強化する。 b) NRW の 46%から 20% @2020 までに達成 c) EMBU の人材育成を図ため、KEWI/EMBU の合同現場研修計画を支援する。	a) 6,000 m ³ /d を有効活用するため、継続して NRW 削減活動を強化する。 b) KEWI/MERU との合同現場研修計画を支援する。 c) 慢性的な給水量不足、増加を促進したい。

1.3 Leading WSP が KEWI に期待する NRW 研修コースの調査

1) KEWI の研修に対する評価/コメント		
①講座の選定	a) KEWI の短期研修コース(基礎教育)は、WSP が必要とする研修をバランス良く提供している。 b) KEWI は新技術の情報を得るため水業界と連絡を取って欲しい。 c) WASPA に研修コースを紹介して欲しい。 d) KEWI での短期研修コース(基礎知識の習得)は、非常に有効である。 e) 今後も継続して KEWI の研修コースで人材強化を図る。	a) KEWI の基礎教育を実施している短期研修コースは、良い。 b) KEWI での研修効果は、WSP 研修生の態度「学習意欲/意識が低い」が悪いので、大きく左右される。 c) NRW 短期コースを 2~3 名、受講している。 d) 今後も継続して KEWI の研修コースで人材強化を図る。
②教科書	a) KEWI の NRW 基礎教育教科書としては Phase-1 で作成された教科書で「問題ない」。 b) 他の WSP に実施している研修はベンチマーキングだけなので、Phase-1 で作成されたマニュアルは使用できない。 c) 各 WSP の現場が抱える課題対策に焦点を合わせた教科書が欲しい。	同左
③教授方法と④教室環境	a) KEWI の実習設備の一部は、旧式、WSP で役に立つ実習設備が不足している。 b) 整備された OJT 設備と WSP 現場研修の組み合わせが出来ると研修が効果的となる。 c) 教室環境は良いが、特にコメントなし。	a) ③/④については特に注文はない。 b) 教室環境は OK, 特にコメントなし。
⑤KEW の実習設備	a) KEWI キャンパスでの実習/現場研修は、デモンストレーションだけで、効果的な実習や OJT が実践できない。	a) 現状でしようが無い。 b) 実習設備が整備されると KEWI での研修効果が上がる

⑥現場実習用の教材	a) 実践的な教材は未整備である。	a) OK、しかし、Phase-1 のマニュアルの改善が必要である。
⑦その他	a) KEWI が教材を整備する必要がある。	a) KEWI の研修は OK。 b) NRW 管理の改善が必要である。
2) 特に KEWI に何を改善して欲しいか？	a) KEWI の夜間研修コースを実施して欲しい。	a) NRW 管理によるメリット (人事管理) 管理の研修テーマの開設 ???
1.4 Leading WSP と KEWI 間での合同研修の実施体制の整備について		
1) すでに実施体制は構築されているか？	a) まだ未整備である。b) KEWI との合同研修は可能である。 c) 準備ができています。	a) まだ未整備である。b) KEWI との合同研修は肯定的で、喜んで協力する。c) 準備ができています。
2) 「もし No の場合」 ①KEWI との合同研修の実施体制の構築に賛同するか？	N/A	N/A
②活動資金が確保されるか？	a) 予算の割り当てなし	a) 予算の割り当てなし
2.2.WSP の上級管理者に対し「NRW 削減」の意識強化を目指した研修の必要性について		
1) 上級管理者向けの研修は必要か？	a) Yes b) WSP の MD、TM、CM、NRW のチームリーダーを含める必要がある。MD: Hamilton Karugazo 不在	a) Yes b) WSP の MD、TM、CM、NRW のチームリーダーを含める必要がある。
2) 「もし NO の場合」 ①不必要の理由は何か？	N/A	N/A
3) 「もし YES の場合」 ①WSP の上級管理者として役割は何か？	①リーダーシップを発揮する (目標設定、実行力と決断力)。 MD: Hamilton Karugazo 不在	a) リーダーシップを発揮する (目標設定、実行力と決断力)。 b) 目標達成の戦略の策定能力と管理能力 c) スタッフが自ら NRW 削減課題の発見と即座な対策行動を起こす様に「にやる気」を起こさせる (意識改革) d) スタッフが NRW 業務に「すぐ行動」できるように必要な機材/安全管理体制の充実を図り、スタッフの活動を全面的にサポートする e) 必要予算の確保

②NRW 削減が遅れている上級管理者へのアドバイスは何か？	MD: Hamilton Karugazo 不在	a) 意志を持って、部下に指示 b) スローガンの設定 c) NRW 削減の目標値設定 d) WSP の事情に合わせた「NRW 削減計画」の策定 e) 目標値管理と障害項目抽出、早急な対策の行動力 f) やる気のないスタッフには強く「change attitude」を求める。
研修項目は？	MD: Hamilton Karugazo 不在	a) 組織の上位から「NRW 推進の宣言」する強力なスピーチが必要 (NRW 削減は国家の「命令」であることの認識) b) MD/DM の事業経営能力の強化、年度目標の策定とモニタリング強化 (例、NRW の経営指針/パロメーターの分析能力、B/S 財務表の見方、組織の目標、etc.) c) コマーシャル/テクニカルの管理職・広い専門分野の NRW に関する知識の強化。 d) 予算確保の手順
④講師になることへの可能性の有無？	a) KEWI が必要するなら喜んで協力する。 MD: Hamilton Karugazo 不在	a) KEWI が必要するなら喜んで協力する。 b) 出席者は、WSP の MD、TM、CM、NRW のチームリーダーを含める必要がある。

Kericho WSP における聞き取り書式

R-1 打合せ議事録	
<p>プロジェクト名: The Project for Strengthening Capacity in Non-Revenue Water Reduction 件名: Study of Current Situation 場所: Kericho Head office 日時: Febraly 13, 2017, (9:30 AM-12:30PM) 出席者: KERICHO WSP (MD Joseph K. Terer, Mr.Hillary Langat, Ms Emily Eiectne, 他 10 名)、 KEWI (Moseiti), JICA Team (田口副業務主任、芝崎担当者)、総計 11 名 (添付資料-1 参照)</p> <p style="text-align: center;">協 議 事 項 (情報収集)</p> <p>1. KEWASCO MD J.K. Terer 挨拶、参加者の紹介</p> <p>2. JICA Team から以下の説明を行った。</p> <p>2-1) 第 2 次、Phase-1 調査/期間 2-2) 今回の GIS 業務の現況調査の目的 2-3) 調査目的と日本側が考える KEWI のあるべき最終目標イメージを説明した。</p> <p>3. MD のコメント</p> <p>1) KEW 支援プロジェクト (400 MKshs ?) による WTP/ 配水管網/下水管整備等 (5 箇所の地区) のリハビリ工事がスタートした。 2) 職員の半数が KEWI で短期 GIS 研修コース (3 名)、3 年長期研修コース (1 名) を卒業している。 3) もし、KEWI-KEWASCO 合同現地研修が実施する場合、積極的に協力する。 4) WSP 管理者強化の研修コースの講師として、喜んで協力する。 5) GIS の将来構想は、GIS による配水網のモニタリング及び O/M、コマーシャル情報を一元管理することである。</p> <p>4. 以下、質問書の回答/コメントを得た。</p> <p>4-1) Training Facilities について</p> <p>①How many classrooms do you have? →教室は 1 箇所 (County Government の一室、PC/プロジェクタ-なし)</p> <p>②Are they equipped with desks and chairs? →講義人数日に応じて、KEWASCO 側で机/椅子を準備する。</p> <p>③How many participants can each accommodate? →教室のスペースは約 15~20 名の研修が可能</p> <p>④What teaching aids are available in the class? →講師としては、最大 2 名が可能である (含むインターン生)。</p> <p>⑤What short comings do you have about the facilities? →隣の部屋の会話が講義の邪魔になる (防音設備が不十分)。 2017/2018 年度に建設費用を計上したい。</p>	<p>4-2) Technical Content and Trainers について</p> <p>①Do you have a structured teaching materials ? →教科書は、KEWI/KERICHO と共同作成した教科書を使用している。</p> <p>②What is the duration of the training ? →これまで 2 回、各 2 週間コースを実施した (内訳 : 2015/2016 年 SWAPs (独支援) で 1 回、2015/2016 (WASPA) で 1 回。尚、KEWI で 2 週間研修後、2-週間 KEWASCO で現場研修が実施された)</p> <p>③How do you award the participants after completion? →研修参加証明書が発行される。</p> <p>④What field work are participants exposed to? →研修用の DMA (水道メータ約 250、約配管距離約 3km) 内で、GPS で約 70 ポイントの情報収集する、(配水池、バルクメータ、水道メータ、等)、尚、研修用 DMA は 2 箇所ある。</p> <p>⑤How many trainers do you have? →2 名 (GIS 専門職 1 名とインター生が 1 名)</p> <p>⑥What is the professional competence of each? →GIS 専門職者は、Geography 卒業後、5 年間 KEWASCO での GIS 業務実績がある。</p> <p>4-3) Hardware and Software について</p> <p>①What training software are used ? →研修に使用するソフトは QGIS。実務では ARC-10 (有料) を使用。</p> <p>②What are the benefits and challenges of the software ? →使用する QGIS ソフトは無料である。</p> <p>③How many computers are available for trainers ? →研修で使用できる PC は 2 台程度、研修生には PC 持参の義務を付けている。</p> <p>④Are they shared by the trainer ? →KEWASCO が所有する機材の共通は業務に支障があるため、「不可」である。</p> <p>⑤What are the specifications ? →現有機材は A4 プリターだけ、仕様は不明。</p> <p>⑥How many GPS' s are available ? →GPS は 15 台保有している。</p> <p>⑦What are the specifications ? →GPS の仕様は不明</p> <p>⑧Do you have the following equipment ? ・ Scanners : A4 サイズプリンター (1 台) ・ Printers : 無い</p> <p>⑨How many of ⑧ above do you have and what are the specifications? →所有していない。</p>

4-1) On the Job Training Plan について

Q Do you have an On the Job Training OJT plan?

→ これまで3回実施している。(4-2) ②参照

Q Does OJT benefit your organization directly?

→ OJT を実施することで、「他の WSP の現状 課題が把握できる」、「新調が早くなる」の両面で効果的である。

4-2) Arrangements with other institution and personal について

Q Which other partner institutions do you work with?

→ これまで、KEWI と合同で WACFA と WAFPA からの講師研修を実施した。

Q What arrangements are in place to work with these institutions?

→ 1人で研修を受け入れる用意がある。

Q What are the benefits of working with them?

→ WSP の現状 課題が把握出来るので、KEWASCO の技術向上に役立っている。

4-3) Accommodation Facilities について

Q Where do you accommodate the participants?

→ 宿舎設備は、整備されている。

Q How much do they pay for the accommodation?

→ 全て個人負担である。

Q Who covers for their accommodation?

→ 全て個人負担である。

4-7) Cost of the Training について

Q What is the cost of the training in terms of tuition?

→ 30,000 Kshs 程度、これは市営ホテルで決まる。

Q Are there other cost charged on participants directly?

→ その他は授業料は発生しない。

Q Does this also cater for organizations preparation costs of the training?

→ 研修料に含めた、追加授業料は発生しない。

4-8) Advancement into the Training について

Q After this training, is there option for further advancement?

→ 希望すれば、更に KEWASCO で研修が研修が実施できる。

Q What do you recommend to the business in terms of further advancement?

→ 研修して、風評を持って書面研修すること。

4-9) Last Training Conducted について

Q Do you have an evaluation of the last training conducted?

→ 研修の成果品の完成度から研修効果を把握/判断している。

② What challenges did the trainers face?

→ 研修生の能力差により、理解度、作業速度、成果品の精度などに差がでる。
今後、研修者応募条件及び研修生のクラスの選定基準が不可欠である。

③ What was the general overview?

→ KEWI からの GIS 講師と KEWASCO 研修担当者は、上手く協力して研修を実施している。また、KEWI 講師の資質/教材/授業方法に改善の必要性は当面ない。

④ Were trainee awarded?

→ 研修参加証明書が発行される。

添付資料-1 Participants Sheet

THE PROJECT FOR STRENGTHENING CAPACITY IN NON-REVENUE WATER REDUCTION

Participants: Date: Feb 13, 2017 Venue: KEWI/CHO WSP

S/No	Name	Organization	Position	E-mail address	Telephone	Signature
1	JOSEPH K. TERER	KEWASCO	MANAGING DIRECTOR	JOSEPH.K.TERER@KEWASCO.KE	0790661610	[Signature]
2	WALTER M. MASEKI	KEWI	TRAINER	wmaseki@kewi.or.ke	0720070000	[Signature]
3	MASOMKI TATEUCHI	JICA Team	NRW MANAGER	tateuchi@jica.go.jp	0977-581411	[Signature]
4	HILLARY K. TOO	KEWASCO	NRW	hkt@kewasco.or.ke	0799435912	[Signature]
5	ALFRED KIWU	KEWASCO	D & M	alfred.kiwu@kewasco.or.ke	0720171145	[Signature]
6	HILARY LANGAT	KEWASCO	TSM	hlangat@kewasco.or.ke	0799977468	[Signature]
7	ANDROSE KOECH	KEWASCO	NRW	androse.koch@kewasco.or.ke	0720605112	[Signature]
8	PHILIP K. KOECH	KEWASCO	NRW	philip.koch@kewasco.or.ke	0722907578	[Signature]
9	ERIC KOECH	KEWASCO	Project Eng.	eric.koch@kewasco.or.ke	0799352408	[Signature]
10	DAVID K. SILE	KEWASCO	TEAM	dsile@kewasco.or.ke	071127412	[Signature]
11	EMILY GIECTIONS	KEWASCO	GIS OFFICER	emily.giections@kewasco.or.ke	070811113	[Signature]
12	JOHN OCHIENI	KEWASCO	GIS ASSISTANT	johnochieni@kewasco.or.ke	071709720	[Signature]
13	KALLES GEORGIOS	KEWASCO	NRW	kallesg@kewasco.or.ke	0712362299	[Signature]
14	ALFRED LANGAT	KEWASCO	NRW	alfredlangat@kewasco.or.ke	0706200721	[Signature]
15	SABIRU BASHIR	JICA	TRAINING EXPERT	sabiru.bashir@jica.go.jp	-	[Signature]

満足度調査の結果

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KEWI/ISO/TR/SC.FORM:001KEWI/IS1

KENYA WATER INSTITUTE
SHORT COURSES EVALUATION TOOL

The Evaluation Is a Summary of NRW Trainings Conducted by KEWI in 2015- 2016 both as
In-house and on Site

Please give an independent view on the short course you have attended.

Your opinion and comments will be useful in evaluating this short course and for improvement of future short course

1. Title of the course: *Non-Revenue Water Management*
2. Location: *KEWI/ On site WSPs/ Tailor made* Date : *2015-2016*
3. Duration of course: *5 days*
4. What is your job designation?

i) <i>Technical Managers</i>	ii) <i>Billing Clack</i>
iii) <i>Plumbers</i>	iv) <i>Revenue Clark</i>
iv) <i>GIS Officers</i>	v) <i>Meter Reader</i>
vi) <i>Water supply Operators</i>	viii) <i>Customer Care Assistant</i>
5. For how long have you been in this job

i) <i>1 - 4 years (105 No)</i>	ii) <i>9 - 15 years (78 No)</i>	iii) <i>18 - 30 years (67 No)</i>
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6. Have you attended any other course/seminars/workshops before? Please specify

i) <i>ICT (2No)</i>	vii) <i>HIV & AIDS Awareness (1No)</i>
ii) <i>Public Procurement/ Audit (1No)</i>	viii) <i>Short course in KEWI (162No)</i>
iii) <i>Asset Management (1No)</i>	ix) <i>Leak Detection & Repair (2No)</i>
iv) <i>Strategic Business Planning (3No)</i>	x) <i>Basic Meter Reading (73No)</i>
v) <i>Non Revenue Water (1No)</i>	xi) <i>Asset Management (1No)</i>
vi) <i>Contract Documentation & Management (1No)</i>	xii) <i>Non (3No)</i>
7. What other course do you wish to attend? Please specify

i) <i>GIS (53No)</i>	vi) <i>Meter Servicing (95No)</i>
ii) <i>Culture Change & Governance (12No)</i>	vii) <i>Customer Care Public Relations(53No)</i>
iii) <i>Leak Detection (85No)</i>	viii) <i>Monitoring and Evaluation (21No)</i>
iv) <i>Meter Reading & Installation (34No)</i>	
v) <i>Effective & Efficient Management of Water Resources (31No)</i>	
8. How would you rate the relevance of this course you have attended to your actual or future job?

Very good (<i>131No</i>)	Good (<i>86No</i>)	Fair (<i>33</i>)	Bad(<i>Nil</i>)
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9. The contents of the course were

Very good (<i>129No</i>)	Good (<i>121No</i>)	Fair (<i>1No</i>)	Bad (<i>Nil</i>)
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10. Which part of the course were you mostly interested in?

i) <i>Non Revenue Management (115No)</i>	ii) <i>Billing and Customer Care (4No)</i>
iii) <i>Reduction of Physical losses (86No)</i>	iv) <i>Metering and Installations (4No)</i>
v) <i>Leak detection (152No)</i>	vi) <i>Zoning and Meter Installation (57No)</i>
vii) <i>No comment (4No)</i>	

11. Any other comment or suggestion			
i) 92% fine (230No)	ii) Meter Reading needs more time (62No)		
iii) More practicals needed (13No)	iv) Course was relevant and timely (61No)		
vi) More training (3No)			
vii) More time needed for meter installation, Zoning, Leak detection and repair techniques (168No)			
12. How would you rate the presentation of this course?			
Very good (25No)	Good (198No)	Fair (27No)	Bad (Nil)
13. The course handouts/ materials were:			
Very good (17No)	Good (213No)	Fair (20No)	Bad (Nil)
14. The presentation during the course:			
a) Covered all my expectations	(179No)		
b) Came close to my expectations	(71No)		
c) Was too superficial/not addressing my problems	(Nil)		
d) Was not good	(Nil)		
15. Performance of the trainers was			
Very well (117No)	Well (132No)	Fairly (1No)	Badly (Nil)
16. The competence of the trainers was			
Very good (87No)	Good (163No)	Fair (Nil)	Bad (Nil)
17. The presentation of the subject by the trainers was			
Very good (151No)	Good (98No)	Fair (1No)	Bad (Nil)
18. The teaching aids (LCD/Laptop, videos, tools, equipment, etc used for this course were			
Very good (19No)	Good (230No)	Fair (1No)	Bad (Nil)
19. The course duration was:			
Adequate (5No)	Long (18No)	Short (227No)	
20. Theory and group work were			
Well balanced (54No)	Too much theory (196No)	Too much group work (Nil)	
21. Will this course improve the performance of your work?			
	Yes (250No)	No (Nil)	
22. How do you rate the following?			
a) Training venue and facilities			
Very good (2No)	Good (233No)	Fair (15No)	Bad (Nil)
b) Food			
Very good (3No)	good (44No)	fair (203No)	bad (1No)
23. Your general impression of the course is			
Very good (49No)	good (199No)	fair (2No)	bad (Nil)
24. Would you recommend this course to your colleagues?			
YES (250No)	NO (Nil)		
25. Any other comments			
i) Visit other water service providers to benchmark our self	(28No)		
ii) Requested more training	(189No)		
iii) Trainers competed and qualified	(25No)		
iv) No comments	(8No)		