



Rural Water Supply Operation and Maintenance Management



Strategic Framework for Operation & Maintenance of Rural Water Supply System



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Providing rural water services is irreducibly complicated, and sometimes complex; there is no single solution to improving sustainability. Sustainable services rely on an interlocking network of different actors and institutions – all of which need to function at least ‘well enough’. Ensuring that rural water supplies are sustainable therefore means working with the ‘whole system’ – from regulation through provision of adequately resourced support services to ensuring oversight and accountability.

Moriarty and Verdemato, 2010

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Strategic Framework for Operation and Maintenance of Rural Water Supply

Draft Report

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Acronyms

CBMS	Community Based Maintenance System
CBO	Community Based Organization
CMP	Community Managed Project
CSO	Civil Society Organization
DFID	Department for International Development (UK)
DAG	Development Assistance Group
GIS	Geographical Information System
GTP	Growth and Transformation Plan
IDA	International Development Agency (WB)
JICA	Japan International Cooperation Agency
JMP	Joint Monitoring Office
JTR	Joint Technical Review
HDW	Hand dug Well
HP	Hand Pump
KDC	Kebele Development Committee
KII	Key Informant Interview
LSP	Local Service Provider
MDG	Millennium Development Goal
M&E	Monitoring & Evaluation
MIS	Management Information System
MoE	Ministry of Education
MFI	Micro Finance Institution
MoWIE	Ministry of Water Irrigation & Energy
MVS	Multi Village System
NGO	Non-governmental Organization
NWI	National WASH Inventory
O&M	Operation & Maintenance
OWNP	One WASH National Program
RPS	Rural Piped System
RWCO	Regional WaSH Coordination Office
RWRB	Regional Water Resources Bureau
RWS	Rural Water Supply
SDA	Service Delivery Approach
SDM	Service Delivery Model
SNNPRS	South Nation & Nationalities Peoples Regional State



SP	Spare Part
TVETC	Technical Vocational & Educational Training College
UAP	Universal Access Plan
UNICEF	United Nations Children's Fund
VLOM	Village Level Operation and Maintenance
WASH	Water Supply Sanitation and Hygiene
WAO	Water Administration Office
WASHCO	Water Supply Sanitation and Hygiene Committee
WDC	Woreda Development Committee
WB	World Bank
WIF	WASH Implementation Framework
WSG	Woreda Support Group
WUG	Water User Group
WWO	Woreda Water Office
WWT	Woreda WASH Team



DEFINITIONS OF TERMS:

Accessibility	Is having a functional and reliable water supply facility without any barriers within a radius of 1500 metres for Rural Water Supply
Access Coverage	Is the percentage of people with access to safe, adequate and reliable water supply within 1500m at 15 l/c/d for rural community
Adequate Water	Is the quantity of water required to meet the minimum demand per capita per day. The standard being 15l/capita/day by 2015 for Rural people
Borehole Depth	The term “shallow” in Ethiopia is used to refer to a borehole up to about 60m in depth; “medium” depth refers to 60-150m; “deep” boreholes are drilled up to about 450m
Community	Refers to a group of people living in a designated area who share residential and developmental challenges and benefits. It may also refer to all people sharing such challenges and benefit regardless of geographical and social boundaries
Community Based Management	Is the process of empowering community members to assume the lead role in decision making about the levels of services they require, whilst organizing themselves to plan, implement, operate and maintain their water supply and sanitation facilities.
Community Management	Is a form of community participation in which the community takes the final decision on all aspects of planning, implementation, management, monitoring, evaluation, O&M of the water supply facility
Evaluation	Is the periodic and systematic review and analysis of a practice to determine the relevance, effectiveness, efficiency and impact of programmes/projects compared to the set objectives
Functionality	The term functionality refers to the number or percentage of working/operational rural water supply schemes out of the total number of rural water supply schemes constructed at any given period.
Kebele/Tabia	Is the lowest administration unit in the Ethiopian government's administrative hierarchy
Maintenance	Refers to activities required to sustain the water supply facilities in a proper working condition. It includes preventive maintenance, corrective maintenance and crisis maintenance.
Monitoring	Is the regular and continuous checking of whether plans, activities and situations are being implemented as planned, and includes the provision of feedback to facilitate the taking of corrective measures by relevant stakeholders.
Operation	Operation refers to the routine activities necessary to make the system function
Point Water Supply	In rural water supply context, these are hand dug wells, shallow wells, on-spot springs types of schemes
Preventive Maintenance	Refers to an activity that includes checking the status of hand pump components at regular fixed intervals
Rehabilitation	Is the correction of major defects and the replacement of equipment to enable the facility to function as originally intended.
Reliable Water Supply	Is the supply of water on a continuous basis meeting the minimum demand per capita per day
Repair	It is the restoration of a defective component to return the facility to acceptable working condition. The cost of the repair should be borne by the community.

Rural Area	“Areas of population outside urban and peri-urban using point or surface water sources for which the community is responsible for the O&M”. in addition, low population densities characterize rural areas, with small houses isolated from each other.
Rural Piped System	It is a water supply system feeding various villages and small towns by gravity, pumping and a combination system through public taps and yard connections
Safe water	Is water that is free from harmful quantities of physical, chemical and pathogenic matter and that meets the minimum Ethiopian standards (usually WHO Guidelines)
Seed Money	Is the initial sum of money disbursed to an organization in order to create/start a revolving fund for undertaking a designated programme
Scheme (Water)	The entire facility (concrete works, pipes, pumps) established to extract water from a water source, and distribute it to (close to) people’s homes
Sustainable Supply Chain	Is a system of procuring and supplying spare parts that guarantees a continuous supply of spare parts
Source (Water)	The natural water source only, i.e. spring, groundwater, river, etc
Supply chains	Is the term used for the process that relates all activities involved with the flow and transformation of goods from the raw materials stage through to the end-user, as well as the associated information flows
WASHCO	It is a committee of representatives from a number of Water, sanitation and hygiene Point Committee of the same village. Sometimes WASHCO committee may refer to 2 or more village representatives benefitting from a water and sanitation point.
Woreda	It is the lowest administration unit (next to Kebele), in the Ethiopian government’s administrative hierarchy.



Acknowledgment

We wish to acknowledge the invaluable input of Ministry of Water, Irrigation and Energy, Regional Water Bureaus, Zone and Woreda Water Offices, COWASH, Water Action, Action Aid, JICA, World Bank, Ethiopian Catholic Church Social & Development Coordination Office of Harar, All visited rural piped system Water Boards and Water Administration Offices, WASHCO members, user communities and several key individuals who gave freely of their time, provision of demanded data and information, arranging schemes visiting. This strategic framework for Operation & Maintenance for rural water supply schemes is developed through gathering and analysis of the existing situation, thus the stakeholder consultation is highly appreciated to give us the inputs.

In addition, we wish to extend our thanks to all those people in one way another who have contributed to the development of this strategic framework.



0. Executive Summary

Introduction:

This Rural Water Supply Strategic Framework for Operation and Maintenance is developed by the Ministry of Water, Irrigation and Energy (MoWIE) with the technical and financial support of the Finland Government through COWASH.

The activity is designed to assist the lower government body in determining the most appropriate follow-up and monitoring strategy for the country in order to provide rural water supply and sanitation systems that are operated and maintained by communities with support and guidance that are beyond their capacities and that ensure the long-term sustainability of those systems.

This O&M framework has developed based on the assessment findings on constraints and challenges of operation and maintenance of rural water supply schemes. To implement this framework various manuals and guidelines are developed in parallel.

The strategy that is developed with the context took account of four fundamental principles that were identified during the situational assessment:

1. Community members are primarily responsible for day-to-day operations and maintenance (O&M) and scheme management activities through their representative of WASHCO/Rural Water Boards.
2. Communities must be strengthened and empowered to meet their responsibilities through the formation and development of a recognized structure and legal personality.
3. In addition to an increased role for the community, there is also a need for external institutional support in the long term to maintain project benefits over time.
4. The regional water bureau and its descendants should play a role that goes beyond direct intervention to encompass monitoring of systems, coordination and facilitation of the activities of other key organizations, and provision of reliable information and advice for communities.

Development of this O&M strategy framework involved the consideration of key characteristics of the rural water supply and sanitation sector, including institutional trends and constraints. One of the main conclusions resulting from this process was that although it may be desirable to have a nationwide strategy, existing resource constraints and lack of a national presence makes it virtually impossible to consider any kind of countrywide O&M strategy for the foreseeable future.

Objectives:

The overall objective of these strategic directions is to ensure that rural communities and small towns gain sustained access to potable water supply from existing water supply facilities through the use of appropriate operations and maintenance management practices.

The key goal of this Framework is therefore to provide guidance and policy direction for streamlining O&M in daily operations at all levels within the sector, to ensure long term sustainability of facilities and enjoyment of intended benefits. It shall form the basis for planning, implementation and monitoring of O&M to be used by all sector actors, including government and development partners.

The Framework shall also serve to raise awareness on the need to plan and balance O&M issues with investments in new facilities at an early stage.

This framework points out the key strategic areas that need to be tackled within specific O&M management as well as major crosscutting issues for the whole sector. It provides direction for the overall (and sub-) sector development and prioritizes in view of the limited resources available.

Existing O&M Situations

Regarding the O&M management, it was pointed out previously before decentralization policy came into effect, O&M activities were conducted by organizing from the branch (*ketena*) Water Supply and Sewerage Authority (WASSA) with mobile workshop, which system was not participatory of the user communities. Such system was not ensured the ownership of the community and was found ineffective.

It was also pointed out that the O&M management section/department has not been in place in the structure of the MoWIE, which is supposed to be one of the key instruments to execute the water resources management policy as well as strategy. In fact the MoWIE is not expected to carry out the O&M activities down there, but should be follow up its implementation since it is linking with the functionality as well as access coverage of the water supply.

In Ethiopia today, the O&M of Rural Water Supply Facilities (RWSF) is largely based on the Community Based Scheme Management (CBSM), which emphasizes community responsibility and authority over the development, operation and maintenance of their facilities. The concept of CBSM was first introduced in Ethiopia starting 1994 since decentralization proclamation was issued. However, despite such legal frameworks, Woreda decentralization had not been translated into action due to several reasons. It was from the outset envisaged that an effective CBSM built on community ownership and community responsibility for O&M of installed water supply facilities, with support from various other actors, would ensure a long term operational sustainability. Since then, CBSM has been adopted and implemented by all rural water supply projects including ESRDF, WASH Program and several NGOs involved in rural water sector programmes. CBSM is formalized through the National Water Policy as a sustainable system for maintenance of installed rural water supply systems. However there are still a number of shortcomings with the O&M of water supply facilities.

The average non-functionality of the rural water supply schemes, according to the National WASH Inventory (2011), at the national level was in the order of magnitude of 25.5%. It varies between 20% and 35% region to region. The reasons for non-functionality are numerous and have a lot to do with insufficient attention to software issues and short project delivery time-frames which do not allow time for training and follow up post implementation.

A lack of effective supply chain processes in the country as a whole, limits to the authority and abilities of community structures to maintain schemes - both in terms of addressing technical problems and more regularly in terms of financial and general scheme management.

The non-functionality root causes as learnt during the assessment that in the regions are so many, to mention of among the other the study and design problem, the season for digging of well, poor construction quality and workmanship, poor quality of materials installed, misuse of the schemes, climate change, the unavailability & expensiveness of spare parts, absence of proper supply chain, lack of institutional support etc.

The implementers are mainly focused only in constructing of new schemes rather than putting energy and attention into ensuring long term sustainability, that is Operation and Maintenance Management where communities are being reached. All organization should therefore engage in looking back processes where possible to help resolve problems that have emerged in schemes that they have been involved in during the past.

It is these situations demanding to formulate this strategic framework of O&M management that implementing the Country's Water Resources Management Policy.

Policy, Strategy and Guidelines

The Ministry of Water, Irrigation and Energy (MoWIE) formulated policies, legislation and strategies such as National Water Resource Management Policy, Water Sector Strategy (2000), water Sector Development Program (2002), Water and Sanitation Access Plan (UAP) (2005), Memorandum of Understanding signed by three sector ministers (MoU, 2006) and a revised Memorandum of Understanding (MoU), signed by four sector ministers in November 2012.

MoWE has also prepared various guidelines for the implementation of the policy, such as WASH Implementation Framework, One WASH National Program as well as various manuals and guidelines. Following that, this strategic framework is developed to address the issue of post construction and sustainable use of the rural water supply schemes.

Regional water bureaus issued proclamations, directives and regulations to exercise the water policy. All the regional water bureaus issued proclamations to establish the urban and rural water supply and sanitation services but fewer are issued the directives and regulations. The issue of the RWS ownership and legal personality are not elaborated properly.

The WRMP clearly stated the issue of i) ownership of the schemes, ii) O&M support issues, iii) Tariff issue, iv) Gender issues, v) capacity building and vi) private sector involvement.

O&M Strategic Directions

The MoWIE and/or Regional Water Bureaus recognise the direct links between improved operations and maintenance practices and the effectiveness and sustainability of water supply and sanitation services.

It is also recognised that O&M should not be viewed only as a technological or operational perspective but take into account other aspects associated with overall performance of water supply services.

There is therefore the commitment to undertake sound operations and maintenance practices, systems and procedures consistent with achieving sustainability in water supply service provision.

In order to alleviate the challenges listed in chapter 3, a clear strategic framework is needed to develop for operation and maintenance of rural water supply schemes.

The strategy to achieve the objective is derived from three working principles:

- Consolidate community ownership and management of water supply services through adequate monitoring and back-up support from the Woreda and enhance maintenance and repair services by delegating critical aspects to the private sector that are local service providers;
- Communities should bear the full cost of O&M through the setting, collection and management of appropriate tariffs;
- The business of spare parts is currently not viable on its own and the revolving fund office/enterprise and involvement of private sector should be supported with measures that reduce transaction costs in order to promote the availability of spare parts.

The strategy for achieving the objective is the adoption of the following directions:



- **Improving O&M practices** through the development and adoption of appropriate technical and human resource development measures that would strengthen (and fill the gaps and shortfalls of) existing operations and maintenance systems;
- **Improving funds mobilization to cover O&M** through the adoption of rational tariff setting methods, revenue collection and prudent financial management policies;
- **Strengthening supply chains for spare parts**, related goods and services to sustain O&M of water supply systems through the adoption of demand, supply and regulatory support measures; and
- **Reinforcing capacity for on – going institutional support** for the management of community water supply services through targeted capacity building and training.

1) Proclamation, Directive and Regulation

The regional Water Bureaus need to amend their proclamations on the basis of change into action of the water policy by considering the ownership, legal personality, defining clear roles and responsibilities, clear direction of the rural piped systems, incentive to rural water boards/WASHCOs, the involvement of private sector in maintenance service delivery and sale of spare parts, the establishment of revolving fund office/enterprise and other issues.

A road map to implement the proclamation, detailed of consecutive directive and regulation also needed to develop.

2) Raising the Profile of O&M

The objective of this strategic direction is to create awareness on the importance of O&M and provide incentives for stakeholders to play their role regarding undertaking or supporting O&M.

Whenever new schemes are constructed and commissioning, all people are become exited. For as long as the water system functions and water is flowing at the pump, attention is removed from the water system and the procedures for ensuring sustained functioning is relegated to the background and very easily forgotten and ignored at all levels. Voluntarisms on the part of user communities exacerbate disinterest and lack of interest on the part of volunteer WASHCO members with the passage of time.

Measures that would sustain the practice of needed O&M include but not limited to the following:

- Incentivize of WASHCOs/RWBs, rewarding the best performed one and offer recognition, sharing the best experience to other
- Financial management system should be in place and a mandatory should be there like renewal of the licence and certification,
- Clear preventive and maintenance schedule should be in place
- In order to solve the problem of spare parts, revolving fund office/enterprises should be established at region, and linking the distribution/sale of spare parts with the private sector (associations) and Micro Finance Institutes,
- Capacity building and training should be design based on the need assessment, refreshing training in regular basis should be in place to offer the stakeholders in O&M management,
- Institutional support should be maintained in terms of allocation of O&M budget, assigning of qualified staff by increasing their numbers based on the ratio of (number of staff against number of schemes), equip the local government with necessary logistic, equipment and tools,

- Regular and consistent monitoring mechanisms should be in place to assist the community and supervise, monitor and evaluate WAHCOs, Rural Water Boards, Local Service Providers etc.
- Develop appropriate norms and standard in study, design and construction supervision of rural water supply schemes, which has an implication on the O&M management and functionality of the schemes,
- Water Quality Management: provision of water is not only quantity wise, but also need to consider the quality as well. Thus a clear water quality monitoring and surveillance mechanism should be in place. So, water quality sampling frequency should be design and water quality laboratories need to build at least at each of the regional capitals.

In order to effect the implementation of this strategic framework, implementation action plan should be developed as described in this document.

Currently an estimate of over 130,000 different types of rural water supply schemes exist in the Country, even this number will increase much in the next five years. The existing schemes have different ages over 30 years and new recently constructed. All these schemes need to give attention to serve to their design period and even beyond if proper O&M management system in place. Of course to implement it, the requirement of this strategic framework is a mandatory.

On top of that, this strategic framework will contribute to reduce the non-functionality rate of RWS schemes from the existing 20 – 30% rate to drop to 10% by the GTP plan. Furthermore, the non-functionality rate has direct implication on the water supply coverage which is a dynamic change increasing or decreasing rate, depends the application of proper O&M management.



1 INTRODUCTION

1.1 Background

The Ministry of Water, Irrigation and Energy (MoWIE) is mandated to address all water related functions in collaboration with the Regional States. MoWIE leads development of policies, strategies, guidelines, regulations and standards; in addition to coordinating external support. Thus, MoWIE is to ensure coordinated development and management of water resources on one the hand, and provision and sustainability of water and sanitation services on the other.

In line with the decentralization as provided for the administration of Federal system in 1992, MoWIE led the development of a Water Sector Policy in a participatory manner that ensured inputs from various stakeholders. Approved in 1999, the Policy outlined how the sector will evolve, including establishing a distinction to its broad sub-sectors, among namely: Water Supply and Sanitation for both rural and urban components.

The Policy and strategy set out key aspects of the operation and maintenance of water supply system. In order to implement the policy and strategy, strategic framework for O&M supposed to be developed. This framework provides guidance for the proper operationalize of operation and maintenance management of the rural water supply system to ensure the sustainable use of schemes as well as to reduce the rate of non-functionality within the time frame of GTP – II.

This strategic framework shall pave the way to move from ad-hoc operationalization to well planned and well-targeted O&M Management, including aid modalities such as Programme Based Approaches (PBAs). Hence, it shall guide the sector towards achieving the GTP – II and to contribute to the overall socio-economic development of the Country.

With this strategic framework, MoWIE, key rural water supply sector stakeholders and partners have initiated an inclusive sector wide governance and development process. It will enable them to: identify sources, mobilize resources for post construction support address priority interventions, leading towards sustainable, equitable and publicly accountable response to water related public health and livelihoods' aspirations in Ethiopia.

1.2 Objectives and Relevance of the O&M Framework

The overall objective of these strategic directions is to ensure that rural communities and small towns gain sustained access to potable water supply from existing water supply facilities through the use of appropriate operations and maintenance management practices.

Significant progress has been registered in developing and initiating implementation of a national O&M strategic framework for rural water supply schemes. However, if these gains in increasing safe water supply coverage are to be consolidated, it is important that the issues of sustainable use and maintenance of the facilities developed are also appropriately addressed.

Against the background of low functionality of facilities which plays against government commitment to increase coverage, it is important that more concrete attempts are made to address this situation. The key goal of this Framework is therefore to provide guidance and policy direction for streamlining O&M in daily operations at all levels within the sector, to ensure long term sustainability of facilities and enjoyment of intended benefits. It shall form the basis for planning, implementation and monitoring of O&M to be used by all sector actors, including government and development partners.

The Framework shall also serve to raise awareness on the need to plan and balance O&M issues with investments in new facilities at an early stage.

This O&M Framework reviews O&M findings arising from the assessments and other observations, and proposes approaches towards their solution. It aims to streamline and

strengthen O&M aspects in the planning and implementation of water supply activities by all sector players. It focuses on issues, and attempts to address the concerns and approaches from different perspectives, so that the various sector players can identify and address the area's most suitable to their specific requirements.

The O&M Framework is to be used alongside other sector documentation on policy, strategies and implementation guidelines. In addition detailed materials exist or are due to be produced for training and other extension work on O&M issues.

The purpose of this strategic framework is to operationalize the Water Resources Management Policy and ensure its implementation through effective and technically sound strategic approaches, improved the O&M management, capacity and involvement of all stakeholders. The scope of this strategic framework includes Community Based Scheme and Financial Management, Supply Chain, Support from the Government, Private – Public – Partnership, Monitoring, Evaluation and Reporting, Roles & responsibilities of stakeholders with a time frame of up to 2020.

This framework points out the key strategic areas that need to be tackled within specific O&M management as well as major crosscutting issues for the whole sector. It provides direction for the overall (and sub-) sector development and prioritizes in view of the limited resources available. However, O&M management action plans defining annual targets and scheduling specific activities are yet to be developed.

1.3 Operation and Maintenance

Operation refers to the everyday running and handling of water supply facilities, involving the actual delivery of services. It involves:

- Major operations required to convey safe drinking water to users; and
- Correct handling of facilities by users to ensure long component life.

The proper operation of a water supply facility results in its optimum use and contributes to a reduction in breakdowns and maintenance needs.

Maintenance refers to the activities aimed at sustaining the water supply in a proper working condition. It can be divided into:

- Preventive maintenance – regular inspection and servicing to preserve assets and minimize breakdowns;
- Corrective maintenance – minor repair and replacement of broken and worn out parts to sustain reliable facilities; and
- Repair (crisis maintenance) –responses to emergency breakdowns and user complaints to restore a failed supply.

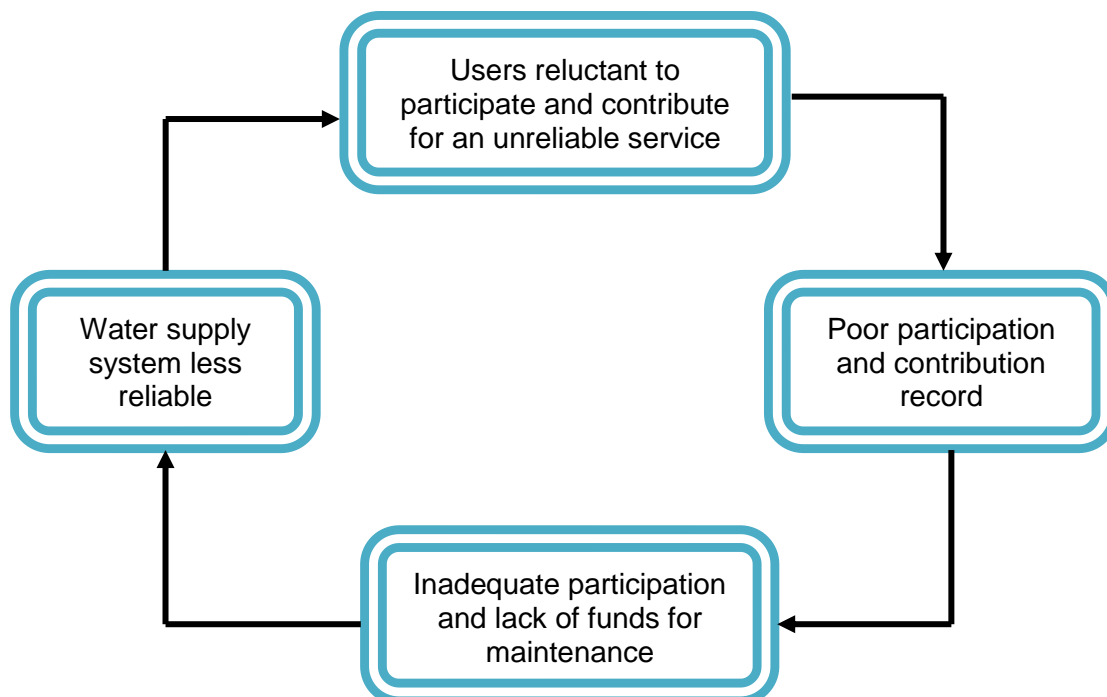
Operation and maintenance (O&M) is therefore the sum total of activities required to achieve smooth running and continuous sustenance of a water facility to ensure long service. The main potential benefits to a community of sustainable O&M are numerous, and include:

- Reduced time in water collection leading to increased time for more economically gainful activities for improved well being of the family;
- Improved health when combined with good hygiene practices to reduce disease morbidity and expenditures on health; and
- Less dependence on external organizations that often have limited resources.

The close linkages between cost recovery and sustainable O&M are characterized by the vicious circle shown in Figure 1- 1. Considerable effort is required from all stakeholders to break the vicious circle and ensure proper O&M of communal water facilities.

Figure 1-1: The vicious circle of underfunded and poorly maintained water supplies

1.3.1



Generally O&M of community water facilities is poor due to a number of complex reasons including:

- Low priority given by respective institutions who are more interested in constructing new facilities, which they perceive as having a more dramatic impact;
- Poor cost recovery and low revenues leading to a lack of financial resources for O&M;
- Inadequate staffing, which may result from the relatively low status of O&M compared with construction activities; and
- Lack of appropriate and refreshing capacity building for the key stakeholders (e.g. WASHCO's, Woreda Water Offices etc).

1.4 The Ethiopian Situation

Regarding the O&M management, it was pointed out previously before decentralization applied O&M activities were conducted by organizing from the branch (ketena) Water Supply and Sewerage Authority (WASSA) with mobile workshop, which system was not participatory of the user communities. Such system was not ensured the ownership of the community and was found ineffective.

It was also pointed out that the O&M management section/department has not been in place in the structure of the MoWIE, which is supposed to be one of the key instruments to execute the water resources management policy as well as strategy. In fact the MoWIE is not expected to carry out the O&M activities down there, but should be follow up its implementation since it is linking with the functionality as well as access coverage of the water supply.

In Ethiopia today, the O&M of Rural Water Supply Facilities (RWSF) is largely based on the Community Based Scheme Management (CBSM), which emphasizes community responsibility and authority over the development, operation and maintenance of their

facilities. The concept of CBSM was first introduced in Ethiopia starting 1994 since decentralization proclamation was issued. However, despite such legal frameworks, Woreda decentralization had not been translated into action due to several reasons. It was from the outset envisaged that an effective CBSM built on community ownership and community responsibility for O&M of installed water supply facilities, with support from various other actors, would ensure a long term operational sustainability. Since then, CBSM has been adopted and implemented by all rural water supply projects including ESRDF, WASH Program and several NGOs involved in rural water sector programmes. CBSM is formalized through the National Water Policy as a sustainable system for maintenance of installed rural water supply systems. However there are still a number of shortcomings with the O&M of water supply facilities.

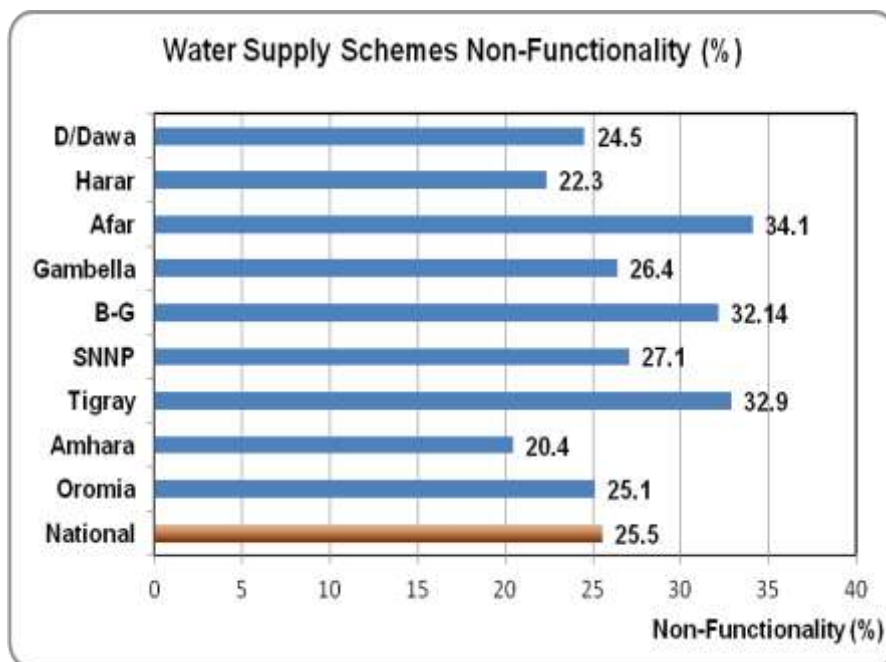
The average non-functionality of the rural water supply schemes, according to the National WASH Inventory (2011), at the national level was in the order of magnitude of 25.5%. It varies between 20% and 35% region to region as it is presented in Figure 1.2. The Afar region took maximum non-functionality rate that was 34.1% (2011) and followed by Tigray region with 32.9% (2011). The minimum non-functionality rate was for Amhara region that was 20.4% (2011). The reasons for non-functionality are numerous and have a lot to do with insufficient attention to software issues and short project delivery time-frames which do not allow time for training and follow up post implementation.

A lack of effective supply chain processes in the country as a whole, limits to the authority and abilities of community structures to maintain schemes - both in terms of addressing technical problems and more regularly in terms of financial and general scheme management.

The non-functionality root causes as learnt from the key informant interview made with various regional water bureaus are so many, to mention of among the other the study and design problem, the season for digging of well, poor construction quality and workmanship, poor quality of materials installed, misuse of the schemes, climate change, the unavailability & expensiveness of spare parts, absence of proper supply chain etc.

The implementers are mainly focused only in constructing of new schemes rather than putting energy and attention into ensuring long term sustainability, that is Operation and Maintenance Management where communities are being reached. All organization should therefore engage in looking back processes where possible to help resolve problems that have emerged in schemes that they have been involved in during the past.

Figure 1-2: Non-Functionality of Water Supply Schemes by Region (2011)



Source: National WaSH Inventory, 2011

Currently an estimate of over 130,000 different types of rural water supply schemes exist in the Country, even this number will increase much in the next five years. The existing schemes have different ages over 30 years and new recently constructed. All these schemes need to give attention to serve to their design period and even beyond if proper O&M management system in place. Of course to implement it, the requirement of this strategic framework is a mandatory.

1.5 Strategic Action Framework

At the end of the workshop participants prepared a framework for the development and implementation of strategy for the operations and maintenance of rural water supply systems. The framework comprise constraints and issues that impact on the effective and efficient operations and maintenance of water supply and the strategic actions that are required to improve operations and maintenance. The framework also contains proposed policy issues or skill requirements that are necessary pre-requisites for implementing the strategic actions proposed. The discussions leading to the development of the strategic action framework deepened the understanding among participants of water supply operations and maintenance issues and the strategic orientation to address the issues. The detailed proposed framework is contained in Annex - A of this report.

2 POLICY AND STRATEGY FRAMEWORK

2.1 General

The Ministry of Water, Irrigation and Energy (MoWIE) formulated policies, legislation and strategies such as National Water Resource Management Policy, Water Sector Strategy (2000), water Sector Development Program (2002), Water and Sanitation Access Plan (UAP) (2005), Memorandum of Understanding signed by three sector ministers (MoU, 2006) and a revised Memorandum of Understanding (MoU), signed by four sector ministers in November 2012. MoWE has also prepared guidelines for gender mainstreaming in the water and energy sectors (2012).

2.2 Water Resources Management Policy

The Ministry of Water Resources has issued the Water Resources Management Policy (WRMP) in 1999, formulated a Water Sector Strategy (WSS) and drawn up a 15-year Water Sector Development Program (WSDP) in 2001. The WRMP has considered water as social and economic goods. The principle of cost recovery, decentralized management, sustainability of water supply and capacity building, research and development are incorporated as the most important concepts in the water policy. The water strategy acts as a road map to translate the policy into action. The water policy, as well as the strategy, promote the principles of integrated water resources development and management, and accelerate the water supply and sanitation coverage.

Policy aspects related of RWS Ownership and O&M

Many issues of rural water supply ownership and operation & maintenance concerns are addressed by the national water resources management policy. The policy includes all the external as well government support budget reliable to O&M. Summary of the ownership and O&M aspects of water policy are presented below in Table 2.1.

Table 2-1: Aspect on Ownership and O&M Policy Component

Policy components/Aspects	RWS-O&M issues covered by the Water Policy
Ownership of schemes	<ul style="list-style-type: none"> ▪ Create and promote a sense of awareness in communities of the ownership and their responsibilities for O&M of water supply systems and develop participatory management practices ▪ Ensure that the system of ownership of water supply systems recognizes the local objective realities on the ground, and involvement of the users and other stakeholders, as well as be based on conducive conditions for sustainable management ▪ Provide the legal basis for active and meaningful participation of all stakeholders, including water users' associations, the community and particularly for women to play the central role in water resources management activities
Operation and Maintenance support issues	<ul style="list-style-type: none"> ▪ Promote the establishment of integrated O&M framework that provides reliable and sustainable water supply systems in all the regions ▪ Ensure that all studies and development activities undertaken by various stakeholders budget for reliable O&M purposes

Policy components/Aspects	RWS-O&M issues covered by the Water Policy
	<ul style="list-style-type: none"> ▪ Develop guidelines and procedures for inspection, preventive, routine and curative maintenance services and for training of technicians as well as develop a network of monitoring systems ▪ Promote the direct involvement of communities, particularly women, in the O&M of water systems ▪ Promote that operation and maintenance of water systems is based on decentralized approach which enhance sustainability

As presented in Table 2-1, one of the policy issues is the establishment of integrated operation and maintenance framework that is so far not developed. So, this national rural water supply scheme operation and maintenance framework is answering the requirements in the water resources management policy.

Table 2-2: Economic aspects of the Water Policy

Policy components/Aspects	RWS-O&M issues covered by the Water Policy
Water Pricing	<ul style="list-style-type: none"> ▪ Water has economic value and ensure that fees are paid for service rendered ▪ Ensure that the price of water should be neither too high nor too low ▪ Ensure that Tariff structures are site-specific depending on the particulars of the project, location, use, cost and other characteristic of the catchment ▪ Ensure that rural tariff settings are based on the objective of O&M cost recovery ▪ Ensure that tariff structures in water supply systems are based on equitable and practical guidelines and criteria ▪ Provide subsidies for disadvantaged rural communities and the communities shall cover the operation and maintenance cost ▪ Develop flat rate tariffs for communal services like hand pumps and public stand posts
Financing of water development	<ul style="list-style-type: none"> ▪ Coordinate and promote that all funding in the water sector is based on the country's water resources objectives, policy and strategy ▪ Promote credit services, by the government, for water resources development undertakings ▪ Ensure accountability of proper fund utilization obtained from different sources

Table 2-3: Gender aspects of the Water Policy

Policy components/Aspects	RWS-O&M issues covered by the Water Policy
Gender Issue	<ul style="list-style-type: none"> ▪ Promote the full involvement of women in the planning,

	<p>implementation, decision making and training as well as empower them to play a leading role in self-reliance initiatives</p> <ul style="list-style-type: none"> Promote the direct involvement of communities, particularly women, in the O&M of water systems
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Table 2-4: Stakeholders aspects of the Water Policy

Policy components/Aspects	RWS-O&M issues covered by the Water Policy
Private Sector	<ul style="list-style-type: none"> Promote private sector participation in technology development, construction, and in operation and maintenance of utilities Develop a framework for Community-Government-Private sector-External Support Agencies Partnership

Policy Principles on Institutional Issues

The institutional aspect of the water policy is an important component necessary for the implementation of the concepts of Operation and Maintenance. The institutional component will provide a framework and context for private, public, NGOs, community and individual users' role in the management, development, protection, and utilization of the water resources of the country. Hence, the institutional aspect of the policy should clarify issues like:

- Users management,
- Capacity building, and
- Roles, responsibilities and authority of stakeholders.

Table 2-5: Institutional Aspects of the Water Policy

Policy components/Aspects	Institutional issues covered by the existing Water Policy
Users management	<ul style="list-style-type: none"> Decentralization of water management to the local level Foster participation of user communities Support community self initiatives and direct involvement in water resources management
Capacity building	<ul style="list-style-type: none"> Enhance the service promotion of regional states in the area of consultancy and training Promote objective oriented training with special emphasis on trades-level training, community participation, administration and finance, and O&M Assist in the establishment and strengthening of water users associations Equip water supply organizations with the necessary facilities
Clarification of roles, responsibilities and authority of actors	<ul style="list-style-type: none"> define the relationships and interactions among the Federal, Regional, Zonal, Woreda and Kebele levels of institutional framework Promote linkage to coordinate water resources management activities between federal and regional government Avoid or minimize institutional instability



Policy components/Aspects	Institutional issues covered by the existing Water Policy
	<ul style="list-style-type: none"> ▪ Provision of information, guidelines and directions for external support agencies and establish reliable framework for coordinating and monitoring their activities ▪ Define and implement the respective roles of the various institutions and stakeholders at all levels including Federal, Regional governments, ESAs, NGOs, private sector, etc.

2.3 Water Resources Strategy

The water strategy acts as a road map to translate the policy into action. The water policy, as well as the strategy, promote the principles of integrated water resources development and management, and accelerate the water supply and sanitation coverage.

1. Put in place a system to legalise the ownership of WSS systems. In this regard, promote decentralized management of these systems. In the case of rural systems, institutionalize and regulate the role of local communities by:
 - (a) promoting the establishment of community based structures;
 - (b) Facilitating these community in developing an interface with the local administrative structures; and defining the rules of engagement for service providers.
2. Develop guidelines, principles and norms for streamlining the interventions of external support agencies and NGOs. Secure effective collaboration amongst all the formal and informal stakeholders in the WSS subsector by undertaking the following actions:
 - (a) promote private/informal sector involvement in consultancy, contracting, supply of spare parts, maintenance and operation as well as management of WSS (especially urban) services;
 - (b) involve NGOs in funding and in the actual implementation, operation and maintenance of WSS projects;
 - (c) Equip water supply and sanitation organizations at all levels with the necessary facilities in terms manpower and equipment.

Capacity Building Aspects

Strengthen the capacity of water users associations (water committees) so that they may make independent informed choices, and remain and serve as a focal point in the WSS management structure which can ensure autonomous decentralised management of the WSS systems.

2.4 Proclamation, Directive and Regulation

Proclamations are issued to implement the policies. As autonomous body, regional states are responsible in issuing proclamation on the basis the water resource management policy. All regions are issued proclamation for the establishment of rural as well urban water supply and sanitation service. In fact the naming of the proclamation differs from region to region. Some regions issued both the urban and rural together with giving more emphasis for urban issues than the rural. Few regions issued in separate proclamation.

Following the proclamation, it is expected to develop and issue directive and regulation by elaborating the proclamation, but these are done by SNNP and Benishangul-Gumuz

regions. Amhara draft while Oromia under process. Tigray, Afar, Somali, Harari and Gambella regions are not yet. The contents of the proclamation, directive or regulation regarding to the O&M and legislation issues of each region is briefed below.

The SNNP regional state issued rural potable water and sanitation association establishment regulation on May 18, 2012, with regulation No. 102/2012. Prior to this regulation, directive had to be issued which explained the proclamation. This regulation is unique that it established community elected committees at all level such as 1) General Assembly, 2) Executive committee, 3) rural potable water and sanitation association federation, and 4) Establishment of kebele level water and sanitation association and 5) WASHCO's at individual schemes.

The Amhara National Regional State (ANRS) had issued a proclamation no. 82/2003 for establishment of urban and rural water supply sewerage service, which repealed by a revised proclamation on re-organization of the water supply and sewerage service for both urban and rural with proclamation no. 188/2011 dated October, 2011. Following the proclamation, the ANRS issued revised regulation with regulation no. 94/2012 dated May 18, 2012 for the combined establishment of urban and rural water supply and sewerage service. The regulation regarding to rural water supply says only the establishment of WASHCO but not in detail of the structure specially in addressing rural piped system organizational structure.

Directive for establishment of WASHCO has been prepared by the ANRS with detailed description but not yet approved. It is a synonymous with SNNP region, but federation association establishment is not incorporated. The directive addressed both point water source as well as rural piped system community management issues, which is incompatible with proclamation no. 188/2011 and regulation no. 94/2012 in which it was missed.

The Benishangul - Gumuz regional state issued a proclamation to provide for the determination of the organization and the powers and functions of Rural Domestic Water Supply Users' Associations in 2008.

Following issuing of the proclamation, the regional water mines and energy development bureau prepared directive for the execution of the proclamation as drafted in November, 2013 but not yet issued by the regional state.

The Oromia National Regional State issued proclamation to provide for establishment and administration of rural potable water supply service organization with proclamation no. 152/2009 dated July 16, 2009.

The same as Amhara region, the Tigray region also issued proclamation for reestablishment of Urban and Rural water supply and Sewerage Service, with pro. No. 122/1999 dated February 17, 2007. This proclamation gave more emphasis for the urban water utility. Regulation was also issued on February 8, 2007, with reg no. 40/1999. It was surprisingly issued before the proclamation that was February 10, 2007. How could this happen? Proclamation should come first and followed by the regulation.

The Gambela People Regional State also issued proclamation for establishment of urban water supply and sewerage and rural water supply and sanitation services with proclamation no. 22/1999 dated March, 2007. The proclamation contain is also similar with others like Amhara and Tigray. Here the terms of service of the water and sanitation committee is four years with possible re-election for second time. The proclamation says nothing about the rural piped system management. It can be said that, the proclamation is shallow in addressing various issued in its articles.

2.5 Water Supply & Sanitation Universal Access Plan

The Rural Water Supply UAP (2011-2015) aims to accelerate progress to achieve 98% access to improved water supply for the rural population with an annual growth rate of 9%¹.

¹Urban Water Supply: Universal Access Plan 2011-2015, Ministry of Water and Energy, Addis Ababa.

The water supply component of the last PASDEP (2006-2011) extracted from the UAP and adopted as a national plan has allowed Development Partners to align their plans and programs with the Government's plan.

According to the National WASH Inventory (NWI), conducted in 2011 access to water supply was 52.1%.

GoE has set out its goals in the GTP, which identifies water and sanitation as priority areas for achieving sustainable growth and poverty reduction. In line with the GTP, GoE has prepared a Universal Access Plan (UAP), with the following targets:

- 98.5% access to water supply, and reduction of proportion of non-functioning facilities to 10%.

2.6 WASH Implementation Framework

To facilitate achievement of the GTP and UAP targets, GoE has prepared a WASH Implementation Framework (WIF) to provide guidance for implementing the Program that defines the roles and responsibilities of major stakeholders in the WASH sector.

2.7 One WASH National Program (OWNP)

Water supply, sanitation and hygiene are no longer addressed separately, but as an integrated package aimed at achieving agreed targets. Government is now committed to implementing a Sector Wide Approach (SWAp) through the One WASH National Program, which is also supported by a number of Development Partners and NGOs.

1.07 USD billion was estimated for implementation of rural water supply under the OOWNP. With which construction of 58,118 new water points and water supply schemes, and rehabilitating 20,610 existing schemes in order to achieve the GTP target of 98.5% access in water supply and to reduce non-functionality of water supply facilities to 10%. Furthermore, 19,190 household dug wells and 25,038 community dug wells are expected to be constructed by households and communities through self supply enhancement program.

On top of that an estimated cost of USD 90,028,152 for rural WASH component management and capacity building such as support to improve the skills and capacity of the Program's organizations and implementing parties at federal, regional/city, woreda/town and kebele and community levels to plan, manage and monitor Program activities through the provision of training, **post-construction management support**, equipment, tools, and, where required, software for monitoring and reporting, GIS and accounting and billing systems.

All these are indicated that emphasis has been given in operation and maintenance management of the schemes.

The One WASH National Program (OWNP) is designed to achieving the goals set out in the Growth and Transformation Plan (GTP). In the GTP, targets for access to safe water supply are 98%, 100% for rural and urban areas, respectively.

Achieving GTP targets and universal coverage mean that an additional 26.6 million rural and 4.4 million urban inhabitants in 6,284,000 households will gain access to safe drinking water, as well as 22,342 primary schools, 643 secondary schools and 7,772 health posts/centers.

The Program will seek to improve aid effectiveness and promote institutional reforms, with particular focus on capacity development at Woreda, kebele and community levels. WASH training will be increasingly professionalized and institutionalized through support to training institutions at all levels.

The Program will be implemented as a joint effort between Government, development partners, NGOs, training institutions, the private sector, community members and other stakeholders. In addition to the Government, a number of Development Partners have expressed interest in supporting the Program through contributions to a Consolidated WASH Account at federal level. Other partners, including bilateral and multilateral aid organizations and NGOs, will support the Program through other funding arrangements, as well as through provision of technical assistance, supplies and other means.

The OWNPs stated by regions that some 20,615 water supply schemes will need to be rehabilitated to reduce non-functionality to 10% in line with the GTP target.

2.8 Guidelines for condition of grants

The Guidelines for Planning and Operation of the Woreda Water and Sanitation Development Grant is proposed to develop, and are continuously updated and disseminated over time. They spell clearly how the Conditional Grant forwarded to Woredas shall be utilized and managed to ensure attainment of O&M objectives. They detail the sector goals, key strategies and approaches, measures for strengthening of Woreda Water Office capacity, activity based planning and reporting, release of funds, and monitoring and audit arrangements.

Sustainability is stressed in the objectives, implementation approaches, funding, staffing, and guidelines for monitoring of activities. Some specific areas mentioned are:

Effective Utilization and Improved Sustainability: Establishment of a sustainable community based management system through effective community mobilization and training, monitoring and support supervision. 2% of the grant is allowed for Woreda Water Office operations and up to 10% for O&M of water supply schemes. Multi-sectoral (technical and political) monitoring of implementation and maintenance of facilities is also promoted.

3 CHALLENGES IN OPERATION AND MAINTENANCE

3.1 General

A number of O&M issues have been identified from this and other various studies and consultations as crucial for sustainability of water supply facilities. Some of the issues are discussed below, and the key ones are handled in greater depth in subsequent chapters. **Annex C** also identifies common problems under each of these aspects and proposed remedial actions that can be taken up by the different stakeholders.

3.2 Ownership

One of the main issues that affects management and maintenance of communal water supply facilities is the understanding of ownership. The National Water Resources Management Policy (1999) describes the community as the *owners* of a water supply facility. However this is not interpreted to the full scale and found the ground situation in different way. The issue of community ownership is made difficult by the loose nature of the „community“ as an entity. In such instances it becomes difficult for communities to assume full responsibility and accountability for the maintenance of facilities.

Water Supply facilities constructed with Government own budget have not involved communities adequately whereas those development partners and NGOs fully involve the community from planning stage to implementation. This discrepancy way of WASH project implementation made the community based scheme management inconsistency among the various community users. Now through One WASH National Program, communities will be involved to varying degrees by the different sector actors in planning, provision of labor and contribution of cash towards capital costs as a means of instilling the sense of ownership and responsibility.

The ownership of the facility needs to be clearly defined at the planning stage. Where CBSM is to be applied, this leads to the roles to be played by the parties being clearly demarcated. Woreda Water Office can facilitate the registration of the WASHCOs/WUAs as legal entities in some instances and commit kebeles to take legal responsibility in others. This „in-trust“ arrangement is intended for an interim period only; the ultimate goal is to achieve full community ownership of facilities.

Each of the Regional States is needed to issue proclamation, directive and regulation to establish WASHCO's and ensuring the legal personality.

3.3 Status of managing bodies

There is no uniform legal status of the WASHCOs or RWBs selected to manage the water supply systems constructed with government support. Project implementation with the support of External Support Agencies (ESAs) developed constitutions as voluntary associations to the WWO for ratification, thus giving them a mandate to manage the water supply schemes. However, this procedure is logically wrong because the process should have been the other way round whereby the WWO initiates action to constitute the WASHCO/RWB and delegates them through an appropriate by-law to manage the scheme's assets for a period. The unclear mandate given to WASHCOs/RWBs has caused a lot of confusion with WWO interfering in the affairs of the WASHCOs/RWBs and sometimes dissolving them without due process. It is felt that the true owners of the water system should actually be the rural communities in whose jurisdiction the facility is situated and not the town administration.

3.4 Technology Choice

O&M requirements are a major concern in technology choice, and need to be emphasized at the planning stage. This enables communities to make an informed choice of the type of

technology they would like based on suitability, cost and maintenance requirements. The source of water gives the initial guidance, for instance springs (low or highland), groundwater, rainwater, etc. The technology used for developing a particular source also has an important bearing on the O&M requirements, and should be carefully considered. For instance in areas susceptible to corrosion, resistant materials should be considered.

Due to the usually hurried planning process lacking in bottom-up aspects, consultation and discussion on alternative technologies is not adequately done, which greatly contributes to the poor O&M.

The importance of adequate mobilization before construction should be further emphasized. Standardization of technologies to use at national level facilitates capacity building and availability of equipment and spare parts. Proper technology selection contributes to good quality facilities that are better accepted by users and easier to maintain. Current and planned interventions aim to review and strengthen the standardization and detailed specification of technologies for community facilities.

By default, in most of the rural water supply system, Afridev and Indian Mark – II hand pumps are accustomed. Especially Afridev hand pump can be maintained by caretakers. Thus, standardization of hand pumps is needed and encourages local manufacturers to produce such a kind of hand pumps in the Country.

A part from that Multi-Village Rural Water Supply system is now days demanded for those areas water sources are scarce in terms of quantity and quality. For instance it is recommended for areas like Benishangul – Gumuz region who implementing villagizing settlement.

3.5 Maintenance and Repair

Despite the sound theoretical knowledge of WASH and good skills displayed by pump caretakers regarding maintenance, all most all communities do not really carry out preventive maintenance. Most communities actually practice breakdown maintenance. This is due partly to lack of funds to purchase maintenance kits and spare parts and partly due to lack of real appreciation of the value of preventive maintenance, despite the theoretical knowledge on the subject matter.

Capacity for maintenance and repair services by pump caretakers is good but this is not supported by availability of adequate funds to effect required maintenance work. Postponing maintenance would eventually lead to more expensive interventions and early costly rehabilitation of the handpump. Measures need to be taken to strengthen (or pressurize communities to) the practice of preventive maintenance within pump communities.

3.6 Technical Services Support

Woreda Councils have been entrusted the responsibility of legal ownership of community water supply infrastructure and to coordinate the implementation of all development projects within the sector. All Woredas have set up Woreda WASH Team (WWT) to support the delivery and management of water supply facilities within the Woreda.

Zone or Woreda Water Offices, who provide back-up repair services support to communities for rural water supply schemes problems beyond the capacity of WASHCO (caretakers), are faced with a number of problems in trying to provide these essential services.

- High turnover of staff,
- Minimum ratio with the number of staff against the total number of schemes, as a result the staffs do not cover the entire demand of maintenance,
- Difficulty in reaching some communities with no provision of logistics to undertake monitoring activities in support of O&M of existing water supply facilities.
- The staffs are not equipped with tools and spare parts
- Lack of practical knowledge

- No allocation of budget for O&M management,
- Emphasis has been placed in acquisition of new water supply facilities and not in the sustenance of existing schemes.

There is an urgent need to raise the profile of O&M at the Woreda level in order that resources and attention is given to issues of sustainability of existing infrastructure including long-term rehabilitation and replacement.

3.7 Community Mobilization and Training

It has been observed universally that mobilization and training assists in clearly defining the problems, options and roles. It is crucial that adequate mobilization and relevant training are provided at an early stage, to ensure that all stakeholders are supported to play their roles and that the magnitude of O&M requirements is well defined and planned for. This activity is continuous to maintain effective morale and involvement of all.

In the past 10 years, some mobilization has done during the planning and implementation phases of WASH Program for communities to site sources and elect WASHCOs. Unfortunately, many times it is not well targeted in terms of participants and content as well as hurried. The training if carried out at all is many times done after construction which ceases to make sense. Rarely is a needs assessment done to determine the specific needs of communities and WASHCOs to tailor the training event. In-stead a standard and inadequate curriculum that glosses over the roles and responsibilities of WASHCOs while specifically weak in terms of skills that shall be required of WASHOCs is followed.

Focus of the sector in terms of funding and implementation is still on the hardware components which may be more tangible but not as sustainable without due attention to the software aspects. Currently, in OWNPN, budget is allocated for the software activity. This is an area that needs to be immediately looked into. Woreda's need to allocate budget regularly to implement the software components in order to ensure the sustainable use of the schemes. This promotion shall be monitored over one year on its effectiveness in improving sustainability.

3.8 Replacement of Non-Functional Committees

Non-functionality or inactivity of WASHCOs seriously affects the management and maintenance of facilities. This creates a leadership vacuum during which all responsibilities and commitments are forsaken. There is need for a mechanism to reactivate and/or replace Committees that become non-functional due to various reasons including migration, abandoning work, death, etc. This should be initiated and taken up by communities and also established as part of the follow-up mechanism through government structures, NGOs or the private sector.

3.9 Supply Chain

Existing situation revealed that spare parts are supplied in various ways. 1) Free supply, 2) supply with payment, and 3) supply from retailers. Spare parts are freely supplied by NGOs where Woredas they intervened. The regional water bureaus procuring bulk spare part items and distributed free of payment. It means that the Government subsidizing. While Bilateral such as UNICEF donates spare parts, and which is in turn is sold by Woreda Water Offices with a reasonable price. If spare parts are not available in any of the stock, the users buy from the market with two to three folds with poor quality. Some spare parts even could not be obtained in the stock and market, which associated with the standardization of materials.

It was also learnt that the water administration offices are suffered from the bad quality of the materials in the market. There is no anybody checking the quality of imported materials and issues for the accreditation.

3.10 Financing

In line with Community Based Scheme Management (CBSM), water users are expected to mobilize and manage funds for the maintenance of their water supply facilities. Management of funds at community level is one of the weakest links in effective O&M as it greatly hinders the collection of funds. At present most communities do not collect and keep funds in preparation for preventive maintenance and anticipated repairs. Instead they struggle to raise funds after a breakdown has occurred, usually resulting in long down-times.

In many cases caretakers could not undertake repairs and Woredas as well due to budget constraints and lack of technicians. Training and follow-up programmes need to emphasize financial management and accountability aspects. In addition communities need to be empowered to take disciplinary action when their funds are mismanaged or when agreements are not honored. Major repairs (including replacement) are also a major concern at present, particularly rehabilitation of boreholes. Under CBSM kebeles and Woredas are required to budget for and contribute towards the costs of major repairs when the need arises.

The Water Policy requires that Government (regional and federal) in the short run supports the cost of major rehabilitation, where this is beyond community capacity. The Regional water bureau's guidelines allow for meeting some costs of major rehabilitations. Unfortunately this facility has been greatly abused due to the inadequate details on utilization of these funds. More so the rehabilitation targets mostly the hardware ignoring the software and management aspects, which greatly reduces the chances of sustainability of the now rehabilitated structures. Specific guidelines have now been issued to Woredas on the assessment, classification of required work and supervision of borehole rehabilitation, which have reduced on the misuse of such funds.

According to the OWNPN plan, a total of USD 1,197,103,425 is required for rural water supply to achieve the target of 98% access. Enhancement of self supply requires an additional USD 8,598,098. The financial requirement is for reinvestment, program management, study and design, *post-construction support, capacity building, water quality monitoring, and catchment management/environmental safeguards* are determined in addition to construction and rehabilitation of water supplies for households, schools and health posts/centers. TA requirements for supply chain, communication, M&E and Pastoralist WASH are also included.

3.11 Gender

Collection and management of water for household use still remains a responsibility of the woman in many rural areas. The burden of disruption in water supply and O&M therefore also remains her problem. Numerous efforts have therefore been made to ensure the effective participation of women in planning and implementation to ensure delivery of appropriate services and sustainable systems. Successes have been achieved in the election of women on key positions on the WASHCOs, especially as treasurers (they are believed to be more trust-worthy than men), and the remaining activity is just to train them as HPMs or caretakers to maintain and repairs water supply facilities. Despite these achievements, many women in these instances are unable to effectively perform these roles as a result of inadequate preparation and support to take them up.

As WASHCO members, many lack the confidence, skills and time to participate effectively. Minimal advances have been made in trying to challenge the position of the women at home – they still have an enormous load of household duties which do not allow them adequate time to participate in meetings and trainings. Likewise, husbands are reluctant to let them do this work as it involves them spending a lot of time out of home in the company of men in isolated areas. To ensure practical gender integration, a more in-depth analysis should be done at different levels to assess clearly the gender issues that affect both men and women's participation.

The Water Policy provides for a plan at community level for ensuring meaningful involvement of women as one of the critical requirements in order to be provided with support. Ways need to be identified in which the women can be supported to effectively take on these new roles. At the national level, more firm commitment should be made in terms of positive policy direction, time, resources and action for it to be effectively taken up at the lower levels.

3.12 Institutional Support Requirements

The support from the Government as well as development partners especially, post construction is unclear and inconsistent. After handing over the scheme to the community, the support and follow up by local government bodies is found minimal. The O&M cost recovery demarcation is not properly set as a result the mandate of the community and the government becomes complicated. Budget for post construction support is not allocated, even some region allocates, it is very small amount in terms of per diem and logistic only. Proper, regular, and refresh trainings are not design and not hold a budget for it.

Experience has shown that leaving rural water points to be managed by communities on their own is a major factor in low functionality. There is a need for post-construction support with complementary roles for communities, the private sector and all levels of government to improve the functionality of rural water supplies together.

3.13 Monitoring and Reporting

This is a crucial function to be undertaken regularly at all levels in order that proper track is kept of the performance of the sector and actual achievements made. Findings of monitoring are relevant for realistic planning and timely remedial action. At present some monitoring is carried out at Federal, regional and Woreda levels, but this is not adequately coordinated. The MIS in MoWIE does not at present adequately fulfill the role of streamlining, collecting and organizing social and technical data from all levels for meaningful use. The monitoring approach should be simplified, though comprehensive enough to encompass technical as well as social parameters of functionality. Quantitative and qualitative information should be collected for integrated and sustainable action. The mechanisms for information collection need to be strengthened and the actual collectors (WASHCO, WWO, ZWO, Regional Water Bureaus, NGOs, etc) clearly identified. Monitoring of performance should also target making an inventory of best practices to be promoted and lessons learnt as did in 2011 and 2014 in Somali Region.

3.14 Capacity Building

Capacity building during the planning and implementation phase in most cases offered by the implementer of NGOs and Bilateral, but that is absent in Government implementing projects. To some extent the software part of the RPS like the Wulbareg-Sankura RPS is minimal with no office facilities, manual financial management etc that supposed to be provided by the implementer NGO.

Refresh training is totally ignored and not budgeted by both the local government and the water board in their annual plan. Since the turnover of the water board members and the staff high, refreshing training is mandatory.

3.15 Water Quality Monitoring

Water quality test conducted during the study period on projects implemented by NGOs, while it is even absent in Government implemented projects. Water quality monitoring and surveillance is totally ignored. Water quality test conducted only when some water born disease is outbreak.

4 STRATEGIC DIRECTIONS FOR O & M OF RURAL WATER SUPPLY

4.1 General

The MoWIE and/or Regional Water Bureaus recognise the direct links between improved operations and maintenance practices and the effectiveness and sustainability of water supply and sanitation services.

It is also recognised that O&M should not be viewed only as a technological or operational perspective but take into account other aspects associated with overall performance of water supply services.

There is therefore the commitment to undertake sound operations and maintenance practices, systems and procedures consistent with achieving sustainability in water supply service provision in Woreda”.

In order to alleviate the challenges listed in chapter 3 above, a clear strategic framework is needed to develop for operation and maintenance of rural water supply schemes as presented in subsequent sections below.

4.2 Guiding Principles

The strategy to achieve the objective is derived from three working principles:

- Consolidate community ownership and management of water supply services through adequate monitoring and back-up support from the Woreda and enhance maintenance and repair services by delegating critical aspects to the private sector that are local service providers;
- Communities should bear the full cost of O&M through the setting, collection and management of appropriate tariffs;
- The business of spare parts is currently not viable on its own and the revolving fund office/enterprise and involvement of private sector should be supported with measures that reduce transaction costs in order to promote the availability of spare parts.

4.3 Strategic Directions

The strategy for achieving the objective is the adoption of the following directions:

Improving O&M practices through the development and adoption of appropriate technical and human resource development measures that would strengthen (and fill the gaps and shortfalls of) existing operations and maintenance systems;

Improving funds mobilization to cover O&M through the adoption of rational tariff setting methods, revenue collection and prudent financial management policies;

Strengthening supply chains for spare parts, related goods and services to sustain O&M of water supply systems through the adoption of demand, supply and regulatory support measures; and

Reinforcing capacity for on – going institutional support: for the management of community water supply services through targeted capacity building and training.

4.4 Opportunities

The enabling factors that would drive the stakeholder’s capacity to achieve the stated objectives include but not limited to the following:

- Good sector policy, strategies and guidelines exist and can easily be refined and updated to raise the profile of O&M;

- Communities are capable and willing to pay for O&M if properly informed and motivated;
- Community management of water supply facilities is entrenched and is effective in many communities;
- Woreda Assemblies place a lot of premium on water supply provision and accordingly plan and budget for it;
- The private sector would seize the opportunities offered by the sector to supply services and goods once the incentives are right and demand exists as in the supply of other similar sectors (plumbing, hardware, transport);
- Area mechanics have proved very resourceful in undertaking complex repairs of handpumps;
- The Association of Water Boards has been successfully operating and can easily expand its services to support Water Boards.

4.5 Proclamation, Directive and Regulation

All regional states are expected to prepare and issue the descendant legislation of the proclamation, that are directive and regulation for establishment of rural potable water supply and sanitation associations and ensure the legal ownership and asset transfer of the community.

It is also recommended to retouch and amend the proclamations for establishment of rural water supply and sanitation service with the best responsive of the water policy that some proclamations gave more emphasis for urban water supply.

4.6 Raising the Profile of O&M

The objective of this strategic direction is to create awareness on the importance of O&M and provide incentives for stakeholders to play their role regarding undertaking or supporting O&M.

The issues: Enthusiasm for the provision of new water supply facilities is high among all stakeholders including communities, Woreda Assemblies and political authorities. However, once the facility is provided the initial excitement that was manifest from community mobilisation to commissioning of the new facility begins to decline at all levels. For as long as the water system functions and water is flowing at the pump, attention is removed from the water system and the procedures for ensuring sustained functioning is relegated to the background and very easily forgotten and ignored at all levels. Voluntarisms on the part of user communities exacerbate disinterest and lack of interest on the part of volunteer WASHCO members with the passage of time. Measures that would sustain the practice of needed O&M include but not limited to the following:

a) Community level

- Provide incentives through a system of awards to WASHCOs that are performing well with their O&M and funds mobilization by instituting a system of objective competitive criteria of selection of good performing communities;
- Consideration for provision of additional facilities must be contingent on evidence of proper management of existing facilities;
- Provide ongoing O&M extension services support to communities;
- Provide affordable incentives to “volunteers” responsible for O&M at the community.

b) Woreda level

- Criteria for Woreda selection for new systems should include adequate level of follow-up support to communities for sustaining existing systems.

c) Regional level

- A well-prepared advertising campaign should be mounted the entire country over a period of one year focusing stakeholder attention onto maintenance and increased motivation to pay for O&M.

4.7 Financial Management

In line with Community Based Scheme Management (CBSM), communities have the responsibility of operating and maintaining water supply facilities, including financial management aspect. It is therefore important that communities are involved in the choice of their water system and are made fully aware of the financial implications of operating and maintaining the scheme. They should therefore be supported to put in place transparent and sustainable financial management systems, and equipped with sufficient skills to be able to operationalize them. For further reading, please refer the Community Based Financial Managements Manual.

4.7.1 O&M Costing and Budgeting

The costs of maintenance of water supply facilities shall be borne primarily by the users. They will meet costs pertaining to:

- (i) Repair and replacements of worn out parts;
- (ii) Labour costs of O&M (caretakers, scheme attendants, handpump mechanics, etc);
- (iii) Administrative/ logistical requirements; stationary, public transport, fuel, per-diem etc,

The community may get external support from lower local governments or NGOs to meet those costs beyond their ability. These may include;

- (i) Borehole rehabilitation to include:
 - Desilting of borehole,
 - Fishing of dropped handpump parts (pipes and rods), and
 - Replacement of whole riser pipe.

The current O&M guidelines provide for carrying out such repairs, and procedures for accessing such support are in place.

- (i) Major extensions of piped systems;
- (ii) Refresher trainings for WASHCOs, caretakers and technicians; and

The communities can request for support in the above mentioned areas, adhering to the bottom up planning principles and the critical requirements of OWNPN. This can be planned for under the OWNPN of the Woreda development plan. As part of O&M plan development, communities should be facilitated to come up with realistic O&M costs. These vary according to the technology and age of the facility. Up to date information on costs of consumables, spares and labour is needed. A comparison with existing similar water systems may give a good indication of the costs to be expected. Costs should be forecast over a period to address daily maintenance requirements as well as allowing for savings for the future for major replacements. On an annual basis, communities may review their costs and expenditures to come up with more realistic estimates. There are various ways to come up with an appropriate tariff payable by users, which will cover the O&M costs. Depending on the specific situation and what the community finds appropriate, the tariff should be able to cover the main cost areas. Some guidance notes on calculating tariffs are given in **Part – C of the Community Based Financial Management Manual**.

4.7.2 O&M Funds Mobilisation

The objective of this strategic direction is to institute measures that will ensure that adequate funds are mobilized to cover the cost of operations and maintenance of water supply systems.

It is essential to encourage innovative and original approaches to O&M funds mobilisation, as communities are very resourceful when they are convinced of an idea. The blue print prescription by community trainers for payment at the pump has not worked in most communities, as these communities are generally not cash economies. The use of other revenue generating measures to support O&M has worked in some communities. Monthly or quarterly collection of O&M funds appears to be more adapted to the wishes of most community members than volumetric charge at the pump.

Other funds mobilisation methods that could be used to complement direct payment for water include but not limited to the following:

Various methods can be adopted for collection of funds depending on the nature of the community. The following are some examples of such methods of funds collection:

- (i) Fixed fee per household
- (ii) Fee per jerrycan
- (iii) Donations and Auctions
- (iv) Selling of produce
- (v) Woreda contribution
- (vi) Government grants
- (vii) When need arises
- (viii) Revolving funds

The method(s) selected by a community for collection of funds should be suited to their circumstances, and should be agreed by them at the planning stage.

4.7.3 Use and Management of Users Fee

One of the biggest challenges affecting user fees is the mismanagement of these funds, which may lead to users losing trust in the system and stopping paying. It is therefore important that beneficiaries have confidence in the management of their funds. Handling of funds needs to be done in a transparent way that can be understood by the community. Please for the detail, refer Community Based Scheme and Financial Management Manuals.

4.7.4 Keeping of O&M Funds

O&M funds can be kept in different ways depending on the regularity of collection and expenditure, amounts collected, security concerns and ease of access when needed. Where possible communities should open and operate bank accounts. When WASHCOs are needed to withdrawal of money from the Bank, the must get approval from the kebele or Woreda Water Office in order to protect the community money from abusing. See the details in the Community Based Financial Management Manual.

4.7.5 Transparency and Accountability

At an early stage the community should define clear roles for different WASHCO members in financial matters, and establish procedures for carrying them out. They should agree on who collects the fund, who keeps them, the process for approving payment, who checks records, etc. Penalties should be put in place for defaulters and fraudulent acts recognized by the community and Woreda.

For this to be achieved, simple records must be kept of user fees, including a provision for signing against their payments or through use of receipts. Likewise all expenditures should be properly recorded. This information should be shared with users as frequently as

possible during user meetings, or display of posters in public places, churches/mosques. Where a bank account is used the Bank statements should also be shared with users. This allows them check the records and seek clarifications, as part of their responsibility in financial management. As part of back-up support, the Woreda Water Offices should regularly check the financial records maintained by the WASHCOs for any mistakes or inconsistencies which results should be shared with users for information and action.

4.8 Monitoring and Back-up Support

The objective of this strategic direction is to ensure that communities are living up to their responsibilities in sustaining the water supply facilities provided and to provide information to communities regarding spare parts and other services.

The Issues: Lack of monitoring and back-up support service by the Woreda Water Office is a major handicap in community water supply systems. This has resulted in lack of information regarding the status of the systems. With communities left entirely on their own regarding operations, maintenance and funds mobilisation, compliance in preventive maintenance procedures cannot be enforced. This will result in major breakdowns in the near future requiring expensive interventions and possible rehabilitation. However, in the face of low funds available in these communities for major repairs, the systems risk being broken down for long periods. This would force community members to resort to unsafe traditional sources of water supply. Even for the few communities that have well functioning O&M systems and funds mobilisation, there is the need to continue ongoing outside monitoring and support to prevent them from falling apart due to diminishing enthusiasm with time. The alternative monitoring procedures that can be adapted to each Woreda situation are as follows:

a) Direct community visits

- Woreda Water Offices visit every community at least once in a six month to provide extension service and to monitor community compliance with preventive maintenance procedures, mobilization of adequate funds and management of O&M funds.

b) Indirect monitoring

- **Periodic meetings:** WWOs organizes periodic meetings of representatives all the communities (include caretakers) at least once every quarter at the level of the kebele. The meetings should accomplish the following:
 - Provide extension services to communities on O&M management, funds mobilization and management;
 - Disseminate and exchange information and experiences;
 - Gather information from individual communities on status of systems and other related pump problems encountered.
 - The findings from these general meetings would then be used to programme specific community visits to provide specific support requirements.
- **Using Area Mechanics/Local Service Providers:** Request Area mechanics to provide periodic returns on the work they undertake at the community level to the Woreda, and should include repair work undertaken, condition of pump and other related information from the communities they visit. This information will be analyzed periodically to determine what the major issues are with the communities and where to provide extension support. The Area mechanics would be provided with a standard format for reporting. To achieve this, a system of registration and certification for Area mechanics need to be established to ensure that they comply. Some limited support needs to be provided to AM to motivate them to submit reports. This support would serve other purposes such as assistance to access difficult to reach areas, as discussed further under supply chains.

- The preferred monitoring method is to undertake community visits since direct contact at the community offers the best prospects for redressing individual community issues. However, this method requires extra resources in terms of staff time, finance and transportation and therefore each District Assembly has to assess its capacity to achieve ongoing community support in the face of its limited resources and select or combine some of the measures outlined.

4.9 Supply Chains

One of the objectives with this strategic direction is to institute support measures that would strengthen appropriate stakeholder's ability to supply spare parts and O&M services effectively to the communities. This is done by establishment of Revolving Fund Office / Enterprise and Local Service Providers (Private Sector)

a) Definition

The Supply Chains Initiative is an emerging methodology for diagnosing and ensuring that the linkages between actors involved in the supply of goods and services for sustaining O&M are effective. An effective supply chain for goods or services is one that is perceived by the consumer or the provider to satisfy the following criteria:

1. **Availability:** Are there an adequate range of goods and services available whenever they are needed?
2. **Affordability:** Is the price reasonable and acceptable?
3. **Reliability:** Does the good or service meet expectations in quality and standards?
4. **Delivery time:** Should it be delivered quicker?
5. **Accessibility:** Is it within a reasonable distance of all users?

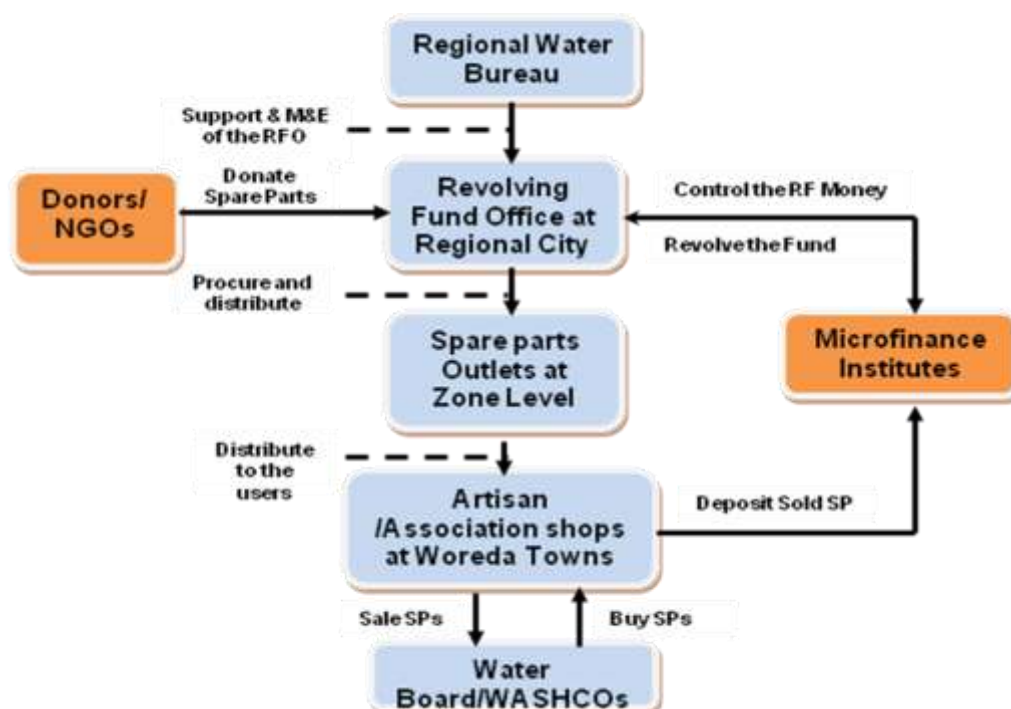
A supply chain is effective if one answer positively to all of the above criteria for the supply of goods or services. The proposed supply chains for the provision of spares parts and services are presented in figure below.

This framework recommended establishing Revolving Fund Offices/Enterprises (RFO/E) by each of the Regional States like what did by Tigray region for smooth and regular provision of spare parts at Woreda level. This revolving fund office/ enterprise will be linked with Private Sector local service providers who will take the spare part items, open shop at Woreda level and sale to WASHCO. It was also recommended that Regional states provide seed money for initial stock of spare parts and restock with pumps and spare parts using income from sales and services.

The Regional Water Bureaus should take the initiative to improve the supply chains for components and spare parts from the suppliers to communities. The approach being adopted is to support national manufacturers and suppliers to develop regional distribution networks in partnership with RFO/E for distribution of components and spare parts.

Communities / WASHCOs will pay for handpumps and its spare parts directly from the Woreda dealers (Local Service Providers) using their community contributions and the dealers/LSP will arrange for the delivery and installation. The WASHCO under the supervision of the WWO will then pay the remainder of the cost after completion of installation and repair. This approach is intended to increase the sense of ownership and ensure availability of inputs when required. See the respective manuals for detailed information in supply chains.

Figure 4-1: Proposed Spare part Management



b) Spare Parts

As a result of choice of partial commercialisation using the Regional Revolving Fund Office / Enterprise establishment option to supply spare parts, certain additional measures need to be implemented in order to strengthen the supply chain. In particular enhancing Regional and Woreda distribution links to ensure spare parts are available to the communities at affordable prices. The basis for direct market intervention by the public sector is minimisation of risks that are due to uncertainties in the demand for spares and the business potential for spares. Potential private sector/LSPs dealers should be supported through Microfinance Institute loan arrangement with start-up capital to finance the initial stock of spares.

The support measures can be grouped into certain multi-dimensional classification system as follows:

- Demand support measures that aim at supporting the degree of money-backed demand for spare parts at the community level;
- Supply support measures that aim at supporting the fledgling private sector with information, training and finance;
- Regulatory support measures that aim at improving the sector capacity to identify problems and make policy level decisions.
- The regulatory measures require the public sector (RFO/E) to impose certain rules of conduct including rules of business or performance requirements in the public interest and may include informal price controls, technical standards and quality control.

Table 4-1: Framework for Improving Supply Chain for rural Water Supply Schemes

Constraint	Solution	Strategic Action Required	By Whom

<ul style="list-style-type: none"> ▪ Inadequate distribution network for spare parts ▪ Poor Quality of spare parts ▪ High price of spare parts ▪ Non-uniform availability 	<ul style="list-style-type: none"> ▪ Strengthen spares distribution and support measures: <ul style="list-style-type: none"> ○ Create real demand for spares – planning by considering preventive maintenance ▪ Establish Revolving Fund Office/Enterprise ▪ Support to private Sector/local service providers; ▪ Impose business rules and performance requirements 	<p>Demand side:</p> <ul style="list-style-type: none"> ▪ Ensure preventive maintenance by communities; ▪ Provide extension support to communities; ▪ Monitor community affordability and willingness to pay <p>Supply side:</p> <ul style="list-style-type: none"> ▪ Establish Regional Revolving Fund Office/Enterprise; ▪ Open outlets ▪ Market information; ▪ Establish local service providers for spare part retailing and maintenance service ▪ Business support to the LSPs <p>Regulatory:</p> <ul style="list-style-type: none"> ▪ Quality controls and standards; ▪ Monitor RFO/E and LSPs 	<p>WWOs WWOs</p> <p>WWOs</p> <p>Regional Water Bureaus</p> <p>RFO/E RFO/E RWBs</p> <p>RWBs/RFO</p> <p>RWB RWB/ZWO/WWO</p>
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c) Supply Side Support Measures

4.9.1 Establish Regional Revolving Fund Offices/Enterprises

It was proposed in the assessment report to establish regional Revolving Fund Offices/Enterprises (RFO/E) by issuing proclamation, directive and regulation like that of Tigray Region to buy and seal spare parts and provide services which requires machines and equipment. The initial seed money is proposed to contribute by the regional government, Woredas, Water utilities, WASHCOs and NGOs.

It was suggested, if the RFO/E fully given the mandate in managing the supply chain of spare parts, an outlet at zonal level should be established. The distribution of spare parts is suggested to be through the LSP/association. These associations establish at Woreda level. The association as per the spare part demand requirement, purchase from the zonal stock of the RFO/E, and open shops at Woreda towns and then WASHCOs are proposed to buy spare parts from these LSP/ association shops.

In such a way that, the associations/LSPs endorse the sold money to the Micro Finance Institutes, from which the RFO/E takes and revolve the money in a year cycle.

The loan would be paid back gradually until the associations/LSPs dealer is self-financing. It would be necessary to establish requirements for minimum stock and minimum delivery period of stocks.

For further reading, a detail is found in Volume – I: Part – E Spare part Supply and Management Manual.

4.9.2 Private Sector Involvement (Local Service Providers)

Local Service Providers (LSPs) are associations established as entrepreneurs who do business with water-related services, such as area pump mechanics, plumbers, or traders of water-related technical equipment, auditing service and spare part retailer.

In many countries, private businesses fill the gap left by inefficient public water service providers, and play a critical role in supplying water to rural communities. These businesses – often microenterprises – charge cost-recovering fees and the profit margins often lead to much higher prices than formal providers would charge. Communities, thus, benefit from increases in service efficiency, outreach, and the reliability of these service providers. However, improved management and the scaling-up of these services depend on adequate access to financial and business development services.

In general, there are two basic requirements to be eligible to operate/service a water supply system in partnership with the Woreda and RFO/E. They are: the LSPs/Associations must be a legal entity and it must have license to operate a water supply system and sale spare parts.

The following requirements shall be satisfied to involve the LSP in the sector to operate, maintain and managed the community water supply schemes and sales spare parts.

These local service providers/Associations can be also perFO/Erm a service as an Area Mechanic/Technician provides technical support and advice for communities on maintenance and repair of rural water supply and irrigation schemes. They inspect the facilities with problems, identify the parts that need to be repaired, and replace or repair them. Costs of spare parts replaced as well as remuneration and incentive to APMs for maintenance and repair of facilities and spare part sales should be borne by communities and revolving fund office.

Detailed roles and responsibilities and linking with various stakeholders is found in Volume – I: Part – E Spare part Supply and Management Manual.

4.9.2.1 Support to spare Parts Retailers and Area Mechanics

The objective of this measure is to ensure the availability of genuine spare parts and technical services to pump owning communities by setting and enforcing some minimal standards of goods and services supplied through retailers, and area mechanics.

The measures include the following:

- Establish standards for retailers and area mechanics, including selection criteria, registration and performance requirements;
- Put in place procedures for ensuring enforcement of standards;
- Provide ongoing support to retailers and area mechanics including financing, transportation, marketing and networking;
- Assess spare parts minimum stock levels and composition at retail level based on number, type density of pumps and accessibility to Woreda centers and establish performance criteria for replenishment of stock (as presented in the manual);
- Assess ideal density of retail outlets per Region;
- Find ways of assisting area mechanics to reach difficult areas;
- Assess the possibility of using area mechanics to collect monitoring information;
- Assess the use of Area mechanics as retailers in areas where pump density might not warrant the establishment of a retailer;

- Area mechanics should provide returns to WASHCO, Kebele WASH Office and Woreda Water Office on activities they have undertaken for a period (3 months) and should include repairs undertaken, nature of repairs and spares used.

4.9.2.2 Monitoring of spare parts supply situation

Provide all stakeholders with information on regional (and national) situation of spares of different pumps, compare with forecasts, and evaluate whether policy measures are working.

Action: Establish spare parts supply monitoring system, including identification of data collection needs, means of collection, procedures for analysing data and reporting format and this should preferably be at the Regional RFO/E level.

4.9.3 Monitoring community affordability and willingness to pay

Develop information systems to keep stakeholders informed on affordability and willingness to pay status of communities. Information is used to facilitate intervention and appropriate timely action when affordability and willingness to pay becomes problematic. The support measures include the following:

- Develop database and conduct baseline survey followed by ongoing monitoring to assess community ability to pay for spare parts at the Woreda level;
- Develop model community budgets supported by Woreda and Regional based collection of price data.

4.9.4 Provide extension services support to communities

Improve the ability of Kebele WASH to provide advice and information to communities in WASH in particular on maintenance, financial management and accountability. Encourage preventive maintenance and improve revenue collection and management of funds; Information on where to obtain assistance on repairs, obtaining spare parts etc.

Action: Provide on-going comprehensive extension support services to communities. This activity should be part of the duties of Kebele WASH Office with support from Woreda WASH Office.

Market information

This would improve availability of accurate information and data for use by private sector participants with up to date register of pumps in service, type and age, spare parts availability, source of services.

Action: Establish market information system and conduct special studies to record information on installed handpumps, annual updating of potential minimum demand forecasts based on actual sales and schedule for preventive maintenance, information on consumer attitudes and practices that would affect the demand and supply of spare parts. This activity is better undertaken by WWO with support of projects or other funding agencies.

4.10 Institutional Support Requirements

In order to ensure success of CBSM, it is important that back-up mechanisms to communities are established. Necessary support should be given to ensure continued functioning of established structures and facilities. HPMs, and pump attendants are required to carry out the maintenance and repair tasks, and spare part dealers (that are LSPs) to supply the required spare parts. Woredas need to provide technical and other guidance to communities, and assist in sourcing major repair services. Continuous follow-up is required to support the communities and WASHCOs carry out their roles, to bring in new ideas, and to reactivate dormant WASHCOs.

At the national level, MoWIE is required to have a mechanism to disseminate relevant information and monitor the performance of the O&M systems around the country, intervene to support Woredas where required, and initiate or adopt measures to improve the systems, if necessary. It also needs to coordinate with all players in the sector, including NGOs and the private sector, on O&M issues. This requires the strengthening of the O&M function within MoWIE and Regional Water Bureaus.

Community management requires ongoing institutional support. It must not be assumed that once a community has been 'sensitized', 'mobilized' and 'harmonized' it can be left alone to manage its own water supply. It should also not be assumed that a sense of ownership will lead automatically to a sense of responsibility and willingness to finance and manage. If community management systems are to be sustainable they require ongoing support from an overseeing institution to provide encouragement and motivation, monitoring, participatory planning, capacity building and specialist technical assistance.

What comprises 'support'?

The first step is to recognize that support is required if community management is to deliver sustainable solutions. The second is to determine what that support should entail. Appropriate institutional support comprises the following components:

- Encouragement and motivation;
- Monitoring and evaluation;
- Participatory planning;
- Capacity building; and
- Specialist technical assistance (including financial support where required).

Institutional support is best provided by a local government institution, although where this is not possible an NGO or stakeholder group can fulfill this role.

Appropriate legislation may also be necessary to establish community-based organizations as legal entities which legally own the systems they manage.

4.11 Legalizing Rural Water Board's and WASHCO's

Legalization of water boards and WASHCOs is needed to be address in the proclamations, directives and regulations that the regional states issues. It has given little attention.

Transfer the ownership of schemes to W&S Associations: The ownership of RWS schemes should be handed over to rural potable water supply and sanitation association and/or user committees that ensuring the real feeling of belong. Training should be provided to boards and administration offices on technical, accounting, and procurement procedures. To improve the functionality and sustainability of schemes, it is important that the assets belong to and are operated by the associations.

The minimum contents of WASHCO legalization is presented in the manual as well as in the assessment report.

4.12 Develop Appropriate Norms and Criteria

Operation and maintenance is highly affected by the poor planning, study, design and construction quality. Water sources are depleted or vanished, Pumps failed; pipes are burst; structures are cracked and etc. These are due to the absence of consistent norms, standard and criteria; and coupled with poor contract administration and construction supervision. it contributed for the shortening of the life of the schemes and high O&M costs. Such problems were confirmed during the consultant visit various stakeholders and RPS schemes in the entire nine regions.

Thus, according to the water resource management policy, the Ministry of Water, Irrigation and Energy is need to develop guidelines for the study and design with the design criteria

and norms and manual for contract administration and construction supervisions, and region water bureau disseminate and cascading to down to the Woreda.

4.13 Planning for Preventive Maintenance

There are multiple misconceptions about the benefits of preventive maintenance. One such misconception is that preventive maintenance is unduly costly, time consuming, or causes disproportionate work. This logic dictates that it would cost more for regularly scheduled downtime and maintenance than it would normally cost to operate equipment until failure or repair is absolutely necessary. This may be true for some smaller equipment components; however, one should compare not only the costs but also the long-term benefits and savings associated with preventive maintenance.

Without a sound preventive maintenance program, labor costs for lost water production time from unscheduled equipment breakdown will be incurred, damages to equipment can be much more severe and potential negative treatment process and/or regulatory ramifications can be unacceptable to the customer and costly to the system.

This was what observed during the field assessment of the Consultant. A very one good example was the Siraro RPS, which the pumps and pipes have been frequently broken-down as a result, technicians and plumbers have been found very busy in corrective maintenance.

Thus, preventive maintenance planning in the annual plan should be done by knowing the assets management principle. Spare parts requirements depends on the preventive maintenance plan for each of parts replacement schedules as presented in the manual.

4.14 Water Quality Management

Water quality monitoring and surveillance is one of the forgotten activities in the visited rural water supply schemes. No one has given attention unless some water born related diseases outbreak.

The strategies to ensure drinking water quality will broadly be protection, monitoring and surveillance and treatment. Improvement programmes should be based on village water safety planning and implementation with verification by water quality testing.

The Regional Water Resources Bureau, in coordination with Federal Ministry of Water, Irrigation and Energy (MoWIE), will strive to make the national water quality standards mandatory. This involves strengthening existing legislations and also issuing necessary guidelines to the service providers. Water quality monitoring and enforcement will be part of the regulatory mechanisms existing/ designed by various agencies.

Water Quality Cells need to be set up in each regions manned by technically qualified staff with expertise in testing and treatment of major chemical and biological contaminants found in the region.

Water quality data will be recorded at WWO level in the WASH IMS data base system and pass to the region and then to the MoWIE MIS. Educate the community in household water treatment and safe storage through water extension workers or Health extension workers.

4.15 Building Professional Capacity

4.15.1 Training

The MoWIE through the consulting firm has developed various O&M management manuals to capacitate the various stakeholders involves in O&M management of rural water supply schemes. These manuals further disintegrated to training modules. The regional water bureaus, zone and woreda water offices should arrange to deliver a combination of class room and field based training programmes. The training should not be a onetime training, rather should be offered in regular basis as a refreshing training to the already participated persons as well as for the new participants.

4.15.2 Technical support

The regional water bureaus, zone and woreda water offices, NGOs need technical support to help the RFO, LSPs, WASHCOs, RWBs and the communities plan and implement and maintain rural water supply systems. This can be facilitated by provision of spare parts, tools, equipment, resource persons, follow up, supervision, monitoring and evaluation.

4.15.3 Outsourcing

Regional Water Bureaus should be guided to explore options to access professional experience and skills for operation and maintenance, distribution of spare parts, auditing service. MoWIE should support the Regional water bureaus with appropriate knowledge and tools to prepare, tender and manage service agreements with community based, public or private handpump mechanics, contractors, piped water supply operators and other service providers. Care should be taken while drawing up such service agreements that the basic requirements of poor households to minimum service levels are not violated under any circumstances. Detailed guideline should be prepared to contracting the private sector (associations)

4.16 Monitoring and Reporting

This is a crucial function to be undertaken regularly at all levels in order that proper track is kept of the performance of the sector and actual achievements made. Findings of monitoring are relevant for realistic planning and timely remedial action. The assessment revealed that at present some monitoring is carried out at Regional and Woreda levels, but this is not adequately coordinated. The database management at WWRO does not at present adequately fulfil the role of streamlining, collecting and organising social and technical data from all levels for meaningful use.

Box 1: Key aspects to monitor RWS System

☛ **To create more sustainable services at scale, three key aspects to monitor are:**

- ✚ the services received by users – usually in terms of quantity, quality, accessibility and reliability over time;
- ✚ the performance of service providers or operators – fulfilment of basic technical, financial, management and organisation functions necessary to deliver a sustainable service; and
- ✚ The performance of the service authority (WWRO) – fulfilment of planning, coordination, regulatory and support functions necessary to ensure the establishment and performance of service providers.

5 PLANNING FOR OPERATION AND MAINTENANCE

5.1 General

Inadequate planning can significantly affect the success of an effective CBSM. Key O&M aspects need to be defined right from the identification stage through the implementation phases. In order to ensure that O&M aspects are streamlined in all stages of operation, it is important that like other activities they are planned for.

Through planning communities are able to make more informed technology choices looking at their abilities; their specific needs to fulfill their roles in O&M are identified and catered for.

Mobilization and training activities are streamlined alongside other implementation tasks to ensure their timeliness. The quality of the facilities is an important consideration from the outset, as a well constructed facility allows for more effective CBSM.

In addition the management of water from the catchment to point of consumption should be addressed to ensure maximum benefits from the facilities that are addressed in Manual of Water Safety Plan (WSP).

It is generally agreed that most rural communities cannot at present afford to meet the full costs of replacement and that there is need for external support to meet such costs. Government acknowledges this and has made a provision within the current conditional grants funding for major repairs beyond community capacity. These include replacement of complete handpumps, and borehole de-silting and repairs. It is important in O&M planning to clearly identify what aspects are to be financed by whom. The sections below outline how O&M issues should be planned for and integrated in the different stages of implementation.

5.2 Considerations along the Cycle

5.2.1 Planning Phase

- (i) Hold advocacy meetings at both the Woreda and Kebele levels at the outset creating awareness and demand for water and sanitation services. Such meetings should target balanced participation of women and men, and should raise awareness on the:
 - Link between clean water, the health benefits derived and therefore the monetary benefits accruing;
 - Ownership, responsibility of community towards O&M, relevance of community contribution as sign of commitment;
 - Assessment of the O&M status; factors affecting functionality;
 - Benefits of proper hygiene and sanitation;
 - guidelines and steps for mobilization of communities;
 - Planning procedures, guidelines and conditionalities for accessing funding under different programmes.
- (ii) Identify and appraise community priorities at various levels and integrate into Woreda development plans. Part of the appraisal criteria should be the ability to effectively maintain facilities and also meet the critical requirements of the OWNPN.
- (iii) Feedback to communities on approved plans / choices.

5.2.2 Pre-Construction Mobilisation and Training Phase

- (i) As part of the community needs assessment to guide in decision making on technology choice, allocation of facilities and input in planning for sustainability:
 - Assess community capacity and willingness to pay and factors that can affect it;

- Map existing water and sanitation facilities and analyze ongoing O&M practices and challenges, population to be served (numbers, location), socio-demographic characteristics, institutions;
 - Share information and facilitate discussion on the costs (investment and maintenance) and management and maintenance implications of the different technologies;
 - Development of water and sanitation action plans.
 - Formation of WASHCOs, identification of attendants, Local Service Providers – LSPs who perform as masons, plumbers and/or mechanics to be trained; - ensure gender sensitivity;
- (ii) During sitting and verification of water sites assess:
- Feasibility of the water source in terms of:
 - Water quality as per the Ethiopian Standard guidelines as well as community perceptions,
 - Adequacy and reliability/ consistency in water supply, and
 - Appropriateness of site for optimal accessibility and ease of water collection); and
 - Suitability of the site in terms of:
 - Optimal walking distance, as per the UAP/GTP,
 - Accessible during all seasons,
 - Risk of contamination, need to follow Water Safety Plan
 - Cultural issues, and
- (iii) During mobilization and sensitization of communities apply deliberate strategies to target effective participation of men and women. Ensure:
- Sensitization on ownership, benefits of clean and safe water, link between clean water, health benefits derived and therefore the monetary benefits accruing, O&M obligations;
 - Finalization of user lists;
 - Mobilization of community contributions to capital investments;
 - Consultation on appropriate O&M management systems to adopt in development of the O&M plan; and facilitate community meetings to develop bye laws and plans;
 - Verification to ensure feasible and viable O&M plan in place; and
 - Fulfillment of all critical requirements.
- (iv) Signing of MoU with successful committees stipulating their roles and commitments towards O&M to be fulfilled.

5.2.3 Implementation – Construction Phase

- (i) Continued mobilization and sensitization of communities on:
- Sensitization on ownership, benefits of clean and safe water, link between clean water, health benefits derived and therefore the monetary benefits accruing, O&M obligations, Roles and responsibilities; and
 - Maintenance of water facilities.
- (ii) The training curriculum for WASHCOs, HPMs, Operators and attendants etc should be geared towards preparation of communities to fulfill their roles during both the mobilization and the O&M follow-up phase. Special attention should be paid to:

- Roles and responsibilities;
 - Technical skills, financial management, reporting, record keeping, monitoring;
 - Hygiene and sanitation promotion and monitoring;
 - Mobilization, communication, management and leadership skills;
 - Importance of regulatory aspects e.g. WASHCO constitution and by-laws;
 - Maintenance requirements of the different technologies i.e. preventive and curative aspects, maintenance costs over a period of time;
 - Importance and planning for O&M; and
 - Review and finalization of O&M plans.
- (iii) During construction monitor the quality of materials and work being done.
- (iv) All through implementation monitor integration of key O&M aspects. Reporting formats should include components on functionality surveillance.
- (v) Before commissioning can take place ensure:
- WASHCOs are in place and functional;
 - Communities are sensitized on proper and safe handling of water (safe water chain);
 - O&M plan is in place showing how the facilities and systems shall be maintained;
 - One year O&M funds have been secured;
 - Water source is functional; and
 - Follow up arrangement in place.
- (vi) Commissioning should be carried out to emphasize the ownership and CBSM aspects.

5.2.4 Post Construction – O&M Phase

- (i) Provide support supervision and review on-going O&M approaches.
- (ii) Plan for and support repairs, replacements and rehabilitation
- (iii) Plan for and support replacement and (refresher) training of WASHCOs, Caretakers, scheme attendants, HPMS, etc.
- (iv) Monitor aspects of:
- Use of water;
 - Functionality of the facility (technical, management, financial management and transparency);
 - Interventions (technical and regulatory) taking place, both successfully and unsuccessfully;
 - Quality and quantity of water; and
 - Benefits realized from improved services (impact).
- (v) Take any necessary remedial action according to findings.

5.3 Operation and Maintenance Phases

In line with the government's continued drive to sustainability of facilities, it is a requirement that each user community develops five (5) year O&M plan before it is assisted to develop a water supply facility. This is a plan showing how the water supply facility will be maintained and sustained to ensure continuous reliable operation over a period of time.

It defines what (activities) will take place (when) by different actors, what kind of costs shall be incurred and how the resources will be mobilized. In subsequent discussions stakeholders agreed that 5 years is too long to be realistic at community level, and that a three (3) year O&M plan is more realistic and should be prepared instead. However it should focus on O&M cost recovery and the lifetime costs of managing and maintaining the facility.

After the village has been short-listed based on their application for support, it shall be facilitated through a discussion on alternative water technologies, their costs and O&M requirements for them to make a realistic choice based on affordability and cultural appropriateness. When the WASHCO has been formed and trained, then discussions on the O&M plan can commence. The user community should develop the O&M plan with support from both the Kebele extension workers and Woreda Water Office staff. This plan shall be verified for its viability before a water source can be constructed.

The O&M Plan should include at least the following components:

(a) Description of the water facility

- Location; name, type of technology, geographical location, GPS coordinates
- Components of the facility (for piped supplies, also specify geographical location of different components)

(b) Management structure

- Details on users / beneficiaries; statistics,
- Composition, term, roles and procedures (meetings, allowances, sanctions, etc) of the WSC/WUA
- Replacement mechanism for the WASHCO/WB
- Other actors involved in O&M of the water supply facility and their roles

(c) Description of O&M activities

- Type and frequency of occurrence
- Requirements to carry out activities (personnel, materials, equipment, costs)
- How to ensure users participate in O&M activities and make their contributions, and how to handle those who do not comply
- Where and how to access handpump mechanics/plumbers and spare parts when required
- Where and how to access extension workers when required for training, follow-up support, etc

(d) O&M budget

- Expected income and sources (community, benefactors, government, etc)
- Expected costs (minor and major maintenance; repair and replacement)

(e) Regulatory issues (by-laws, agreements with LSP/HPM or other actors)

(f) Environmental issues

Since WASHCs are at present not legal entities, the O&M Plan should preferably be ratified by the Woreda Water Offices to give it the required status. The following information is required in order to prepare a realistic plan:

- list of preventive maintenance activities necessary to be carried out for the different water technologies
- up to date costs of spares and where they can be accessed
- life span of the different components of the facility

- update list of users
- information on alternative sources of funding
- monitoring indicators that can be reviewed together with communities before they are adopted

5.4 Preparation of Action Plan

5.4.1 Introduction

It is important to emphasize that Woreda O&M Action Plan, which will be prepared under the guidance of this framework, refers to plans and budget related only to improvement of the O&M component, while OWNPN comprehensively covers other plans and budget such as construction/rehabilitation of rural water supply facilities, development of information management system, and sanitation.

5.4.2 Stages to Prepare O&M Action Plan

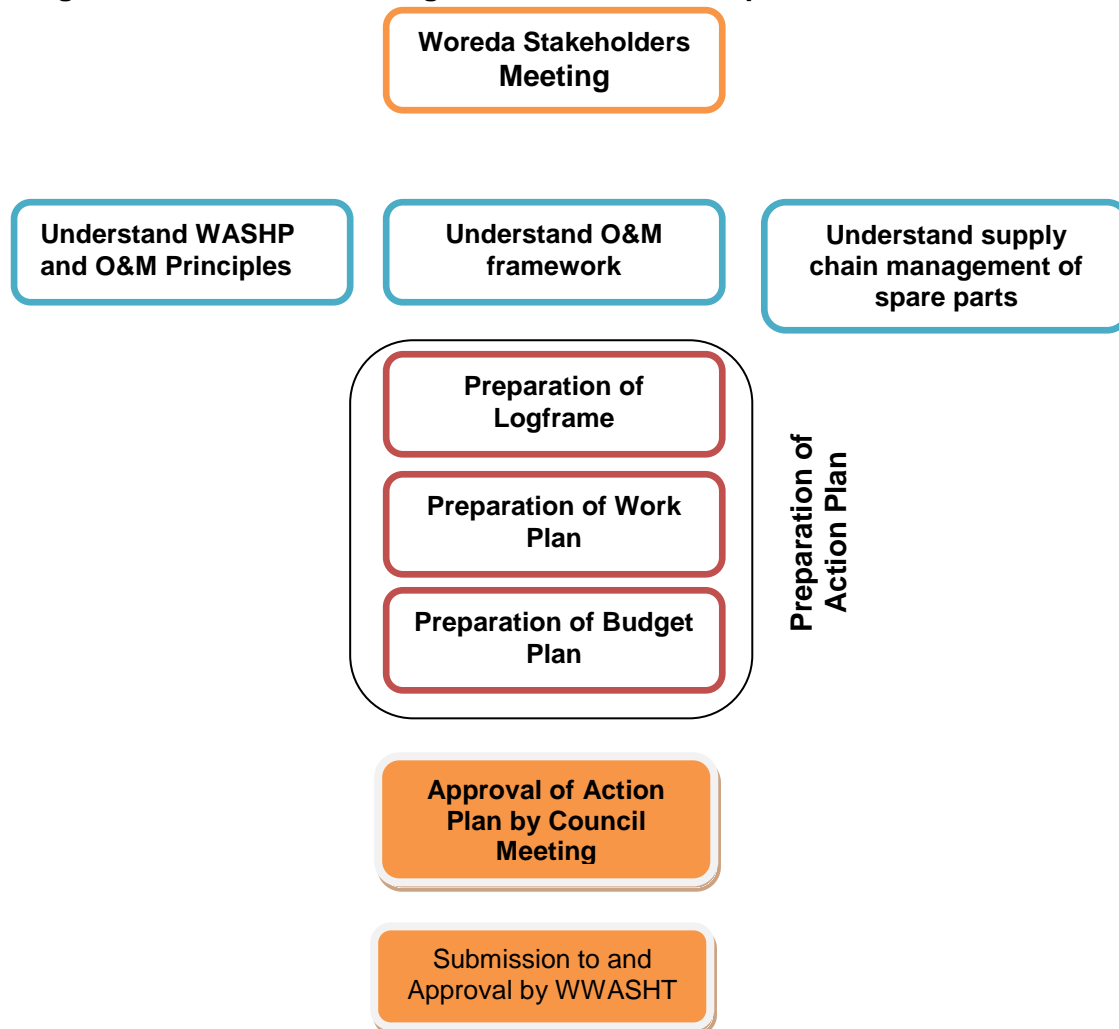
The most important aspect of O&M is the preparation of actual action plans. Table 8-1 below explains the flow chart for preparation of the Action plan.

Table 5-1: Flow chart for preparation of O&M Action Plan

Stages	Activity	Objectives
Stage - 1 Adoption of National Guidelines	1. Adoption of Water Supply O&M principles	To understand and agree of WIF, OWNPN and O&M principles
	2. Adoption of O&M guidelines and Mechanisms to be established	To understand and agree on O&M guidelines for implementation
	3. Adoption of principles of supply chain of spare parts	To understand and agree on supply chain management manual
Stage – 2 Analysis	1. Baseline data & IMS	To obtain current situation and data regarding RWS O&M
	2. Problem analysis	To identify gaps/ problems
	3. Adoption of ideal O&M system	To redefine roles and responsibilities, and agree on ideal O&M mechanism to establish
	4. Action/ solutions	To develop O&M Outputs & activities
Stage – 3 Transform O&M solution to Action plan	Logframe	To specify objectives, outputs & activities to implement
	Proposal	To illustrate strategies & methodology to implement each Output & activities
	Work plan	To illustrate implementation schedule
	Budget	To justify necessary funds to implement outputs and activities

Figure 5-1 further illustrates the stages involved in preparation of O&M action plan, the frameworks and concepts to be understood by stakeholders, and the composition of the actual action plan to be submitted to Woreda WASH Team (WWT).

Figure 5-1: Flow chart of stages for Action Plan Preparation



5.4.2.1 Step 1: Understanding of OWNPs and adoption O&M of principles

Most aspects of stage 1 (Awareness & adoption of WIF, O&M guidelines and the principles of Supply Chain management manual) are conducted by Program Support Teams through orientation workshop organized for Woreda stakeholders.

Stakeholders

The stakeholders meeting for introduction of O&M Component activities shall be held with the following stakeholders but not limited to

Woreda WASH team and WASH Coordinator:

- Woreda Cabinet,
- Water Desk
- Health desk
- Education Desk,

- Woreda Finance and Economic Development,
- Women Affairs,
- NGOs working on the area

Issues to be Discussed and Agreed

In the Stakeholders meeting, the issues to be discussed include but not limited to the following, and the consensus shall be made among all stakeholders.

National Frameworks

All stakeholders have to understand frameworks stipulated in the documents described on table below:

Table 5-2: List of references for National Guidelines

Name of documents	Notes
National Water Supply, Sanitation & Hygiene Implementation Framework (WIF)	National WASH Programme document for rural water supply and sanitation
National Guidelines for Sustainable Operation and Maintenance Management (O&M Guidelines)	General guidelines for O&M activities with standard roles and responsibilities. This manual can be expanded as a national guideline.
O&M Component Implementation Manual for RWS	This manual: Implementation guidelines and O&M capacity building activities
Supply Chain Management Manual for Rural Water Supply (SCM Manual)	Instructive manual on how to establish and manage spare parts supply chain for hand pump
Decentralization Policy	The way forward on development, devolved responsibility to Woredas and Sub-structures
One WASH National Program	All stakeholders are implemented WASH program in one umbrella: One Finance, One Plan, One report principle
Growth and Transformation Plan (GTP) @ Universal Access Plan for the sector – 2020.	Developmental goals of the sector, and achievement of GTPs

As a result of discussion, stakeholders should agree on framework, implementation process, roles and responsibilities. This agreement should be clearly recorded in form of minutes of meeting. In general, stakeholders may organise series of meetings to discuss overall issues of RWS. In such a case, Council Secretary has to make sure that process of discussion is recorded chronologically.

5.4.2.2 Stage 2: Analysis

The analysis stage has three interrelated parts describe as follows:

Part - 1: Utilization of Baseline data

Woreda should clarify institutions, organizations, groups, and people involved in operation and maintenance of RWS facilities in the Woreda. It is understood that although the O&M proper is not yet established or implemented, there is something happening at grassroots, some kind of repair work that communities are doing to continue accessing water from

existing hand pumps. Therefore, based on their baseline information and IMS data, WWOs should carry out inventory of the prevailing situation and or practices of O&M.

Part - 2: Problem Analysis

Problem analysis is the process to analyse the gap between the current situation and the ideal situation. There are many ways of problem analysis which lead to identification of gaps, and to develop solutions to realise the ideal situation. Examples are: (1) Table format for participatory planning, (2) SWOT analysis and (3) the Logical framework approach.

1) Table for Participatory Planning

Table 5-3 below describes a simpler way of participatory planning that could be used for identification of gaps between actual and the ideal situation.

Table 5-3: Format for participatory planning

Core O&M issues	Actors	Expected Role/ Responsibilities	Identified Gaps between Actual & Expectation	Solutions
Availability of spare parts	WWOs WASHCOs	Procure & sells spare parts Replenish spare parts	There are no spare part in the Woreda Hardware shops do not stock hand pump spares	Establish spare part shop Advertise availability of spare parts to community
Availability of tool kits	WWOs WASHCOs	Procure tool kits Distribute tool kits to WASHCOs centres/APMs	There are no tool kits in the Woreda Hardware shops do not stock hand pump tools	Procure and distribute tool kits to WASHCOs
Community contributions	Community Caretaker	Contribute O&M funds Manage properly O&M funds	Users do not make enough contributions	Sensitize communities on O&M
O&M monitoring	WWO	Develop monitoring tools for O&M Monitor WASHCO O&M activities	Monitoring tool not well defined	-----
	WASHCO	inspection of water points Prepare & submit report to WWO	There are monitoring forms for use by WASHCO	Develop tools & conduct WASHCO training on O&M monitoring
	APMs	Prepare reports on Number of faults received and action taken and submit to WASHCO	APMs do not have Monitoring forms APMs Not well trained	-----
	Caretaker	Carry out minor repair works	Caretaker not well oriented on roles/responsibility	-----
Skill/knowledge (capacities)	WWO	Perform their roles/resp on O&M	Woreda-WASH are not trained on O&M	Conduct training on O&M of H/pumps for Woreda-WASH
	WASHCO	-----	Do not have capacity to perform their roles/resp	-----
	APMs	Repair & maintain hand pumps	APMs not well oriented on roles/responsibility	-----

	Caretaker	-----	-----	-----
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2) SWOT Analysis

SWOT analysis involves carrying out a review of available stakeholders, their roles and responsibilities as well as the programmes that are on-going by considering their strengths, weaknesses, opportunities and threats as illustrated on table below.

Table 5-4: SWOT Analysis

Actors	Strengths	Weaknesses	Opportunities	Threats
WASHCO	Availability of WASHCO members in community	Not all wards have WASHCOs in place	Annual budget by WWOs include formation of WASHCOs	WASH Technicians as WASHCO members belong to MoWE and holding them accountable for submission of report is a challenge
-----	-----	-----	-----	-----

3) The Logical framework approach

This approach involves 3 major aspects namely: a) the Problem Tree, b) the Objective Tree, and c) the Project selection. The detailed methodology and steps to develop O&M action plan using the logical framework approach.

a) Problem Tree

Problem Analysis visually presents the cause and effects of existing problems in the form of Problem Tree. To develop this, you identify the core problem, and then write down the direct causes of the core problem. This is followed by a determination of the direct causes of the 'direct cause' of the core problem as illustrated in Figure 8-2.

Explanation of how to state problems identified

Causes and effects of problems ultimately lead to the core problem. When you prepare problem tree for analysis, you should state the problems in detail. For instance, instead of saying "inadequate number of APMs" in general, you should state: "Number of APMs in Catchment A, B and C is not enough" highlight the number of APMs that are lacking in a particular area. A sentence like "spare parts for repair of hand pumps are not available for community members" will make the situation and problems more specific rather than writing "spare parts are not available". Thus, Problem Tree (Figure 8-2) should be well phrased to illuminate specified problems.

b) Objective Tree

After the Problem Tree analysis, the next step is to prepare an objective Tree as illustrated in Figure 8-3 below;

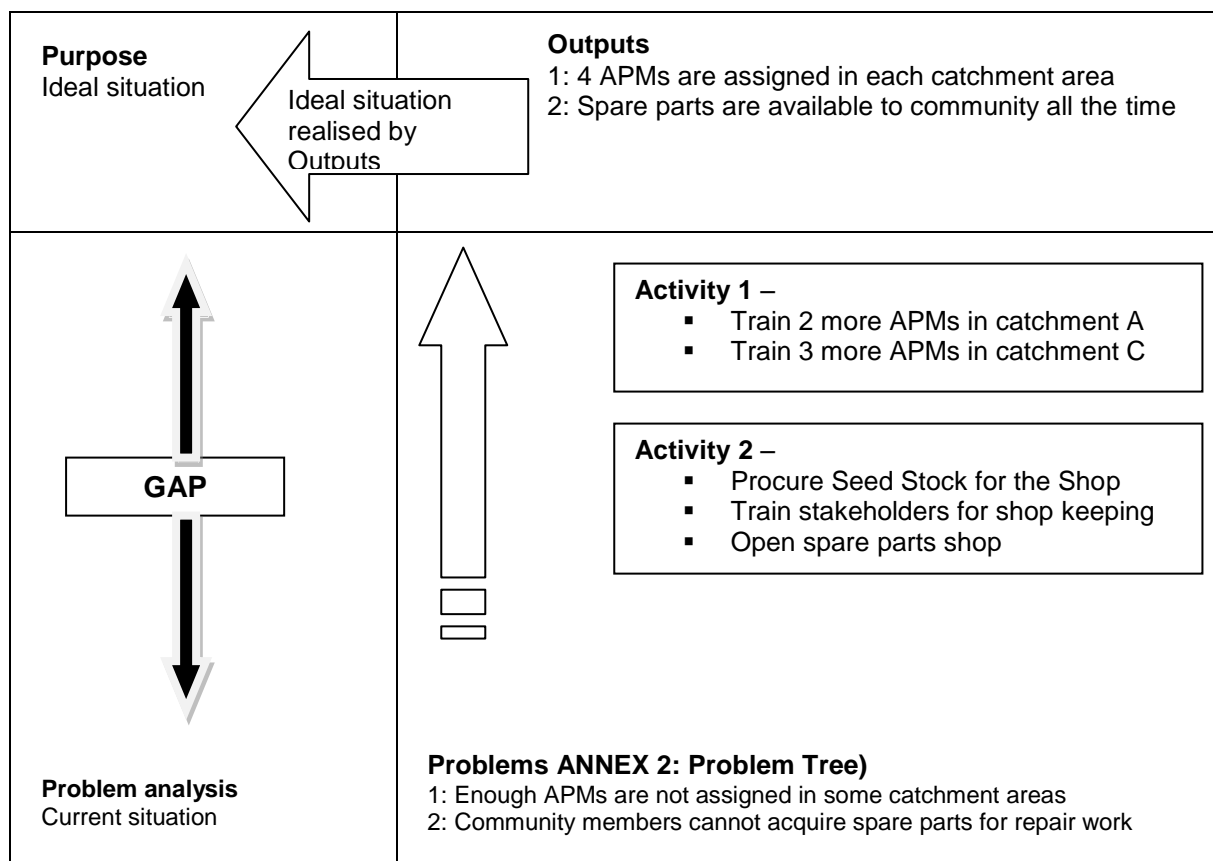
- An objective tree is developed by taking a problem tree and replacing cards showing "cause-effect" relationships with cards showing positive "means-ends" relationship.
- Objective analysis clarifies the "means-ends" relationship between the desirable situation that would be achieved once problems have been solved and the activities for attaining it.

Aims to display all possible solutions and forms the foundation for the project's specific strategies. In short, this forms the basis for developing Outputs and activities to be carried out.

5.4.2.3 Stage 3: Transforming problems/solutions into Action Plan

Results of stage 1 & 2 (Adoption of National guidelines and Analyses of data) lead to development of Outputs and activities. These outputs and activities are solutions to the identified problems, and should be transformed into Action plan. The Action Plan constitutes of the Narrative Proposal, Log Frame, Work Plan and Budget Plan. This will be illustrated as results of problem analysis. Conceptual framework of Logframe is illustrated in Figure 8-4 with reference to preparation process of Action Plan, and how Logframe is designed to bridge the gap between current situation and ideal situation.

Figure 5-2: Conceptual Framework of Logframe



Logframe

The Logical Framework method is a tool for managing the entire cycle of a development project - from formulation and implementation to evaluation - by means of Logical Framework. It is commonly referred to as Project Design Matrix (PDM).

The Logical Framework shows the Objectives, Activities, Inputs and other components of project, together with their logical interrelations.

Narrative Proposal

This is a descriptive summary of the O&M Action Plan (Logframe, Budget and work plan) to explain Woreda information, Outputs, Objectives, Activities to be carried out, Methodologies and approaches or strategy for implementation and the expected Outcomes. Table 5-5 below illustrates components of the narrative proposal document to be prepared on O&M activities. For detailed information on these activities refer to Implementation section of this manual.

Table 5-5: Format of Narrative Proposal

Major Items	Description
Background Information/ Woreda profile	Provide Woreda data on RWS, stakeholders involved and any other relevant information regarding the Woreda situation analysis, overall objective of O&M, Purpose and problem statement/ justifications
Summary of O&M activities: Summarize the Outputs and activities to be conducted as below	
Name of Output, and Number	Write the Output number and the title (Name) of Output as indicated on the Logframe
Objectives	Write the objectives of the Output. Each output has its own objectives
Target group	Indicate the target (beneficiary) group for the activities outlined for this Output
Methodology/approach	Describe how you will carry out activities under this Output, who will be involved, how many persons will be involved in implementation, what will be done, and where and when activities are likely to be conducted. This includes selection criteria for the target group and the number of sessions or phases for conducting activities. The significance of this section of proposal is that it provides information on how to plan and prepare your budget. It also provides strategy for implementation such that even if there is change of staff, anybody who takes over will be able to be guided without difficulties
Expected Outcomes	Describe and explain what you expect to achieve, or the results expected after conducting these planned activities for this Output.
Budget Summary	In summary, describe the budget and its allocation to Outputs and activities

Work Plan

Planned activities under Logframe should be presented in a form of Gantt-chart. The Gantt-chart will help Woredas to overview entire implementation process and to monitor the progress of implementation. This Gantt chart is called the Work Plan and its format is presented in Figure 5-3.

Figure 5-3: Work Plan

No.	Activities	Duration	Person in charge		January				February				March			
					1	2	3	4	1	2	3	4	1	2	3	4
1				Plan												
				Actual												
2				Plan	■	■	■	■	■	■	■	■				
				Actual												
3				Plan												
				Actual												
4				Plan												
				Actual												

Planned duration should be shown in dotted line or by shading the boxes. Similarly, duration of actual implementation is entered by putting a continuous line or by shading using a

different colour. Progress for implementation of activities should be monitored all the time and each output should have its own work plan sheet.

O&M Budget plan

Woreda WASH Team is required to prepare comprehensive budget to carry out O&M activities in the Woreda, not restricted to specific areas. The plan will be implemented within the framework of WIF and as a part of its O&M component of the Woreda RWS budget plan.

Woreda WASH Teams are further advised to follow the laid down accounting and budget systems within the framework of the government guidelines.

However, for the purpose of information sharing, the following format/template of budgeting and categorisations of cost areas which was used under.

Table 5-6: Definition of categories

No.	Category	Definitions
1	Allowance	Allowance means cost to pay participant(s) and/or trainer(s) for training and/or sensitization (not meeting) such as; <ul style="list-style-type: none"> ▪ Daily Subsistence Allowance (DSA)
2	Transport Cost	This category includes cost for travel from duty station to venue of training/sensitization and field visit under trainings such as; <ul style="list-style-type: none"> ▪ Transport Refund ▪ Fuel Cost
3	Hire (Conference Hall, Vehicle, etc)	Hire covers rental charge of space and equipment as follows; <ul style="list-style-type: none"> ▪ Conference room ▪ Multiple projector ▪ Other equipment required for workshop/training
4	Conference Cost	Under this category, LA can require fund necessary for holding conference which includes; <ul style="list-style-type: none"> ▪ Tea breaks (once per a half day) ▪ Lunch (with maximum of one drink for each lunch per person) ▪ Water (once per a half day) Maximum amount of conference cost per person per day is -----ETB.
5	Communication	Communication is to contact stakeholders such as APMs, WASH teams, also to communicate with Region and Zone Water Bureau by communication tools such as; <ul style="list-style-type: none"> ▪ Telephone-call ▪ Facsimile ▪ Mailing letters ▪ Emails at internet café
6	Stationery	It covers cost to prepare materials necessary for training/sensitization such as; <ul style="list-style-type: none"> ▪ Writing material (Pen and maker) ▪ Paper (notepad and flipchart) ▪ Photocopying ▪ Binding
7	Procurement of materials	This category is for procurement of materials which can be utilized for long period and could be differentiated from materials for short-period use such as stationery. Cost that is necessary for implementation of O&M activities but cannot be included in any other category will be described under this category. Examples are; <ul style="list-style-type: none"> ▪ Bicycle

No.	Category	Definitions
		<ul style="list-style-type: none"> ▪ Vehicle ▪ Computers

5.4.2.4 Approval of Action Plan by Woreda Cabinet

Action Plan should be officially approved by full Cabinet meeting. Otherwise Action Plan will not be recognised as O&M component plan under OWNPN.

5.4.2.5 Submission to Regional Water Bureau and Its Approval

Action Plan approved by full Cabinet should be submitted to the Regional Water Bureau (RWB) directly through Zone Water Office, and if necessary RWB may request revision of Action Plan.

5.5 Implementation of O&M Activities

Follow the O&M activities to be carried out in Volume – I, Part H: Preparation of Action Plan and Implementation of O&M manual for the detailed descriptions.

5.6 Work Plan for Implementation of O&M Strategy

It is needed to make an agreement to fix the implementation of this O&M strategic framework. It can be proposed that 12 months may require in the first instance, after which an overall evaluation will be made to consider progress under the various components. See the sampled detail implementation plan in Annex – B.

Annexes

Annex A: Proposed O&M Strategic Framework

Issue/ Constraint	Strategic Action	Requirement For Implementation	
		Policy	Skills
a) Legal Framework No or ineffective of Legal Status for WASHCO (some regions issued proclamation but not effected, whereas other did not)	<ul style="list-style-type: none"> Those regions issued the proclamation should register WASHCOs and effect the legalization. Those regions, who did not issue proclamation for legalization of WASHCO, need to develop and implement. 	Proclamation on legal status of WASHCOs	Drafting the appropriate By-Laws
b) Monitoring Ineffective monitoring of rural water supply schemes by relevant Government body	<ul style="list-style-type: none"> Resource and motivate Regional Water Bureau, Zone and Woreda Water Offices to conduct M&E on Rural water supply schemes 	Woreda Water offices to draft and implement policy on Woreda Council	Training Woreda Water Offices on M&E tools
c) WASH Stakeholders No clear roles for different stakeholders in relation to O&M of RWSS	<ul style="list-style-type: none"> Woreda Councils to resource Woreda WASH team to take charge of supporting O&M of RWSSs. Staff WWO appropriately. 	-	-
d) WWO Staffing <ul style="list-style-type: none"> Lack of permanent and committed WWO staff/high turnover Inadequate support from Woreda Council/Regional Water Bureau Inadequate capacity to undertake O&M function Inadequate logistics for monitoring and supervision Inadequate practical knowledge of O&M systems 	<ul style="list-style-type: none"> Woreda Council to employ more permanent staff to form O&M support team. Full implementation of decentralization policies Adequate budget line to be created for O&M management support to WWO. Recruit skilled staff that can support WASHCO and rural water boards Provide logistics such as transport and fuel and allowances to facilitate monitoring and supervise both point water sources and rural piped system Provide orientation training on O&M to staff at regular intervals (periodically) 	Review staffing policies with regard to O&M for water and sanitation	Training of staff to adequately support to WASHCO and RPS



Issue/ Constraint	Strategic Action	Requirement For Implementation	
		Policy	Skills
e) WWT Roles and Responsibilities Inadequate knowledge of roles of WWTs, WWOs, etc	<ul style="list-style-type: none"> Orientation training for all stakeholders on their roles and responsibilities for RWSS. 		<ul style="list-style-type: none"> Meetings; Orientation workshops
f) Profile of O&M Low profile of O&M at Woreda and community levels	<ul style="list-style-type: none"> Provide incentives (award) schemes to WASHCO that perform well in O&M 	Policy on annual award scheme for WASHCO, AM and Woreda O&M team members	Design award scheme (indicators and criteria for award)
g) Finance Low funds mobilization for O&M	<ul style="list-style-type: none"> Continuous training on the need for O&M funds, including innovative fund raising methods Allocate 5-10% of the Woreda budget to O&M management of RWSS 	Implement water resources management policy for financing the RWSS	Mobilization and awareness creation
h) Maintenance Lack of preventive maintenance	<ul style="list-style-type: none"> Increase WASHCO skills through continuous education by WWO Effective monitoring of RWSSW by WWO Refresher training for WASHCO by WWO Institute incentive schemes for good performing WASHCOs Develop comprehensive O&M Management Manuals 		<ul style="list-style-type: none"> Adapt the monitoring tools developed by MoWIE Adapt format for local service providers maintenance Adapt the rural WS O&M management manual developed by MoWIE
i) Area Mechanics/Local Service Providers a) Low/absence volume of business b) Lack of realistic service fees c) Inadequate means of transport	<ul style="list-style-type: none"> Establish local service providers/ Area Mechanics by catchment area Link LSPs/AMs with spare parts providers, i.e Revolving Fund Office/Enterprise to enable them get additional income from spars 	Contractors for new HP installation should engage the services of AM in Woreda	<ul style="list-style-type: none"> Train LSP/AM in Business management skills Train AM on riding and acquisition of



Issue/ Constraint	Strategic Action	Requirement For Implementation	
		Policy	Skills
	<p>distribution</p> <ul style="list-style-type: none"> Regional Water Bureau to develop standardised service fees in collaboration with all stakeholders eg WWO, RFO/E, NGO, LSPs/AMs, Link LSPs/AMs with Micro Finance Institute (MFI) to get loan for initial money Provision of tools and equipment to LSPs/AMs through Revolving Fund Office / Enterprise 		<p>license</p> <ul style="list-style-type: none"> Provision of tools and equipment and train for their utilization
<p>j) Supply Chains</p> <p>(i) Discrepancy of Supply Chain Situation</p> <p>i. Bulk procurement by some Regional Water Bureau,</p> <p>ii. NGOs or Bilateral provision of spare parts with the virtue of free of payment</p> <p>iii. Some WASHCOs purchase from private retailers, which prices is too high to afford</p> <p>(ii) Poor business environment</p> <p>i. slow moving and expensive spare parts</p> <p>ii. Inadequate business mgt. skills for retailers</p> <p>iii. No minimum stock levels kept;</p> <p>iv. Inadequate knowledge to identify and order parts.</p>	<ul style="list-style-type: none"> The first action for supply chain, establishment of Revolving Fund Office/Enterprise at regional level and open outlets at Zone and shops at Woreda towns Diversify business eg sell other spare parts; Involve private retailers / local service providers in retailing spare parts by opening shop at Woreda town Support spare parts dealers with credit facilities to procure and stock all categories of spare parts from RFO/E; Encourage preventive maintenance to increase volume of parts movement Institute periodic market surveys for spare parts. Institute minimum stock levels to be kept by all retailers; Provide on-the-job training for retailers on spare parts. 	<p>Issue proclamation for establishment of RFO/E like that of Tigray Region,</p> <p>Develop Directive and Regulation to implement the proclamation</p>	<ul style="list-style-type: none"> Business mgt training Sensitise retailers Training on stock management to enable retailers to identify parts and to restock their stores Adapt the Spare part supply and management manual developed by MoWIE

Issue/ Constraint	Strategic Action	Requirement For Implementation	
		Policy	Skills
a) Rural Piped System / Water Board (i) No legal status (ii) Inadequate accountability (iii) Inadequate motivation (iv) Inadequate capacity of operating staff (v) Poor remuneration of staff (vi) Shifting the community based management to the urban utilities grading	<ul style="list-style-type: none"> Regional Water Bureaus to pass appropriate legal personality and by-laws Regional Water Bureaus, Zone or Woreda Water office to enforce accountability Provide allowances for Board Members Training in functional areas Recruit qualified staff and Attractive salaries be paid Provide attractive condition of service through adequate budgeting and tariffs Grading RPS and establish proper structure rather than adapting the urban water utility structure 	<p>The WRM policy need to include the rural piped system situation which crosses one or more Woreda, Zone and even region</p> <p>Update ad amendment of proclamation for establishment of Rural Piped System</p> <p>Issue directive and regulation particular for RPS</p>	<ul style="list-style-type: none"> Design records and reporting format Skills development though refreshing training Train board members and refreshing them regularly Conduct business plan and set appropriate remuneration and tariff
b) Water Quality Monitoring and Surveillance (i) Inadequate water quality monitoring	<ul style="list-style-type: none"> Set criteria for water quality and surveillance for the frequency of sampling the type of water quality test Establish water quality laboratory at selected specific locations Provide resources and needed logistics to make monitoring possible Provide water quality monitoring kits Train staff in the use of kits Zone or Woreda Water office to enact bye-laws on water quality monitoring Regular monitoring 		<ul style="list-style-type: none"> Adapt the recently developed water quality and surveillance manual by MoWIE Budgetary and procurement skills Training needs assessment Monitoring skills
c) Cost Recovery (i) The cost recovery for RPS is not clear, which cost is recovered since the RPS provides for	<ul style="list-style-type: none"> Set clear cost recovery mechanism for RPS (whether full or O&M costs) Set economic tariffs 	Clearly elaborate the WRM policy on Tariff policy/Principles on	Skills development



Issue/ Constraint	Strategic Action	Requirement For Implementation	
		Policy	Skills
both rural and urban	<ul style="list-style-type: none"> Ensure efficient revenue collection Ensure proper financial planning Ensure proper accountability 	tariff setting for RPS	

Annex B: Demonstration Work Plan for the Implementation & Monitoring of O&M Strategy

No.	O&M Strategic Activities	Year - O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful resources Documentations		
		Year	2015						2016									
		Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May				Jun	
1	Legal Framework																	
1.1	Amend the existing proclamation, Directive & Regulation based on the strategic direction															Regional State Governments	WASHCO/RWB legalization, Ownership, registration and certification; RFO/E, LSPs	Water Policy, Strategy, Existing proclamations, directives, regulation
1.2	Issue Proclamation, Directive and Regulation for legalization of WASHCO/RWB																	



1.3	Issue Proclamation, Directive and Regulation for establishment of Revolving Fund Office/Enterprise and Private Sector involvement																
1.4	Spare part and Technical Service																
1.4.1	Develop clear guideline for the establishment of Revolving Fund Office/Enterprise at each of Regional States														Regional Water Bureaus	Organization structure, recruitment of staff, fulfill equipment & tools, warehouse and shops	Spare part supply & management manual
1.4.2	Establish Revolving Fund Office/Enterprise at each of Regional States																
1.4.3	Develop clear guideline for the involvement of LSPs on RWS maintenance and retailing for spare parts																
1.4.2	Organize LSPs on RWS for maintenance and retailing for spare parts																

No.	O&M Strategic Activities	Year - O&M Strategy													Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful resources Documentations
		Year	2015						2016								
		Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun			
2	Planning for Spare parts																
2.1	Establish RFO/E Office at region and warehouse at Zonal town														Regional Water Bureaus		
2.2	Develop Guideline for organizational structure																
2.3	Recruit RFO/E personnel																
2.4	Equip the RFO/E with the necessary equipment, tools and instruments																



2.5	Hold budget for construction of warehouse at regional capitals and zone towns																
2.6	Construct the warehouse at different outlets																
2.7	Compute the spare part requirements in each Woredas based on the SP manual method of calculation															Revolving Fund Office	
2.8	Consolidate the various types of the spare part demand																
2.9	Plan for procurement & bidding for SPs, tools, equipment etc																

No.	O&M Strategic Activities	Year - O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful resources Documentations	
		Year	2015						2016								
		Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May				Jun
2.10	Allocate seed money by regional water bureau														Regional Water Bureaus		
2.11	Procure and delivery SPs as per the plan														Revolng Fund Office		
2.12	Train the LSPs on maintenace and spare shop operation and management														Regional Water Bureaus		
2.13	Distribute the SPs to LSPs and fix the price of saling														Revolng Fund Office		



3	Resource allocation & Assign																
3.1	Assign appropriate staff at Woreda Water Offices; increase number of staff as per the recommended ratio																
3.2	Arrange and offer training as per the training need assessment																
3.3	develop work plan for O&M support, supervision and monitoring																
3.4	Allocate budget to carry out O&M management support																
3.5	Procure the necessary equipment, tools, instrument																
3.6	Link loan to LSPs from Micro Finance Institutes																

No.	O&M Strategic Activities	Year - O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful resources Documentations	
		Year	2015						2016								
		Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May				Jun
4	Capacity Building and Training																
4.1	Carry out training to RFO staff																
4.2	Carry out training to LSPs																
4.3	Carry out training to WWO staff																
4.4	Carry out training to WASHCOs/RWBs																



5	Establish Monitoring & MIS																
5.1	Develop and adapt supervision, monitoring & evaluation formats & reporting system																
5.2	Development of MIS, Data Fields and indicators																
5.3	Regional Water Bureau supervise, monitor & evaluate the RFO/E																
5.4	Zone and Woreda Water Office supervise, monitor and evaluate LSPs, WASHCOs/RWBs																
5.5	Establish periodic review and analysis timetable																
5.6	Monitoring community affordability and willingness to pay																
5.7	Conduct community mobilization and sensitization																

No.	O&M Strategic Activities	Year - O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful resources Documentations	
		Year	2015						2016								
		Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May				Jun
6	Plan for O&M Activities																
6.1	Hold advocacy meetings																
6.2	mobilization and sensitization of communities																
6.3	Plan for routine maintenance																
6.4	Plan for preventive maintenance																
6.5	Plan for breakdown Maintenance																





Annex C: Summary of Typical O&M Issues and Proposed Remedial Action

Issue	Current Status	Constraints	Proposed Solution	Responsible

