Project for Strengthening Operation and Maintenance of Rural Water Supply Systems in Rwanda

March 2016

Rwanda

Project Area（4 model district in Eastern Province）

1. Background of the Project and Issues

The government of Rwanda (hereinafter referred to as "GoR") has set the mid- to long-term national development programme "VISION 2020", and set the target to provide full coverage of safe drinking water to all its population by 2020. Afterwards, the GoR brought forward the said period in The Second Economic Development and Poverty Reduction Strategy (EDPRS 2) to 2017/2018. The national average rate of access to improved drinking water source is 84.8% as of 2014 according to the Fourth Integrated Household Living Conditions Survey 2013/14 (EICV4). However, it is inferred that the actual rate of access to safe water is much less than the statistical data because in the four model districts of Eastern Province the average operation rate of the improved rural water supply facilities – which are the piped water supply systems; boreholes with hand pump; and improved springs, and the Project refers to all these three types of facilities together as 'rural water supply facilities' – is only 64.3 %[1] as of 2015 according to the results of the baseline survey carried out by the Project.

The GoR transferred ownership of the rural water supply facilities, including the responsibility for operation and maintenance (hereinafter referred to as "O&M") of these, to the districts in 1987. With introduction of Public-Private Partnership (hereinafter referred to as "PPP") in 2004, the O&M system of the rural water supply facilities has shifted from community-based management (hereinafter referred to as "CBM") to the delegated management by water

[1]The value is calculated by dividing the total functional rural water supply facilities by the total number of the three types of facilities, as shown in the table 2, table 3, and table 4. The rate of access to improved drinking water source in the Eastern Province is 80.6 % according to the EICV 4.

service providers (hereinafter referred to as “WSP”) in the private sector.

However, since the WSPs lack the capacity to manage rural water supply facilities, and the collection of the water fee is insufficient to cover damages, there have been a lot of cases where rural water supply facilities were left without proper rehabilitations once their parts or equipment, such as pumps, were damaged. Moreover, the districts lack the technical and managerial capacities to supervise WSPs. According to the National Policy and Strategy for Water Supply and Sanitation Services (2010), GoR set a goal to manage 75 % of the rural water supply facilities by WSPs. However, this rate has stalled at less than 50 % according to the National Water Supply Policy and Strategy in the process of revision as of 2015.

Against this background, Rural Water Services (hereinafter referred to as “RWS”) of Water and Sanitation Corporation (hereinafter referred to as “WASAC”) has been surveilling the O&M of rural water supply facilities to strengthen the support systems to WSPs carried out by the districts since 2014. WASAC was established as an implementing agency of energy, water supply and sanitation, to implement the policy, planning, and carry out monitorings under the supervision of Ministry of Infrastructure (hereinafter referred to as “MININFRA”).

Although the O&M framework for rural water supply systems is improving steadily, several issues still remain, such as defining the roles of WASAC RWS, forming organizations and institutions and capacity development (hereinafter referred to as “CD”) for the staff.

Considering the situation above, the GoR has requested assistance, through technical cooperation, to the government of Japan in order to develop the capacity of O&M of rural water supply systems in 2014.

Japan International Cooperation Agency (hereinafter referred to as “JICA”) has executed the technical cooperation project aiming to improve the capacity of O&M of the WSPs in four districts of the Eastern Province, where access to safe water is limited, by providing the training in CD between 2007 and 2011.

Because the O&M framework, standards, guidelines, manuals, etc., have not yet been developed properly at the national level, the impacts of the cooperation have not reached the districts and WSPs. Therefore, it is necessary to establish and reinforce the system concerning the organizational technical and institutional aspects to develop the capacity of WSPs by districts through WASAC RWS, to improve the functionality of water supply facilities and water supply service coverage.

2. Approach to Solution

(1) Outline of the Project

The Project started with local activities in April, 2015 and has been gradually becoming more common to the project stakeholders, other aid agencies and the beneficiaries of the Project in the name of RWASOM (Project for Strengthening Operation and Maintenance of Rural Water Supply Systems in Rwanda).

The Project has the four outputs stated in the frame below to achieve the Project purpose; Sustainable framework for the operation and maintenance of rural water supply systems in Rwanda is established.

The period of the Project is from February, 2015 to December, 2019, including three phases. Each period of the three phases is as follows:

- The first period: February 2015-April 2016
- The second period: March 2016-April 2018
- The third period: March 2018-Decmber 2019

【Overall Goal】

Sustainable framework for the operation and maintenance of rural water supply systems in Rwanda have become common and operational conditions of rural water supply systems in all districts of the Eastern Province are improved.

【Project Purpose】

Sustainable framework for the operation and maintenance of rural water supply systems in Rwanda is established

【Output 1】

Effective and sustainable institutional framework for the operation and maintenance of rural water supply systems is developed.

【Output 2】

National guidelines and manuals necessary for operation and maintenance of rural water supply systems are developed.

【Output 3】

The capacity of WASAC-RWS to support the districts in their operation and maintenance of rural water supply systems is developed.

【Output 4】

The proposed operation and maintenance framework, tested in four model districts from the Eastern Province, is found to be effective.

(2) Implementation system of the Project

The Project is implemented by WASAC RWS under the supervision of MININFRA. The RWS, which is the Project's counterparts (hereinafter referred to as "C/P"), is organized by the following four units under the practical responsibilities of the Project by the director of RWS.

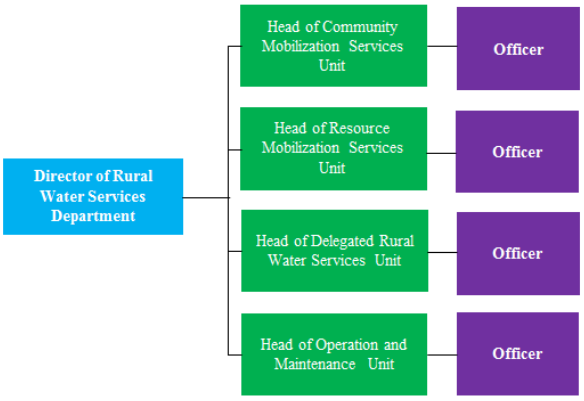

Figure 1：Organizational structure of RWS

Technical issues, emerging during the Project, shall be addressed through discussions with the model districts, the C/P, and other stakeholders in the Project Implementation Committee (hereinafter referred to as "PIC"), which is held about once a quarter. Furthermore, the progress, the status of the achievement of the Project, and the important issues are discussed with the Ministries and the stakeholders headed by the Chief Executive Officer of WASAC in the Steering Committee (hereinafter referred to as "SC"), which is held about once or twice a year.

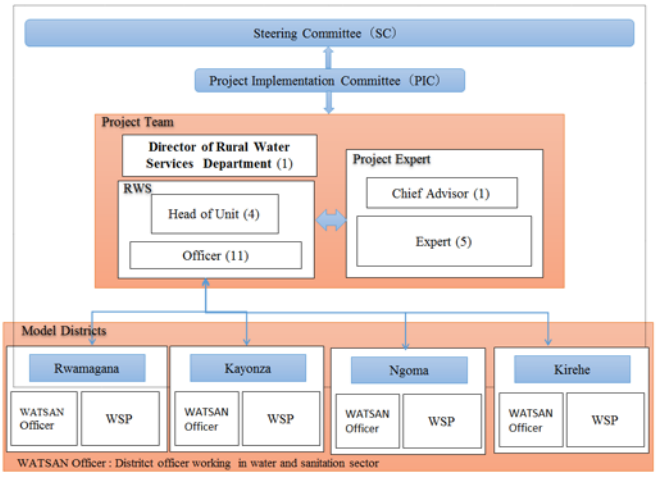

Figure 2：Implementation structure of the Project

(3) Outputs and activities of the Project

The four outputs of the Project will be achieved through the following activities:

【Activities in Output 1 (Activity 1)】

The sustainable framework for the O&M of rural water supply facilities shall be established by identifying actual problems and challenges through organizing information regarding the existing relevant laws and policies in Rwanda, and interviewing the organizations involved in the Project regarding the implementation structure and efforts for O&M of rural water supply facilities

【Activities of Output 2 (Activity 2)】

The Project shall improve the national guideline and manuals related to O&M of rural water supply facilities according to the results of analysis and study of the existing guideline and manuals. The guideline and manuals shall be improved by carrying out appropriate revisions and evaluations during the CD of RWS, districts, and WSPs.

【Activities of Output 3 (Activity 3)】

The RWS's action plan shall be developed based on the progress of output 1 and output 2. Afterward, the necessary technical support manuals for the districts shall be developed. These activities will start in the second period.

【Activities of Output 4 (Activity 4)】

The support of CD for the districts shall be implemented according to the each district's challenges, which will be drawn from the result of the baseline survey. The effectiveness of the proposed framework for the O&M of rural water supply facilities shall be validated based on verification of the aforementioned guideline and manuals (Activity 2) during the training sessions.

The training of CD for the related organizations shall be implemented in stages as shown in figure 3 below. First, the experts of the Project will provide training to RWS's staff members and then those RWS' staff members will provide the training to staff members of the model districts. Finally, those trained staff members of the model districts will provide the training to staff members of WSPs. The contents of the training and its approach shall be revised where necessary according to the results of verification after completion of a trial in the 2nd phase. This enables the training to be brushed up for future trials.

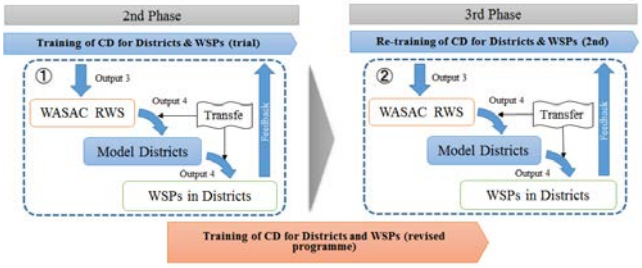

Figure 3：Process of the training of CD

3. Result of Approaches

(1) Result of Activity 1

Due to the repeated reform of the relevant organizations in GoR, the responsibility of each organization on O&M of rural water supply facilities were uncertain before the Project commenced. However, the results of information gathering, analysis and interviews from related organizations illustrated that the responsibilities of respective organizations on O&M of the piped water supply systems are being defined under the framework described in figure 4.

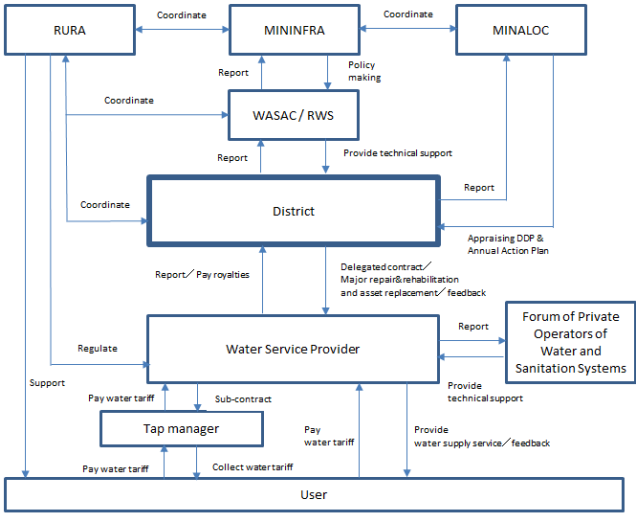

Figure 4：O&M framework of the piped water supply systems (draft version)

The piped water supply systems are basically managed under PPP with technical support to the districts by RWS and the union of WSPs named Forum of Private Operators of Water and Sanitation Systems (FEPEAR). Rwanda Utilities Regulatory Authority (hereinafter referred to as “RURA”) has responsibilities to issue an operation license and regulate the service level for WSPs.

Photo 1：Water storage tank (left), public-tap stand (right)

As WASAC RWS is reinforcing the O&M systems in the aforementioned framework for the piped water supply systems, the Project is required to support this existing framework too. The reinforcement of O&M framework at the district level is currently a pressing issue in the water sector.

In the meantime, although 50 % of people still rely on point water sources, such as boreholes and improved springs in local regions, the baseline survey of the Project showed that the majority of point water sources have not formed a community-based O&M system and are not regularly monitored by the responsible staff of the districts. In many cases, therefore, rural water supply facilities were left without proper arrangements once these had broken.

Consequently, WASAC RWS shows its intention to reinforce the O&M systems of point water sources while the Project will try to establish a holistic O&M framework of both piped water supply systems and point water sources.

The Project proposes a framework in which daily cleaning and basic maintenance of point water sources shall be managed by the newly organized water user committee, and the major repairs shall be managed by WSPs on the condition that the community pays the WSPs for major repairs with the collected water fees as figure 5 shows. The Project will aim to establish an effective model system through some trials.

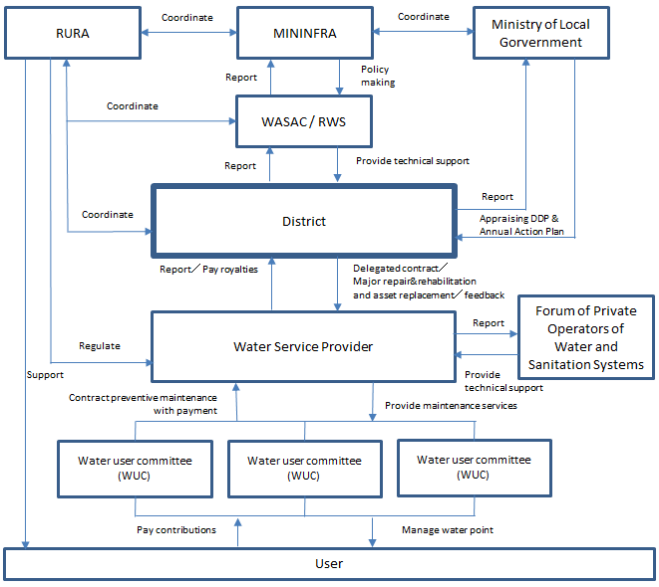

Figure 5：O&M framework of the point water sources (draft version)

Photo 2：Borehole with hand pump (left), improved spring (right)

(2) Result of Activity 2

Regarding national guideline and manuals for O&M of rural water supply facilities, the following six modules were developed as an O&M manual for WSPs by a different aid programme:

- Delegated Management of Rural Water Supply Services under PPP
- Financial and Commercial Management for Rural Water Supply Systems under PPP
- Operation and Maintenance of Gravitational Rural Water Supply Systems
- Operation and Maintenance of Pumps in Rural Water Supply Systems
- PPP Contract Tendering for Rural Water Supply
- Social Mobilization

It was agreed between RWS and the aforementioned aid programme that the capacity of WSPs shall be strengthened based on the six modules. Thus, the Project will review and revise the modules, adding necessary new items according to the challenges revealed from the results of the baseline survey. The new necessary modules, such as the one regarding water quality management, shall be developed by consulting with C/P in the future.

(3) Result of Activity 4

The Project held the first PIC to discuss the outline of the baseline survey and the questionnaires with the four model districts, C/P, and other stakeholders, before the baseline survey started. Active discussion to verify the relevance of the questionnaires and consider necessary new items was made among the participants.

The major results of the baseline survey that were composed of the following three surveys are as follows:

1) Actual condition survey of O&M

The number of beneficiaries, the operational condition, the responsible actor, performance of collecting water fee, and so on regarding the piped water supply systems, boreholes and springs, were surveyed.

The baseline survey of the Project targeted all rural water supply facilities in the four model districts that are categorized as improved drinking-water source in the GoR, shown in table 1 below. The total surveyed number reached 879 facilities.

Table 1：Number of survey systems by type of rural water supply facilities, (four model districts)

Rural water supply system	Number
Piped water supply system (system)	69
Borehole (place)	240
Spring (place)	570[2]
Total number	879

The baseline survey revealed the operational status and problems of each facility as follows:

[2] Target of the baseline survey is improved springs. However, since some of the springs were defined as ‘unimproved spring’ after confirmation during the survey, the relevant number includes some of the unimproved springs. (Unimproved spring is not improved drinking water source according to the definition of the GoR)

a) Piped water supply systems

【Operational status】

The total number of the totally functioning systems is 60 out of the entire 69 systems (87 %) in the four model districts. The other five systems are partially functioning with some defects in one section or one facility.

Table 2：Operational status of the piped water supply systems (four model districts)

Operational status	Number
Functional	60
Functional but partially broken down	5
Broken down	4
Total number	69

【Major problems】

- Appropriate arrangements are not secured for lowering the time of interruption of water supply
- Repair system for non-functioning systems is as yet not established
- Due to lack of water meters, only 31 % of the production volume and 8 % of the distribute volume are measured
- Planning ability of O&M systems is low
- Management system of chlorine is as yet not introduced
- Financial resources of the water quality management system are as yet not secured
- The responsibilities of water quality management between the districts and WSPs are not clear in the delegated management contract

b) Boreholes

【Operational status】

The number of the functioning boreholes is 69 out of all the 240 boreholes (29 %) in the four model districts. Currently, a lot of boreholes are broken or abandoned.

Table 3 : Operational status of the boreholes (four model district)

Operational status	Number
Functional	69
Not Functional	93
Abandon	78
Total number	240

【Major problems】

- 80 % of all the boreholes have no organized actors for O&M
- All boreholes in three districts of the four model districts do not regularly collect water fee. Moreover, only 20 % of the boreholes in the remaining district regularly collects water fee.
- A lot of boreholes are left without proper repairs once they break due to lack of skill and financial resources
- Since communities' sense of belonging to a borehole are low and the proper fences have not been set up, the water sources in 92 % of all the boreholes are not hygienically protected from the livestock
- The environment of the vicinity in 90 % of all the boreholes are under unsanitary conditions with rubbish, dung, and waste water

c) Springs

【Operational status】

Most of the improved springs, 498 out all the 528 improved springs (94 %), are functioning in the four model districts. However, among 89 improved springs which have technical or hygienical problems that should be resolved, although they are available in fetching water.

Table 4：Operational status of the improved springs (four model district)

Operational status	Number
Functional	409
Functional but partially broken down）	89
Not Functional	22
Abandon	8
Total number	528[3]

【Major problems】

More than 80 % of all the boreholes have no organized actors for O&M and thus same problems afflict these springs as the aforementioned boreholes.

2) Survey of O&M system

The baseline survey revealed current problems of relevant organizations from institutional, technical and financial aspects. In particular, the action plan, personnel allocation, budget, materials and equipment for O&M of the rural water supply facilities, and the repair structure for these facilities were assessed.

The result of the baseline survey illustrated following problems;

- The ability to understand the contents of the delegate management contract of both the staff of the districts and WSPs are low
- Since contractual coverages stipulated in the delegated management contract have not been fully performed by both the districts and WSPs, due to lack of ability in understanding of the contract and/or technical or financial barriers, the contract has been becoming a dead letter.
- Since the royalties collected from WSPs and other taxes collected from private companies are deposited in the same bank account, the royalties are incorporated into general revenue and then are not appropriately used for the O&M of the rural water supply facilities
- Since the formats of the financial report designated by the Ministry of finance (hereinafter referred to as “MINECOFIN”), do not differentiate the royalties from other taxes with an specific item, the royalties collected from WSPs are not able to be managed in distinction from other revenues

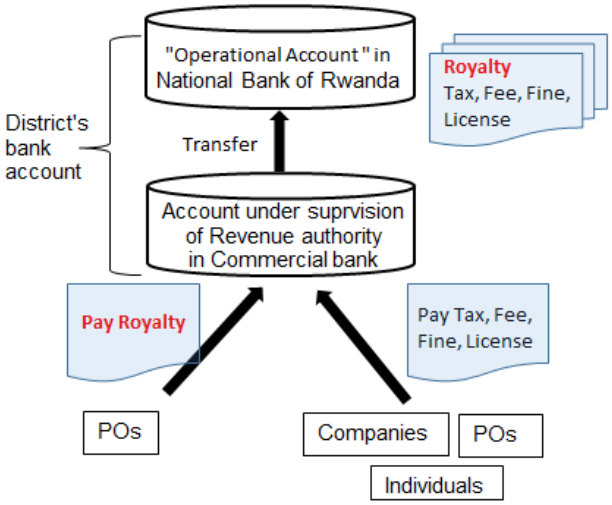

Figure 6：Flow mechanism of royalty and other taxes

3) Survey for actual conditions of water supply

The household survey assessed the following: size of family; distance between home and sources; conditions of domestic works by women; daily water consumption; water fees; willingness to pay a water fee; latrine adoption rate and water-related diseases. This survey was conducted with 1,200 households which benefited from the piped water supply systems, boreholes or improved springs.

[3] The value does not include unimproved spring

Photo 3：Interview in household survey

The main results of the survey are as follows;

- Travel distance for fetching water (one way between home and source)[4]

More than three out of ten of households travel more than 500 meters each way to the water source in all of the four model districts. In the Rwamagana district in particular,, more than half of households take more than 500 meters each way to fetch water in the Rwamagana district.

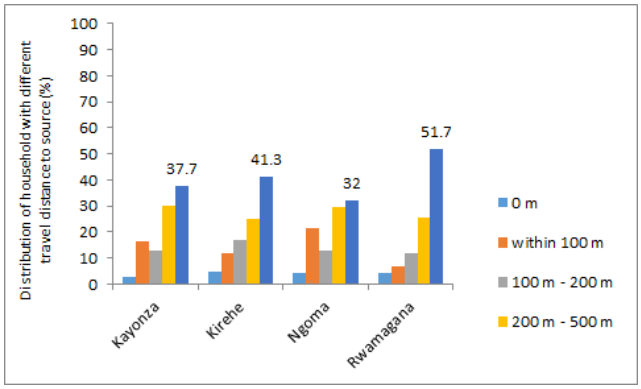

Figure 7：Distribution of households with different travel distance to source (meter)

- Prevalence rate of diarrhea (over the last two weeks before the survey)

More than 15 % of households indicated that some family members contracted diarrhea over the last two weeks in all of the model districts.

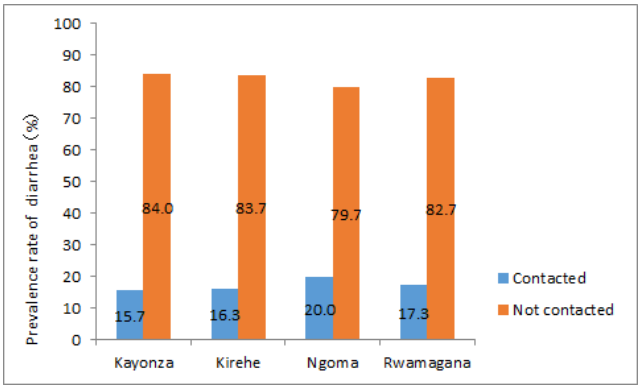

Figure 8：Prevalence rate of diarrhea in household over the last two weeks (from time of survey)

- Women burdened by domestic labor (household duties)

Women feel the most physical burden and stress in fetching water out of daily domestic labor in all of the model districts

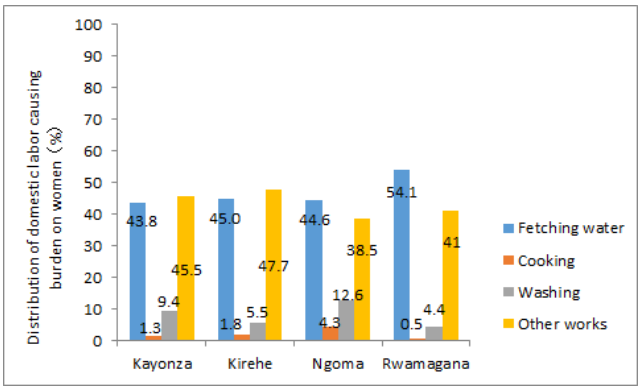

Figure 9： Distribution of domestic labor causing burden on women (ratio)

(4) Stakeholder sharing workshop

The stakeholder sharing workshop was held on 10th March, 2016 – with the related organizations of GoR, the international agencies, public entities and Non-governmental organizations – to share the results of the baseline survey implemented by the Project, and

[4] The surveyed data is gathered by interview from households, and it is not the actual measured value

discuss the challenges derived from its implementation. The main results of discussion are as follows:

- MINECOFIN is aware of problems in formats of the financial report as mentioned above. It promised to put the issue on the agenda in the ministry in the future
- The system of water quality management should be established by defining responsibilities of examining and analyzing water and securing certain financial resources

Active discussion, questions and answers on the results of the baseline survey were made among the participants. In particular, RURA brought up a lot of opinions to seek an optimal system of water quality management of rural water supply facilities for the most serious concerns. The stakeholders have been having a better understanding for improvement of water quality management systems in rural regions.

Photo 4：Presentation by the project expert

4. Creative solution and Lesson learnt

(1) Creative solution during the Project

1) Building the communication system with the C/P

RWS, one of the C/P, started with a four-unit structure in October, 2015 and increased its staff members from six people to sixteen staff members. However, the C/P often had difficulty holding regular meetings with the Project Experts because they were usually busy with their routine works as well as urgent works required by the MININFRA. The Project is adopting a system that makes effective use of the C/P's spare time to share different information and make decisions in order to tackle the aforementioned challenge. Moreover, the Project Experts and the C/P have been trying a system where both sides are able to clearly understand the progress of the Project by reporting the schedules of the Project activities using e-mail every Monday.

2) Encouraging the C/P's initiative in meetings

The Project encouraged the C/P to take initiative in meetings and workshops based on close discussion between the Project Experts and the C/Ps to raise the C/P's initiative and ownership in the Project. The PIC, the stakeholder sharing workshop, and the SC, have so far been held under the initiative of the C/P, and in turn the C/P has had a better understanding of the Project.

The Project tries to keep adopting this effort during the Project period, so that the RWS itself is able to enhance its basic abilities toward organizational sustainable development through boosting its independence.

Photo 5：The C/P presented the results of the baseline survey in the 2nd PIC

1) Organizing specialized team collaborated by the Project Experts and the C/P

The Project Experts and the C/P jointly worked as team on sorting out the results of the baseline survey, based on four specialized units – each unit have experts with different field of expertise.. With this structure the C/P could exercise their expertise and professional skills, and because all units share the tasks, the Project increased in effectiveness through involving all of the C/P's members.

Photo 6：Meeting with the C/P by unit

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Completion Report for the Project for Improvement of Water Supply and Sanitation in the Southern Part of the Eastern Province in Republic of Rwanda (JICA, 2011)

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