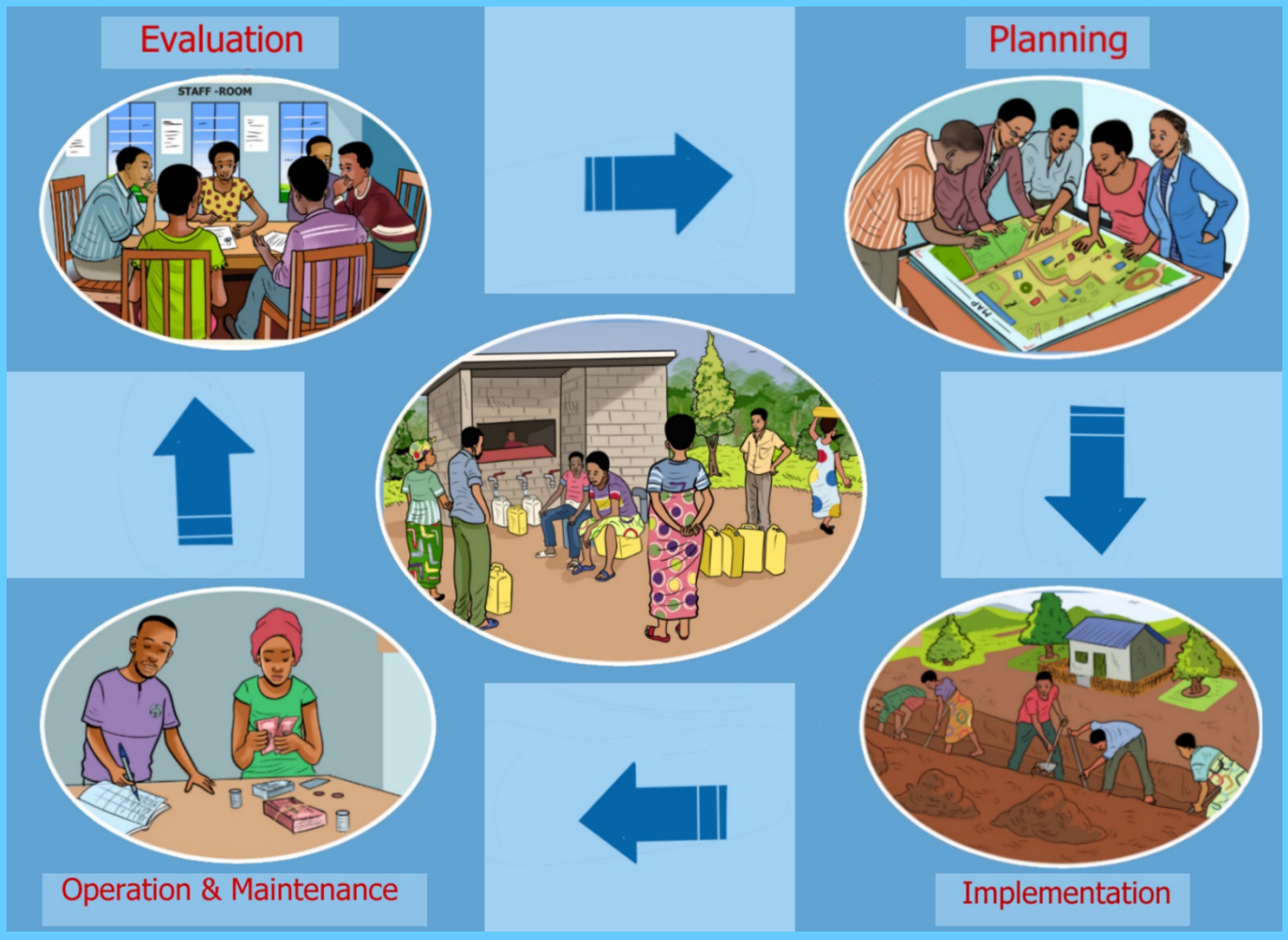
REPUBLIC OF RWANDA

MINISTRY OF INFRASTRUCTURE

Manual
for Rural Water Supply Project Cycle Management



Edition 1.0

May 2019

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PREFACE

Access to safe drinking water is crucial, not only for people's health and wellbeing, but also for poverty reduction and economic development; Improving the access, quality, availability and sustainability of water supply services in RWANDA is the top priority in the Sector; Rwanda has committed to reach SDGs targets by 2030 through the different programs such as the NST1 and 7 Years Government Program with the aim of achieving universal access to basic water and sanitation services by 2024. In order to achieve this target, an appropriate institutional system has to be in place.

The development of the National guidelines for Sustainable Rural Water Supply Services and all its supporting documents (Manuals, Training Modules, etc.) is part of the mechanism to develop the Operation and Maintenance in the Rural Water Supply, and make an important guidelines to Districts, Private Operators, User communities and all the stakeholders in the Rural Water Supply Services sub-sector.

I want to extend my appreciation to the stakeholders, especially JICA/RWANDA through the RWASOM Project, for the effort to have these important documents in place.
We look forward to positive impact of the developed documents through the O&M framework in the rural water services, sustainability of existing water infrastructures and overall, an improved and sustainable clean water supply service toward the communities in RWANDA.

Patricie UWASE

PERMANENT SECRETARY

TABLE OF CONTENTS

LIST OF ACRONYMS

AfDB	African Development Bank
CM	Community Mobilization Services Unit/RWSS/WASAC
DWM	Delegated Water Management Services/ RWSS/WASAC
DWB	District WASH Board
FEPEAR	Forum des Exploitants Prives pour l'Eau et l'Assainissement en milieu Rural
GIS	Geographic Information System
GPS	Global Positioning System
JICA	Japan International Cooperation Agency
MININFRA	Ministry of Infrastructure
MINALOC	Ministry of Local Government
O&M	Operation and Maintenance
OM	Operation and Maintenance Unit/RWSS/WASAC
PDM	Project Design Matrix
PO	Private Operator
RM	Resource Mobilization Unit/RWSS/WASAC
RURA	Rwanda Utilities Regulatory Authority
RWASOM	Project for Strengthening Operation and Maintenance of Rural Water Supply Systems in Rwanda
RWF	Rwandan Franc
RWS	Rural Water Services
RWSS	Rural Water and Sanitation Services
SC	Steering Committee
SWG	Sector Working Group
TSM	Technical Support Manual
TWG	Thematic Working Group
UNICEF	United Nations Children's Fund
WASAC	Water and Sanitation Corporation
WATSAN	Water and Sanitation
WSPs	Water Service Provider
WSS	Water Supply System
WUC	Water Users Committee

ACKNOWLEDGEMENT

This manual was produced by the “Project for Strengthening Operation and Maintenance of Rural Water Supply Systems in Rwanda” under the technical cooperation by Japan International Cooperation Agency (JICA).

A series of workshops were held in the project, and a lot of stakeholders in Rwanda, development partners, and NGOs technically contributed in the formulation of the manual. The Ministry of Infrastructure and Water and Sanitation Cooperation Ltd (WASAC) therefore, extends special thanks to these stakeholders for allowing their staff to participate in the production of this module.

The Ministry is also indebted to JICA for assisting in the development of the manual, and many who have not been mentioned here but contributed in different ways.

Outline of Manual

a. Introduction

The Government of Rwanda (GoR) is responsible for the provision of safe water, improved sanitation and promotion of hygiene practices. The Government aims to ensure that all people have convenient access to water in sufficient quantity and of acceptable quality for basic use and that adequate sanitation is provided to all populations for improved health by 2020.

In order to achieve the overall water and sanitation sector goals, the GoR has been developed the National Water Supply Policy and Implementation Strategy in 2016. The Policy presents the sector's approach on how to achieve the Vision 2020 and 2050 and NST I objectives and breaks them down into concrete policy directions through effective coordination among all stakeholders, in particular, the Districts, concerned Ministries, WASAC, RURA, Private Sector, Civil Society and Development Partners.

After the GoR adopted the decentralization policy in 2001, the Districts have been taken place the lead in planning and implementation of the rural water supply project (RWSP), applying their regular procurement, contract management, financial and reporting procedures, and evaluation framework as well. However, the most of the Districts are still facing the capacity gaps for smooth implementation of the RWSPs. So a support framework consisting of financial, technical, capacity building and monitoring and evaluation shall be needed in order to enable the Districts to efficiently implement a required scope of the projects.

This manual has been prepared, primarily, to guide the implementation of the RWSP. The manual mainly focus on the various actors in the project cycle to plan, manage and evaluate the RWSP in the effective implementation of each activity. It will serve as reference in the implementation of RWSP.

b. Purpose of the Manual

This manual provides guidance on methods and procedures involved in planning, implementation, operation and maintenance, and monitoring and evaluation of RWSP. It outlines a set of important technical approaches and tools for economic, financial and social analysis of projects, guidance on various activities in a project cycle.

This manual aims at acting as basis for elaborating the procedure for RWSP. Specifically, the manual is intended for the following:

- To understand the role and responsibilities of the various stakeholders in RWSP
- To standardize the procedures for implementation of a rural water supply project through a project cycle, which will help utilizing national or external budget effectively.
- To enhance the capacity of the concerned institutions to design water supply projects that are appropriate to the needs of target groups, comprehensive in relation to the whole project cycle, and adequate for donor's requirements

c. Target Users of the Manual

The users of the Manual may range from community level, district, WASAC, concerned ministries and institutions at national level, private sectors, Non-Governmental Organizations to development partners. It is expected that the users will find this Manual very useful in the planning, implementation, operation and maintenance, monitoring and evaluation of RWSP at all levels.

d. Overview of the Manual

The systematic process of initiating, planning, implementing, managing and evaluating projects or programmes is known as 'Project Cycle; it is also defined as an approach in project management used to guide management activities and decision-making procedures during the life-cycle of a project, from the first idea until the evaluation. Based on the afore-mentioned concept, this manual is divided into four chapters;

Chapter 1: Planning Stage
Chapter 2: Implementation Stage
Chapter 3: Operation and Maintenance stage
Chapter 4: Evaluation Stage

Figure 0-1: Project Cycle in a Rural Water Supply Project

Box 1: Project Cycle Implementation in Rwanda

Below is presented the figure summarizing roles to be played by each main stakeholder in Public Investment Program (PIP) production.

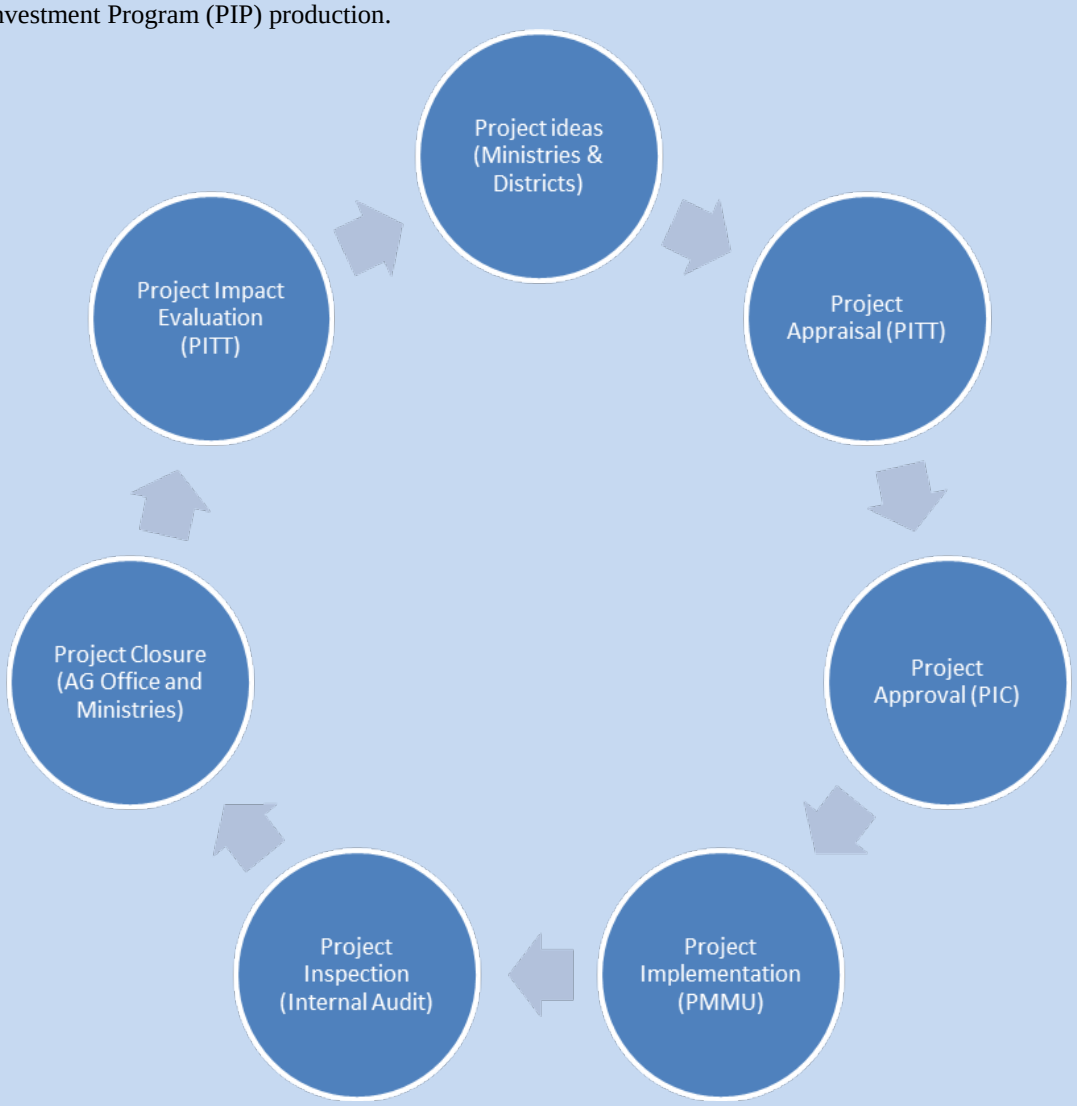


Figure 0-2: Project Cycle Implementation in Rwanda

PITT: Public Investment Technical Team
PIC: Public Investment Committee
PMMU: Projects Management and Monitoring Unit

Source: PUBLIC INVESTMENT GUIDELINES

e. Responsibility Matrix

There are various stakeholders involved in RWSP at different levels with their own roles and responsibilities. RWSP is implemented more effectively and efficiently in close collaboration with these stakeholders. Therefore, it is important to recognize them to ensure successful and sustainable RWSP.

A Responsibility Matrix is the one of the tools to represent the roles and responsibilities for the various stakeholders by one table. It is used to define who is responsible for the work elements and deliverables by forming a matrix with the work breakdown structure (WBS) and the organizational breakdown structure (OBS). Each activity is assigned a WBS code, main and support actors for the scope of work required.

The sample responsible matrix and the responsible matrix for RWSP developed can be found in below figure and page 7&8 respectively.

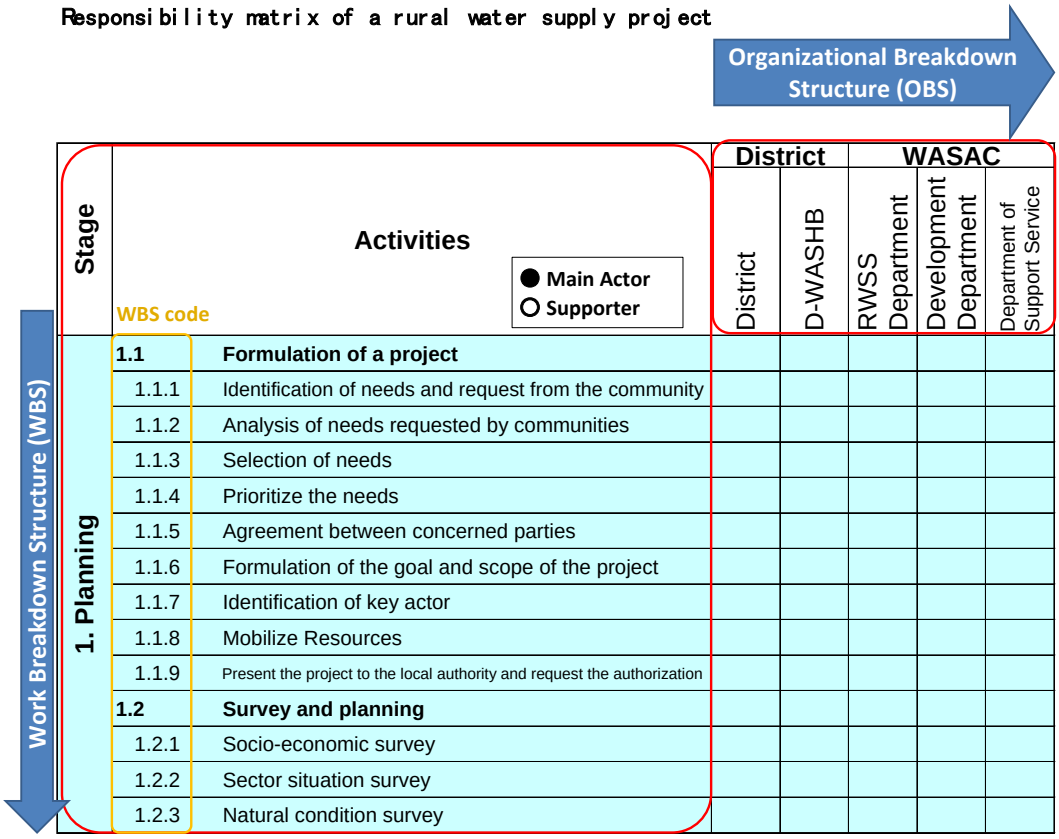


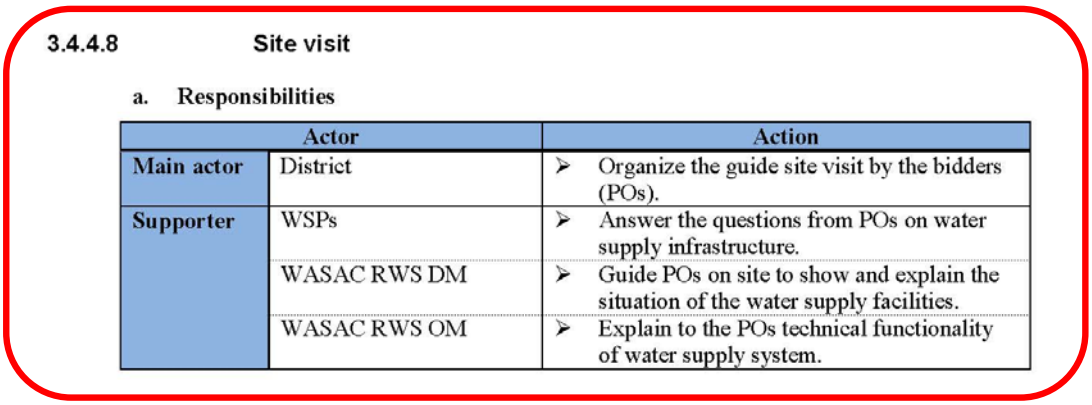
Figure 0-3: Sample of the responsibility matrix

f. Structure of the Manual

Main structure of this manual is divided into the following two bodies.

- **Body 1: Responsibilities**

The Body 1: "Responsibility" covers a duty or obligation to satisfactorily perform or complete a task by main actors and/or support actors in each activity for RWSP.



3.4.4.8 **Site visit**

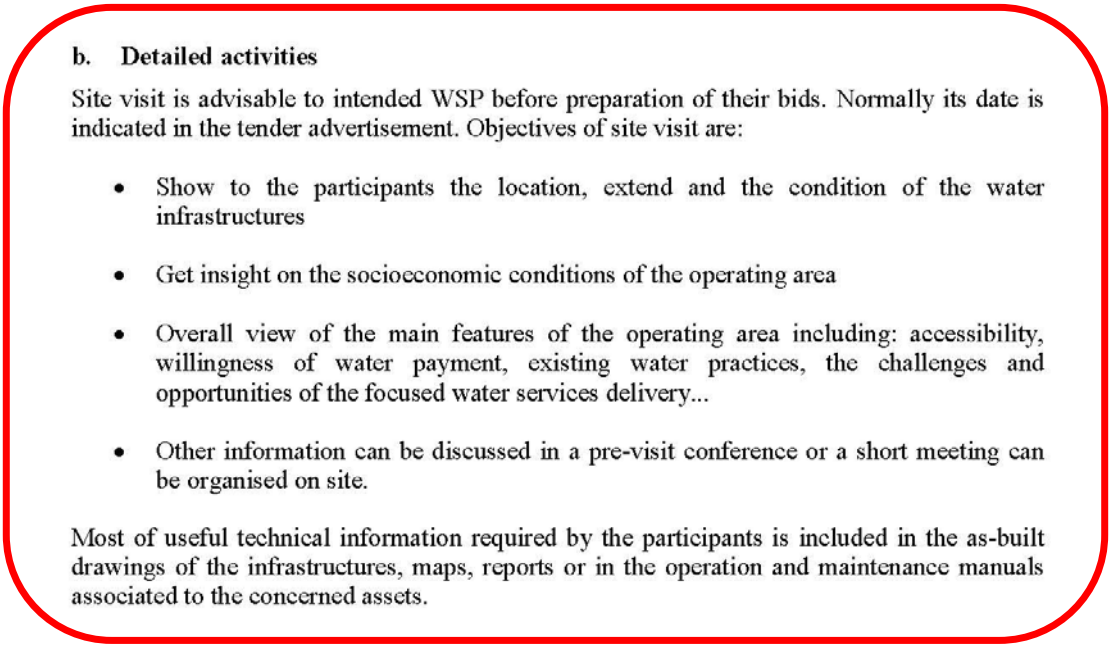
a. **Responsibilities**

Actor		Action
Main actor	District	➢ Organize the guide site visit by the bidders (POs).
Supporter	WSPs	➢ Answer the questions from POs on water supply infrastructure.
	WASAC RWS DM	➢ Guide POs on site to show and explain the situation of the water supply facilities.
	WASAC RWS OM	➢ Explain to the POs technical functionality of water supply system.

Figure 0-4: Image picture of Body 1

◆ **Body 2: Detailed activities**

The Body 2: "Details activates" covers processes, approaches and methods for the implementing of each activity.



b. Detailed activities

Site visit is advisable to intended WSP before preparation of their bids. Normally its date is indicated in the tender advertisement. Objectives of site visit are:

- Show to the participants the location, extend and the condition of the water infrastructures
- Get insight on the socioeconomic conditions of the operating area
- Overall view of the main features of the operating area including: accessibility, willingness of water payment, existing water practices, the challenges and opportunities of the focused water services delivery...
- Other information can be discussed in a pre-visit conference or a short meeting can be organised on site.

Most of useful technical information required by the participants is included in the as-built drawings of the infrastructures, maps, reports or in the operation and maintenance manuals associated to the concerned assets.

Figure 0-5: Image picture of Body 2

g. Supplement Volume

This Manual should be used together with the various tools which are included the "**TOOL KITs"** developed as separated volume (hereinafter "Supplement Volume"). These tools will be useful and helpful when you will conduct any activities for RWSP.

The list of the tools is shown in below table.

Table 0-1: The List of the Tools

Technical Support Manual		**Tool Kits**	
Activity No.	**Activity Name**	**Tool No.**	**Tool Name**
1.2.1	Socio-economic survey	Tool 1	Sample questioner for socio-economic survey
1.2.6	Environmental Impact Assessment	Tool 2	Environmental Impact Assessment
1.2.7	Project appraisal	Tool 3	Public Investment Program (PIP) Forms
		Tool 4	Standard Reporting format for a Feasibility study
4.2.1	Reporting of evaluation	Tool 5	Project Completion Report for Public Sector Operations (PCR)

h. Reference Documents

This Manual shall be also used alongside water and sanitation sector policies, strategy documents, guidelines and other manuals such as the following:

Table 0-2: The List of the Reference Documents

1. Planning Stage	
1.1	**Formulation of a Project**
	➢ Vision 2020／2050 ➢ National Strategy for Transformation (NST) ➢ Water and Sanitation Sector Strategic Plan (SSP) ➢ District Development Strategy (DDS) ➢ Sustainable Development Goals (SDGs) ➢ National Water Supply Policy and Implementation Strategy, 2016 ➢ National Decentralization Policy (Revised), Jan. 2012
1.2	**Survey and planning**
	➢ Guidelines for Commissioning and Managing Feasibility Studies ➢ Public Investment Guideline ➢ Rwanda standards, RS EAS 12 2014, Potable Water – Specification ➢ Guidelines for Environmental Impact Assessment for Water Resources Management In Rwanda, RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA), March 2009 ➢ General guidelines and procedure for Environmental Impact Assessment, 2006 ➢ General Guidelines and Procedures for Strategic Environmental Assessment (SEA), 2011
1.3	**Design**
	➢ Manuel D'Etude Pour Systems Gravitaires, Dec. 1996 ➢ Etude de development des infrastructures d'alimentation en eau potable et d'assainissement en milieu rural, Apr. 2008
2. Implementation Stage	
2.2	**Tendering**
	➢ Public Procurement User Guide, Nov. 2010
3. Operation and Maintenance Stage	
3.1	**Preparation of O&M plan**
	➢ District and Private Operator's Guideline for Operation and Maintenance of Rural Water Supply System in Rwanda, SusWAS Project, Jun. 2016
3.4	**Set up of the structure management**
	➢ PPP model contract (2016 updated version) ➢ Water Services Licensing Regulations RURA, Serial No. 009/ SAN/RURA/2012, Jun. 2012
3.6	**Monitoring of execution of PPP contract**
	➢ Regulation No.002/RB/WAT-EWS/RURA/015 of 23/09/2015, Governing Water supply Services in Rwanda
4. Evaluation Stage	
Cross cutting (all the stages)	
➢ National Guidelines for Sustainable Rural Water Supply Service	

Responsibility matrix of a rural water supply project (This scenario : Implementer is a district.)

Stage		Activities	Local Government			WASAC			Central Institutions														
			District	DWB (District WASH Board)	DJAF	RWSS Department	Development Department	Department of Support Service	MININFRA	MINECOFIN	MINIJUST	MINALOC	MINISANTE	MoE (formerly, MINIRENA)	REMA	RDB	RSB	RURA	Community (Users)	Consultant / Contractor	WSP/POs	NGOs	Development Partners (DPs)
1. Planning	**1.1**	**Formulation of a project**																					
	1.1.1	Identification of needs and request from the community	○	○															●			○	
	1.1.2	Analysis of needs requested by communities	●	○		○													●				
	1.1.3	Selection of needs	●	○		○																	
	1.1.4	Prioritize the needs	●	○		○																○	
	1.1.5	Formulation of the goal and scope of the project	●		○	○	○		○			○							●			○	○
	1.1.6	Identification of key actors	●			○	○		○													○	○
	1.1.7	Resource mobilization for the project planning	●		○	○	○		○	○		○										○	○
	1.1.7.1	Identification of potential sources of funds	●	○	○	○	○		○	○		○										○	○
	1.1.7.2	Mobilization of funds	●	○	○	○	○		○	○		○										○	○
	1.1.8	Present the project to the local authority and request the cooperation and authorization	●			○	○		○			○											
	1.1.9	Agreement between concerned parties	●		○	○	○		○	○		○										○	○
	1.2	**Survey and planning**																					
	1.2.1	Socio-economic survey	●			○	○													○		○	○
	1.2.2	Sector situation survey	●			○	○													○		○	
	1.2.3	Natural condition survey																					
	1.2.3.1	Water source survey (for water volume)	●			○								○	○					○			
	1.2.3.2	Water quality survey (for water source)	●			○								○	○					○			
	1.2.3.3	Topographic survey	●			○														○			
	1.2.3.4	Soil testing and investigation	●			○								○	○					○			
	1.2.3.5	Survey of procurement condition	●			○		○															
	1.2.4	Basic plan																					
	1.2.4.1	Water demand projection	●			○	○																
	1.2.4.2	Elaboration of basic plan	●			○	○																
	1.2.4.3	Facility planning	●			○	○																
	1.2.5	Structure of implementation	●			○	○																
	1.2.6	Environmental Impact Assessment	●			○	○							○	○	○				○			
	1.2.7	Land Expropriation	●			○	○		○											○			
	1.3	**Design**																					
	1.3.1	Outline design																					
	1.3.1.1	Design plan	●			○														○			
	1.3.1.2	Determination of basic parameters	●			○														○			
	1.3.1.3	Calculation of basic quantity	●			○														○			
	1.3.2	Construction plan	●			○														○			
	1.3.3	Procurement plan	●			○														○			
	1.3.4	Plan of design and construction supervision	●			○														○			
	1.3.5	Plan of construction schedule	●			○														○			
	1.3.6	Plan of operation and maintenance	●			○														○			
	1.3.7	Planning of capacity building	●			○														○			
	1.4	**Cost estimation**																					
	1.4.1	Structure of implementation cost	●			○	○													○			
	1.4.2	Estimation of implementation cost																					
	1.4.2.1	Method of cost estimation	●			○	○													○			
	1.4.2.2	Management cost	●			○	○													○			
	1.4.2.3	Preparation cost	●			○	○													○			
	1.4.2.4	Construction cost	●			○	○													○			
	1.4.2.5	Procurement cost	●			○	○													○			
	1.4.2.6	Design and supervision cost	●			○	○													○			
	1.4.2.7	Provisional cost	●			○	○													○			
	1.4.2.8	Operation and maintenance cost	●			○	○													○			
	1.5	**Project appraisal**	●			○	○		○	○										○			○
	1.6	**Resources mobilization for the implementation of the project**	●	○	○	○	○		○	○		○										○	○
2. Implementation	**2.1**	**Preparation of implementation**																					
	2.1.1	Preparation of project time frame	●	○		○			○	○												○	○
	2.1.2	Setting indicators of the project progress	●	○		○			○	○												○	○
	2.2	**Implementation of land expropriation**	●							○									○	○			
	2.3	**Tendering**																					
	2.3.1	Preparation for tender documents (for contractors and supervisors)	●			○		○															
	2.3.2	Advertisement of tender	●					○															
	2.3.3	Opening and evaluation of tender	●			○		○															
	2.3.4	Selection of contractors and supervisors	●			○		○															
	2.3.5	Preparation of contract documents	●			○		○			○												
	2.3.6	Signing the contract	●					○			○												
	2.3.7	Notification / commencement	●					○															
	2.4	**Implementation of construction works and supervision**																					
	2.4.1	Kick-off meeting of the project	●	○		○																	
	2.4.2	Implementation of construction works and supervision	●	○		○													○				
	2.5	**Community mobilization for implementation stage**	●	○		○																○	○
	2.6	**Monitoring and evaluation of implementation**																					
	2.6.1	Preparation of progress reports	●			○			○													○	○
	2.6.2	Monitoring of EIA	●											○	○								
	2.6.3	Monitoring of Resettlement of Action Plan	●			○																	
	2.7	**Handover of the facilities to District**																					
	2.7.1	Provisional handover of the facilities	●			○			○										○	●	○	○	○
	2.7.2	Final Handover of the facilities to District	●	○		○			○										○	○	○	○	○
	2.7.3	Issue of completion certificate to the contractors	●	○																			

Stage		Activities	Local Government			WASAC			Central Institutions															
			District	DWB (District WASH Board)	DJAF	RWSS Department	Development Department	Department of Support Service	MININFRA	MINECOFIN	MINIJUST	MINALOC	MINISANTE	MoE (formerly, MINIRENA)	REMA	RDB	RSB	RURA	Community (Users)	Consultant / Contractor	WSP/POs	NGOs	Development Partners (DPs)
3. Operation and Maintenance	**3.1**	**Preparation of O&M plan**																						
	3.1.1	Preventive maintenance plan	●			○													○		●		
	3.1.2	Curative maintenance plan	●			○															●		
	3.1.3	Spare parts procurement plan	●			○															●		
	3.1.4	Replacement plan	●			○															○		
	3.1.5	Preparation of O&M manuals	●			○															●	○	○
	3.2	**Assessment of present situation of the water facilities**																					
	3.2.1	Reporting of the assessment	●			○															○	○	
	3.3	**Community mobilization for O&M**	●	○		○															○	○	
	3.4	**Set up of the structure of management**	●			○																	
	3.4.1	Planning the process of introducing private participation	●	○		○																	
	3.4.2	Involving stakeholders in the design and management of the PPP arrangement	●	○		○																	
	3.4.3	Preparation of PPP contract																					
	3.4.3.1	Determination of selecting method of PO	●	○		○		○															
	3.4.3.2	Determination of qualification of PO	●	○		○		○										○					
	3.4.3.3	Preparation of contract documents	●	○		○		○															
	3.4.4	Selection of PO																					
	3.4.4.1	Confirmation of the condition of existing facilities	●	○		○																	
	3.4.4.2	Establishment of a tender committee	●			○																	
	3.4.4.3	Establishment of an Independent Review Panel at the District Level	●			○																	
	3.4.4.4	Preparation of tender documents for selecting PO	●			○																	
	3.4.4.5	Tender notice	●			○																	
	3.4.4.6	Distribution of tender documents	●			○																	
	3.4.4.7	Pre-qualification of candidates of bidder (PO)	●			○																	
	3.4.4.8	Site visit	●	○		○		○													○		
	3.4.4.9	Query & Answer	●	○		○															○		
	3.4.4.10	Preparation of technical proposal by bidder																			●		
	3.4.4.11	Preparation of the financial proposal																			●		
	3.4.4.12	Evaluation of proposal	●																				
	3.4.4.13	Tendering and selecting PO	●			○															○		
	3.4.4.14	Signing contract	●			○															●		
	3.4.4.15	Handover of water supply systems to PO	●	○		○															●		
	3.4.5	Execution of PPP contract																					
	3.4.5.1	Conducting O&M of water supply systems by PO	○	○		○															●		
	3.4.5.2	Conducting periodical water quality analysis	○			○															●		
	3.4.6	Establishment of District WASH Board (DWB) and hold a regular meeting	●			○			○			○									○	○	○
	3.4.7	Establishment of water users committee (WUC) and hold a regular meeting	●			○			○			○						○	●		○	○	○
	3.5	**Carry out capacity development**																					
	3.5.1	Ensuring hygiene and protection of water facilities	●	○		○			○			○	○						○		●	○	○
	3.5.2	Technical intervention for O&M	●	○		○															●	○	○
	3.5.3	Carry out water quality management including chlorination	●			○			○				○					○			●	○	○
	3.6	**Monitoring of execution of PPP contract**																					
	3.6.1	Determination of method of monitoring	●	○		○												○					
	3.6.2	Determination of method of evaluation	●	○		○												○					
	3.6.3	Determination of items / parameters of monitoring and execution of monitoring																					
	3.6.3.1	Water quality	●	○		●												○			●		
	3.6.3.2	Customer satisfaction	●	○		○												○	○		○		
	3.6.3.3	Water tariff	○			○												●	○		○		
	3.6.3.4	Royalty	●	○		○				○								○	○		●		
	3.6.3.5	Condition of facilities	●	○		○												○	○		●	○	○
	3.6.3.6	Revenue and expense	●	○		○												○	○		●		
	3.6.4	Evaluation																					
	3.6.4.1	Taking action in case performance is over required standard	●	○		○			○					○				○	○		○		
	3.6.4.2	Taking action in case performance is below required standard	●	○		○			○					○				○	○		○		
	3.6.5	Notice of results of performance to the public	●			○												○	○		○		
	3.7	**Data management**	●	○		○															○		
	3.8	**Reporting for delegated management**																					
	3.8.1	Providing feedback	●	○		●												●			○		
	3.9	**Review of O&M plan**																					
	3.9.1	Revising PPP contract if necessary	●	○		○												○	○		○		
	3.9.2	Termination of PPP contract																					
	3.9.2.1	Inspection of functioning of water supply systems	●	○		○												○	○		○		○
	3.9.2.2	Evaluation of the execution results of PPP contract	●	○		○												○	○		○		
	3.9.2.3	Termination of PPP contract	●	○														○	○		○		
	3.9.2.4	Handover of water supply systems from PO to District	○	○		○												○	○		●		
	3.9.2.5	Issue of certificate for termination of PPP contract	●	○		○												○	○		○		
4. Evaluation	**4.1**	**Developing a plan on overall evaluation**	●		○	○			○														○
	4.2	**Selection of evaluator**	●	○	○	○																	
	4.3	**Planning evaluation design**	○	○	○	○														●			
	4.4	**Implementation of evaluation survey**	○			○													○	●			
	4.5	**Reporting of evaluation**	○		○	○			○	○		○								●		○	○
	4.6	**Follow-up, Dissemination and Knowledge sharing**	●			○			○													○	○

● Main actor ○ Supporter

1 Planning Stage

The all-important step of any successful project life cycle is planning and should include a detailed breakdown and assignment of each task of your project from beginning to end. This stage requires study and analysis culminating in the full Project Design and that may lead to system development activities.

Acquisition activities are performed, if necessary, to obtain contractor support. The project work is broken down into specific tasks and sub-tasks, including the identification of project deliverables and assignment of allocated resources to each task. Control documents relating to that effort are produced. The degree of project management rigor that is to be applied to the project is determined and milestones are established. Specific plans for management and governance of the project are established and documented to guide ongoing project execution and control. In the this stage, sufficient requirements detail is required to support the development of the Project Management Plan and permit outside validation of this deliverable.[1] Overview of Planning Stage is shown in below.

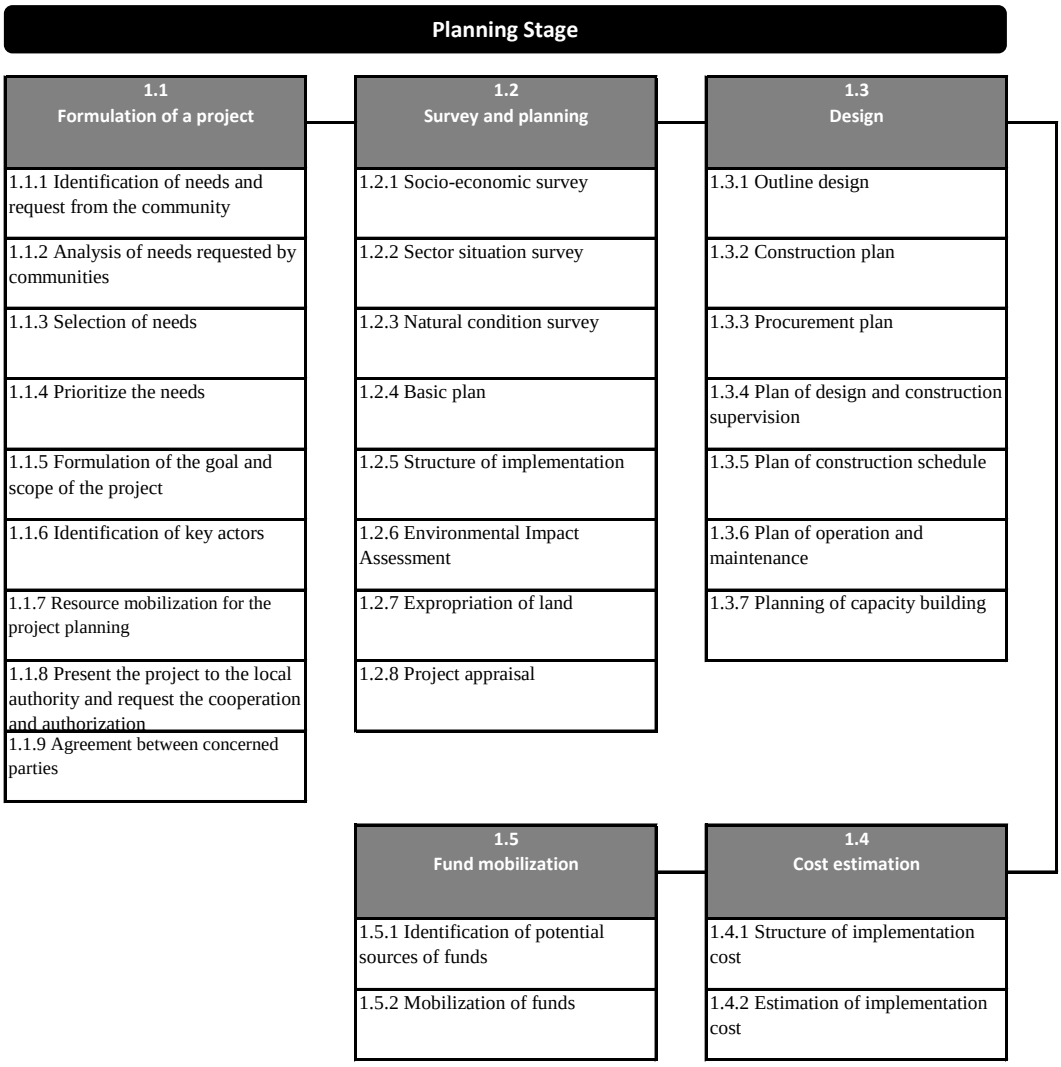


Figure 1-1: Planning Stage Overview

[1] https://www2a.cdc.gov/cdcup/library/pmg/planning/default.htm

1.1 Formulation of a project

1.1.1 Identification of needs and request from the community

A. Responsibilities

Actor		Action
Main actor	Community (Users)	➢ Identify/determine the most important needs among the communities ➢ Request the needs from communities to district (Practically, community submit requests to cell office first, and then sector). ➢ Follow up the presented requests for district to take its action
Supporter	District (Sector/Cell level)	Support community in prioritizing their needs Support community to submit the request from the community to the district
	DWB	Support community in identifying their needs
	NGOs	Assist community in the process of identifying needs with information and technical guidance.

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 Community

The District basically promotes a **demand responsive approach** (hereinafter referred to as DRA) to communities. The District ensures that needs are solicited by the communities and not imposed on them.

1) The community brings up issues and discuss on challenges emerging in rural water supply services and sanitation in community gatherings.

   The community should identify its own water and sanitation needs and corresponding solutions through a process of internal discussion and external negotiation in participatory manner. NGOs and other partners shall assist this process with information and technical guidance.

2) The community and the village chief consult Sector and Cell about countermeasure for issues and challenges that the community face.

3) The community submits documents to the Sector for presenting their needs selected through the step mentioned above to the Sector.

4) The local authorities follow up the requests presented to the District. In the case that the District does not respond to the requests, the village chief urges the District to take any actions for the requests.

5) The village chief is held accountable for the District's responses to the request to the community.

B.1.1 District (Sector/Cell level)

1) Sector and Cell assist the community in the process of identifying needs with information and

technical guidance.

2) Sector and Cell help the community to prioritize the needs among their issues and challenges by overviewing issues existing in village.

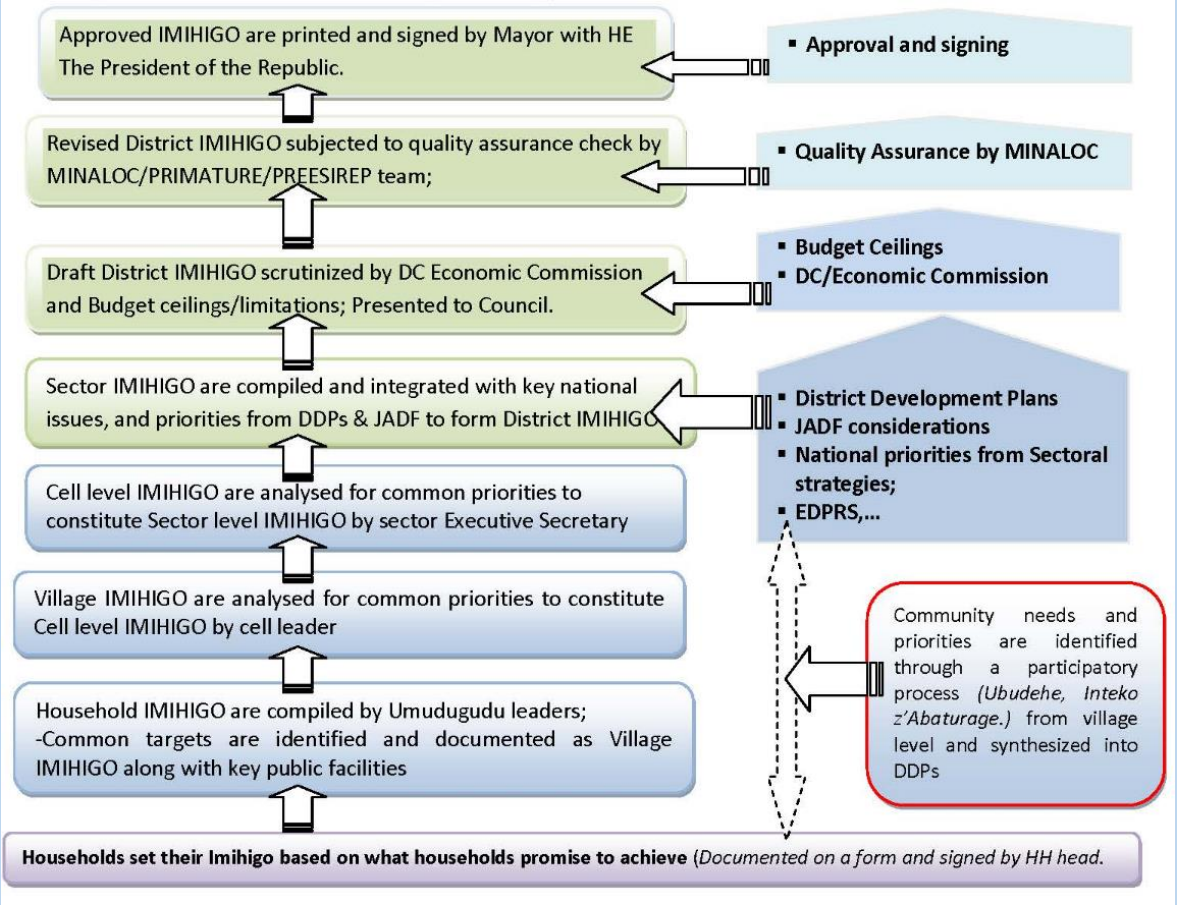
3) Sector support the community to submit their request to District, follow up the progress and give feedback to the community.

Box 1-1: IMIHIGO: A Bottom-up Planning and Performance Management framework

Decentralization has, since 2000, been a key policy of the Government of Rwanda (GoR) for promoting good governance, service delivery, and national development.

Since 2006, GoR has introduced and implemented the Imihigo which is a performance based and accountability mechanism.

The most important initiative about Imihigo is the understanding that the concept must shift base to households. The process and linkages in the design of Imihigo are summarized in below figure. This new arrangement has been hailed as realistic and all-involving.



Source: NATIONAL DECENTRALIZATION POLICY (Revised), June 2012, Government of Rwanda

1.1.2 Analysis of needs requested by communities

A. Responsibilities

Actor		Action
Main actor	District	Analyse needs requested by communities
	Community	Participate in process of needs analysis
Supporter	DWB	Support the District in prioritizing needs of the communities by assessing the operational status and other technical and financial aspects of the existing water supply facilities.
	WASAC RWSS	Support the District in prioritizing needs of the communities by assessing the operational status and other technical aspects of the existing water supply facilities.

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

1) The District visits the villages to study needs requested by the communities such as the following views;

- Situation of water supply and sanitation in the community
- Access of water sources of the community
- Level of living condition of the communities

2) The District prioritizes needs of the communities according to the following views.

- The result of the study mentioned above
- Social aspect such as gender, equity and social inclusion, disparity in water supply and sanitation infrastructure, economical situation
- The community's willingness to pay and other contributions for water services
- The community's ability (affordability) to pay and other contribution for water services

B.1.1 Community

The community is to get involved in the process of the needs analysis. The District holds meetings with the community to disclose the processes and methodologies of the analysis to them.

1.1.3 Selection of needs

A. Responsibilities

Actor		Action
Main actor	District	Select the needs with careful consideration based on the analysis
Supporter	DWB / WASAC RWSS	Support the District to identify needs in consideration of the available resources

B. Detailed activities

B.1 Detailed activates for each actor

B.1.0 District

The District selects some candidates of community from the applicants according to the result of the analysis as well as the District's budget.

The District feeds back the result of selection of the needs to the communities. The needs are defined as a project after the selection.

1.1.4 Prioritize the needs

A. Responsibilities

Actor		Action
Main actor	District	Prioritize needs of communities
Supporter	DWB	Support the District in prioritizing needs of communities
	WASAC RWSS	➢ Support the District to prioritize the need according to available resources ➢ Support the District to develop and communicate priority programs for universe access in collaboration with districts planners
	NGO	Support the District in prioritizing needs of communities

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District and DWB

The District sorts out the result of the meeting with the stakeholders and local authorities.

The District collects information for setting criteria for prioritizing the needs from NGOs working in same areas

The District sets the criteria for prioritizing the selected communities (needs) according to the following standpoints;

【Selection criteria】

- Performance contract of the District
- The budget of the District
- The result of the analysis (See **Clause 1.1.2)**
- The result of the discussion with the concerned stakeholders (See **Clause 1.1.4**)

The District prioritizes the communities (needs) selected in **Clause 1.1.3** according to the set criteria.

B.1.1 WASAC RWSS

1) Support the District to prioritize the needs according to the available resources

2) Support the District to develop and communicate priority programs for universe access in collaboration with Districts planners

B.2 NGOs

NGOs which work in area of the District provide useful information for prioritizing the needs, such as survey reports about situation of water supply services, activity reports, etc.

1.1.5 Formulation of the goal and scope of the project

A. Responsibilities

Actor		Action
Main actor	District	➢ Formulate a project goal and scope of the project ➢ Conduct assessment for formulation of the scope of the project
	Community	Cooperate with district in providing information
Supporter	DJAF	➢ Support the District to allow associations operating in the District or elsewhere to set up centers to assist administration in settling petitions of the population. It shall be done through agreements with the District and in compliance with the law. ➢ Support the District to harmonize and implementing cooperation agreements between the District Council and other organs; ➢ Support the District to sign regulations, announcements, contracts, conventions and agreements between the District and various organs and institutions; ➢ Support the District to monitor the institutions created according to the agreements concluded with District authorities in accordance with the laws applicable in the country.
	WASAC	➢ Support the District in formulating project goal and scope related to a community mobilization ➢ Support the District in formulating project goal and scope related to a PPP contract and water quality control and management ➢ Support the District in designing rough draft of designs of construction, construction costs, and method of O&M ➢ Support the District in raising project resources and setting up monitoring and evaluation method
	MININFRA / MINALOC	Provide technical assistance in the formulating the project goal and scope.
	NGO / Development Partners	Collaborate with central governmental institutions and district in planning project to partially or fully implement them

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

1) The District assesses the following necessary information for formulating the project goal and scope

- Baseline level of water supply service
- The community's willingness to pay and other contributions for water services
- The community's ability (affordability) to pay and other contribution for water services
- Resources generated from the District's budget, the community and other stakeholders

2) The Districts sets up a goal and formulates the scope to outline of a project according to the assessed information mentioned above

3) The District formulates outcomes, activities and time frame of the project in consideration of the contract performance of the District and the targeted goals of the concerned stakeholders

4) The District sets the benchmarks for each outcome and activity

5) The District sets the monitoring and evaluation systems

6) The District organize meetings to share the formulated projects with the stakeholders

B.1.1 Community

The project is to be formulated based on DRA (demand responsible approach). Even in the process of formulation of the scope of the project, the community is to proactively participate in the process. The community provides any information that the District requires

1.1.6 Identification of key actors

A. Responsibilities

Actor		Action
Main actor	District	➢ Identify key actors of the project ➢ Discuss responsibility in the project with key actors ➢ Coordinate stakeholders involved in addressing the needs in the project
Supporter	WASAC / MININFRA	Support the District in determining the key actors and their responsibilities in the project
	NGO / Development Partners	➢ Collaborate with central governmental institutions and District in coordination meetings organized when identifying the key actors ➢ Address the challenges facing in the District

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

The District prepares the list of actors in the project

The District sorts out all responsibilities required for implementing the project

The District discuss what kind of responsibilities the concerned actors are able to bear with them in the project

The District figures out responsibility matrix by the concerned actors

1.1.7 Resource mobilization for the project planning

1.1.7.1 Identification of potential sources of funds

A. Responsibilities

Actor		Action
Main actor	District	➢ Identify potential source of funds / partners ➢ Mobilize funds
	DJAF	➢ Support the District to identify the key actors, to set up the role and responsibilities for each partner in the project ➢ Support the District to coordinate and harmonize development activities of the District with key actors; ➢ Support the District to advise key actors on allocation of resources and other development issues; ➢ Support the District to monitor and Evaluate the implementation of the adopted programs
	DWB / WASAC	➢ Support the District to identify the potential source of funds ➢ Support to mobilize the resource or fund
	MININFRA / MINALOC	➢ Coordinate channelling of the funds to support project in collaboration with MINECOFIN ➢ Coordinate with NGOs and development partners to secure the fund for the project
	MINECOFIN	➢ Coordinating the elaboration of national development planning ➢ Establishing criteria for appraisal and prioritization of public investments in the context of limited resources ➢ Coordinating the elaboration of the national investment programme and ensuring synergy between the investment plans at all levels
	NGOs / Development partners	➢ Support the District to achieve the target through support of the project (budget or programme) ➢ Support sector development in accordance with the principles agreed for the sector wide approach. ➢ Contribute to the implementation of water supply projects.

B. Detailed activities

After preparing the project design report described above, District should have identified potential source of funds.

In this section, the broad categories of funds are as follows:

B.1 Source of funds

The major source of funds for the District are; Own revenues, Government treasury, development partners, Government transfers, grants, and loans. Accessing funds for project financing is not confined to a particular type of fund source but may require a combination of different fund sources.

District generated revenue source

Government transfer

Grants

Loans

B.1.0 District generated revenue source

Local revenues are generated from rates taxes, licenses of various types, user charges, fees, royalty fee, commercial undertakings, etc. provided for in the Districts.

B.1.1 Government transfers

Government transfers funds to District to assist the latter in financing critical development activities implemented at the local level. The said transfers which are in the form of grants contains among others, the Local Development Fund. Central Government transfers funds to District through Local Administrative Entities Development Agency (LODA). LODA provides funds to District through different programs such as;

■ **Vision 2020 Umurenge Program (VUP)**

"Vision 2020 Umurenge" is an initiative by the Government of Rwanda (GoR) in collaboration with development partners and NGOs. It is led by the Ministry of Local Government (MINALOC) and supported by the Ministry of Finance and Economic Planning (MINECOFIN). The Vision 2020 Umurenge Program (VUP) uses the existing decentralization system and leverages technical and financial assistance to accelerate the rate of poverty reduction in Rwanda

Both Government of Rwanda and Development Partners contribute to the financing of the Local Government priority projects and key activities through LODA level.

The Vision 2020 Umurenge Programme (VUP) contains three components:

- Direct Support; a regular cash transfer for very poor households with no labour capacity
- Public Work; a public works programme for very poor households who are able to work
- Financial Services; a microcredit scheme that provides small loans at low interest rates to individuals or groups

■ **Ubudehe**

Ubudehe is vulnerable or social class that belong to rural communities engaged in misdeed behavior such as abuse drugs, underage drinking. Ubudehe is at the cutting edge of participatory in development actions. Ubudehe was chosen as a reminder that collective action and participatory development are very rooted in Rwandan society.

Only households classified as Ubudehe categories 1 and 2- the two poorest categories in the six-point ranking determined by local communities in their own neighbourhood are eligible for Direct Support or Public Works.

In addition to above types of Government fund transfers, line ministries may assign District to implement projects on their behalf. The fund for such project will be shown under the respective line ministry budget for disbursement to the District by LODA and concerned ministry. The transfer of these funds is arranged and agreed upon by the District and LODA with the line ministry.

B.1.2 Grants

A grant is in terms of projects and material given to Districts or given by District to the community for the funding and implementation of development and service activities. Recipients of grants are not required to repay the money or materials provided.

Aside from the Government, development partners (DPs) are the largest provider of grants in the country. Foreign donors are multi-lateral organizations such as UNICEF, World Bank (WB), African Development Bank (AfDB), European Union (EU), foreign NGOs (WaterAid, Word vision, Water for people etc.), etc. and bilateral donors like foreign governments (JICA, Netherland, Swiss cooperation, USAID, etc.). By- and-large, the greater portion of the capital development funding for the Districts is mobilized from foreign donors through the Government. The distribution of donor funds among the Districts depend on the agreement entered into between the Government and the donor.

Box 1-2: Information of the WASH funders

Information of the WASH funders can be found from below URL.

http://washfunders.org/Knowledge-Center/

B.1.3 Loans

District may have to borrow money from financial institutions on the approval of the government. Borrowed money can only be utilized for a viable investment project.

B.2 Public Investment Program (PIP)

Based on the "PUBLIC INVESTMENT GUIDELINES" by MINECOFIN, there are various source of funding taking into consideration the following possible ways of financing:

- Internal financing where Rwanda will finance projects from its own resources
- Grants: Donors could accept to grant funds to implement some projects
- Loans: Government could seek loans for some investments
- Purely Private

Selecting how a project will be financed will depend on various factors. The starting point will be to calculate the viability of the project itself. The first step will be the calculation of the financial and economic Net Present Values (NPVs) at the investment point of view. Interpretations of the both financial and economic NPVs are basically shown in below table.

Table 1-1: Criteria to select the sources of funds

Sign of the NPV		Source of Fund	Action to be undertaken
Financial NPV	Economic NPV		
Positive (+)	Positive (+)	Private PPP Public	Line ministry or LODA to look for a private before seeking funds from the government
Positive (+)	Negative (-)	Purely Private	The project to be sent to ministry or LODA to work with RDB to find a private investor
Negative (-)	Positive (+)	Purely Public	To look for grant To use internal resources To contract a loan

Source: Public Investment Guidelines 2014, MINECOFIN

For projects which are purely public or PPPs, the government could find funds from its own resources, use grants or loans.

The privileged source will be to seek for grants if transaction costs are not very high and if there is a potential donor in the area of the project.

Public Investment Technical Team (PITT) will work closely with external finance unit to identify a potential project donor. If no grant can be obtained, then the Government will start seeing how to use its own resources to implement the project as purely public or as a PPP.

When own resources are not sufficient, the government will seek for a loan. To contract a loan, it will require the project to generate enough resources to repay it back. Therefore, the Government will consider its debt sustainability and the appraisal of the project should show if the project will be able to service the debt. Therefore, the project will be analysed at the owner's point of view. The loan will be added to the net cash flows from the total investment point of view as cash receipts and subtracts payments of interest and loan repayment as cash outlays. This analysis will show if the project will pay back the loan.

1.1.7.2 Mobilization of funds

A. Responsibilities

Actor		Action
Main actor	District	➢ Prepare the concept paper provides details of need of funds (the outline exactly why, when and how the funds will be utilized and in the loans how funds will be repaid). ➢ Conduct the conferences on the project inviting NGOs, International Organizations operating in the country, the business community, relevant government offices, etc. ➢ Conduct fund raising activities is a good way of generating the necessary resources and at the same time getting the people and beneficiaries. ➢ Submit the project proposal to potential donors.
Supporter	DWB, DJAF	➢ Support the District to manage the various resource mobilised to development partners, NGOs and institutions
	DWB, DJAF, WASAC, MININFRA, MINALOC	➢ Support to mobilize the resource or fund ➢ Resource mobilization in direct ➢ Support the District to identify the mobilization of funds ➢ Support the coordination among the stakeholder concerned
	MINECOFIN	➢ Coordinating the elaboration of national development planning ➢ Establishing criteria for appraisal and prioritization of public investments in the context of limited resources ➢ Coordinating the elaboration of the national investment programme and ensuring synergy between the investment plans at all levels
	NGOs / Development partners	➢ Support the District to achieve the target through support of the project (budget or programme) ➢ Support sector development in accordance with the principles agreed for the sector wide approach. ➢ Contribute to the implementation of water supply projects.

B. Detailed activities

Mobilization of financial resources will involve setting out ways and means of collecting finances mainly through taxes, fines, fees, investments, requests, appeals, and training preparation of budget for marking, loans, and transfers from the central Government, development partners, community, etc. It is the total effort geared towards the raising of funds to finance the development activities of the District.

B.1 Resource mobilization strategies

Once the investment required is determined and the District has its budget for the District Development Plan (DDP), the District is ready to begin sourcing funds to support the projects it intends to implement. When mobilizing resources, the District with support from WASAC must be fully prepared to outline exactly why, when, and how the funds will be utilized and in the case of loans how funds will be repaid. Below strategies for the mobilization of resources.

B.1.1 Conduct of conferences

The District conducts conferences on a project by inviting stakeholders operating in the country, the business community, relevant government offices, etc. During such a conference, names of possible financiers may be suggested or some of the invited organizations may be taken up on coat-sharing basis. This is an excellent means of drawing donors to the District to support the implementation of a project, but conducting such a conference will require an investment on the part of the host.

B.1.2 Fund raising campaigns

Conducting fund raising activities is a good way of generating the necessary resources and at the same time getting the people and beneficiaries involved. Activates under this strategy are numerous, ranging from holding of charity to asking communities for contributions.

B.1.3 Submissions of Project Proposals (concept note)

In any planning exercise, requirements will most likely exceed available resources. Projects that could not be funded out of the project may be submitted to potential donors for consideration in the form of project proposal. This may be done on behalf of the communities by the District.

B.2 Flow of funds to projects

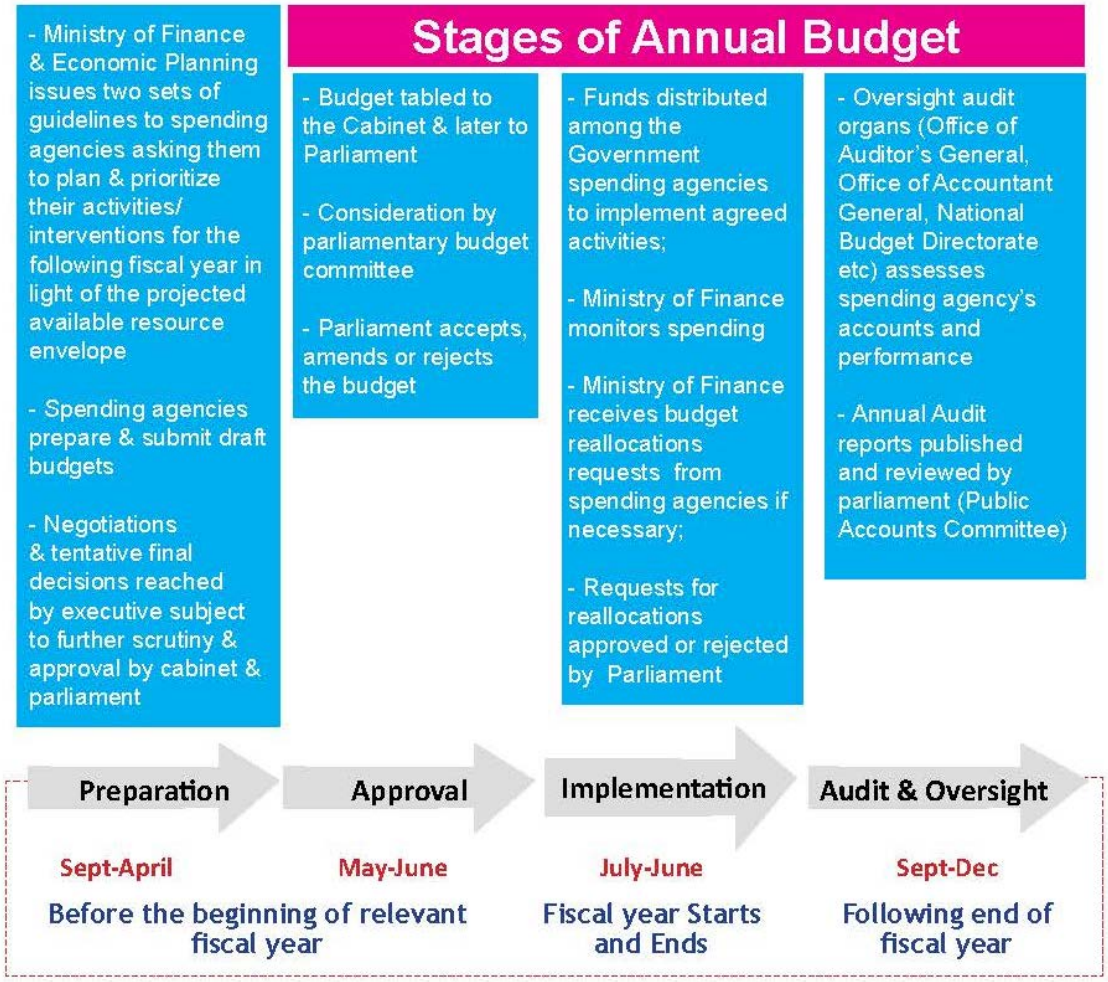
The flow of funds to projects is described below.

1. Any donor has a Policy which talking about Country Assistance Strategy (CAS) for each sector of activities.
2. Each country should have a Strategic document as EDPRS II, SDGs, and VISION 2020 …in Rwanda.
3. During the meeting, any donor present an envelope allocated to each Country for 3 fiscal years.
4. Meeting between Country and Donor to discuss on projects proposals from the Country
5. Discussion on the content of envelope and check if they coincide with country's strategies.
6. To compare the priorities and Country Assistance Strategy and sign the MoU for financial agreement. At this level, the Country start to study the Projects
7. Project presentation and Contract signature
8. Implementation of the Project

B.3 Overview of budgeting process in Rwanda

B.3.0 Annual Budget Cycle in Rwanda

In Rwanda, the budget is passed on an annual basis to ensure that the government continues to operate. Normally, the budget process timeline is governed by a budget calendar that categorizes the whole process into four key stages of Drafting or Preparation, Legislative & Enactment, Implementation, as well as Audit and Evaluation. The following figure provides a general overview of the budget process in Rwanda.



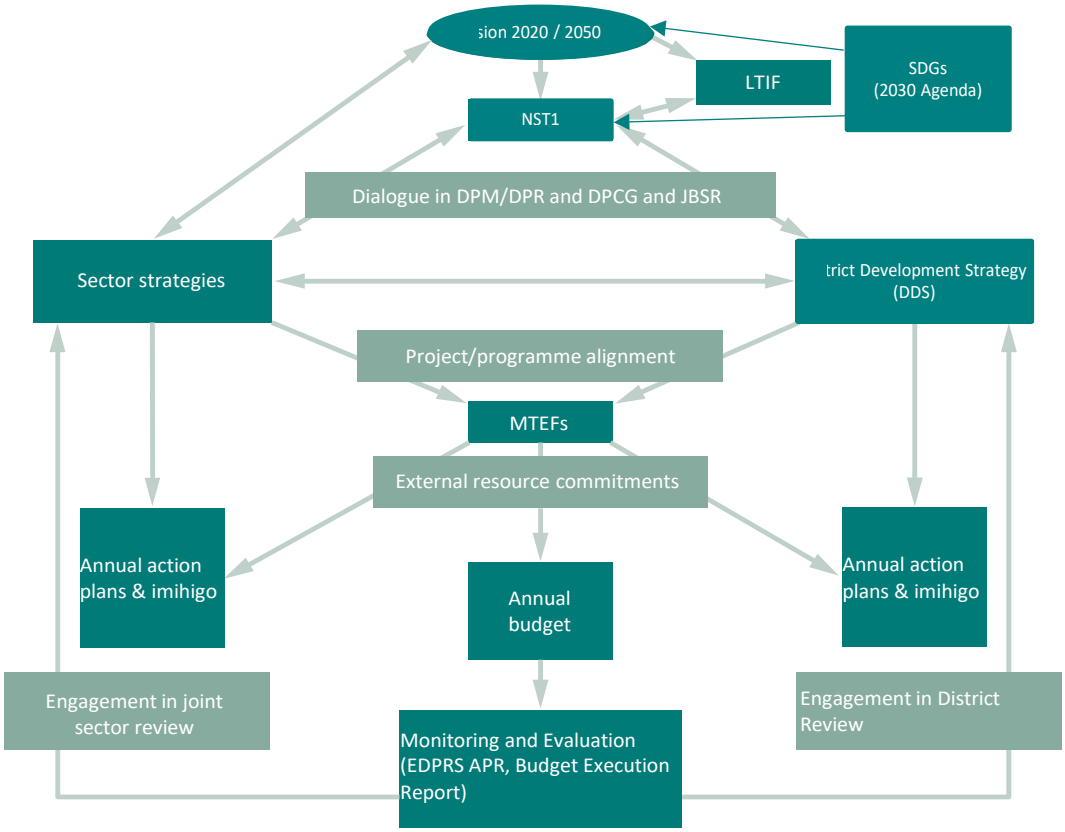
Source: National budget, a Citizen's Guide 2014-2015, MINECOFIN

Figure 1-2: Annual budget cycle in Rwanda

B.3.1 Planning and Budgeting in Rwanda

The hierarchy of planning instruments from the longer term (VISION 2020 / 2050) to the medium term (National strategy for Transformation 1 (NST 1 as new name to replace EDPR 3), sector strategies, District development strategies (DDSs)) to the annual term (annual action plans, performance contracts) is illustrated in figure 1-7.

The Medium Term Expenditure Framework (MTEF) is the key instrument linking planning and budgeting since its roll-out in 2002. Its objective is to ensure the National Budget is an efficient and relevant tool to implement the plans and reach the objectives defined in the NST1, sector strategies, and District development strategies. The main achievements of the MTEF process in Rwanda are the enhanced quality of macro- economic planning and budget ceilings, the improved budget preparation process and negotiations between MINECOFIN and budget agencies based on enhanced budget submissions, and efforts to enhance the quality of medium term revenue forecasting.



Reference book: Budget Strengthening initiative, April 2012

Figure 1-3: Linkages between Planning, Budgeting and Aid Coordination

1.1.8 Present the project to the local authority and request the cooperation and authorization

A. Responsibilities

Actor		Action
Main actor	District	➢ Explain the outline of the project to the local authorities for approval and cooperation ➢ Take into consideration inputs from the communities regarding the project
Supporter	WASAC	Support the District in explaining the project to the local authorities and involving them to the project
	MININFRA / MINALOC	Guide the District on the expected outputs by holding central and local government consultations coordinated by MINALOC with collaboration of MININFRA.

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

1) The District is to provide the only reasonable foundation for generating full involvement and a sense of ownership of the community when presenting the project.

2) The District encourages community to ensure the following commitment on the project:

- Contributions to develop a sense of community ownership of the project
- Enhancement of local responsibility for long-term operation & maintenance
- Sustainability of the project
- Optimization of project costs.

3) The District holds meeting with communities and local authorities for specifying the main entity which leads the project and sensitizing community for their contribution to the project.

4) The District reflects concerns and suggestions of the local authorities and representative of communities in the proposed project where necessary.

1.1.9 Agreement between concerned parties

A. Responsibilities

Actor		Action
Main actor	District	Exchange and sign memorandum of understanding (MoU) between District and concerned parties
Supporter	DJAF	➢ Support the district in Development planning accountability. ➢ To collect and analyse reports submitted by local government, civil society organizations, private sector, other local Districts JADF ➢ To prepare the JADF Stakeholder Consultative Meeting.
	WASAC	Support the District to elaborate MoU and ensure that all activities are taken into consideration
	MININFRA / MINECOFIN / MINALOC / NGO / Development Partners	Ensure that the MoU signed and all activities are linked on the national policies and strategies, sector policy and strategy, and country and aid policies and strategies of NGOs and Development partners.

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

The District has meetings with the concerned parties to explain the execution of the projects based on the needs of communities.

The District requests the concerned parties for cooperation in executing the projects.

The District prepares the memorandum of understanding (hereinafter referred to as MoU) based on the discussion with the concerned parties.

The District explains and discusses the MoU with the concerned parties.

The District and the concerned parties sign MoU.

1.2 Survey and planning

1.2.1 Socio-economic survey

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the socio-economic survey including target areas, survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey Provide the guidelines for survey
Supporter	WASAC	Support the District in development of terms of reference (ToR) to recruit the consultants who will undertake the social economic survey Support the District to supervise socio economic survey Support the District to analyse the result from the social economic survey
	Consultant firm	Conduct the socio-economic survey based on the contract between the District and the consultant firm
	NGO	➢ Cooperate with the District and Consultant firm to implement the socio-economic survey ➢ Support the District to supervise socio-economic survey
	Development Partners	➢ Provide guidance on the international regulations and guidelines rerated to the socio-economic and environmental impact survey like the World bank policy on involuntary resettlement (OP 4.12) and AfDB involuntary resettlement policy.
	National institute of statistics of Rwanda (NISR)	➢ Provide existing national statistics data

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

The District prepares survey sheets. The survey items are prepared in cooperation with WASAC RWSS.

The District prepares implementation plans of the survey.

The District selects a local consultant firm.

The District supervises the consultant firm for implementation of the sector situation survey.

The District organizes validation of the survey.

B.2 Overview of the survey

The socioeconomic assessment is a way to learn about the social, cultural, economic and political conditions of stakeholders including individuals, groups, communities and organizations.

The socioeconomic survey is intended to:

- Assess the prevailing socioeconomic conditions in the study site. This includes provision of a baseline survey and characterizing the existing state of the survey site. This will assist in identifying the main areas of concern.
- Analyse the impacts of the prevailing environmental conditions on the socioeconomic structure of the survey sites.
- Develop a set of guidelines for establishing viable communities

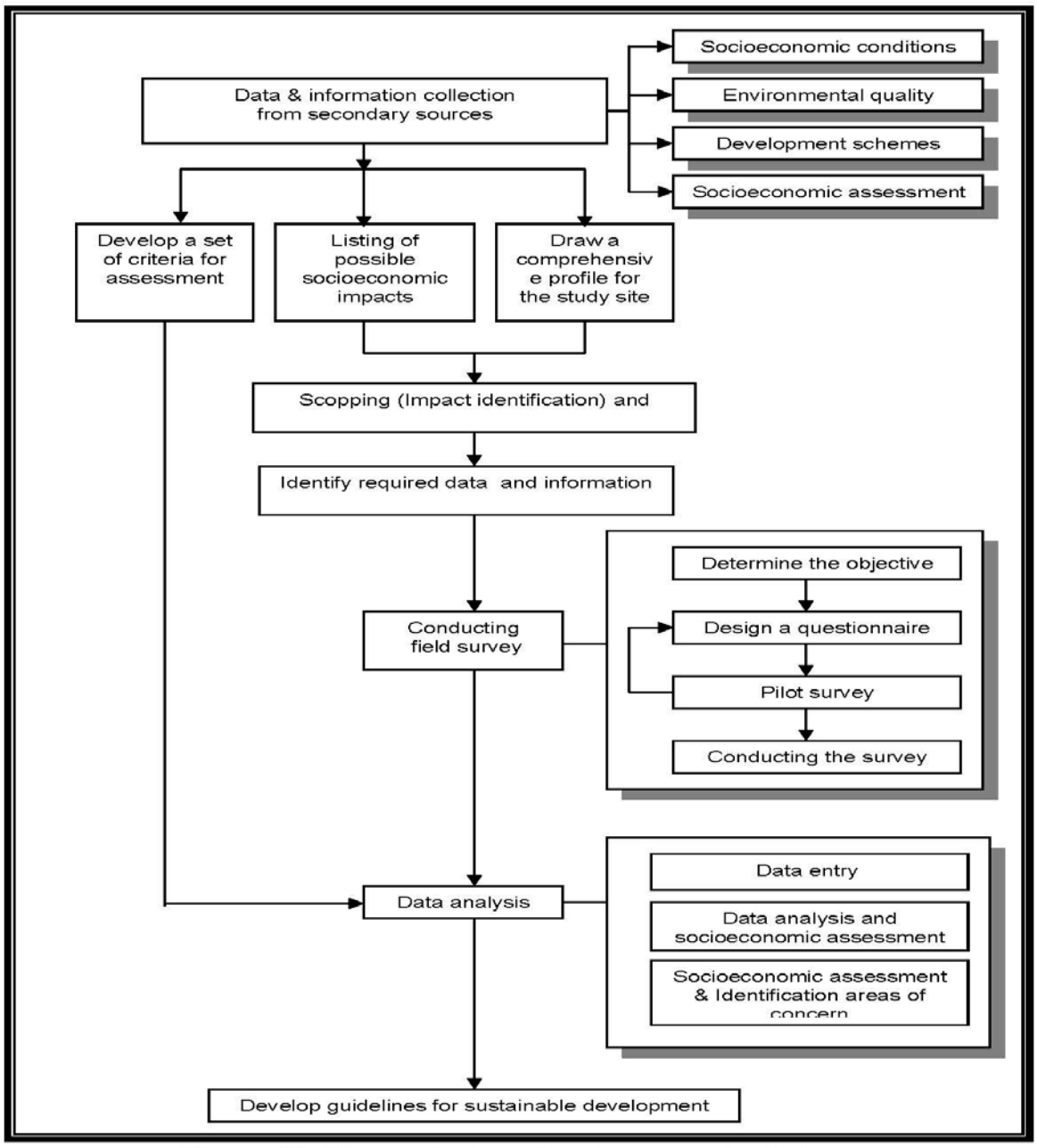
B.3 Procedure of the survey

Based on the above, a work plan for the socioeconomic survey is developed. This work plan includes the following tasks and activities.

The socio-economic survey shall include a combination of literature review, household survey interviews, key informant interviews and focus group discussions. The following process shall be followed in preparing for the collection of socio-economic data:

【Data collection process for the socio-economic survey】

- Preparation of a questionnaire complete with relevant questions for obtaining baseline data. Different questions for households, institutions and key informants shall be prepared.
- Determination of the sample size, depending on the project area population characteristics.
- Training of enumerators.
- Pre-testing the questionnaires



Source: A Manual for Socioeconomic Study, Prepared by M. A. Abdrabo & M. A. Hassaan, 06/2003

Figure 1-4: Workflow of the Socio-Economic Survey

B.3.0 Develop baseline conditions

This section can be considered as a preparatory work which includes the following steps:

B.3.0.0 Data and information collection from existing sources

Socio-economic data is useful during the planning and design stage and it is important to prepare adequately to ensure that the information obtained is accurate and reliable.

Materials; including statistics, research work, study reports, that may provide data and information about conditions in the study site, have to be reviewed. This includes available data and information about various socioeconomic aspects, environmental quality and previous as well as current development schemes. It should be noted that various socioeconomic aspects of the study site, have to be considered comprehensively without any bias towards any of the aspect.

As Census data is relatively inexpensive and highly reliable, Census represents one of the main secondary sources of data and information.

B.3.0.1 Develop a comprehensive profile of the survey site

Depending upon the data and information that are collected from secondary sources, a comprehensive profile of survey site could be developed.

The comprehensive profile should cover the following items:

- Boundaries of the study site
- Past and present:
  - o Demographic structure
  - o Economic structure
  - o Social structure
  - o Infrastructure provision

  Development schemes in the study site, past, present and future.

Usually, such a comprehensive profile is great importance for the following steps of the study as it highlights the character and the main features of the study site.

B.3.0.2 Develop a set of criteria for assessment:

A comprehensive list of all possible socioeconomic impacts and indicators should be developed with reference to **Tool 1 in the TOOL KITS**. Thereafter, these impacts should be scoped to focus on the most important impacts to be dealt with within the context of the socioeconomic assessment.

B.3.1 Field work

The field work would involve the following steps

B.3.1.0 Identify required data and information

After scoping, the data and information from secondary sources about the survey site and the previous development schemes should be reviewed to identify the gap of information to be collected from primary sources.

B.3.1.1 Conducting field surveys

After the identification of gaps in the required data and information, field surveys would be planned. This would require also the identification of the target population and sampling techniques.

B.3.1.2 Designing a questionnaire form

A questionnaire will have to be designed in such a way that takes into account the type of people to be covered by the survey. This aspect is very important in order to end up with the right answers needed for this research work and avoid any possible biases.

B.3.1.3 Pre-test and feedback

In order to ensure the effectiveness and adequacy of the designed questionnaire forms, pre-testy would be conducted. The main objectives of conducting these pre-test is to fine tune them to attain their objectives most effectively.

A checklist is usually prepared before data collection to prevent the omission of information or activity important for the process. It is also important to ensure that data collectors are competent and well versed with the data collection tools. Data collection has different forms in relation to water supply infrastructure provision.

B.3.2 Data analysis and socioeconomic assessment

This section of the socioeconomic survey will include the socioeconomic assessment of the survey site depending upon the analysis of the data and information collected from primary and secondary sources.

B.3.2.0 Data entry and verification

Dealing with large amount of data requires a systematic approach for data coding, tabulating and entry. It should be noted that, before data entry, the collected data should be verified. Such verification could be carried out for all collected data or for the random sample of the data. This depends usually on the quality of the procedures of data collection.

B.3.2.1 Data analysis

Analysis will involve standard statistical analysis of the data and information collected. The analysis should be based upon the criteria developed before.

B.3.2.2 Socioeconomic impacts assessment and identification of main areas of concern

One of the main objectives of socioeconomic assessment is to identify various socioeconomic positive and negative impacts. The socioeconomic impacts assessment should highlight possible relationships between assessed socioeconomic variables and the environmental quality in the survey site. Such an assessment could guide the following step of the work. Also, the areas of concern (issues and opportunities) of socioeconomic structure of the survey site have to be identified.

B.3.3 Develop a conceptual framework for sustainable development

This section is intended to provide guidelines and concepts that may contribute to the community development. This includes identification of the basic concepts of community development. This will involve, also, an attempt to consider various alternatives, which might alleviate the problems prevailing in the survey sites. Also, this will mainly provide the required changes to enhance positive impacts and minimize negative impacts.

At this stage, a participatory approach should be followed to ensure that all stakeholders and affected groups are involved in deciding whether the development of new alternatives can be pursued.

B.4 Selection of the local consultant firm

The District takes the following actions for selection of the local consultant frim

【Preparation of the procurement】

- To prepare tender documents for selecting local consultants.
- To publish announcement of the tender.
- To select candidates following the official tender process.
- To prepare the delegated contract of the survey.
- To sign the contract with the selected local consultant.

1.2.2 Sector situation survey

District should make the survey through consultant firms. This activity is specific for water and sanitation project in the District level.

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the sector situation survey including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey Provide the guidelines for survey
Supporter	WASAC RWSS	Support the District in development of terms of reference (ToR) to recruit the consultants who will undertake the sector situation survey Support the District to supervise sector situation survey Support the District to analyse the result from the sector situation survey
	Consultant firm	Conduct the sector situation survey based on the contract between the District and the consultant firm
	NGOs	Cooperate with District to conduct surveys of the situation about for rural water supply
	National institute of statistics of Rwanda (NISR)	➢ Provide existing national statistics data ➢ Provide the guidelines for survey

B. Detailed activities

B.1 Detailed activities for each actor

B.1.0 District

The District prepares survey sheets. The survey items are prepared in cooperation with WASAC RWSS.

The District prepares implementation plans of the survey.

The District selects a local consultant firm in the same procedure as mentioned in **Clause 1.2.1** Socio –economic survey - b4.

The District supervises the consultant firm for implementation of the sector situation survey.

The District organizes validation of the survey.

B.1.1 WASAC RWSS

1) WASAC RWSS support the District in elaborating TOR of the local consultant firms.
2) WASAC RWSS supports the District in planning the survey for the community by designing questionnaires
3) WASAC RWSS supports the District for supervision of the local consultant firms.
4) WASAC RWSS supports the District in analysing the result of the survey and validating the survey.

1.2.3 Natural condition survey

The District conducts the survey of topography and geology, soil, hydrogeology, and ground properties, etc., and uses the results as the basic data for the basic plan and outline design. WASAC and MoE (formerly, MINIRENA) assists this activity. The District should recruit the local consultant firms for implementation of the surveys and supervise them.

1.2.3.1 Water source survey (for water volume)

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the water source survey including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey Provide the guidelines for survey
Supporter	WASAC RWSS	Support the District and the consultant firm in all the process of the water source survey Provide technical assistance in development of the survey plan and supervision of the survey by the District
	MoE, REMA	Support the District and consultant firm in the process of the water source survey for the identification of water sources
	Consultant firm	Implement the water source survey by literature review, discharge observation, test drilling, runoff analysis, water balance analysis, etc.

B. Detailed activities

The District will be responsible for collecting data of available water resources prior to the formulation of a water supply plan. WASAC assists this activity.

Although data of an entire year is often required in meteorological and hydrological survey and existing data is often used, field survey is conducted as needed.

B.1 Meteorology

Data of temperature, humidity, precipitation, force, direction and velocity of wind, evapotranspiration, daylight hours, amount of sunlight and amount of underground recharge, etc., is obtained.

B.2 Hydrological survey

River: Hydrological survey of rivers includes survey of inventory of hydrological data, precipitation, river water level, river flow rate, water quality, and riverbed composition.

Groundwater: Hydrological survey of groundwater includes survey of hydrogeology, aquifer, groundwater level, coefficient of permeability of aquifer, pumping capacity (pumping test), and water quality.

Spring: Hydrological survey of springs includes annual amount of discharge, water quality, permeation of surface water, surrounding conditions, water quality with rainfalls, and future development plans.

Box 1-3: Possible sources of water for large scale water supply projects

According to existing study report, possible sources of water for large scale water supply project were recommended. The following table shows a very broad comparison of available water resources in the Eastern Province.

Table B1-3: Comparison for selection of water sources in the Eastern Province

Resource type	Water quality	Water quantity	Cost indication	Comments
Rain water dams	Good	Enough	Very high	This is a very good option but it might be limited by high cost due to construction of dam.
River	Bad	Enough	High	This is a workable option but the sediment load is a limiting factor in our rivers.
Lakes	Good	Enough	Moderate	This looks to be the best option on condition that we have enough water in the lakes.
Spring	Very good	Very Limited	Low	This was the best option but it is limited by the quantity. No big sources are available in the Eastern Province.
Boreholes	Good	Limited	High	The National water resources master plan has qualified most parts of the Eastern Province to be poor in groundwater yield.

Source: Final report on the guideline study on large-scale water supply projects, HICE CONSULT, December 2014

1.2.3.2 Water quality survey (for water source)

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the water source survey including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey ➢ Provide the guidelines for survey
Supporter	WASAC RWSS	Support the District and the consultant firm in all the process of the water source survey ➢ Provide technical assistance in development of the survey plan and supervision of the survey by the District
	MoE, REMA	Provide existing data of the water quality survey for water sources
	Consultant firm	➢ Implement the water quality survey by literature review ➢ Order the laboratory analysis of the water samples and assess its results.

B. Detailed activities

When planning a new and/or upgrading of water supply system, water quality of the water sources should be investigated and assessed whether the quality of raw water is suitable for supply.

When planning the construction of a new water supply system,

. There are many cases where water treatment plants are not installed, and the water source is directly subjected to chlorine disinfection and distributed in rural water supply infrastructures. So it is necessary to confirm that the source water quality is stable and sanitary, satisfying the drinking water standard value throughout the year.

B.1 Water Quality Survey Plan

B.1.0 Water quality parameters

Samples from the potential surface and groundwater sources should be collected and analysed for several quality parameters. During sampling, some parameters may be observed and tested on site with portable water quality equipment; while others have to analysed formally by qualified laboratory.

Weather conditions, time of sampling, flow rate (when possible) and the physical appearance (color) of the water at the sampling point should be included in the assessment report. A prescribed volume and number of samples for laboratory analyses will have to be collected, stored in appropriate containers, protected to preserve the original quality, and transported to the testing laboratory in the soonest time possible.

All naturally occurring chemicals that are of health significance and found in the drinking-water supply as a result of the geological characteristics in the locality should be in the priority list mentioned in Rwanda Standard RS ES 12. The list of priority physical and chemical parameters to be monitored may be changed based on the results of previous water examinations. Parameters that are less likely to occur in water may be less frequently tested.

These tests are important in the selection of a potential source of supply. They also become necessary when major developments or environmental changes occur in the vicinity that might affect the quality of water of an existing source, or if important changes are found in the quality of the water originating from a previously tested source.

＜Source: Rural water supply volume I: Design manual, The world bank office Manila＞

B.1.1 Frequency of sampling

Source water quality assessment will be carried out both in rainy and dry season since it is important to check the trend of water quality change.

Table 1-2: Recommended survey period for water quality analysis

【Following four times】

1) First survey is carried out from March to May (Heavy Rainy),

2) Second survey is carried out from June to August (Too Dry),

3) Third survey is carried out from September to December (Rainy),

4) Fourth survey is carried out from January to February (Dry)

B.2 Water Quality Assessment

Rwanda standard board (RSB) provides the “Potable water quality standard (Rwanda Standard RS ES 12)”. Potable water shall be free from organisms and chemical substance that are hazardous and injurious to human health and shall comply with requirements in Table 1, 2, 3, 4, 5, and 6 as stipulated in the Rwanda Standard RS ES 12.

As a result of the assessment, if the water quality does not meet the drinking water standards, one of the following options should be considered:

【Options in case of poor water quality】

To install water treatment facilities

To change the water source

To consider water supply from other water supply systems.

1.2.3.3 Topographic survey

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the topographic survey including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey ➢ Provide the guidelines for survey
Supporter	WASAC RWSS	Support the District and the consultant firm in all the process of the topographic survey Provide technical assistance in development of the survey plan and supervision of the survey by the District
	Consultant firm	➢ Implement the topographic survey

B. Detailed activities

The District gathers and organizes materials that include the contour map, aerial photographs and satellite images of the target area. It also conducts surveying (plane surveying, longitudinal surveying, sectional surveying, etc.) necessary for the basic plan and outline design. The scale size of the survey map is decided in consideration of characteristics of the project and contents and purpose of use of the project facility.

The District orders topographic survey to the consultant. In that case the District should have guidelines for surveys. WASAC supports this activity.

1.2.3.4 Soil testing and investigation

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the soil testing and investigation including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey Provide the guidelines for survey Supervise the local consultant firm for implementation of the survey Make a decision regarding suitable site for construction of proposed infrastructure
Supporter	WASAC RWSS	➢ Assist the District in ordering soil test and investigation to local consultant firms ➢ Assist in making a decision regarding suitable site for construction of proposed infrastructure
	MoE, REMA	Provide existing data of the soil test
	Consultant firm	➢ Implement the soil test and investigation

B. Detailed activities

The District tests the soil to decide the basics of the plan, which include the location of the construction, foundation type of structures, rough dimensions, and survey policies. The soil test in the survey stage is conducted to find out the overall property of the stratum that is part of the ground of the location of the structures to be constructed. WASAC assists this activity.

The survey consists mainly of the following:

B.1 Collection of past survey data

Data of boring survey and borehole drilling around the survey area are investigated and collected. As rough ground formation can be learned just by collecting such materials, existing geological data is studied in the preliminary survey before the boring survey, etc.

B.2 Survey of existing structures

Surveying settlement and incline and other changes of structures enables estimation of overall geological structure when there are structures around the survey area. It also helps selection of type of foundation.

B.3 Surface geological survey

Natural phenomena in exposure are estimated in the surface geological survey.

B.4 Boring and test-pit survey

The survey is conducted to confirm the past survey results from sample materials and also confirm new soil layers.

1.2.3.5 Survey of procurement condition

A. Responsibilities

Actor		Action
Main actor	District	Set up the procurement method and process
Supporter	WASAC	Support to survey procurement condition and process

B. Detailed activities

The District conducts surveys of items below, including current labour conditions and procurement of materials and equipment, in the target water supply area. WASAC assists this activity.

【Survey items for the procumbent condition】

Labour laws and regulations

Scale and past experiences of construction companies and their ownership of construction machinery

Working hours and labour practices

Difficulty in securing workers and skilled workers

Procurement and means of transportation of materials and equipment and availability of local supplier of imported materials and equipment

Customs clearance procedures

1.2.4 Basic plan

1.2.4.1 Calculation of Water demand

A. Responsibilities

Actor		Action
Main actor	District	Conduct water demand projection
Supporter	WASAC	Support to calculate water demand

B. Detailed activities

The District studies and analyses current demand and forecasts future demand in the below procedures to decide the sale of the water supply facility. WASAC assists this activity.

B.1 Target project year

The water facility installation project is aimed to be completed 10 years after the completion of the basic plan.

B.2 Planned water supply coverage area

The area where water is supplied are planned to be covered by the water installation project. It shall be decided based on the study of possibility of integration with existing water service in consideration of wide-area coverage and the project is to be reasonable also in terms of its facility operation.

B.3 Planned water supply population

The planned water supply population is determined after the population in the target project year is estimated, which is multiplied with the water prevalence rate, based on the demographics of the past 10 years based on the living population in the planned water supply coverage area. The population information to be used is from National Institute of Statistics Rwanda.

B.4 Planned water supply volume (water demand)

The daily water supply volume is decided by multiplying the daily supply volume per capita by the planned water supply population in the project. The daily water supply volume per capita is as shown in the table below.

Table 1-3: Standard of Daily Supply Volume

Water consumers	Demand
1. WPT	
Agglomeration Habitat	20 l/day/capita
Urban habitat	80 l/day/capita
Livestock:	
- Cattle	40 l/head/day
- Goats / Sheep	5 l/head /day
2. Private connection	
Health Buildings	
- Hospital	150 l/bed/day or 15 m^3/day
- Health Centers	6 -10 m^3/day
School Centers.	
- Primary school.	5 l/student/day
- High school:	15 l/student/day
- Baoding	40 l/student/day
- Clerkship	5 l/student/day
3. Development Centers	
- Youth Centre	50 l/person/day

Water consumers	Demand
- Orphanage	30 l/person/day
- District Office	500 l/day
- Sector Office	100 l/day
- Court	200 l/day
Other Centers	
- Parish	80 l/person/day
- Prison	70 l/person/day
- Military Camp	100 l/person/day
Trade and Industry	
- Trading Centre	120 l/day
- Market	1,000 l/day
- Slaughter house	350 l/animal (cattle)/day
- Tea Factory	5 m3/ton of treated tea production

Source: Study Manual for Gravity-Fed System –Technical part-, December 1996, German Technical Cooperation Agency (GTZ)

1.2.4.2 Elaboration of basic plan

A. Responsibilities

Actor		Action
Main actor	District	Make a plan of facility
Supporter	WASAC	Support to make a plan of facility

B. Detailed activities

The District selects items below for formulating a water supply plan. WASAC assists this activity.

B.1 Scale of facility, matters to be deliberated in facility planning, etc.

- Water source potential (ground water pumping capacity, spring intake capacity, minimum river water volume, water right, and other water sources)
- Geographical and geological conditions
- Water supply coverage area, water supplied population, primary unit of water supply, non-revenue water rate, water demand, load factor, time factor, and hours of water supply
- Raw water quality
- Situation of water service administration (water charge, etc.)
- Situation of electricity supply
- Urban development plan and local plan

B.2 Selection of facility structure and determination of structural specifications

Water sources to be used (surface stream water, groundwater and spring)

Intake facility (intake method and existing facility upgrading method)

Raw water transmission system (power/natural flow, pipe/drain, and hill/river crossing system)

Water purification system (oxidation, sedimentation/filtration, disinfection and other specific procedures of treatment, drainage water/sludge treatment system, etc.)

Water conveyance and distribution system (power/natural flow and pipe type/diameter)

Distributing reservoir and elevated tank (capacity, water level and structure)

Distribution network development and water supply coverage area extension system

Water supply facility

Mechanical and electric equipment

Measuring equipment

Water volume and water pressure monitoring and control system

Non-revenue water reduction measures

1.2.4.3 Facility planning

A. Responsibilities

Actor		Action
Main actor	District	Identify and list the needed facilities
Supporter	WASAC	Support the District in the identification of needed facilities

B. Detailed activities

The District formulates a facility plan in consideration of location of construction, route and scale. Alternative facility plans are submitted as needed for comparison. WASAC assists this activity.

1.2.5 Implementation Structure

A. Responsibilities

Actor		Action
Main actor	District	Set an implementation structure
Supporter	WASAC	Support the District to set implementation structure

B. Detailed activities

The District finds out the organization and its personnel, finance and budget, and technical level in charge of the water supply plan and deliberates the project implementation structure. WASAC assists this activity.

1.2.6 Environmental Impact Assessment

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the environmental impact assessment including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey Provide the guidelines for survey Submit EIA report to RDB
Supporter	WASAC RWSS	Support the District to select registered consultant and supervise consultant services in accordance with the consultant services agreement.
	RDB	➢ Receive and register EIA Applications (Project Briefs)

Actor		Action
		submitted by developers; ➢ Identify relevant Lead Agencies to review Project Briefs and provide necessary input during screening, ➢ Review Project Briefs and determine project classification at screening stage, ➢ Transmit Project Briefs to relevant Lead Agencies and concerned Local Governments to provide input on Terms of Reference (ToR), ➢ Publicize Project Briefs and collect public comments during development of ToR, ➢ Receive EIA documents submitted by a developer and verify that they are complete, ➢ Transmit copy of EIA Reports to relevant Lead Agencies, Local Governments and Communities to review and make comments, ➢ Review EIA reports and make decision on approval, organize and conduct public hearings, appoint an officer from Authority to chair public hearings, receive public comments and compile public hearing reports, ➢ Appoint the Technical Committee and its representative to the Technical Committee, ➢ Forward EIA Documents (EIA Report, Environment Monitoring Plan and Public Hearing Report) to the Technical Committee, ➢ Chair the Executive Committee which makes final decision on approval of a project, ➢ Communicate decision on whether or not a proposed project is approved, ➢ Issue to developers EIA Certificate of Authorization if their projects are approved.
	Consultant firm	➢ Implement the EIA and develop the EIA report.
	REMA	➢ Advise the Government on policies, strategies and legislation related to the management of the environment as well as the implementation of environment related international conventions, whenever deemed necessary; ➢ Conduct thorough inspection of environmental management in order to prepare a report on the status of environment in Rwanda that shall be published every two (2) years; ➢ Put in place measures designed to prevent climate change and cope with its impacts; ➢ Conduct studies, research, investigations and other relevant activities in the field of environment and publish the findings; ➢ Closely monitor and assess development programs to ensure compliance with the laws on environment during their preparation and implementation; ➢ Participate in the preparation of activities strategies designed to prevent risks and other phenomena which may cause environmental degradation and propose remedial

Actor		Action
		measures; ➢ Provide, where it is necessary, advice and technical support to individuals or entities engaged in natural resources management and environmental conservation; ➢ Prepare, publish and disseminate education materials relating to guidelines and laws relating to environmental management and protection and reduce environmental degradation risks; ➢ Monitor and supervise impact assessment, environmental audit, strategic environmental assessment and any other environmental study. REMA may authorize in writing, any other person to analyse and approve these studies. The EIA review has been delegated to Rwanda Development Board.
	MoE	➢ Participate in screening at the request of Rwanda environment Management Authority(REMA); ➢ Publish the list of EIA practitioners; ➢ At the request of REMA, review Project Briefs so as to advise on Terms of Reference; ➢ Ensure that their own projects adhere to EIA requirements; ➢ Ensure that private-sector projects in fields over which they have jurisdiction comply with EIA requirements; ➢ At the request of REMA, review EIA report; ➢ Serve on REMA's Technical Committee; ➢ Serve on REMA's Executive Committee; ➢ Provide information or advice to developers and EIA Experts during EIA process; ➢ Participate as panellist at public hearings held during the conduct of EIA; ➢ Advise developers on the requirement for EIA (where relevant) before licensing their projects; ➢ Assist in inspecting and monitoring environmental compliance by ensuring that licensing terms and conditions are met, including those specified by REMA.

Reference: ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED PROJECT OF STRENGTHENING NZOVE-NTORA PRINCIPAL WATER PIPELINE IN KIGALI CITY, REPUBLIC OF RWANDA,

B. Detailed activities

The Government of Rwanda takes environmental protection very seriously and has taken significant steps to ensure a balance between economic development and environmental protection, as well as to prevent environmental degradation. Notable among the measure taken is the ban of manufacturing and use of polythene bags. The Government has established a clear legal and institutional framework for environmental protection. **Rwanda Environmental Management**

Authority (REMA) is the principal agency responsible for the management of the environment in Rwanda and coordinates, monitors and supervises all activities in this field.

In addition, projects that affect the environment are subject to an Environmental Impact Assessment (EIA) prior to obtaining authorization for their implementation. Before commencing implementation of business projects, investors are required to cross-check whether their projects are required to undergo an EIA. Applications for EIA certificate should be addressed to **Rwanda Development Board (RDB)**.

B.1 Steps for the EIA

The chapter 3 "Environmental Impact Assessment" in Organic Law (N° 04/2005 of 08/04/2005) requires every project to assess environmental impact to obtain authorization for its implementation (Article 67), indicates the necessary items of the Environmental Impact Assessment (Article 68), and sates the authorities who examine and approve the survey (Article 69). The detailed procedures of the EIA implementation and approval are shown in the EIA guideline, which were formulated in 2006.

The District performs environmental and social considerations properly in accordance with the laws on environment impact assessment. WASAC assists this activity.

District shall employ the consultant who is licensed by RDB to conduct EIA for new water supply project and shall supervise consultant services in accordance with the consultant services agreement.

Environmental impact assessment is conducted in the following steps:

(1) The District submit the project brief to RDB

(2) RDB conduct site visit and provide TOR for EIA

(3) If the project cannot have negative impact to the environment, RDB provide clearance and allow the implementation of the project. If the project is likely to have negative impact on the environment, District is requested to conduct full environmental Impact assessment through a consultant. Full environmental impact assessment is composed of the following steps:

【Steps for the full environmental impact assessment (EIA)】

- ✓ Public involvement
- ✓ Scoping, Screening
- ✓ Impact analysis
- ✓ Mitigation measures
- ✓ Environmental statement (review and Judgement)

(4) The District submit the report to RDB

(5) RDB reviews the report and issue the certificate for implementation of the project.

B.2 EIA Approval Process

The detailed approval process of the EIA is shown in the General Guidelines and Procedure for Environmental Impact Assessment for Rwanda, 2006. Regarding the water resources management related projects, the EIA Guidelines for Water Resources Management was formulated in 2009.

The EIA procedure in Rwanda is shown in the figure below. According to the guideline, the RDB takes a responsibility for scoping, but there are some cases, in which developers conduct scoping and formulate the ToR by themselves.

RDB RWANDA DEVELOPMENT BOARD

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) CERTIFICATE

N°: ..... Date: ...../12/ 2015.

This is to certify that the Environmental Impact Statement (EIS) was received from *Project Developer* of *Address of project developer*;

Proposed project: "*Project Title*";

The objective of the project: .....;

Location: *Province, District, Sector, Cell, Plot No (where applicable)*

The EIS has been submitted in accordance with the Laws and Regulations relating to the requirements & procedures for Environmental Impact Assessment in Rwanda and has been reviewed and found to have sufficient and relevant mitigation measures to the identified likely impacts of the project on the environment.

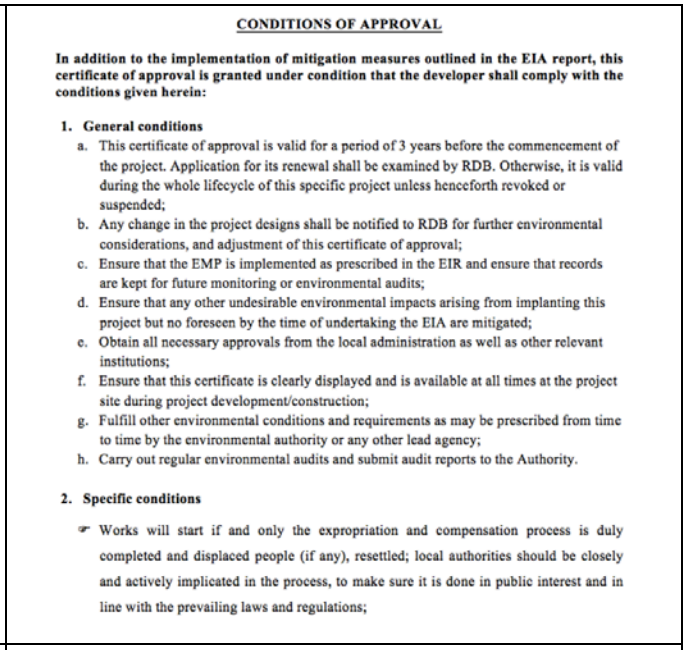
It was therefore approved subject to fulfillment of the conditions attached to this Certificate.

Francis GATARE
Chief Executive Officer

Copies to: .....

DRAFT

Sample EIA Certificate by RDB



CONDITIONS OF APPROVAL

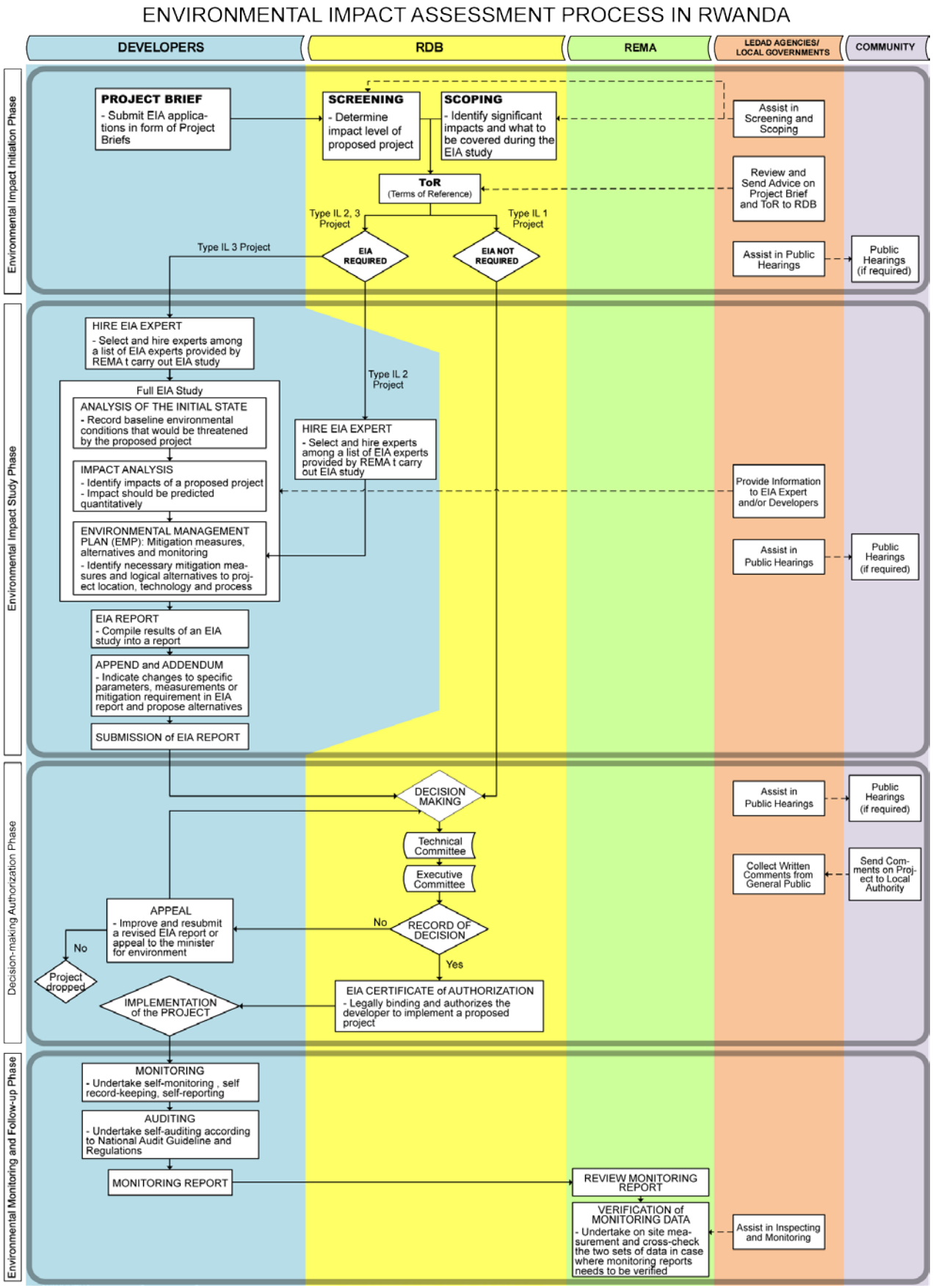
In addition to the implementation of mitigation measures outlined in the EIA report, this certificate of approval is granted under condition that the developer shall comply with the conditions given herein:

1. **General conditions**
   a. This certificate of approval is valid for a period of 3 years before the commencement of the project. Application for its renewal shall be examined by RDB. Otherwise, it is valid during the whole lifecycle of this specific project unless henceforth revoked or suspended;
   b. Any change in the project designs shall be notified to RDB for further environmental considerations, and adjustment of this certificate of approval;
   c. Ensure that the EMP is implemented as prescribed in the EIR and ensure that records are kept for future monitoring or environmental audits;
   d. Ensure that any other undesirable environmental impacts arising from implanting this project but no foreseen by the time of undertaking the EIA are mitigated;
   e. Obtain all necessary approvals from the local administration as well as other relevant institutions;
   f. Ensure that this certificate is clearly displayed and is available at all times at the project site during project development/construction;
   g. Fulfill other environmental conditions and requirements as may be prescribed from time to time by the environmental authority or any other lead agency;
   h. Carry out regular environmental audits and submit audit reports to the Authority.

2. **Specific conditions**
   ☞ Works will start if and only the expropriation and compensation process is duly completed and displaced people (if any), resettled; local authorities should be closely and actively implicated in the process, to make sure it is done in public interest and in line with the prevailing laws and regulations;

Sample conditions of approval by RDB

Source: RDB Web-page



Source: EIA Guidelines for Water Resources Management

Figure 1-5: EIA Approval Process

1.2.7 Land Expropriation

A. Responsibilities

Actor		Action
Main actor	District	Develop the plan for the land expropriation including survey items, survey method, procurement plan, budgeting and timeframe Recruit and supervise the local consultant firm for implementation of the survey for the development of the resettlement action plan. Provide the guidelines for survey Approve resettlement action plan created by the local consultant Consult with MINECOFIN the compensation fee and apply for Approximate Budget for the compensation to MINECOFIN
Supporter	WASAC	Support the District to select registered consultant and supervise consultant services in accordance with the consultant services agreement.
	MINECOFIN	Consider budget allocation to secure approximate compensation cost
	Consultant firm	➢ Implement the inventory survey including literature review, field work to collect socio-economic baseline data, public consultation with relevant stakeholders and social impact assessment including both social benefits and negative effects of the proposed project on local population and users. ➢ To create the draft resettlement action plan.

B. Detailed activities

Rwanda is undergoing rapid development, often leading to expropriation of private lands.

The expropriation law (LAW No. 18/2007 Relating to Expropriation in the Public Interest) provides procedures to protect the rights of property owners in the expropriation process.

This law determines the procedures relating to expropriation of land in the interest of the public. The law stipulates that the government has the authority to carry out expropriation. However, the project, at any level, which intends to carry out acts of expropriation in public interest, shall provide funds for inventory of assets of the person to be expropriated.

B.1 Procedures of land expropriation

The procedures of land expropriation stated in the law are shown below.

B.1.0 Prepare for application for expropriation which includes the following contents

- The description of the project proposal;
- The indication that the project is aimed at the public interest;
- The **land master plan** on which the project shall be carried out;
- The document indicating that the project does not degrade the environment;

- Proof confirming the availability of payment of the compensation;
- The explanatory note to verify that such a land or place suits the project;
- The minutes indicating that the concerned population was sensitized about the importance of the project

However, the master plan particularly indicates the following:

the plan or maps indicating the demarcations of the land where activities shall be carried out;

the nature of assets on that land;

the list indicating holders of rights registered on the land titles;

the list of authorized beneficiaries of property incorporated on that land.

B.1.1 Examine the proposal by relevant Land Commission

- The relevant Land Commission shall request, in writing, the District authorities concerned to convene a consultative meeting (within 30 days)
- The relevant Land Commission shall take a decision within a period of at least fifteen days
- The decision the relevant Land Commission takes shall be open to public at offices where the land is located and by radio and newspaper (within 30 days)
- The relevant commission shall publish and post an actual list of beneficiaries of the activities
- Value the land and assets
- Implement land expropriation

B.2 Preparation of Resettlement Action Plan (RAP)

The preparation of this RAP results of the combination of desk study, field surveys and census as well as public consultation with PAPs and stakeholders. The desk study involved review of previous study documents and analysis of the proposed project maps; and field surveys to establish the location of the proposed dam, irrigation canals and related infrastructure. The field survey consisted on conducting household census of identified PAPs; conducting baseline socio-economic survey on the project area as well as census and measurement of lands and crops which are likely to be affected. Discussions with PAPs and key stakeholders including district administration was also another tools used along the preparation of this RAP.

B.2.0 Literature review

Review on the existing baseline information and literature material was undertaken to gain a further and deeper understanding of the project.

B.2.1 Field work

The consultant deployed surveyors/enumerator's team lead by a GIS expert and used a detailed questionnaire to collect socio-economic baseline data. Furthermore, the GIS expert and his team used a designed form to record all properties including land, crops and trees in submerged, borrow pits, disposal, access roads and camps site areas. The identification of all projects affected person was also done through field survey by GIS expert and surveyors. The provisional assets valuation

was made based on similar project and prevailing market price in the area but it shall be updated upon the completion of final design studies and payment should be made prior construction work.

B.2.2 Public consultation

In compliance with national regulations and other international guidelines on environmental and social consideration and public consultation was the basis for building strong, constructive, and responsive relationships that are essential for the successful management of a project's environmental and social impacts. Stakeholder engagement involved, in varying degrees, the following elements: stakeholder analysis and planning, disclosure and dissemination of information, consultation with stakeholders and participation, grievance redress mechanism(GRM), and on-going reporting to beneficiaries or Project Affected Persons (PAPs).

From the scoping exercise, stakeholders were identified in two categories. First category made of implementing and regulatory agencies including government institutions, local administration and key experts in the area of irrigation and involuntary resettlement. Second category is made by potential project beneficiaries and/or project affected parsons. During the Public consultation, the RAP expert applied different participatory methods, namely; interviews, one-to-one discussions, focused group discussions (FGD) and official meetings with stakeholders. Stakeholders were informed on the proposed project and anticipated resettlement implications, existing legal framework and provisions in relation to involuntary resettlement. Though the consultant guided discussions, most of the time was given to participants to provides, views, and comments and ask questions. For each meeting, key issues discussed were recorded and included in the RAP report together participants list.

B.2.3 Social impact assessment

The proposed project has positive social and economic benefit to the user's communities and individuals but it may also have negative impacts including loss of land, crops, trees and means of livelihood. Therefore, the consultant assessed both social benefits and negative effects of the proposed project on local population and users. The social impact assessment considered permanent changes in land use and loss of property and other assets caused by occupation of land for the irrigation stricture, temporary changes in land uses caused by short term occupation of land for construction, and changes in accessibility to existing land uses resulting from the temporary or permanent presence of the project.

B.2.4 Assets valuation methodology

As provided by the valuation law, the company certified valuer used the methodology whereby the proposed price for the real property is close or equal to replacement value. The valuar compared prices by referring to the prices recently assigned to a real property that is similar or comparable to the real property subject to valuation. Income loss were estimated based on investment cost, average production on one hectare, unit cost per 1kg for the last season times number of missed season. It is worth to note that the valuation done is just provisional and will be updated upon the completion of final design studies.

B.3 Institutional arrangement for RAP preparation and implementation

There is no single institution governing resettlement activities and social impact are assessed and managed through EIA. The institutional framework for environmental and social management is currently enshrined in the organic law determining the modalities of protection, conservation and promotion of the environment in Rwanda, published in the Official gazette nº 9 of the 1st May 2005, particularly in its chapter III relating to the establishment of the institutions, the 2013 land law and 2015 expropriation law. The responsibility of preparation and implementation is shared by different institution based on the nature of the project and the project proponent.

For a rural water supply project, in general, the main actors responsible for development of policy, framing regulations, developing projects, monitoring and approval of issues related to resettlement and compensation are:

- Ministry of Forest and Lands(MINILAF);
- Ministry of Infrastructure(MININFRA);
- Water and Sanitation Corporation Limited (WASAC Ltd);
- Rwanda Land Management and Use Authority (RLMUA);
- Rwanda Environment Management Authority (REMA);
- Local administration;
- Sectors and Cells in the project areas.

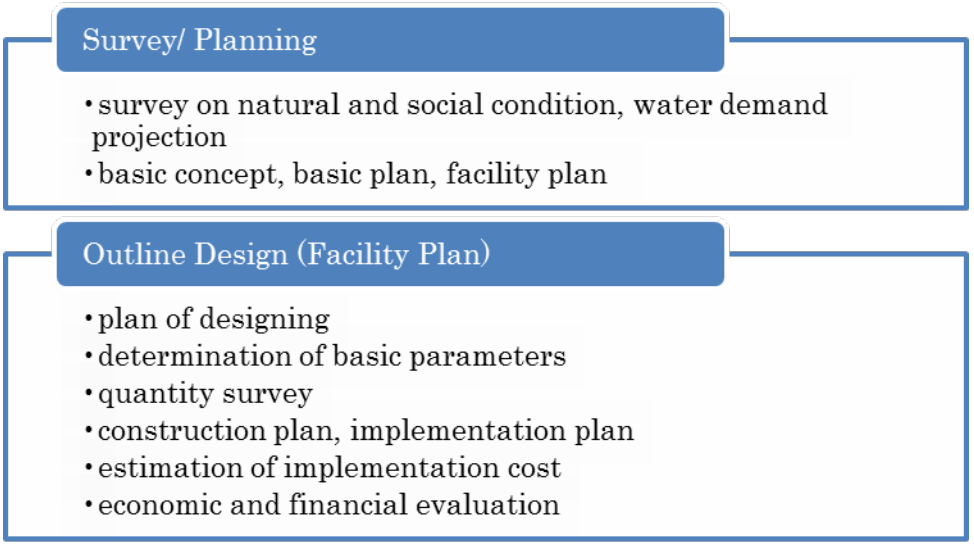
Reference:

1. FINAL REPORT, RESETTLEMENT ACTION PLAN FOR PROJECT OF STRENGTHENING NZOVE-NTORA PRINCIPAL WATER PIPELINE IN KIGALI CITY, REPUBLIC OF RWANDA, August, 2018, WASAC/JICA/ BESST LTD

1.3 Design

1.3.1 Outline design

The District decides basic design-related matters and draws an outline design in 1.2 in the procedures below based on the basic plan and facility plan of the project formulated. A standard design flow of the outline design is provided below. WASAC assists this activity.



1.3.1.1 Design plan

A. Responsibilities

Actor		Action
Main actor	District	Make a design plan
Supporter	WASAC RWSS	Support to make a design plan

B. Detailed activities

The District makes preparations for design (deliberation of requirements, design-related materials of similar structures, design policy, procedures, design method, schedule, and design-related matters to be considered) and conducts preliminary review. WASAC assists this activity.

1.3.1.2 Determination of basic parameters

A. Responsibilities

Actor		Action
Main actor	District	Determine basic design parameters
Supporter	WASAC RWSS	Support to determine basic design parameters

B. Detailed activities

The District determines main design requirements and decides such basic issues as main dimensions, cross-section and facility allocation of the project facility in the above basic plan. It makes drawings based on the site condition based on the basic matters. WASAC assists this activity.

General design drawings of the outline design are i) locational drawing, ii) overall project drawing, iii) facility plan drawing, iv) plane longitudinal and cross-sectional drawings, v) general drawings, and vi) other drawings.

1.3.1.3 Calculation of basic quantity

A. Responsibilities

Actor		Action
Main actor	District	Calculate a basic quantity
Supporter	WASAC RWSS	Support to calculate a basic quantity

B. Detailed activities

The District estimates the approximate quantities based on the design drawings. The estimation results are compiled into a quantity estimation sheet. WASAC assists this activity.

1.3.2 Construction plan

A. Responsibilities

Actor		Action
Main actor	District	Make a construction plan
Supporter	WASAC RWSS	Support to make a construction plan

B. Detailed activities

The District selects construction methods and procedures as below and formulates a construction plan. WASAC assists this activity.

B.1 Determination of division of construction stages and stage construction

In consideration of the scale of project, construction site conditions, construction period and project effects, division into stages and stage construction are determined when deemed necessary to reflect them in the construction plan.

B.2 Construction method

Feasible and proper construction methods are selected in consideration of the situation of the target area, ordering form and construction conditions.

Construction conditions that include the purpose and features, situation of the target area, natural conditions, and contents of construction are fully understood for quantity survey based on proper construction methods. Considerations are desired to be given to improvement of local construction techniques and technical transfer in deciding the construction method in view of capacity and technical standards of local engineers and contractors and available materials and equipment. Necessary makeshift facilities, temporarily necessary land and construction orders are determined to make a relevant plan.

Temporary works are planned in consideration of the consistency with the scale and contents of construction and construction plan and economic efficiency based on the understanding of various conditions including terrain, geology, climate, hydrology and other natural conditions, surrounding environment, and related laws and regulations.

1.3.3 Procurement plan

A. Responsibilities

Actor		Action
Main actor	District	Make a procurement plan
Supporter	WASAC RWSS	➢ Support to make a procurement plan ➢ Support to make a procurement plan for management

B. Detailed activities

The District formulates labour and material and equipment procurement plans in the procedures below with understanding of the situation of the target area. WASAC assists this activity.

B.1 Labour and material and equipment procurement plans

Labour is procured locally as a principle. However, when it is deemed difficult to procure human resource locally due to local characteristics and the shortage in the target area, procurement of labour (special skilled workers) from neighbouring areas is considered. Although construction materials and equipment are procured locally or in international competitive biddings, procurement from third countries is considered as needed in comprehensive consideration of maintenance after installation, marketability and economic efficiency, when it is deemed difficult to procure them locally or it is substantially financially disadvantageous.

B.2 Transportation plan

When the transportation cost of materials and equipment to be used for construction is deemed to affect the rough project cost significantly in consideration of the features and locational conditions of the project and suppliers, transportation routes and methods are studied comprehensively from its economic and safety perspectives and it is reflected in quantity survey if needed.

1.3.4 Plan of design and construction supervision

A. Responsibilities

Actor		Action
Main actor	District	Make a plan of design and supervision
Supporter	WASAC RWSS	Support to make a plan of design and supervision

B. Detailed activities

The District comprehensively determines human resources necessary for facility design and construction supervision and design and construction supervision structure based on the contents of design and construction and schedule plan. WASAC assists this activity.

When refined estimation of the design and construction supervision cost is required, the organization and allocation of design supervisor (consultant), communication system of relevant government agencies, contractors and other parties involved in the construction, allocation of materials and equipment, vehicles and offices necessary for construction supervision, various procedures of construction and quality management, timing and supervision methods are established properly.

The human resources plan is formulated properly, containing the technical level and allocation system of design and construction personnel necessary for their supervision.

1.3.5 Plan of construction schedule

A. Responsibilities

Actor		Action
Main actor	District	Make a construction schedule
Supporter	WASAC RWSS	Support to make a construction schedule

B. Detailed activities

The District assumes the project implementation period and formulates a construction schedule plan consistently with it. WASAC assists this activity.

When there are multiple construction sites in one project, the construction order of structures affects the schedule plan and thus each site conditions need to be reflected. When detailed study is requested, an outline construction schedule table is formulated with attention to following matters in consideration of past similar project:

【Points to be considered to formulate the construction schedule】

- Division of construction period into stages
- Timing of manufacturing and procurement of material and equipment
- Work item, construction order and method, installation and removal of temporary facility, construction and removal of detour, etc.
- Scale and quantity of construction
- Traffic regulations and restrictions of neighbouring environment
- Timing of seasons (annual number of days of rain, etc.), and holidays

The construction period of each construction item and stage are shown in the bar chart in the construction schedule table in general. Attention is paid to consistency with the table in estimating the rough project cost.

1.3.6 Plan of operation and maintenance

A. Responsibilities

Actor		Action
Main actor	District	Make an operation and maintenance plan
Supporter	WASAC RWSS	Support to make an operation and maintenance plan

B. Detailed activities

The District determines a general management structure of facility operation and maintenance. It pays attention to the maintenance organization and staff, inspection and repair plan, and charge collection plan. WASAC assists this activity.

1.3.7 Planning of capacity building

A. Responsibilities

Actor		Action
Main actor	District	Make a capacity building plan
Supporter	WASAC RWSS	➢ Support to make a capacity building plan concerning community mobilization ➢ Support to make a capacity building plan concerning delegated PPP contract ➢ Support to make a capacity building plan concerning operation and maintenance of water supply facilities ➢ Support to make a capacity building plan concerning financial aspect and resource mobilization ➢ Support the District to ensure capacity development of District staff and POs by mobilizing resource and providing training

B. Detailed activities

The District formulates District staff and private operator's (PO) capacity enhancement plan, assuming that the constructed facility operation and maintenance is carried out by private operator under a PPP contract. WASAC assists this activity.

B.1 District

Make a capacity building plan

B.2 WASAC RWSS

Support to make a capacity building plan concerning community mobilization

Support the District to ensure capacity development of District staff and POs by mobilizing resource and providing training

Support to make a capacity building plan concerning delegated PPP contract

Support to make a capacity building plan concerning operation and maintenance of water supply facilities

Support to make a capacity building plan concerning financial aspect and resource mobilization

1.4 Cost estimation

The District estimates the project cost in the below procedures. WASAC assists this activity.

1.4.1 Structure of implementation cost

A. Responsibilities

Actor		Action
Main actor	District	Set a structure of implementation cost
Supporter	WASAC RWSS	Support to set a structure of implementation cost

B. Detailed activities

Basic items necessary for the estimation are as follows:

B.1 Contents of target construction

Contents of construction, construction plan (location, scope, scale of facility, duration, construction method and makeshift method), ancillary works, related works, and responsibilities of residents

B.2 Past similar construction works

Contents of construction, construction plan (location, scope, scale of facility, duration, construction method and makeshift method), amount of contract, contract form, etc.

B.3 Neighbouring environment

- Condition around the site, land use, existing facilities and structures, and buried objects
- Access to the construction site and detour during construction

B.4 Terrain, geology, climate, etc.

- Site terrain: contour map and enlarged drawing of the site
- Ground condition: columnar section, geological property and soil bearing capacity
- Temperature and humidity: monthly average, high and low
- Precipitation: seasonal fluctuation, daily maximum, hourly maximum, annual precipitation, and annual number of days of rain
- Velocity and direction of wind: monthly maximum and average, etc.
- Scope of damage caused by floods, earthquakes and droughts in the past, etc.

B.5 Project implementation agency

Organization, budget and human resources, scope of responsibility, technical capacity, operation and maintenance structure

B.6 Procurement of materials and equipment

Market price of construction materials, price and lease fees of construction machinery, etc.

B.7 Land

Conditions to secure land for facility construction and accommodations, etc. (residents' responsibility, leased land, etc.), compensation for land, and necessary site area

B.8 Labor and local contractors

Supply base of workforce, skill level of contractor workers, social insurance, working hours, holidays, capacity and reliability of skilled workers, etc.

B.9 Laws and regulations and customs

Labor and employment laws and regulations, taxation law, construction laws and regulations and technical standards and specifications, related customs, etc.

B.10 Others

Necessary items due to the characteristics of the target project

1.4.2 Estimation of implementation cost

The District estimates the project cost in the below procedures. WASAC assists this activity.

1.4.2.1 Method of cost estimation

A. Responsibilities

Actor		Action
Main actor	District	Choose a cost estimation method
Supporter	WASAC RWSS	Support to choose a cost estimation method.

B. Detailed activities

The rough project cost can be estimated in four ways: i) rough estimation, ii) unit rate/pay item, iii) combined unit rate (quote collection), and iv) sum of unit rate. The rough estimation is used for the project cost as it is deemed most appropriate.

1.4.2.2 Management cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a management cost
Supporter	WASAC RWSS	Support to estimate a management cost

B. Detailed activities

The project management cost is the expenses necessary for project execution management of District or government implementation agency. It includes the cost necessary for crosschecking and approval of detailed design documents and construction supervision (site observation, attendance at various inspections, approval of design change, etc., administrative management, meetings, etc.) as the owner. It is sometimes decided in terms of the ratio to the construction cost.

1.4.2.3 Preparation cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a preparation cost
Supporter	WASAC RWSS	Support to estimate a preparation cost

B. Detailed activities

District shall estimate the expense for land acquisition, compensation expense, removal expense, and expense for environment impact assessment.

1.4.2.4 Construction cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a construction cost
Supporter	WASAC RWSS	Support to estimate a construction cost

B. Detailed activities

B.1 Direct construction cost

The direct construction cost of main and other construction works are calculated in the method in 1.4.2.1.

B.2 Indirect construction cost

The indirect construction cost consists of temporally works cost and site management cost. They shall be included in the unit price of the bill of quantity of direct construction cost.

B.3 General administration cost

It is calculated based on the general administration cost ratio. They shall be included in the unit price of the bill of quantity of direct construction cost.

1.4.2.5 Procurement cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a procurement cost
Supporter	WASAC RWSS	Support to estimate a procurement cost.

B. Detailed activities

The cost for equipment procurement is calculated referring to Rwanda Public Procurement Authority (RPPA) price of all equipment and materials.

1.4.2.6 Design and supervision cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a design and supervision cost
Supporter	WASAC RWSS	Support to estimate a design and supervision cost

B. Detailed activities

The detailed design and supervision cost is the cost for technical services (detailed design and construction supervision) of design supervisor (consultant) in the project implementation stage. The detailed design cost usually includes topographical survey, geological survey, soil survey and test and other survey of natural conditions as well as tender document preparation. Supplementary natural condition survey and social survey are also including in some cases. Tender and tender evaluation and other related works are also included in the detailed design.

The detailed design and supervision cost of the target project in the feasibility study is often obtained in terms of ratio to the construction cost.

1.4.2.7 Provisional cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate a provisional cost
Supporter	WASAC RWSS	Support to estimate a provisional cost

B. Detailed activities

The provisional cost of the target project in the feasibility study include the unforeseen cost and it is often obtained in terms of ratio to the construction cost.

1.4.2.8 Operation and maintenance cost

A. Responsibilities

Actor		Action
Main actor	District	Estimate operation and maintenance cost
Supporter	WASAC RWSS	➢ Support to estimate a community sensitization cost ➢ Support to estimate an administration cost ➢ Support to estimate a facility operation and maintenance cost

B. Detailed activities

The operation and maintenance cost is also an important element of examining the relevance of project implementation. It is necessary to confirm that the operation and maintenance cost is within the scope of water charges provide by RURA.

1.5 Project appraisal

A. Responsibilities

Actor		Action
Main actor	District	Develop the project appraisal report
Supporter	WASAC RWSS	Support the District to appraise the project's viability in terms of financial, economic, social, technical, institutions, … that will help improving the project design

B. Detailed activities

B.1 Introduction

Project appraisal which aims to meet following intentions represents a crucial step in the project cycle

- The proposed project is reviewed from a range of perspectives to determine whether to proceed to writing a proposal and seeking funding.
- Project appraisal also represents an opportunity to improve project design prior to implementation.

Project appraisal examines the information gathered during the course of the preceding steps in consideration of the following criteria.

Table 1-4: Project Appraisal Criteria

Aspect	Points to be reviewed
Financial	➢ Can the project be financed? ➢ Will there be sufficient funds to cover the expenditure requirements during the life of the project?
Economic	➢ Will the nation and society at large be better off as a result of the project? ➢ Will the project benefits be greater than the project costs over the life of the investment?
Technical	➢ Has due attention been paid to technical factors affecting the project design? ➢ Given the human and material resources identified, can the project activities be undertaken and outputs achieved within the time available and to the required standards?
Social and Gender	➢ What will be the effect of the project on different groups, at individual, household and community levels? ➢ How will the project impact on women and men? ➢ How will they participate in various stages of the project cycle? ➢ Will the social benefits of the project be greater than the social costs over the life of the investment when account is taken of time?
Institutional:	➢ Are the supporting institutions in place? ➢ Can they operate effectively within the existing legislative and policy environment? ➢ Has the project identified opportunities for institutional strengthening and capacity building?
Environmental	➢ Will the project have any adverse effects on the environment? ➢ Have remedial measures been included in the project design?
Political	➢ Will the project be compatible with government policy, at both central and regional levels?
Sustainability and Risk	➢ Will the project be exposed to any undue risks? ➢ Will the project benefits be sustainable beyond the life of the project?

Source: Public investment guideline 2014, RDB

B.2 Finical and Economic Assessment

B.2.1 Economic Assessment

B.2.1.1Introduction

An economic appraisal assesses the project from the point of view of its impact on the economy as a whole.

Economic appraisal is a systematic means of analysing all the costs and benefits of various options to achieve a particular service objective. Economic appraisal is mandatory as it assists selection of those projects or programs which maximise benefits to the community relative to costs, or which are the most cost effective.

In essence, economic appraisal shows:

- Whether the benefits of a proposed project are likely to exceed its costs;
- Which among a range of options to achieve an objective has the highest net benefit; or
- Which option is the most cost effective, where benefits are equivalent.

Economic appraisals assist decision making among projects competing for limited Government funds. They are a mechanism for assessing the best possible value for the community from particular Government expenditure.

The results of an economic appraisal are not the only factors taken into account when making a decision, but they provide important information on the effects of each possible decision. The Guidelines establish the framework for agencies to undertake project analysis on a consistent basis.

Source: NSW Government Guidelines for Economic Appraisal

B.2.1.2Economic Assessment Approaches

The main types of economic appraisal are introduced below.

Table 1-5: Main type of the Economic Assessment Approaches

Methodology	Description
Cost Benefit Analysis (CBA)	CBA is the most comprehensive of the economic appraisal techniques. It quantifies in money terms all the major costs and benefits. CBA can be applied to most, if not all, public agencies that cover costs with revenue and to agencies which do not fully cover costs by revenue but which produce traded outputs. The technique is also applicable in varying degrees to social infrastructure such as schools, hospitals and public housing. The key strength of CBA is that it considers on a **consistent basis the benefits and costs of alternatives**. Thus the outcomes for a range of options are translated into comparable terms which facilitate evaluation and decision making. Against this CBA does not by itself provide direct consideration of the distribution of benefits and costs and can require considerable data for satisfactory implementation. Further, the concentration on valuation of impacts can sometimes lead to the overlooking of impacts which cannot be valued quantitatively, although CBA does allow for the incorporation of such impacts. Overall, **CBA is most easily applied to public sector agencies producing outputs that generate revenue** (for example water supply and electricity) or else where the major benefits can be quantified fairly readily (for example roads).
Cost Effectiveness Analysis (CEA)	Where the output of a **project is not readily measurable in monetary terms** (using either actual or proxy values) such as in certain areas of health, education or social welfare, it may not be possible to apply CBA. An alternative approach is available, that of Cost Effectiveness Analysis (CEA). This type of appraisal compares the costs of different initial project options with the same or similar outputs. CEA is applicable to a wide range of public sector agencies with strong community or social welfare objectives. For example, in the health sector, CEA could be used to assess the relative merits of alternative treatments for severe kidney problems in terms of relative cost

Methodology	Description
	for given increases in life expectancy. Of course the quality of this additional life expectancy would need to be considered in qualitative terms. It should be noted that CEA cannot be used directly to compare projects with different objectives. Nevertheless, the fact that the costs and benefits are all identified will allow more informed subjective decisions to be made. It should also be noted that while some benefits may be difficult to assess in monetary terms, the technique still requires the valuation of as many benefits of the project as possible. Careful identification and analysis of all the benefits and costs remains a key element of CEA. The temptation to list the benefit of a project as "improved service provision" (or something similar) should be resisted. In all cases some better indicator of the benefits will be available.

Source: NSW Government Guidelines for Economic Appraisal

B.2.1.3Cost Benefit Analysis (CBA) Methodology

（1）Introduction

Cost Benefit Analysis (CBA) is an appraisal method that provides analysis of social gains and losses that could arise from a project.

The aim of CBA is to put a monetary value on the benefits expected from the project and compare these to the costs which are expected to be incurred. If the benefit exceeds the cost, there is economic justification for the project to go ahead.

The cost benefit analysis process estimates the benefits and costs of an investment for two reasons:

- To determine if the project is viable; if it is a good investment
- To compare one project investment with other competing projects, to determine which is more feasible.

It allows decision makers to appraise projects in a consistent and comparable manner.

（2）Steps in CBA

A CBA is used to evaluate the total anticipated cost of a project compared to the total expected benefits in order to determine whether the proposed implementation is worthwhile for a company or project team.

Basically, a CBA has following three parts.

- First, all potential costs that will be incurred by implementing a proposed action must be identified.
- Second, one must record all anticipated benefits associated with the potential action.
- Third, subtract all identified costs from the expected benefits to determine whether the positive benefits outweigh the negative costs.

1）Identification of Costs

The first step is to identify and quantify all costs associated with a proposed action. In order to successfully identify all potential costs of a project, one must follow the subsequent steps.

i. Make a list of all monetary costs that will be incurred upon implementation and throughout the life of the project. These include start-up fees, licenses, production materials, payroll expenses, user acceptance processes, training, and travel expenses, among others.

ii. Make a list of all non-monetary costs that are likely to be absorbed. These include time, lost production on other tasks, imperfect processes, potential risks, market saturation or penetration uncertainties, and influences on one's reputation.

iii. Assign monetary values to the costs identified in steps one and two. To ensure equality across time, monetary values are stated in present value terms. If realistic cost values cannot be readily evaluated, consult with market trends and industry surveys for comparable implementation costs in similar businesses.

iv. Add all anticipated costs together to get a total costs value.

2）Identification of Benefits

The next step is to identify and quantify all benefits anticipated as a result of successful implementation of the proposed action. To do so, complete the following steps.

Make a list of all monetary benefits that will be experienced upon implementation and thereafter. These benefits include direct profits from products and/or services, increased contributions from investors, decreased production costs due to improved and standardized processes, and increased production capabilities, among others.

Make a list of all non-monetary benefits that one is likely to experience. These include decreased production times, increased reliability and durability, greater customer base, greater market saturation, greater customer satisfaction, and improved company or project reputation, among others.

Assign monetary values to the benefits identified in steps one and two. Be sure to state these monetary values in present value terms as well.

Add all anticipated benefits together to get a total benefits value.

3）Evaluate Costs and Benefits

The final step when creating a cost benefit analysis is to weigh the costs and benefits to determine if the proposed action is worthwhile. To properly do so, follow the subsequent steps.

i. Compare the total costs and total benefits values. If the total costs are much greater than the total benefits, one can conclude that the project is not a worthwhile investment of company time and resources.

ii. If total costs and total benefits are roughly equal to one another, it is best to re-evaluate the costs and benefits identified and revise the cost benefit analysis. Often times, items are missed or incorrectly quantified, which are common errors in a cost benefit analysis.

iii. If the total benefits are much greater than the total costs, one can conclude that the proposed action is potentially a worthwhile investment and should be further evaluated as a realistic opportunity.

（3）Decision criteria in CBA

The decision criteria provide an indication of the economic performance of the proposal.

1）Basic principle

i. Discounting

Costs and benefits of projects analysed using CBA rarely occur within a short time period. It is more often the case that at least some of the outcomes of a project occur over time. However, as the value of money changes over time – due to the effects of inflation etc. – the value of a cost or benefit in the future may not be representative of the actual worth of that cost or benefit in present terms. For this reason, it is necessary to discount the future values of costs and benefits occurring over time to a common metric – present values. This also allows researchers to calculate the net present value of a project.

In some cases, the costs or benefits associated with a project occur over multiple years. In this case discounting the future values of any such costs and benefits becomes a particularly important part of any CBA if it is to provide an accurate net present value of a project. The formula used to calculate the present value of future costs or benefits in monetary terms over multiple years is:

$$PV = \frac{F}{(1+r)^n} + \frac{F}{(1+r)^n} + \ldots + \frac{F}{(1+r)^{n-1}} + \frac{F}{(1+r)^n}$$

or

$$PV = \sum \frac{F}{(1+r)^n}$$

Where,

PV = present value

F = future value of cost or benefit in monetary terms

r = the rate of discount

n = no. of periods under consideration (e.g. years)

Example: Discounting

Benefit flow of $1000 in Year 1 followed by benefits of $500 per annum until Year 5.

Table 1-6: Discounting benefits

Year	1	2	3	4	5	Total
Benefit ($)	1000	500	500	500	500	3000
Discounted benefit (present value $)	943	445	419	396	373	2577

Example: Discounting benefits

Assuming a 6% discount rate, the discounted total benefit is equal to:

$$Total\ Benefit = \frac{1000}{1.06^1} + \frac{500}{1.06^2} + \ldots + \frac{500}{1.06^5}$$

$$Total\ Benefit = 2577.88$$

The results shown by Table 1-4 show that the benefit of $500 earned in Year 2 is higher than the $500 earned in Year 5 when compared to the present value. $500 in Year 2 is equivalent to $445 in present value while benefits of $500 in Year 5 are only worth $373 in present value.

Source: Cost-benefit Analysis manual, First Edition, February 2011, Transport and Main Roads of Queensland government

ii. Costs and Benefits

When conducting a CBA, the most important element of data gathering conducted by the researcher is in collecting data on costs and benefits associated with a project or a set of project alternatives.

- **Type of costs**

Various costs are incurred in preparation of, during, and after a project. The exact natures of the costs incurred in a project are dependent on the specific project being appraised. However, there are a number of common costs.

Table 1-7: Type of Common Costs

• Design/planning	• Reductions in aesthetic of an area or locale
• Purchase of land/site	• Training
• Demolition	• Wages
• Site preparation	• Maintenance
• Construction	• Administration/transaction costs
• Externalities (e.g. increased noise pollution during construction)	

Source: CBA Builder (http://www.cbabuilder.co.uk/CBA2.html)

- **Type of benefits**

Various benefits are realised from a project. Obviously these benefits, as with costs, are dependent on the type of project being appraised e.g. a road development project would likely have benefits including time-savings and reduced pollution as a result of reductions in congestion.

Table 1-8: Type of Common Benefits

• Live savings and/or reduced injury	• Positive (possible multiplier) effect on local/wider economy.
• Reductions in pollution	• Time-savings
• Job creation	• Aesthetic improvements
	• Revenues (from a toll on a road for example)

Source: CBA Builder (http://www.cbabuilder.co.uk/CBA2.html)

2）Types of CBA

There are different types or methods of analysis to determine the economic efficiency of a project. The types that will be covered in this section are

- Benefit Cost Ration (BCR or B/C)
- Net Present Value (NPV)
- Internal Rate of Return (IRR)

i. Benefit Cost Ration (BCR or B/C)

This is the ratio of project benefits versus project costs including capital and O&M costs. It involves summing the total discounted benefits for a project over its entire duration/life span and dividing it over the total discounted costs of the project.

$$BCR = \frac{\sum PV(B)}{\sum (PV(C)} \quad \text{or} \quad BCR = \frac{\sum \text{present value of total future benefits}}{\sum \text{present value of total future costs}}$$

Where:

BCR = benefit cost ratio

PV (B) = present value of the benefits

PV (C) = present value of the costs d = the discount rate

- **Understanding the results of BCR**

Table 1-9: Interpretation of the results of BCR

BCR<1.0	BCR=1.0	BCR>1.0
In economic terms, the costs exceed the benefits. Solely on this criterion, the project should not proceed.	Costs equal the benefits, which means the project should be allowed to proceed, but with little viability.	The benefits exceed the costs, and the project should be allowed to proceed.

Source: SMART HOSPITALS TOOLKIT, Pan American Health Organization & World Health Organization

- **Challenges of using BCR**

The BCR hides the magnitude of the numerator (net benefits) and the denominator (net costs) in a ratio and this may lead to incorrect decisions. Worthy candidate projects may be eliminated from the list simply because they have lower BCR relative to their competitors when the eliminated projects may have significantly high NPVs compared to the selected project. Other weaknesses of BCR include: sensitivity to how costs are defined; and wrong ordering of mutually exclusive projects, especially when projects are of different scales.

Example: BCR

If the sum of the discounted capital and operating costs is assumed to be $50 million over the evaluation period and the discounted benefits are assumed to be $70 million, then the BCR is given as follows:

$BCR = \$70m/\$50m$

$BCR = 1.4$

This example indicates that the present value of the benefits exceeds the present value of the costs required to build a project by 1.4 times

Source: SMART HOSPITALS TOOLKIT, Pan American Health Organization & World Health Organization

ii. Net Present Value (NPV)

NPV measures the actual or real net economic benefit of a project. While the BCR provides a ratio of benefits to costs, NPV measures the absolute net economic gain. NPV is calculated by subtracting the discounted costs from the discounted benefits. All projects with a positive NPV provide a net economic benefit. NPV should be used when comparing mutually exclusive project options. The option with the highest NPV is the preferred option.

$$NPV = \sum PV(B) - \sum PV(C) \quad \text{or}$$

NPV = ∑ present value of total future benefits - ∑ present value of total future costs

Where:

NPV = net present value

PV (B) = present value of the benefits

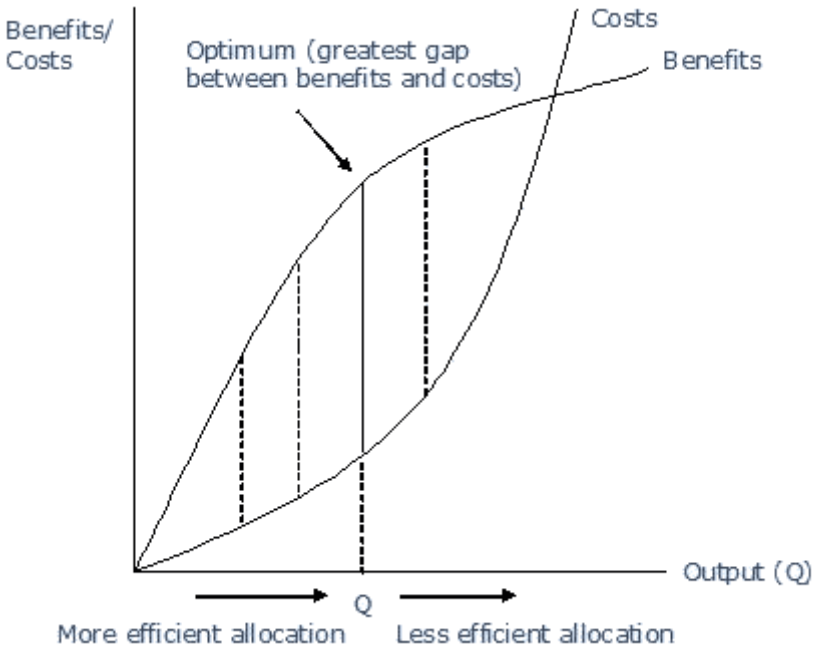
PV (C) = present value of the costs

- **Understanding the results of NPV**

Table 1-10: Interpretation of the results of NPV

NPV = Negative	NPV = 0	NPV = Positive
This happens when present value streams of costs of the project (incremental investment of the projects) exceeds the benefit of the project. In this case, it is expected that investment costs will not be recovered, and there will be a decline in net real wealth to the investor or the public sector in our context. **Projects with negative NPV should not be implemented.**	A project with zero NPV it means that there is neither a gain nor loss to the society. In this case, the incremental investment of the project will only recover the cost. **Projects with zero NPV should not be implemented.**	This happens when present value streams of costs of the project (incremental investment of the projects) are lower than the benefits from the project. **Only projects with positive NPV should be implemented.** The project with the highest positive NPV is the one which maximizes the net worth of the society.

Source: Public Investment Management – Operational Manual, President's Office, Planning Commission Dares Salaam, February, 2015



Source: CBA Builder (http://www.cbabuilder.co.uk/Results1.html)

Figure 1-6: Relation among the Benefits, Costs and Output

Example: NPV

If the discounted total benefits are assumed to be \$70 million and the discounted total costs are assumed to be \$50 million, the NPV is:

$NPV = \$70m - \$50m$

$NPV = \$20m$

This result indicates that there has been a welfare improvement of \$20 million in net terms as a result of this project.

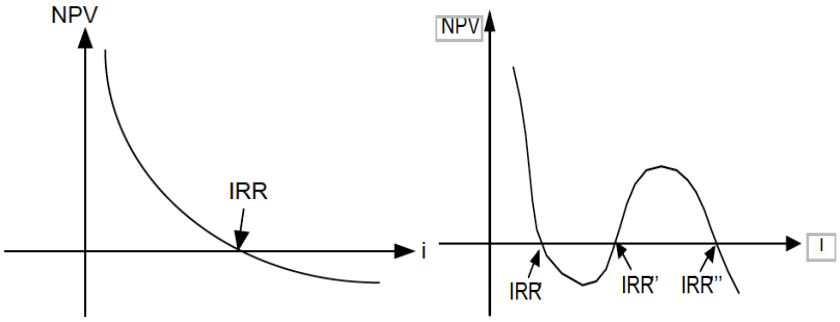
Source: Cost-benefit Analysis manual, First Edition, February 2011, Transport and Main Roads of Queensland government

iii. Internal Rate of Return (IRR)

Internal Rate of Return (IRR) is a discount rate at which the sum of all future cash flows is equal to the initial investment, such that an investment breaks even. IRR is a discount rate at which NPV equals to zero. In other words, IRR shows that investors can recover their invested capital and earn a rate of return equal to the discount rate.

The IRR is a solution to a complex polynomial equation. It is the value where the NPV curve crosses the horizontal axis. Therefore, there is no guarantee that NPV curve will ever cross (or will cross only once) the horizontal axis. Multiple IRR occur when the net benefits (benefits minus costs) alternates in signs from year to year. When this happens, it becomes difficult to use IRR as a decision criterion.

- **IRR is a Solution to Polynomial Equation**



Source: Public Investment Management – Operational Manual, President's Office, Planning Commission Dares Salaam, February, 2015

Figure 1-7: Relationship between NPV and IRR

- **Understanding the results of IRR**

Table 1-11: Interpretation of the results of IRR

When it use	IRR > Social discount rate	IRR < Social discount rate
It can be used to compare projects. For example, a project with an IRR of 6% is equivalent to another project of IRR 6%, at least in economic	If the IRR value, that is the value at which NPV is equal to zero, is higher than the social discount rate (i.e. the interest rate used in the CBA), then	If, the IRR is lower than the social discount rate, this suggests the project should not go ahead.

terms. This is particularly useful for projects when comparing with a 'do nothing' approach.	this provides economic justification for the project to go ahead	

Source: CBA Builder (http://www.cbabuilder.co.uk/Discount3.html)

- **Challenges of using IRR**

There are a number of limitations in the use of the IRR. First, it may be the case that there is more than one occasion when the NPV is zero, that is at more than one discount rate or IRR. In addition, the IRR should not be used to select from a range of projects which differ substantially in size. Remember the IRR is a percentage value not a monetary value.

3) Sensitivity Analyses

The calculated benefits and costs of a project may vary depending on differing assumptions about the input data and methodology applied in the cost benefit analysis. The range of potential outcomes for differing inputs can be gauged using a sensitivity analysis.

Sensitivity and risk analyses are particularly concerned with factors, and combinations of factors, that may lead to unfavourable consequences. These factors would normally have been identified in the project (logical) framework as "project risks" or "project assumptions". Sensitivity analysis tries to estimate the effect on achieving project objectives if certain assumptions do not, or only partly, materialize. Risk analysis assesses the actual risk that certain assumptions do not, or partly, occur.

Table 1-12: Variables in Water Supply Projects

Variables in Water Supply Projects to be considered in Sensitivity Analysis		
Possible Key Variables	Quantifiable Variables	Underlying Variables
Water Demand	Population growth Achieved coverage Household Consumption Non Domestic consumption Unaccounted for Water	Price Elasticity Income Elasticity
Investment Costs	Water Demand Construction Period Real Prices Conversion factors	-
O&M Costs	Personnel costs (wages / No. of staff, etc.) Cost of Energy Cost of Maintenance Efficiency of Utility	-
Financial Revenues	Quantity of water consumed Service level Income from connection fees	Water tariffs
Economic Benefit	Water Demand Resource Costs Savings	Willingness to Pay

Cost Recovery	Water Tariffs Subsidies	-

Source: Refer to "Guide to Cost-Benefit Analysis of Investment Projects, European Union, 2015"

Example: Sensitivity Analyses

Table 1-13: Example of the Sensitive Analyses

Item	Change	NPV	IRR (%)	SI (NPV)	SV (NPV)
Base **Case**	-	126	13.7	-	-
Case A: Investment Costs	+20%	-211	9.6	13.3	7.5%
Case B: Benefits	-20%	-294	7.8	16.6	6%
Case C: O&M Costs	+20%	68	12.9	2.3	43.4%
Case D: Construction delays	One year	-99	10.8		

SI = Sensitivity indicator, SV = Switching value

In case of an increase in investment costs of 20 per cent (Case A), the sensitivity indicator is 13.3. This means that the change of 20 per cent in the variable (investment cost) results in a change of (13.3 x 20 per cent) = 266 per cent in the ENPV. It follows that the higher the SI, the more sensitive NPV is to change in the concerned variable.

In the same example, the switching value is 7.5 per cent which is the reciprocal value of the SI x 100. This means that a change (increase) of 7.5 per cent in the key variable (investment cost) will cause the ENPV to become zero. The lower the SV, the more sensitive NPV is to change in the variable concerned and the higher the risk with the project.

At this point the results of the sensitivity analysis should be reviewed. It should be asked:

(I) which are the variables with high sensitivity indicators; and

(II) how likely are the (adverse) changes (as indicated by the switching value) in the values of the variables that would alter the project decision?

Source: PROJECT RISK EVALUATION METHODS - SENSITIVITY ANALYSIS, MIRELA ILOIU, DIANA CSIMINGA

B.2.1.4Cost Effective Analysis (CEA) Methodology

Cost Effectiveness Analysis (CEA) is an alternative form of CBA. It assesses the net cost of a project or service relative to the outcomes (benefits) generated. CEA is used where the need for a project has already been established, but uncertainty remains over the best method for achieving it. It is primarily used in health and defence policy as it, unlike more standard forms of CBA, bypasses three constraints:

i. It does not require all costs and benefits to be put into monetary terms.

ii. It acknowledges that a measure may not represent all of the benefit that is accrued.

iii. It may be analysing intermediate goods (outcomes may not be clear).

As such it does not constrain the researcher into having to apply monetary values to certain variables. For example, the development of a new hospital would likely result in a number of saved lives in an area, but whereas standard forms of CBA would require a monetary value be placed on the value of a life saved, CEA does not require this. This makes it particularly suitable for health policy.

CEA considers alternatives in reference to the ratio between the costs associated with each alternative and a single quantified, but not monetary, effectiveness measure. This represents a complication of CEA as costs are represented by monetary values, while effectiveness may be measured in terms of saved lives, time savings or other similar quantifiable measures. For this reason, a ratio is calculated. Two forms of ratio can be expressed:

i. **Cost-Effectiveness Ratio**: dividing costs of an alternative by the measure of effectiveness.

ii. **Effectiveness-Cost Ratio**: dividing effectiveness measured by costs of alternative.

Using these ratios, the researcher can compare two project alternatives as follows:

$$CE_{ij} = \frac{C_i - C_j}{E_i - E_j}$$

Where,

Ci = Costs of alternative i

Cj = Costs of alternative j

Ei = Effectiveness units of alternative i

Ej = Effectiveness units of alternative j

Example: CEA

Consider a project for which there are four alternatives. The project involves adding a safety barrier to the centre reservation of a stretch of a major road. The cost per mile of the barrier differs depending on the quality of the material used. Scheme A uses a reinforced wooded barrier. Scheme B uses iron, C uses steel, and D uses concrete reinforced with steel. The costs and effectiveness in terms of lives saved are shown in the table below.

Table 1-14: Example of the Cost Effective Analysis

Scheme	Cost (US$)	E (lives saved per annum)	C/E	ΔC	ΔE	ΔC/ΔE
A	9,000	5	1,800	-	-	-
B	15,000	8	1,875	6,000	3	2,000
C	20,000	11	1,818	5,000	3	1,667
D	30,000	12	2,500	10,000	1	10,000

Simply calculating the ratio of costs to effectiveness (C/E) of each scheme suggests scheme A to be the most cost effective of the alternatives considered, as it is estimated it will result in one life being saved for every US$1,800 spent. However, this simple approach does not consider the incremental difference provided by each scheme. This is especially important considering that scheme A is estimated to result in five lives being saved, while scheme D will potentially save 12 lives per year.

Instead the incremental cost-effectiveness ratio can be calculated, as in the table. This calculates the cost effectiveness of each alternative relative to the change in costs and effectiveness compared with the

previous, cheaper, and alternative. In the above example, it can be seen that the lowest cost associated with an incremental change in effectiveness, that is an additional life saved, is associated with scheme C. Scheme C costs US$5,000 more than Scheme B (and US$11,000 more than scheme A), but it results in a further three lives being saved each year compared with scheme B. This gives an incremental cost effectiveness ratio in comparison to scheme B of US$1,667. In this example, the choice of scheme would differ depending on whether a simple cost-effectiveness or incremental cost-effectiveness ratio was calculated. In the prior case scheme A would be chosen, but this ignores the added effectives, in terms of lives saved, that is achieved by spending additional funds on scheme C.

Source: CBA Builder (http://www.cbabuilder.co.uk/CBA5.html)

B.2.2 Finical Assessment

The purpose of the financial analysis is to use the project's cash flow forecasts in order to calculate suitable return rates, specifically the **financial internal rate of return (FIRR)** on investment and own capital and the corresponding financial net present value (FNPV).

While the CBA encompasses more than just the consideration of the financial returns of a project, most of project data on costs and benefits is provided by financial analysis. This analysis provides the examiner with essential information on inputs and out-puts, their prices and the overall timing structure of revenues and expenditures.

The financial analysis and economic analysis are complementary. If a project is not financially sustainable, economic benefits will not be realized.

The financial analysis is made up of a series of tables that collect the financial flows of the investment, broken down by total investment, operating costs and revenue, sources of financing and cash flow analysis for financial sustainability.

B.2.2.0 Non-revenue Earning Projects

Non-revenue earning projects are not subjected to a financial viability test because by definition they do not have a positive cash flow stream. It is difficult to quantify monetary benefits of projects in sectors like health, education, rural water supply and sanitation, etc.

B.2.2.1 Revenue Earning Projects

The financial viability of revenue earning projects is determined on the basis of the project itself, not on the basis of the operations of the entity that owns or operates the project. The principal comparison is between the FIRR which represents the rate of return earned on the project and the Weighted Average Cost of Capital (WACC) for the project. If the rate of return exceeds the cost of capital to finance the project it meets the test of financial viability.

Example: Financial Analysis

In the following example of a net cash flow calculation.

Table 1-15: Net Cash Flows, 2004 (US$'000)

Items		2004	2005	2006	2007	2008	2013-2034
A Operating Cash Flows							
A1 Receipts:							
A11 Water sales:							
A111 Domestic consumers		0	668	1,613	2,922	4,740	14,077
A112 Government establishments		0	21	50	80	124	726
A113 Private establishments		0	32	76	117	170	997
A114 Subtotal	A111+A112+A113	0	722	1,739	3,119	5,034	15,800
A12 Connection fees		0	2,552	3,067	3,689	4,436	0
A13 Total operating receipts	A114+A12	0	3,273	4,806	6,807	9,470	15,800
A2 Payments:							
A21 Operation and maintenance		0	-410	-918	-1,534	-2,303	-4,281
A22 Sales taxes		0	-84	-109	-142	-183	-139
A23 Business tax		0	-100	-100	-100	-100	-100
A24 Connection payments		0	-2,424	-2,914	-3,504	-4,214	0
A25 Total operating payments	A21+A22+A23+A24	0	-3,018	-4,041	-5,280	-6,800	-4,520
AA. Net Cash Flows from Operations	A13+A25	0	255	765	1,527	2,670	11,280
B. Investing Cash Flows:							
B1 Investments		-7,184	-43,107	-64,660	-28,738	0	0
BB. Net Cash Flows to Investments		-7,184	-43,107	-64,660	-28,738	0	0
C. Net Cash Flows	AA+BB	-7,184	-42,852	-63,895	-27,211	2,670	11,280

The rate of return of a project to the entity is indicated by the project's FIRR. Therefore, the FIRR is also the discount rate at which the net present value (NPV) of the net cash flows becomes zero. The following table provides an example of an FIRR calculation. The table presents project receipts, payments, and net cash flows for the full project period of 30 years. For the purpose of the illustration, it is assumed, that receipts and payments will remain constant from year 2013 onwards.

Table 1-16: FIRR Estimation at 2004 Prices (US$'000)

No.	Year	Payments	Receipts	Net Cash Flows	No.	Year	Payments	Receipts	Net Cash Flows
0	2004	7,184	0	-7,184	16	2020	4,520	15,800	11,280
1	2005	46,125	3,273	-42,852	17	2021	4,520	15,800	11,280
2	2006	68,702	4,807	-63,895	18	2022	4,520	15,800	11,280
3	2007	34,018	6,807	-27,211	19	2023	4,520	15,800	11,280
4	2008	6,800	9,470	2,670	20	2024	4,520	15,800	11,280
5	2009	2,810	6,306	3,496	21	2025	4,520	15,800	11,280
6	2010	3,193	7,795	4,602	22	2026	4,520	15,800	11,280
7	2011	3,604	9,535	5,931	23	2027	4,520	15,800	11,280
8	2012	4,045	11,568	7,523	24	2028	4,520	15,800	11,280
9	2013	4,520	15,800	11,280	25	2029	4,520	15,800	11,280
10	2014	4,520	15,800	11,280	26	2030	4,520	15,800	11,280
11	2015	4,520	15,800	11,280	27	2031	4,520	15,800	11,280
12	2016	4,520	15,800	11,280	28	2032	4,520	15,800	11,280
13	2017	4,520	15,800	11,280	29	2033	4,520	15,800	11,280
14	2018	4,520	15,800	11,280	30	2034	4,520	15,800	11,280
15	2019	4,520	15,800	11,280					
							FIRR	@4.33%	

The WACC represents the cost incurred by the entity to raise the capital necessary to implement the project. As most projects raise capital from several sources and each of these sources may seek

a different return it is necessary to use a weighted average of the different returns paid to these sources.

Table 1-17: Calculating WACC

Item	Financing Component					
	DP Loans	Foreign Loans	Domestic Loans	Government Funds	Equity Participation	Total
A. Amount (US $'000) 50,000	50,000	5,000	5,000	30,000	10,000	100,000
B. Weighting	50.00%	5.00%	5.00%	30.00%	10.00%	100.00%
C. Nominal cost	6.70%	6.70%	12.00%	7.00%	10.00%	
D. Tax rate	40.00%	40.00%	40.00%	0.00%	0.00%	
E. Tax-adjusted nominal cost [C x (1–D)]	4.02%	4.02%	7.20%	7.00%	10.00%	
F. Inflation rate	…	…	4.00%	4.00%	4.00%	
G. Real cost [(1+E)/(1+F)–1]	4.02%	4.02%	3.08%	2.88%	5.77%	
H. Minimum rate test [H=4%]	4.02%	4.02%	4.00%	4.00%	5.77%	
I. Weighted component of WACC	2.01%	0.20%	0.20%	1.20%	0.58%	4.19%
Weighted Average Cost of Capital (Real):			**4.19%**			

Comparison of FIRR and WACC

If the Project's FIRR exceeds the Project's WACC, the project is considered to be financially viable.

In the example, the FIRR of 4.33 percent is above the WACC of 4.19 percent, and hence the project is financially viable.

Source: Guidelines and Financial Analysis of Projects, African Development Bank Group, (https://www.afdb.org/en/projects-and-operations/financial-management/financial-management-policies-procedures/gu)

B.3 Alignment and links with priorities of the GoR

Whether a proposed project/programme is well-aligned to GoR priorities is fundamentally linked to how the proposed project/programme is conceived in terms of GoR planning and budgeting practices.

There are two levels of alignment, one at the national level, checking whether aid programmes are in sync with the EDPRS II, VISION 2020 and the Public Investment Programme, and one at the sectoral/ District level, to see whether the proposed aid is aligned with sector strategies (or where these are not well developed agency/ministry strategies) and District Development Plans (DDPs).

For the sectoral/District level, again two levels are introduced: level I and level II alignment, with only the second level allowing the GoR to fully improve on intra-sectoral/agency allocations (which should ultimately be the aim of alignment).

Table 1-18: Level I and II Alignment

Level	Description
Level I alignment	Development Partners align projects to sectoral priorities as defined in sectoral/GoR agency plans.
Level II alignment	On top of Level I Alignment, the DPs also provide the GoR with information on its planned disbursements for the coming fiscal year, in time to be included in the GoR budget preparations and in the format of GoR budget-submissions and following the GoR chart of accounts.

Source: Rwanda Aid Policy Manual of Procedures May 2011

Checklist 1 below helps GoR officials to deal with alignment issues every time a new aid programme is proposed. Responsibility for alignment to national planning tools remains with MINECOFIN, whilst alignment to sectoral/District plans is firmly in the hands of the line ministry / District –which is also responsible for quality control.

Table 1-19: Checklist 1: Sectoral / District Development Plan Alignment checklist

Alignment Aspect	GoR preference	Questions/Tasks	Institution	Consult
Alignment to national plans and priorities	Aid to be aligned with EDPRS and ideally to fund EDPRS II financing gaps; capital investment projects should be vetted by the PIC.	Does the aid cover one of the 3 flagship EDPRS II projects? Is it already included in the EDPRS II financing framework? If capital investment is proposed, has it been vetted by the PIC?	National Development Planning Directorate (MINECOFIN), Public Investment Committee (PIC)	EDPRS, tables 6.3, 6.4, 6.5 (should be updated through the EDPRS APR) Long-Term Investment Framework National Public Investment Policy
Alignment to Sector (ministry) strategies/ District development plans	Alignment of project to priorities as defined in sectoral (Ministry) / District / other GoR budget agency plans	Does the main objective of the suggested project fit with the overall objectives of the sector strategic plan (SSP) / District Development Plan (DDP)? Does the proposed project respond to a clearly identified financing gap in the SSP? NoteL work with available ministry/District/GoR agency planning framework or annual action plan if there's no costed SSP.	Planning, budget committee and DAF of Ministry /District / other GoR budget agency Discuss in SWGs	Sector Strategic Plan (e.g. Education, health) Ministry/District/other GoR budget agency Annual Action Plans or other available planning framework EDPRS sometimes has more information on sectoral financing gaps
	DP aligns projects' procedures so as to be in sync with GoR fiscal year and budgeting format	Does DP submit information on the project time for the budget preparations? (such that GoR can include it in its budget allocations?) Is the information submitted such that it fits in with the MTEF/budget format used by the GoR? (in terms of classification, programmes, sub-programmes, etc.?)	Project Manager, DAF/budgeting committee of Ministry/ District/other GoR budget agency NBD for support Discuss in SWGs	Costed SSP Finance Law related documentation (BCC, MTEF formats, etc.) DPAF indicators in section B

Source: Rwanda Aid Policy Manual of Procedures May 2011

1.6 Resources mobilization for the implementation of the project

It is the same content as Clause 1.1.7 “Resources mobilization for the project planning”. Refer to Clause 1.1.7 in this manual.

2 Implementation Stage

The implementation stage, the work plan is put into motion and the work of the project is performed. It is important to maintain control and communicate as needed during implementation stage. Progress is continuously monitored and appropriate adjustments are made and recorded as variances from the original plan.

During this stage, implementer (s) is carrying out the tasks, and progress information is being reported through regular meetings. The project manager uses this information to maintain control over the direction of the project by comparing the progress reports with the work plan to measure the performance of the project activities and take corrective action as needed.

The first course of action should always be to bring the project back on course (i.e., to return it to the original plan). If that cannot happen, the implementer (s) should record variations from the original plan and record modifications to the plan. Throughout this step, project sponsors and other key stakeholders should be kept informed of the project's status according to the agreed-on frequency and format of communication. The plan should be updated on a regular basis.

Progress reports should always emphasize the anticipated end point in terms of cost, schedule, and quality of deliverables. Each project deliverable produced should be reviewed for quality and measured against the acceptance criteria. Once all of the deliverables have been produced with approval by the client, this stage is ready for closure. Overview of Implementation Stage is shown in below.

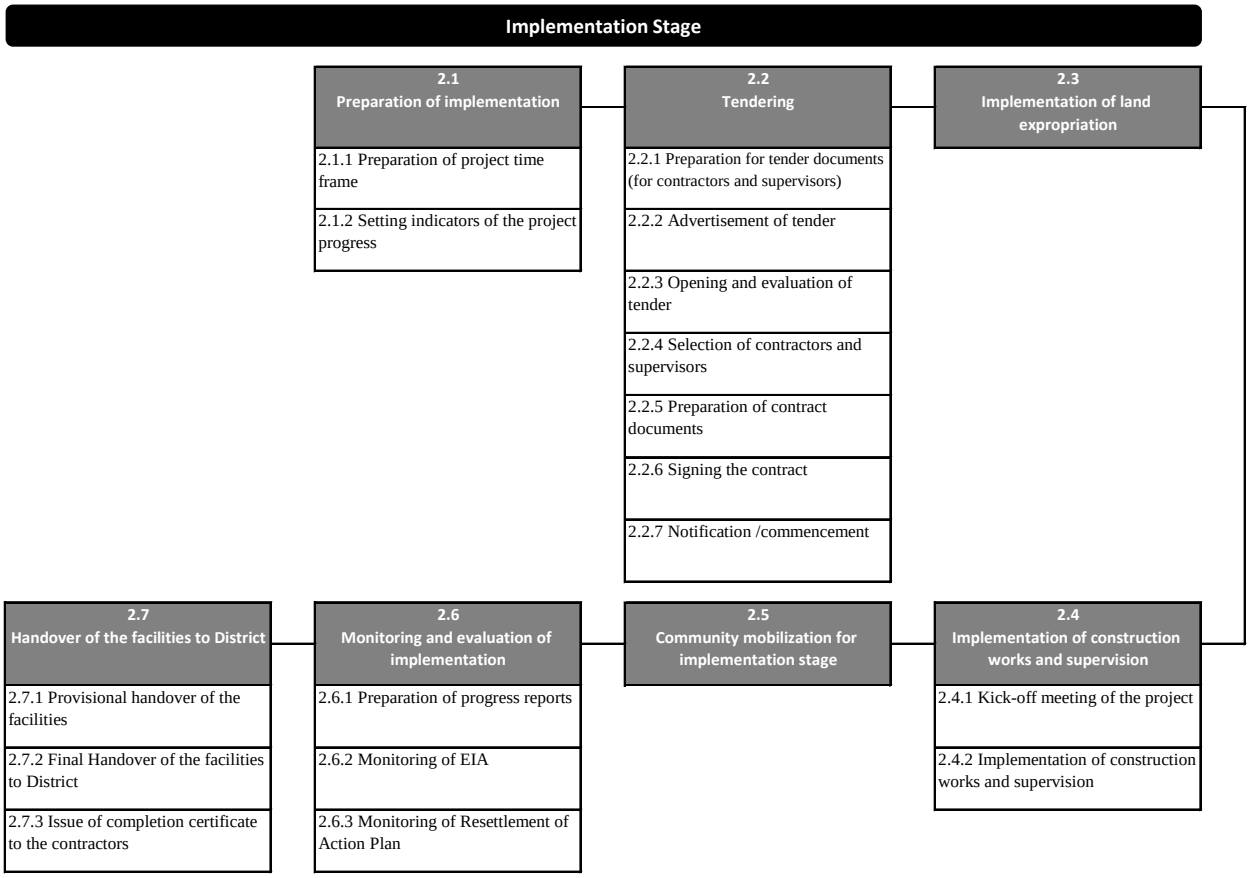


Figure 2-1: Implementation Stage Overview

2.1 Preparation of implementation

2.1.1 Preparation of project time frame

A. Responsibilities

Actor		Action
Main actor	District	Prepare the project time frame work from the tender to handing over of the facilities
Supporter	WASAC RWSS	Support the District to prepare the time frame for the implementation of a project

B. Detailed activities

B.1 Introduction

Time is important in any planning process. Timeframe is a way of focusing managerial attention on the time factor, on critical events and on priorities. The timeframe states when each activities starts, how long it lasts and when it will be completed. This is usually presented in the form of a bar chart, which sets out the sequence of activities and links them to critical events or milestones.

The development of the project timeframe refers to the following two statements:

- The schedule creates a framework for the whole project implementation plan and facilitates creation of the work breakdown structure (WBS) by placing the related activities, tasks and responsibilities on timeline.

- The schedule outlines the project phases and their overlaps and shows them on the common project's timeline.

In the project timeframe the following information (the key components) should be provided in a clear and easy-to-read format:

- **Number and brief descriptions of project phases.**

A project phase is a manageable portion of work that is accurately defined and measured by a deliverable and time-frame. Usually the project phase is divided into logically dependent activities to compete a certain job. Each project phase should be briefly described during the Project Setup process to provide an overview of the jobs being initiated and completed during that phase.

- **The deliverables set being archived within each project phase.**

Completion of each project phase results in achieving or producing deliverables. The implementation schedule should specify a specific set of deliverables being achieved after successful completion of every project phase.

- **Major activities for each deliverable.**

During implementation of each project phase, the major activities should be outlined in order to achieve each deliverable, within the defined time-frame of that phase.

- **Key milestones.**

The way to audit and control implementation of each project phase is to define check-points (the key milestones) to be conducted on a regular basis during the implementation process.

- **Responsibilities and assignments.**

Completion of each project phase requires allocation of responsibilities. The project manager should set employee responsibilities and assignments per project phase and also define who is responsible for and assigned to the delivery of the major activities within each project phase.

B.2 Development tools

The recommended tool is called a "**Gantt chart**". It is simple but useful. It is easy to read and can be used to progress against time. The chart uses the activities from work breakdown matrix as heading for each row, and time units (years, quarters, months, weeks, etc.) as the headings for each column.

B.3 How to develop accurate timeframe

Delivering projects on time is one of the biggest challenges faced in project management. To successfully manage time, the District with sport actors requires the ability to develop accurate schedules and to implement them through the life of the project.

The first step in successful time management is schedule planning. The steps in the schedule planning process include:

【Steps in the schedule planning】

- **Activity definition and sequencing:** Comprehensively identifying the activities that need to be performed to produce the project deliverables and identifying the relationships that exist among the various schedule activities.
- **Activity resource estimating**: Allocating the type and quantity of resources available/required to perform each schedule activity.
- **Activity duration estimating**: Estimating the time required to complete project activities.
- **Schedule development**: Creating a project schedule based on activities, sequences, durations, resources and schedule constraints.

B.3.1 Activity Definition and Sequencing

Starting from the WBS, the District develops an activity list which comprehensively records all of the activities within the scope of the project (or within the scope of a specific work package of the project). Next, the District develops a network diagram which graphically represents the sequences, relationships and dependencies between the WBS's activities.

The diagram here shows that the entire project, represented as a Level 1 component, can be subdivided into Level 2 components, and some or all Level 2 components can be subdivided into Level 3 components.

You can continue to subdivide all the components in the same manner until you reach a point at which you think the components you defined are sufficiently detailed for planning and management purposes. At this point, you now have Level "n" components, where n is the number of the lowest-level component in a particular WBS branch. Level "n" components are called **work packages**.

B.3.2 Activity Definition and Sequencing

Once the sequence of activities is identified, it is tempting to move straight to activity duration estimating. First, however, the important step of estimating resources must be completed. At its core, the relationship between resource estimating and duration estimates is intuitive. Everyone knows that it will take one person longer to dig a hole than it will take a team of five people to dig a hole.

Furthermore, duration estimates will vary considerably depending on whether the excavation team plans to use a single shovel, a pneumatic drill or dynamite to make the hole.

In short, resources matter. They are one of the main factors influencing the project duration estimates. Therefore, resource decisions need to be made before duration estimates can be made. Decisions relating to the number and quality of resources committed to an activity, in turn, are contingent on a number of factors, including (but not limited to) the following:

Table 2-1: Important factors influencing the project duration estimates

Factors	Description
Time	If there is a very tight timeframe, the project may choose to dedicate high levels of resources including staff, materials and capital equipment to meet time constraints. Conversely, if the timeframe is loose, the project may choose to dedicate lower levels of resources allocated to an activity.
Budget	If money is in short supply, the project might choose to invest in a 'low cost' resource mix. For example, more manual workers and less machinery are a preferable low--cost alternative. This resource decision, however, will extend the duration of the latrine excavation activities.
Regulations and Organizational Policies	Often projects are constrained by labour laws and/or internal organizational policies that limit work schedules (hours per day, days per week, holidays per year, family leave policies). These constraints influence resource availability and consequently duration estimates.
Other Factors that Influence Resource Availability	A number of other factors influence resource availability, and thereby will influence activity duration estimates. Some examples of these factors include: ➢ **Weather Constraints** impede an agricultural project where community participation is impossible during harvest season. ➢ **Material Constraints** impede a housing project which requires scarce construction materials, making it necessary to adopt an alternative strategy that is more time consuming. ➢ **Logistics Constraints** impede an emergency relief project from accessing transport, extending the time required to fill food warehouses. ➢ **Human Resources Constraints** impede a health project from accessing qualified labour, extending duration estimates for technically complex activities.

Source: A Guide to the PMD Pro - Project Management for Development Professionals, 2011 PM4NGOs

B.3.3 Activity Resource Estimating

Once resource estimates are complete, the network diagram should be revisited and duration estimates will be added to all the activities.

B.3.4 Schedule Development

Based on the estimates generated through the previous steps, the District can now develop a project schedule. Within the development sector, the preferred tool for project schedule development is the Gantt chart.

Planning and implementing projects is made easier if it is viewed as small manageable items where the dependencies are visually illustrated, parallel processes are apparent, and the overall schedule is portrayed graphically. A Gantt chart uses bars to graphically represent the schedule of project activities, including their start date, end date, and their expected durations.

The complexity and comprehensiveness of the Gantt chart will vary. At its core, the Gantt chart tool has the advantage of being relatively easy to prepare, read and to use. However, it is important to recognize that the tasks of a project can be quite complex and many dependencies can exist between them.

One way to retain simplicity in the Gantt chart even when tasks and dependencies are complex, involves rolling up the broader, more comprehensive activities of a project into a summary Gantt Chart, with details being further elaborated on a detailed schedule.

The Summary Gantt Chart will not only differ from the detailed Gantt Chart with regard to the level of detail, but also with regard to its purpose. The summary Gantt Chart will be especially helpful when discussing the high--level progress of the project with stakeholders (project board members, key stakeholders, donors, etc.) The purpose of the detailed Gantt chart, however, will be less focused on high--level communication and much more focused on the operational planning, implementation and monitoring of activities. Here, the audience will focus on the project team and the implementing partners and suppliers responsible for completing project work packages and tasks.

Table 2-2: Sample of the Gantt Chart for the project implementation

Activities	Sub-activities	Implementing personnel	Products	Duration	Year / Month	2017 1	2	3	4	5	6
1.Construction and Rehabilitation of Boreholes in Nyagatare and Kayonza Districts	(1) A ssessment of non functional boreholes	O&M Unit/WASAC	Report	5 days	Plan						
					Actual						
	(2) Site identification for new boreholes	O&M Unit/WASAC District	Report	5 days	Plan						
					Actual						
	(3) BoQ elaboration for rehabilitation and construction of boreholes	O&M Unit/WASAC	BoQ	15 days	Plan						
					Actual						
	(4) Preparation of terms of reference for procurement	O&M Unit/WASAC	Tender	15 days	Plan						
					Actual						
	(5) Procurement process	Procurement/WASAC	Contract signed	3 months	Plan						
					Actual						
	(6) Implementation	O&M Unit/WASAC District	126 boreholes rehabilitated and 49	8 months	Plan						
					Actual						
	(7) Closing and handover	O&M Unit/WASAC District and contractor	Reports	1 week	Plan						
					Actual						
	(8) Monitoring and Evaluation	O&M Unit/WASAC District	Reports	13 months	Plan						
					Actual						

2.1.2 Setting indicators of the project progress

A. Responsibilities

Actor		Action
Main actor	District	Set up the indicators of the project progress
Supporter	WASAC RWSS	Support the District to set up project progress indicators

B. Detailed activities

B.1 Introduction

“How do we know process is being made? How can we know if an intervention is making our local water and sanitation system more sustainable?” These are very important questions regarding projects or programmes in water and sanitation.

You will only know if your objectives and outputs have been achieved by setting indicators that are measurable.

An indicator is realistic and measurable criteria of project progress. Indicators should be defined before project starts, and allow to monitor and evaluate whether a project is being achieved or not. Indicators of achievement are usually required at output level. **Indicators for activities are not developed** since it considered that it is a straightforward action that you have or have not implemented.

Box: Targets and Milestones

Indicators of achievement measure change brought about by the project. They can be broken down into **targets** and **milestones**.

- **Indicators** define what is to be measured (not what is to be achieved; that's the job of targets)
- **Targets** define the desired value or direction for progress.
- **Milestones** give information on the path towards your target.

Source: capacity4dev.eu, (https://europa.eu/capacity4dev/rom/minisite/lfa-training-material)

B.2 Steps how to set the indicators

B.2.1 Steps

Step 1: Identify What to Measure

The first step to creating program indicators for monitoring and evaluation is to determine which characteristics of the program are most important to track. A program will use many indicators to assess different types and levels of change that result from the intervention, like changes in knowledge, attitudes, and behaviours among the priority community (s).

Referring to the program's logic model can help to identify key program areas that need to be included in monitoring indicators.

Indicators fall under the three stages of the logic model, which include:

【Indicators fall under the three stages of the logic model】

- **Inputs** – resources, contributions, and investments that go into a program
- **Outputs** – activities, services, events and products that reach the priority audience(s)
- **Outcomes** – results or changes for the priority audience(s)

Each stage of the logic model can use indicators to assess inputs, outputs, and outcomes. Process indicators consist of inputs as well as outputs and provide information about the scope and quality of activities implemented; these are considered monitoring indicators. Performance indicators include outcomes and are most commonly used to measure changes towards progress of results; these are considered evaluation indicators.

Step 2: Use the SMART Process to Develop High-Quality Indicators

In order to make the most out of indicators, they should be **"SMART" (Specific, Measurable, Attainable, Relevant, and Time-Bound)**, as explained below. Consider each of these points when developing new indicators or revising old ones.

【SMART (Specific, Measurable, Attainable, Relevant, and Time-Bound) Process】

- **Specific**: The indicator should accurately describe what is intended to be measured, and should not include multiple measurements in one indicator.

- **Measurable**: Regardless of who uses the indicator, consistent results should be obtained and tracked under the same conditions.
- **Attainable**: Collecting data for the indicator should be simple, straightforward, and cost-effective.
- **Relevant**: The indicator should be closely connected with each respective input, output or outcome.
- **Time-bound**: The indicator should include a specific time frame.

The example below uses the one of the approaches to improve an indicator.

1. What is the input/output/outcome being measured?
2. What is the proposed indicator?
3. Is this indicator specific?
4. Is this indicator measurable?
5. Is the indicator attainable?
6. Is the indicator relevant and related to the input/output/outcome being measured?
7. Is this indicator time-bound?
8. Based on answers to the above questions, what is the revised proposed indicator?

Step 3: Establish a Reference Point

To show change or progress in a project, a reference point must be established. A reference point is a point before, during, or at the end of a project where indicators are used to establish the state of the project in order to provide a point of comparison as the project progresses.

The reference point is often chosen before or at the start of a project to assess the progress of the project over time. At the same time, implementation timelines do not always allow for baseline data to be collected. In these cases, reference points can be set up at other times in the project.

Depending on the stage of the intervention, a reference group can be established in one of several ways (see below):

Table 2-3: Establish a reference point in a project

Intervention has not begun	Intervention has begun	Intervention is over
Establish the reference point immediately before it begins. This point is usually referred to as a baseline.	See if any data related to the project indicators were collected in other surveys targeting similar populations. For example, use data from large-scale national surveys like National Census and /or EICV.	A reference point can be established through a control group. Identify a sample group that has not been exposed to the intervention and is demographically, geographically, culturally, and socially similar to the intervention group. Then administer data collection on program indicators with this group.

Step 4: Set Targets

Targets define the path and end destination of what a program hopes to achieve and is a number or percentage which will measure success. Once the reference point is established, determine what changes should be seen in the program's indicators that would reflect progress towards success.

When establishing targets, consider:

【Points to be considered for the setting of the targets】

- **Baseline data or reference point**: This sets a certain point in time in the program from which to observe change over time.
- **Stakeholder's expectations**: Understanding the expectations of key stakeholders and partners can help set reasonable expectations for what can be achieved.
- **Recent research findings**: Do a literature search, if literature is available, for the latest findings about local conditions and the program sector, or conduct baseline survey in order to set realistic targets.
- **Accomplishments of similar programs**: Identify relevant information on similar programs that have been implemented under comparable conditions. Those with a reputation for high performance can often provide critical input on setting targets.

The sample indicators for the rural water supply project can be found in the table below.

Table 2-4: Sample indicators for the rural water supply project

Categories	Sample indicators
Service level indicator	❖ **Water services provided are in line with the Rwanda standards** ➢ Functionality ➢ Capacity ➢ Crowding ➢ Distance to water point ➢ Quality ➢ Reliability
Service provider indicators <Governance and Management indicators>	❖ **A well-qualified, trained and experienced gender balanced WATSAN is in place** ➢ A gender balanced WATSAN committee is in place ➢ The WATSAN has been constituted in line with the guidelines ➢ The WATSAN consists of people dealing with technical/operational aspects and financial/accounting aspects ➢ Vendors are engaged at each water point ➢ WATSAN members have received initial training and regular re-fresher training ❖ **Technical, Administrative and financial Reports are kept and read out to the Community** ➢ Technical, Administrative and Financial Reports are kept ➢ Technical, Administrative and Financial Reports are read out to the Community ➢ Records of all maintenance activities are kept
Service provider indicators <Financial Management indicators>	❖ **Annual income from water sales exceeds total annual expenditure** ❖ **There is sound financial management, accounting and auditing** ➢ open and mange bank account ➢ Books are kept ➢ auditing is carried out at least once every year ❖ **Tariff setting is taking into account the lifecycle costs**
Service provider indicators	Spare parts are available to enable maintenance

Categories	Sample indicators
<Operational Indicators>	Area mechanics are available to enable maintenance Corrective maintenance is executed in an effective way Periodic maintenance is executed in an effective way Water Quality Sampling and Analysis services are performed on half yearly basis by recognised institutions and paid for by each community through tariffs
Support function indicators	The district monitors O&M of water facilities in terms of financial, technical and administrative performance, including periodic audits, and provides support where needed. The district assists the community in case of major repairs and borehole rehabilitation. District Water and Sanitation Plan is incorporated into Medium Term Development Plans and budget of the assembly, which is used to guide implementation. Districts are able to allocate and utilise financial resources for water and sanitation services. Bye-laws for the WATSANs exist and are enforced effectively. NGOs providing water facilities do so in coordination with the district

Source: Draft indicators for sustainable rural water supply services in Ghana, February 2012

Step 5: Examine the Means of verification

The means of verification should be considered and specified at the same time as the formulation of indicators. This will help to test whether or not the indicators can be realistically measured with a reasonable amount of time, money and effort.

The means of verification should specify:

- **HOW** the information should be collected (e.g. from administrative records, special studies, sample surveys, observation,) and/or the available documented source (e.g. progress reports, project accounts, official statistics, engineering completion certificates).
- **WHO** should collect/provide the information (e.g. local government workers, contracted survey teams, the District agricultural office, and the project management team)?
- **WHEN/HOW** information should be collected (e.g. monthly, quarterly, and annually).

It is important to make sure that the required information can be collected through existing systems or at least with improvements to existing systems, and with the available resources. In some cases, additional resources might be needed to develop a survey or database. This should then be added to the project budget.

Step 6: Determine the Frequency of Data Collection

As a last step, consider how often data should be collected in order to properly track the program's progress. These designated points in time are usually referred to as benchmarks. Ideally, at least one round of data collection should occur between the reference point and the end of the program.

If the data are collected at the midpoint of the program, it is called a midline. If data are collected at the end of the program, it is called an end line.

The frequency of collecting data is mostly dependent on the cost and length of the project — longer projects, or those with more funding, can typically collect comprehensive data more frequently than shorter projects or those with less funding.

B.3 Milestones

Milestones are more than just stepping stones on the **critical path to the completion of a project.** Read more to discover why setting milestones is an important managerial tool in project planning, evaluating outcomes, and rewarding team members.

B.3.1 What is a Milestone?

In its basic form, a milestone is an important event marked on a timeline and recognized when successfully reached. Milestones are the building blocks for the project's schedule and often create forward momentum to propel the project along to completion. They can also be used effectively as primary checkpoints to see how well your project is doing and whether the project is on schedule and on budget.

B.3.2 Step how to set the Milestones

1) Step 1: Create a work breakdown structure

When embarking on project milestone planning, you will first need to create a work breakdown structure to get an overview of all the tasks in a manageable outline or diagram.

2) Step 2: Setup milestones

With this overview in hand begin to look for opportunities to setup milestones around the completion of key tasks and activities. Try to visualize a timeline of the important events that will advance the project to the next level.

Table 2-5: Important factors for the setting up of the milestones

Factors	Descriptions
Frequency	As a project manager, you may be tempted to overuse milestones as a motivation tool to keep the team moving along the ladder to reach the surface of success, but don't fall into the trap of labelling every task completion as a milestone. In turn, don't adopt the other extreme approach by ignoring or not recognizing significant and relevant events as milestones particularly at junctions of the critical path. A good compromise is to consistently designate important deliverables as milestones.
Timing	Milestones that are spaced too far apart will not have the benefit of the momentum derived from motivating team members by recognizing their major achievements. However, when milestones, appropriately represented as diamonds in MS Project, are placed too closely together they quickly lose their luster and distinctiveness. As a rule of thumb try to space milestones at intervals for no longer than every two weeks for projects of several months in duration.
Visibility	Milestones need to be placed prominently in the project's schedule and tracked periodically. Make sure that your milestones have been incorporated into your project scheduling, calendar, or other project tracking software program.
Accountability	Milestones are commitments that must be met on time. If a milestone is missed, it needs to be addressed immediately by re-examining the resources

Factors	Descriptions
	to determine if they are properly matched to the objectives.
Fallibility (Uncertainness)	It may sound counter-intuitive, but you should select challenging milestones that carry a degree of risk for failure. Not every venture of NASA undertaken to pave the way for the Apollo 11 mission was successful. Ranger 3, an unmanned probe sent to study the Moon missed its target by 22,000 miles. Don't forget to treat milestones as learning experiences and opportunities to make adjustments early in the project's execution.

Reference:

http://www.brighthubpm.com/project-planning/68427-successful-project-milestone-planning/

2.2 Implementation of land expropriation

A. Responsibilities

Actor		Action
Main actor	District	District as the implementing agency of the rural water supply project implementing agencies will be responsible for overall technical and fiduciary oversight for the project, which will include the preparation of the Resettlement action plan (RAP) for the infrastructure development project.
Supporter	MINECOFIN	MINECOFIN will be responsible for timely disbursing of the compensation funds to the respective commercial banks.
	Community	➢ Support the District to facilitate the valuation of land and property incorporated thereon. ➢ Support the District in attendance and participating in the valuation land and property shall be conducted in the presence of land owner and that of the owner of property incorporated on land or their lawful representatives and in the presence of representatives of local administrative entities. ➢ Support the District in development of the minutes indicating persons present and absent for approval by the Executive Secretary of the Cell of the place where the valuation is conducted
	Consultant / Contractor	➢ Support the District to carried out the evaluation of land and property incorporated thereon ➢ Submit the report of the valuation of land and property incorporated thereon to the District, a report containing the list of persons to be expropriated, the size of land and the value of property incorporated thereon belonging to each person to be expropriated, and the fair compensation to be paid to any person whose property is expropriated in the public interest.

B. Detailed activities

B.1 Implementation schedule

B.1.1 Time Schedule for the Implementation of the RAP

Upon review and approval of a RAP by all stakeholders, the implementing agency (district) will embark on the process of RAP implementation. This process will be conducted prior to the commencement of the construction activities. PAPs will be allowed sufficient time for relocation or handover of land. Person Affected Peoples (PAPs) will only be required to move after receipt of their total compensation packages including replacement land and structures whenever applicable. However, the processing of registration documents for new pieces of land is sometimes lengthy and highly bureaucratic. Therefore, these may be distributed long after or deep into the construction phase but not beyond commissioning. The detailed activity schedule for the resettlement activities will be finalized during the preparation of the RAP.

B.1.2 Linking Resettlement Implementation to Civil Works

The resettlement schedules will be coordinated with construction schedules. Before any project civil works activity is implemented, PAPs will have to be compensated in accordance with the Rwandan and international resettlement laws, regulations and guidelines. In other words, no individual or affected household should be displaced due to civil works activity before compensation is paid and resettlement sites with adequate facilities are prepared and provided for to the individual or homestead affected.

The land acquisition (for both construction and relocation) and demolition of houses should be completed within the preparatory stage of the engineering construction and before the beginning of relevant engineering works. The schedule is thus expected to ensure that PAP, prior to their physical relocation will:

- have been adequately consulted about the project, its impacts and compensation entitlements;
- have received compensation entitlements in a timely manner;
- have been provided with means to establishing livelihoods.

2.3 Tendering

2.3.1 Preparation for tender documents (for contractors and supervisors)

A. Responsibilities

Actor		Action
Main actor	District	Prepare a tender document
Supporter	WASAC RWSS	Support to prepare a tender document

B. Detailed activities

The District prepares tender documents in the below procedures. WASAC assists this activity.

Tender documents need to contain clearly documented instructions to bidders, and technical specifications and drawings necessary for tenders to prepare for the tender, bidder evaluation method that serves as the criteria for deciding the bid winner, and formation of contract (draft) that provides contract conditions after winning the bid.

In government projects, no revision is permitted after the tender documents are issued by the client (District) to make the procedures fair and transparent, unless the technical specifications and drawings or other documents contain some doubtful point and it may confuse bidders. No change in the bid evaluation method or form of contract (draft) is allowed. No change is allowed in

conditions provided in technical specifications, procurement conditions. However, price negotiations or a contract negotiation is allowed after bidding.

Tender documents are extremely important during project implementation for both bidders and the client. As project outcomes are affected by the technical specifications and drawings, in particular, they need to be prepared appropriately being consistent with the scale of the project and site conditions and cover all necessary items. It also needs to be fully confirmed that bidders are not limited due to certain specifications.

B.1 Contents of Tender Document

B.1.1 Detailed activities

The contents of tender document according to Rwanda Public Procurement Authority (RPPA) include;

1. Instruction to the bidder

a) General statement
b) Tender documents
c) Preparation and submission of documents by bidders
d) Bid opening
e) Tender evaluation and award
f) Common conditions

2. Tender Forms

a) Power of attorney
b) Price entry form
c) Detailed price entry form
d) List of major equipment manufacturers
e) Certificate of supply from manufacturers
f) Time schedule

3. Conditions of contract, technical specifications, drawings, equipment list, and specifications

The Conditions of Contract and Technical Specifications are extremely important documents to guarantee fairness of the tender, specify the quality and work progress of target structures and specifications of materials and equipment, and decide measures to secure them. Items below are clearly stated in particular, avoiding any ambiguity, to be interpreted unambiguously both by the client and bid winner.

- Specifications and standards of materials and equipment to be procured or used
- Inspection method and frequency and criteria for determination to guarantee quality and work progress
- Inspections and approvals to be performed by the consultant
- Documents to be submitted by the bid winner to the consultant
- Specific contents of construction and procurement plan to be submitted by the bid winner
- Type, format and number of copies of completion documents, completion inspection method, etc.

B.2 Form of Contract (draft)

The contract form (draft) is produced as below.

B.2.1 Number of copies of form of contract

Two or more copies of the contract form are produced.

B.2.2 Contracting parties

The client and contractor are specified. Their official legal name and address are stated if the contracting parties are legal entities.

B.2.3 Date of contract

B.2.4 Signature of Form of Contract

Contracting parties sign the form of contract and they also put their initials on all pages to prevent replacement. If signatures of the initials are not written on all pages for some reason, the form is dual-page bound and not all pages need to have initials as long as the signature is put on the signature Page.

B.2.5 Purpose of contract and scope of duties of contracting parties

The purpose and scope of the contract are stated. Design documents and documents related to equipment specifications that are part of the form of contract are based on the results of detailed design study.

B.2.6 Amount of contract

In addition to the total amount of contract, implementation design and supervision cost and soft component cost are stated in the consultant contract and facility construction cost, equipment procurement cost, installation cost, and operation training cost are stated in a contractor contract.

B.2.7 Correction and changes of contract

Both contracting parties are required to agree to correct the form of contract (attach document to prove it). It is approved only when there is a compelling reason for the change.

B.2.8 Contract period

B.2.9 Time of completion of the duties (construction, shipping, etc.)

B.2.10 Payment conditions

The consultant contract states that the client issues a certificate of completion of specified duties (prepared by the client or consultant) that is necessary for requesting the payment (The signature of the client is required.).

The facility construction contract states that the consultant may issue the certificate (however, it may require approval from the client). Bill of Lading (B/L) and other documents are submitted for the equipment procurement contract.

When a request for installation payment is allowed because of split shipping, etc., in the contractor contract (particularly equipment-related), the contract states that split shipping and installation payment are permitted. The payment at shipping and payment at delivery are separately states in payment conditions of the contractor contract (equipment-related).

B.2.11 Payment procedures

B.2.12 Obligations of client

The facility construction contract includes land acquisition and provision of electrical power supply, water supply, drainage and other related facilities. Such as access road, internet etc.

B.2.13 Delay

When the contractor delays the project completion in accordance with the implementation schedule originally agreed on with the client or an incident that prevents it occurs, he will promptly report it to the client and state terms and conditions that stipulate responsive measures.

B.2.14 Force majeure

The contract contains explanations about force majeure and conditions that the responsibility for pursing the duties be exempt temporarily or eternally and in whole or in part when such an incident occurs. It states procedures of confirmation of occurrence of such an incident and measures to be taken by the contractor. It also states the rights and obligations of the contractor and client in such a case.

B.2.15 Dispute and lawsuit

The contract states that efforts are made for settlement first and that necessary procedures are taken with an arbitral institution if no settlement is reached with the best efforts.

B.2.16 Governing law of contract

The contract states governing laws.

B.2.17 Advance Payment Security, Performance Security, Guarantee Bond, etc.

Although it can be set if the client demands it, the conditions and period of guarantee are specified. It is not set in the case of consultant contract in general. It is also noted that the advance payment security is returned to the contractor swiftly on the date provided in the contract.

When the advance payment is made for equipment, the same amount of advance payment security is set to guarantee it.

B.2.18 Penalty for delay for construction or delivery

B.2.19 Warranty period

It is for one (1) year or longer after the completion of construction or delivery.

B.2.20 Others

The original copy of the form of contract is produced in English or French in principle and it is stated that it serves as grounds for interpretation.

2.3.2 Advertisement of tender

A. Responsibilities

Actor		Action
Main actor	District	Advertise the tender notice to the public
Supporter	WASAC Department of Support Service	Support to elaborate and advertise tender notice

B. Detailed activities

The District advertises the tender in the below procedures. WASAC assists this activity.

The purpose of the advertisement is to publicly announce the tender on newspapers, etc., to widely invite qualified tenderers. To this end, the most relevant means of advertisement is selected in consideration of various circumstances so all qualified entities will have an opportunity to participate in the tender.

B.1 Points to note in producing advertisement (draft)

B.1.1 Newspaper on which advertisement is posted

Widely published newspapers are usually chosen for newspaper advertisement to invite qualified tenderers widely. However, no newspaper is specifically decided and considerations need to be given so that all qualified companies will have an opportunity to learn about the tender in advance and as many companies as possible will be able to participate. A tender shall be announced by the website of District if available.

B.1.2 Advertisement period, posting on multiple newspapers, and timing of advertisement

When it is necessary to attract a wider range of qualified potential tenderers, the need for posting the advertisement for two weeks or longer or on multiple media is deliberated. Attention is paid to the timing of advertisement to avoid the time where holidays concentrate (as it does not appeal to a wide range of qualified potential tenderers).

B.1.3 Language of advertisement

The advertisement contains the executing agency, project title, and contents of advertisement and project briefly in English, French or Kinyarwanda so it will be widely known to potential contractors.

B.1.4 Tender schedule

The client needs to confirm the tender schedule for producing the advertisement (draft). Main matters to be studied are listed below.

1. Date of advertisement of prequalification (P/Q)
2. Newspaper that advertises P/Q
3. Date of distribution of P/Q documents
4. Deadline of submission of P/Q documents
5. Planned date of reporting of P/Q results

(if the project has P/Q)

6. Name of newspaper that the tender advertisement is placed in (only if no P/Q screening is conducted)
7. Planned date of distribution of tender documents
8. Duration of acceptance of questions
9. Deadline of answering to questions and addendum
10. Scheduled date of tender
11. Scheduled date of contract

12. If the project is subject to trial of contingency expenses, it is stated.

At least three (3) days are secured including the date of P/Q advertisement (excluding Saturday, Sunday and public holidays) as the date of distribution of P/Q documents. At least three days are secured until the deadline of the submission of P/Q documents from the following day of the completion of distribution of P/Q documents (excluding Saturday, Sunday and public holidays). The duration is deliberated to secure a proper period in the case of projects where consortiums are assumed.

The duration from the planned date of distribution of tender documents to the planned date of tender is for 30 days or longer as the baseline.

2.3.3 Opening and evaluation of tender

A. Responsibilities

Actor		Action
Main actor	District	Open and evaluate the tender by District tender committee
Supporter	WASAC RWSS	➢ Give advice about regulation of tender process of opening and evaluation of tender ➢ Support by dispatching the staff to District tender committee

B. Detailed activities

The District executes the tender in the below procedures. WASAC assists this activity.

B.1 Tender

As the client, the District is responsible for smoothly executing the tender whose fairness and transparency are secured.

B.1.1 Position of District

B.1.1.1 Involvement of District official in charge of the contract

The tender meeting organizer is the client (District) and all final decisions are made by him. In other words, the responsible person with authority over the contract of the client needs to be involved in all tender-related duties (tender meeting, tender evaluation, award issuance, remainder request, contract conclusion, etc.). The selection of personnel who attend the tender meeting from the client needs to be arranged in advance with understanding of it.

B.1.1.2 Preparatory discussions

Tender meeting procedures, language to be used, contents of greeting of the client, and other points to note are discussed sufficiently in advance in accordance with tender documents to avoid unnecessary confusion on the day of the tender opening. The planned tender price is confirmed and the tender meeting is held with a sealed planned price confirmation sheet on which the price is written and signed to secure fairness of the tender procedures. The confirmation sheet is to show that the planned tender price is not changed. It is opened in front of the tenderers after the tender to prevent doubts about the evaluation of the bidding price. The client and candidate tenders must not have any contact or exchange information before the tender to properly “execute the tender fairly.”

B.1.1.3 Procedures for bids opening

The District that is the client needs to conduct the bids opening meeting and document screening. The document screening needs to be conducted smoothly after confirming the contents.

B.1.2 Venue

B.1.2.1 Environment of venue

Confirm that the venue is spacious enough and in a peaceful atmosphere. If the venue is too small the clients and tenderer staff sit tightly, or there is no independent room, it may hinder smooth bids opening meeting or it may cause inconvenience to document screening, etc. Bidder's representatives should be seated separately from the officials of the client.

B.1.2.2 Preparation of tender price sign board

Prepare a table (tenderers are put in the alphabetical order) to enter the bidding price) that each candidate tenderers offer in advance and put it where all participants can see at the bid opening.

B.1.3 Bid opening meeting procedures

Items below are prepared at least one week before the bid opening.

- List of tenderers
- Agenda of bid opening meeting
- Procedures of bid opening
- Route to the venue of bid opening (map, required travel time, etc.)
- Layout of the venue and seating arrangement

B.1.4 Procedures when the District's intention needs to be confirmed in bid opening meeting

When questions and complaints from tenderers make it difficult to make judgement in the bid opening meeting and discussions with District officials involved in the bidding are needed, they will not start discussions there. Temporary suspension of the bid opening meeting is declared without hesitation and concerned parties move to another room or a place for the discussions among District officials, discussions are conducted and a conclusion is drawn before resuming the meeting. Tenderers are observed during the discussions so that they will not exchange information or conduct discussions among them.

2.3.4 Selection of contractors and supervisors

A. Responsibilities

Actor		Action
Main actor	District	Select contractor and supervisor
Supporter	WASAC RWSS	Support to select contractor and supervisor who has enough potential

B. Detailed activities

The District selects contractors and design supervisors in the procedures mentioned below. WASAC assists this activity.

B.1 Principles of bids evaluation

The bids evaluation is performed based on the principle that "the tenderer that offered the lowest price within the planned price wins the bid among those that meet all specifications."

B.2 Points of bids evaluation

Necessary items related to technical specifications and time schedule in the tender documents are analysed and sorted out in accordance with the items of the tender evaluation report (It is confirmed with the tenderers when there are ambiguities in the tender.) and prices are evaluated.

In case of many successful bidders with equal prices, the procuring entity shall invite them to submit their new bids with reduced prices. In the event the bidders are again on par, the procuring entity shall resort to lot casting among those bidders. If the successful bidder fails to enter into a written procurement contract, the procuring entity may award the tender to the qualified bidder that ranked second. ("Public Procurement User Guide, November 2010 (Rwanda Public Procurement Authority, Ministry of Finance and Economic Planning)")

2.3.5 Preparation of contract documents

A. Responsibilities

Actor		Action
Main actor	District	Prepare contract document for contractor and supervisor
Supporter	WASAC RWSS	Support to prepare contract document for contractor and supervisor
	MINIJUST	Support the District to prepare contract document for contractor and supervisor of big projects (contract amount is equal or beyond 500 million Rwf)

B. Detailed activities

The District produces a contract by reflecting the tender result in the form of contract (draft) in the tender documents. WASAC assists this activity.

2.3.6 Signing the contract

A. Responsibilities

Actor		Action
Main actor	District	Sign the contract for contractor and supervisor
Supporter	WASAC	Support the District to sign contract for contractor and supervisor
	MINIJUST	Support the District to approval the contract by the legal opinion

B. Detailed activities

The District and bid winner agree upon the content of the contract and sign it.

2.3.7 Notification /commencement

A. Responsibilities

Actor		Action
Main actor	District	Finally notify other bidders that their bids were not successful
Supporter	WASAC	Support the District to commence the implementation of the construction work and supervision

B. Detailed activities

Upon signature of a procurement contract, the procuring entity shall finally notify other bidders that their bids were not successful. (Ref: Article 40 Paragraph 4 of The **Ministerial Order N° 001/14/10/Tc .Of.19/02/2014.Establishing Regulations on Public Procurement, Standard Bidding Documents and Standard Contracts**).

WASAC
Water & Sanitation Corporation
"Dignifying Life"

Kigali,
Ref. No: N°11.07.0**/...../15-**/ ***-WASAC-CEO /**

Managing Director
*****
P.O. Box abcd Kigali Rwanda
Tel: 078*****

Dear Sir,

Subject: Final regret notification letter for the construction works of *** Water Supply System in Rwamagana District

Reference is made to the article 40 paragraph four of the Ministerial Order N°001/14/10/TC of 19/02/2014 Establishing Regulations on Public Procurement, Standard Bidding Documents and Standard Contracts whereby "upon signature of a procurement contract, the procuring entity shall finally notify other bidders that their bids were not successful", It is in this regards, the Water & Sanitation Corporation (WASAC) would like to notify you that the above said tender was finally awarded to ****** **Ltd** for *** **Billion** *** **Million** *** **Hundred** *** **Thousand And** *** **Hundred Rwandan Francs (Rwf **,***,***,*** All tax inclusive).** Therefore, your bid was not successful for the above mentioned tender. WASAC gets this occasion to wish you good luck for next tenders.

Based also to the article 23 paragraph six of the Law N°05/2013 of 13/02/2013 Modifying And Completing the Law N° 12/2007 Of 27/03/2007 on Public Procurement related to tender security whereby the procuring entity shall immediately release the bid security if:
1° the procurement proceedings are cancelled;
2° the procuring entity realizes that none of the bidders complies with the required conditions;
3° **the procurement contract is signed.**

As the procurement contract was signed for the due tender, Water & Sanitation Corporation requests you to reach its procurement office to pick up your original Bid Security.

Sincerely,

***** ********
Procurement Services Manager

******* **********
Director of Support Services

******* ********
Chief Executive Officer

KN4 Av 8, CENTENARY HOUSE, Nyarugenge District, Kigali City, Rwanda Tel: + (250) 788181427
E-mail: wasac@wasac.rw, www.wasac.rw

Figure 2-2: Sample of notification to bidder

2.4 Implementation of construction works and supervision

2.4.1 Kick-off meeting of the project

A. Responsibilities

Actor		Action
Main actor	District	Organize kick-off meeting
Supporter	WASAC RWSS	➢ Participate in Kick-off meeting and support to explain contents of project to stakeholders regarding expropriation and community mobilization. ➢ To provide advice about project implementation

B. Detailed activities

The District shall gather the contractors, supervisors and stakeholders and holds a kick-off meeting prior to the commencement of the construction work in accordance with the contract. District shall explain scope of project, the role and responsibility of each stakeholder and construction plan as well as the time schedule of the project. WASAC shall assist this activity.

2.4.2 Implementation of construction works and supervision

A. Responsibilities

Actor		Action
Main actor	District	Supervise the progress of implementation activities
Supporter	Community	Contribute for land acquisition and voluntary work if necessary
	WASAC RWSS	➢ Mobilize community to promote ownership of facility ➢ Support to supervise construction work in accordance with the contract

B. Detailed activities

After the conclusion of the contract, the District supervises works of contractors as the client so that the contract is successfully executed. WASAC assists this activity.

Main points to note in the construction supervision stage are as follows:

B.1 Construction supervision

The purpose of the construction supervision is to ensure that the construction work is performed correctly while ensuring the specified quality in accordance with specifications and design drawings provided in the contract. Specifically, it is checked whether the quality and specifications of the materials and quality, and work progress of constructed objects are identical with what is provided in the contract. If they do not meet the provisions in the contract, it is judged whether it is within the acceptable range from the technical point of view and it is confirmed whether the District accepts it or not.

Thus, the contractors are requested to submit a construction plan prior to its launch and it is carefully examined and approved before the commencement of construction works.

Quality management data, photographs, and other construction records are properly arranged and stored to fulfil accountability.

A good working environment should be secured to safety of those involved directly and indirectly in the project.

B.2 Time schedule supervision

Instructions should be given to complete the construction within the original time schedule.

If it is likely to be difficult to complete the works within the schedule because of occurrences of a war, conflict, earthquake, flood or other unavoidable events, the best course of action is discussed with relevant parties.

B.3 Supervision of installation and operation training of equipment

When equipment is installed in newly constructed facility, attention needs to be paid so that they will be arranged at the right time. It is confirmed that the facility is constructed to meet the quality adequate enough for the equipment installation. Also, a safe place for temporary storage of equipment is secured. If the facility construction gets behind the schedule, equipment procurement schedule is adjusted. If the client is responsible for some works of facility development, he has to strictly meet the deadline.

It is supervised so that contractors perform installation, operation training and delivery of maintenance manuals securely.

2.5 Community mobilization for implementation stage

A. Responsibilities

Actor		Action
Main actor	District	➢ Collect basic information of communities ➢ Encourage communities to participate in the project ➢ Foster a sense of ownership of communities for the project ➢ Respond to communities' inquiries, problems or complaints
Supporter	WASAC RWSS	Support District in conducting community mobilization by establishing and selecting target groups, etc.
	NGO and Donor	Collaborate with the District in promoting community mobilization

B. Detailed activities

B.1 District

The District should introduce participatory methods as a means of ensuring the relevance of committee inputs in the implementation stage. There should be no unilateral decision-making in implementing the project.

1) The District holds meetings with communities and local authorities to disseminate the outline of the project to them and collect basic information of the communities' capacity and intention for O&M such as willingness, operational skill and knowledge, and community contribution.

2) The District discusses and specifies a main entity (members) which leads the project with the community. The District is recommended to make good use of existing entity and rules in the community if there, when implementing the project.

3) The District and community discuss and define the roles and responsibilities of the community, the District, NGOs and other concerned parties.

4) The District and stakeholders assist the community to understand the available technological option and help them to select the technology best suited for their needs (project).

5) The District needs to achieve community commitments for the project. The community and the village chief should be involved in the project as key actors. The District encourages them to proactively act their own roles in the project.

6) The District responds to needs requested by the communities as necessary

B.2 WASAC RWSS

CM unit of WASAC RWSS supports the District in the process mentioned above.

B.3 NGO and Donors

NGO and donors collaborate with the District in the process mentioned above by implementing some activities on behalf of the District.

2.6 Monitoring and evaluation of implementation

2.6.1 Preparation of progress reports

A. Responsibilities

Actor		Action
Main actor	District	➢ Receive and check the progress report from the consultant and share the copies of the report to all stakeholders. ➢ Monitor progress and take necessary action.
Supporter	WASAC RWSS	➢ Monitor progress to know the timing to start community mobilization ➢ Monitor progress to know the timing to start preparation of PPP contract ➢ Support to monitor progress and take necessary action ➢ Monitor progress to manage consumption of resource
	NGO and Donors	Receive the report and monitor the progress of works

B. Detailed activities

The District hires the supervision firm responsible to produce and submit a monthly progress report and WASAC assists this activity. However, in case of a big project, activities can be implemented by WASAC and supervision is jointly done by District and WASAC under MOU.

2.6.2 Monitoring of EIA

A. Responsibilities

Actor		Action
Main actor	District	Prepare the monitoring report. Environmental officers at local government level assist in inspecting and monitoring environmental compliance during project implementation.
Supporter	Ministry of environment (MoE)	Assist in inspecting and monitoring environmental compliance during project implementation.

Actor		Action
	REMA	➢ Inspect to ensure environmental compliance during project implementation. ➢ Receive and review annual Monitoring Reports prepared by developers. ➢ Cross-check monitoring results. ➢ Undertake routine inspection and auditing to enforce compliance ➢ Take action when project not in compliance.
	Local Governments	Environmental officers at local government level assist in inspecting and monitoring environmental compliance during project implementation.

Source: GENERAL GUIDELINES AND PROCEDURE FOR ENVIRONMENTAL IMPACT ASSESSMENT, 2006, RWANDA ENVIRONMENT MANAGEMENT AUTHORITY

B. Detailed activities

B.1 Environmental Auditing and Monitoring

Monitoring refers to regular collection of environmental data at the project site while environmental auditing is a systematic documentation, periodic and objective evaluation of protection and management of the environment.

Both REMA and the developer (or an EIA Expert contracted by a developer) shall be responsible for environmental monitoring and auditing. During auditing and monitoring, the Authority intends to ensure that mitigation measures and recommendations of the environmental impact study are implemented to avoid adverse environmental impacts and costs a developer would incur in restoration if environmental degradation occurred.

B.1.1 Dual Level Monitoring

The monitoring process shall be a dual level process executed by both the developer and REMA. The developer shall undertake self-monitoring, self-record-keeping and self-reporting. Information gathered through monitoring shall be recorded and forwarded to REMA annually.

During monitoring the developer shall measure specific environmental indicators determined by prevailing national standards, sectoral regulations and any other relevant legislation. The developer will be responsible for regular and frequent monitoring and shall keep records of monitoring with respect to date and findings. Monitoring environmental parameters recommended by the EIA study should be an ongoing responsibility of the developer who should annually submit a monitoring report to the Authority.

Monitoring shall follow a plan detailing a schedule for inspecting and reporting findings to REMA and relevant Lead Agencies. It shall also identify key indicators of the environmental quality and impacts to be monitored and threshold levels above which the impacts are significant, delineate responsibilities specifying who collects data, who acts, what specific actions and costs involved. REMA and relevant Lead Agencies shall review the monitoring reports and advise on measures necessary to abate any ongoing impacts.

A project shall be considered non-compliant and could face penalties or closure if a developer does not submit monitoring reports or does not implement impact mitigation measures to the satisfaction of the Authority. REMA shall also undertake parallel monitoring as the developer, but on an impromptu basis.

B.1.2 Preparation and Contents of a Monitoring Report

The developer and REMA shall implement and monitor environmental aspects of the project in accordance with the impact mitigation plan described in the Environmental Impact Report, each entity preparing a monitoring report with the following information:

- Name or title of developer,
- Address of developer,
- Name of project,
- Details of environmental parameters/ indicators monitored,
- Results of monitoring exercise,
- Specific parameters not in compliance,
- New measures for improved environmental conservation (in cases where monitoring results show worse conditions than predicated in the Environmental Impact Assessment).

B.1.3 Verification of Monitoring Data

In cases where the Authority needs to verify content of monitoring reports submitted by facility owners, its inspectors shall undertake onsite measurements as need arises. Data so collected will be compared with what is provided by the developer. After cross-checking the two sets of data, the Authority shall produce a report detailing the monitoring results. The monitoring report made by the Authority, referred to as a Compliance Report, will indicate whether or not the developer's monitoring data is consistent and if he is in compliance.

If the monitoring data is found to be inconsistent, REMA will immediately repeat monitoring for contradictory parameters. If the developer is found to be non-compliant he/she shall take measures necessary to mitigate any ongoing adverse environmental impacts. The Authority shall have an oversight function to ensure that monitoring is conducted and that the developer implements measures arising out of such monitoring. The developer shall submit to the Authority and the lead agency a report on mitigation measures taken to address ongoing impacts.

2.6.3 Monitoring of Resettlement of Action Plan

A. Responsibilities

Actor		Action
Main actor	District	➢ Arrange a monitoring of the compensation activities ➢ Maintain a complete database on every individual impacted by the sub-project land use requirements and compensation, land impacts or damages ➢ Prepare Resettlement Completion Report and other regular monitoring reports.
Supporter	WASAC	➢ Support arrangement of the monitoring of the compensation by the district ➢ Support preparation of the resettlement completion report and other regular monitoring report

B. Detailed activities

B.1 Overall

Arrangements for monitoring of resettlement activities by the implementing agency; supplemented by independent monitors as appropriate, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; evaluation of the impacts of resettlement for a reasonable period of time after the resettlement activities have been completed

Implementing agency will conduct monitoring and evaluation to track the implementation of the Resettlement Action Plan, paying particular attention to the project-affected communities, especially vulnerable groups, including female headed households and orphan-headed households. The monitoring process will seek to verify that:

- Actions and commitments for compensation, resettlement, land access, and development in the RAP are implemented fully and on time,
- Entitled persons receive their compensation on time,
- Compensation and livelihood investments are achieving sustainable restoration and improvement in the welfare of Project-Affected Persons, households and communities,
- Complaints and grievances are followed up with appropriate corrective action, and
- Vulnerable persons are tracked and assisted as necessary.

The project sponsor such as donor agency will conduct routine supervision to ensure that the PAPs are not worse off than they were before the project. In addition, an external audit will be undertaken by an external party to the project implementation team with the aim to assess the compliance of the RAP implementation.

B.2 Monitoring indicators

A number of indicators would be used in order to determine the status of affected people. Therefore, the resettlement and compensation plans will set two major socio-economic goals by which to evaluate its success: Affected individuals, households, and communities are able to maintain their pre-project standard of living, and even improve on it; and the local communities remain supportive of the project. In terms of the resettlement process, the following indicators could be used to understand the success of the measures identified and the working of the relevant parties in implementation the RAP:

- Percentage of individuals selecting cash or a combination of cash and in-kind compensation;
- The number of contentious cases as a percentage of the total cases;
- The number of grievances and time and quality of resolution;
- Number of impacted locals employed by the civil works contractors; and
- General relations between the project and the local communities.

The District authorities will maintain a complete database on every individual impacted by the sub-project land use requirements and compensation, land impacts or damages; and the implementing agency should prepare Resettlement Completion Reports for RAP, in addition to other regular monitoring reports.

The project Resettlement and Compensation Committee will facilitate coordination of information collation activities (such as surveys, supervising documentation) in accordance with procedures put

in place. Implementing agency will provide training, technical support and funds to ensure that this happens. In order to assess whether these goals are met, the RAP will indicate parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities.

Implementing agency will scrutinize these statistics in order to determine whether the compensation arrangement is done as planned in the RAP. The project team will alert implementing agency, if there appears to be any discrepancies. Financial records will be maintained by the district land bureau to permit calculation of the final cost of resettlement and compensation per individual or household. The indicators that will be used to monitor implementation of the RAP include.

- Outstanding compensation cases;
- Grievances recognized as legitimate out of all complaints lodged;
- Grievance resolved and unresolved by levels

Financial records will be maintained by implementing agency, to permit calculation of the final cost of resettlement and compensation per individual or household.

2.7 Handover of the facilities to District

2.7.1 Provisional handover of the facilities

A. Responsibilities

Actor		Action
Main actor	District	➢ Select and nominate the PO who is going to ensure the sustainability of the WSS ➢ Conduct inspection upon completion of facility construction and installation of equipment
	Consultant	➢ Organize the inspection and participate in the inspection.
	Contractor	➢ Receive the comments and instructions from the District
Supporter	WASAC RWSS	➢ Ensure that the expropriation has been well conducted and everybody has been paid. ➢ Support to conduct inspection ➢ Support to inspect water supply facility to comply with the requirement of specification and drawing of the contract ➢ Support to prepare inspection report ➢ Support the District in development of Operation and Maintenance manual and tools for facilitating the sustainability of WSS.
	WSP / POs	➢ Conduct inspection upon completion of facility construction and installation of equipment and report to District ➢ Start Operation and Maintenance of WSS
	Community (Users)	➢ To manage the transition period to the final handover

Actor		Action
	NGOs	Support the District to build the capacity of staffs and beneficiaries
	Development Partners	To monitor if the comments and instruction collected to the District are been taken in consideration

B. Detailed activities

The District performs a completion inspection in the below procedures. WASAC assists this activity.

The supervision firm performs a completion inspection upon the completion of facility construction and installation of equipment in the presence of the client (District). The supervision firm prepares the completion inspection report and obtains approval from the client.

The inspection includes adequate confirmation of the completion documents (as built drawings, photographs during construction, quality control report, maintenance-related documents, etc.) to be submitted to the client to check whether the outcome of the construction complies with the design.

The representative of District, WASAC, contractor, and consultant should participate in the inspection and sign the inspection report both provisional and final handover.

2.7.2 Final handover of the facilities to District

A. Responsibilities

Actor		Action
Main actor	District	➢ Check based on the provisional handover inspection report if the instructions given has been followed ➢ Inspect again the WSS to see if there is no new defect ➢ Receive the water supply facility and keep all necessary documents such as as-built documents and catalogs from contractor ➢ Sign the final handover report
	Contractor	➢ Receive remarks and instructions from District and make required correction. ➢ Sign the final handover report
Supporter	DWB	➢ Support the District to file all necessary documents such as as-built documents and catalogues from contractor ➢ Providing report of reliability period ➢ Support the District to check if there is no new defect on ➢ Water supply systems ➢ Support the District to ensure the overall coordination at the District level ➢ Support the District as the consumers' voice, as well as for reports and complaints received at lower decentralized levels (Village to Sector level).
	WASAC RWSS	➢ Support to sensitize the community to promote ownership of the facilities and intention to pay water fees ➢ Support to hand over water supply facility from contractor to District

Actor		Action
	MININFRA	➢ Participate inauguration ceremony on behalf of the GoR ➢ To be shared final project document
	Community (Users)	➢ Support the District to facilitate the sustainability of facilities. ➢ To be involved in project identification, planning and commissioning, as a matter of policy; form user committees to represent consumer interests; are in charge of the operation and maintenance of certain water infrastructures (community management).
	Contractor	➢ Receive remarks and instructions from District and make required correction. ➢ Sign the final handover report
	WSP / POs	➢ Confirm if the WSS is working well ➢ Continue Operation and start to own curative maintenance cost
	Development Partners	➢ Support the District to build the capacity of staffs and beneficiaries ➢ Handover the completed project ➢ Final evaluation of the project ➢ Support sector development in accordance with the principles agreed for the SWAP; contribute to financing sector projects through a variety of aid modalities.

B. Detailed activities

When the final handover report is judged to be approved, the District promptly receives completed water supply facility from the contractor. WASAC assists this activity.

2.7.3 Issue of completion certificate to the contractors

A. Responsibilities

Actor		Action
Main actor	District	Provide completion certificate to the contactor
Supporter	None	None

B. Detailed activities

When the final handover report is approved, the District promptly issues a certificate of completion to the contractors.

<Reference>

- http://www.sswm.info/home, sustainable sanitation and water management

- https://opentextbc.ca/projectmanagement/chapter/chapter-3-the-project-life-cycle-phases-project-management/

- Resettlement Policy Framework, Development of Urban Infrastructure in six Secondary Cities of Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare of Rwanda, and the City of Kigali, Final report, January 2016

- GENERAL GUIDELINES AND PROCEDURE FOR ENVIRONMENTAL IMPACT ASSESSMENT, November 2006, RWANDA ENVIRONMENT MANAGEMENT AUTHORITY

3 Operation and Maintenance Stage

Operation is defined as the everyday running and handling of a water facility. Maintenance is a collection of those activities required to sustain the water supply in a proper working condition. Overview of Operation and Maintenances Stage is shown in below.

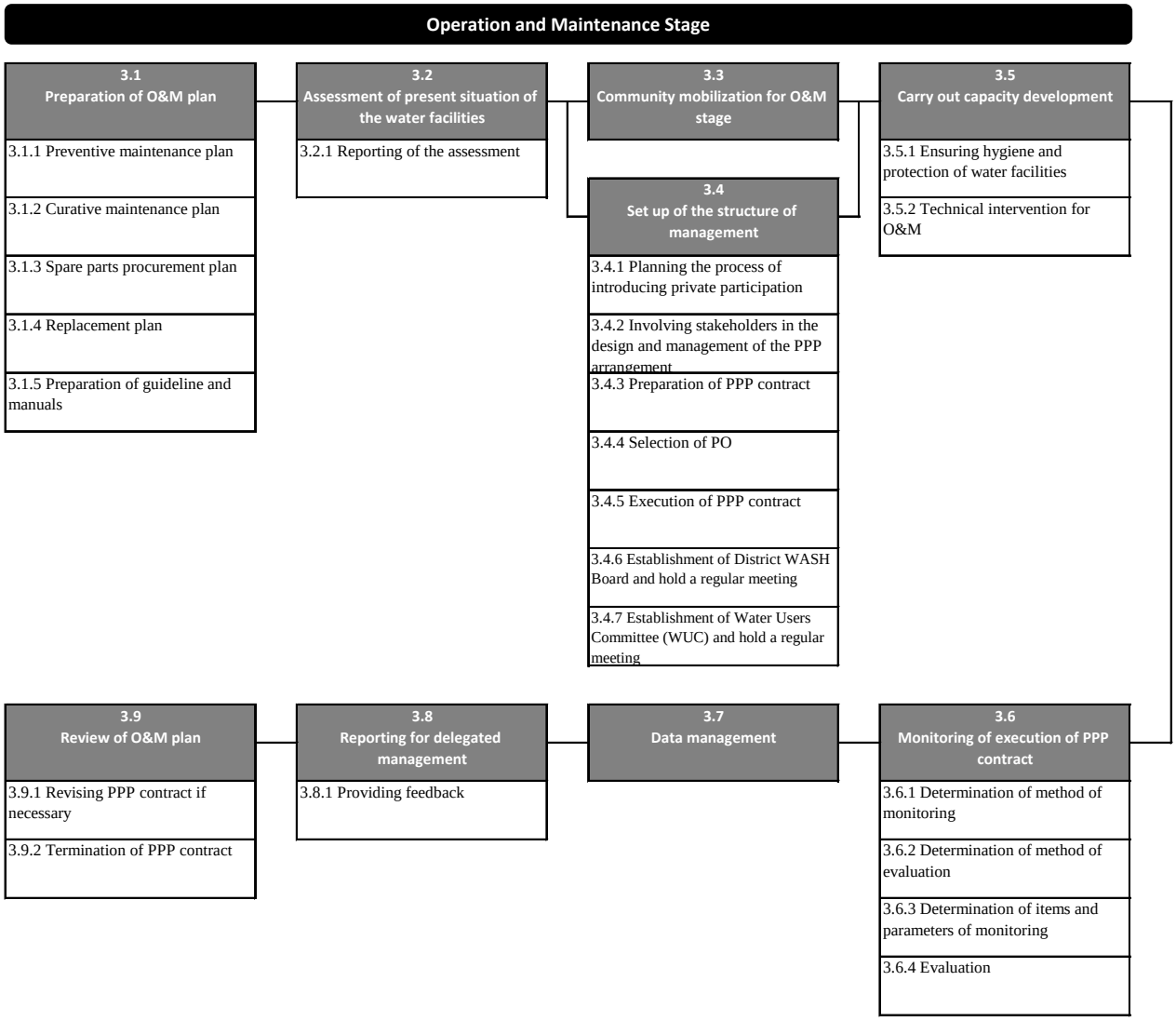


Figure 3-1: 3 Operation and Maintenance Stage Overview

(The chart is created based on the responsibility matrix of rural water supply project)

3.1 Preparation of O&M plan

Planning is about defining the objectives and targets to achieve, then deciding the actions and techniques to accomplish them. While planning for preventive O&M, the PO proposes to establish a Strong Leadership, sound mechanisms of Coordination and control, sound structure and process, solid decision making and firm resources mobilisation. Here managers try to balance and optimize the available resources and other capabilities with the external environment (threats, opportunities) in order to generate a plan from which will depends the performance (Mugabi, Kayaga, & Njiru, 2007). One of the main factors for a successful plan (Kayaga, Mugabi, & Kingdom, 2013) is the involvement of the stakeholders, mostly the community:

（1） Plan for community involvement

The activities of a WSP should take into consideration the following points:

- Identification of local priorities regarding the opening hours, the choice of the caretaker at the water point, payment methods, communication / relations
- Giving a voice to low-income communities or households
- Recognition and adoption of the local knowledge related to the operation and maintenance
- Training and employing of local caretakers / plumbers

Community participation facilitates for making informed decisions, and develops a sense of ownership among local stakeholders. It also helps for limiting the acts of vandalism and enhances the fund collection efficiency.

（2） Plan for human resources mobilisation

The awareness of staff regarding their roles and responsibilities should be ensured. In addition, employees should be given workshops and further trainings as a way of capacity development, in order to guarantee adequate qualification, knowledge and skills. Moreover, appropriate incentive and motivation should be developed as tools of behaviour control. Human resource planning requires the provision for:

- Recruiting / staffing of qualified workers
- Developing the capacity of employees
- Assessing, monitoring and rewarding of employees
- Establishing and maintaining of good relationships with and among workers

（3） Plan for financial resources mobilisation

- Estimate the budget required for the activities of preventive Operation and maintenance
- Identify the sources of fund (Bank loans, partners, sponsor, water selling, and other sources of incomes) normally, the government is encouraging financial autonomy of the WSPs. That is why it is calling the involvement of the Private Operator as they show the capacity and willingness to invest.
- Plan for a clear and complete financial accountability, financial reporting and auditing.
- Define the rules and tools for financial monitoring

3.1.1 Preventive maintenance plan

A. Responsibilities

Actor		Action
Main actor	District	➢ Approve the preventive maintenance plan elaborated by WSPs ➢ Follow up the WSPs to confirm if they follow the plan
	WSPs/POs	➢ Elaborate the preventive maintenance plan ➢ Conducting the preventive maintenance according to the plan elaborated

Actor		Action
Supporter	WASAC RWSS	➢ Conduct community mobilization about ownership of infrastructures and payment of water services ➢ Support the WSP by training them to elaborate the preventive maintenance plan ➢ Support the District and WSPs by conducting capacity building on elaboration of preventive maintenance plan ➢ Support the District and WSPs in elaboration and approval of preventive maintenance plan
	Community / Users	➢ Protection of the facility ➢ Pay for water services

B. Detailed activities

Preventive maintenance refers to the regular inspections and servicing of a water facility in order to preserve assets and minimize breakdowns (Davis et al., 1995).

Figure 3-2: Users polluting their water (Davis et al., 1995).

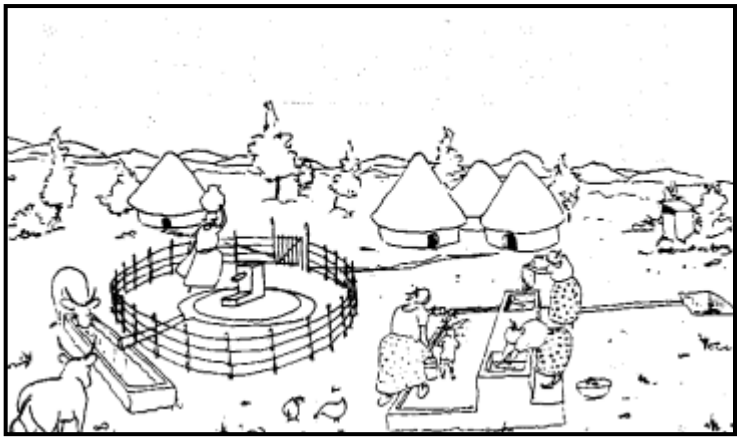


Figure 3-3: Users protecting their water source (Davis et al., 1995).

Preventive maintenance plan shall be elaborated by POs in accordance with **Article 7.3 of "District and Private Operator's Guideline for Operation and Maintenance of Rural Water Supply System in Rwanda (SusWas)" hereafter called "O&M Guideline**"

For a WSP, preventive operation and maintenance embraces a wide range of activities starting from the strategic planning; then covering also resources mobilisation, stock provision, servicing and maintenance as well as records keeping.

B.1 Plan for preventive Operation and Maintenance activities

Suitable preventive operation and maintenance encompasses 3 compulsory actions including the provision of a stock, the regular inspection and servicing of the installations as well as comprehensive records.

B.1.1 Procurement and Stock

Every WSP should always have a stock containing a minimum quantity of spare parts, tools and consumables required for routine operation, servicing, maintenance and replacement of used appurtenances or fittings. The same stock should serve for a quick / emergency repair when needed. Spare parts include pipes in all sizes as the ones in the concerned networks, gaskets, joints, valves, spigots, bolts nuts, unions, nipples sockets and elbows. The tools are pipe wrenches, different kind of keys, spanners set, hooks, hammers, screw drivers, chisels, dewatering pumps, shovels, pliers, crow bars, measure tape, rope, lamp torch and ladder, brushes, vice. Consumable are the lime, most commonly used oxidants such as chlorine and Potassium permanganate, common coagulants such as Aluminium Sulfate, Sodium Aluminate, Ferric Sulfate, Ferrous Sulfate, Ferric Chloride, Polyaluminum Chloride and Cationic Polymers, disinfectants such as chlorine, fuel (for pumping system), lubricant...

B.1.2 Inspection, cleaning and servicing

The condition of various components or installations of a water facility as well as the fittings and appurtenances of a water facility should be regularly checked, manipulated, cleaned, lubricated and adjusted based on a periodical schedule.

Sources and Catchment areas

- Regular measurement of discharge: The regular measurement of the source gives an indication of seasonal variation of the production. Sometimes the drop down of the discharge is due to the intrusion of roots in the catchment or sealing of the catchment drain.
- The intake structures must be maintained in order to ensure that the quality of water injected in the distribution system is safe as it is controlled from the head of the network.
- The protection ditch must always be maintained to avoid deposits in order to allow easy drainage of rain water
- The fence of the catchment zone should be maintained. This requires the regular cutting of trees in order to avoid damage to the fence and keep it clean.
- The access gate of intake chambers should be kept closed with a door firmly controlled.
- Weeding and trim the lawn glasses planted in the catchment zone.
- Cleaning the catchment zone through sweeping, washing or scrapping the focused spots.

B.1.3 Storages tank

- Adjusting the float valves
- Controlling the cover / trap doors
- Aeration of the tank by maintaining the holes provided in the aeration chimney

- Expelling rodents, lizards, mosquitoes and flies
- Testing and sealing the leakages
- Disinfection
- Proper protection of openings of the service reservoirs (i.e. ventilators with nets and manhole covers)
- Appropriate evacuation of overflow, dead ends and stagnant water
- Cleaning of manholes or Chambers
- Appropriate maintenance of access ladder
- Appropriate maintenance of supports and anchor blocs
- Appropriate maintenance and cleaning of drainage pits / holes

B.1.4 Pipes

- Cleaning pipes (Flushing out water, swabbing or air scouring)
- Disinfection: The chemicals commonly used are chlorine. When using chlorine, higher concentrations are required than normal dosages. Maintaining 0.5-1.0 mg/l of residual chlorine for a week or two will be sufficient in most cases. In isolated and extreme cases, much higher dosages of 10-50 mg/l can be used, specifically for cleaning of the service reservoirs but these should be disconnected from operation. (N. Trifunovic, 2014).
- Covering with soil the unearthed piped
- Leakages sealing
- Removing intrusion from growing roots
- Controlling soil movement or heavy traffic over pipes
- Adjustment of flow and pressure

B.1.5 Fittings

- Appurtenances and fittings installed in the drinking water facility need regular inspection, manipulation, cleaning and adjustment. The fittings in Galvanized Steel such as meters, valves, sockets, spigots, nipples and unions are likely to rust it not operated and conveniently serviced. In addition, the strainers, meshes as well as pipe sections located in depression may clog with mad, litter and rubbish if not regularly cleaned. Some accessories require lubrication. The servicing procedures may refer to the manufacturer's manuals or pre-prepared guidance manuals. For that, at the commissioning of each completed new project, the contractor should be requested to submit both manuals.
- At all cost it is recommended to identify and use of local spare parts where it could apply.

B.1.6 Monitoring of the network

- Observations, measurements of quality, water flow, pressure, water level and leakages along the pipelines.

B.1.7 Records keeping

- WSP are recommended to always avail a book in which all performed activities are daily summarised. Such book should describe the date, the accurate location, description of activity performed, a detail of the materials involved, the cost implication, a sketch/drawing if applicable, as well as additional observation.

3.1.2 Curative maintenance plan

A. Responsibilities

Actor		Action
Main actor	District	Check and approve the curative maintenance plan elaborated by WSP
	WSP	➢ Elaborate and submit the curative maintenance plan to the District ➢ Conducting the curative maintenance according to the plan approved by the District
Supporter	WASAC RWSS	Support the District and WSPs in the elaboration and approval of curative maintenance plan

B. Detailed activities

Curative maintenance is defined as "the minor repairs and replacement of broken and worn out parts to sustain reliable facilities" (Davis et al., 1995).

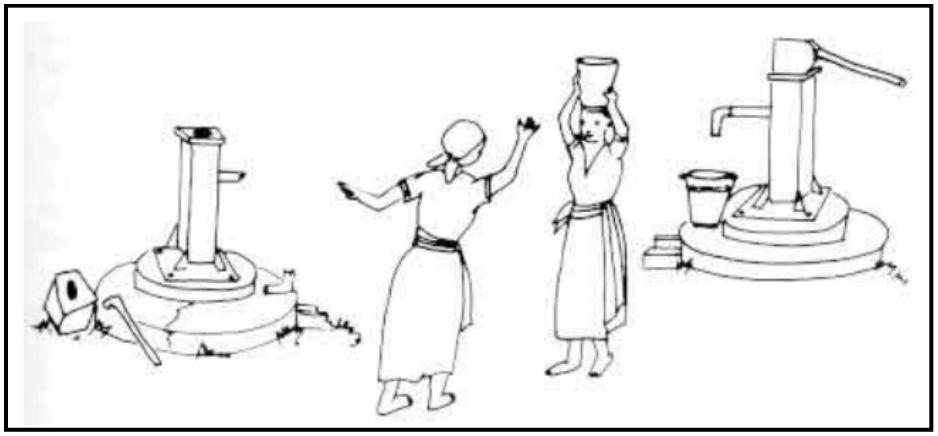


Figure 3-4: Good Operation and maintenance can make difference (Davis et al., 1995)

Curative maintenance plan shall be elaborated by POs in accordance with **Article 7.4 of "District and Private Operator's Guideline for Operation and Maintenance of Rural Water Supply System in Rwanda (SusWas)" hereafter called "O&M Guideline**"

The plan for curative maintenance should outline the strategies for: identification of the technical problems within the water infrastructure, the sources and quality of spare parts, the means of transport, availability or hiring technical staff, the measures for isolation during repairing and back up delivery solution.

- Detection of failures in the water facility. It is important that the PO vulgarize his phone number and provide the modalities for compensation of the call fees among the users so that any person who detects a problem can inform him quickly. Certain POs choose to construct relation with a number of informants in the service area. Besides the informants, the PO should analyse the regular records. When he founds incoherent or suspicious data he has to carry out investigation, tests, measurement to find if they are caused by the technical failure.

- The PO should indicate how he plans to arrange his transport to reach the site as quick as possible (vehicles or motorcycles are recommended)

- Sources of spare parts: Normally the PO analyse the history of the facilities and knows the parts most likely to breakdown. In that case he creates the enough stocks scattered across the working area. For none frequently breaking parts he identifies a closer supplier with whom he arranges agreement.

- Technical team: Relevant workers involved in maintenance of water facilities are plumbers, masons and sometimes electro mechanics.

- Isolation of the section to repair if necessary (Use of additional valves, bypassing or temporally closing the facility)

- Manual for repairing procedures: It is recommended that the PO avails a manuals of procedures in which he describes the techniques he intends to utilise during reparations works. Those techniques should provide sustainable solution at the optimum cost. It could be recommended to him to give first priority to local materials and technologies. The manual of procedures must also show what the individual or corrective tasks, techniques of handling of fitting, safety of workers on site and tidiness insurance are.

- The PO should limit the time of reparation as short as possible and provide a backup solution for water delivery (enough storage, by pass, water trucks)

- Budget: The budget dedicated to curative maintenance is a portion of the revenues from the water sold. Normally the elements of O&M expenses include: (i) Personnel, (ii) Materials, Chemicals, (iii) Utilities, (iv) Transport, (v) outsourcing.(Brikké, 1990)

- The following figure -shows the 2012 annually expenditures distribution of a sample PO:

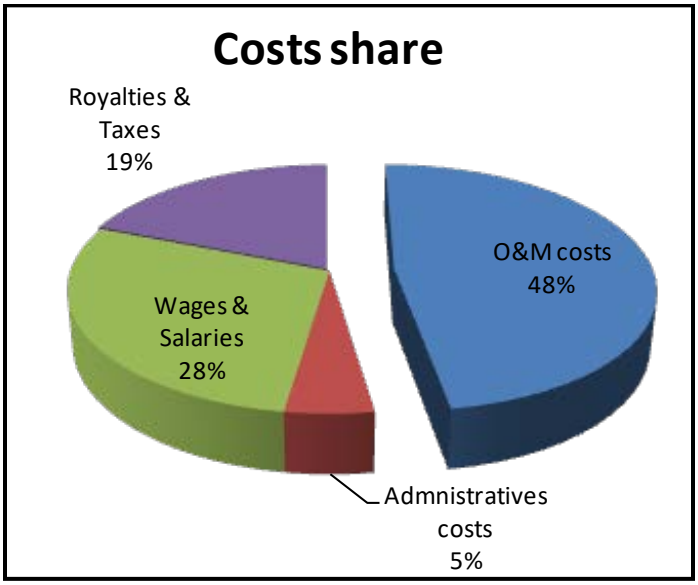


Figure 3-5: Expenditures items and their costs % in the Year 2012.

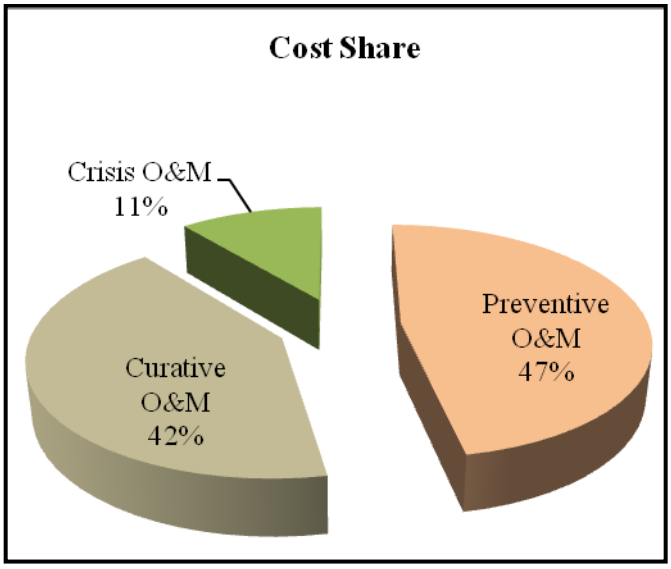


Figure 3-6: Breakdown of O&M costs (Sample PO: Year 2012)

3.1.3 Spare parts procurement plan

A. Responsibilities

Actor		Action
Main actor	District	Check and approve the spare parts procurement plan elaborated by WSP
	WSP	Elaborate the spare parts procurement plan
Supporter	WASAC RWSS	Support the Districts and WSP in elaboration and approval of spare parts procurement plan

B. Detailed activities

The District instructs the PO to formulate a spare parts procurement plan in accordance with **Section 7.2 of the "O&M Guidelines**".

The WSP identifies the most frequently required consumables and spare parts and estimate the periodically required quantity. The frequently damaged spare parts are: services taps, valves, padlocks, sockets, Te-junction and water meters. A WSP takes profit through creating the stock, because the stock reduces the redundant courses while going at the hardware shop every time of breakdown. It is recommended to start from the spare parts which match with local or wide spread technology. The spare parts procurement plan should outline the following points:

【Point to be considered for the developing of the spare parts procumbent plan】

- Establishment of a procurement unit in charge of supplying spare parts.
- Procedure of identification of the supplier preferably a local one.
- Determine the procedures of ordering
- Defines the system of transport
- Decide the payment procedures
- Provide the storages place / warehouse and the stock manager.

In case no local supplier is available, choose an appropriate manufacturer, contact him. Visit the factory. Conduct the test of resistance of the material. Plan with him the modalities of supplying.

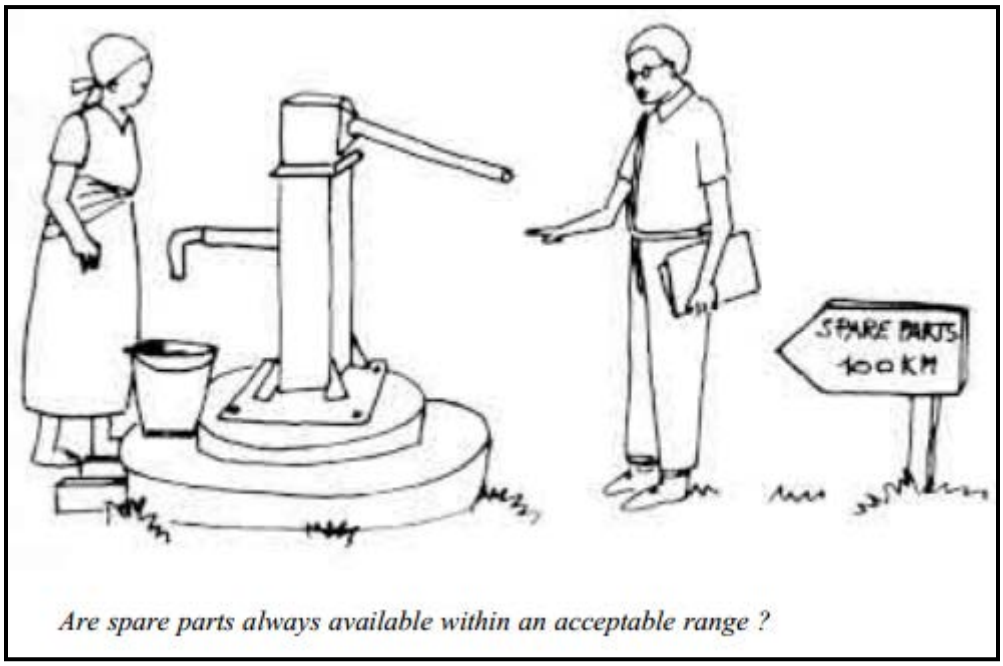


Figure 3-7: Spare parts are sometimes difficult to find (Davis et al., 1995).

WSPs should find plumbing materials (pipes, fittings, spare parts of pumps, etc. Availabilities of spare parts depends on a kind of spare part) of optimum quality at local markets. WASAC RWSS can also support the POs by providing a reference plumbing hardware shops.

3.1.4 Replacement plan

A. Responsibilities

Actor		Action
Main actor	District	Elaborate the replacement plan
Supporter	WSP	Support the District by identifying the water supply facilities which need to be replaced
	WASAC RWSS	Support the Districts by helping them to elaborate the replacement plan

B. Detailed activities

The District produces an asset management sheet in accordance with **Section 4.3 of the "O&M Guidelines"**. Similarly, it also produces an asset budget sheet in accordance with **Section 4.4 of the "O&M guidelines".** It then formulates a replacement plan based on the asset management sheet and asset budget sheet.

A plan of replacement can be elaborated by the District in the beginning of every financial year. Basically two factors drive the plan of replacement. Those are:

- The inventory of defected water facilities
- Available budget

The Districts prepares the replacement plan, but priorities are discussed among the stakeholders of drinking water schemes.

The plan of replacement should display:

- The description of the water facility to rehabilitate
- All works to be executed
- The budget allocated
- The time to execute the replacement (starting and deadline)
- Potential impacts (positive and negative)

3.1.5 Preparation of O&M manuals

A. Responsibilities

Actor		Action
Main actor	District	➢ Request PO to develop and submit own O&M manual for each and every water supply system. ➢ Examine and approve O&M manual submitted by PO for each and every water supply system ➢ Monitor the operation and maintenance practices of the PO by this O&M manual
	PO	Develop own O&M manual for each and every water supply system
Supporter	NGOs and Donors	Support WASAC RWSS by providing capacity building and resources which can help them in the elaboration of guidelines and manuals
	WASAC RWSS	➢ Support PO to develop their own O&M manual based on the guidelines elaborated by WASAC for each and every water supply system ➢ Support District to examine O&M manual submitted by PO

B. Detailed activities

District shall request PO to develop and submit his own O&M manual for each and every water supply system. District shall monitor the operation and maintenance practices of the PO by this O&M manual.

PO shall develop own O&M manual for each and every water supply system in accordance with the national guidelines and manuals elaborated by WASAC and the ***"District and Private Operator's Manual for Operation and Maintenance of Rural Water Supply System in Rwanda"***. The O&M manual should at least be updated yearly after an evaluation meeting of PO and District.

Brikké, (1990) highlights that an O&M manual should be developed within the following objectives:

【Objectivise of the O&M manual】

- To raise awareness on how to assess O&M needs and constraints
- To identify strategies to ensure O&M on a sustained basis
- To develop an overview of tools, methods and demonstration relating to key issues in O&M
- To identify O&M requirements for different service options
- To identify roles and actors involved in O&M
- To develop an information management framework and indicators to monitor O&M
- To develop individual or group action plan

- To provide an insight on modalities for adoption of PPP option in water services delivery.

3.2 Assessment of present situation of the water facilities

3.2.1 Reporting of the assessment

A. Responsibilities

Actor		Action
Main actor	District	Assess the current situation of water supply facilities and prepare the assessment report
Supporter	WASAC RWSS	Support the District by; ➢ conducting together the assessment about community mobilization ➢ conducting together the assessment about contract management ➢ conducting together the assessment on O&M of water supply facilities ➢ conducting together the assessment about fund mobilization
	PO	Support the District in conducting the assessment

B. Detailed activities

The District as the owner of drinking water infrastructures has to continuously be aware of the condition of those facilities and it should be informed about the degree of the services that the beneficiaries are receiving. That is why a periodically assessment is to be conducted followed by a report.

Actors: The assessment as well as the report is done by a technical team from the District supported by WASAC RWSS and in collaboration with users and other stakeholders (NGOs, religious institutions ...).

Assessment tools: Inventory of facilities, maps and drawings, reports of the WSP, measurement instruments, questionnaires.

Methods: Site measurement, observations, tests, interviews, discussion with informants. Analysis of report, correspondences from the WSP as well as the minutes of the hold meetings.

Technical parameters or information to be checked and reported:

【Technical parameters or information to be checked】

- **Amount of water produced**: different techniques can be used such as a chronometer and a bucket, geometrical channels, barrages...
- **Quality of water produced**: take a sample at different spots (source, middle, tail end) and take the sample to the laboratory
- **Pressure of water flow** in service pipes using a manometer
- **Condition of the sources and catchment area** for checking the leakages in the sources, drainage or protection ditch, fence for limiting animals' accessibility, growing trees in the vicinities (distance < 50 m) whose roots may interfere the sources.
- **Condition of the treatment plants:** Physical pre-treatment, aeration, chemicals dosing, flocculation and sedimentation unit, filtration and disinfection units

- **Condition of the pumping station:** Pump shelter, pumps, switch board system, anti-hammer, workshop, generator or electrical installation
- **Condition of the pipelines:** No PVC pipes exposed on sun, no breaks or leakages, no internal coating, supports and anchorages
- **Condition of the storages tanks:** Internal coating, leakages, trap door and proper aeration, float valves, inlets and outlets, tidiness
- **Condition of the water taps:** Hygiene, fences, water meters, spigots and valves
- **Condition of hydraulic structures:** civil works and appurtenances inside the valves chambers, balancing chambers, air release valves, washouts

Beside technical aspects of the water facilities, additional parameters can be assessed and reported. Those include:

【Additional parameters to be checked】

- Number and categories of the users covered, quality of the services offered to the users and their satisfaction.
- Achieved welfare, health and socio economic impact.
- The terms and management of the contracts of the WSPs: Time schedule of the contract, royalty payment, annually beginning targets of the WSPs and closing achievements, reporting and correspondence from the WSP, feedbacks and inputs from the Districts, meeting between contracting parts and their minutes.
- Activities and results of fund mobilisation, networking and partnership in water sector
- People awareness and participation

The schedule of technical appraisal of the condition of the water assets should be at least once a year, so that the identified defects or requirements could be considered in the annual District budget.

3.3 Community mobilization for O&M stage

A. Responsibilities

Actor		Action
Main actor	District	➢ Conduct community mobilization for Operation and Maintenance of water supply facilities
Supporter	WASAC RWSS	➢ Support District in conducting community mobilization for maintaining water supply facilities
	NGOs	➢ Collaborate District in conducting community mobilization for maintaining water supply facilities in terms of capacity building

B. Detailed activities

B.1 District

Rural communities are not aware of the new principles of water services management, including their roles in maintaining the hygiene, security and sustainability of the infrastructures as well as payment for water services. The Districts and other stakeholders require to repeatedly conduct the meeting and campaigns in order to community awareness rising. There should be no unilateral decision-making in carrying out O&M of water supply facilities. When the District considers

community participation, women should be encouraged to take on leadership roles on a kind of committee. The District empowers the communities for addressing their own issues on water supply.

Source: (Brikké, 1990)

Figure 3-8: Willingness to pay for water services

1) The District holds meetings with communities and local authorities to disseminate the outline of the project to them and collect the following basic information;
   - The community's capacity of O&M of water supply facilities such as operational skill, knowledge and economical situation at home (ability to pay for water service).
   - The community's intention for O&M such as willingness to participate in O&M, and community contribution to O&M such as paying for water services.
   - The history of community based management such as presence of WUC, repair system and water tariff system.
2) The District discusses the roles and responsibilities of the community and achieves community commitment with the chief of the village.
3) The District and the community discuss and identify the main entity which is supposed to be in charge of daily management of water supply facilities (newly establish committee or utilize an existing entity).
4) The District prepares training programmes for the members of main entity to strengthen their capacity for O&M of water supply facilities as necessary.
5) The District has meetings with implementation partners (NGOs) to coordinate their interventions on O&M of water supply facilities as necessary.
6) The District in cooperation with private sectors assists the communities to establish effective links with the concerned private sector in the provision of maintenance and repair services and the supply of spare parts.
7) The District responds to needs requested by the communities as necessary

B.2 WASAC RWSS CM unit

CM Unit supports the District in the process mentioned above.

B.3 WASAC RWSS OM unit

OM Unit supports the District by conducting community mobilization for maintaining water supply facilities

B.4 NGO

NGO collaborates with the District in the process mentioned above by implementing some activities on behalf of the District.

3.4 Set up of the structure of management

3.4.1 Planning the process of introducing private participation

Normally, the preparation and implementation of a PPP arrangement involves 4 steps which are: (i) Developing the policy governing the PPP, (ii) Designing the PPP arrangement (iii) Selection of the Private Operator and (iv) Management of the arrangement. The following figure summarises the steps involved in design and implementation of a PPP arrangement:

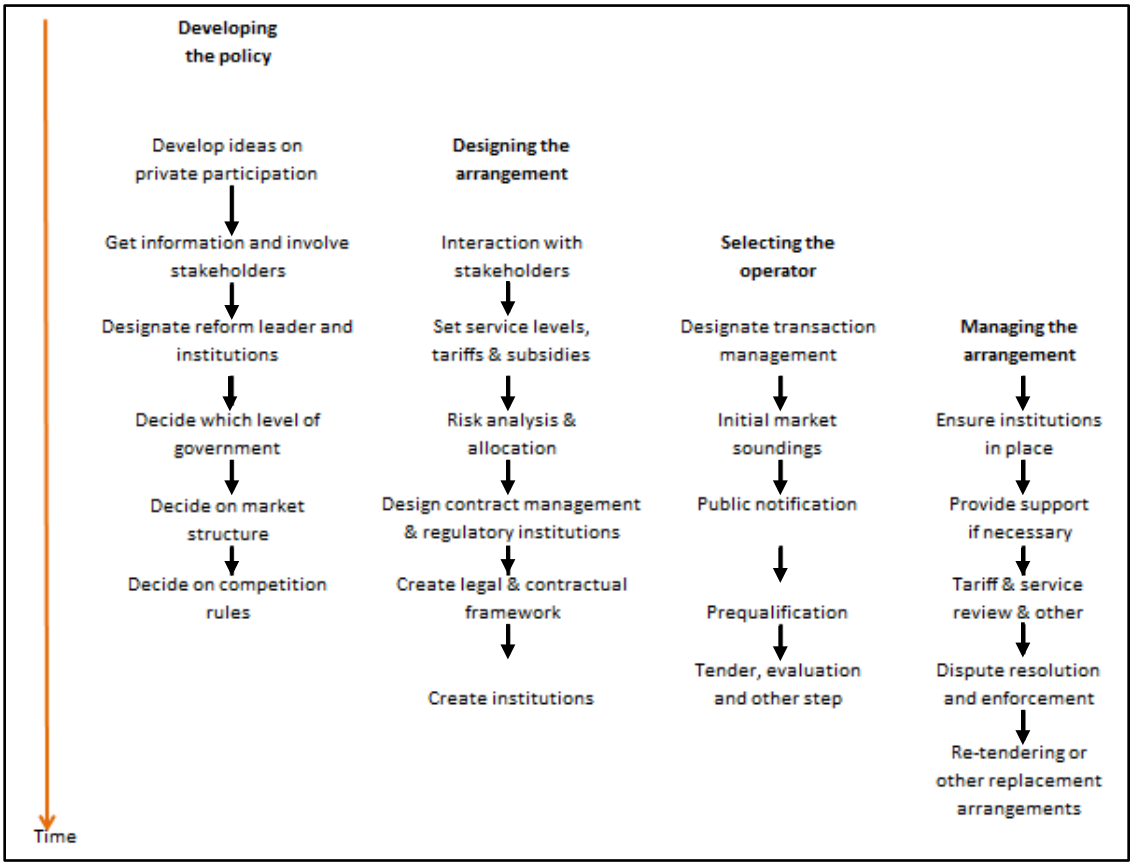


Figure 3-9: Stages of a PPP process (Public – Private Infrastructure Advisory Facility: PPIAF, 2006)

3.4.2 Involving stakeholders in the design and management of the PPP arrangement

Stakeholders of a PPP arrangement in water services delivery are identified in the following way:

- Identify important stakeholders
- Developing a strategy for engaging stakeholders

- Interacting with different groups of stakeholders
- Identifying winners and losers under different options and if necessary adjust or redesign the PPP arrangement.

The table below outlines the main types of stakeholders and it proposes the methodology to involve them.

Table 3-1: Stakeholders and ways to involve them in designing arrangements (PPIAF, 2006)

Stakeholders	Subgroups	Questions to answer
Consumers	Middle-class	Where do they live?
	Poor, connected	What service do they get now?
	Poor, unconnected	What service do they want?
	Women	How much are they willing to pay?
		What monetary and nonmonetary barriers stop them connecting?
		What are their views on types of arrangement that may be suitable?
NGOs and community-based organizations	NGOs and community-based organizations that represent consumers	What extent does the organization represent consumers?
		Which consumers do they represent?
	NGOs that represent broader interests outside the immediate scope of services in question (for example, the environment)	To what extent does the NGO represent the people in the community or country?
		About which issues are they concerned?
		What information and ideas can the NGOs offer?
Workers	Managers	What ideas do they have for improving operations?
	Permanent workers	What are their biggest fears about reform?
	Contractors and informal workers	What hopes do they have for benefiting from reform?
	Unions	
Private firms and financiers	International water operating companies	What contribution can they make?

Stakeholders	Subgroups	Questions to answer
	Local water operators and potential operators, for example other utilities	What ideas do they have to improve the situation?
	Financiers	What risks are they willing to accept?
	Local contractors and consultants	How would they like the arrangement designed?
		What are likely deal-breakers?
Alternative providers	Water vendors and truckers	What services are they providing now?
	Standpipe operators	How might private participation threaten them?
	Cesspit emptiers	How can private participation help them improve their business and the service they offer?
	Public toilet providers	
Politicians and officials other than those designing the arrangement	National government	How might private participation alter their responsibilities?
	Provincial or local government	How might individuals, parties, or organizations portray private participation?
	Government departments	What issues might be grouped with private participation?
	Political parties and individual politicians	
Media	Journalists writing for foreign audiences	On what sources of information do they rely?
	Journalists writing for national audiences	Who is their main audience?
		What are the competing sources of information?

There are five ways of interaction with stakeholders as illustrated in the following table:

Table 3-2: Five types of interaction with stakeholders (PPIAF, 2006)

Collecting information	Gathering information about people such as: who are they, where are they, what do they say they want?
Providing information	Letting people know what is planned
Consulting	Identifying the problems, offering options and proposed solutions, listening to feedback, and revising the proposed approach if appropriate
Deciding together	Not only consulting with the group but also giving it a decision-making role
Acting together	Different interests deciding together what is best, then forming a partnership to make it happen

3.4.3 Preparation of PPP contract

3.4.3.1 Determination of selecting method of PO

A. Responsibilities

Actor		Action
Main actor	District	Select the type of method for PO selection
Supporter	WASAC RWSS	Explain the types of method for PO selection.

B. Detailed activities

The delegated management of water facilities to private operators is recommended by the Government of Rwanda in National Policy and Strategy for water supply 2016. As a method of selection of private operators, public tendering is compulsory according to the public procurement user guide (RPPA, 2010).

There are 3 methods of selecting a PO which are:

i. Open competitiveness

ii. Competitive negotiation

iii. direct negotiation (bilateral agreement)

Bilateral agreement is only applicable "when a project idea originates with a private sector sponsor and that sponsor seeks to negotiate directly with the contracting authority the terms and conditions for the proposed contract" (PPIAF, 2006).

A good procurement process should be clear and transparent, robust, fair, cost-effective and timely. The following table summarizes advantages and disadvantages of different method of selecting a PO as described by PPIAF (2006).

Table 3-3: Comparative advantages vs. disadvantages of different POs selection options

Selection methods	Advantages	Disadvantages
Competitive bidding	• Encourages transparency • Provides a market mechanism for	• Can be hard to implement unless outputs are standardized and all technical parameters can be

Selection methods	Advantages	Disadvantages
	selecting the best proposal • Protects the government's key terms from erosion through intensive negotiation • Stimulates interest among a broad range of potential partners	clearly defined, making evaluation of innovative or nonstandard proposals difficult • May encourage underbidding • May entail high costs for bid preparation, which can deter potential operators.
Competitive negotiations: In competitive negotiations the contracting authority engages in simultaneous negotiations with two or more bidders	• Encourage bidders to be more creative and innovative • Reduce the incentive for bidders to deliberately underbid in order to win projects • Offer a richer way to screen bidders than price alone, since the contracting authority can get to know the operator and judge how good a partner it is likely to be.	• Bids can be difficult to compare • Competition is less transparent than with competitive bidding, which may allow corruption and reduce the legitimacy of the process • The cost of bidding may deter some firms
Direct negotiation	• Provide incentives for private companies to find innovative solutions to local service problems • Increase the chance of private interest when the costs of competitive bidding would be high relative to expected revenues (as in small towns).	• The absence of competition reduces pressure for cost effectiveness. • The approach lacks transparency and may be more likely to be perceived as corrupt, which among other things reduces political sustainability.

Source: Information in the table drawn from (PPIAF, 2006)

The most commonly applied selection method is "competitive bidding" in Rwanda.

Below shows the process of selection of PO by tendering.

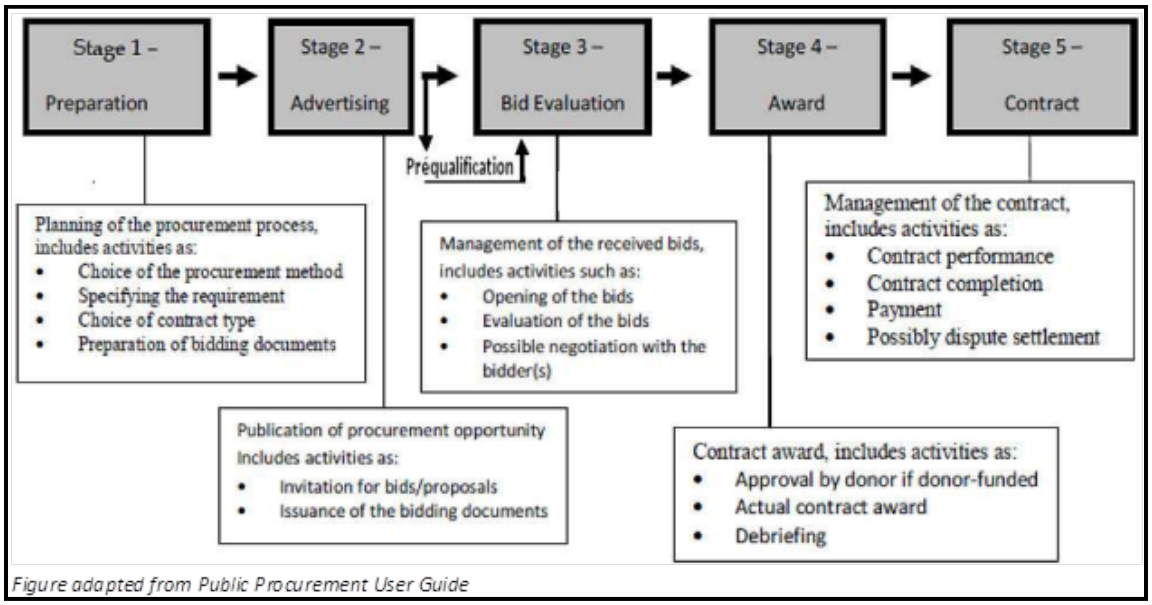


Figure 3-10: Stages of selection of PO

3.4.3.2 Determination of qualification of PO

A. Responsibilities

Actor		Action
Main actor	District	➢ Set up the criteria for PO selection ➢ Decides the scoring mechanisms ➢ Outline the mandatory technical, financial as well as legal records required for a PO
Supporter	WASAC RWSS	Determine the general criteria for a PO
	RURA	➢ Develop and implement a licensing system for water service providers ➢ Regulate the qualifications and minimum standards to be met by the operators in the condition for sustainable service delivery. ➢ Enact the regulations governing the water services provision, ➢ Determine the standards of the quality of the service to delivery

B. Detailed activities

When the Districts delegate the management of the water assets and infrastructure, their expectation is first to obtain optimum water services to the consumers then the sustainability as well as the development of existing water facilities. This implicates that the District should choose a capable private operator which demonstrate enough:

- Technical capacities
- Operational capacities

The District establishes the procedures for performing the steps of prequalification, evaluation of technical proposals and evaluation of financial proposals. Technical evaluation may use two stages in the process, separating the prequalification from real technical evaluation. The objective of prequalification stage is only to appraisal the general profile of the PO through its legal documents and experience. On the other hand, the technical qualification focuses on the managerial and operational aspects, mostly the plan and methodology.

Sample selection criteria include:

i. Legal records / compliance which are:
- Trade registration certificate from RDB (Company, cooperatives or individuals)
- License of water services delivery delivered by RURA
- VAT registration from RRA
- Tax clearance certificate from RRA
- Non fees clearance from RSSB

ii. Proof of experience
- Provide descriptive information on similar contracts previously performed by the candidate PO endorsed by the completion certificate

iii. Possession of appropriate and sufficient tools and equipment
- Office appliances (Computers, camera, desks, tables ...)
- Transport facilities: Vehicle, motorcycle, bicycles
- Plumbing tools

iv. Evidence of financial capacity

- Balance sheet and profitability,
- Support offered by financial institutions to its bid,
- Track record in financing a previous contract

So far, financial capacity in water services is not compulsory as most of the candidates are new entrepreneurs

v. Human resources

- 1 Coordinator: Bachelor's degree of Civil or hydraulic Engineer or any related field with an experience of at least 5 years in water supply or water services delivery.
- Plumbers: having experiences of more than 5 years (the number of required persons depends on the extend of operating area)
- Water quality technician: A2 Diploma in laboratory and experience of 5 years
- Accountant: A2 Diploma in accounting

vi. Sound plan and methodology for planning and implanting the daily activities of O&M of the water facilities

The measurement instruments which can help to qualify a candidate Private Operator may include:

- A formal evaluation framework
- Collecting and analysing the existing data and documentation on the history and background of the candidate (His reputation)
- Consultation of different informants and stakeholders operating in the water sector

Technical evaluation may use two stages in the process, separating the prequalification from real technical evaluation. The objective of prequalification stage is only to appraisal the general profile of the PO. On the other hand, the technical qualification focuses on the managerial and operational aspects.

3.4.3.3 Preparation of contract documents

A. Responsibilities

Actor		Action
Main actor	District	➢ Prepare the model contract document ➢ Determine the type of the contract
Supporter	WASAC RWSS	➢ Provide the model of a typical contract ➢ Modify the model contract according to the actual situation. ➢ Revise the draft contract submitted by the District

B. Detailed activities

The latest model contract documents prepared by WASAC shall be utilized and modified according to the actual situation.

District shall determine the type of the contract suitable for the District requirements. There are 6 different types of contracts for delegated management of water services. The types of contracts which are mostly applicable are as follows.

	Roles and responsibilities of the private partner	Asset ownership	Capital investment	Operations / maintenance	Commercial Risk
Service contract	Supplies equipment or specific one-off services in return for a fee.	Public	Public	Private/ public	Public
Management contract	Supplies management services to the utility in return for a fee. Financial incentives for achievement of targets may be included.	Public	Public	Private	Public
Lease / affermage	*Lease:* pays a lease fee to the contracting authority; operates infrastructure; retains revenue from customers. *Affermage:* similar, except revenue from customers is shared with the contracting authority and lease fee may be absent. Financial incentives for achievement of targets may be included in either case.	Public	Public	Private	Shared
Concession	Operates and maintains infrastructure, and makes capital investment in infrastructure improvements and expansion. Pays a concession fee, retains revenue and may also receive payments for meeting specific targets/conditions.	Public	Private	Private	Private
Divestiture	Owns infrastructure, responsible for all investment, operations and maintenance.	Private	Private	Private	Private

Figure 3-11: Typology of PPPs (EU, 2010)

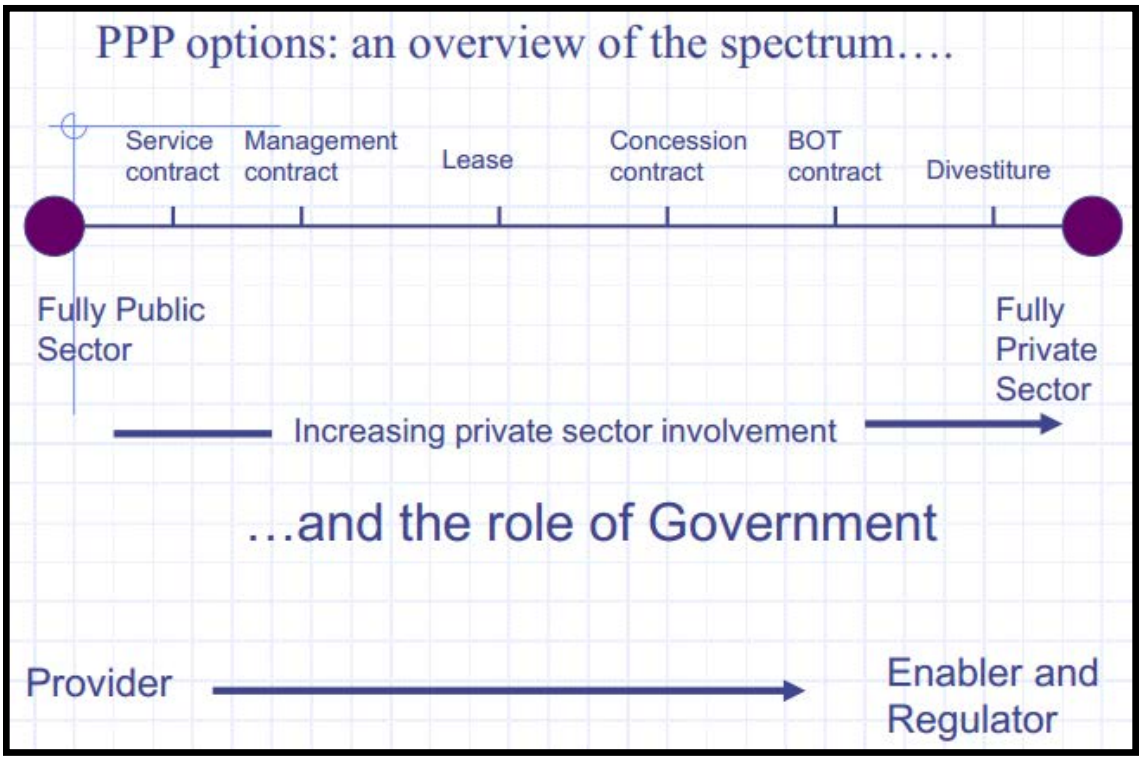


Figure 3-12: Sequence of PPP different PPP arrangements in water services delivery (Jaspers, 2014)

The type of PPP contracts commonly applied in water services is management contract arrangement. A duration period of 4 - 5 years is provided to the PO. That period can be renewed depending to the achieved performance. The relatively short period of (4 years) is somehow a limitation to the POs because they stay reluctant for investing. A period of 8 years is reasonable. Although WASAC

recommends 5 years' period, he is flexible for the possibility of renewing the first contract based on the performance of the PO.

After the type of the contract is determined, the following steps shall be taken:

- Invite the successful bidders and discuss the main outlines of the contract
- Prepare the basic contract based on the model contract provided by WASAC
- Share the draft contract to WASAC and request their inputs
- Negotiate the terms of the contract with the WSP
- Finalize the contract document and sign it in conjunction with the successful bidder

3.4.4 Selection of PO

3.4.4.1 Confirmation of the condition of existing facilities

A. Responsibilities

Actor		Action
Main actor	District	Prepare the technical data summary sheet based on the result of the assessment
Supporter	WASAC RWSS	Support the District in the preparation of the technical data summary sheet based on the result of the assessment

B. Detailed activities

To prepare a "technical data summary sheet" which will be annexed to the TOR for PO selection, the following information about the delegated facilities shall be investigated.

【List of the technical data summary sheet】

- Drawings of the water supply facilities
- Function and specification of each facility
- Maintenance records of each facility
- Current conditions of each facility
- Necessary data such as water quality, water volume, water pressure etc.

The District prepares a technical data summary sheet to be attached to the tender document for PO selection that contains i) facility drawings, ii) repair and rehabilitation records of each facility, iii) daily operation records for the past, and iv) past necessary data that includes water quality, volume and pressure after investigation of the water supply system's function prior to prepare tender document.

The technical data summary sheet presents the facility's current function whose operation and maintenance is to be delegated. The bidder prepares a proposal and estimates the cost based on the report. Thus, the contract can be more efficient when as much information as possible is provided. (When there is not enough information, the risks assumed by the bidder increase and the cost is unlikely to be reduced.) When the existing facility has already been delegated, the facility function report prepared by the existing PO (inspection record, etc.) is used.

Basic information for preparing the report on the condition of existing facility come from the existing data such as the report of existing water operator, MIS PNEAR data, site visit, inquiry and survey

conducted among users. Sample data sheets available at the District level are presented in the table below:

Table 3-4: Existing data on the condition and functionality of Kanyege water scheme in Nyamasheke District

No	District	Sector	Cell	Village	Name of the water facility	Designation	Type of water point	Number of users households	Capacity of the tank (m3)	Shape of the tank	Material of tank construction	Coor Y	Coor X	Alt GPS
1	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	BF1	Simple	68				S2 18 26.9	E29 12 25.9	1564
2	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	CVN1						S2 18 30.3	E29 12 27.2	1582
3	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	R1			5	Cylindrique	Moellon	S2 18 30.4	E29 12 27.2	1584
4	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	CV1						S2 18 37.4	E29 12 32.4	1572
5	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	CP1						S2 18 46.9	E29 12 36.4	1554
6	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	BF2	Simple	42				S2 19 00.1	E29 12 35.2	1601
7	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	CVN2						S2 19 02.3	E29 12 34.1	1608
8	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	R2			5	Cylindrique	Moellon	S2 19 02.4	E29 12 34.1	1609
9	Nyamasheke	Macuba	Nyakabingo	Nyarunombe	Kanyege	CVNS1						S2 19 02.6	E29 12 34.1	1609
10	Nyamasheke	Macuba	Nyakabingo	Musumba	Kanyege	CVN3						S2 19 07.9	E29 12 36.1	1641
11	Nyamasheke	Macuba	Nyakabingo	Musumba	Kanyege	CE1						S2 19 08.0	E29 12 36.1	1641
12	Nyamasheke	Macuba	Nyakabingo	Mwasa	Kanyege	R3			20	Cylindrique	Moellon	S2 19 26.9	E29 12 37.7	1766
13	Nyamasheke	Macuba	Nyakabingo	Mwasa	Kanyege	CVNS2						S2 19 26.9	E29 12 37.6	1765
14	Nyamasheke	Macuba	Nyakabingo	Mwasa	Kanyege	BF3	Double(6 Robinet)	983 élèves				S2 19 28.8	E29 12 36.4	1764
15	Nyamasheke	Macuba	Nyakabingo	Mwasa	Kanyege	BF4	Simple	3				S2 19 29.8	E29 12 36.1	1761

Existing data on the condition and functionality of Kanyege water scheme in Nyamasheke District ***(continued)***

Existence of a Developed spring	Name of a Developed spring	Distance from the Developed spring to the BF (m)	Existence of a Non Developed spring	Name of a Non Developed spring	Distance from the Non Developed spring to the BF (m)	Compliance with EWSA plan	Condition of the facilities	Required works
non			non			non	Good condition	No comment
							Good condition	No comment
							Float valve is missing	Provide the float valve
							Good condition	No comment
							Good condition	No comment
non			non			non	Good condition	No comment
							Good condition	No comment
							Float valve missing , Leakages	Replace the float valve and make the tank waterproof
							Trapdoor not operational, used masonry	Rehabilitation of the trapdoor and the masonry
							The surroundings of CVN developed	Developed the surroundings of the CVN
							No float valve	Provide the float valve
							Broken float valve, Nut and screw on the trapdoor are missing	Replace the float valve, provide the nut and screw on the trapdoor
							Broken valve, Damaged trap door	Replacement of the valve and reparation of the trapdoor
non			non			non	Non water taps (6) and the control valve is missing	Provide the water taps (6) and the control valve

Table 3-5: Sample inventory and conditions of the water facility annexed to the tender document for recruiting a PO in Musanze District

Lot 1:

No	Name of WSS	Sectors to be served	Cell to be served	Length (Km)	Water flow l/s	Type of WSS	Year of constr.	Water Point	Private connection	Status	Actual Population served	Management
1	Kazibaziba	Rwaza	Nturo	11	0.9	G	2001	7	1	**Good**	3500	District
2	Kanyanskyo	Kivuruga (Gakenke) Rwaza	Gakenke Musezero Nturo Nyarubuye	23	4.9	G	2012	6	0	**Very Good**	11865	District
3	Nyabinyoni	Gacaca	Karwasa, Kabirizi and Gasakuza	30	4.2	P	2013	32	0	**Very Good**	19280	District
4	Cyabirumba	Kinigi Nyange	Cyivugiza Nyonirima	3	0.4	G	1963	4	0	Medium	547	District
5	Ryango	Kinigi	Nyonirima Kampanga	4	0.2	G	1963	14	8	Medium	4625	District
6	Bunyenyeri	Kinigi	Bisoke Kaguhu	4	0.5	G	1976	2	0	Medium	4228	District
7	Nyagakangaga	Nyange	Ninda	3	0.3	G	1976	3	1	Medium	2500	District
8	Kansenda	Rwaza	Musezero	0.813	0.5	G	2012	1	0	**Very Good**	600	District

Plus Spring water sources inventoried in Sectors: Gacaca (42), Rwaza (92), Kinigi (0), Nyange (0) and Shingiro (0)

Lot 2:

No	Name of WSS	Sectors to be served	Cell to be served	Length (Km)	Water flow l/s	Type of WSS	Year of constr.	Water Point	Private connection	Status	Actual Population served	Management
1	Nyarubuye	Gashaki	Mbwe	3	0.4	G	1984	6	5	Medium	894	District
2	Kanzo	Gashaki	Mbwe	4	0.3	G	1980	5	2	Bon	764	District
3	Munindi	Kivuruga(Gakenke) Gashaki Rwaza Remera	Sereri (Gakenke) Mbwe Muharuro Kivumu Kigabiro Rurambo Murandi Murwa Gasongero Kamisave Kabushinge	28	2.9	G	2012	75	59	Very Good	31517	District

Plus Spring water sources inventoried in Sectors: Gashaki (45), Remera (34) and Kabushinge (0)

Lot 3:

No	Name of WSS	Sectors to be served	Cell to be served	Length (Km)	Water flow l/s	Type of WSS	Year of constr.	Water Point	Private connection	Status	Actual Population served	Management
1	Cyasure	Busogo Kimonyi Muhoza Muko	Nyagisozi Mbizi Buramira Birira Songa Ruhengeri Cyivugiza Mburabuturo	19	2.07	G	2012	37	6	**Very Good**	25000	District
2	Ruziku	Muko	Songa Cyivugiza Mburabuturo	6	1.6	G	1982/2003	11	6	Medium	6578	District
3	Kabirizi	Muko	Songa	0.500	0.1	G	1962	1	1	Medium		District
4	Gakongoro	Nkotsi	Mubago Rugeshi	7	0.4	G	1986	6	2	Medium	785	District
5	Rukomati	Nkotsi	Gashinga	12	0.7	G	1982	6	0	Medium	643	District
6	Rubindi	Nkotsi	Bikara	6	0.6	G	1986	5	12	**Good**	2500	District
7	Rugeshi	Nkotsi	Rugeshi	13	0.4	G	1982	10	0	Medium	149	District
8	Rukore	Busogo Kimonyi Muko Nkotsi	Nyagisozi Mbizi Cyogo Ruyumba Bikara	17.9	2.2	G	1986	28	16	Good	14000	District

Plus spring water sources inventoried in Sector: Nkotsi (26), Busogo (20), Kimonyi (7), Muhoza (10) and Muko (4)

List of Spring Water sources in Musanze District

No	Sector to be served	Number of Spring water sources	Actual Population served	Management
1	Muhoza	10	5080	None
2	Kimonyi	7	3240	None
3	Cyuve	0	0	None
4	Nkotsi	26	5045	None
5	Gacaca	42	20441	None
6	Musanze	0	0	None
7	Busogo	20	5140	None
8	Nyange	0	0	None
9	Kinigi	0	0	None
10	Gataraga	2	1300	None
11	Rwaza	92	32521	None
12	Gashaki	45	15910	None
13	Shingiro	0	0	None
14	Muko	4	1585	None
15	Remera	34	12930	None
Total		**282**	**103192**	

Source: (Musanze, 2013)

3.4.4.2 Establishment of a tender committee

A. Responsibilities

Actor		Action
Main actor	District	➢ Choose and appoint the members of the tender committee ➢ Continuous renewal of the tender committee members
Supporter	WASAC RWSS	➢ Training to the tender committee on PO selection ➢ Feedback and recommendations on reports of tender committee

B. Detailed activities

A tender committee shall be established under the District for a mandate of three years' renewable once. Article 4 of Ministerial Order n°001/08/10/min of 15/01/2008 establishing regulations on public procurement and standard bidding documents stipulates that "the tender committee shall be composed of five (5) or seven (7) persons depending on the nature of the procurement entity including the Chairperson, Vice-chairperson and the Secretary". The tender committee has the following responsibilities:

【Responsibilities of the tender committee】

- To conduct bids opening
- To evaluate different bids
- To recommend tender award
- To provide recommendations on all issues relating to public procurement
- To provide advice on bidding documents before their publication
- To approve tender to be awarded through other method than open competitive one
- To approve any change to be carried out on the procurement contract.

The tender committee shall make a bids opening report immediately after their opening. It shall also make a brief report on the bid evaluation comprising the evaluation process and comparison of bids and it shall be signed by all the evaluation committee members present" **(Article 8, Ministerial Order n°001/08/10/min of 15/01/2008**).

3.4.4.3 Establishment of an Independent Review Panel at the District level

A. Responsibilities

Actor		Action
Main actor	District	The District council chooses and appoints the members of independent review panel
Supporter	WASAC RWSS	Train and advise the independent review panel about the aspects of tendering for DWM

B. Detailed activities

The independent review panel is the competence established to hear and settle the complaints if the first decision of the tender committee is contested. According to the **Law n° 12/2007 of 27/03/2007 on public procurement,** "the Independent Review Panels at Districts level shall be appointed by the District Council for a mandate of 4 years and it should be composed of five (5) persons selected from the public service, private sector and civil society. The representatives of public services shall not be more than two (2) persons" (**Ministerial Order n°001/08/10/min of 15/01/2008)**.

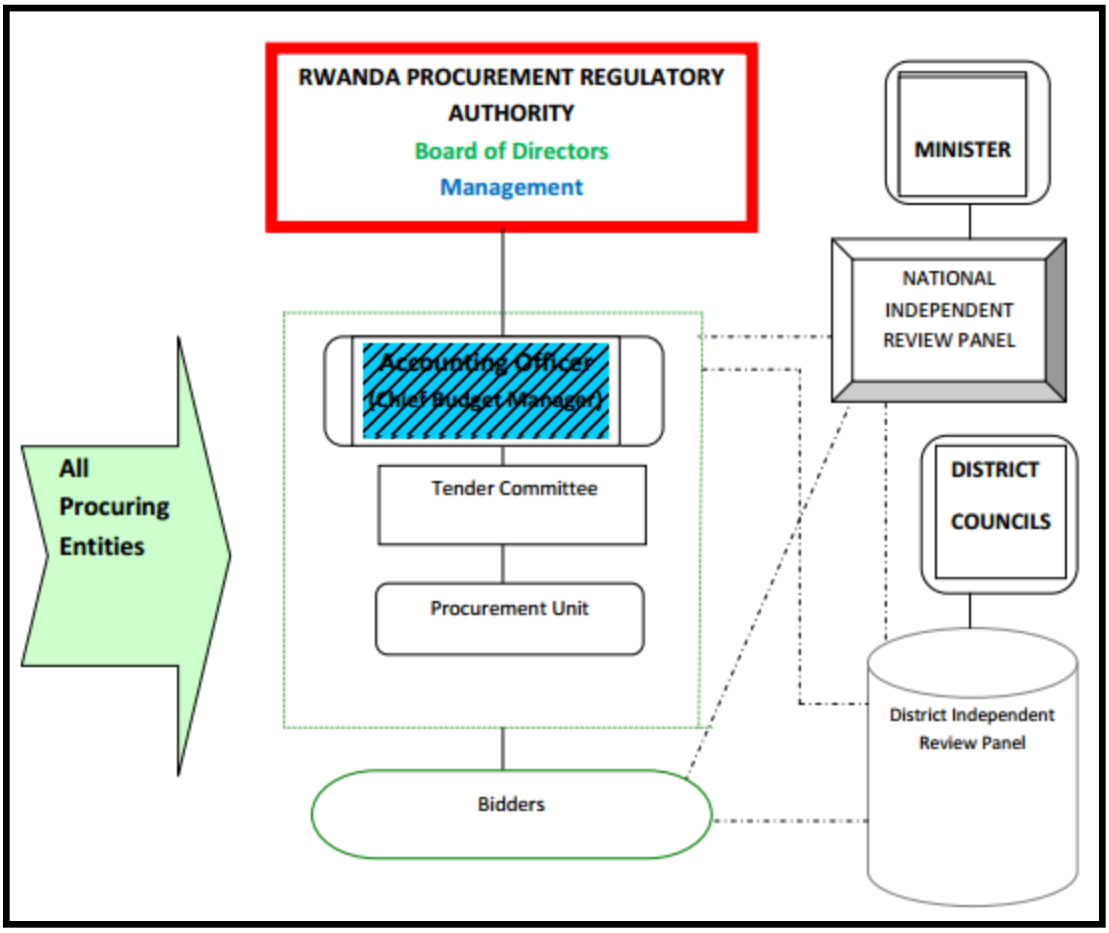


Figure 3-13: Rwanda Public Procurement Authority organizational structure (RPPA, 2010)

As per (Ministerial Order n°001/08/10/min of 15/01/2008), the duties of the independent review panel are:

- Receiving the requests for review
- Recording the requests for review in the register provided for that purpose and giving a number to each of them;
- Preparing all documents that are necessary for the activities of the Independent Review Panel;
- Preparing invitations to people to be interviewed by the panel;
- Acting as the secretary to the Independent Review Panel.

3.4.4.4 Preparation of tender documents for selecting PO

A. Responsibilities

Actor		Action
Main actor	District	Prepare the tender document for selection of qualified PO.
Supporter	WASAC RWSS	Provide to the District a model for the form and the contents of tender documents for PO selection.

B. Detailed activities

TOR for the services required, detailed specifications of the requirement, a draft contract, period of the contract, quality standards, service levels and facility condition data shall be prepared as tender documents.

The TOR and the draft contract are the most important documents, so that they have to be well discussed beforehand. The facility data report is also important for the appropriate cost calculation by bidders. If there are errors or lack of information in the facility data report, it may require a process of contract amendment.

The tender documents include at least the following:

(1) Letter of tender advertisement

(2) Introductory note explaining the context of delegated management and PPP arrangement

(3) Instructions to the bidders

This indicates the tender process and its schedule. The contents are as follows.

- Necessary documents to be submitted
- Deadline date, place and means of submission of the necessary documents
- Guidance to prepare the necessary documents

(4) Draft contract

The latest model contract shall be used and it can be modified according to the actual situation.

(5) Terms of Reference (TOR)

TOR shall indicate the required services and their levels, which include required standards of water quality, water volume and water pressure.

1) Water quality management

Water quality shall be properly managed to meet the national standard of drinking water. Required means of water quality analysis and its frequency shall be stipulated.

2) Water volume management

Water volume shall be properly controlled according to the required level of supply. The required level of supply shall be defined based on the national standard and the past experience in the sites.

3) Water pressure management

Water distribution pumps and water level of reservoir tanks shall be properly managed to keep required water pressure at each water tap. The required level of water pressure shall be defined based on the national standard and the past experience in the sites.

4) Other technical management

Other specific technical issues which have to be managed by the PO shall be stipulated according to the actual site conditions.

(6) Facility condition report

Facility condition report mentioned in the Article 3.4.4.1 includes drawings, specifications, maintenance records and current conditions of each facility. Bidders will calculate the cost of operation and prepare a technical proposal based on this report. Therefore, providing information

of the facility as detail as possible may help to make an appropriate tender.

(7) Reference material

There are reference materials for bidder to use when preparing tender, such as past operation data, O&M manual, etc.

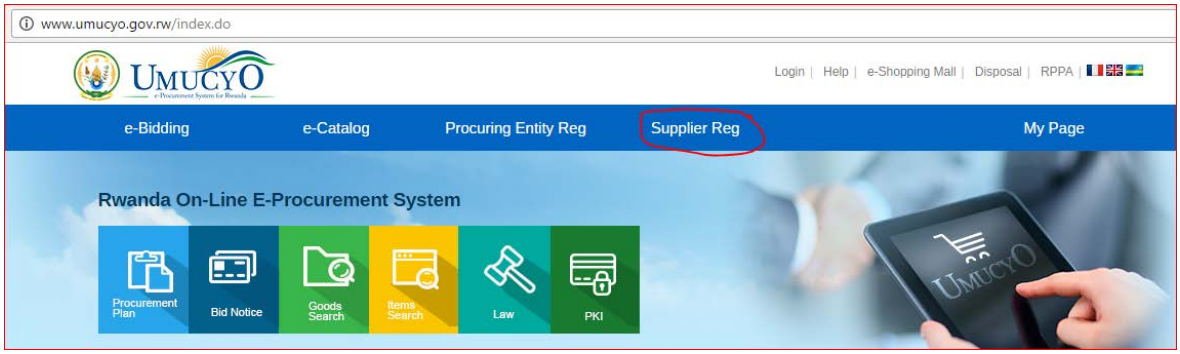
3.4.4.5 Tender notice

A. Responsibilities

Actor		Action
Main actor	District	To advertise the tender to the public.
Supporter	WASAC RWSS	➢ To provide advice about the advertisement of the tender to the District. ➢ Explain the procedure for tender notice, timing and means of notice.

B. Detailed activities

The District shall advertise the tender on UMUCYO website, which is an electronic public procurement system. The system was established by the Rwandan Government (RDB) and tested in 2016, then from 2017 all public entities, private organisations and individuals wishing to participate in public tenders are requested to use the "Umucyo procurement system". Today all public institutions including the Districts are registered at Umucyo system in the category of procuring entities. Umucyo system offers to procuring entities a portal to enter and submit their tender notices which are automatically published to the Umucyo website, thus accessible to the public. Following the directives of RPPA, the time allocated to the preparation of bids must be at least 30 calendar days. Moreover, through this system public institutions can publish their yearly procurement plan.



Source: www.umucyo.gov.rw

Figure 3-14: Image screen page of UMUCYO

3.4.4.6 Distribution of tender documents

A. Responsibilities

Actor		Action
Main actor	District	Distribute the tender document to the bidders (PO).
Supporter	WASAC RWSS	Advice and explain how to distribute the tender documents.

B. Detailed activities

UMUCYO system is constructed in way such that once one visits the website and opens an advertisement the system displays all the information related to the tender in 5 tables:

Table 1 describes the procuring entity and defines the purpose of the tender

Table 2 gives a brief information on the tender features

Table 3 briefly specify the purpose of the tender, tender security and tentative contract duration

Table 4 offers accessibility to tender documents

Table 5 gives the details of required documents

Below the 5 there is a small tab through which a tender notice is reached.

According to this framework, once the tender has been published, everybody can access, read and download the tender document from UMUCYO system website. That means that the tender document is published at the same time with the tender notice. Obviously, some candidates loose directly their interest after reading the tender document and do then not proceed to the site visit. This is one of the benefits to praise from UMUCYO system. As a common practice, interested bidders are requested to pay a certain amount of money for acquisition of the tender document. According to the **"Ministerial Order n°001/08/10/min of 15/01/2008 establishing regulations on public procurement and standard bidding documents"**. For that, bidders have to proceed an online application of tender documents, then print online declaration. Based on the obtained declaration bidders go to pay to the requested amount of tender document to specified banks and then the proof of payment is automatically retrieved at UMUCYO system.

3.4.4.7 Pre-qualification of candidates of bidder (PO)

A. Responsibilities

Actor		Action
Main actor	District	Prequalify the candidates of bidder (PO).
Supporter	WASAC RWSS	Set the prequalification items for PO selection.

B. Detailed activities

Normally, when the contracting authority has adopted to conduct the stage of pre-qualification separately, the District advertises a request for expression of interest. During this stage, a list of required information is published or the forms to fill in are distributed. That procedure is called Expression of Interest (EoI).

For our case in Rwanda, the step of prequalification is commonly combined with the step of technical qualification. One unique bid contains the required documents for prequalification as well as the technical qualification. RPPA has requested all companies registered in Rwanda to apply for categorization. From 2015 the first classification was published ranging from category A up to category F. This categorisation forms a first parameter on which Districts relay to qualify bidders. Additional criteria for prequalification include:

- Relevant licences including the certificate of Registration of the business to RDB, the licence of water services delivery granted by RURA, the tax clearance certificate provided by Rwanda Revenue Authority, RSSB contributions clearance Certificate
- Legal records of the candidate PO (if the company was not blacklisted)
- Geographical location of the head office
- Resources including financial, human and materials
- Experience proved by the references of the in the same field

3.4.4.8 Site visit

A. Responsibilities

Actor		Action
Main actor	District	Organize the guide site visit by the bidders (POs).
Supporter	WSPs	Answer the questions from POs on water supply infrastructure.
	WASAC RWSS	➢ Guide POs on site to show and explain the situation of the water supply facilities. ➢ Explain to the POs technical functionality of water supply system.

B. Detailed activities

Site visit is advisable to intended WSP before preparation of their bids. Normally its date is indicated in the tender advertisement. Objectives of site visit are:

- Show to the participants the location, extend and the condition of the water infrastructures
- Get insight on the socioeconomic conditions of the operating area
- Overall view of the main features of the operating area including: accessibility, willingness of water payment, existing water practices, the challenges and opportunities of the focused water services delivery...
- Other information can be discussed in a pre-visit conference or a short meeting can be organised on site.

Most of useful technical information required by the participants is included in the as-built drawings of the infrastructures, maps, reports or in the operation and maintenance manuals associated to the concerned assets.

The following points shall be taken into account during site visit for the bidders to be able to propose the prices or methodology based on appropriate assumptions then the consequences positively impact the contract implementation.

- Proper drawings of the water schemes shall be prepared and provided beforehand to the participants.
- An appropriate guide who knows the details of the water infrastructures shall be accompanied.
- The enough time is secured to visit the schemes.

It is advised that after the site visit a certificate is issued and it should be attached to the technical proposal of the bid.

3.4.4.9 Query & Answer

A. Responsibilities

Actor		Action
Main actor	District	Answer the queries from the bidders.
Supporter	WASAC RWSS	➢ Support District to answer the query from bidders related to water supply facilities management. ➢ Support District to answer the query from bidders related to technical functionality of water supply system.

B. Detailed activities

During tendering, intended bidders are provided with the right to inquire clarifications on the tender document or the tender process. On UMUCYO system, for each tender, there is a tap provided for that purpose. Normally, the bidders are provided 14 days after the distribution of tender documents for requesting such kind of clarifications. RPPA (2010) stipulates that "the period during which bid clarifications may be requested will be defined in the bidding documents. Requests for clarifications received after this period may be ignored unless they draw attention to a serious flaw in the bidding documents. On the other hand, The District is requested to answer the asked questions at most 21 days before the deadline of submission of the bids".

Three types of confusion may occur:

- A mistake in the tender document
- Unclear statement
- A misinterpretation

A standard form for queries and answers is found at UMUCYO system.

3.4.4.10 Preparation of technical proposal by bidder

A. Responsibilities

Actor		Action
Main actor	Bidder {PO(s)}	Preparation of technical proposal
Supporter	None	None

B. Detailed activities

Before preparation of the bid, the participant should ensure that he has understood well the tender documents and the tender process. In addition, the bidder should have collected sufficient information regarding the technical characteristics of the infrastructure, the local socio economic condition as well as the working environment.

The following list displays the framework for the presentation of the methodology as provided in most of the tender documents:

Organization of the WSP for performing:

- Functionality of the water facility
- Operation and maintenance
- Billing and fund collection
- Book keeping, records and data managements
- Customers care and good relation with the public
- Settlement of complains and conflicts
- Relation with local administration

Strategies for continuously improving the quality of the service

- Planning and targeting
- Monitoring and auditing
- Relations and involvement of users
- Learning, training and skill transfer
- Reporting
- Partnering and networking

Materials resources

- Transport
- Communication
- Spanners and tools
- Provision of spare parts, consumables and storage

Human resources

- Key managerial staffs (Education, experience, residence)
- Technician staffs (Education, experience, residence)

Site installation housing and offices

- Location, features and equipment of the main office
- Secondary offices
- Housing of key staff

Health and safety policy

- First-aid box and accident book
- Registration of worker to a health insurance company or a social health insurance program like community based health insurance
- To maintain safe and healthy working conditions, provide and maintain plant, equipment and machinery, and ensure safe storage / use of substances(HSE)
- To implement emergency procedures - evacuation in case of fire or other significant incident ((HSE)
- To prevent accidents and cases of work-related ill health and provide adequate control of health and safety risks arising from work activities ((HSE)
- providing adequate welfare facilities
- Keep workers informed for eventual hazards, then provide them with instruction, training for the conduct in such conditions
- Monitor safety conditions in all workplaces

Consumers' mobilization

- Schedule of the meeting with users
- Tools: Discussion, films, newspapers
  Main topics: Hygiene, willingness for payment, security of infrastructures.

3.4.4.11 Preparation of the financial proposal

A. Responsibilities

Actor		Action
Main actor	Bidder {PO(s)}	Preparation of financial proposal if necessary
Supporter	None	None

B. Detailed activities

Normally, the purpose of financial proposals was to make a competition among different proposals of bidders, with regards to the tariff of water service and the rate of royalty fees paid to the Districts. Today, the price of drinking water services is regulated by RURA (Rwanda Utility Regulation Authority). A common water price as well as the rate of royalty fees have been set and published. No Water Service Provider is allowed to go above the RURA stipulated price. Although the price published by RURA is supposed to be the ceiling, private operators (POs) have complained that this price doesn't cover all operating costs. Before that price could be revised, it can be recommended to the Districts to apply identical price setup by RURA and not go below, unless some operations are

not performed which can threaten the sustainability of infrastructures. Based on that, we can sustain that there is no need to submit financial proposal, as the price is already known.

3.4.4.12 Evaluation of proposal

A. Responsibilities

Actor		Action
Main actor	District	Evaluate the technical proposal as well as the financial proposal
Supporter	None	None

B. Detailed activities

The evaluation of bids is the task of the District tender committee. The evaluation is made in 2 states such as the evaluation of technical proposal and the evaluation of financial proposal.

B.1 Evaluation of Technical Proposal

Once the bids have been submitted and opened, the tender committee seeks an appropriate day for the detailed scrutiny. During evaluation activity, each member of the tender committee is given an evaluation form on which all criteria to score are enumerated and should be given the marks.

After individual evaluation all forms are collected and an average is calculated. The score attributed to a given bid is an average of respective results from different evaluators. The final score of a bid is a combination of the results from both the technical and the financial proposals.

During the evaluation of the technical proposal 4 important criteria are taken into consideration. Those include **the experience, the methodology, the material resources and human resources.** The distribution of the scores is more or less in the following ranges:

Table 3-6: Evaluation criteria for Technical Proposal

Evaluation items	Score
1. General experience of the firm in the field	5 to 15 points
2. Relevant experience in similar services	10 to 20 points
3. Quality of the methodology proposed	20 to 30 points
4. Qualifications and experience of the key personnel proposed for the service	40 to 60 points
5. Transfer of knowledge or technology	0 to 10 points (where applicable)
6. Participation of Nationals	5 to 10 points (where required)

At the end of the technical proposal appraisal, an evaluation report is prepared and bidders are notified of the provisional results through UMUCYO e-procurement system

For transparency purpose, the evaluation results are disclosed to all competitors. Unsatisfied participants have the right to complain.

B.2 Evaluation of Financial Proposal

As long as the current water tariff is uniform and determined by RURA, there is no need to submit and evaluate the financial proposals.

3.4.4.13 Tendering and selecting PO

A. Responsibilities

Actor		Action
Main actor	District	Precede the tender and selection of POs process.
Supporter	WSPs	Explain and hand over to PO selected the equipment and materials for water supply system
	WASAC RWSS	Explain necessary actions to be taken when the performance of a PO is over required standard.

B. Detailed activities

When the compliance check for prequalification has been done and the evaluations of financial as well as the technical proposals are completed, the preferred bidder can be selected. In general procurement process there are seven ways for selecting the successful bidders:

Table 3-7: Procurement process for selecting of PO

(i) Quality and Cost Based Selection (QCBS)

(ii) Quality Based Selection (QBS)

(iii) Least Cost Selection (LCS)

(iv) Consultants' Qualifications Selection (CQS) for technical studies and training

(v) Fixed-Budget Selection (FBS)

(vi) Selection of Individual Consultants

(vii) Single –Source Selection(SSS)

However, only 3 methods are applicable for selecting a Private Operator:

Table 3-8: 3 methods for selecting a PO

- Quality and Cost Based Selection (QCBS) is commonly used.
- Quality Based Selection (QBS) is requested if the water facility to manage are complex (Technology of water treatment plant, boost pumping, big pipes like DN> 200 in the network, calculated high potential risk on environment or socio economy ...)
- Least Cost Selection (LCS) suitable for very simple water facilities like developed springs, hand pumps, dug wells.

When the Quality and Cost Based Selection (QCBS) is adopted, the financial and technical scores are combined according to their predefined respective weights.

In case the Quality Based Selection (QBS) or Least Cost Selection (LCS) are used, the District negotiates with the first scored bidder about the terms of the contract, if there are some ways to adjust the financial offer or the technical aspects. When a misunderstanding between the District and the first PO happens, the second (reserve bidder) can be given a chance to negotiate.

The following table illustrates the main considerations of combining the technical and the financial scores.

Table 3-9: Comparing ways to combine financial and technical scores (PPIAF, 2006)

Scoring option	**Competition focused on cost or quality?**	**Objectivity and transparency**

Weighted average score	Both	Medium
Technical threshold, best financial	Cost	High
Fixed price, best quality	Quality	Low

During the process of selecting a successful bidder, there are some issues to be settled. Those include:

- Winner's curse and lowball bids: Some bidders put a very low price which cannot allow providing the required services. The others purposefully give false arithmetic or jump some items to give impression that they are the lower offers. To avoid that kind of cheating a thorough analysis of the financial proposals should be conducted.

- Variant bids: In some tenders' variants bids are acceptable. In that case, bidders are allowed to provide more that a single proposal. It is challenging to compare them in the seek of the best proposal.

- Complaints and appeals: it is frequent to face unsatisfied bidders, which reject the results of analysis and go to the court. The District should be prepared enough to handle such kind of issue.

The following figure is featuring the flow of a QCBS in a tendering cycle.

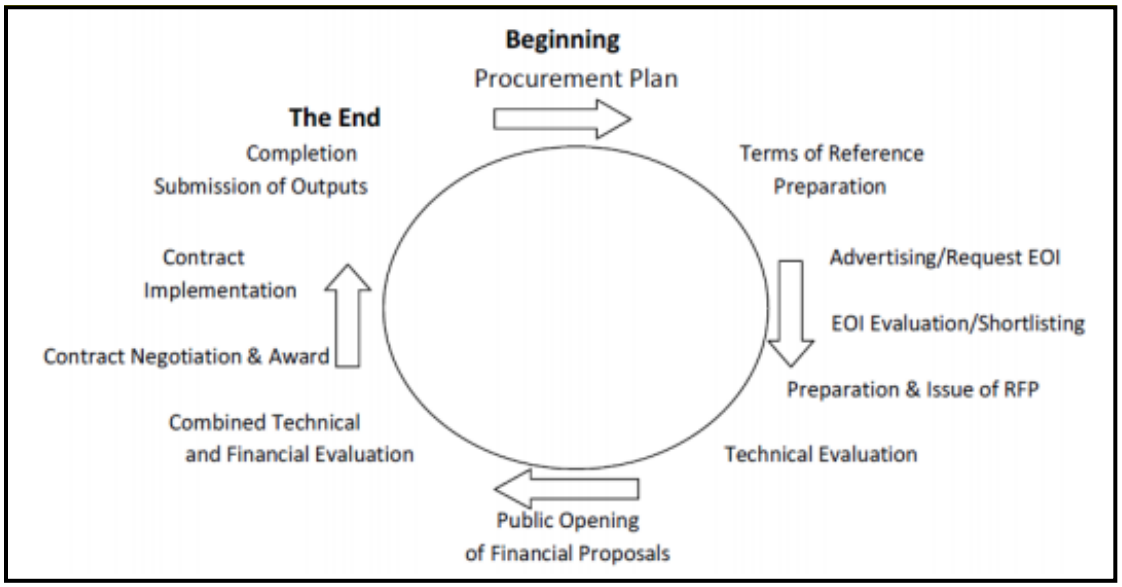


Figure 3-15: QCBS Selection Cycle (RPPA, 2010)

3.4.4.14 Signing contract

A. Responsibilities

Actor		Action
Main actor	District	Signs the contract with POs and WASAC
	WSPs	Signs the contract with District and WASAC
Supporter	WASAC RWSS	Signs the contract as the third Contracting authority.

B. Detailed activities

When the evaluation of financial proposal is finish, all bidders are notified the provisional results. On the other hand, the successful candidate is given a copy of the draft contract in order to thoroughly

read and grasp the content. The District and the PO agree on the day of finalizing / negotiating and signing the contract. Meanwhile, the intended PO is requested to arrange the payment of the performance security fee. According to RPPA (2010), this fee must be paid within 15 days if the tender is at National level and 21 days if the tender is International.

There is no existing rule which stipulates the amount of the security fee for the water services, but it can be recommended to estimate it based on the residual value of water assets. A minimum of 300,000 Frw per contract were applied in some Districts.

Before the signature of the contract the involved parties should take care of the following points because if not cleared before they become contentious issue during contract implementation.

Table 3-10: Check points before signing of the contract

- The address of the business
- All appendices are ready and well checked. In many cases, the document describing the inventory and conditions of the water infrastructures are not updated. It even happens to include in the appendices the infrastructures which are no more operational.
- The description of time span of the contract and the mention of renewing or not
- Water tariff
- Modality of implementation of a private connection
- The clear calculation of royalties
- Financial responsibility of both parties (Threshold amount of financial responsibility of the PO, beyond that the District has to intervene)
- Reporting frequency, format and to whom to report.

The Districts and the successful bidder should arrange that the signing of the contract is made within the period of validity of tender. Beyond that period, the contract cannot be awarded.

Beside the District (Client) and the Private Operator (Services provider) WASAC can sign on the contract as a witness.

Normally, the day of the contract start is not the same day of the contract signature. In practice after contract signature, an acceptance letter is issued to the Private Operate, the services are supposed to start more or less in 4 weeks after reception of the acceptance letter.

3.4.4.15 Handover of water supply systems to PO

A. Responsibilities

Actor		Action
Main actor	District	Handover of water supply systems to PO
	PO	Receive water supply system from the District
Supporter	WASAC RWSS	Assist in evaluation and handover water supply facilities for management.

B. Detailed activities

The handover is done between the District and the Successful Private Operator. If the Water facilities were previously managed by a different water services provider, this last should first hand the infrastructure to the District and in turn, the District hand them to the new Private Operator. The items below are the basics of the process of water infrastructures handover:

Table 3-11: Handing over process

- A comprehensive inventory of all concerned infrastructures
- Drawing and specification of each facility
- A note of the functional condition of each infrastructure
- History and background of the construction, operation and maintenance records of each facility
- Main features of the sources including, production and water quality
- Store and spares parts available
- Documents such as Books, manuals, reports, correspondence

The statement of handover is a valuable document that each contract party should keep safely, given that at the end of the contract, that documents would be a support document for closing the contact.

B.1 Handover

The District hands over water supply facilities to the PO in accordance with the following procedures. WASAC assists this activity.

Handover is "for smooth operation when the PO is delegated to manage." The operation methods and points to note regarding the facilities are described as matters of the handover. If an existing PO is replaced, these matters are handed over to the new PO regardless of whether the term has expired or the term is in the middle of cancellation.

As smooth handover leads to the stable operation of water business, the key is to avoid accidents and the suspension of operation due to the handover.

To this end, attention needs to be paid to the points below and matters of the handover need to be provided.

B.1.1 Matters to be confirmed in handover

Matters to be confirmed in the handover are listed below. They are specified in the required standards.

① Confirmation of operation contents

② Confirmation of data management situation

③ Confirmation of operation methods specific to the target facilities

The PO may demand the presentation of matters to be handed over and their explanations, in the confirmation of facility functions, to confirm whether they are documented properly and the PO may also check the contents of the handover matters at any time.

3.4.5 Execution of PPP contract

3.4.5.1 Conducting O&M of water supply systems by PO

A. Responsibilities

Actor		Action
Main actor	WSPs/POs	Conduct O&M of water supply systems
Supporter	District	Monitor the O&M of water supply systems conducted y WSPs

Actor		Action
	WASAC RWSS	➢ Advice the District and WSPs on PPP contract management ➢ Explain means of partnership to District and WSPs (PO)

B. Detailed activities

From the date of contract commencement as mentioned in acceptance letter, the Private Operator is responsible of ensuring the optimum quality and quantity of water in a safe and pleasant environment to the consumers.

At this stage, the PO should ensure that he has:

- mobilized enough and qualified human resources
- rented the store houses and offices in the middle of operating area
- provided enough tools, equipment and spare parts
- taken the contact of key persons from local leaders

The beginning of a water services contract is quite tricky and requires hard working. The PO should thus:

- continuously check if the water is reaching all water points.
- sample a number of water points and conduct the preliminary water quality test
- hire local workers mainly water stand post operators
- introduce himself to the beneficiaries of each water point and agreed on the schedule of water opening
- control the tidiness of the components of the water infrastructure
- equip the network with new fittings wherever necessary
- operate and lubricate most of the junctions

Beside the technical concerns he should:

- plan and start the collection of water fees
- keep records, prepare and submit reports
- meet the District for discussing on further improvement of the services and sustainability of the infrastructures.
- implement the company's plans and strategy oriented to the water services business.

The PO prepares for the operation until the day it begins upon launch of PPP delegated contract. For the preparation, the PO formulates an operation and maintenance plan, takes over the operation, and familiarizes itself with the operation as needed. The District prepares for monitoring in order to confirm and evaluate PO operation after it starts.

B.1 Operation contract

The PO formulates and submits an operation and maintenance plan in accordance with the contract based on the proposal it submitted in the tender, as well as negotiations at the conclusion of the contract, and has it approved by the District.

B.2 Position of operation and maintenance plan

The operation and maintenance plan is formulated based on the proposal the PO submitted and reviewed in accordance with the contract, when it is concluded, as support for its capacity to perform

the operation with the proposed price while meeting the standards provided in the requirement standard documents. The PO operates the facilities in accordance with the operation plan as a general rule.

B.3 Compliance with required standards

The operation and maintenance plan defines the PO's responsibilities and it cannot evade said responsibilities if it fails to observe the required standards, even if it performs the operation in accordance with the plan.

If the PO deviates from the operation and maintenance plan or if it is discovered, as a result of the District entering into the facility, that it is not performing the operation as planned, it shall not be subject to a penalty as long as the required standards are met. However, the District may demand the PO explain the inconsistencies with the operation plan and it will make arrangements for plan changes when needed.

3.4.5.2 Conducting periodical water quality analysis

A. Responsibilities

Actor		Action
Main actor	WSPs/POs	Conduct water quality analysis by regularly entrusting water quality monitoring, using parameter items that are prescribed in Water Quality Management Framework.
Supporter	District	➢ Monitor and assure suitable water quality for drinking to users ➢ Keep water quality monitoring report and enter water quality data into database regularly. ➢ Announce water quality data to residents regularly.
	WASAC RWSS	Support District to assure water quality control.

B. Detailed activities

District and water service providers maintain and manage the water quality of water being supplied.

Maintain and manage the water quality of supplied water to satisfy Rwanda's water quality standards.

Water quality standards are imposed uniformly on water being supplied and based on the drinking water standards determined by RSB.

B.1 Detailed activities by each actor

B.1.1 WSPs

1) To confirm required parameters of water quality monitoring in the delegated contract between the District and WSP
2) To make up plan of annual water quality analysis by themselves or third party.
3) To provide the water analysis report and share with stakeholders.
4) To measure residual free chlorine on daily basis and adjust dosing accordingly
5) To record the result of residual free chlorine into a log book. Refer to **table 3-13**.
6) To bear the expense of water quality analysis

B.1.2 District

1) To demand regular report to WSPs for the water quality analysis conducted by authorized third-party institutions according to the delegated contract between District and WSPs.

2) To consider schedule when each WSP requests the WASAC central laboratory for water quality analysis.

3) To assess the result of water quality analysis.

4) To announce regularly the water quality results to public.

5) To keep regular water quality monitoring reports of WSPs and manages them properly. The reports should be arranged to be able to get the required information immediately anytime.

6) To enter water quality data into database by Excel files regularly. The data should be arranged to be able to get the required information immediately anytime.

7) To conduct water quality analysis regularly for boreholes with hand pumps and improved springs based on delegated contract between District and WSP.

B.1.3 WASAC RWSS

1) To support District activity of announcing water quality data to residents regularly.

2) To develop an annual schedule of water quality analysis, ordered by WSPs and carried out by WASAC central laboratory, so that the analysis work of WASAC central laboratory are managed and averagely balanced through the year. Also WASAC RWSS DWM coordinates the dates for WSPs to carry out water sampling.

3) To support District activity of properly managing water quality data.

4) To support District activity of properly managing WSP's performance.

5) To support and provide technical advice for water quality monitoring to District and WSPs.

B.1.4 Qualified Laboratory:

1) To support WASAC RWSS in developing an annual schedule of water quality analysis, carried out by qualified laboratory and ordered by WSPs. So that the analysis work of WASAC central laboratory are managed and averagely balanced through the year.

2) To conduct water quality analysis in rural water supply in response to a request from WSPs.

3) To consult with the respective water treatment plant (WTP) laboratory, the nearest laboratory to the respective WSP, regarding water sampling and analysis.

4) To order the water treatment plant laboratory water sampling.

5) To assess the water quality data and requests water treatment plant laboratory to re-analyse water if necessary.

6) To submit original report of results of water quality analysis to WSPs and submit the copy to WASAC RWSS.

7) WSPs shall conduct water quality analysis according to ISO procedure.

8) To send an invoice and charges the expenses to the respective WSP.

9) WASAC central laboratory and water treatment plant laboratory shall only use calibrated water-quality measuring instruments and use only reagents which do not reach expiration date.

10) Water-quality measuring instruments shall be properly calibrated regularly and certificate of calibration should be shown anytime if there is a request.

B.1.5 Water treatment plant laboratory

1) To go to the site and takes water samples in the terminal public water standpipe taps together with WSPs staff. And then he/she brings water samples back to their laboratory and analyses the water.

2) To report the result of water quality analysis to WASAC central laboratory.

Table 3-12: Record book of daily residual free chlorine measurement

Record book of the concentration of residual free chlorine Name of water supply system : Name of Operator: Month/Year : December, 2016 RSB Standard Value : 0.2 ～0.5mg/L at terminal tap						
Date	Time	Measured by	Result of measurement (mg/L)		Chlorine disinfection facility	
			Distributing reservoir outlet	Public standpipe tap	Level of chlorine solution in a tank (mm)	Inventory of chlorine agent (Jerri-can)
Example						
10th	13:00	Radjab	1.0	0.3	450	3
1st						
2nd						
3rd						
・						
・						
・						
30th						
31st						

Table 3-13: Record book of chlorine solution preparation and chlorine agent consumption

Record book of chlorine solution preparation and chlorine agent consumption Name of water supply system : Name of operator : Month/Year : December, 2016						
Date	Time	Dosage quantity of Chlorine 65	Water quantity	Level of chlorine solution in a tank before replenishment	Level of chlorine solution in a tank after replenishment	Recorded by
		kg	L(kg)	mm	Mm	
Example						
17th	10:00	1.5	98.5	400	800	IRIHO
Total Volume in December				-	-	

B.2 Measuring Procedure for the water quality analysis

The procedure of the water quality analysis is divided into eight steps as shown in figures below.

STEP 1:
Private operator requests laboratory to conduct water quality analysis.

STEP 2:
Staff of nearest laboratory visits the site to take water samples.

STEP 3:
Private operator and laboratory staff take water samples at site together.

STEP 4:
Laboratory staff brings sampled water back to laboratory.

STEP 5:
Laboratory analyses sampled water.

STEP 6:
Laboratory reports water quality results to WSPs.

STEP 7:
WSPs reports water quality results to District with copy to WASAC RWSS and RURA.

STEP 8:
WASAC RWSS provides feedback to private operator.
District provides feedback to private operator.

Figure 3-16: Measuring Procedure of Rural Water Quality Analysis

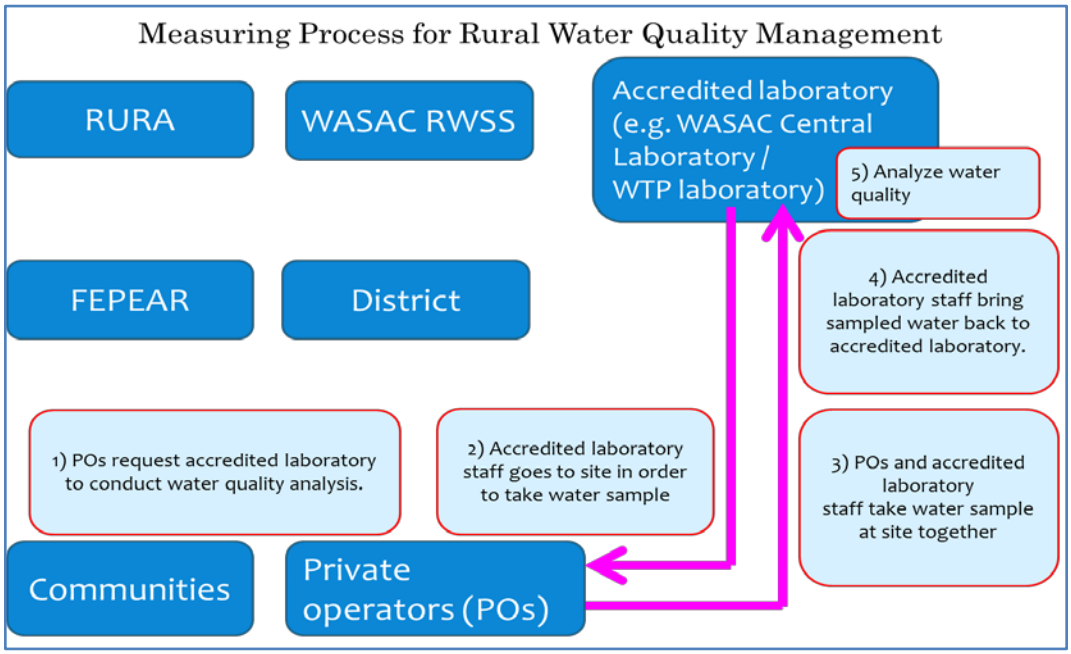


Figure 3-17: The process of the water quality sampling and analysis

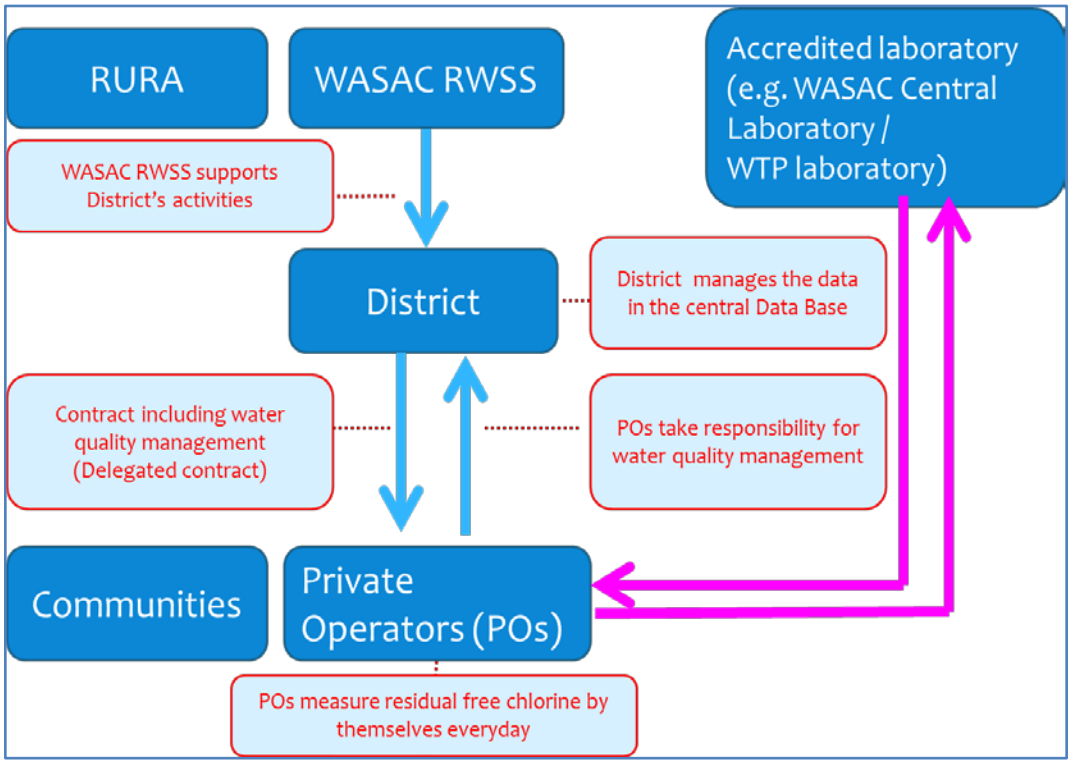


Figure 3-18: Institutional roles and responsibilities for the water quality analysis

B.3 Reporting for the water quality analysis

Reporting relationship and activities by each actor is described in the figure below.

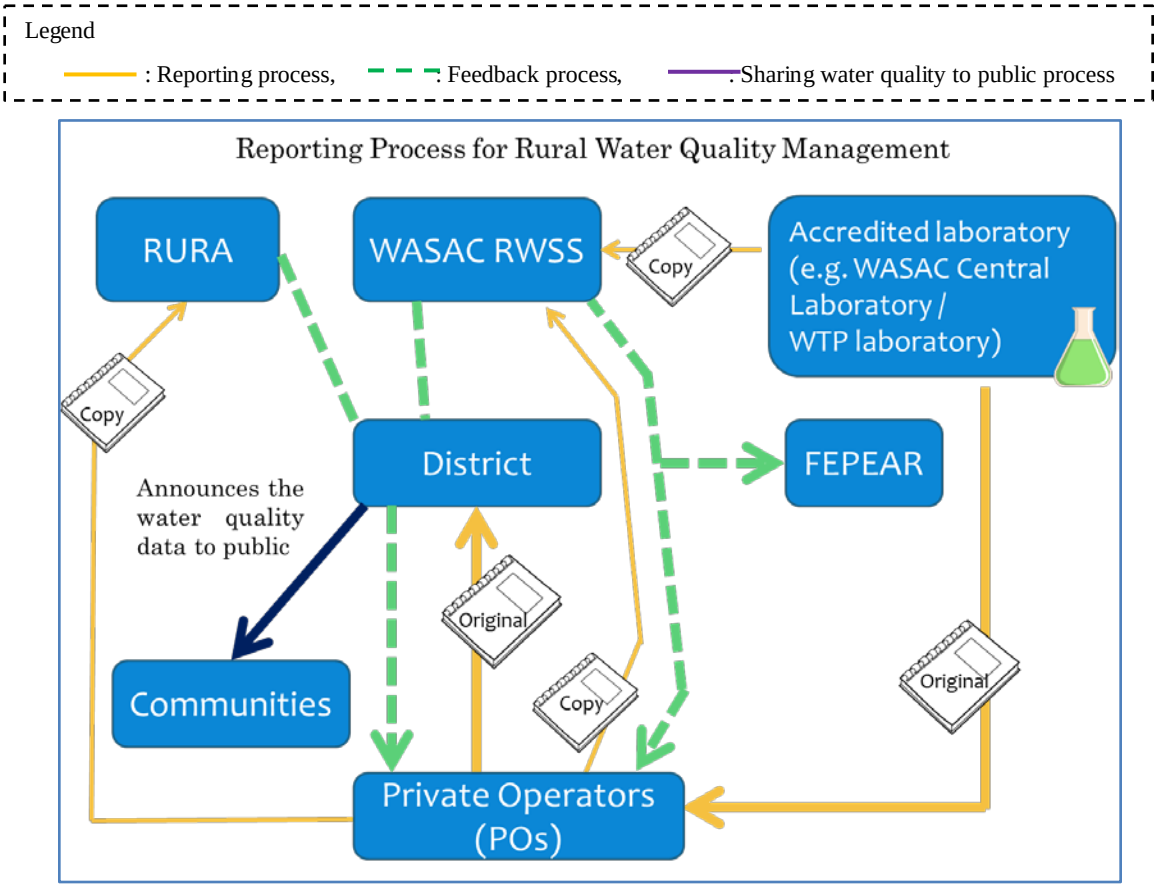


Figure 3-19: The reporting relationship for the water quality analysis

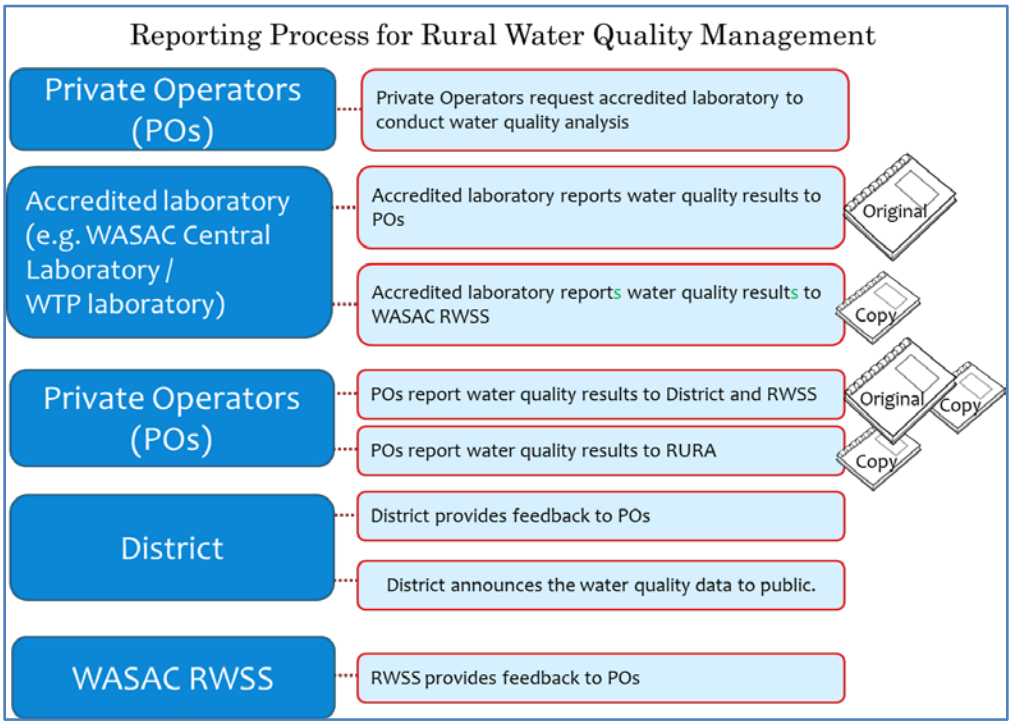


Figure 3-20: Necessary activities for the reporting of the water quality analysis

B.4 Parameters required for minimum monitoring of rural water supply

Parameters required for minimum monitoring of rural water supply is recommended as in the table shown below.

Table 3-14: Parameters required for minimum monitoring of rural water supply

No.	Water quality parameters	Reference value	Unit	Why is the reference value set? *1
＜**Microbiological**＞				
1	Total coli-forms	Absent	Cfu/100 ml	The presence of total coliforms in distribution systems and stored water supplies can reveal regrowth and possible biofi lm formation or contamination through ingress of foreign material, including soil or plants.
2	E.coli	Absent	Cfu/100 ml	"E. coli (or, alternatively, thermotolerant coliform bacteria) provides an appropriate indicator for the enteropathogenic serotypes in drinking-water. The presence of E. coli (or, alternatively, thermotolerant coliforms) provides evidence of recent faecal contamination,"
＜**Physicochemical**＞				
3	Turbidity	5	NTU	"Turbidity is more likely to include attached microorganisms that are a threat to health. Turbidity can seriously interfere with the efficiency of disinfection by providing protection for organisms. Turbidity is an important indicator of the possible presence of contaminants that would be of concern for health, especially from inadequately treated or unfiltered surface water."
4	pH	6.5 ～8.5	-	"pH is one of the most important operational water quality parameters and lower- pH water (approximately pH 7 or less) is more likely to be corrosive. Failure to minimize corrosion can result in the contamination of drinking-water and in adverse effects on its taste and appearance."
5	Aluminium (as Al^{3+})	≦0.2	mg/L	The presence of aluminium at concentrations in excess of 0.1–0.2 mg/l often leads to consumer complaints as a result of deposition of aluminium hydroxide floc and the exacerbation of discoloration of water by iron.
6	Nitrate (as NO_3-)	≦45	mg/L	"Methaemoglobinaemia is a consequence of the reaction of nitrite with haemoglobin in the red blood cells to form methaemoglobin, which binds oxygen tightly and does not release it, thus blocking oxygen transport. Drinking-water nitrate may be an important risk factor for methaemoglobinaemia in bottle-fed infants,"
7	Ammonia (as NH3)	≦0.5	mg/L	"Ammonia in water is an indicator of possible bacterial, sewage and animal waste pollution. Ammonia can compromise disinfection efficiency, result in nitrite formation in distribution systems, cause the failure of filters for the removal of manganese and cause taste and odour problems."

No.	Water quality parameters	Reference value	Unit	Why is the reference value set? *1
8	Total Iron (as Fe)	≦0.3	mg/L	"On exposure to the atmosphere, the ferrous iron oxidizes to ferric iron, giving an objectionable reddish-brown colour to the water. At levels above 0.3 mg/l, iron stains laundry and plumbing fixtures. There is usually no noticeable taste at iron concentrations below 0.3 mg/l, although turbidity and colour may develop."
9	Manganese (as Mn)	≦0.1	mg/L	"At levels exceeding 0.1 mg/l, manganese in water supplies causes an undesirable taste in beverages and stains sanitary ware and laundry. Even at a concentration of 0.2 mg/l, manganese will often form a coating on pipes, which may slough off as a black precipitate."
10	Copper (as Cu)	≦1	mg/L	"Staining of sanitary ware and laundry may occur at copper concentrations above 1 mg/l. At levels above 5 mg/l, copper also imparts a colour and an undesirable bitter taste to water."
11	Phosphates (as PO_4^{3-})	≦2.2	mg/L	Phosphorus is contained in a lot of sewage such as from households or feces and urine and is measured with an index to express degree of the pollution of the water. Phosphorus can be the cause of excessive plankton growth when large amounts of phosphorus become the nourishment source of plankton in lakes and ponds.
12	Residual free chlorine	0.2 ～ 0.5	mg/L	"Chlorine residual should be maintained throughout the distribution system. At the point of delivery, the minimum residual concentration of free chlorine should be 0.2 mg/l."

*1: Source: 2011, WHO, Significance in drinking-water from Guidelines for Drinking-water Quality of WHO, (excluding No.11, PO43-)

B.5 Related documents

Details of the water quality control and management and can be found “2015, WASAC &JICA, Training module on water quality control and management (First Edition)”.

3.4.6 Establishment of District WASH Board (DWB) and hold a regular meeting

A. Responsibilities

Actor		Action
Main actor	District	Establish the District WASH Board.
Supporter	WSPs	Advice in defining the responsibilities of the District WASH Board
	WASAC RWSS	➢ Explain the collaboration of DWB and POs in water service management. ➢ Define the criteria for selection of DWB members. ➢ Define the role and responsibility of DWB.

Actor		Action
		➢ Propose the technical aspects among the duties of the DWB ➢ Support operationalization of DWB.

B. Detailed activities

The Districts should establish complete and strong WASH boards because they contribute to the successful implementation of the water services provision. The District WASH Board is expected to be the most active District unit dedicated to the monitoring of management of the water infrastructures as described in the following objectives:

- Reinforce the monitoring of drinking water systems management
- Regular management of Private operators' contracts
- Make a technical and financial audit of operations
- Decide on the use of the water royalties' account.
- Negotiate capacity building funds
- Customer Satisfaction and Water Quality Motoring
- Planning on Water supply and Sanitation
- Sensitize the population before the installation of Water Supply Infrastructure and the Delegation management.

That is why the members of the WASH board should plan regularly meeting and attempt them. The members of the DWB should be well documented and updated with regard to the activities of the PO as well as other stakeholders involved in the water sector.

Proposed composition of WASH Board is as follows.

Table 3-15: Proposed composition of WASH Board

	Members	No of persons
1	Vice-Mayor FED as chairperson of the Board	1
2	WATSAN Officer as Secretary of the Board	1
3	Representative of water users	2
4	Representative of Private Operators	1
5	Representative of Schools	1
6	Representative of health centers	1
7	Representative of District council (EC)	1
8	WASAC representative	1
9	JADF representative	1
-	Other stakeholders if necessary	-

3.4.7 Establishment of Water Users Committee (WUC) and hold a regular meeting

A. Responsibilities

Actor		Action
Main actor	District	➢ Establish water user's committee at water point sources, public tap, and village/ Cell/Sector level. ➢ Provide technical support to POs and WUC
	Community	Elect water users committee members

Actor		Action
Supporter	WASAC RWSS	➢ Promote set-up of WUC by introducing the concept of "Set up of the Water User Committee" and follow up relevant activities to the Districts ➢ Support operationalization of WUC
	NGOs / Development Partners	➢ Support the District trough DWB to provides technical support to Water Users Committee

B. Detailed activities

A WUC is to be established at every water points of the following schemes: 1) Public tap, 2) Borehole of hand pump, and 3) Improved spring. The members of the Water Users Committee (WUC) are elected among the community members in the villages. In addition to the water point, A WUC is to be established at village level, cell level, and sector level as well, in which the members of WUC are elected either/both among the member of one lower administrative-level of WUC or/and community members.

The District is responsible to initiate and coordinate the election activities. Although the WUC work under their volunteerism, a small motivation can raise their performance. They also continuously need the support from the District such as controlling collected user fees in the District's bank account, intermediary support in major repair, basic reporting materials, communication means, and capacity development trainings.

The member structures, roles and responsibilities of WUC are as shown in the table below.

Type of WUC	Member	Roles and responsibilities
Piped water supply system (Public tap)	1) President 2) Vice president 3) Secretary	● Monitor service delivery, functionality and cleanliness of public tap or kiosk ● Report problems and complaints to committees at village, cell and sector level, DWB and POs ● Represent users' interests in the WUC at system level ● Sensitize users to pay for water services
Borehole of hand pump	1) President 2) Vice president 3) Secretary/Treasure 4) Counsellor (2) 5) Technician	● Monitor service delivery, functionality and cleanliness of facility ● Report problems and complaints to committees at village, cell and sector level, DWB and POs ● Sensitize users to pay for water services and ensure O&M ● Carry out regular O&M where necessary ● Open bank account and collect water fees
Improved spring	1) President 2) Vice president 3) Secretary/Treasure 4) Counsellor (2)	● Ensure cleanliness of improved spring ● Report problems and complaints to committees at village, cell and sector level, DWB and POs ● Sensitize users to pay for water services and ensure O&M ● Open bank account and collect water fees
Village, Cell, Sector WUC	1) President 2) Vice president 3) Secretary/Treasure 4) Counsellor (2)	● Discuss issues with DWB when necessary ● Monitor service delivery, functionality and cleanliness of facility and O&M performed by WUC members

Type of WUC	Member	Roles and responsibilities
		● Share results of monitoring with DWB

3.5 Carry out capacity development

Capacity and capacity development are wide concepts still evolving. "In the water utility context, institutional capacity development has previously been narrowly conceived in terms of individual skills development. Often missed were important dimensions at policy or legislative levels, or in supporting organisational processes, systems, structure, and behaviours. Institutional capacity therefore goes beyond the individual and the organization. It encompasses the wider external operating environment (including policy, legal, political and regulatory aspects) which may facilitate or hamper the existence and performance of an organization" (Kayaga et al., 2013) .

"At the individual level, capacity refers to skills, experience and knowledge that are imparted to people to become efficient and effective actors in an organisation. Some of these capabilities are acquired through formal training, others through experiential learning". (Kayaga et al., 2013) .

"At the organizational level, capacity is seen in terms of how well an organization has developed a clear vision, mission and strategy; as well as adaptable systems, structures and tools; and the ability to influence its operating environment in a positive and strategic manner". " (Kayaga et al., 2013) .

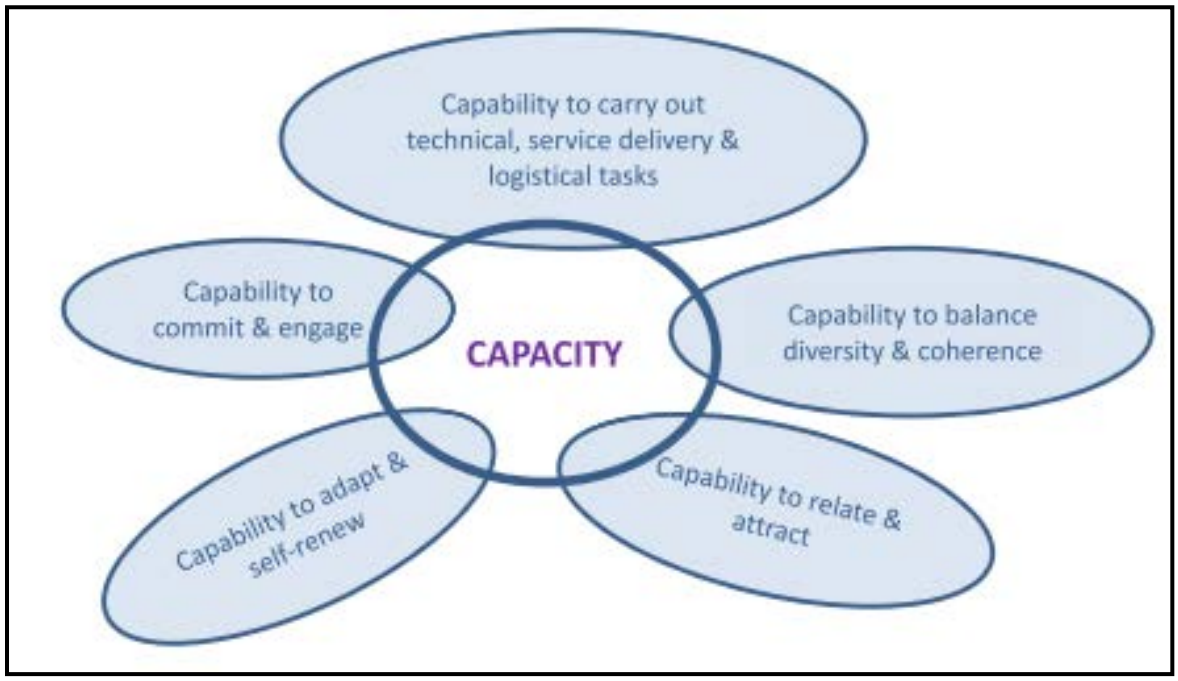


Figure 3-21: Elements of capacity (Kayaga et al., 2013)

Normally most of stakeholders of the PPP arrangement may benefit from a capacity development intervention. Lusthaus (2002) highlighted that the performance (effectiveness, efficiency, financial viability and ongoing relevance) is a result of harmonisation of various factors including the capacity of the company, enabling environment and motivation to perform better. Accordingly, during capacity development, the following capabilities of the PO should be looked on:

- Strategic leadership
- Organizational structure
- Human resources management
- Finance management
- Procedures /system: "Systems are standardized policy and mechanisms that facilitate work, primarily manifested in the organisation reward system, Management Information System

(MIS), and in such control systems as performance appraisal, goals and budget development..." (Burke & Litwin, 1992) including Problem-solving, decision-making, communications, monitoring and evaluation.

- Infrastructures: Assets and facilities such as working offices, adequate lighting, clean water, electricity ...
- Technology equipment like computers, phones ..., information systems, hard-ware / software, library...
- Inter-organisation linkages / Partnerships

The dimension of enabling environment includes the condition of:

- Formal rules (regulation, taxes, legal framework, labour right, mandate ...)
- Institutional arrangement
- Autonomy of the Private Operator
- Institutional ethos (history, cultural values, norms, taboos)
- Socio economic aspect (finance, demography, natural resources ...)

While the dimension of motivation draws from:

- System of rewards and incentives of the PO
- Mission, vision and culture of the PO.

Capacity development is different from absorption of the changes introduced by interventions from outside. That is why during the design of a capacity development scheme, neglecting the initial capacity of the target PO may lead to the failure. So far, international development agencies recognise the absences of analytical tools to appraisal the capacity. Thus, "Literature suggests that the concept of capacity can be operationalized by identifying its component units, which in turn would help in understanding its dynamics. This operationalization is case-specific and, therefore, one needs to determine both the targeted development objective and the targeted organization" (Pascual Sanz, Schouten, Alaerts, & Tulder, 2011).

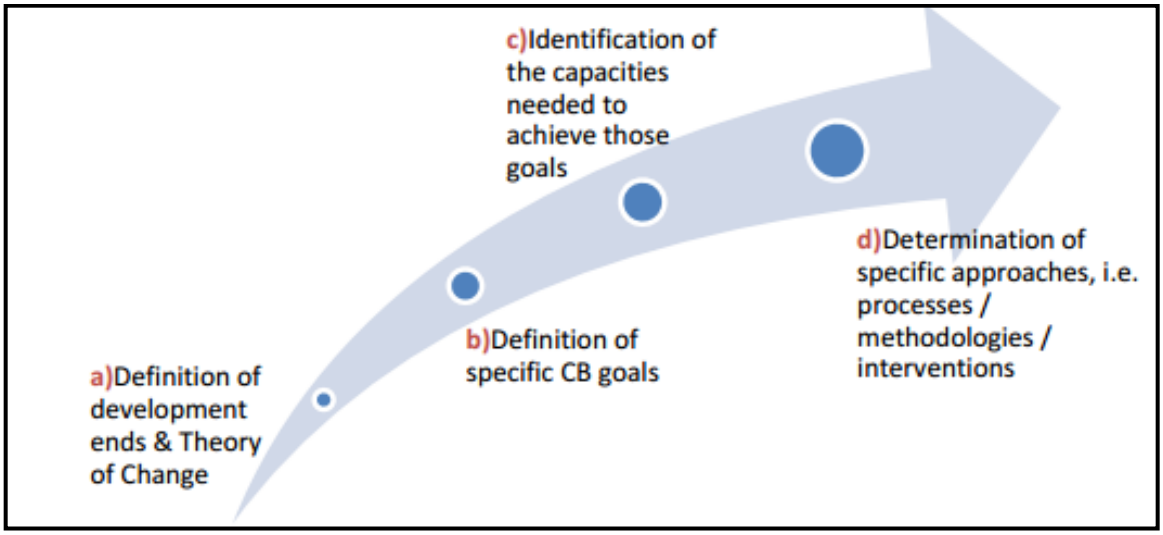


Figure 3-22: Often missing element of CD which bring to the failure (IDRC, 2008)

3.5.1 Ensuring hygiene and protection of water facilities

A. Responsibilities

Actor		Action
	District	➢ Establish effective measure for hygiene and protection

Actor		Action
Main actor		of water supply facilities ➢ Carry out promotion of hygiene awareness and practice ➢ Organize Community hygiene clubs (CHC) ➢ Promote Community-Based Environmental Health Promotion Programme (CBEHPP) ➢ Raise hygiene awareness of the communities and encourage them to change their hygiene behaviour by providing trainings and workshops
	WSPs/POs	➢ Ensure the hygiene and proper protection of water supply facilities.
Supporter	WASAC RWSS	➢ Support District in promoting hygiene awareness and practices to communities. ➢ Support District in establishing effective measure for hygiene and protection of water supply facilities ➢ Support District in establishing an agreement about promoting hygiene awareness and practice in the delegated management contract signed between the District and WSP ➢ Support District in promoting sanitation.
	NGO	➢ Support District to raise hygiene awareness of the communities and encourage them to change their hygiene behaviour

B. Detailed activities

B.1 District

The District is to adopt CBEHPP in preventing health issues of people of Rwanda. However, since CBEHPP covers a wider range of topics than are usually targeted by WASH intervention, the District considers relevant topics to improve O&M of water supply facilities. The negative behaviours of people can be controlled through social mobilisation intervention initiated either by the District or other supporters.

1) To works on establishing CHC
2) To carry out assessments of hygienic status around water points and incidence rate of water-borne diseases in the communities.
3) To make hygiene promotion programmes according to the result of the assessments. The District organizes, in collaboration with CHC members, regular promotions of hygiene awareness, practice, and sanitation with population
4) To encourage CHC members to empower the communities to address their own hygienic and sanitary issues.
5) To organize regular inspections to check respect of norms and rules of hygiene and sanitation in the District.

Sometimes it is necessary to adopt incentive measures including fines or punishments. The Districts can even engage the sector and cell authorities to settle discovered conflicts.

B.2 WSP/PO

WSP/PO is responsible for ensuring the hygiene environment and proper protection of water supply facilities in cooperation with the communities.

1) WSPs conduct regular monitoring of hygienic and sanitary situation of water sources.

B.3 WASAC RWSS

CM unit of WASAC RWSS supports the District in the process mentioned above

DWM unit of WASAC RWSS encourages the District and private sectors to stipulate some agreements/articles in regard to promoting hygiene awareness and practice in the delegated management contract.

OM unit of WASAC RWSS provide technical advice about sanitary and water facilities to the District.

B.4 NGO

NGOs support the District to raise hygiene awareness of the communities and encourage them to change their hygiene behaviour by providing trainings and workshops

3.5.2 Technical intervention for O&M

A. Responsibilities

Actor		Action
Main actor	District	Provide technical intervention to POs.
	WSPs	Conduct technical intervention on operation and maintenance.
Supporter	WASAC RWSS	Support by providing technical intervention to District and to POs.

B. Detailed activities

It is effective for the new PO to receive assistance from the District or old PO during the handing over period, so that it will be able to understand the operation and maintenance procedures and features of facilities. If the handing over period is organized while the previous PO is still operating the facilities, the operation will be handed over more smoothly., Due to the differences in the scale and features of the facilities, specific skill to be transferred to the new PO are listed and a hand over plan is formulated accordingly. All of these should be reflected in the delegated contract.

Whether or not the cost for the skills transferring period is included in the delegated contract is discussed and decided in advance, and reflected in the delegated contract. The District provides training for PO capacity building separately when needed.

Beside trainings, the technical interventions required from the Districts are those ones which call for advanced expertise or which engage relatively high financial resources. The District has the capacity to hire an external expert/ specialist for the repair of heavy damage to the sources, broken tanks, pumps or any other activity requiring high technical skills within the treatment chain. The figure below details the responsibilities of different actors involved in operation and management of the drinking water infrastructures.

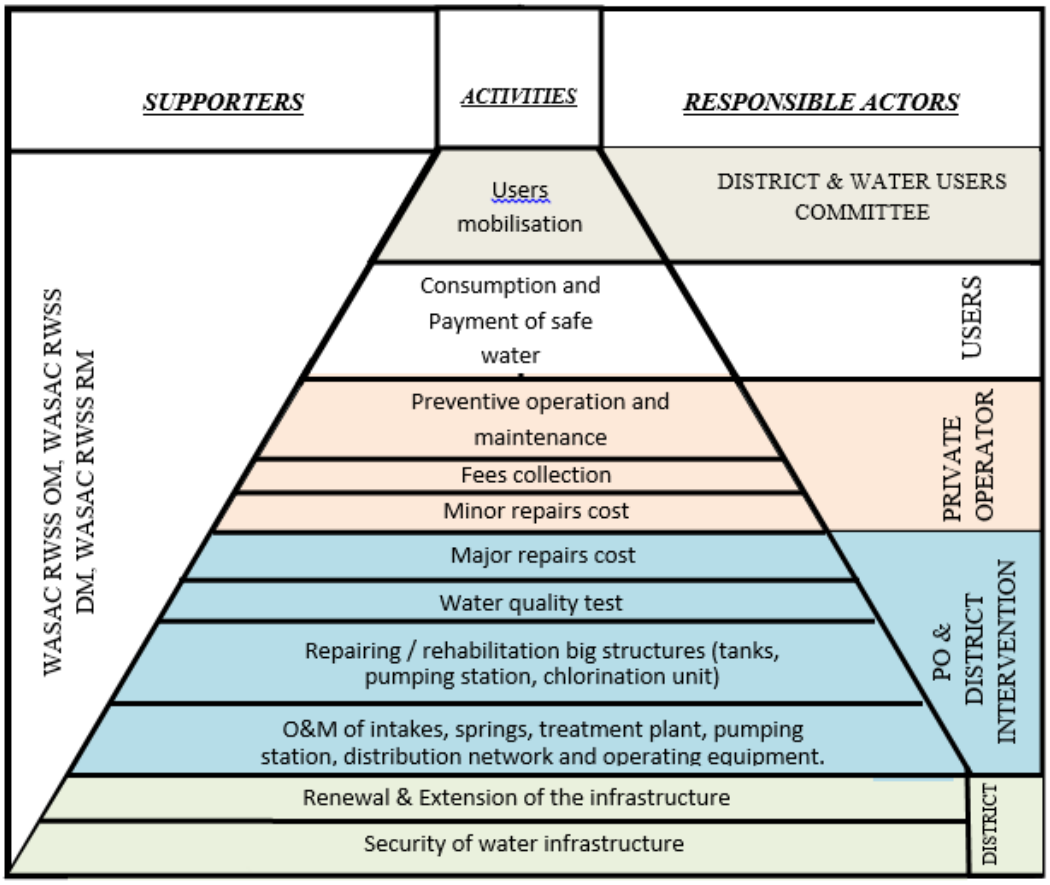


Figure 3-23: Actors and responsibilities for O&M of drinking water facilities

3.5.3 Carry out water quality management including chlorination

District with support from WASAC has responsibility for the capacity building for the WSPs for the strengthening of the chlorination control in the water supply infrastructures.

A. Responsibilities

Actor		Action
Main actor	District	Collaborate with WASAC RWSS to provide training to WSPs for the following: water quality control and management, procedure of regular water quality analysis by authorized third-party institutions and how to chlorinate and control residual free chlorine in supplied water.
	WSPs	Be trained and have acquired the ability to carry out the following: water quality control and management, procedure of regular water quality analysis by authorized third-party institutions and how to chlorinate and control residual free chlorine in supplied water.
Supporter	WASAC RWSS	Support activity of District and collaborate with District to provide training to WSPs for the following: water quality control and management, procedure of regular water quality analysis by authorized third-party institutions and how to chlorinate and control residual free chlorine in supplied water.

B. Detailed activities

B.1 Detailed activities by each actor

B.1.1 District:

1) To collaborate with WASAC RWSS to provide training to WSPs on how to conduct chlorination.
2) To collaborate with WASAC RWSS to provide training to WSP on how to control residual free chlorine in supplied water daily.
3) To collaborate with WASAC RWSS to provide training to WSP for procedures of regular water quality analysis by authorized third-party institutions.
4) To collaborate with WASAC RWSS to provide training to WSPs for procedure of purchasing residual free chlorine meter and its reagents.
5) To tell the contact information of the relevant organization when WSPs have trouble.
6) To store training records

B.1.2 WSPs:

1) To be trained and acquire know-how to conduct chlorination from District and WASAC RWSS.
2) To be trained and acquire know-how to control residual free chlorine in supplied water daily.
3) To be trained and acquire know-how for procedure of regular water quality analysis by authorized third-party institutions.
4) To understand and acquire the know-how for procedure of purchasing residual free chlorine measuring instruments and its reagents.
5) To properly maintain the training texts and materials and then ensure they are shared among co-workers.
6) To store the contact information of the relevant organizations when WSPs have trouble.
7) To purchase residual free chlorine meter and its reagents.

B.1.3 WASAC RWSS:

1) To collaborate with District to provide training to WSPs on how to conduct chlorination.
2) To collaborate with District to provide training to WSPs on how to control residual free chlorine in supplied water daily.
3) To collaborate with District to provide training to WSPs on procedure of regular water quality analysis by authorized third-party institutions.
4) To collaborate with District to provide training to WSPs for procedure of purchasing residual free chlorine meter and its reagents.
5) To stores training record.

B.2 Capacity building on the water quality management

District shall request the training on the water quality management for WSPs to WASAC RWSS to enhance their capacity. The flowchart for the capacity building on water quality management is shown below. And also details of the capacity building can be found the “Training module on water quality control and management (First Edition), WASAC & JICA, 2015”.

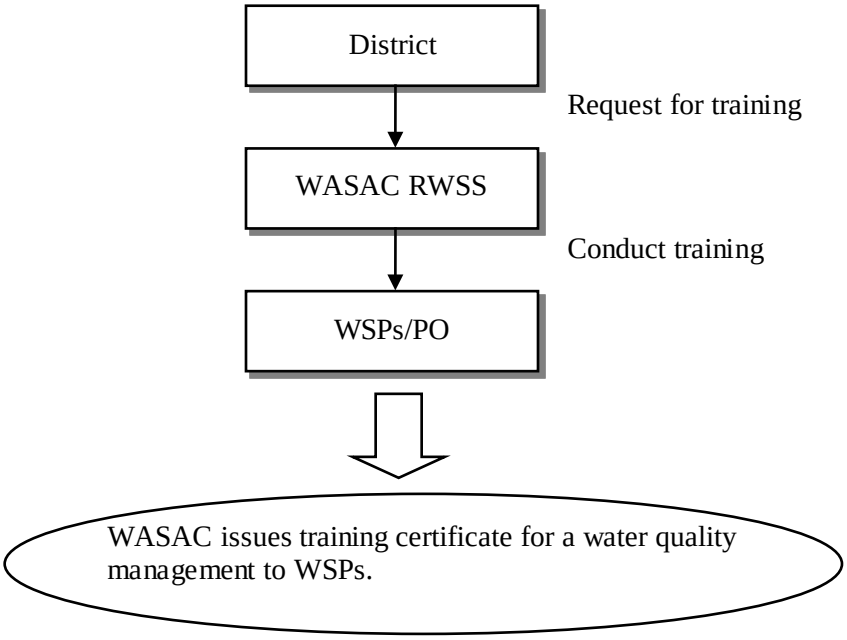


Figure 3-24: The flowchart for the capacity building on water quality management

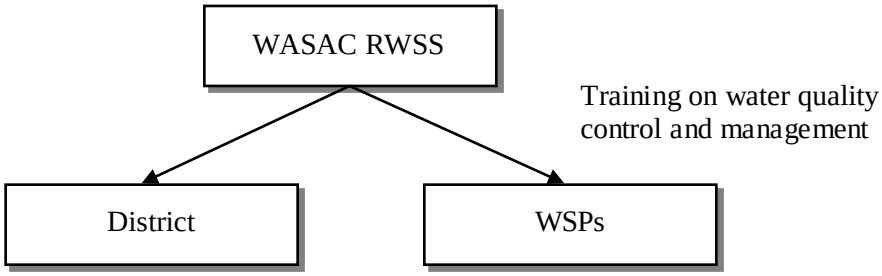


Figure 3-25: Capacity Development Structure for Water Quality Management

3.6 Monitoring of execution of PPP contract

3.6.1 Determination of method of monitoring

A. Responsibilities

Actor		Action
Main actor	District	Determine the method of monitoring of PPP contract management.
Supporter	WASAC RWSS	➢ Explain the method of monitoring of water supply service management. ➢ Explain the method of monitoring of revenue and expenditure management. ➢ Explain the method of technical monitoring of water supply systems. ➢ Explain the method of monitoring of royalty management.

B. Detailed activities

Monitoring is about a systematic and continuous self-assessment. Planning the activities of monitoring of an ongoing PPP contract in water services requires defining the concerned actors, their responsibilities, the time schedule and the methodology to follow. Thus, the Districts should identify and involve key institutions / stakeholders for the process of monitoring. The mostly concerned are:

- The Ministry of Infrastructures
- Ministry of Local Government
- The Ministry of Health
- Civil society (Churches, NGOs, other independent local organizations)
- Water Users Committees
- WASAC
- RURA

As a procedure,

- The District collects the monthly / quarterly plan from the PO based on his contractual responsibilities he defines the short term targets as well as the long term targets in terms of water quantity, water quality, coverage, pressure in pipes, customer services, maintenance and operations activities, reporting ...
- The District approves the conformity of the plan to the objectives of the Contract as well as to the National Water Policy and Strategy.
- The District prepares its own monthly / quarterly plan regarding its mutual intervention toward the management of water infrastructures.
- The District formulate the objectives and indicators for monitoring
- The District prepares the budget for the activities of monitoring
- The District requests reports from the WUC at the end of the month / quarter
- The District and WASAC read and discuss the monthly reports from the PO and WUC
- The District performs site visits and discussions with users regarding the quality of services they receive
- The District together with the WUC and the PO compare the achieved targets with the planned ones
- Analyse the collected information by sorting out challenges, issues, and weakness of the PO, the District or the WUC.
- Formulate the measures, strategies or recommendations if necessary to support and adjust the actions of each actor in order to fit in the objective of delivering optimum water services to the consumers while ensuring the sustainability of the infrastructure and the profitability of the business.
- The Districts can introduce some tools like Performance contracts and benchmarking to the best practices which may boost the achievements of the PO.

The implementation of a PPP contract calls for mutuality among involved actors. Sometimes the POs complain that they are left alone. They regularly report to the Districts and do never receive any comments or feedback. In many cases, the WUCs are created even at the early stage of construction of the water facilities, but they are often not operational afterwards, due to the lack of appropriate incentives or observed low will from the Districts. It is up to the Districts to reinforce the WUC and show a pertinent involvement.

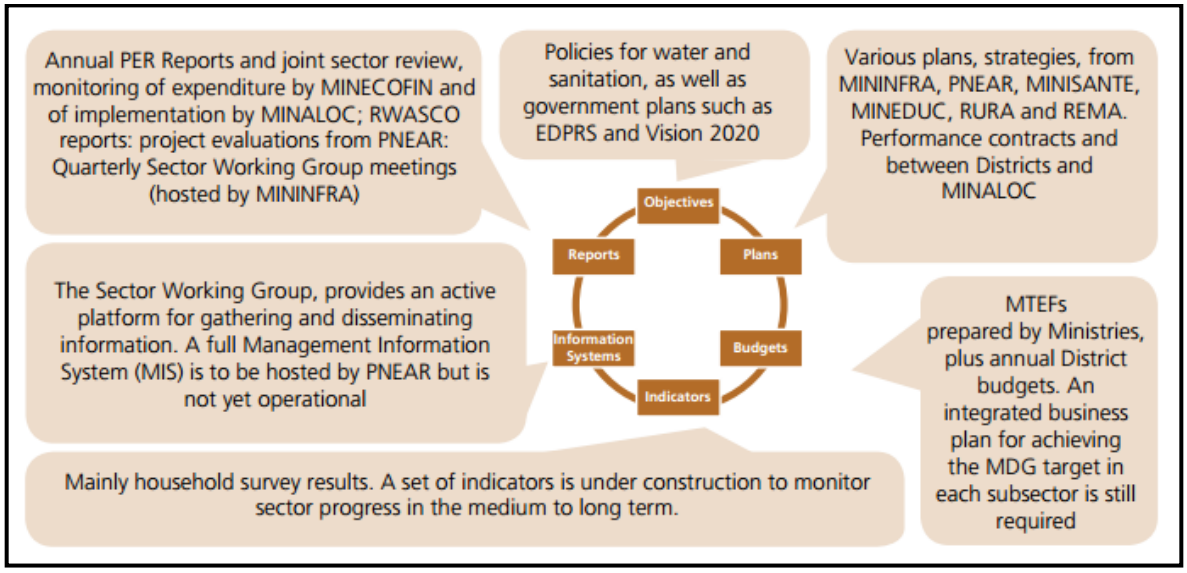


Figure 3-26: The monitoring and evaluation cycle in 2010s Rwanda Water Sector (WSP, 2011)

3.6.2 Determination of method of evaluation

A. Responsibilities

Actor		Action
Main actor	District	Determine the method of Evaluation of PPP contract management.
Supporter	WASAC RWSS	➢ Determine the approach to involve the community during the evaluation ➢ Explain the method of evaluation of water supply service in PPP Contract management. ➢ Explain the method of Evaluation of revenue and expenditure in PPP Contract management. ➢ Explain the method of technical evaluation of water supply systems in PPP contract management. ➢ Explain the method of evaluation of royalty in PPP Contract management.

B. Detailed activities

The determination of the method of evaluation is related with the development of the tools for measurement of project impact, effectiveness, efficiency and sustainability. The following table depicts the mains aspects to consider during the planning of evaluation.

Table 3-16: Example of evaluation plan (Carden, Smutylo, & Earl, 2001)

Who Will Use the Evaluation? How? When?	What is the question to ask?	Source of information	Evaluation methods	Who will conduct and manage the evaluation	Date of start & date of finish)	Cost (Frw)
District to keep track of the performance of the PPP contract at	What impact has the PPP arrangement on the quality of water	Water Users, Media, Civil society	Survey, Site visits, Observations	Districts, WASAC, WUC	1 August - 30 October	3,000,000

Who Will Use the Evaluation? How? When?	What is the question to ask?	Source of information	Evaluation methods	Who will conduct and manage the evaluation	Date of start & date of finish)	Cost (Frw)
the end of every year.	services delivery?					

Horton (2002) has outlined the main steps to be undertaken for evaluation of an endeavour. The same procedure can be adapted to the PPP contract management as follows:

- Map out the logic of adopting the PPP management pattern. (the hierarchy of objectives and underlying objectives)
- Monitor activities, outputs, and outcomes.
- Periodically assess results in relation to the initial objectives and expectations.
- Involve stakeholders throughout the evaluation process
- Think in terms of contributions of external partners, rather than impacts

The evaluation of the effectiveness of the PPP contract is based on determining the objectives of the contract, thus assess if those objectives were achieved. As stated by The Asian Development Bank (2008), there are three main reasons that motivate Governments to engage in Partnerships and those are:

i. To attract private capital, investment;
ii. To increase efficiency and use available resources more effectively;
iii. To reform sectors through a reallocation of roles, incentives, and accountability.

Investment & expansion	Extent of investment in the system for rehabilitation, production and coverage extensions.
Efficiency	Including levels of unaccounted for water (UFW)*, labour productivity** and billing/collection efficiency***
Service quality	Including water quality, reliability, pressure and hours of service; also customer care and responsiveness
Price	Tariff and connection charges, with a dual focus on cost recovery and affordability
Provision for low-income households	Including subsidies and specific service approaches e.g. standposts
Wider societal impacts	Including impacts on growth, poverty reduction, social equity and environment.

* % water produced that is lost either through leakage or unauthorised use

** Number of staff per 1000 connections

*** % of billed charges which are collected

N.B. The stated objectives of the partnerships being examined do not necessarily include all of these criteria. The focus is often on service and financial improvements rather than wider societal impacts, though these may be implicit goals.

Figure 3-27: Evaluation criteria and interpretation (EU, 2010)

The impact of a PPP contract can be tackled through a survey conducted over users, health centres, and educational as well as economical institutions. Normally successful PPP endeavours are expected to produce change in following areas:

- Improving the availability and quality of drinking water supply services;
- Reducing water fetching chores, particularly for women;
- Reducing water costs;
- Reducing water-borne diseases;
- Promoting water related income generating activities and
- Improving the coverage of water services through connected households and communities.

Sustainability may be reflected in the following features of the stakeholders:

- Willingness, involvement and devotion from or PPP parties is developed
- Ability (Technical and managerial skills)
- Incentive to push PPP parties to the performance.
- Leadership
- Financial capacity

The table below summarizes the different techniques commonly used during evaluation.

Table 3-17: Over view of evaluation methods.

METHOD	USE WHEN
QUESTIONNAIRE SURVEY • Involves a printed or electronic list of questions. • Is distributed to a predetermined group of individuals. • Individuals complete and return questionnaire.	➢ **SURFACE-MAIL OR FAXED SURVEY** • The target population is large (more than 200) • You require a large amount of categorical data • You require quantitative data and statistical analyses • You want to examine the responses of designated subgroups (male/female, for example) • The target population is geographically dispersing • You want to clarify your team's objectives by involving team members in a questionnaire development exercise • You have access to people who can process and analyse this type of data accurately ➢ **E-MAIL OR WEB PAGE SURVEY** • You have the appropriate software and knowledge of this method • Your respondents have the technological capabilities to receive, read, and return the questionnaire • Time is of the essence
FACE-TO-FACE INTERVIEW • Involves a printed or electronic list of questions • Is distributed to a predetermined group of individuals • Individuals complete and return questionnaire	• You need to incorporate the views of key people (key-informant interview) • The target population is small (less than 50) • Your information needs call for depth rather than breadth • You have reason to believe that people will not return a questionnaire
TELEPHONE INTERVIEW S	**ONE -TO-ONE TELEPHONE INTERVIEWS:**

METHOD	USE WHEN
• Like a face-to-face interview, but it is conducted over the telephone • Interviewer records responses	• The target population is geographically dispersed • Telephone interviews are feasible (cost, trust of respondent...) **TELECONFERENCE INTERVIEWS:** • The target population is geographically dispersed • Equipment is in place
GROUP TECHNIQUE (INTERVIEW, FACILITATED WORKSHOP, FOCUS GROUP) • Involves group discussion of predetermined issues or topic • Group members share certain common characteristics • Facilitator or moderator leads the group • Assistant moderator usually records responses • Can be conducted in person or through teleconferencing if available	• You need rich description to understand client needs • Group synergy is necessary to uncover underlying feelings • You have access to a skilled facilitator and data has been recorded • You want to learn what the stakeholders want through the power of group observation (using a one-way mirror or video)
DOCUMENT REVIEW • Involves identification of written or electronic documents containing information or issues to be explored • Researchers review documents and identify relevant information • Researchers keep track of the information retrieved from documents	• The relevant documents exist and are accessible • You need a historical perspective on the concerned PPP contract • You are not familiar with the PO's history • You need hard data on selected aspects of the focused PPP contract.

Source: adaptation from (Carden et al., 2001)

3.6.3 Determination of items and parameters of monitoring and execution of monitoring

3.6.3.1 Water quality

A. Responsibilities

Actor		Action
Main actor	District	➢ Monitor the performance of the water quality management based on the delegated contract between District and WSP ➢ Take measure to protect the source of drinking water from risk of pollution ➢ Verify drinking water-safely based on the water quality results submitted by the WSP ➢ Respond to emergency situations to maintain and monitor water quality in the water supply systems

Actor		Action
		➢ Explains water quality monitoring results to rural residents.
	WSP/PO	➢ Conduct the water quality measurement based on the descriptions in **Clause 3.4.5.2** "Conducting periodical water quality analysis by the authorized third party". ➢ Protect water sources and watersheds ➢ Submit reports of water quality tests to the District, WASAC and RURA ➢ Responds to customer water quality complaints or concerns; explains water quality monitoring results
Supporter	WASAC RWSS	➢ Support all the activities by the District ➢ Develop the performance evaluation sheet for WSP and safety confirmation sheet as safe drinking water. ➢ Provide training for water quality monitoring to districts and POs.
	RSB	➢ Provide the portable water quality standard. ➢ Provide certification to POs.
	RURA	➢ Regulate the provision of water services including the water quality for all rural water supply facilities. ➢ Evaluate capability of POs in the water quality management. ➢ Monitor water quality and propose corrective measures to POs and districts.
	Communities	➢ Protect water sources and watersheds from contamination such as livestock, animals and human activities. ➢ Inform any issues related to water quality to districts and POs if the water pollution happens

B. Detailed activities

B.1 Detailed activities by each actor

B.1.1 District:

1) To check WSP's monthly report and monitor the performance of water quality management based on the delegated management contract between District and WSP. And then provide feedback to WSP.
2) To check regularly WSP's performance regarding water quality control and management according the performance evaluation sheet for WSP and safety confirmation sheet. And then to feed back to WSP.
3) To record the evaluation result into the sheet when the monitoring is carried out. Refer to table 3-61: The performance evaluation sheet for WSP form-1 and table 3-62: The performance evaluation sheet for WSP form-2.
4) To verify drinking water-safely based on the water quality test report submitted by the WSP.
5) To record the water quality test results into the monitoring sheet. Refer to table 3-63: Safety confirmation sheet as safe drinking water.
6) To instruct WSP for corrective action if there is an abnormality in water quality.
7) To take measure properly to protect the source of drinking water from risk of pollution.
8) To respond to emergency situation to maintain and monitor water quality in the water supply

systems.

9) To explain water quality monitoring results to rural community.

B.1.2 WSPs:

1) To conduct the water quality control and measurement including chlorination based on the descriptions in **Clause 3.4.5.2**.
2) To responds properly to customer water quality complaints or concerns.
3) To explain water quality monitoring results

B.1.3 WASAC RWSS:

1) To support District and WSPs in all the activities related to water supply and sanitation services.
2) To develop the performance evaluation sheet for WSP and safety confirmation sheet as safe drinking water.

B.1.4 RURA:

1) To inspect a performance of WSPs with regards the water quality management standard in Rwanda.

The performance evaluation sheet for WSP from-1

Regarding Chlorination

Name of surveyor : ***

Month : December, 2017

Date	Time	ID No. of System	System Name	District / Sector	Wether condition	Name of Interviewee of WSP	Q1 Daily measuring residual free chlorine			Q2 Recording measurement results		Q3 Percentage satisfying water quality standards		Q4 Record of Preparation of The Chlorine Solution		Remarks
							Conducted	Partial implementation	Not implemented	Confirmed	None	Number of pass / number of times	%	Confirmed	None	
Example																
10th	13:00	1	MKM	Rwamagana /	Fine	SATO	レ	－	－	レ	－	8 / 10	80	レ	－	
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

Table 3-61: The performance evaluation sheet for WSP from-1

Table 3-62: The performance evaluation sheet for WSP from-2

The performance evaluation sheet for WSP from-2

Regarding periodical water quality analysis by the authorized third party

Name of surveyor : ***

Month : December, 2017

Date	Time	ID No. of System	System Name	District / Sector	Wether condition	Name of Interviewee of WSP	Q1 Periodical water quality analysis by the authorized third party		Q2 Water Quality Test Report by third party		Q3 Water quality result (presence or absence of incompatible water quality parameters)		Q4 Has the corrective action been taken against water quality abnormality		Q5 What is the corrective action taken?	Remarks
							Conducted	Not implemented	Confirmed	None	Confirmed	None	Conducted	Not implemented		
Example																
10th	13:00	1	MKM	Rwamagana /	Fine	SATO	レ	－	レ	－	－	レ	－	－	―	
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

Table 3-63. Safety confirmation sheet as safe drinking water

(Record of required monitoring parameters for rural water supply system)

System Name: _____

System ID No. _____

No.	Water quality parameters	Standard value	Unit	Water Quality Test Result		Remarks
				Rainy Season	Dry Season	
-	Laboratory test report No.	-	-			
-	Sampling Date	-	-			
-	Weather condition on sampling	-	-			
-	Sampling Place	-	-			
-	Name of sampler	-	-			
1	Total coli-forms	Absent	Cfu/100 ml			
2	E.coli	Absent	Cfu/100 ml			
3	Turbidity	5	NTU			
4	pH	6.5 ～8.5	-			
5	Aluminium (as Al^{3+})	≦0.2	mg/L			
6	Nitrate (as NO_3-)	≦45	mg/L			
7	Ammonia (as NH_3)	≦0.5	mg/L			
8	Total Iron (as Fe)	≦0.3	mg/L			
9	Manganese (as Mn)	≦0.1	mg/L			
10	Copper (as Cu)	≦1	mg/L			
11	Phosphates (as PO_4^{3-})	≦2.2	mg/L			
12	Residual free chlorine	0.2 ～ 0.5	mg/L			

<Contents of corrective action implemented when water quality was not satisfied>

B.2 Related documents

Details of the water quality monitoring can be found in the following document.

- Training module on water quality control and management (First Edition), WASAC & JICA, 2015

3.6.3.2 Customer satisfaction

A. Responsibilities

Actor		Action
Main actor	District	Monitor the improvement of water service management.
Supporter	WSPs	Improve the water service delivery to the customer and vulnerable people.
	Community	Protect the water infrastructures and resources.
	WASAC RWSS	➢ Mobilize the community to have common understanding on behaviour change and ownership of water infrastructures. ➢ Monitor the water service management under PPP. ➢ Develop the water service management reporting system. ➢ Monitor the application of the water tariff, opening time of water point, quality and quantity of water… Monitor the curative maintenance of water supply facilities to be done by POs.

B. Detailed activities

Parameters for monitoring customers' satisfaction include:

- Existence of instrument or practice used to be informed of the opinion and the wishes of customers. Those can be surveys, forums, customer's councils....
- Incorporation of the wishes of customers into the operational decisions of the company.
- Existence of instruments portraying the right of customers (customers' charter, agreements, contracts ...) including fines or compensations for non-compliance.
- Plan for training employees to take care of customers
- The ways in which customers access to the PO (personal audience, email, phone...)
- Water provision aspect: quantity and pressure in pipes, rapidity to repair leakages or to execute individual connections
- Continuity of service (hour per day)
- Quality of water supplied (number of tests carried out and the results like bacteriological characteristics, taste, odour, colour,)
- Investigating, reception and mediation of users complains (suggestion boxes, meeting, receptionist, phones call)
- Responsiveness (quick solution, intervention or feedback)
- Staff - customer relationship: courtesy from sales staff, friendliness, others services after water delivery
- Invoice on time and clarity of invoice

3.6.3.3 Water tariff

A. Responsibilities

Actor		Action
Main actor	RURA	Conduct the water tariff study.
Supporter	WASAC RWSS	➢ Support in mobilizing the community to pay the service of water. ➢ Monitor the affordability of water tariff to the consumers. ➢ Monitor the financial resource management.
	District	➢ Monitoring the respect of the water tariff
	Private Operator	➢ Providing the data ➢ Respect of the water tariff set by RURA

B. Detailed activities

Nowadays, the tariff of water services is determined by RURA. The ranges of water prices set up by RURA are as featured below:

Table 3-18: Schedule of water tariff over the water facilities managed by the PO.

Type of water system	***Jerrycan* out of TVA (Frw)***	***Jerrycan TVA included (Frw)***	***m^3 Out of TVA (Frw)***	***m^3 TVA included (Frw)***
Gravity	7**	8	287	338
Pumping electricity	17	20	731	863
Pumping by Diesel	21	25	921	1087
Complex (Traitement)	14	16	597	704
Turbo pump	16	19	689	814

Source: Decision N°06/BD/ER-LER/RURA/2016 OF 13/12/2016 on Maximum Rural Water Tariffs
*The capacity of a jerry can be 20 liters

The water tariff is not static. The determination of tariffs" need to balance a number of objectives:

(i) stipulated service standard and associated costs,
(ii) customers' willingness and ability to pay,
(iii) resulting cost recovery,
(iv) required economics (return on investment) for private operator, and
(v) need for/availability of subsidies. The right combination of factors must be determined through an iterative optimization process using the project model" (ADB, 2008) as shown in the figure below:

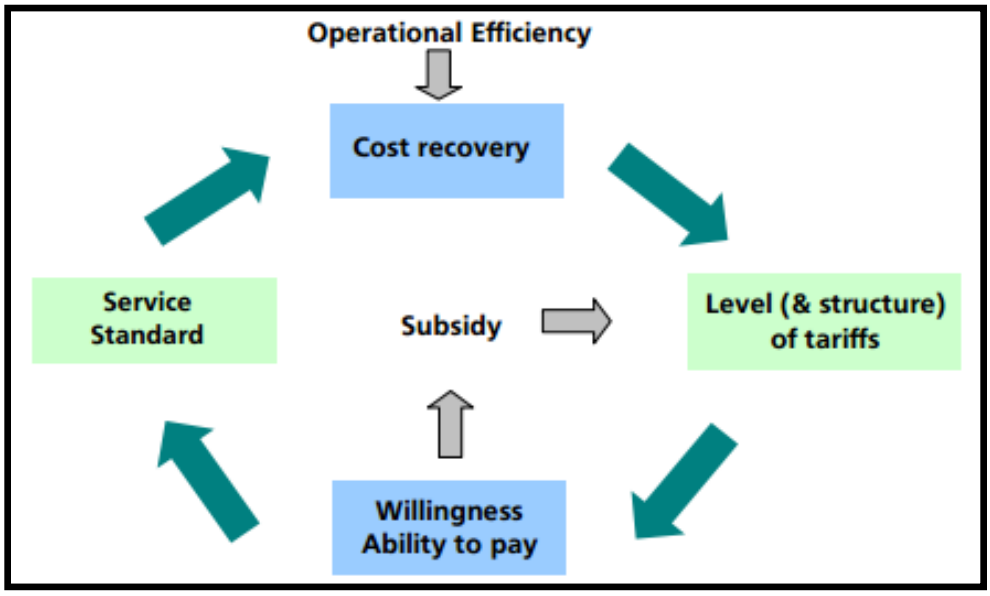


Figure 3-28: Iterative process of designing tariff (ADB, 2008)

The cost recovery has four stepped levels and the National water supply policy (MININFRA) should stipulates which level the tariff should cover.

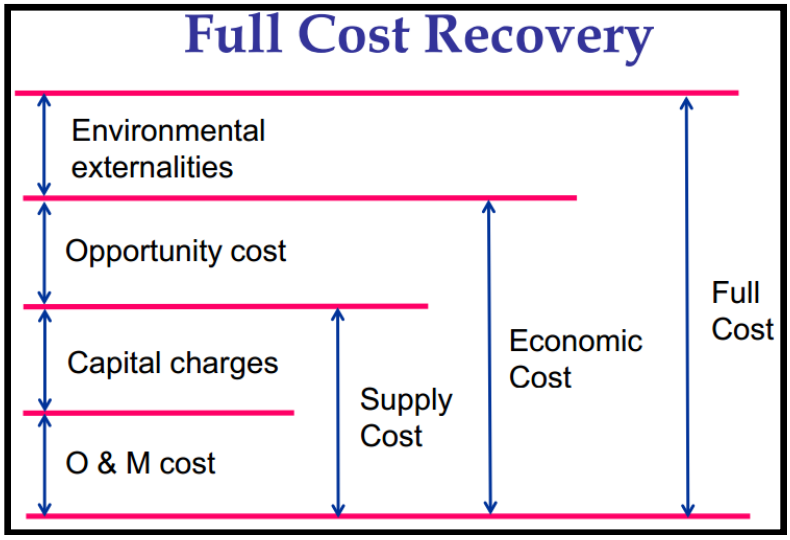


Figure 3-29: Various levels of cost recovery (Jiang, 2014)

The consideration of equity, fairness and affordability principles shapes the structure of a tariff to adopt. Those may be "uniform flat fee, increasing bloc fee, decreasing bloc fee, or mixed systems". The following figure presents a typical example of increasing tariff system:

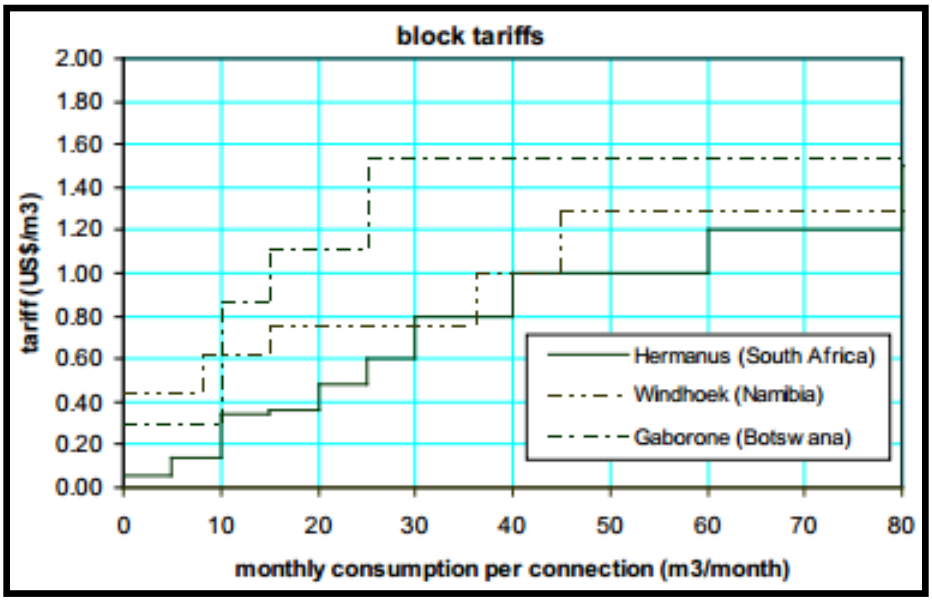


Figure 3-30: Block tariffs of Windhoek (Namibia), Gaborone (Botswana), and Hermanus (South Africa) (after May 1999) (Zaag & Savenije, 2013)

The main parameters for assessing the tariff include:

- The tariff structure was explained to the consumers and it is well understood
- The price is affordable
- Economic criteria: Externalities, marginal cost

  Externalities are the consequences incurred by a project of drinking water to the third parties during construction or during exploitation. Those may include the loss of agriculture lands, mosquitoes in wetted areas, depletion of natural water sources. Marginal cost is the increase in total cost from supplying one more unit of water
- Efficiency criteria: Look if operations, consumables and staffing ratio are at optimum level.
- Financial criteria: Ensure that the tariff covers O&M costs plus depreciation and financing costs, generates cash from operations to cover a set percentage of the capital expenditures
- Equity criteria : The WSS tariffs was designed to provide cross-subsidies between: (i) different WSS where water production and distribution and waste water collection and disposal costs differ; and (ii) various categories of customers (residential, commercial, industrial, public…) within a same system (Locussol & Ginneken, 2010).

3.6.3.4 Royalty

A. Responsibilities

Actor		Action
Main actor	District	➢ Request to MINECOFIN to open special account for royalty ➢ Confirm the payment schedule of royalty with PO ➢ Make the financial report including the royalty and submit to the MINECOFIN and copy to WASAC RWSS and RURA at least quarterly base ➢ Make the annual audit report and submit to MINECOFIN and copy to WASAC and RURA by end of the fiscal year ➢ Make the financial plan including the royalty

Actor		Action
		➢ Report the financial report to District Water Board (DWB) at quarterly base
	WSPs/POs	➢ Pay the royalty based on the RURA regulations ➢ Make the monthly report including the royalty
Supporter	MINECOFIN	➢ Analyse the request from Districts and open the special account for loyalty in BNR on behalf to the Districts. ➢ Check the annual financial and audit reports and give feedback to the Districts
	WASAC RWSS	➢ Support the Districts in advocacy to MINECOFIN for open account for the WASH activities including the royalty ➢ Support the Districts in checking of the financial reports and give feedback to the Districts
	RURA	➢ Regulate the royalty rate-WSPs ➢ Review of the royalty rate regularly based on the cost escalation

B. Detailed activities

B.1 Introduction

Generally, a royalty is a payment to an owner for the use of property, in case of water management in Rwanda, the Districts are legal owner and the Private Operators (POs) are licensees of the facilities respectively. In most cases, royalties are designed to compensate the owner for the asset's use, and they are legally binding.

B.2 Royalty rate

Royalties are often expressed as a percentage of the revenues obtained using the owner's property. In case of the water management in Rwanda, the royalty rate is determined by RURA. The following formula is adopted as royalty rate.

$$\mathbf{RA = 10\% \times Vp \times Tm}$$

RA : District Royalty (FRW)
Vp : Billed water volume during the month (m3)
Tm: Average tariff approved by RURA per m3 (FRW/m3)

The schedule of royalty payment is agreed during the contract negotiation between the PO and the District.

B.3 Management of the royalty

The purpose of royalty fees is to create a certain saving so that in case of a technical problem, extension or audit, that fund could serve. However, it was noticed that in most of the Districts, royalty fees are mixed with others Districts income and directed to other endeavours. It is essential for the Districts to establish independent bank account for water management including royalty fees. The situation of this fund should be shared among the District, WASAC, the DWASH Board and the PO.

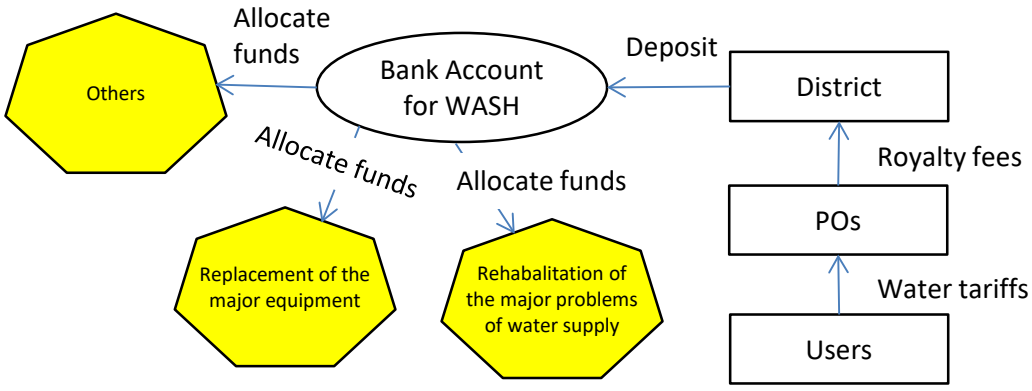


Figure 3-31: Flow of the royalty fee from users to District

Example: Calculation of the Royalty fee

【Condition】

- Served households number: 2,000 HHs
- Monthly billed volume: 1,000 m^3
- Water system: Electricity pumping
- Water tariff for electricity pumping (example): 863 RWF/m^3

【Calculation】

Amount of the monthly royalty = 10% x 1,000 m^3 x 863 RWF/m3 = 86,300 RWF

3.6.3.5 Condition of facilities

A. Responsibilities

Actor		Action
Main actor	District	Monitor the condition of facilities.
	WSPs	Monitor the condition of facilities and make a maintenance plan and implement it
Supporter	WASAC RWSS	Support the District and WSPs in monitoring of facilities condition.

B. Detailed activities

As the owner of the facilities, the District checks the monthly and annual reports submitted by the PO to see whether their functions and degradation conditions are acceptable, and whether they require any repair work or replacement.

The PO submits a monthly report to the District within 15 days after the end of the month in accordance with **Article 10.1 of "District and Private Operator's Manual for Operation and Maintenance of Rural Water Supply System in Rwanda"** and the format of the delegated contract. It also submits an annual report to the District by the end of the first quarter of the following year also in accordance with **Article 10.1 in the manual** and the format of the operation delegated contract.

The District sends a copy of the monthly and annual reports submitted by the PO to WASAC.

WASAC assists the above operation of the District and provides advice properly based on the monthly and annual reports submitted by the PO.

The District should continuously check and control the condition of the water infrastructures. Most of the Districts have introduced in their structure a position of "WATSAN officer" which has in its

responsibilities, the follow up of water services delivery. Some of the most important items to stress include:

- Cleanliness of the tanks
- Sealing of pipes
- Existence and proper installations of appurtenances
- Functionality of installation and pressure reaching each water point.
- Protections of the sources including fences and lawn.
- Production of the source and the quality of water produced.
- Manholes and internal equipment.

Monitoring the condition of the water infrastructure is a responsibility which engages the District as well as the DWASH Board and the WUC.

WASAC should operationalise a Management Information System (MIS) containing complete and updated information of the water facilities. That system would be a good reference of the stakeholders for the monitoring of the evolution of the condition of the water services delivery.

3.6.3.6 Revenues and expenses

A. Responsibilities

Actor		Action
Main actor	District	Plan the management of water revenues and expenses.
	WSPs/POs	Expect to maximize the recovery of revenue and minimize the expenses.
Supporter	WASAC RWSS	➢ Advice to reduce the leakage on water supply system and on the fetching water point. ➢ Advice to optimize the revenue (organize the training for capacity building, conduct the reflexion meeting, develop financial report model, etc.)

B. Detailed activities

The revenues of a PO come from water selling. It is not a good practice for a PO to expect the profit from the services of implementing the new connections or from selling pipes and fittings to the users. The expenses of a PO include the operating costs, salaries, taxes, and royalty.

The PO invoices all consumers and collects the funds at least once in a month. The collection efficiency should be as high as possible so that the revenues from water sells could cover his expenses and procure him an allowable profit. The PO should set up an accounting system which ensures a good management and allowing audits. The book keeping of the PO is expected to at least capture: (i) Balance Sheet, (ii) Cash Flow, (iii) Bank book, (iv) Investments (v) Profits and Losses, (vi) Depreciation. (vii) File of receipts, invoices and all accounting records.

The District requests the business plan from the PO. The District monitors and controls the accounting documents of the PO to make sure that the business plan is properly carried out. Locussol and Ginneken (2010) stipulates additional key points to check which are:

- If the PO has developed a set of operation manuals and procedures for commercial activities
- If the PO offers the possibility to the consumers for choosing their preference. Either (i) individual connections, shared connections or public standpipes.
- If the PO correctly meters consumed water as a basis for billing
- If the PO disconnects non-paying users and reconnect them after payment

- If the PO receives the complaint and seeks feedback from customers on the quality of the service, they receive and adjusts his services accordingly
- If the PO handles complaints in a timely manner and makes available to the public independent assessments of their performance for handling complaints
- Accounting principle applied by the PO
- If WSS service providers have a sufficient number of certified accountants, adequate hardware and software for preparing financial statements
- If accounting procedures are recorded in internal accounting guidelines
- If ceilings are set for procuring goods, works and services by operational departments, if they are adhered to and if they are perceived as being an impediment to efficient operations
- Which auditing rules are applied and the quality of the audits carried out
- If the PO is able to timely take actions for addressing audit qualification

If revenue is found below the expenses an intervention is required such as: Adjusting tariffs, subsidy, materials support, and training to boost fund collection, campaigns to raise awareness of users.

A low willingness to pay from the water users is among the main factors which undermines the Water Supply Services prosperity. The local authorities themselves should understand the concept of water payment.

WASAC RWSS and the District should support the PO in the case of resistance for payment of water. This can be done through population mobilization and in extreme situation, fine and punishment measures should be applied to the consumers who don't want to settle their invoices.

The District DWASH Board opens and independent bank account for only keeping the royalty fee. In that case, both of them plan the use of revenues credited to that account

3.6.4 Evaluation

3.6.4.1 Taking action in case performance is over required standard

A. Responsibilities

Actor		Action
Main actor	District	Award the performing over required standard.
Supporter	WSPs	Continue to provide better service delivery.
	WASAC RWSS	➢ Encourage the community to continue the partnership with their partners. ➢ Determine the criteria of a good performer ➢ Encourage the performer to continue in the way taken. ➢ Continue to improve the performance of technical skills. ➢ Check the financial management and build the skills of POs and District staffs. ➢ Verify the financial report.

B. Detailed activities

During evaluation, the methodologies such as observations, site visits and interviews with consumers, sampling and testing water quality, Water sampling and tests, measurements, secondary data and information analysis help to assess the operational performance of the PO. In case the performance is satisfactory, the recommendations should be formulated in order to maintain or even improve that performance. Such recommendations can be:

- Disseminate the achievements and share to others

- Attracting partners for learning from the achieved experience.
- Motivation (Awards, field trip, bonus ...)
- Recommend the extension of the contract
- Benchmark the best practices

3.6.4.2 Taking action in case performance is below required standard

A. Responsibilities

Actor		Action
Main actor	District	Blame the poor performing below required standard.
Supporter	WSPs/POs	Improve the performance of service delivery.
	Community	Participate actively in partnership with District and POs.
	WASAC RWSS	➢ Mobilize the community to ensure security of water infrastructure, to pay water service. ➢ Determine the criteria of a poor performer. ➢ Encourage the poor performer to improve the reporting system, to augment the opening time, to recruit the qualified staffs, to build the capacity of existing staffs. ➢ Improve the performance of technical skills. ➢ Recommend to recruit the performer staff, Development of technical and financial report, to maximize the tariff recovery, to build the poor performance of staffs.

B. Detailed activities

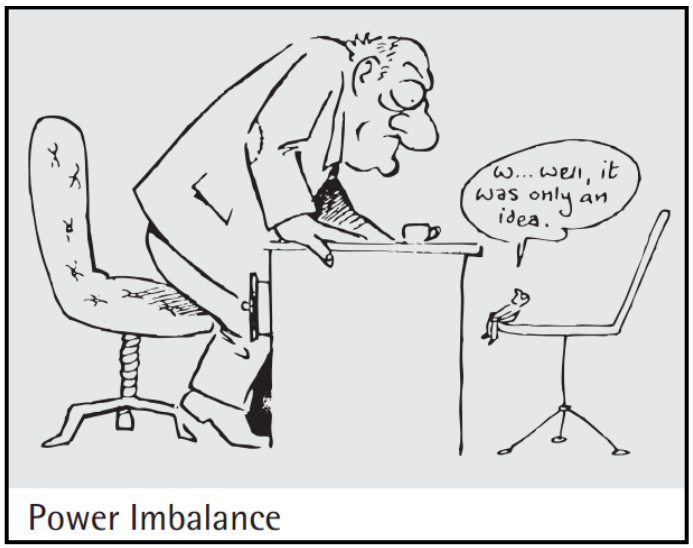
When the performance reflected by the evaluation is below the expected level, the following actions can be undertaken:

- Review and adjust the actors involved in the PPP implementation and the roles allocations
- Establish a suitable enabling environment
- If the issue comes from the capacity of the PO, plan for capacity development actions.
- Motivate stakeholders to more involve in the turnaround of the situation
- Apply fines if the fault comes from the POs
- If the case is extreme, plan to terminate the contract and recruit a new POs.

Not always the poor performance is the mistake of the PO as the success of a partnership requires the mutuality of different actors.

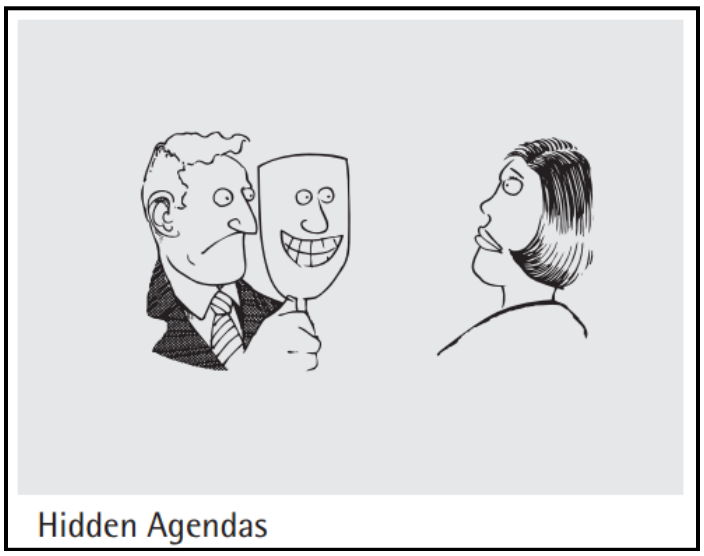
Common obstacles and sources of failure in partnering are:

The District and other stakeholders may apply heavy, strict conditions to the PO and deprive him the right to give his idea. That happens mostly when the PO call them to involve more like giving feedback to the letters or reports, or requesting them act on time, to intervene in fund recovery or mobilise the money for repairing an asset.



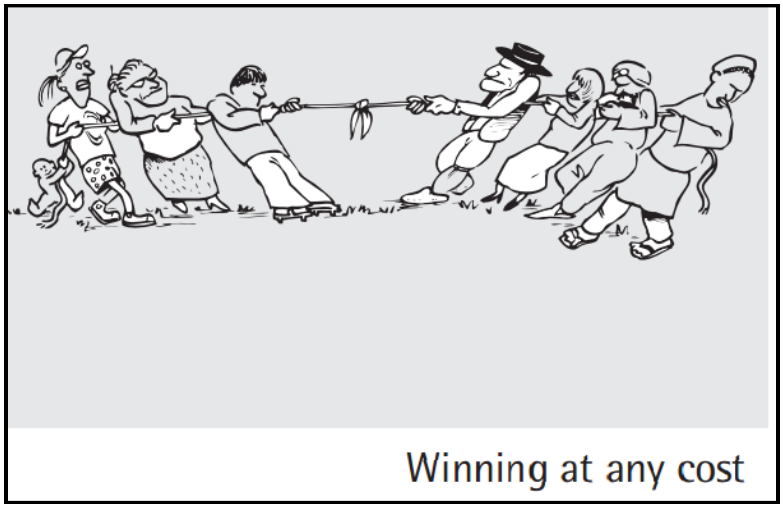
Source: (Tennyson, 2003)

It may also happen that the District and the PO don't have the same agenda. For instance, in case of corruption when the selected PO was not the one focused by the procurement unit. The District will look a way to make the PO fail. All if same staffs from the contracting authority need to be given a certain amount of money, individual connections for free by the PO, without taking care of royalties to be paid or reparations....



Source: (Tennyson, 2003)

On the other hand, some PO may be looking on maximizing their own profits regardless of the performance of the contract duties. Or if the District solely waits the investment from the PO while it is using the royalties in others programmes different from water.



Source: (Tennyson, 2003)

The following table gives example of the common sources of failure in a partnering arrangement.

SOURCE OF 'OBSTACLE'	EXAMPLE
GENERAL PUBLIC	• Prevailing attitude of scepticism • Rigid / preconceived attitudes about specific sectors / partners • Inflated expectations of what is possible
NEGATIVE SECTORAL CHARACTERISTICS (ACTUAL OR PERCEIVED)	• Public sector: bureaucratic and intransigent • Business sector: single-minded and competitive • Civil society: combative and territorial
PERSONAL LIMITATIONS (OF INDIVIDUALS LEADING THE PARTNERSHIP)	• Inadequate partnering skills • Restricted internal / external authority • Too narrowly focussed role / job • Lack of belief in the effectiveness of partnering
ORGANISATIONAL LIMITATIONS (OF PARTNER ORGANISATIONS)	• Conflicting priorities • Competitiveness (within sector) • Intolerance (of other sectors)
WIDER EXTERNAL CONSTRAINTS	• Local social / political / economic climate • Scale of challenge(s) / speed of change • Inability to access external resources

Source: (Tennyson, 2003)

Figure 3-32: Likely sources of failure in a PPP arrangement

3.6.5 Notice of results of performance to the public

A. Responsibilities

Actor		Action
Main actor	District	Advertise the notice results of performance to the public.
Supporter	WSPs/POs	Advertise the notice resultants of performance to the WUCs.
	Community	Complain the issues from community through the meetings.
	WASAC RWSS	Advertise the notice results of performance to the public.

B. Detailed activities

The public as the PPP beneficiary should be kept aware of the actual level of performance of their water services provider because they may accept, reject or impact this performance to a certain extend through the WUC.

As users participate in a survey during evaluation, communicating them the results is a form of recognition which may motivate for further participation and involvement.

They also need to be informed about the true image of the PO and the PPP arrangement applied in over their water facilities.

If after the evaluation any adjustment is to be applied, communicating the results of evaluation to the users is a way to prepare them for adaptation to the change.

The results can be communicated to the public through the following ways:

- Locally available media,
- Different meeting of local administration.
- Specific meeting can be organized for that purpose.
- A report of can be made available at the local administration office, the PO office and make it accessible to everybody

3.7 Data management

A. Responsibilities

Actor		Action
Main actor	District	Set up data management system.
Supporter	WSPs/POs	Share data to the MIS.
	WASAC RWSS	➢ Gate data from MIS. ➢ Share data management to MIS. ➢ Share technical data management to MIS. ➢ Mobilize the funds to make MIS operational.

B. Detailed activities

A comprehensive inventory of water facility should be made. Those data need to be stored in a systematic way, protected and efficiently shared.

- WASAC RWSS should design and construct appropriate MIS.
- District collect information regarding location and the condition of the infrastructures through site visits, observations and reports from PO.
- The Districts continuously provide the actual data to MIS manager for system update

- WASAC RWS updates the MIS
- WASAC RWS design a way of sharing data in efficient way.

3.8 Reporting for delegated management

3.8.1 Providing feedback

A. Responsibilities

Actor		Action
Main actor	District	Analyse the report and provide feedback to WSPs with advice.
Supporter	WSPs	➢ Prepare and submit the delegated water management report (related to O&M, CM, DWM, RM) to District. ➢ Receive the feedback from the Districts.
	WASAC RWSS	➢ Support by helping the District to analyse the report and to provide feedback regarding Community mobilization. ➢ Support by helping the District to analyse the report and to provide feedback regarding contract management. ➢ Support by helping the District to analyse the report and provide feedback for O&M. ➢ Support by helping the District to analyse the report and provide feedback on resources mobilization.

B. Detailed activities

POs report to the Districts and copy WASAC RWS and RURA. The report should depict the technical activity as well as the financial operations performed during the concerned month. Both monthly and annually reports are mandatory.

The District conducts monitoring based on the monthly and annual reports submitted by the PO and reports the results in writing to the PO within 15 days after receiving them. After scrutinizing, the Districts are expected to formulate and send the feedback to the Private Operator. The feedback can provide supportive information or guidance to the PO, but also it is a sign of involvement and participation of the Districts in PPP management pattern. In most of the case the feedback from the Districts is missing.

The District convenes the PO, WASAC and other stakeholders as needed to hold a meeting on the monitoring results to discuss achievement level of the requisite standards, recommended improvements and responsive measures.

If the monitoring results do not satisfy the required standards of water volume and quality, etc., the District and the PO have a meeting to have a common understanding of the reason for it and respond to the situation in accordance with the division of responsibilities provided in the contract.

If the PO bears the responsibilities, it is possibly because the PO does not have sufficient capabilities or it lacks something when performing its duties. Thus, the investigation into the cause of not achieving the required standards or responsive measures should not be left to the PO, but the District is actively involved in order to properly guide and supervise the PO in solving the problem.

WASAC assists this activity.

3.9 Review of O&M plan

3.9.1 Revising PPP contract if necessary

A. Responsibilities

Actor		Action
Main actor	District	Revise the PPP contract.
Supporter	WSPs/POs	Negotiate the revision of PPP contract.
	WASAC RWSS	Support to PPP contract revision.

B. Detailed activities

If the performance is low the contract can be revised in the following cases:

- Performance incentives are missing. Such incentives may include rewards for better performance, fines for poor performance, performance contracts, benchmark systems...
- Responsibility of the PO were poorly defined and some tasks are not included
- Responsibilities of the District are poorly defined
- Guiding Policy and strategy have changed affecting the existing water governance, scope or the methods of contract implementation.
- Social economic conditions have significantly changed: (Booming population growth, pattern of habitat and leaving standard have changed, preferences of users have changed, incentive to clause of contract that are limiting,
- New guidelines or conditions of the independent regulatory authority (RURA) regarding the water services standards (mainly the price and water quality)
- Mistake in the first contract (Over estimation of served population, false inventory of the facilities)

Normally each contract should include a clause dedicated to the provisions which may govern the revision processes if necessary. If such provisions are not there, negotiations can be conducted between the PO and the District in the umbrella of laws and rules governing the procurement and contract implementation.

3.9.2 Termination of PPP contract

3.9.2.1 Termination of PPP contract

PPIAF (2006) Stressed that in the PPP contractor for water services management there is a list of events that trigger the contracting parties to terminate the contract. For instance, some of the valuable reasons for the termination may include:

- Requisition, expropriation, or seizure of the water system by the government,
- Any other event of force majeure that renders execution of the contract virtually impossible.
- default by the contracting authority or the PO
- Alternatively, if penalties in a particular period reach a certain threshold, the contracting authority may have the right to terminate the contract.

Termination payments compensate the operator in the event of early termination of the arrangement

The compensation provisions may make the contracting authority pay the operator's outstanding debt, equity, loss of profit, and third party liabilities resulting from cancellation of subcontracts. These significant sums can be a major deterrent to the contracting authority terminating an arrangement.

On the other hand, when a contracting authority terminates a contract because of operator default, the sponsor of the PO may lose the equity put into the project company. The operator usually ensures that all possible steps are taken to prevent default.

Provisions for compensation on termination are always closely scrutinized by the banks, which want to ensure that their loans will be repaid if the arrangement is terminated. (PPIAF, 2006)

3.9.2.2 Evaluation of the execution results of PPP contract

A. Responsibilities

Actor		Action
Main actor	District	Evaluate the execution results of PPP contract.
Supporter	WSPs	Hand over the results of PPP contract to the District.
	WASAC RWSS	Supporting the District during the evaluation of PPP contract

B. Detailed activities

A successful PPP contract should have ensured the following:

- Expansion of coverage: This may be achieved if the PO has mobilised financial resources for the construction of the new Water points, catchment of the new sources for reinforcement of existing production, and extension of the network. Note that the Districts cannot rely on the solely investment of the PO for positive results.

- Improved services quality: A picture of water quality is translated in stable everlasting supply, optimum water quality and pressure in pipes

- Improved operational efficiency: Reduction of water losses enhanced labour productivity and bills recovery efficiency.

- Impact on the tariff level: It is expected that PPP contract shall bring up a reasonable water tariff compared to the public water utility or the street water vendors.

- Sustainability of the infrastructures: Sustainability can be defined as "continuation of the benefit flows to the users/clients with or without the programmes or organisations that stimulated them" (Kayaga et al., 2013). Sustainability is ensured if the water assets were operated and maintained appropriately. In addition, if the skills in water services management were transferred among stakeholders so that the community itself is able to operator and maintain its water infrastructure alone.

- Improved welfare of consumers: The burden of women and children for fetching water on a long distance has reduced; indoor cleanness has increased, unsafe water diseases have reduced, employments in water business have been created ...

The following picture can be used to compare connected and unconnected households with assumptions about how much the unconnected have to pay for water and their willingness to pay for better services.

3.9.2.3 Inspection of functioning of water supply systems

A. Responsibilities

Actor		Action
Main actor	District	Conduct the inspection on functionality of water supply systems.

Actor		Action
Supporter	WSPs/POs	Support the District in conducting the inspection on functionality of water supply systems.
	WASAC RWSS	Support the District and WSPs in conducting the inspection on functionality of water supply systems.

B. Detailed activities

The District confirms the differences in facility functions before the beginning of the contract and at its termination to check whether the facilities are properly operated and maintained during the contract.

Therefore, the District decides the scope and means of confirmation in the contract before hand and checks the facility functions with the presence of the District and PO, and records the results when the delegated contract begins.

The PO submits a facility function report that contains inspection results to the District after the termination of the contract in order to not hinder the selection procedures of the new PO with which the District concludes a contract.

The District confirms the facility function report submitted by the PO.

The District performs an acceptance inspection of water supply facilities when they are returned by the PO at the termination of the delegated PPP contract.

The PO prepares for the return of the facilities to the District prior to the acceptance inspection.

WASAC assists this activity.

Identifying the actors: Besides the inspections performed along with the execution of the contract, at the end of the contract, an overall view of the conditions of the water assets is required. That inspection should be conducted by a technical team from the Districts supported by WASAC RWS, the members of DWASH Board and if required an external consultant.

Developing the procedure and implementing: During the inspection activity, the following actions can be undertaken:

- Avail the existing inventory, drawing, descriptive notes and operational manuals of the water infrastructures.
- Check the conditions and functioning of Sources, treatment plant, pumping station, storages tanks, pipes, manholes and appurtenances.
- Inspect the spares parts in the stores and the balance between the beginning and the end of the contract.
- Define the area requiring rehabilitation
- Update the inventory, drawing, descriptive notes and operational manuals of the water infrastructures
- Prepare a comprehensive expertise report signed by the contracting authorities and the PO.

3.9.2.4 Handover of water supply systems from PO to District

A. Responsibilities

Actor		Action
Main actor	WSPs/POs	Prepare the handover of water supply system from PO to District.

Actor		Action
Supporter	District	Approve the handover of water supply system from PO.
	WASAC RWSS	Support the District in the approval process.

B. Detailed activities

The PO needs to deliver the facilities in the condition that meets the requirements provided in the contract when he returns them to the District.

The District decides provision of operation handover in the contract before hand in order to not hinder operation and maintenance after its termination.

The PO prepares for the transfer of facilities to the new PO when the District concludes a contract. In doing so, He hands over all consigned assets including, spare parts, tools and facilities, in the condition that satisfies the requirements provided in the contract, etc.

The PO delivers the water supply facilities in the condition that satisfies the required maintenance standards to the new PO with the presence of the District. The three parties confirm the facility's condition in writing.

WASAC assists this activity.

- The District establishes a handover statement endorsed by the expertise report of the current inventory and condition of the water assets.
- Both parties the District and the PO sign the handover statement

Note that a transition period is required during which:

- The District assigns the operation and maintenance of the facilities to a new Water Services Provider
- The existing PO withdraws from the site and stops his water services activities

3.9.2.5 Issue of certificate for completion of PPP contract

A. Responsibilities

Actor		Action
Main actor	District	➢ Notify the termination of PPP contract to WASAC ➢ Prepare the certificate of completion ➢ Refund the performance security to the PO.
Supporter	WSPs/POs	➢ Write a letter to the client (District) to request the certificate of completion ➢ Remind to the client the nature and scope of assignments performed
	WASAC RWSS	➢ Approve the satisfaction with regard to the contract management ➢ Approve the satisfaction with regards to the tasks of O&M performed by the POs.

B. Detailed activities

District shares the draft certificate of completion to WASAC for requesting the confirmation of satisfaction. Based on the report of the conditions of infrastructures, WASAC and the District deduce whether they are satisfied or not.

District refunds to the PO the money taken or deposit to the bank for performance security. Sometimes the PO has invested in the water facilities under his management. If his investment was not recovered, he can be refunded by the District.

District delivers the certificate of completion to the PO. Normally the certificate of completion of the contact stipulates the scope and the conditions in which the contract was performed.

BIBLIOGRAPHY

ADB. (2008). Public-Private Partnership Handbook.

Brikké, F. (1990). Management of Operation and Maintenance of rural water supply and sanitation systems. *IRC, Delft, Netherlands, prepared for WHO*.

Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of management, 18*(3), 523-545.

Carden, F., Smutylo, T., & Earl, S. (2001). *Outcome mapping: Building learning and reflection into development programs*: International Development Research Centre.

Davis, J., Brikké, F., & Boesveld, M. (1995). Making your water supply work : operation and maintenance of small water supply systems. from http://catalog.hathitrust.org/api/volumes/oclc/34750975.html

EU. (2010). A COMPARATIVE EVALUATION OF PUBLIC-PRIVATE AND PUBLIC-PUBLIC PARTNERSHIPS FOR URBAN WATER SERVICES IN ACP COUNTRIES. *water policy in developing countries.*

Horton, D. (2002). *Planning, implementing, and evaluating capacity development* (Vol. 50): ISNAR.

HSE. Health and safety policy: Retrieved on http://www.hse.gov.uk/risk/casestudies/.

IDRC. (2008). Strategic Evaluation of Capacity Development

Jaspers, F. (2014). Introduction to Contract Management. *UNESCO - IHE; Lecture Materials*.

Jiang, Y. (2014). Pricing Water: Socio-economic and Environmental Challenges. *Water economics - Lecture Material*.

Kayaga, S., Mugabi, J., & Kingdom, W. (2013). Evaluating the institutional sustainability of an urban water utility: A conceptual framework and research directions. *Utilities Policy, 27*(0), 15-27. doi: http://dx.doi.org/10.1016/j.jup.2013.08.001

Ministerial Order n°001/08/10/min of 15/01/2008 establishing regulations on public procurement and standard bidding documents. *Retrieved from*

http://www.minecofin.gov.rw/fileadmin/templates/documents/Laws_and_Regulations/procurement_code_standard/REGULATIONS_ON_PUBLIC_PROCUREMENT_AND_STANDARD_BIDDING_DOCUMENTS.pdf

Locussol, A., & Ginneken, M. v. (2010). Template for assessing the governance of public water supply and sanitation service providers. *Water Working Notes, Note no. 23*.

Lusthaus, C. (2002). *Organizational assessment: A framework for improving performance*: IDRC.

Mugabi, J., Kayaga, S., & Njiru, C. (2007). Strategic planning for water utilities in developing countries. *Utilities Policy, 15*(1), 1-8.

Musanze, D. o. (2013). DOSSIER D'APPEL D'OFFRES POUR L'EXPLOITATION PRIVEE DES SYSTEMES D'ALIMENTATION EN EAU POTABLE DU DISTRICT DE MUSANZE.

Pascual Sanz, M., Schouten, M., Alaerts, G., & Tulder, a. R. v. (2011). Appraising water operator's capacity to reduce Non-Revenue Water. The case of Blantyre water board.

PPIAF, W. B.-. (2006). *Approaches to Private Participation in Water Services: A Toolkit*: International Bank for Reconstruction and Development/World Bank.

RPPA, M.-. (2010). Public Procurement User Guide. *1*, 141.

Tennyson, R. (2003). *The partnering toolbook.* Paper presented at the International Business Leaders Forum (IBLF), the Global Alliance for Improved Nutrition (GAIN), International Atomic Energy Association, UNDP. New York: UNDP.

WPP, A. (2010). Guidelines for User Fees and Cost Recovery for Urban, Networked Water and Sanitation Delivery.

WSP. (2011). Water Supply and Sanitation in Rwanda : Turning Finance into Services for 2015 and Beyond, An AMCOW Country Status Overview.

Zaag, P. v. d., & Savenije, H. H. G. (2013). *Principles of Integrated Water Resources Management*. UNESCO-IHE, Delft.

4 Evaluation Stage

Evaluation is defined as “the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results” by the OEDCD-DAC (Organization for Economic Co-operation and Development, Development Assistance Committee) who defined DAC Evaluation Criteria were first systematically defined in 2002 and are undoubtedly the most known and adopted widely in the development assistance.

As such, the term of “evaluation” shall mean a comprehensive and detailed assessment, which is usually conducted by setting particular item to be clarified (evaluation questions) prior to conducting the evaluation.

The logical framework clearly specifies what is to be achieved (outputs and objective), how it is to be verified (indicators and means of verification) and the key assumptions.

Evaluation is the last step in the project cycle presented in chapter 1, but it is not end of a project. Indeed, it can be considered the starting point for a new planning process, because the conclusions of the evaluation will allow the stakeholders to draw lessons that may guide future decision-making and project identification.

Overview of Evaluation Stage is shown in below.

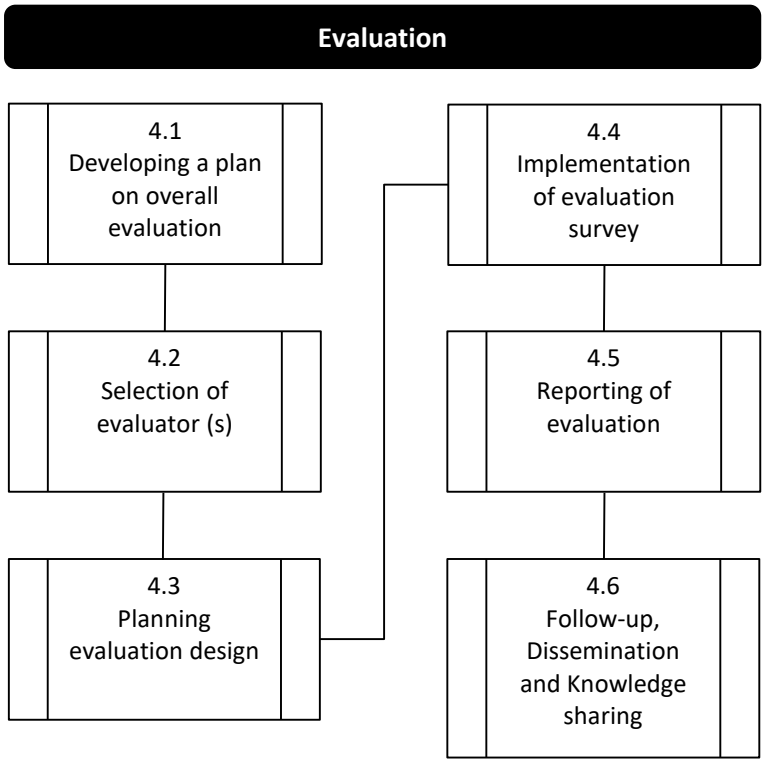


Figure 4-1: Evaluation Stage Overview

(1) Evaluation and similar concepts

Evaluation is often confused with similar concepts such as audit, review, or monitoring. However, evaluation is a process that comprehensively assesses an object in detail, and can be differentiated from monitoring, which continuously measures a set indicator or reviews overall performance. Table below shows the concepts of these terms.

Table 4-1: Concepts similar to evaluation

Similar Term	Concept
Monitoring	A continuous function which deals with systematic collection of data on specific indicators in order to provide information on the progress of implementation, degree of achievement, and the management of funds to stakeholders and relevant staffs at operation unit of implementing agencies.
Review	Periodic or need basis assessment of performances of development assistance.
Audit	An independent and objective procedure that is designed to improve operations of organization or to add further value. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to assess and improve the effectiveness of risk control and governance process.

Source: ODA Evaluation Guidelines (7th Edition), April 2012, Ministry of Foreign Affairs of Japan

(2) Goal of Evaluation

According to the "Principles for Evaluation on Development Assistance, 1991, DAC", the goal of evaluation is regarded as followings.

- Improve future assistance policy, programmes, and projects through feedback of lessons learned
- Provide a basis for accountability including the provision of information to the public

In summary, evaluation is considered to have two goals: "**management**", which refers to bringing lessons learned into the further improvement of development assistance, and "**accountability**".

(3) Evaluation items

According to the OECD-DAC, 1991, the evaluation criteria set up followings:

Table 4-2: Five Evaluation Criteria by DAC

Criteria	Description
Relevance	Question whether project objectives, overall goals, and project scope were/are in line with the priority needs and concerns of the recipient country at the time of the project appraisal as well as the post evaluation. This criteria will focus on the recipient country's development policy/plan, the needs of beneficiaries, and the donor's policy.
Efficiency	Measure how efficiently the various inputs are converted into outputs of the project during the implementation process (productivity of implementation process). This criterion will examine the appropriateness of inputs such as project cost and its volume, implementation schedule, timing, institutional/organizational function.
Effectiveness	Examine the extent to which the project objectives have been achieved in relation to the outputs. This criteria will include quantitative analysis based on operation and effect indicators, and will also include a re-calculation of the Internal Rate of Return (IRR).
Impact	Identify the extent to which overall goal of the project has been achieved, and verify intended and unintended, direct and indirect, positive and negative changes in technical, social-economic, institutional and environmental aspects as a result of the project.
Sustainability	Question whether project benefits are likely to continue after completion of the project. These criteria will include a study of technical, institutional, and financial aspects in O&M agency/ organization, condition and status of equipment/facilities procured by the project, technology transfer, and ownership of beneficiaries. It will also include an analysis of issues and constraints which may impede

Criteria	Description
	sustainability of the project.

Source: JIBIC, 2008, Training text on the loan project evaluation

4.1 Developing a plan on overall evaluation

A. Responsibilities

Actor		Action
Main actor	District	➢ Prepare the evaluation framework and/or ToR (Terms of Reference) ➢ Organize the meeting with relevant stakeholders to share the evaluation framework and/or ToR ➢ Finalize the evaluation framework and/or ToR with reflection of the comments from the above meeting ➢ Secure the budget for evaluation
Supporter	JADF	➢ Support the District to prepare the evaluation framework ➢ Support the District to organize the meeting with relevant partners to share the evaluation framework ➢ Support the District to prepare the evaluation of performance contract achievement
	WASAC RWSS	➢ Support the District to conduct the above work ➢ Support the District to mobilize the resources such as budget
	MININFRA	Support the District to secure the budget
	Development partners	➢ Support the District to conduct the above work ➢ Support the District to secure the budget

B. Detailed activities

B.1 Different responsibilities in evaluation

Responsibility in the evaluation organizers such as the Districts differ from those of evaluators, who are usually consultants contracted for the evaluation. Major tasks of the evaluation are shown in the below.

Table 4-3: Different responsibility in evaluation

Actor	Main roles
Evaluation organizers (Districts)	➢ Preparing the TOR ➢ Selecting evaluator (s) (consultant) ➢ Securing budget for evaluation ➢ Monitoring the evaluation work ➢ Providing comments on the draft report ➢ Publicizing the evaluation report ➢ Providing feedback from the results to concerned parties
Evaluator (consultant)	➢ Preparing the detailed evaluation design ➢ Collecting and analysing information ➢ Preparing an evaluation report

Source: Strengthening Monitoring and Evaluation. System (SMES) Monitoring and Evaluation Training Manual, Module 4, November 2009, Strengthening Monitoring and evaluation Project

B.2 Developing a plan on overall evaluation including Terms of Reference (ToR)

In order to plan and conduct evaluation, the basic design of evaluation needs to be made in advance. There are a number of matters to be identified in planning as below.

- Purpose of evaluation
- Scope of works
- Method of evaluation
- Evaluators or evaluation team
- Expense
- Time and period of evaluation
- What will be reported, how and to whom

In defining above point, developing a ToR will be useful for those organize the evaluation. ToR is written document presenting the purpose and scope of the evaluation, the methods to be used, the standard against which performance is to be assessed or analyses are to be conducted, the resources and time allocate, and reporting requirements. ToR also defines the expertise and tasks required of a consultant as an evaluator.

4.2 Selection of evaluator

A. Responsibilities

Actor		Action
Main actor	District	➢ Announce information for competitive bidding ➢ Procure the evaluator (s) from consulting firm
Supporter	DWB	Support selection process of the evaluator (s)
	JADF	Support selection process of the evaluator (s)
	WASAC RWSS	Support selection process of the evaluator (s)

B. Detailed activities

It is same process as mentioned in clause 1.2.1.

4.3 Planning evaluation design

A. Responsibilities

Actor		Action
Main actor	Consultant (Evaluator)	Develop the detailed evaluation plan
Supporter	District／DWB	Organize the consultation meeting
	JADF	Attend the consultation meeting and contribute to a planning of evaluation design
	WASAC RWSS	Give comments concerning the evaluation design.

B. Detailed activities

The selected evaluator(s) develop the evaluation design which includes objectives, scopes, methods, questioner for evaluation, work schedule, etc. Upon completion of design, the consultation meeting will be held with relevant stakeholders. The meeting will be opportunity to confirm the details of evaluation design with relevant stakeholders as well as to modify the design, if necessary. Common steps for the evaluation design are shown in below figures.

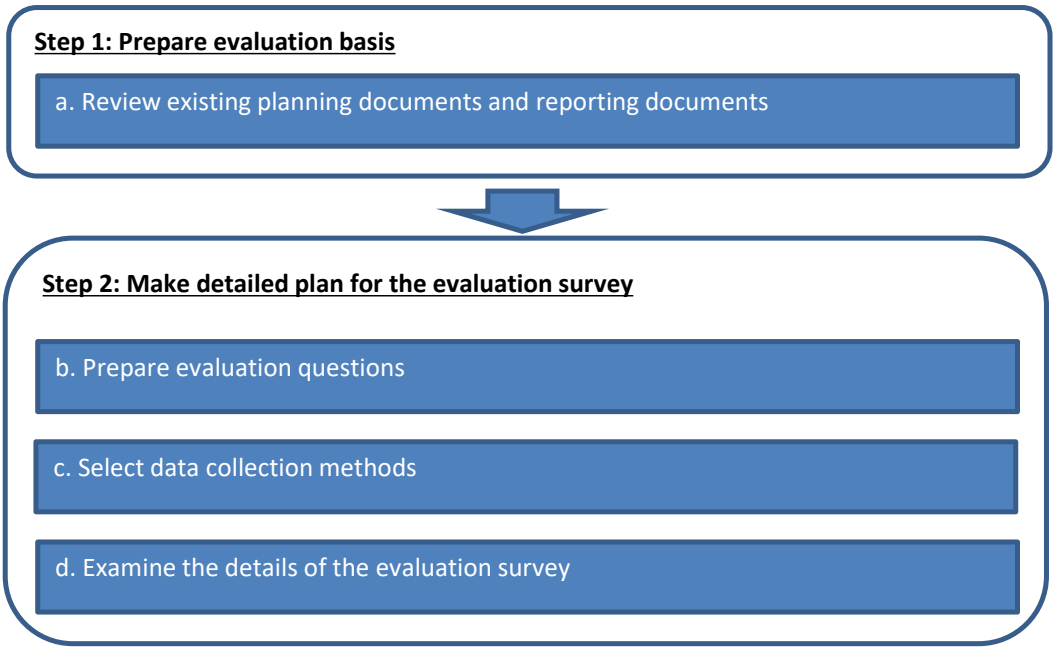


Figure 4-2: Common steps for the evaluation design

B.1 Prepare Evaluation Basis

B.1.1 Review existing planning and reporting documents

Before conducting any analysis, it is crucial to prepare a foundation for evaluation. For this purpose, it is important to familiarize yourself with the project by reviewing related documents such as project design report, inception report, work plan, monthly report, progress report and etc. Other information related to organizational structure of the project with decision-making process and information flow among key stakeholders is also useful.

B.2 Make a detailed plan for the evaluation survey

B.2.1 Prepare evaluation questions

Evaluation questions can be developed according to the five evaluation criteria described in Table 4-2. This question can be further broken down until one can imagine exactly what data should be collected.

When carrying out an evaluation, Evaluation Grid is a useful tool for evaluation planning and as a work sheet. Evaluation Grid is a matrix of evaluation questions, necessary data, and data sources and data collection methods as shown in table below.

Table 4-4: Evaluation Grid

Items of evaluation	Evaluation questions	Necessary data	Data sources	Data collection methods
Relevance				
Effectiveness				
Efficiency				
Impact				
Sustainability				

B.2.2 Select data collection methods

When selecting data collection methods for each question, it is crucial to check the methods in light of the following three criteria:

- Reliability of the data,
- Accessibility to the data
- Cost to obtain the data

B.2.3 Examine the details of the evaluation survey plan

Once evaluation questions and the method of collecting information are selected, it is necessary to review them from the following perspectives in order to raise the accuracy and efficiency of the questions and data collection methods.

Table 4-5: Check points for validation of the detailed plan

Points	Explanation
Validity of the evaluation questions	Will conclusions for the five evaluation criteria be drawn by the responses to the questions?
Importance of the evaluation questions	How important will be the responses obtained in making judgments about the five evaluation criteria?
Reliability of information	Given the available sources of information and method of collecting information, how reliable will be the obtained information?
Accessibility of information	Can the required information be easily accessed?
Cost	Is the cost required for obtaining the information appropriate?

Source: Strengthening Monitoring and Evaluation. System (SMES) Monitoring and Evaluation Training Manual, Module 4, November 2009, Strengthening Monitoring and evaluation Project

4.4 Implementation of evaluation survey

A. Responsibilities

Actor		Action
Main actor	Consultant (Evaluator)	➢ Conduct the data collection and analysis ➢ Report the progress of the survey
Supporter	District	Supervise the data collection and analysis
	WASAC RWSS	Supervision
	Community (Users)	➢ Cooperate the evaluation survey ➢ Provide the survey data

B. Detailed activities

B.1 Collect data

Based on the prepared Evaluation Grid, information is collected by using the selected data collection methods. The following table shows the example of Evaluation Grid with collected information.

Table 4-6: Example of the Evaluation Grid

Items of evaluation	Evaluation questions	Necessary data	Data sources	Data collection methods
Relevance	Is the Project purpose and the needs of target	- Development plan - Related	- Project source - Results of	- Document survey - Interview

Items of evaluation	Evaluation questions	Necessary data	Data sources	Data collection methods
	group corresponded?	- documents - Opinion from stakeholders	the questioner survey	- Questioner survey

B.2 Analyse data

Collected data are organized and analyzed based on the five evaluation criteria. The following table shows the example of results using Evaluation Grid

Table 4-7: Example of the results using evaluation grid

Items of evaluation	Evaluation questions	Results
Relevance	Is the Project purpose and the needs of target group corresponded?	The Overall Goal and Project Purpose are reasonable and aligned to the national development plan, sector plans and other relevant polices in Rwanda.

4.5 Reporting of evaluation

A. Responsibilities

Actor		Action
Main actor	Consultant (Evaluator)	Draw up evaluation report
Supporter	District / WASAC RWSS /	➢ Prepare the consultation workshop ➢ Validate the report ➢ Share and/or disseminate the evaluation results to the relevant stakeholders
	JADF	➢ Attend consultation meeting and contribute in the analyses of the survey report from development partners ➢ Support the District to share the evaluation results to the relevant stakeholders
	MININFRA / MINECOFIN / MINALOC / NGO / Development partners	➢ Give comments for draft report ➢ Endorse the final report

B. Detailed activities

Producing a report is one way to communicate the results with relevant stakeholders such as project funders, decision makers, planners, project members, or who act or modify their actions based on the evaluation results. The report should include those aspects of the project and its evaluation. The report should also encourage to use the information and recommendations. Common steps for the reporting are shown in below.

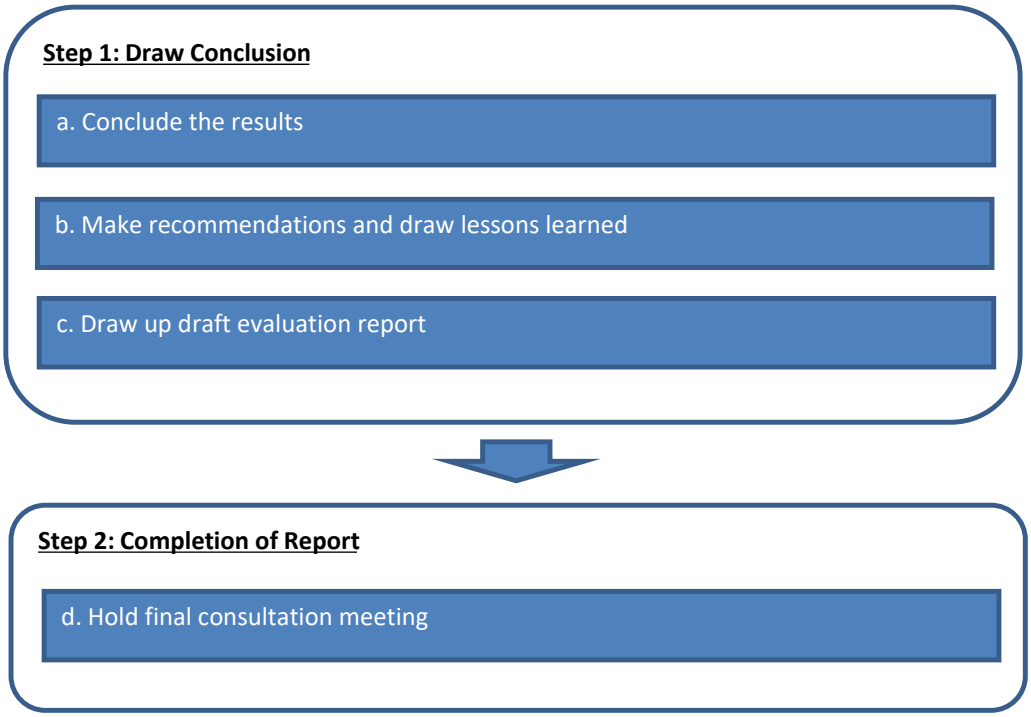


Figure 4-3: Common steps for the reporting

B.1 Conclude the results

Based on the results of analysis, value judgments need to be made for each evaluation criteria. At the same time, influential factors that affected the results should be analyzed as well. There are two steps in this process of concluding the results.

Table 4-8: Process of concluding the results

Steps	Work
Value judgments according to the five evaluation criteria	➢ To evaluate a project with the five criteria and specify the factors that brought the evaluation results. ➢ To analyze the factors that inhibited the achievement of the objective. When explaining hindering or contributing factors, specific evidence needs to be presented in order to ensure the credibility of the evaluation.
Conclusion based on the judgments	➢ To draw a conclusion, the evaluator has to make a value judgment from a comprehensive viewpoint, considering all the five criteria. ➢ To provide evidence for the judgment from the results.

B.2 Make recommendations and draw lessons learned

Based on the conclusion, recommendations are made and lessons learned are drawn.

Table 4-9: Recommendations and Lessons learned

Item	Points to be drawn
Recommendations	➢ Worded in a constructive manner and aimed at improving the project, future projects and the programme ➢ Presented in a clear, concise, concrete and actionable manner, making concrete suggestions for improvements i.e., “who should do

Item	Points to be drawn
	what to improve what” ➢ Specify who is called upon to act. It can be useful to group recommendations by evaluator (s).
Lessons learned	➢ Observations, insights, and practices extracted from the evaluation that are of general interest beyond the project sphere and contribute to wider organizational learning ➢ Highlight good practices, i.e., experience about what has been tried with a good result. Good practices are a way of making lessons learned more concrete. It must be possible to generalize or replicate them in other projects or work contexts otherwise they are not interesting. (“What has worked particularly well and why? How can it be generalized or replicated?”)

Source: ILO TECHNICAL COOPERATION MANUAL – VERSION 1

In drawing a conclusion, examining the project not only from the five evaluation criteria but also from causal relationships and project implementation process is useful for formulating recommendation and drawing lessons learned.

B.3 Draw up draft report

Evaluation results should be reported in a simple and clear way using figures and other means of facilitating the understanding of readers, and appending reference materials.

The following is an example of outline of Evaluation Report.

Table 4-10: Example of the table of contents of report

Category	Contents	
Overview	**Executive Summary**	
Main part	**1. Outline of the Evaluation**	Background of the Project, Purpose of evaluation, Outline of the Project, Members of the evaluation team, evaluation schedule, Methodology of the evaluation
	2. Achievements and Implementation Process	Records of inputs, Achievements of the outputs & Project purpose, Prospect for achieving of the Overall Goal, Implementation processes of the Project
	3. Results of the Evaluation based on the five criteria	Relevance, Effectiveness, Efficiency, Impacts, Sustainability
	4. Conclusion	
	5. Recommendations and Lessons learnt	Recommendations, Lessons leant
Annexes	Project Design Matrix, Plan of Operation, Evaluation Grid, etc.	

B.4 Hold final consultation meeting

At the point when completing the draft final report, the evaluator (s) in collaboration with will District hold the consultation meeting with participation of relevant stakeholders to obtain their comments for the draft reports. The evaluator (s) will finalize report with reflection of the comments from meeting.

4.6 Follow-up, Dissemination and Knowledge sharing

A. Responsibilities

Actor		Action
Main actor	District	➢ Follow up the recommendations ➢ Disseminate and share the evaluation results such as finding and lessons leant to various stakeholders in water and sanitation sector
Supporter	WASAC RWSS / MININFRA / NGO / Development partners	➢ Follow up the recommendations ➢ Utilize the evaluation report in case of a formulation of the new project

B. Detailed activities

The evaluation does not finish when the final evaluation report has been completed. One of the goals of the evaluation process is to translate findings and recommendations into action. The outcome of the evaluation process should enable the District, WASAC, MININFRA and partners to take informed decisions. Lessons learned should be made accessible to interested parties to facilitate organizational learning and improve project design and implementation.

B.1 Follow-up findings and recommendations from evaluation

After a final evaluation, the District with support from WASAC RWSS is responsible for preparing and implementing a follow-up plan. The follow-up focuses on capturing lessons learned and making them and the report accessible to interested users.

B.2 Dissemination

District with support from WASAC RWSS is encouraged to disseminate the abstract of the evaluation report to other interested individuals inside and outside the Office.

The central ministries and fund-raiser of the Project should also make an effort to disseminate relevant lessons learned to interested officials in the Office. This can be done, for example, via email or a newsletter or by posting interesting insights on the Web site.

B.3 Knowledge sharing and organizational learning

Evaluation reports should be stored by District and WASAC RWSS in an organized manner and the knowledge generated in evaluations should be systematically fed into the design of new projects or the next phase of a project.

＜Reference＞

- International Labour Organization (2010), Project Design Manual
- Ministry of Foreign Affairs of Japan (April 2012), ODA Evaluation Guidelines, 7th edition
- African Development Bank Group (2014), Project Completion Report for Public Sector Operations (PCR)
- WASAC (November 2015), Project completion Report (PCR), Rwanda National Rural Drinking water supply and Sanitation Programme (PNEAR), Second Sub-Programme
- Strengthening Monitoring and Evaluation. System (SMES) monitoring and evaluation training manual, Module 4, (November 2009), Strengthening Monitoring and Evaluation (SEMS) Project
- ILO TECHNICAL COOPERATION MANUAL – VERSION 1