FEDERAL REPUBLIC OF DEMOCRATIC ETHIOPIA

MINISTRY OF WATER AND ENERGY

PART I
REVISED RURAL WATER SUPPLY UAP

MoWE

UAP ETHIOPIA

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List of Acronyms and Abbreviations

AfDB	*African Development Bank*
Birr	*Ethiopian Currency (In April 2011 1USD ~ 17 Birr)*
BOE	*Bureau of Education*
BoFED	*Bureau of Finance and Economic Development*
BOH	*Bureau of Health*
BOWME	*Bureau of Water, Mines and Energy*
CFTs	*Community Facilitation Teams*
EO	*Education Office*
FDRE	*Federal Democratic Republic Of Ethiopia*
GOE	*Government of Ethiopia*
GTP	*Growth and Transformation Plan*
HEWs	*Health Extension Workers*
HO	*Health Office*
MDGs	*Millennium Development Goals*
MoE	*Ministry of Education*
MoFED	*Ministry of Finance and Economic Development*
MoH	*Ministry of Health*
MVS	*Multi Village Schemes*
MoWE	*Ministry Of Water and Energy (Former Ministry Water Resources)*
NGO	*Non Governmental Office*
NSC	*National Steering Committee*
NWASHCO	*National WASH Committee*
OMSU	*Operation and Maintenance Support Unit*
PASDEP	*Plan for Accelerated Development to Eradicate Poverty*
BoA	*Bureau of Agriculture*
RSC	*Regional steering Committee*
RWASHCOM	*Regional WASH Committee*
RWSTG	*Regional Water Study Group*
TSGs	*Town Support Groups*
USD	*United States Dollar*
WASH	*Water Supply Sanitation and Hygiene*
WATSANCO	*Water Supply and Sanitation Committee*
WHO	*World Health Organization*
WIF	*WASH Implementation Framework*
WSDP	*Water Sector Development Program*
WSGs	*Woreda Support Groups*
WSSHE	*Water Supply, Sanitation and Hygiene Education*

Executive Summary

The Universal Access plan that was being implemented during the last 5 years has helped the country to cross the 50% access line. Despite its relative success compared to the previous plans, the UAP required revision to accommodate the following major changes and developments:

a. The growth and transformation plan(GTP) is launched and the UAP needs to be aligned with the GTP
b. the National WASH inventory is on the verge of completion;
c. The WASH WIF which will serve as a guiding document for the revised UAP and funding mechanisms like Community Development Fund (CDF) under the CoWaSH program , Stepped approach and 'Off Budget" allocations supported by NGOs are put in place.
d. Self supply policy guide line is finalized for enhancing local actions in achieving the UAP targets.
e. Preparation of sanitation and hygiene development plan aligned with HSDP IV for rural and periurban areas is completed creating opportunity to bring water supply and health closer together.
f. Furthermore, Urban Water Supply and Urban sanitation UAP documents are now prepared as additional components to give a complete picture of WaSH intervention.
g. Revitalization and simplification of the 2006 WASH MoU is also underway.

This component of UAP focuses on rural water supply.. The document needs to be read in conjunction with the other components, i.e. National Hygiene and Sanitation strategic Action Plan document, urban water supply UAP and Urban Sanitation UAP which will all be under the umbrella of the National WASH implementation Framework.

The major purpose of the revision is to align targets with the growth and transformation plan (GTP) and provide required details and additional features that add value to the GTP. Accordingly, the document attempts to verify the GTP targets with the use of a model. The model has used projected un served population, projected access, beneficiaries per type of schemes, source mix ratio and population density and verified the GTP by generating number of planned schemes that is very close to the GTP. Following the verification, GTP planned schemes , unit costs, various assumptions in regard to human power requirement, etc are used for generating resource requirements for new construction, rehabilitation and miscellaneous other requirements.

In line with the GTP, the national access for the baseline year 2010 is 65.8%, 91.5 % and 68.5 % for rural, urban and combined rural and urban settings. The target to be achieved by 2015 will be 98%, 100% and 98.5% for rural, urban and combined rural and urban settings. A total of 93,827 schemes will be constructed to achieve 98% access by 2015 in rural Ethiopia. *An estimated 100,000 traditional wells are expected to be upgraded to an acceptable standard in line with the self supply policy guideline.* In addition to this water supply facilities for 9409 rural schools and 4,565 health posts will be provided during the 5 years planning period (2011-2015). Side by side with new construction, non functionality of schemes is expected to be reduced from 20% in 2011 to 10% in 2015. This requires the immediate

rehabilitation of 58,595 schemes that are about that are estimated to be 35% of the existing 165,000 schemes during the dry season. The reason for higher percentage of schemes planned to be rehabilitated and expanded is the fact that non functionality could jump to around 35% during the dry season when alternative traditional sources dry up as revealed in the recent preliminary results of the WASH inventory. This consideration supports the assumption (that 35% of 165,000 schemes=58,595 schemes) used in determining the number of schemes to be rehabilitated and expanded in the revised UAP 2 as adopted from the GTP. ***To this end, UAP2 will introduce an operation and maintenance support system in 20 selected regions of the country and make sure that schemes undergo routine preventive and curative maintenance so that the planned non functionality status could be achieved.***

A total of USD 1.78 billion USD is required for the rural component of UAP 2 (2011-2015). Of these USD 0.87 billion USD would be utilized for new construction and 0.23 billion USD would be used for rehabilitation and expansion. Program management, capacity building, study & design, maintenance support, reinvestment, seed money for catchment management and environmental safeguard are going to cost about 0.48 billion USD. Enhancement of self supply requires 0.0353 billion USD. Moreover school water supply and water quality monitoring are going to cost about 0.13 billion USD while health post water supply is expected to cost about 0.04 billion USD.
Of the total financial requirement of 1.78 billion the water, health and education sectors are expected to generate USD 1.58, 0.13 and 0.04 billion respectively. This will mean the water, health and education sectors will generate 90%, 8% and 2% of the total financial requirement.

The national WASH coordination office will play the role of coordinating the three sectors in line with their mandates. This would mean the water sector would help in technical aspects of school and health post water supply while required budget and other administrative aspects would be dealt with the health and education sectors. Moreover, the education sector through school clubs and the health sector through health extension workers are expected to work hand in hand with the water sector in enhancing community awareness on safe water use.

An encouraging effort is already done by the government, donors, communities and NGOs to generate about 1.1 billion USD. There is still a financial gap of about 0.78 billion USD including 15% contingency. The indicated amount should be generated as soon as possible to make the rural water UAP component a reality.

UAP implementation requires vigorous capacity building through the strengthening of the water technical vocational schools and Ethiopian Water Technology centre. A total of 20,041 additional technical and administrative experts expected to be generated by the more than 23 governmental and nongovernmental universities, TVETS and Ethiopian water Technology centre are required to implement the UAP as employees in governmental, non governmental and private sectors. A minimum of 54 rigs and 18 maintenance rigs working in good condition are required for sinking and maintaining the planned boreholes.

About 20 operation and maintenance support units (OMSU) which will operate on commercial basis in selected zones of the country are expected to be established. The OMSUs could also serve as supply chain outlets in collaboration with suppliers.

The implementation strategy would follow an accelerated demand responsive stepped approach in which awareness creation and capacity building would be followed by implementation. The CDF tool under the CoWaSH program and other acceptable tools would be customized and scaled up based on region specific situations.

In terms of finance a strategy for maximizing community and government contribution would be enhanced in line with the GTP financial strategy. Issues will continuously be identified and solved through participatory M& E system to be strengthened and enforced immediately. Effective and efficient use of funding from donor and NGO sources would also be enhanced to achieve UAP targets.

1. Introduction

The Universal Access plan that was being implemented during the last 5 years has helped the country to cross the 50% access line. Despite its relative success compared to the previous plans, the UAP requires revision to accommodate major changes and developments mentioned under section 1.1.

This UAP 2 focuses on rural water supply. In the case of Urban Water Supply, the GTP target of achieving 100% access by 2015 will be used in preparing details by the water and energy sector. The document needs to be used in conjunction with the National Hygiene and Sanitation strategy Action Plan document which will both be part of the national WASH implementation manual.

The major purpose of the revision is to align targets with the growth and transformation plan (GTP) and provide required details and additional features that add value to the GTP. This document attempts to verify the GTP targets with the use of a model described in section 3. Following the verification, GTP planned schemes, unit costs, various assumptions in regard to human power requirement, etc as explained in section 3 will be used for generating resource requirements for new construction, rehabilitation and miscellaneous other requirements presented in sections 4 and 5. Implementation and Financial strategies are dealt with in sections 6 and 7. Post UAP needs are finally presented in section 8.

1.1. Background for UAP revision

The WASH Memorandum of Understanding signed in 2006 by the three Ministries (Water, Health and Education) has opened a room for collaboratively building a national Water Supply, Sanitation and Health Program (WASH). This has helped to integrate water supply projects with hygiene and sanitation, harmonize implementation procedures and support systems of contributing agencies, and foster partnerships with non-governmental organizations and the private sector during the past 5 years time.

In addition the WASH Universal Access Plan (2006-2012) prepared in 2005 to accelerate progress towards full WASH Coverage by 2012 was aiming at achieving 98% access by 2012 with a growth rate of 9% Per annum. **The UAP with its ambitious targets has helped donors and other development** partners to align their various programs with that of the Government. The situation has persuaded many stakeholders to consider the UAP as a symbol of commitment. To this end the water supply part of the 5 year PASDEP (2006-2010) was extracted from UAP and adopted as a national plan by stakeholders.

The UAP was revised in 2009, after a detailed assessment of the three years performance. It was realized that the UAP, which achieved a 6% annual growth rate in coverage, would need reformulation if it were to achieve its objectives. The revised UAP was made to focus on securing water supply access to a total

of 34.5 million people from 2009-2012, implying a two fold increase in implementation rate by giving emphasis to low cost technologies including but not limited to self-supply (family wells). Community mass mobilization, advocacy and promotion, and developing minimum capacity at Woreda level were proposed for enhancing its implementation. The plan was estimated to cost about 6.8 Billion Birr (2009 prices).

Since then, much has happened with overall national water supply coverage reported by Ministry of Water and Energy as of March 2010) as 68.5%. At the end of 2011 this figure is expected to have gone beyond 70%. In particular now, the following developments are to take place before long for realizing WASH UAP implementation:

a. the National WASH inventory is on the verge of completion;
b. The WASH WIF which will serve as a guiding document for the revised UAP and funding mechanisms like Community Development Fund (CDF) under the CoWaSH program , Stepped approach and 'Off Budget" allocations supported by NGOs are put in place.
c. Self supply policy guide line is finalized for enhancing local actions in achieving the UAP targets.
d. Preparation of sanitation and hygiene development plan aligned with HSDP IV for rural and periurban areas is completed creating opportunity to bring water supply and health closer together.
e. Furthermore, Urban Water Supply and Urban sanitation UAP documents are now prepared as additional components to give a complete picture of WaSH intervention.
f. Revitalization and simplification of the 2006 WASH MoU is also underway.

Some of the challenges faced after the launching of the UAP and WASH program are:

a. Absorptive capacity at all levels (many major donor programs have 70% or less implementation rate against their plan)
b. Lack of more reliable, timely data
c. Limitation of fund for small fast growing towns and marginalized rural communities;
d. Weak integration of water supply, sanitation and hygiene in schools, health facilities and communities
e. Unreliable environmental sustainability due to deterioration of source and system sustainability that has resulted from poor catchment management and weak supply chain.
f. Considerable variance in access to WASH facilities between regions as pointed out in SITAN prepared by UNICEF and GoE in 2010 and other documents.
g. The limitation of self supply due to lowering of ground water table even in rift valley areas along Modjo-Awassa road where ground water table was within the range of 10-15 meters ten years ago. Shallow wells happened to be low with fluoride levels earlier before people and farms started pumping excessively. This calls for supportive action in

catchment management to be undertaken at national level and particularly in water deficit areas for enhancing benefits communities are getting from self supply wells.

Taking into account this situation, MoWE is now revising the UAP, aligning it with the new Growth and Transformation Plan (2011-2015) approved by the Ethiopian parliament on December 2, 2010.

The revision will take into account the lessons learnt from the first five years of UAP implementation and the major challenges and opportunities facing the sector. The revision of the UAP focuses on water supply development by using the natural (water) resources, the administrative - institutional system and the socio-economic system as bases for planning.

In accordance to draft Growth and Transformation Plan of Sept. 2010 the GTP is a strategic framework to extricate Ethiopia from poverty so it becomes a middle income economy. The overriding development agenda of GTP is to sustain rapid and broad-based growth path witnessed during the past several years and eventually end poverty.

Sustaining rapid and equitable growth is central to GTP. One of the pillar strategies for sustaining the rapid and broad-based growth path is enhancing expansion and quality of infrastructure development. This infrastructure development will be further intensified with due focus on the quality of services.

The implementation strategies for water supply as is specified in the Growth and Transformation Plan are:

i. Ensure dependable and sustainable water supply based on demand, supply and efficiency measures.
ii. Implement sustainable and feasible technologies to improve the rural water supply coverage.
iii. Implement active management and operation mechanism in existing water facilities before new schemes construction.
iv. To take care of the existing water schemes and ensure economic use of water.
v. To fulfill the basic household demand and the water allocation and utilization beyond this demand shall be based on social and economic priorities.
vi. Capacity building at all levels of water resources management.
vii. Priority to low cost schemes and implement measures such as cost recovery in urban water supply.

The GTP has been approved at parliament level, has a better accountability at Regional and woreda level and monitoring commitment of UAP implementation at MOFED level.

1.2. Rational for the revision and Comparison of UAP1 with UAP2

The rational

The rational for undertaking the revision can be summarized as shown in box below.

Box 1: Rationale for the revision of the former UAP

The rationale for the revision of UAP *includes but is not limited to the following:*

(a) *Key reasons: The new National Growth and Transformation Plan in which the UAP water and sanitation are included as sections is launched. As a result, aligning the UAP with the GTP has become mandatory.*
(b) *There are many changes and developments in the country after the signing the launching of the UAP in 2005 and its revision in 2008:*
(c) *Incorporation of school & health post water supply, catchment management, Water quality monitoring and other miscellaneous requirements for making the UAP complete has become necessary*

Other reasons which could be considered as opportunities

(d) *Reform of organizational structure as a result of Business Process Reengineering (BPR) and the accompanied evaluation of outputs based on balanced score card (BSC) method has brought fundamental changes in the service delivery of the sectors*
(e) *WaSH Multi-Donors Trust Fund (MDTF) is established and new WIF is under preparation,*
(f) *The shift of fund flow by the major donors from channel 2 to channel 1b has enhanced the role of Ministry of Finance and Economic Development (MoFED) in implementation of the WaSH program,*
(g) *Multi-stakeholders Forum (MSF) and Joint Technical Review (JTR) are streamlined into the government activities,*
(h) *The National WaSH Coordination Office (NWCO) is being strengthened and given more and more roles for achieving the UAP targets by 2015,*
(i) *Need for heavy involvement of the private sector and other stakeholders in the WASH program is increased.*

The following gaps were observed in the former UAP during implementation.

Provisions for program management, study and design, capacity building, livestock watering, maintenance, reinvestment, catchment protection, environmental safe guard, school water supply facilities and health post water facilities was missing

(a) *The UAP and its implementation strategy were not made part of a national integrated and well organized plan like GTP*
(b) *Weak monitoring of the UAP implementation in an integrated manner*
(c) *The required capacity building was not fully undertaken for realizing expected results*

Comparison of UAP1 and UAP 2

UAP1 and its review used Birr in determining financial requirements. In a situation where frequent devaluation coupled with price escalation is a reality revision of these costs has also become a necessity. In this UAP 2 model USD is used for determining the financial need to counteract the changes that frequent devaluation incurs. UAP 2 has taken into consideration to cost program management, Rehabilitation, Expansion, Capacity building, Reinvestment, catchment protection, Environmental safeguard, water supply for schools and health posts. Some of the additional works like water quality monitoring, environmental safeguard, catchment management, school water supply and health post water supply will be undertaken by the WASH coordination office. The MoU will help the integration of efforts and resources by the ministries of health, education and water& energy. The Ministry of Agriculture is also expected to play a pivotal role in catchment management activities under the coordination of MoFED for realizing not only UAP2 but the GTP as well. UAP 1 was planned for the years 2005-2012, while UAP 2 is planned for the years 2011-2015 in line with GTP.

The brief comparison of UAP1, its revised version and UAP 2 is shown in box below.

Box 2: Comparison of UAP1 and UAP2

UAP1	UAP2
Prepared first in 2005 with a target to reach 98.3 % access by 2012 at a rate of 9% per annum and cost of 1.006 Billion Dollar for 50.8 million people.	Under preparation with a target to reach 98% access by 2015 at a rate of 7 % per annum and cost of 1.74 billion USD for 17.95 million people
Revised in 2009 with a two fold increase in implementation rate at a cost of 700 Million Dollar for 34.5M people. (Most of the schemes proposed were low cost technology schemes) In course of time the regional plans have shifted from Low cost technologies to medium and high cost technologies due to climate change and Hydrogeological situations	Has additional features which are a step ahead of UAP1 like considerations for: • Catchment management • Environmental safeguard • Study and design • Capacity building • Maintenance • Reinvestment • Program management • School water supply facilities • Health post water supply facilities • Etc.
Based on regional woreda data provided to the then Ministry of water Resources	Aligned With GTP
In spite of falling behind target, it could be considered that the whole effort was a breakthrough since it enabled the country to cross the 50% line	Based on Regional GTP plan aggregated from woreda requirements and officially submitted to the federal government
Quickly changing events, additional requirements, the iterative nature of the plan and the need for incorporating the UAP into the country's GTP plan has initiated the need for further revision	Regional plans tested with the use of a model and found to have addressed population density and technical requirements of the un served population in the regions
	Will serve as a framework for Kebele and Woreda level planning

1.3. Key Revision Considerations

One of the main requirements for the new UAP is to align it with the GTP targets and strategies. Recent revision of GTP targets is to increase rural potable water coverage from the previously planned 98% to 100%. Further in order to align UAP with GTP improvement of service level (both quantity and quality wise) with time has to be also considered. This review will have cost implications not only as a result of target change but also from more focused planning.

Practically, the planning bases for revising the UAP has not changed as such but the issues and shortcomings of the previous UAP particularly for rural UAP has been reviewed in detail in the Review document on Rural Water Supply UAP Implementation and Reformulation of Plans and Strategies for Accelerated Implementation, Feb. 2009. The reliability of the coverage figures, the unpredicted increment in cost, the issue for agreeable institutional arrangement and its establishment, the capacity to implement UAP still remain to be issues needing lasting solution. In these circumstances the revised UAP and its financial requirement will only be indicative. Instead the focus would be more on preparing a well defined planning model that is not only iterative but updatable easily at the Woreda level. This

Woreda based model is to be developed to consider program management requirements, Study and Design costs, Capacity Building needs, construction of new schemes and Rehabilitation and Expansion of existing water schemes. It is believed that UAP plans should follow a bottom up approach and come from the Woredas aggregated at zonal where applicable, regional and national levels in the future once the WASH inventory is finalized.

The variables that are identified to be requiring regular update as clearer and realistic figures are obtained particularly from the WASH inventory as well as from implementation experiences for the Woreda planning model are like:

- ✓ Coverage, access or use figures :
- ✓ Number of un served people/ un served population
- ✓ Unit cost
- ✓ Number of people served by a scheme
- ✓ Scheme mixes: - Based on better Hydro-geological information,
- ✓ Minimum standard
- ✓ Functionality of existing schemes

1.4. Definition

In many instances the term access and coverage had been used interchangeably. Formerly the term access focused more on the potential of the scheme; the number of people that a scheme can serve potentially with 15l/c/day within 1.5 km of distance. On the other hand coverage focused more on the reality; the actual number of people that are being served with 15l/c/day within 1.5 km. The Monitoring and evaluation framework Version 1 of MOWR defined however usage as one of the key indicators expressed in % of rural and urban population actually using improved water sources by type.

In this UAP revision the terms Access and Use alone are relevant and these are defined as:

Access:

Rural population with access to 15 liters of potable water per capita per day within 1.5 km distance (%).
Urban population with access to 20 liters of potable water per capita per day within 0.5 km distance (%).

Use:

Rural population using 15 liters of potable water per capita per day collected within 1.5 km distance (%).
Urban population using 20 liters of potable water per capita per day collected within 0.5 km distance (%).

Beneficiaries:

Targets of rural UAP are rural communities, rural town residents and institutions mainly pre, primary and secondary schools and health centers and posts under the Woreda administration.

Pastoralist Communities:

Pastoralist communities are people living in the pastoral lowland areas of Ethiopia who hold substantial assets in the form of livestock and are very much dependant on the availability of water and pasture.

Marginalized Communities:

These are communities that reside in areas where the natural water resource for water is scarce.

2. Baseline Data for Planning

2.1. Population and population projection:

Regional current census data from CSA and projected population;

In determining the number of schemes per region the population figure of CSA 2007 is projected using the growth rates indicated in the table below.

Table 1:Rural Population at Regional and National Levels as per the Census Data of CSA 2007

Sr. No.	Region	Population in 2007	Population Growth Rate	2011	2012	2013	2014	2015
1	Tigray	3,471,733	2.5	3,832,144	3,927,947	4,026,146	4,126,800	4,229,970
8	Gambela	229,038	4.1	268,974	280,002	291,482	303,433	315,874
6	Benshangul Gumuz	572,882	3	644,784	664,127	684,051	704,573	725,710
10	Diredawa	109,973	2.5	121,390	124,424	127,535	130,723	133,991
9	Hareri	84,023	2.6	93,108	95,529	98,013	100,561	103,176
5	Somali	3,817,937	2.6	4,230,758	4,340,758	4,453,618	4,569,412	4,688,216
3	Amhara	1,510,1836	1.7	16,155,245	16,429,885	16,709,193	16,993,249	17,282,134
2	Afar	1,222,119	2.2	1,333,267	1,362,599	1,392,576	1,423,213	1,454,523
7	SNNPR	13,496,821	2.9	15,131,883	15,570,708	16,022,259	16,486,904	16,965,024
4	Oromiya	23,788,431	2.9	26,670,263	27,443,701	28,239,568	29,058,515	29,901,212
11	Special Enumeration areas	67,542	2.6	74,845	76,791	78,788	80,836	82,938
12	National	61,962,335	2.6	**68,556,661**	**70,316,471**	**72,123,227**	**73,978,218**	**75,882,768**

2.2. Un served Population

Regional un served population determined from projected population figures for the planning period of 2011 to 2015 are shown in table below.

Table 2:Un-Served Population That Will Get Access To Water Supply Between 2011 And 2015

Region	2010 (base year)	Annual Plan (by population)					
		2,011	2,012	2,013	2,014	2,015	Total
Tigrai							
Rural projected pop.	2,198,342	2,567,536	2,985,240	3,381,963	3,796,656	4,229,970	
Unserved pop.		369,194	417,704	396,723	414,693	433,314	2,031,628
Gambela							
Rural projected pop.	163,038	189,573	218,010	248,459	281,040	315,874	
Unserved pop.		26,535	28,437	30,450	32,580	34,834	152,836
Benshangul Gumuz							
Rural projected pop.	506,938	546,673	588,337	632,008	677,771	725,710	
Unserved pop.		39,736	41,664	43,671	45,762	47,939	218,772
Diredawa							
Rural projected pop.	90,006	98,326	107,005	116,057	125,494	133,991	
Unserved pop.		8,320	8,679	9,052	9,438	8,497	43,985
Harari							
Rural projected pop.	48,097	58,658	69,736	80,370	91,511	103,176	
Unserved pop.		10,561	11,078	10,634	11,140	11,665	55,079
Somali							
Rural projected pop.	1,525,712	1,844,611	2,179,060	2,529,655	2,897,007	3,281,751	
Unserved pop.		318,899	334,450	350,594	367,352	384,744	1,756,039
Amhara							
Rural projected pop.	12,708,158	13,570,406	14,458,298	15,372,457	16,313,519	17,282,134	
Unserved pop.		862,248	887,892	914,159	941,062	968,615	4,573,976
Afar							
Rural projected pop.	1,121,927	1,186,607	1,253,591	1,322,947	1,394,748	1,454,523	
Unserved pop.		64,680	66,983	69,356	71,801	59,775	332,596
SNNPR							
Rural projected pop.	13,367,232	14,072,652	14,792,173	15,541,591	16,322,035	16,965,024	
Unserved pop.		705,419	719,521	749,418	780,444	642,989	3,597,792
Oromya							
Rural projected pop.	24,752,285	25,870,155	27,169,264	28,239,568	29,058,515	29,901,212	
Unserved pop.		1,117,870	1,299,109	1,070,304	818,947	842,697	5,148,927
Special Enumeration Areas							
Rural projected pop.	46,620	53,234.62	60,161.81	67,413.22	75,001.04	82,937.86	
Unserved pop.		6,615	6,927	7,251	7,588	7,937	36,318
National							
Rural projected pop.	56,528,354	60,058,432	63,880,875	67,532,489	71,033,296	74,476,303	
Unserved pop.		3,530,078	3,822,444	3,651,613	3,500,808	3,443,007	17,947,949

2.3. Capacity of Schemes Expressed as Number of Beneficiaries per Scheme Type

Potential capacities of new schemes to be constructed are shown in table below. The potential capacities are used in determining the number of required schemes in conjunction with population density and other relevant data.

Table 3: Water supply provision capacities of GTP planned feasible schemes

Types Of Planned Schemes	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others
Population to be served with One scheme	**6**	**75**	**270**	**350**	**4000**	**500**	**1500**	**3500**	**5000**	**100**	**100**	**500**	**800**

2.4. Regional Population Density Factors

Determining the number of on point schemes could easily be undermined if population density factors are not used in conjunction with scheme water supply provision capacities. As a result the factors shown in table below are used in the model for determining the number of new schemes to be constructed during the planning period.

Table 4: Regional Population Density Factors

I.No.	Region	Area in Km^2	Population Density in Km2(CSA 2007)		Population Density Factors that take account of 1.5 km service radius for on point sources						
				Population Within 1.5 km radius for on point schemes	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Shallow well with Hand Pump	Rain Water harvesting	Cystern	Hafir Dam
1	Tigrai	50,079	88.8	627.94	1.20	1.62	2.10	1.20	1.20	3.00	1.20
2	Gambella	25,802	9.8	69.30	4.08	14.69	19.05	5.44	5.44	27.21	8.66
3	B/Gumuz	49,289	13	91.93	3.08	11.08	14.36	4.10	4.10	20.51	6.53
4	Dire Dawa(Rural)	1,196	99.4	702.90	1.20	1.45	1.88	1.20	1.20	2.68	1.20
5	Harari rural		99.4	702.90	1.20	1.45	1.88	1.20	1.20	2.68	1.20
6	Somali		14	99.00	2.86	10.29	13.33	3.81	3.81	19.05	6.06
7	Amhara	159,174	123.3	871.91	1.20	1.20	1.51	1.20	1.20	2.16	1.20
8	Afar	72,053	29.7	210.02	2.67	9.60	12.44	3.56	3.56	17.78	5.66
9	SNNPR	112,343	136.4	964.54	1.20	1.20	1.37	1.20	1.20	1.96	1.20
10	Oromya	353,007	77.3	546.62	1.20	1.86	2.41	1.20	1.20	3.45	1.20

Note

1 Assumed in the absence of data

2 All other data are taken from CSA 2007 Census

2.5. Current water supply status: -

The Current water supply access status including projected water supply access for the years 2011-2015 is shown in table below. The national access for the baseline year 2010 is 65.8%, 91.5 % and 68.5 % for rural , urban and combined rural and urban settings. The target to be achieved by 2015 will be 98%, 100%

and 98.5% for rural, urban and combined rural and urban settings. This plan deals with rural water supply as indicated in the introduction.

Table 5:Annual Water Supply Access Plan

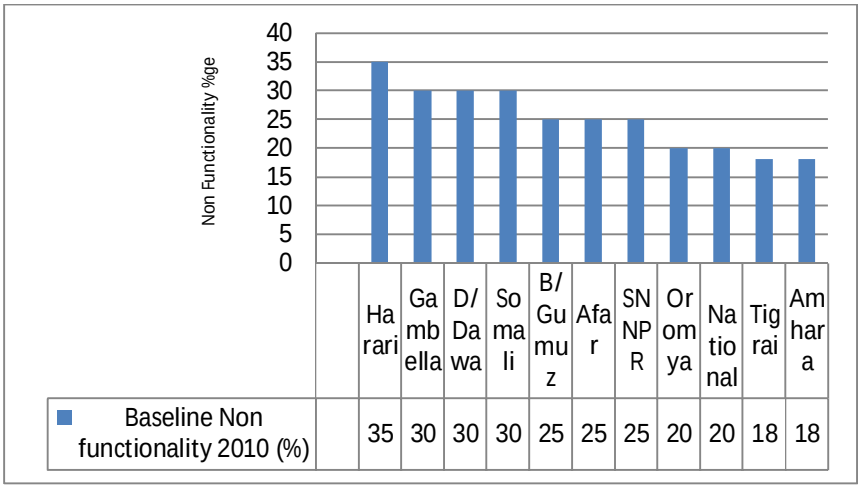
I.No	Region	2010 Base year	Annual Planned Access (%)				
			2011	2012	2013	2014	2015
1	Tigrai						
	Rural	59	67	76	84	92	100
	Urban	85	88	91	94	97	100
	Total	64	72	79	86	93	100
2	Gambela						
	Rural	63	70	78	85	93	100
	Urban	73	82	90	96	100	100
	Total	66	73	79	86	93	100
3	Benshangul Gumuz						
	Rural	81	85	89	92	96	100
	Urban	90	92	94	96	96	100
	Total	80	84	88	92	96	100
4	Diredawa						
	Rural	76	81	86	91	96	100
	Urban	79.7	84	88	92	96	100
	Total	78.1	83	88	92	96	100
5	Harari						
	Rural	53	63	73	82	91	100
	Urban	95	98	100	100	100	100
	Total	75.8	82	87	92	96	100
6	Somali						
	Rural	37	44	50	57	63	70
	Urban	76.5	81	86	90	95	100
	Total	42.5	49	56	62	69	76
7	Amhara						
	Rural	80	84	88	92	96	100
	Urban	90	93	96	98	100	100
	Total	76	81	86	91	96	100
8	Afar						
	Rural	67	68	68	69	69	70
	Urban	86	89	92	95	98	100
	Total	69.5	72	74	76	78	80
9	SNNPR						
	Rural	58.7	67	76	84	92	100
	Urban	90.9	93	95	97	99	100

I.No	Region	2010 Base year	Annual Planned Access (%)				
			2011	2012	2013	2014	2015
	Total	62	70	78	86	93	100
10	Oromya						
	Rural	64.5	72	79	86	93	100
	Urban	95.5	97	99	100	100	100
	Total	68.5	75	82	89	95	100
11	Addis Ababa						
	Urban	96	97	98	99	100	100
	Total	96	97	98	99	100	100
12	Special Enumeration Areas						
	Rural	64	71	78	86	93	100
	Total	64	71	78	86	93	100
	National						
	Rural	65.8	72	79	85	92	98
	Urban	**91.5**	**93**	**95**	**97**	**98**	**100**
	Total	**68.5**	**75**	**81**	**87**	**93**	**98.5**

2.6. Infrastructure status: -

It is estimated that there are more than 165,000 rural water supply schemes in the country. Of about 35% are non functional for at least a few days every year as preliminarily identified by the WASH inventory. Non functionality status of the schemes as reported by the regions and projected by the GTP is as shown in table below. The non functionality was around 20% nationally during the mid of 2010 when the plan for reduction of non functional schemes was prepared by the regions. Immediate maintenance of schemes is required to fall within the planned range.

Figure 1:Regional Non Functionality of Schemes for the baseline year (2010)



2.7. Human Resource Requirement

This UAP plan which aims at 100% access requires a huge number of skilled persons and professionals. The major areas of skilled labor and professions are calculated based on the assumptions shown in table below.

Table 6:Assumptions for Determining Human Power Requirement

I.No	List of major Skilled Workers/professionals	Number of schemes that are assumed to be undertaken /annum	Requirement at National Level	Requirement at Regional Level	Involvement
1	Artisans	5			Labor intensive Schemes
2	Water Technicians	5			All Schemes
3	Electromechanical technicians	5			Schemes to be fitted with EM items
4	Aereal Mechanics/Hand pump technicians	5			Medium schemes to be fitted with Pumps
5	Chief Drillers	10			Boreholes
6	Assistant Drillers	10			Boreholes
7	Water supply Engineers	6			All Schemes
8	Hydrogeologists	15			All Schemes
9	Electrical engineer and related	12			
10	Chemist, biologist lab technician	15			
11	Socio economists	15			All Schemes
12	Accountants	11			All Schemes
13	Community Facilitator Teams(2 per team)	15			All Schemes
14	Woreda Support Groups(4 per team)	20			All Schemes
	Program Management				
15	WASH Coordinator		1	1	All schemes
16	Water supply Engineers		4	2 to 3	All schemes
17	Procurement Experts		4	2 to 3	All schemes
18	Other National Consultants		4	2 to 3	All schemes
19	Supply Chain Expert		2	1	All schemes
20	M&E experts		3	1 to 2	All schemes

3. Planning Model

3.1. Approach

The main output of the revision is a National UAP aimed at achieving GTP targets. The aim is to specify 5years investment schedule that meets GTP needs and at the same time contributes to longer term development goals. The approach is as follows:

The adopted methodology of plan preparation is iterative and analytical.

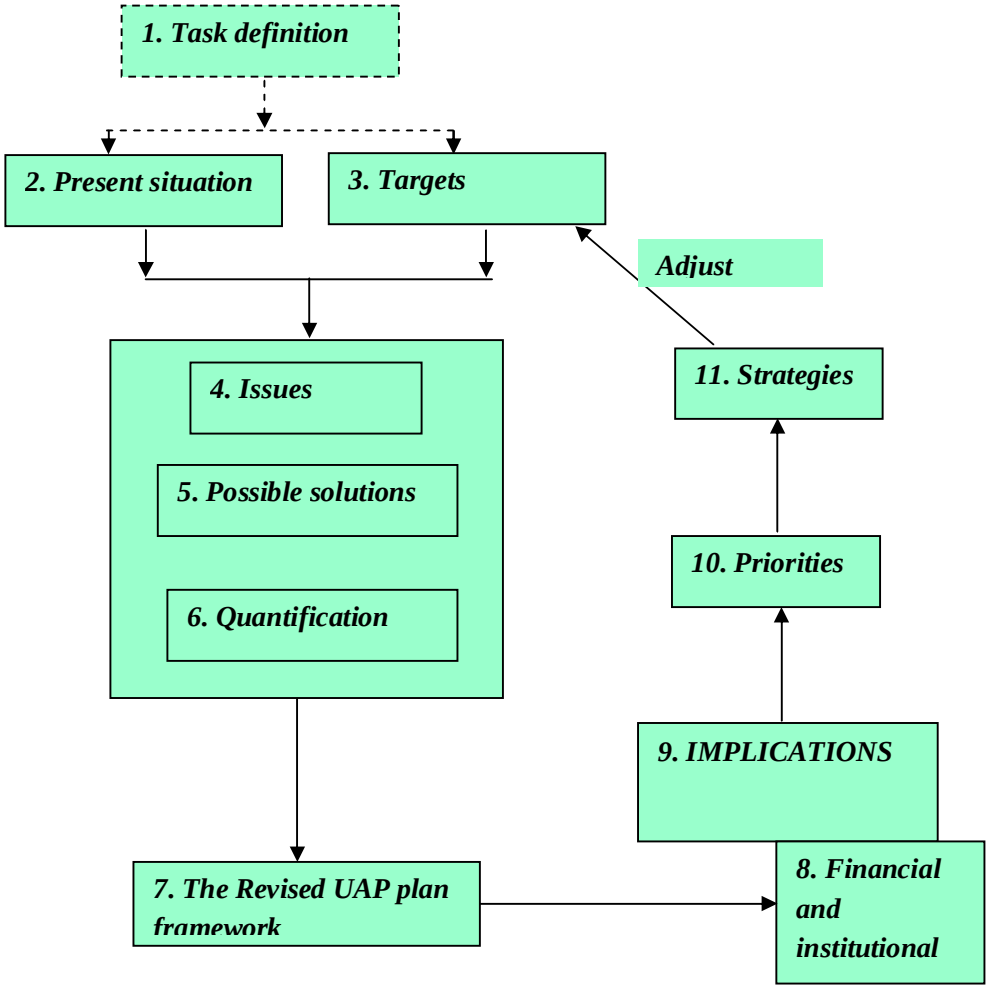
The methodology is iterative as the planning exercise will be done in several rounds, as illustrated in figure 3.1.

The current - or present - situation has to be assessed; service levels and problems have to be identified. Then, targets are set with the aim to "solve the problems" or to "raise the service levels to a desired standard".

By comparing the present situation with the target situation, it is possible to identify important issues and possible solutions. These possible solutions are quantified, using a planning model. Issues will be identified, following which solutions and the quantification of the identified solutions would be worked out.

The model's output will be the desired UAP plan that will be used as a national framework. Additional outputs of the model can also be implications or "consequences" of the plan, such as financial needs or institutional requirements. In case these requirements cannot be met, it may be necessary to adjust the initial targets to bring these needs down to a feasible level. This mechanism of adjustment will be an important element of the planning process as demonstrated by the following figure (diagram).

Table 7:The UAP Planning Process



This method has two advantages:

i. it allows for a gradual refinement of the planning exercise. In subsequent iterations information can be refined in a focused and effective way;

ii. it allows for inputs from the main stakeholders and the woredas in a structured manner by making points and moments of decision making explicit.

Active participation of main stakeholders is sought, especially from the MoWE, selected regional water bureaus and the steering committee to be established by MoWE. They will be involved in the collection of data and the identification of issues and possible solutions. The project team will focus on data analysis and the quantification of development requirements and costs. But the key stakeholders will especially participate in the prioritization, strategy development and the formulation of targets, based on the constraints analysis and prioritization criteria developed by the project team.

The methodology is analytical in two ways:

two "technical fields" can be distinguished in the UAP, i.e.

1) urban water supply and

2) rural water supply. Each of these two fields has its own specific requirements and for each field a somewhat different computation model will be used. The urban models will be based on a town-wise analysis, the rural models on area-wise assessments.

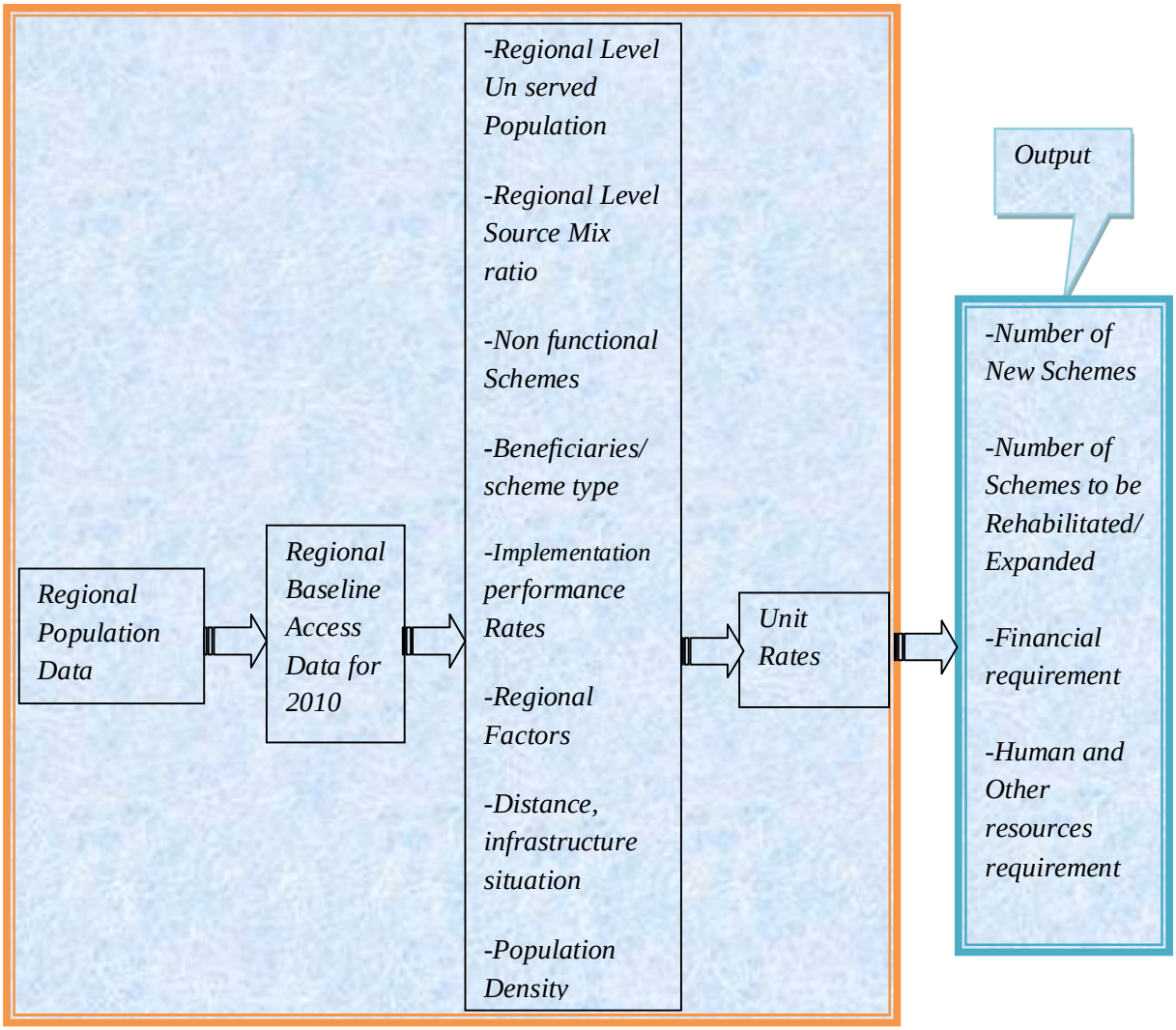
The country is divided in different regional states and special administrative areas, 11 in total. The planning exercise will be done with the region as planning unit, which will also allow accounting for the large differences in available resources and levels of development between the individual regions.

3.2. Input and Outputs of the model

3.2.1. Inputs

The model has used projected un served population for the years 2011-2015 , planned regional access data for the years 2011-2015, types of low & high technology schemes, population that can be served with one scheme of the various technology types, source mix ratio and population density for verifying the GTP plan of new schemes to be constructed. Following the verification, the GTP planned schemes to be constructed, rehabilitated and expanded, unit rates, performance rates, etc. are used in the determination of infrastructural, institutional, financial and miscellaneous other needs.

Figure 2:Inputs and outputs of the Model



3.2.2. Outputs

The outputs of the model are, Number of New Schemes, Number of Schemes to be rehabilitated/ Expanded, Financial requirement, Human and Other resources requirement.

The model is able to take woreda level inputs and provide woreda level outputs that could be aggregated to regional and federal level. Such a scenario could of course be possible following the WASH inventory from which required baseline data could be extracted at kebele and woreda level.

3.2.3. The use of population Density in conjunction with scheme water supply provision capacities in determining the number schemes

Taking population density into consideration reflects the reality in the process of determining the number of schemes required to provide water supply service to the un- served. After the WASH inventory woreda

level population densities could be used to determine number of schemes in conjunction with service capacities of different types of feasible schemes. At this stage it is found justifiable to adopt regional level data taken from the GTP after testing the validity of the data with the model. By entering the following input data that are:

- ✓ un -served population that will get access to water supply between 2011 and 2015(See Table 2-2)
- ✓ Water supply provision capacities of GTP planned feasible schemes (See Table 2-3)
- ✓ Regional Population Density Factors (See table 2-4)

It is estimated that the number of schemes that take relevant factors into consideration with the exception of population density will be **59,216** as shown in Annex 1. On the other hand, considering that on point schemes would be considerably affected by population density, it is estimated that the total number of schemes to be executed between 2011 and 2015 would be **90,450** as shown in **Annex 2** with the use of the model**.** ***This figure which is very close to the GTP planned schemes numbering 93,827 in total has verified the authenticity of the GTP.*** The reason for slightly higher but acceptable number of schemes in the case of the GTP plan could be explained by the fact that the regions used aggregated requirements of their zones and woredas. Though they haven't used woreda level population densities in their analysis they have used their field level judgment in the determination of the number of schemes in their plan.

Following the verification, the model has used the planned schemes for construction, rehabilitation and expansion in determining infrastructural, institutional and financial requirements as indicated in section 3.2.1.

Following the WASH inventory bigger scale hydrogeological maps,Woreda level population densities, GIS map of existing schemes etc could be used for preparing a more precise plan. As the whole planning exercise is iterative and will be continuously refined through a bottom–up (Kebele-woreda-Regional-federal levels), using the number of schemes planned by the GTP framework could be taken to be acceptable by all stakeholders during the planning period i.e.2011-2015.

3.2.4. Water Supply Access

Verified Water supply access figures per woreda are expected to be made available after the WASH inventory. For the purpose of preparing the revised UAP based on baseline data collected for the preparation of the GTP by the regions and compiled by the federal MoWE will be used. Base line access figures for the different regions reported in 2010 are projected to reach 100% by the year 2015 in line with the GTP in table below. The annual rural water supply access increment rate varies from 4% in Benshangul Gumuz to 12 % in Somali region. Nationally the average access increment rate is about 7% which is 2% less than the increment rate of UAP1 due to the extension the target year from 2012 to 2015. as shown in table 2-5.

3.2.5. Resources required to accomplish UAP by 2015

The resources required to meet UAP can be categorized generally into two areas: Infrastructural and human requirements. The infrastructural requirements include development of the best water source alternatives including where necessary transmission, treatment, storage, and distribution; and where there is existing water supply the need for improvement or rehabilitation or replacement with a new one. On the other hand the institutional requirements include the institutional arrangement and the capacity building need for implementing the UAP.

School and health post water supply facilities requirements, human resources requirements are also estimated by combining base line data given in section 2 and additional data from CSA and other sources. (See subsequent chapters for details)

Plan for:

i. Constructing new schemes,
ii. Rehabilitation/Expansion,
iii. Constructing School water supply facilities
iv. Constructing Health post water facilities
v. Improving functionality status of schemes
vi. Capacity building
vii. Program management, study and design
viii. Reinvestment
ix. Operation and maintenance support
x. Water Quality monitoring
xi. Catchment protections are shown in section 4 of this document.

4. Infrastructural Development Requirements

4.1. Minimum Service Level

It is true that no human beings survive without water but water used particularly from unimproved sources is not always safe. In its UA planning the Ethiopian government aims to provide safe water to all. However since improved water and adequate supply means different things to different settings it is vital to determine at least the minimum standard minimum standards as to improvements in water supply in terms of:

- ✓ Quality,
- ✓ Quantity
- ✓ Accessibility (distance)

Quality: Water supplied from improved sources should meet the Ethiopian drinking water standard:

Free from any diseases causing pathogenic organisms and concentration of toxic chemical compounds that have adverse effect on human health.

Fairly clear (i.e., of low turbidity and color) and contain no compounds that cause offensive taste and odor and free of substances and organisms that cause corrosion or encrustation of water supply system.

Quantity: The yield from the scheme during the direst day of the year should have a capacity to provide at least of per capita water that meets the Ethiopian drinking water standard.

Accessibility: The maximum distance for water supply scheme should be within 15 minutes walking distance or 1.5 km from the farthest residents.

4.2. Feasible Scheme Types/Technology choices

The expected outputs of the physical improvement component in case of UAP are construction of new point sources or new small schemes with small distribution, rehabilitated existing point sources, rehabilitated and expanded small schemes with distribution. The feasible technical options to be considered in UAP for the rural communities residing in rural villages or rural towns are:

Point sources:

- Fully lined hand-dug wells with raised collar around the well opening fitted with rope pump designed to serve households and the community for a minimum of 5 years.
- Fully lined hand dug well with raised platform fitted with hand pump designed to serve the community for minimum of 5 years.
- Drilled shallow well fitted with hand pump designed to serve the community for at least a minimum of 10 years

- Capped springs designed to serve the community for at least a minimum of 10 years.
- Rainwater harvesting from roof catchments particularly designed to serve public institutions.

Schemes with distribution main:

- Capped spring with water being distributed in a public fountain designed for at least a minimum of 10 years.
- Motorized deep borehole with water being distributed in a public fountain designed for at least a minimum of 10 years.

4.3. Unit Cost

Unit costs for new construction, rehabilitation, expansion, etc. increase considerably from time to time due to price escalation and inflation. To this end reasonable provision for escalation and inflation is bilt into the unit costs of this revised UAP 2.

4.4. Unit Rates for New Construction

New construction Unit rates determined project by project are usually more accurate for calculating financial requirements. Such a stage could be reached when planning is done at Kebele and Woreda level following the location of possible water sources. In this UAP framework, regional per capita costs for low and high technology schemes used in the GTP are updated and used for determining financial requirement. Accordingly, the per capita costs for different regions are modified by introducing regional factors that account for distance, level of infrastructure and socioeconomic development. Unit rates are escalated by 3% per annum for taking construction and material cost increment into consideration. Calculations are done in USD for avoiding complication that can arise from devaluation. Finally the per capita rates are converted to unit cost of feasible schemes based on their capacity of serving un served population as shown in table below.

Table 8: Escalated Per Capita Rates For Low and High Technology schemes in USD

Per Capita Rates For Low and High Technology schemes in USD at 3% escallation per annum					House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand Pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others
Tigrai	Regional Factor*	Low Tech	M TECH	High Tech	Unit Cost of Schemes in USD												
2011	1.05	13.03	24.87	25.61	78.21	977.58	3,519.30	4,562.05	102,446.51	9,946.26	38,417.44	89,640.70	128,058.14	1,303.44	2,561.16	12,805.81	20,489.30
2012	1.05	13.43	25.61	29.99	80.55	1,006.91	3,624.88	4,698.92	119,968.36	10,244.65	44,988.13	104,972.31	149,960.45	1,342.55	2,999.21	14,996.04	23,993.67
2013	1.05	13.83	26.38	30.89	82.97	1,037.12	3,733.62	4,839.88	123,567.41	10,551.99	46,337.78	108,121.48	154,459.26	1,382.82	3,089.19	15,445.93	24,713.48
2014	1.05	14.24	27.17	31.82	85.46	1,068.23	3,845.63	4,985.08	127,274.43	10,868.55	47,727.91	111,365.13	159,093.04	1,424.31	3,181.86	15,909.30	25,454.89
2015	1.05	14.67	27.99	32.77	88.02	1,100.28	3,961.00	5,134.63	131,092.66	11,194.61	49,159.75	114,706.08	163,865.83	1,467.04	3,277.32	16,386.58	26,218.53
Gambella			-														
2011	1.1	13.66	26.05	26.83	81.93	1,024.13	3,686.89	4,779.30	107,324.92	9,946.26	40,246.84	93,909.30	134,156.15	1,365.51	2,683.12	13,415.61	21,464.98
2012	1.1	14.06	26.83	31.42	84.39	1,054.86	3,797.49	4,922.67	125,681.14	10,244.65	47,130.43	109,970.99	157,101.42	1,406.48	3,142.03	15,710.14	25,136.23
2013	1.1	14.49	27.64	32.36	86.92	1,086.50	3,911.42	5,070.35	129,451.57	10,551.99	48,544.34	113,270.12	161,814.46	1,448.67	3,236.29	16,181.45	25,890.31
2014	1.1	14.92	28.47	33.33	89.53	1,119.10	4,028.76	5,222.47	133,335.12	10,868.55	50,000.67	116,668.23	166,668.90	1,492.13	3,333.38	16,666.89	26,667.02
2015	1.1	15.37	29.32	34.33	92.21	1,152.67	4,149.62	5,379.14	137,335.17	11,194.61	51,500.69	120,168.28	171,668.96	1,536.90	3,433.38	17,166.90	27,467.03
B/Gumuz			-														
2011	1.1	13.66	26.05	26.83	81.93	1,024.13	3,686.89	4,779.30	107,324.92	10,419.89	40,246.84	93,909.30	134,156.15	1,365.51	2,683.12	13,415.61	21,464.98
2012	1.1	14.06	26.83	31.42	84.39	1,054.86	3,797.49	4,922.67	125,681.14	10,732.49	47,130.43	109,970.99	157,101.42	1,406.48	3,142.03	15,710.14	25,136.23
2013	1.1	14.49	27.64	32.36	86.92	1,086.50	3,911.42	5,070.35	129,451.57	11,054.47	48,544.34	113,270.12	161,814.46	1,448.67	3,236.29	16,181.45	25,890.31
2014	1.1	14.92	28.47	33.33	89.53	1,119.10	4,028.76	5,222.47	133,335.12	11,386.10	50,000.67	116,668.23	166,668.90	1,492.13	3,333.38	16,666.89	26,667.02
2015	1.1	15.37	29.32	34.33	92.21	1,152.67	4,149.62	5,379.14	137,335.17	11,727.68	51,500.69	120,168.28	171,668.96	1,536.90	3,433.38	17,166.90	27,467.03
D/Dawa			-														
2011	1.05	13.03	24.87	25.61	78.21	977.58	3,519.30	4,562.05	102,446.51	9,946.26	38,417.44	89,640.70	128,058.14	1,303.44	2,561.16	12,805.81	20,489.30
2012	1.05	13.43	25.61	29.99	80.55	1,006.91	3,624.88	4,698.92	119,968.36	10,244.65	44,988.13	104,972.31	149,960.45	1,342.55	2,999.21	14,996.04	23,993.67
2013	1.05	13.83	26.38	30.89	82.97	1,037.12	3,733.62	4,839.88	123,567.41	10,551.99	46,337.78	108,121.48	154,459.26	1,382.82	3,089.19	15,445.93	24,713.48
2014	1.05	14.24	27.17	31.82	85.46	1,068.23	3,845.63	4,985.08	127,274.43	10,868.55	47,727.91	111,365.13	159,093.04	1,424.31	3,181.86	15,909.30	25,454.89
2015	1.05	14.67	27.99	32.77	88.02	1,100.28	3,961.00	5,134.63	131,092.66	11,194.61	49,159.75	114,706.08	163,865.83	1,467.04	3,277.32	16,386.58	26,218.53
Harari			-														
2011	1.05	13.03	24.87	25.61	78.21	977.58	3,519.30	4,562.05	102,446.51	9,946.26	38,417.44	89,640.70	128,058.14	1,303.44	2,561.16	12,805.81	20,489.30
2012	1.05	13.43	25.61	29.99	80.55	1,006.91	3,624.88	4,698.92	119,968.36	10,244.65	44,988.13	104,972.31	149,960.45	1,342.55	2,999.21	14,996.04	23,993.67
2013	1.05	13.83	26.38	30.89	82.97	1,037.12	3,733.62	4,839.88	123,567.41	10,551.99	46,337.78	108,121.48	154,459.26	1,382.82	3,089.19	15,445.93	24,713.48

Per Capita Rates For Low and High Technology schemes in USD at 3% escallation per annum					House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand Pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others
Tigrai	Regional Factor*	Low Tech	M TECH	High Tech	Unit Cost of Schemes in USD												
2014	1.05	14.24	27.17	31.82	85.46	1,068.23	3,845.63	4,985.08	127,274.43	10,868.55	47,727.91	111,365.13	159,093.04	1,424.31	3,181.86	15,909.30	25,454.89
2015	1.05	14.67	27.99	32.77	88.02	1,100.28	3,961.00	5,134.63	131,092.66	11,194.61	49,159.75	114,706.08	163,865.83	1,467.04	3,277.32	16,386.58	26,218.53
Somali			-														
2011	1.15	14.28	27.23	28.05	85.65	1,070.69	3,854.47	4,996.54	112,203.32	10,893.53	42,076.25	98,177.91	140,254.15	1,427.58	2,805.08	14,025.42	22,440.66
2012	1.15	14.70	28.05	32.85	88.22	1,102.81	3,970.10	5,146.43	131,393.92	11,220.33	49,272.72	114,969.68	164,242.39	1,470.41	3,284.85	16,424.24	26,278.78
2013	1.15	15.15	28.89	33.83	90.87	1,135.89	4,089.21	5,300.83	135,335.73	11,556.94	50,750.90	118,418.77	169,169.67	1,514.52	3,383.39	16,916.97	27,067.15
2014	1.15	15.60	29.76	34.85	93.60	1,169.97	4,211.88	5,459.85	139,395.81	11,903.65	52,273.43	121,971.33	174,244.76	1,559.96	3,484.90	17,424.48	27,879.16
2015	1.15	16.07	30.65	35.89	96.41	1,205.07	4,338.24	5,623.65	143,577.68	12,260.76	53,841.63	125,630.47	179,472.10	1,606.76	3,589.44	17,947.21	28,715.54
Amhara			-														
2011	1	12.41	23.68	24.39	74.48	931.03	3,351.71	4,344.81	97,568.11	9,472.63	36,588.04	85,372.09	121,960.13	1,241.38	2,439.20	12,196.01	19,513.62
2012	1	12.79	24.39	28.56	76.72	958.96	3,452.27	4,475.16	114,255.58	9,756.81	42,845.84	99,973.63	142,819.47	1,278.62	2,856.39	14,281.95	22,851.12
2013	1	13.17	25.12	29.42	79.02	987.73	3,555.83	4,609.41	117,683.25	10,049.52	44,131.22	102,972.84	147,104.06	1,316.98	2,942.08	14,710.41	23,536.65
2014	1	13.56	25.88	30.30	81.39	1,017.36	3,662.51	4,747.70	121,213.74	10,351.00	45,455.15	106,062.03	151,517.18	1,356.48	3,030.34	15,151.72	24,242.75
2015	1	13.97	26.65	31.21	83.83	1,047.88	3,772.38	4,890.13	124,850.16	10,661.53	46,818.81	109,243.89	156,062.70	1,397.18	3,121.25	15,606.27	24,970.03
Afar			-														
2011	1.15	14.28	27.23	28.05	85.65	1,070.69	3,854.47	4,996.54	112,203.32	10,893.53	42,076.25	98,177.91	140,254.15	1,427.58	2,805.08	14,025.42	22,440.66
2012	1.15	14.70	28.05	32.85	88.22	1,102.81	3,970.10	5,146.43	131,393.92	11,220.33	49,272.72	114,969.68	164,242.39	1,470.41	3,284.85	16,424.24	26,278.78
2013	1.15	15.15	28.89	33.83	90.87	1,135.89	4,089.21	5,300.83	135,335.73	11,556.94	50,750.90	118,418.77	169,169.67	1,514.52	3,383.39	16,916.97	27,067.15
2014	1.15	15.60	29.76	34.85	93.60	1,169.97	4,211.88	5,459.85	139,395.81	11,903.65	52,273.43	121,971.33	174,244.76	1,559.96	3,484.90	17,424.48	27,879.16
2015	1.15	16.07	30.65	35.89	96.41	1,205.07	4,338.24	5,623.65	143,577.68	12,260.76	53,841.63	125,630.47	179,472.10	1,606.76	3,589.44	17,947.21	28,715.54
SNNPR			-														
2011	1	12.41	23.68	24.39	74.48	931.03	3,351.71	4,344.81	97,568.11	9,472.63	36,588.04	85,372.09	121,960.13	1,241.38	2,439.20	12,196.01	19,513.62
2012	1	12.79	24.39	28.56	76.72	958.96	3,452.27	4,475.16	114,255.58	9,756.81	42,845.84	99,973.63	142,819.47	1,278.62	2,856.39	14,281.95	22,851.12
2013	1	13.17	25.12	29.42	79.02	987.73	3,555.83	4,609.41	117,683.25	10,049.52	44,131.22	102,972.84	147,104.06	1,316.98	2,942.08	14,710.41	23,536.65
2014	1	13.56	25.88	30.30	81.39	1,017.36	3,662.51	4,747.70	121,213.74	10,351.00	45,455.15	106,062.03	151,517.18	1,356.48	3,030.34	15,151.72	24,242.75
2015	1	13.97	26.65	31.21	83.83	1,047.88	3,772.38	4,890.13	124,850.16	10,661.53	46,818.81	109,243.89	156,062.70	1,397.18	3,121.25	15,606.27	24,970.03
Oromya			-														
2011	1	12.41	23.68	24.39	74.48	931.03	3,351.71	4,344.81	97,568.11	9,472.63	36,588.04	85,372.09	121,960.13	1,241.38	2,439.20	12,196.01	19,513.62

Per Capita Rates For Low and High Technology schemes in USD at 3% escallation per annum					House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand Pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others
Tigrai	Regional Factor*	Low Tech	M TECH	High Tech	Unit Cost of Schemes in USD												
2012	1	12.79	24.39	28.56	76.72	958.96	3,452.27	4,475.16	114,255.58	9,756.81	42,845.84	99,973.63	142,819.47	1,278.62	2,856.39	14,281.95	22,851.12
2013	1	13.17	25.12	29.42	79.02	987.73	3,555.83	4,609.41	117,683.25	10,049.52	44,131.22	102,972.84	147,104.06	1,316.98	2,942.08	14,710.41	23,536.65
2014	1	13.56	25.88	30.30	81.39	1,017.36	3,662.51	4,747.70	121,213.74	10,351.00	45,455.15	106,062.03	151,517.18	1,356.48	3,030.34	15,151.72	24,242.75
2015	1	13.97	26.65	31.21	83.83	1,047.88	3,772.38	4,890.13	124,850.16	10,661.53	46,818.81	109,243.89	156,062.70	1,397.18	3,121.25	15,606.27	24,970.03
National			-														
2011	1	12.48	24.04	24.84	74.87	935.90	3,369.24	4,367.53	99,344.24	9,617.14	37,254.09	86,926.21	124,180.30	1,247.87	2,483.61	12,418.03	19,868.85
2012	1	12.85	24.76	29.08	77.12	963.98	3,470.32	4,498.56	116,335.49	9,905.66	43,625.81	101,793.56	145,419.36	1,285.30	2,908.39	14,541.94	23,267.10
2013	1	13.24	25.51	29.96	79.43	992.90	3,574.43	4,633.52	119,825.56	10,202.83	44,934.58	104,847.36	149,781.95	1,323.86	2,995.64	14,978.19	23,965.11
2014	1	13.64	26.27	30.86	81.81	1,022.68	3,681.66	4,772.52	123,420.32	10,508.91	46,282.62	107,992.78	154,275.40	1,363.58	3,085.51	15,427.54	24,684.06
2015	1	14.04	27.06	31.78	84.27	1,053.36	3,792.11	4,915.70	127,122.93	10,824.18	47,671.10	111,232.57	158,903.67	1,404.48	3,178.07	15,890.37	25,424.59
* Factor that takes account of Infrastructure, distance etc.																	

4.5. Unit Rates for Rehabilitation and Expansion

In regard to rehabilitation and expansion, identifying the type of schemes which require rehabilitation and expansion is required before realistic planning is done. Such detailed data is expected to be availed after the WASH inventory. Till then it is possible to establish average unit rates for the different feasible types of schemes considered in this plan in line with the GTP. Regional factors used in Table 4.1are used for reflecting regional variations that arise from distance, infrastructure and socioeconomic development.

Table 9:Escalated Average Rehabilitation Rate per Scheme (USD)

I.No	Region	Average Annual Rehabilitation and Expansion Rate per scheme				
		2011	2012	2013	2014	2015
1	Tigrai	4,025	4,146	4,270	4,398	4,530
2	Gambella	4,025	4,146	4,270	4,398	4,530
3	B/Gumuz	4,025	4,146	4,270	4,398	4,530
4	D/Dawa	3,850	3,966	4,084	4,207	4,333
5	Harari	3,850	3,966	4,084	4,207	4,333
6	Somali	4,130	4,254	4,382	4,513	4,648
7	Amhara	3,675	3,785	3,899	4,016	4,136
8	Afar	3,850	3,966	4,084	4,207	4,333
9	SNNPR	3,675	3,785	3,899	4,016	4,136
10	Oromya	3,675	3,785	3,899	4,016	4,136
0	National	3,878	3,994	4,114	4,238	4,365

4.6. Unit Rates for school and Health post Water Supply facilities

Unit rates for rural schools which are more of primary school are shown in Table below. Unit rates for Schools without any form of water supply facilities planned to be undertaken from 2011 to 2015 are shown in table below.

Table 10:Escalated Unit Rate for Rural Schools water supply facilities in USD (2011-2015)

I.No	Region	Regional Factor	2011	2012	2013	2014	2015
1	Tigrai	1.05	10,500	10,815	11,139	11,474	11,818
2	Afar	1.1	11,000	11,330	11,670	12,020	12,381
3	Amhara	1.1	11,000	11,330	11,670	12,020	12,381
4	Oromya	1.05	10,500	10,815	11,139	11,474	11,818
5	Somali	1.05	10,500	10,815	11,139	11,474	11,818

I.No	Region	Regional Factor	2011	2012	2013	2014	2015
6	Benshangul Gumuz	1.15	11,500	11,845	12,200	12,566	12,943
7	SNNP	1	10,000	10,300	10,609	10,927	11,255
8	Gambella	1.15	11,500	11,845	12,200	12,566	12,943
9	Harari(rural)	1	10,000	10,300	10,609	10,927	11,255
11	Dire Dawa	1	10,000	10,300	10,609	10,927	11,255

Unit rates for health posts are shown in Table below. About 50% of the existing health posts in 2008 are assumed no to have a water supply facility.

Table 11:Escalated Unit Rate for Rural Health Posts water supply facilities in USD (2011-2015)

I.No	Region	Regional Factor	2011	2012	2013	2014	2015
1	Tigrai	1.05	8,400	8,652	8,912	9,179	9,454
2	Afar	1.1	8,800	9,064	9,336	9,616	9,904
3	Amhara	1.1	8,800	9,064	9,336	9,616	9,904
4	Oromya	1.05	8,400	8,652	8,912	9,179	9,454
5	Somali	1.05	8,400	8,652	8,912	9,179	9,454
6	Benshangul Gumuz	1.15	9,200	9,476	9,760	10,053	10,355
7	SNNP	1	8,000	8,240	8,487	8,742	9,004
8	Gambella	1.15	9,200	9,476	9,760	10,053	10,355
9	Harari(rural)	1	8,000	8,240	8,487	8,742	9,004
11	Dire Dawa	1	8,000	8,240	8,487	8,742	9,004

4.7. Scheme Mix ratio

Regional water source/scheme type mix ratio on the basis of hydrological and hydro-geological information.

The GTP plan derived from regional plans is used to determine source mix ratio. Modifications are done as required to reflect the reality in the process of determining the source mix ratio shown in table below. The source mix ratio so determined is used in conjunction with projected un served population, beneficiaries per scheme type and population density to verify the GTP plan. Seen from national perspective, the most important types of sources are dug wells, springs and boreholes as shown in the table.

Table 12:Scheme /Source Mix Ratio

I.No.	Region	Types of Schemes												
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others
1	Tigray	-	-	0.17	0.04	-	0.27	0.19	0.33	0.00	-	-	-	-
2	Gambela	-	0.10	0.26	0.09	-	0.23	0.12	0.20	-	-	-	-	-
3	Benshangul Gumuz	-	-	0.28	0.12	-	0.16	0.14	0.30	-	-	-	-	-
4	Diredawa	-	-	0.32	-	0.16	0.15	0.08	0.29	-	-	-	-	-
5	Hareri	-	0.07	0.22	-	-	0.20	0.09	0.27	0.03	0.03	-	-	0.10
6	Somali	-	-	0.22	-	-	0.05	0.02	0.51	-	0.04	0.12	0.04	-
7	Amhara	0.01	0.22	0.37	0.10	0.01	0.23	0.03	0.03	-	-	-	-	-
8	Afar		-	-	0.02	-	0.14	0.08	0.36	-	-	-	-	0.39
9	SNNPR	0.01	0.07	0.14	0.22	0.08	0.22	0.09	0.15	-	0.01	-	-	0.01
10	Oromiya	-	-	0.25	0.24	0.02	0.16	0.12	0.21	-	-	-	-	-

4.8. Required Schemes

98.5% access by 2015 could be achieved through schemes to be constructed and rehabilitated within the five years (2011-2015).

4.8.1. New Schemes

The number of planned schemes to be constructed from 2011-2015 by region as per GTP and as verified in section 3.2.2 above is shown in the table below.

Table 13:Number of Planned Schemes by Region as per GTP

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cistern	Hafir Dam	Others	Total
Tigrai														
2,011	-	-	695	73	-	526	175	35	8	-	-	-	-	1,512
2,012	-	-	694	66	-	509	170	40	10	-	-	-	-	1,488
2,013	-	-	673	62	-	491	164	41	11	-	-	-	-	1,441
2,014	-	-	686	56	-	478	159	35	5	-	-	-	-	1,419
2,015	-	-	648	57	-	442	147	32	-	-	-	-	-	1,326
Total	-	-	**3,396**	**314**	-	**2,444**	**815**	**183**	**34**	-	-	-	-	**7,186**
Gambella														
2,011		30	61	12		16	5	1						125
2,012		27	74	12		15	5							133
2,013		22	69	11		-	-							126
2,014		19	78	11		18	6							132
2,015		12	75	8		17	6							118
Total	-	**110**	**357**	**54**	-	**84**	**28**	**1**	-	-	-	-	-	**634**
B/Gumuz														
2,011			24	10		23	8	3						67
2,012			20	8		23	8	6						64
2,013			10	5		23	8	5						50
2,014			14	6		23	8							50

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cistern	Hafir Dam	Others	Total
2,015			8	4		23	8							42
Total	-	-	**76**	**33**	-	**113**	**38**	**14**	-	-	-	-	-	**273**
D/Dawa														
2,011			4		2	3	1	2						12
2,012			4		2	3	1	3						13
2,013			4		2	3	1	3						13
2,014			5		2	3	1	3						14
2,015			1		1	1	0	1						4
Total	-	-	**18**	-	**9**	**13**	**4**	**12**	-	-	-	-	-	**56**
Harari														
2,011		5	15			1	0	2	4	3			2	32
2,012		3	15			2	1	2		3			3	28
2,013		3	15			2	1	2		3			3	28
2,014		3	15			2	1	2		3			3	28
2,015		3	15			2	1	2		3			3	28
Total		**17**	**75**	-	-	**7**	**2**	**10**	**4**	**15**	-	-	**14**	**144**
Somali														
2,011			49			17	6	44		38	64	8		225
2,012			59			20	7	52		45	77	10		269
2,013			62			20	7	55		47	81	10		282

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cistern	Hafir Dam	Others	Total
2,014			57			19	6	51		43	75	9		260
2,015			64			23	8	62		51	89	11		308
Total	-	-	**291**	-	-	**98**	**33**	**264**	-	**224**	**386**	**48**	-	**1,344**
Amhara														
2,011	1,010	2,111	1,454	565	63	96	32	31						5,362
2,012	1,593	2,791	1,923	748	83	103	34	32						7,307
2,013	1,669	2,881	1,984	771	86	104	35	33						7,562
2,014	2,019	3,285	2,265	881	98	130	43	34						8,755
2,015	2,109	3,394	2,337	909	101	131	44	34						9,059
Total	**8,400**	**14,462**	**9,963**	**3,874**	**431**	**563**	**188**	**164**						**38,045**
Afar														
2,011				2		13	4	15					26	60
2,012				2		17	6	15					25	64
2,013				1		13	4	15					24	57
2,014				1		17	6						20	58
2,015				1		13	4	15					20	53
Total	-	-	-	**7**	-	**71**	**24**	**75**	-	-	-	-	**115**	**292**
SNNPR														
2,011	82	326	408	642	234	791	264	55		163			18	2,983
2,012	84	337	421	666	238	792	264	57		174			44	3,077

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cistern	Hafir Dam	Others	Total
2,013	87	347	434	683	243	795	265	60		188			35	3,137
2,014	90	359	449	706	248	795	265	62		203			20	3,197
2,015	92	366	458	711	254	797	266	53		159			14	3,170
Total	**435**	**1,735**	**2,170**	**3,408**	**1,217**	**3,971**	**1,324**	**287**	-	**887**	-	-	**131**	15,564
Oromya														
2,011			3,200	1,430	120	728	243	152						5,872
2,012			3,400	1,450	125	737	246	150						6,107
2,013			3,380	1,520	116	732	244	148						6,140
2,014			3,500	1,560	124	765	255	156						6,360
2,015			3,250	1,370	106	705	235	144						5,810
Total	-	-	**16,730**	**7,330**	**591**	**3,666**	**1,222**	**750**	-	-	-	-	-	**30,289**
National														
2,011	1,092	2,472	5,910	2,734	419	2,212	737	340	12	204	64	8	46	16,250
2,012	1,677	3,158	6,610	2,952	448	2,218	739	357	10	222	77	10	72	18,550
2,013	1,756	3,253	6,631	3,053	447	2,199	733	362	11	238	81	10	62	18,836
2,014	2,109	3,666	7,069	3,221	472	2,248	749	358	5	249	75	9	43	20,273
2,015	2,201	3,775	6,856	3,060	462	2,153	718	343	-	213	89	11	37	19,918
Total	**8,835**	**16,324**	**33,076**	**15,020**	**2,248**	**11,030**	**3,677**	**1,760**	**38**	**1,126**	**386**	**48**	**260**	**93,827**

4.8.2. Schemes to be Rehabilitated/Expanded

In a similar manner to that of the new schemes planned to be constructed as per GTP (See the above table), the number of schemes that need to be rehabilitated during the coming 5 Years (2011-2015) could be justified. The rationale behind this deduction is the fact that about 35% of the schemes are not functional at least for a few weeks within a year. Of the estimated existing rural water supply schemes of more than165, 000 it is acceptable to consider 35% of the schemes i.e. **58,595** schemes for rehabilitation and expansion in spite of the rehabilitation and expansion efforts the country is undertaking since the launching of UAP1.

Table 14:Number of Schemes by Region to be rehabilitated or expanded (Adopted From GTP)

I.No	Region	Annual Rehabilitation and Expansion					
		2011	2012	2013	2014	2015	Total
1	Tigrai	213	197	187	187	163	947
2	Gambella	278	283	261	257	243	1,322
3	B/Gumuz	74	74	70	69	68	355
4	D/Dawa	6	9	12	15	20	62
5	Harari	12	30	30	30	30	132
6	Somali	150	180	189	175	207	901
7	Amhara	4,624	5,356	6,698	7,689	8,234	32,601
8	Afar	32	32	32	32	32	160
9	SNNPR	1,285	1,592	1,906	2,226	2,542	9,551
10	Oromya	225	180	272	330	245	1,252
		1,331	1,825	2,364	2,803	2,989	11,312
	National	8,230	9,758	12,021	13,813	14773	58,595

Extensive maintenance, rehabilitation and expansion work is required to bring down non functionality of schemes to 10 % in order to achieve the intended purpose of UAP2. The GTP plan shown in table below that takes big scale rehabilitation and expansion work into consideration is adopted for realizing this objective.

Table 15:Plan for Reduction of Non functional schemes by the regions

S. No	Region	Baseline Non functionality (%)	Annual Plan (%)				
			2011	2012	2013	2014	2015
1	Tigrai	18	15	13	11	9	7
2	Gambella	30	24	18	12	6	0
3	B/ Gumuz	25	20	16	12	9	5
4	D/Dawa	30	26	22	18	14	10
5	Harari	35	25	20	15	10	5
6	Somali	30	26	22	18	14	10

S. No	Region	Baseline Non functionality (%)	Annual Plan (%)				
			2011	2012	2013	2014	2015
7	Amhara	18	16	14	12	11	10
8	Afar	25	20	16	12	9	5
9	SNNPR	25	22	19	16	13	10
10	Oromya	20	18	16	14	12	10
	National	20	18	16	14	12	10

4.8.3. School Water Supply Facilities

Rural school water supply facilities are projected for the years 2011-2015 based on the baseline data of 2008 taken from the Education Statistics annual abstract for the year 2007/2008.Accordingly water supply facilities are planned to be provided for 9409 schools throughout the country during the 5 years UAP 2 plan. The plan assumes that additional schools constructed between 2008 and 2010 are provided with water facilities. See table below for details.

Table 16:Projected Rural School Water Facilities

I.No	Region	Number of Schools (2008 as base year)	2008						Projection of Schools requiring water supply facilities @1% growth rate						
			Water facility	Tap Facility	Well	Total	Access %ge	Number of Schools without water supply	2009	2010	2011	2012	2013	2014	2015
1	Tigrai	1776	405	205	155	765	43%	1011	1,021	1,031	1,042	1,052	1,063	1,073	1,084
2	Afar	287	85	45	32	162	56%	125	126	128	129	130	131	133	134
3	Amhara	5682	1657	773	710	3140	55%	2542	2,567	2,593	2,619	2,645	2,672	2,698	2,725
4	Oromya	9325	3150	1079	2406	6635	71%	2690	2,717	2,744	2,772	2,799	2,827	2,855	2,884
5	Somali	713					25%	713	720	727	735	742	749	757	764
6	Benshangul Gumuz	336	110	35	85	230	68%	106	107	108	109	110	111	113	114
7	SNNP	4241	1338	646	718	2702	64%	1539	1,554	1,570	1,586	1,601	1,618	1,634	1,650
8	Gambella	180	62	25	45	132	73%	48	48	49	49	50	50	51	51
9	Harari(Urban +Rural)	50	38	29	5	72	144%								
	Harari (Rural)							1	1	1	1	1	1	1	1
11	Addis Ababa	655	625	619	11	1255	192%		-	-	-	-	-	-	-
11	Dire Dawa(urban +Rural)	100	68	64	1	133	133%								
	Dire Dawa (Rural)							1	1	1	1	1	1	1	1
12	Total	23345	7538	3520	4168	15226	65%	**8119**	***8,864***	***8,952***	***9,042***	***9,132***	***9,224***	***9,316***	***9,409***
		Assumed in the absence of data													
	Source: Education statistics Annual abstract(2007/8)														

4.8.4. Health post Water Supply Facilities

Rural health post water supply facilities are projected for the years 2011-2015 ***based on the baseline data of 2008 taken from the CSA annual statistical abstract for the year 2007/2008.*** Accordingly, 4,565 health posts are planned to be provided with water supply facilities throughout the country during the 5 years UAP2 plan. The plan assumes that additional health posts constructed between 2008 and 2010 are provided with water facilities. See table below for details.

Table 17:Projected Rural health Post Water Facilities

I.No	Region	Number of Health Posts (2008 as base year)	Assumed Number of Health Posts without water supply (2008)	Projected Health Posts without Water supply facilities						
				2009	2010	2011	2012	2013	2014	2015
1	Tigrai	614	307	310	313	316	319	323	326	329
2	Afar	206	103	104	105	106	107	108	109	110
3	Amhara	2619	1,310	1,323	1,336	1,349	1,363	1,376	1,390	1,404
4	Oromya	1823	912	921	930	939	949	958	968	977
5	Somali	270	135	136	138	139	140	142	143	145
6	Benshangul Gumuz	98	49	49	50	50	51	51	52	53
7	SNNP	2848	1,424	1,438	1,453	1,467	1,482	1,497	1,512	1,527
8	Gambella	33	17	17	17	17	17	17	18	18
9	Harari (Rural)	2	1	1	1	1	1	1	1	1
10	Addis Ababa	35	18							
11	Dire Dawa (Rural)	3	2	2	2	2	2	2	2	2
	Total	8551	4,276	4,301	4,344	4,387	4,431	4,475	4,520	4,565

4.9. Operational and Maintenance Requirements

Operation and maintenance support system is required for both existing and new schemes. The system should take supply chain improvements into consideration if sustainable and reliable service is to be achieved.

4.9.1. General

Many woredas couldn't efficiently provide support to rural water supply utilities due to budget limitation and human power. Many utilities are far away from spare part supply outlets which are usually located in a few regional capitals like Bahir dar, Awassa, Adama and Mekele. Establishing outlets at sub regional level (i.e. selected centrally located zones within regions) would be a step forward in solving the problem in the coming five years time. In CDF financed woredas outlets at woreda level could be recommended. A proven supply chain model in Africa and elsewhere in the world is the one that involves the private sector in a highly competitive and regulatory environment. Experience has shown that spare part provision alone can't be an attractive business due to low pump density at woreda and zonal levels. It will therefore be prudent to combine spare part and pumps supply for a region or regions depending on the size of the regions to create incentive in spare parts provision. Creating a link with rural water supply operators that install and maintain pumps could further increase the confidence of the selected supplier to proceed with spare part provision through restocking even after say two years when the initial seed spare parts are fully sold out.

4.9.2. Operation and Maintenance Support

Support

Operation and maintenance support is being provided by woreda, zonal and regional water offices at the moment. This set up looks to be highly overloaded since the woreda, zonal and regional water offices are engaged in lots of routine activities including regulation and monitoring.

It would therefore be preferable to establish Operation and Maintenance Support Units (OMSU) at selected centrally located zones to undertake the cumbersome task of support provision as recommended by the water supply and sanitation master plan prepared in 2002. As a start the units could be established in partnership with the private sector (suppliers, Youth group organized for running small scale workshops, etc.) OMSU's can ultimately transform to a private entity that provide service at recommended rates. In a situation where a number of motor bikes are to be used for transport in the woredas, the OMSUs can have an additional job of maintaining the bikes.

For carrying out the above indicated tasks OMSUs need to be equipped with a mobile garage, workshop, vehicles etc. They also need budget for keeping some spare parts in their store for immediate replacement or supply upon request by WASHCOMs. WASHCOMs shall also put some money aside for maintenance to keep their scheme going. Such a set up can undoubtedly build the confidence of suppliers to create link with the OMSUs and enable them to continuously restock spare parts after the initial combined pump and spare parts procurement by the regions.

Recommended number of OMSUs and corresponding financial requirements for their establishment within regions are shown in table below. A total of USD 20,200,000.00 is required.

Table 18:Financial Requirement for Regional Maintenance Support by establishing OMSUs

I.No	Region	Number of OMSUs	Maintenance Support(for Establishing OMSU) in USD
1	Tigrai	2	2,020,000.00
2	Gambella	1	1,010,000.00
3	B/ Gumuz	1	1,010,000.00
4	D/Dawa	1	1,010,000.00
5	Harari		
6	Somali	2	2,020,000.00
7	Amhara	3	3,030,000.00
8	Afar	1	1,010,000.00
9	SNNPR	4	4,040,000.00
10	Oromya	5	5,050,000.00
11	Total	20	20,200,000.00

Route Map

Woredas should as much as possible install similar types of pumps along a route. This will finally help to prepare a route map suitable for preparing preventive maintenance schedule woreda operators and OMSUs can use. The route map will have additional benefits for WASH inventory database and future planning if GPS locations, technical and socioeconomic data are collected side by side.

4.10. Reinvestment

In addition to strengthening operation and maintenance, it is time to think about reinvestment at appropriate intervals to make services reliable and sustainable. Reinvestment could be replacement of pumps, development of additional springs, digging of additional dug wells, drilling of additional boreholes, construction of additional water tanks, etc. The best way of handling reinvestment would be cost sharing with rural water supply utilities and communities. Communities could be sensitized to contribute in cash, kind and labor. Utilities could make savings for reinvestment by increasing their income from additional connections and reviewing their tariff by taking affordability into consideration.

In this plan 10% of the investment requirement for new schemes from 2011-2015 i.e. USD 86,526,924.26 is estimated to be required for supporting Reinvestment.

See table 4-12 for details on regional distribution of the allocation done based on the regional investment requirement.

Table 19:Annual Regional Reinvestment Financial Requirement

I.No	Region	Amount (USD) New Construction	Reinvestment@ 10%
1	Tigrai		
	2011	18,902,737.44	1,890,273.74
	2012	21,359,185.02	2,135,918.50
	2013	21,696,813.16	2,169,681.32
	2014	20,403,633.66	2,040,363.37
	2015	18,713,988.98	1,871,398.90
	Total	101,076,358.25	10,107,635.83
2	Gambella	-	
	2011	815,672.88	81,567.29
	2012	769,569.22	76,956.92
	2013	349,564.73	34,956.47
	2014	903,460.27	90,346.03
	2015	368,086.81	36,808.68
	Total	3,206,353.90	320,635.39
3	B/Gumuz	-	
	2011	1,030,814.15	103,081.41
	2012	1,406,349.48	140,634.95
	2013	1,280,944.61	128,094.46
	2014	87,737.42	8,773.74
	2015	566,635.27	56,663.53
	Total	4,372,480.93	437,248.09
4	D/Dawa	-	
	2011	478,585.19	47,858.52
	2012	652,096.74	65,209.67
	2013	586,433.76	58,643.38
	2014	676,128.64	67,612.86
	2015	268,690.27	26,869.03
	Total	2,661,934.60	266,193.46
5	Harari	-	
	2011	814,766.20	81,476.62
	2012	343,347.19	34,334.72
	2013	391,026.02	39,102.60
	2014	405,723.89	40,572.39
	2015	417,895.61	41,789.56
	Total	2,372,758.92	237,275.89
6	Somali	-	
	2011	4,854,673.79	485,467.38
	2012	7,118,542.04	711,854.20

I.No	Region	Amount (USD) New Construction	Reinvestment@ 10%
	2013	7,767,754.96	776,775.50
	2014	7,410,129.31	741,012.93
	2015	9,258,498.93	925,849.89
	Total	36,409,599.02	3,640,959.90
7	Amhara	-	
	2011	20,554,390.83	2,055,439.08
	2012	28,307,647.99	2,830,764.80
	2013	30,052,079.00	3,005,207.90
	2014	35,275,043.89	3,527,504.39
	2015	37,283,456.92	3,728,345.69
	Total	151,472,618.63	15,147,261.86
8	Afar	-	
	2011	2,372,613.15	237,261.31
	2012	2,800,346.29	280,034.63
	2013	2,756,353.51	275,635.35
	2014	996,461.77	99,646.18
	2015	2,464,391.41	246,439.14
	Total	11,390,166.12	1,139,016.61
9	SNNPR	-	
	2011	52,137,772.86	5,213,777.29
	2012	59,080,880.05	5,908,088.01
	2013	61,770,752.64	6,177,075.26
	2014	42,765,973.08	31,286.88
	2015	61,237,009.06	6,123,700.91
	Total	276,992,387.70	27,699,238.77
10	Oromya	-	
	2011	60,492,068.35	6,049,206.84
	2012	67,179,936.45	6,717,993.65
	2013	47,916,260.87	4,791,626.09
	2014	51,801,363.64	5,180,136.36
	2015	47,924,955.24	4,792,495.52
	Total	275,314,584.56	27,531,458.46
11	National	-	
	2011	162,454,094.83	16,245,409.48
	2012	189,017,900.48	18,901,790.05
	2013	174,567,983.26	17,456,798.33
	2014	160,725,655.57	16,072,565.56
	2015	178,503,608.49	17,850,360.85
	Total	865,269,242.63	86,526,924.26

4.11. Regulation, M&E and Water quality Monitoring Requirements:

Participatory Monitoring and Evaluation (M&E) should be effectively used as a tool for measuring progress, evaluate value for money, identify issues, refine baseline data, etc. Accordingly periodic quarterly, semiannual, annual and midterm monitoring and evaluation would be undertaken based on critical indicators identified by the M&E study of the WASH sector. M&E will be undertaken through utilizing budget allocated for program management and supervision. Water quality monitoring (WQM) as part of Regulation and M&E is also crucial in ensuring the provision of safe and potable water in a reliable and sustainable manner.

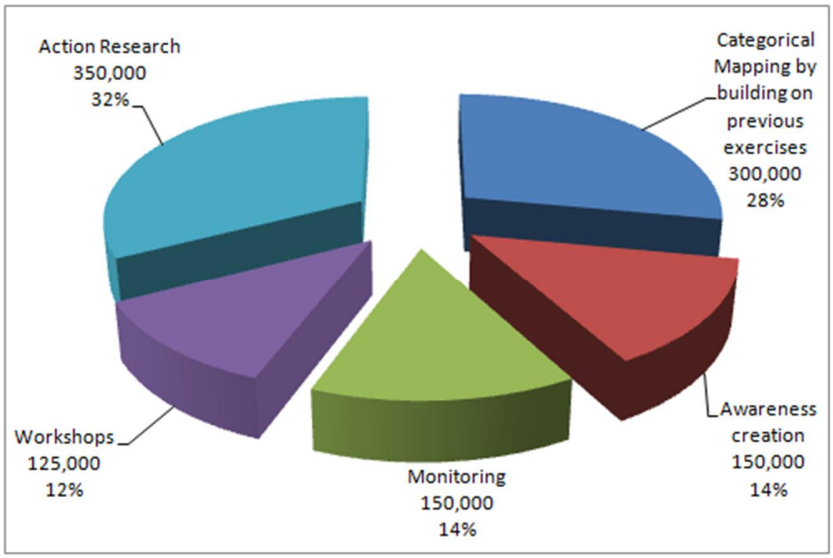
Fluorosis Mitigation: - ***Fluoride is one of the major quality problems in the rift valley part of Ethiopia affecting about 15 million people. The national fluorosis mitigation project housed in MOWE has been undertaking mapping and action research for identifying appropriate fluoride removal technologies that could be replicated throughout fluoride affected areas. The five years UAP implementation period is expected to provide opportunity for replication of recommended appropriate technologies at household and community levels.***

Over pumping of wells could intensify fluoride levels due to leaching of wider aquifer area as observed around Zwai. Such a problem is expected to be mitigated with demand management to be introduced by the rift valley basin authority which is under establishment.

School dental survey and health survey are expected to be carried out by the health sector.

In this plan USD 22,478,600 is estimated to be required for WQM and enhancement of fluorosis mitigation. Of this amount USD 21,403,600 that will be used for National Drinking Water Quality Monitoring as shown in Annex 3 is expected to be generated by the health sector. The remaining amount i.e. USD 1,075,000 that would be used for enhancing fluorosis mitigation as per breakdown shown in table below will be generated by the water sector. Both undertakings will be coordinated by the WASH coordination office in line with the mandates of the two sectors.

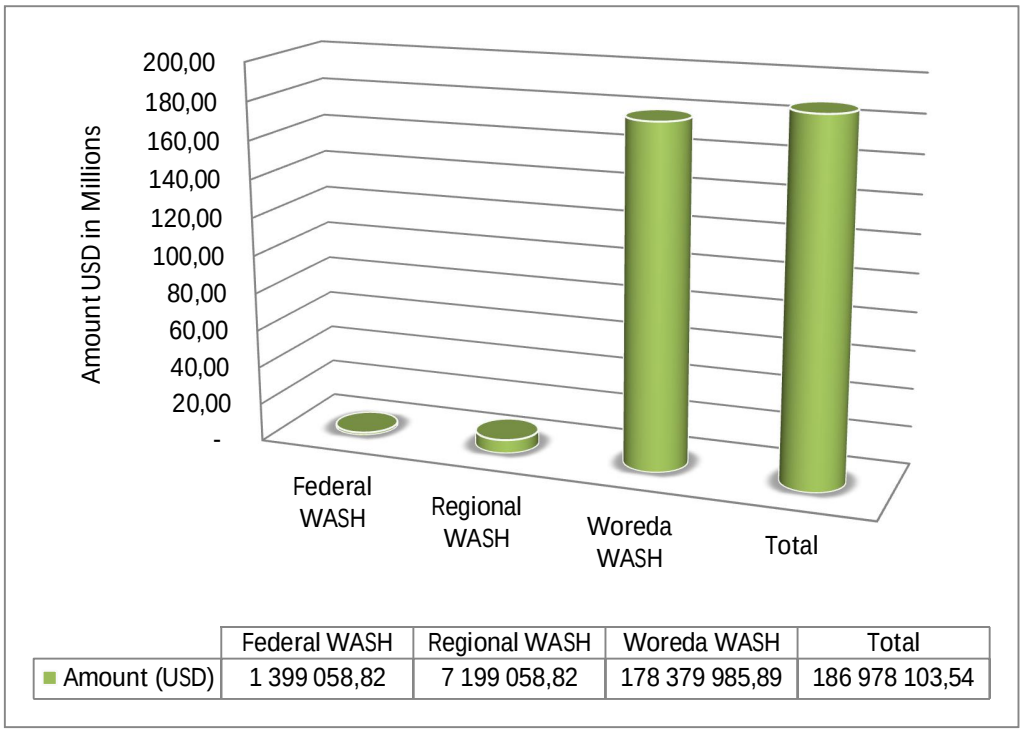
Figure 3:Indicative Financial Requirement for Enhancing Fluoride Mitigation



4.12. Program Management and Supervision Requirement

A huge program like UAP requires a committed and motivated team for undertaking program management and supervision. The program management at federal, regional and woreda levels shall be organized as WASH program management team by bringing experts with adequate experience in the field of water supply, sanitation and hygiene together. The good trend started at the federal and regional levels has helped the water, health and education sectors together during the past few years. Building on what is already done, strengthening and motivating the program management teams in logistics, guiding ma nuals, management tools and skill development at all levels is crucial in order to speed up the implementation of the UAP. In this plan an estimated allocation of USD 187 million USD is put aside for program management and supervision. Of this USD 178.4 million USD is required for building capacity at woreda level based on estimate done for minimum package of the woredas as shown in figure below. The share of the federal and regional WASH would be 1.4 and 7.2 million dollars respectively.

Figure 4: Program Management Financial Requirement for WASH (Water) program (Federal to Woreda Level)



	Federal WASH	Regional WASH	Woreda WASH	Total
Amount (USD)	1 399 058,82	7 199 058,82	178 379 985,89	186 978 103,54

Details are given in Annex 4

4.13. Capacity Building

Training

Capacity building through workshops and seminars could considerably improve the performance rate in design and construction of the large number of schemes in the coming five years. Slow and Conventional design and construction techniques shall be replaced with fast and modern design and construction techniques by involving professional associations, higher learning institutes and practitioner groups. Inactive professional associations like the water resources professional associations shall be reengineered as quickly as possible for undertaking such crucial responsibility.

On the other hand, the Ethiopian Water Technology Centre and the TVETS shall combine hands in upgrading the skill of the hydrogeologists, drillers, electromechanical technicians, water technicians, etc and play their pivotal role in ensuring the availability of the skilled human power and professions required by the UAP as in indicated in Annex 5.

Supply Chain

Spare parts are not usually available at sub regional outlets creating a situation where utilities will be obliged to travel to regional capitals and the federal capital for spare parts. Centralized procurement which is usually slow is limiting the pace of project implementation. Recently studies were undertaken by

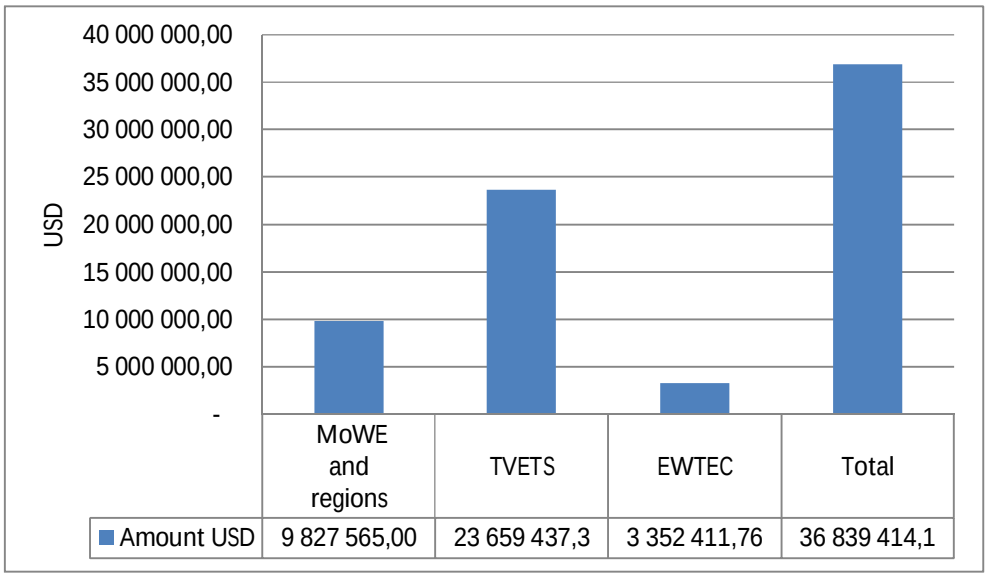
the water and energy sector to cope up with this problem. One of the solutions is to combine spare parts supply together with electromechanical equipments like pumps and facilitate the opening of sub regional outlets by the suppliers. Creating a good link between the suppliers, OMSUs to be established, operators and community water boards and committees can help in putting a system that can ensure the reliability and sustainability of services.

Direct action pumps like rope and washer pumps could be manufactured locally in which case the supply chain becomes less cumbersome.

The federal ministry of water resources and the regional water bureaus could use selected technical institutes like Ethiopian Water Technology Centre to ensure the quality of imported items in collaboration with Ethiopian Standard Authority.

In this plan USD 36,839,414 is estimated to be required in the 5 years planning period for building the capacity of MoWE, Regional BoWEs, Water TVETS and EWTEC as shown in figure below. The bulk of the capacity building needs to be executed at the early stages of the planning period. The capacity building will focus on enhancing skill development of professionals, technicians & skilled workers that will take part in the UAP implementation, manual preparation, and procurement of softwares and improvement of logistics. Skill development would be undertaken through a TOT program for skill transmitters and facilitation of on the job training by the transmitters to the bulk of the professionals and skilled workers.

Figure 5:Summary of Financial Requirement for Capacity Building



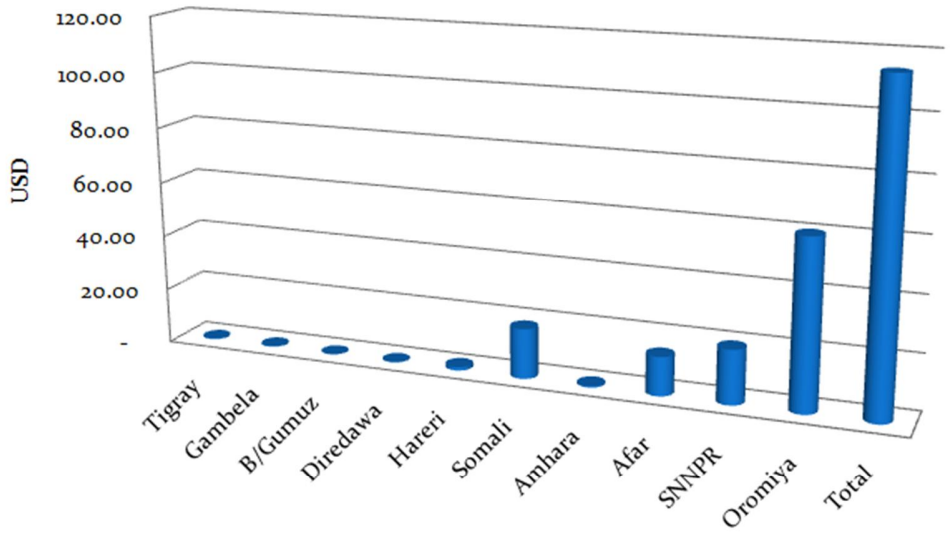
Details are shown in Annex 5 as mentioned above.

4.14. Study and Design

Cost effective study and design of rural water supply schemes contributes to wise use of the limited financial resources. The huge UAP implementation requires fast track study and design aided with modern techniques like the use of satellite imagery, high quality GPS data, global mapper, User friendly hydraulic calculation softwares, design manuals, standards, big scale hydrogeological maps etc.

In this plan USD 114,246,756 is estimated to be required for facilitating fast track study and design. The regional breakdown is shown in figure below.

Figure 6:Estimated Study and Design Expenses in Million USD for High Tech schemes (2011-2015)



	Tigray	Gambela	B/Gumuz	Diredawa	Hareri	Somali	Amhara	Afar	SNNPR	Oromiya	Total
USD in Millions	0.37	0.27	0.07	0.12	1.23	18.02	0.53	13.97	19.45	60.22	114.2

4.15. Catchment Management and Environmental Safeguard Requirement

Catchment Management

Catchment protection and environmental safeguard are increasingly becoming important due to climate change and uncontrolled human activities that are affecting both water quantity and quality .Catchment protection is a community process where communities are organized by woreda agricultural offices and undertake gully protection works, contour terracing , tree plantation etc. The woreda water offices need some budget for supporting such initiatives in order to have catchment protection undertaken at least

around water sources. Integration of catchment protection works at kebele and woreda level is very crucial to fill budget gaps. Basin Authorities which are under establishment are expected to coordinate kebele and woreda level catchment protection efforts throughout the country in the years to come. Impressive results are being achieved in exemplary woredas where ground water potential has improved by 60%. A good example is Doba woreda in western Hararghe.

To this end, financial requirement that will serve as seed money in undertaking catchment protection works is incorporated in this plan.

Accordingly, USD 36,567,733 is estimated to be required as seed money for enhancing catchment protection works. Proper fencing and gulley protection around the water sources and structures are some of the works to be undertaken. The bulk of this seed money could come from communities in terms of labor and materials. Arrangement can be done with the Ministry of Agriculture to deploy the agricultural development workers who have a thorough knowledge of catchment management for the work.

See table below for regional distribution of the allocation done based on the regional investment requirement.

Environmental Safeguard

Water sources should be located reasonably far away from agricultural fields, sanitary landfills, toilets etc. in accordance with acceptable environmental safeguard guidelines. In many rural settlements it is customary to keep dug wells at least 30 meters away from toilets. Financial requirements for sanitation facilities will be addressed in the national hygiene and sanitation strategic action plan. One of the strategies the document uses for achieving 100% sanitation coverage by 2015 is CLTS which is expected to drastically minimize open defecation. The experience of open defecation free villages will be replicated throughout the country minimizing pollution of water sources. In addition to setting of sanitary zone provision of proper drainage system and flood protection will be undertaken to safeguard the water sources in particular and the environment in general. Provision for water quality surveillance and monitoring is also included in section 4-11. .

Table 20:Indicative Financial Requirement for Catchment Management and Environmental Safeguard

I.No	Region	Types of Schemes													
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with Hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
-	-														
1	Tigray	-	-	1,249,728	176,782	-	899,484	549,956	130,479	38,250	-	-	-	-	3,044,679
2	Gambela	-	28,930	131,376	30,402	-	30,912	18,900	713	-	-	-	-	-	241,233
3	Benshangul Gumuz	-	-	27,968	18,579	-	41,400	25,313	9,982	-	-	-	-	-	123,242
4	Diredawa	-	-	6,624	-	7,092	4,692	2,869	8,556	-	-	-	-	-	29,833
5	Hareri	-	4,471	27,600	-	-	2,484	1,519	7,130	4,500	5,520	-	-	9,450	62,674
6	Somali	-	-	107,088	-	-	36,156	22,106	188,232	-	82,432	142,048	41,424	-	619,486
7	Amhara	1,201,200	3,803,506	3,666,384	2,181,062	339,628	207,276	126,731	116,932	-	-	-	-	-	11,642,719
8	Afar	-	-	-	3,941	-	26,220	16,031	53,475	-	-	-	-	77,625	177,292
9	SNNPR	62,205	456,305	798,560	1,918,704	958,996	1,461,144	893,363	204,631	-	326,416	-	-	88,425	7,168,749
10	Oromiya	-	-	6,156,640	4,126,790	465,708	1,349,088	824,850	534,750	-	-	-	-	-	13,457,826
	Grand Total(National)														36,567,733

4.16. School and Health Posts Water Supply Facilities Financial Requirement

Financial Requirement for rural schools water supply facilities based on assumptions and unit rates given in section 4.3.3 above are shown below. The budget for the undertakings is expected to be generated through the education and health sectors respectively. The water sector will make sure that technical issues and guidelines for the execution of the plan is ready through the MoU signed by the three sectors.

Table 21:Financial Requirement for Rural Schools in USD (2011-2015)

I.No	Region	2011	2012	2013	2014	2015	Total
1	Tigrai	2,276,251	2,344,538	2,414,874	2,487,320	2,561,940	12,084,923
2	Afar	294,837	303,682	312,793	322,177	331,842	1,565,331
3	Amhara	5,995,810	6,175,684	6,360,955	6,551,783	6,748,337	31,832,568
4	Oromya	6,056,493	6,238,187	6,425,333	6,618,093	6,816,636	32,154,742
5	Somali	1,605,308	1,653,468	1,703,072	1,754,164	1,806,789	8,522,800
6	Benshangul Gumuz	261,387	269,228	277,305	285,624	294,193	1,387,737
7	SNNP	3,300,033	3,399,034	3,501,005	3,606,035	3,714,216	17,520,321
8	Gambella	118,364	121,915	125,572	129,339	133,219	628,409
9	Harari(rural)	2,144	2,209	2,275	2,343	2,413	11,384
11	Dire Dawa	2,144	2,209	2,275	2,343	2,413	11,384
	Grand Total						105,719,600

Similarly financial Requirement for rural health post water supply facilities based on assumptions and unit rates given in section 4.3.3 above are shown below.

Table 22:Financial Requirement for Rural Health Posts in USD (2011-2015)

I.No	Region	2011	2012	2013	2014	2015	Total
1	Tigrai	552,965	569,553	586,640	604,239	622,366	2,935,764
2	Afar	194,357	200,187	206,193	212,379	218,750	1,031,866
3	Amhara	2,470,972	2,545,101	2,621,454	2,700,098	2,781,101	13,118,725
4	Oromya	1,641,782	1,691,036	1,741,767	1,794,020	1,847,840	8,716,445
5	Somali	243,160	250,455	257,969	265,708	273,679	1,290,971
6	Benshangul Gumuz	96,664	99,564	102,551	105,627	108,796	513,201
7	SNNP	2,442,753	2,516,036	2,591,517	2,669,262	2,749,340	12,968,908
8	Gambella	32,550	33,527	34,532	35,568	36,635	172,813
9	Harari(rural)	1,715	1,767	1,820	1,874	1,931	9,107
11	Dire Dawa	2,573	2,650	2,730	2,812	2,896	13,661
	Grand Total						40,771,461

4.17. Pastoral Communities Requirement

Pastoral communities do not only require drinking water for themselves and their cattle. They also require pasture land for their cattle. To this end water supply schemes shall be constructed close to pasture lands and along the trails of their migration routes as much as possible if the hydrological and hydrgeological conditions allow. Involving clan leaders like Aba Ella(father of the water wells in the Borena situation) in site and technology selection can enhance water supply development in pastoral areas.

4.18. Livestock watering Consideration

Ethiopia has the largest cattle population in Africa. In many parts of Ethiopia specially pastoral regions (Somalia and Afar) it would be appropriate to use wells, rivers, ponds and other surface water sources for livestock watering by keeping the water bodies free of pollutants wherever available. In places of water scarcity providing adequate number of cattle troughs would be mandatory.

Working closely with the clan leaders in Somali and Afar regions and Aba Gedas in Oromya pastoral areas could create an ideal situation for finding appropriate solutions. The well (Ella) management by the father of wells (Aba Ella) in Borena is a good example of community wisdom that has helped Borena pastoralists to sustainably use their traditional wells for more than 1000 years.

The recent irrigation development in:

i. Kesem and Tendaho (Afar region),

ii. Gode(Somali region)

and groundwater development in Borena are creating conducive environment for pastoralists.

In Afar the sugarcane plantation at Tendaho and the sugar mill which will soon start production could soon be a backbone for pastoral communities in providing cattle feed and creating a conducive environment for investment in dairy farm, cattle fattening and beef production. Potential investors, share companies, the government and donors could create innovative ways of supporting livestock watering in the pastoral regions. One such way could be to prepare pasture land and live stock watering facilities around irrigation farms as is being done in Afar.

Livestock Watering Fund: - An innovative way of enhancing livestock watering in pastoral regions is to establish livestock watering fund with the involvement of investors in the field of dairy farm, meat production, sugar production and the government.

4.19: Self Supply

4.19.1. Definition

The basic definition of Self Supply for Ethiopia is '**Improvement to water supplies developed largely or wholly through user investment by households or small groups of households"**. Self-supply

involves households taking the lead in their own development and investing in the construction, upgrading and maintenance of their own water sources, lifting devices and storage facilities A key characteristic of Self Supply is the ladder of incremental improvements in steps that are easily replicable and affordable to users, linked when necessary to microfinance and/or water from productive use. The water technology ladder increases in complexity and cost as one moves upwards, but also implies greater ease in accessing water and reductions in risks and levels of contamination reaching levels contributing to coverage. Steps of the ladder (from bottom to the top) are: unprotected traditional well; semi-protected traditional well, wells fitted with rope pump; wells fitted with hand pumps or those fitted with motorized or solar pumps and many variations in between. In all, management and maintenance are based on local ownership (by individuals or groups of households).

4.19.2. Nature of Assistance

a) Technical Assistance

All self supply interventions will be supported through technical supports that would be given in the form of awareness creation, training, dissemination of packages, manuals and guidelines which will be prepared in early 2012. TA will be provided for upgrading and new development to both (i) individual HHs and (ii) group-led investment

b) Financial Support

Financial support that would cover up to 50% of the self supply hardware is proposed to be given to community groups that qualify based on the self supply policy guideline in addition to the technical support indicated above. Detail criteria for 50% subsidy is under development.

4.19.3. Water Quality

Thermotolerant coliform are taken as the main indicators of water quality. WHO Drinking Water Quality Guidelines and the Ethiopian Water Quality Standard set zero TTC/100ml as the standard for community supplies. In order to contribute to the water supply access coverage, an improved self-supply (family well) has to meet the Ethiopian Water Quality Standard promulgated for community water supplies which is zero TTC/100 ml (Ethiopian Standard – ES 261:2001).Another considered indicator in terms of water quality is acceptable level of fluoride, having high prevalence and related health risks especially in the rift valley area, but a risk that is generally common to all groundwater sources and not just those that are privately financed.

4.19.4. Inclusion of Self-Supply in WASH Inventories

Efforts should be made to include Self Supply schemes into the National WASH Inventory (NWI), in the same way as traditional latrines are included, as part of the household level survey. The first roll-out of the NWI does count family wells used as main drinking source, yet they do not capture other traditional wells, nor the level of protection the well has. NWI incorporating Self Supply should measure performance in terms of water safety, yield and reliability in line with the JMP indicators. Additional

surveys and qualitative research may focus on user satisfaction. Also, the DHS and the agricultural sector inventory can also be consulted for indications of the prevalence of (improved) family wells.

4.19.5 Estimated Seed Money Requirement

The estimated seed money requirement that comprises technical support, financial support and strengthening/establishing youth groups in producing direct action pumps like rope & washer pumps would be about 35.3 million USD as depicted in Annex 6. The self supply facilities indicated in the Annex comprise a mix of facilities already included in the rural UAP water document and new upgradable ones to be sorted out and identified by the regions. *An estimated 100,000 traditional wells are expected to be upgraded to an acceptable standard in line with the self supply policy guideline* The indicated seed money would be generated by the government, donors and NGOs. Based on the tables below technical assistance, financial assistance and direct action pumps production assistance will cover 34%, 57% and 9% respectively. Details on how the assistance is going to be provided is under development as indicated above.

4.20. Summary of Financial Requirement

A total of USD **1,78 billion USD** is required for the rural component of UAP (2011-2015). Of these USD 0.87 billion USD **would** be utilized for new construction and 0.23 billion USD would be used for rehabilitation and expansion. Program management, capacity building, study & design, maintenance support, reinvestment, seed money for catchment management and environmental safeguard are going to cost about 0.48 billion USD. Enhancement of Self Supply requires 0.0353 billion USD. Moreover school water supply and water quality monitoring are going to cost about 0.13 billion USD while health post water supply is expected to cost about 0.04 billion USD as shown in table below.

Table 23:Summary of Expected Costs (2011-2015)

I.No	Region	Amount (USD) New Construction	Amount (USD) Rehabilitation and Expansion	Grand Total (USD)
1	Tigrai			
	2011	18,902,737.44	857,325.00	19,760,062.44
	2012	21,359,185.02	816,712.75	22,175,897.77
	2013	21,696,813.16	798,512.91	22,495,326.06
	2014	20,403,633.66	822,468.29	21,226,101.96
	2015	18,713,988.98	738,418.19	19,452,407.17
	Total	101,076,358.25	4,033,437.14	105,109,795.40
2	Gambella	-		-
	2011	815,672.88	1,118,950.00	1,934,622.88
	2012	769,569.22	1,173,247.25	1,942,816.47

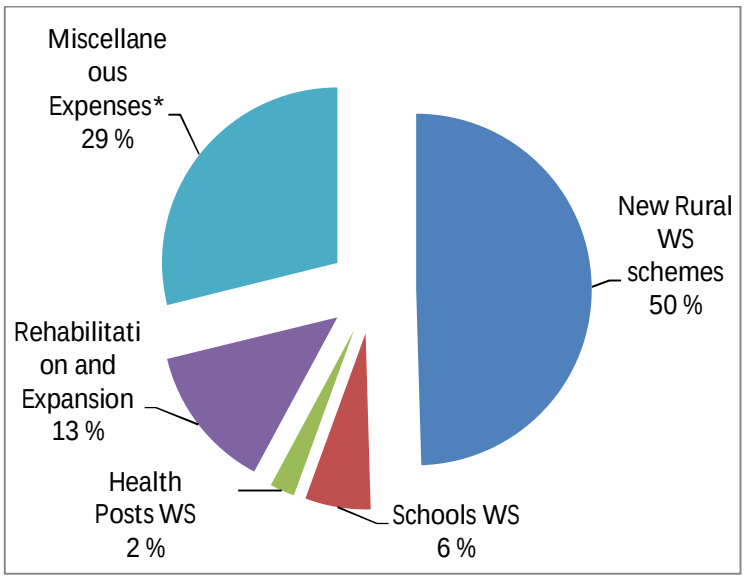
I.No	Region	Amount (USD) New Construction	Amount (USD) Rehabilitation and Expansion	Grand Total (USD)
	2013	349,564.73	1,114,501.97	1,464,066.70
	2014	903,460.27	1,130,344.13	2,033,804.39
	2015	368,086.81	1,100,832.03	1,468,918.84
	Total	3,206,353.90	5,637,875.38	8,844,229.28
3	B/Gumuz	-		-
	2011	1,030,814.15	297,850.00	1,328,664.15
	2012	1,406,349.48	306,785.50	1,713,134.98
	2013	1,280,944.61	298,908.58	1,579,853.19
	2014	87,737.42	303,477.61	391,215.02
	2015	566,635.27	308,051.76	874,687.04
	Total	4,372,480.93	1,515,073.44	5,887,554.37
4	D/Dawa	-		-
	2011	478,585.19	23,100.00	501,685.19
	2012	652,096.74	35,689.50	687,786.24
	2013	586,433.76	49,013.58	635,447.34
	2014	676,128.64	63,104.98	739,233.63
	2015	268,690.27	86,664.18	355,354.45
	Total	2,661,934.60	257,572.24	2,919,506.84
5	Harari	-		-
	2011	814,766.20	46,200.00	860,966.20
	2012	343,347.19	118,965.00	462,312.19
	2013	391,026.02	122,533.95	513,559.97
	2014	405,723.89	126,209.97	531,933.86
	2015	417,895.61	129,996.27	547,891.88
	Total	2,372,758.92	543,905.19	2,916,664.10
6	Somali	-		-
	2011	4,854,673.79	619,500.00	5,474,173.79
	2012	7,118,542.04	765,702.00	7,884,244.04
	2013	7,767,754.96	828,106.71	8,595,861.67
	2014	7,410,129.31	789,768.44	8,199,897.75
	2015	9,258,498.93	962,208.74	10,220,707.66
	Total	36,409,599.02	3,965,285.89	40,374,884.91
7	Amhara	-		-
	2011	20,554,390.83	16,993,200.00	37,547,590.83
	2012	28,307,647.99	20,273,799.00	48,581,446.99
	2013	30,052,079.00	26,114,212.64	56,166,291.63
	2014	35,275,043.89	30,877,268.79	66,152,312.68
	2015	37,283,456.92	34,057,840.32	71,341,297.23

I.No	Region	Amount (USD) New Construction	Amount (USD) Rehabilitation and Expansion	Grand Total (USD)
	Total	151,472,618.63	128,316,320.74	279,788,939.37
8	Afar	-		-
	2011	2,372,613.15	123,200.00	2,495,813.15
	2012	2,800,346.29	126,896.00	2,927,242.29
	2013	2,756,353.51	130,702.88	2,887,056.39
	2014	996,461.77	134,623.97	1,131,085.74
	2015	2,464,391.41	138,662.69	2,603,054.09
	Total	11,390,166.12	654,085.53	12,044,251.65
9	SNNPR	-		-
	2011	52,137,772.86	4,722,375.00	56,860,147.86
	2012	59,080,880.05	6,026,118.00	65,106,998.05
	2013	61,770,752.64	7,431,127.10	69,201,879.74
	2014	42,765,973.08	8,939,107.86	51,705,080.94
	2015	61,237,009.06	10,514,334.48	71,751,343.53
	Total	276,992,387.70	37,633,062.43	314,625,450.13
10	Oromya	-		-
	2011	60,492,068.35	5,718,300.00	66,210,368.35
	2012	67,179,936.45	7,589,426.25	74,769,362.70
	2013	47,916,260.87	10,277,256.57	58,193,517.44
	2014	51,801,363.64	12,581,412.81	64,382,776.46
	2015	47,924,955.24	13,376,615.93	61,301,571.17
	Total	275,314,584.56	49,543,011.57	324,857,596.13
11	National	-		-
	2011	162,454,094.83	30,522,011.00	192,976,105.83
	2012	189,017,900.48	37,235,353.25	226,253,253.73
	2013	174,567,983.26	47,166,889.88	221,734,873.13
	2014	160,725,655.57	55,769,800.85	216,495,456.43
	2015	178,503,608.49	61,415,639.57	239,919,248.06
	Total	**865,269,242.63**	**232,109,694.56**	**1,097,378,937.18**
12	Program Management and Supervision			186,978,103.54
13	Capacity Building			36,839,414.11
14	Study and Design	114,246,755.63		114,246,755.63
15	Maintenance Support			20,200,000.00
16	Reinvestment@10%of Investment Cost	86,526,924.26		86,526,924.26

I.No	Region	Amount (USD) New Construction	Amount (USD) Rehabilitation and Expansion	Grand Total (USD)
17	Seed money for Catchment Management & Environmental safe guard			36,567,732.50
18	Enhancement of self supply			*35,286,986*
19	Regulation, M&E and Water quality Monitoring			22,478,600.00
20	Water supply for Schools	-		105,719,599.72
21	Water supply for Health posts	-		40,771,461.20
	Grand total	**1,066,042,922.52**	**232,109,694.56**	*1,782,994,514*

The percentage distribution of financial requirement for major activities is shown in figure below.

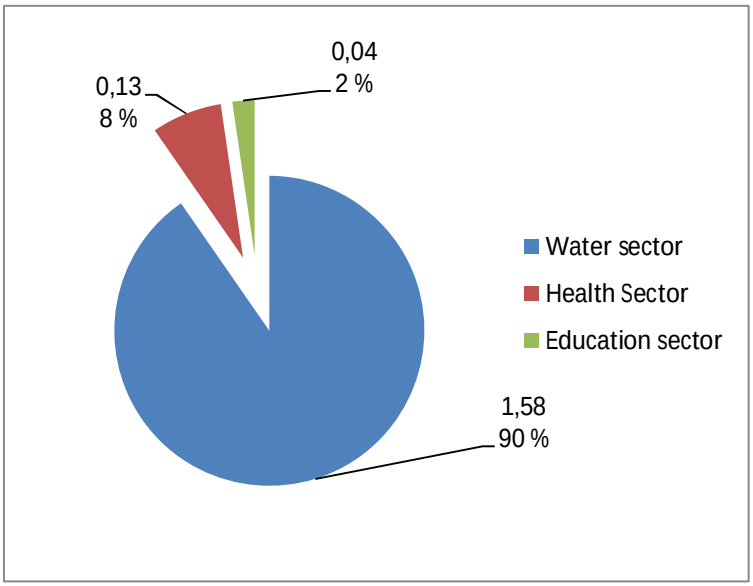
Figure 7: Percentage Distribution of Financial Requirement



Details of Financial Requirements for new schemes construction, Rehabilitation and expansion are shown in Annex 7 and 8 respectively.

Of the total financial requirement of 1.74 billion the water, health and education sectors are expected to generate USD 1.58, 0.13 and 0.04 billion respectively. This will mean the water, health and education sectors will generate 90%, 8% and 2% of the total financial requirement as shown in figure below.

Figure 8:Financial Requirement by Sector in Billion USD



The national WASH coordination office will play the role of coordinating the three sectors in line with their mandates. This would mean the water sector would help in technical aspects of school and health post water supply while required budget and other administrative aspects would be dealt with the health and education sectors.

5. Institutional Development Requirements

5.1 Minimum Woreda level Capacity Building Package

A woreda requires the following for running a WASH program for achieving UAP.

Program management

i. A woreda WASH council chaired by the woreda administrator comprising members from water, health, education , agriculture, women's affairs, finance offices.

ii. Woreda WASH coordination office housed in the water office and guided by the woreda council

Program implementation & Monitoring

i. WASH implementation to be undertaken based on Woreda WASH Annual plan prepared based on the national UAP/GTP framework.

ii. Participatory M & E to be undertaken at kebele level by involving woreda technicians, health extension workers, etc

Human Power Requirement

- 2 health extension workers per kebele
- 3 agricultural extension workers per kebele
- 3-5 water supply technicians per woreda depending on the size of the woreda
- 3-5 electromechanical technicians
- 3-5 CFTs per woreda depending on the size of the woreda
- 1-2 WSG teams per four woredas depending on the size of the woreda
- 2 accountants per woreda
- 2 service providers (could be well trained artisans, youth group) responsible for dug well construction, maintenance
- Complex study and design works by enterprises, consultants
- Complex piped schemes by contractors

Equipment Requirement

- Maintenances rig upon request from the region or OMSU(if OMSU is to be established at sub regional level

- Drilling by drilling contractors

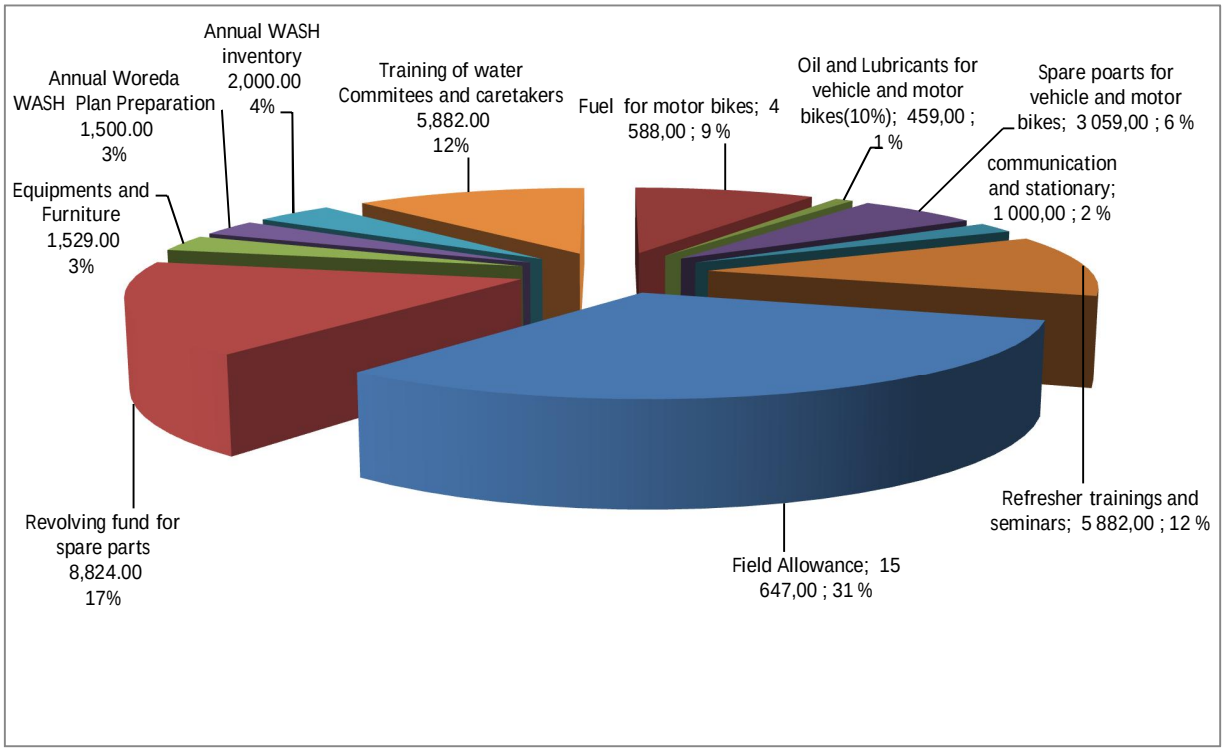
Logistics requirements

- One pick up vehicle per woreda
- 4 motor bikes per woreda

Financial Requirement

In total the woreda minimum financial requirement for operation and maintenance is 50,370.00 USD. The break down that comprises field allowance; revolving fund for spare parts, refresher trainings & seminars, training of water committees and caretakers, fuel and lubricants etc. and the corresponding percentages are shown in figure below. It is assumed that a woreda uses one pick up vehicle and four motor bikes.

Figure 9:Minimum Annual Woreda Operation Financial Requirement



N:B The estimate doesn't include salary and capital investment

5.2. Institutional Arrangement

Institutionally the federal Ministry of water resources and energy is expected to coordinate and monitor the UAP implementation through the WASH coordination unit housed in the ministry. The WASH coordination office in the ministry will be assisted by regional WASH coordination offices in the process

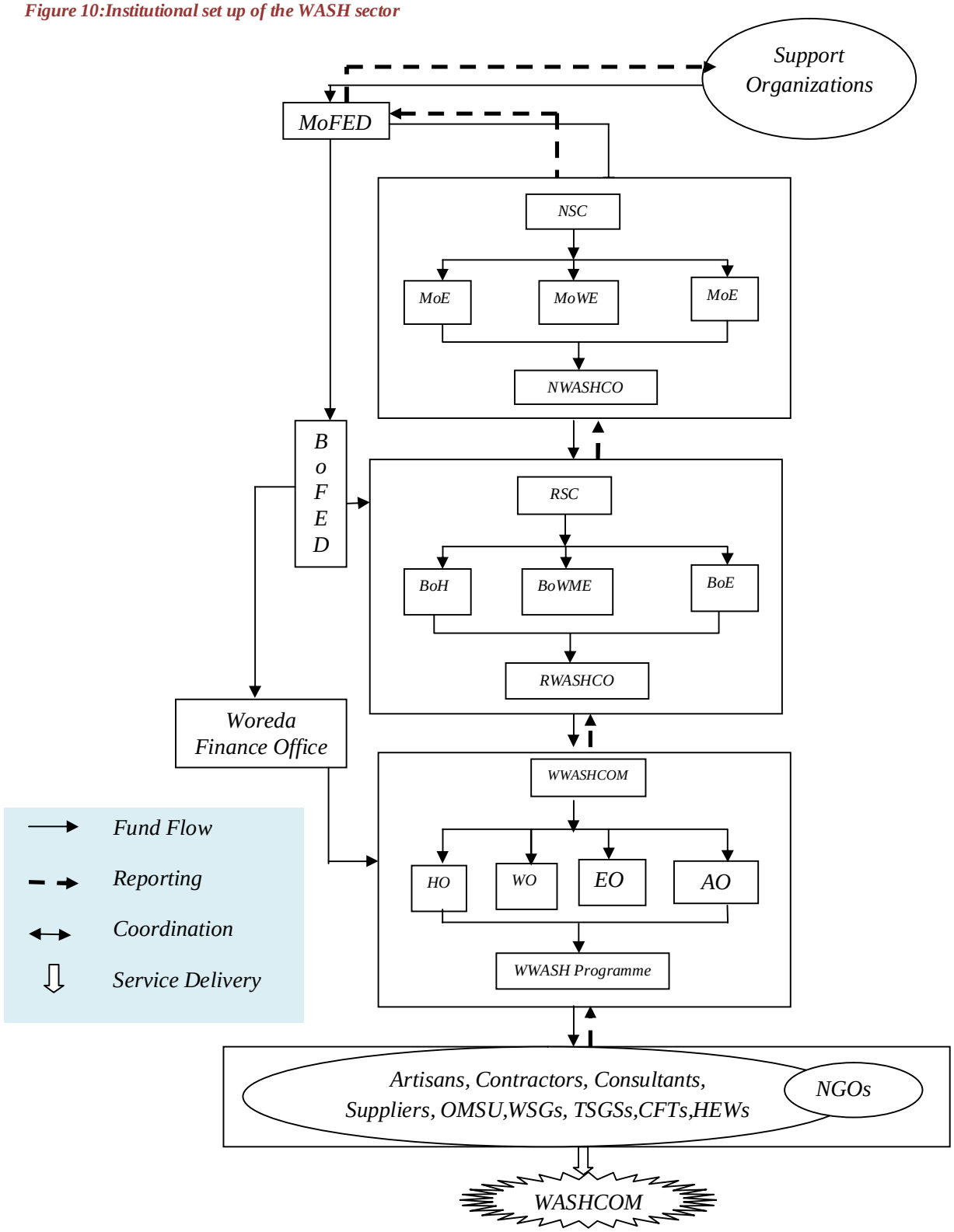
of coordination and monitoring of the UAP. The UAP being part of the GTP will also be monitored by the GTP water desk of Ministry of Finance and Economic Development.

Numerous contractors and consultants shall be mobilized to undertake the huge task of implementing the UAP. One of way of enhancing the capacity of the water supply contractors and consultants is to create public private partnerships between the enterprises at the federal and regional levels and private contractors and consultants.

The experiences of the road, building and power sectors could be replicated in creating incentive for the private contractors and consultants.

The institutional set up from federal to WASHCOM Level is as shown in figure below. The figure shows how fund flow, reporting, coordination and service delivery is going to be carried out from federal to WASHCOM level. Steering committees representing the water, health and education sectors at national and regional level coordinate the WASH program by giving guidance to the national and regional WASH coordination offices. At woreda level, the woreda WASH Committee or council chaired by the woreda administrator takes the responsibility of coordinating the woreda water, health and education offices in implementing the UAP WASH program.

Figure 10:Institutional set up of the WASH sector

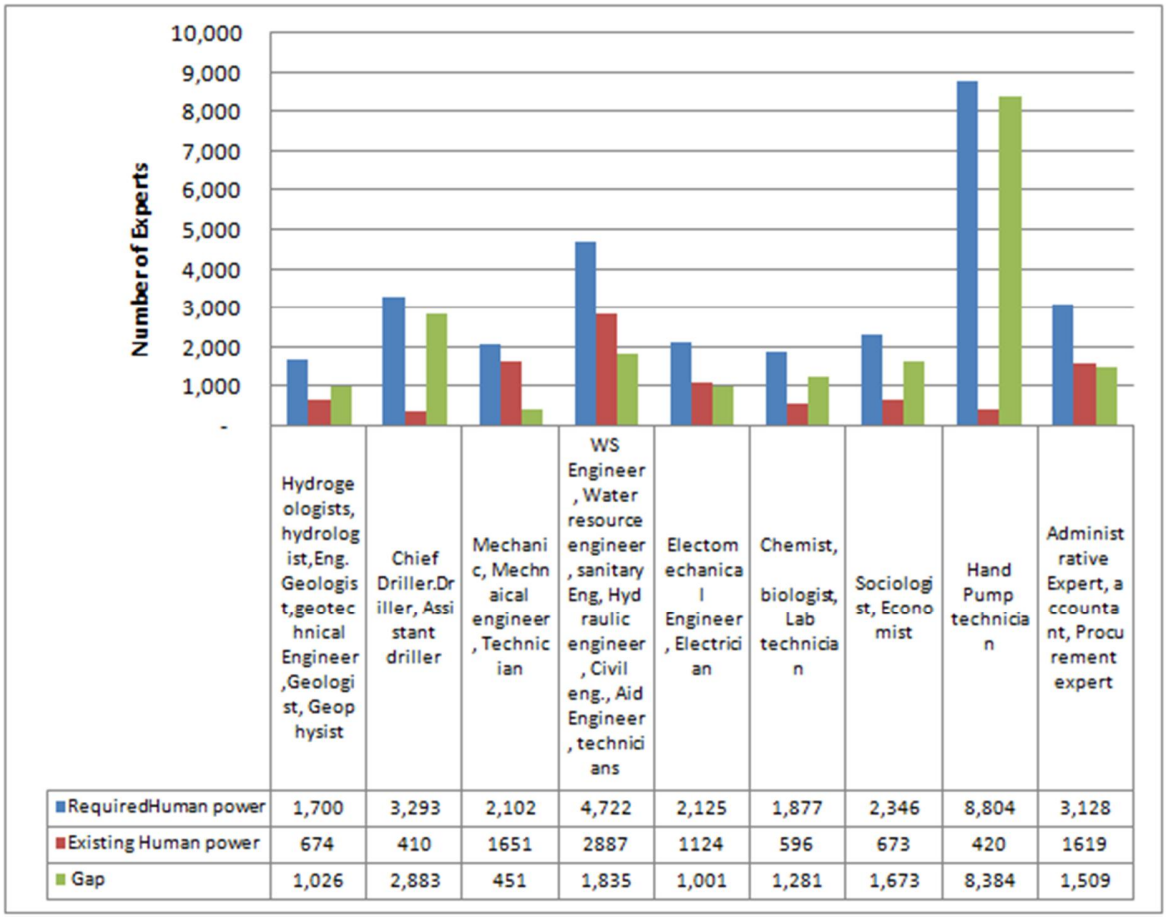


5.3. Human Resources Need

Based on assumptions given in **section 2.7** an overall 122,113skilled and professional experts are required for the five years UAP plan of which *94,589* are going to be caretakers as shown in Annex 9.

Comparison between required and existing skilled and professional human power is done in table below to show the need for concerted effort on the part of the TVETs, EWTEC and the higher learning institutions in the country to fill the gap. Continuous Skill and professional development for the existing and incoming staff is also crucial for cost effective water supply development in the course of UAP implementation. A career ladder that will allow the aerial mechanics, technicians etc. to improve their skill and profession shall be put in place for continuous enhancement of their performance.

Figure 11:Comparison of Required and Existing Skilled and professional Human Power Requirement with Gaps



	Hydrogeologists, hydrologist,Eng. Geologist,geotechnical Engineer,Geologist, Geophysist	Chief Driller.Driller, Assistant driller	Mechanic, Mechnaical engineer, Technician	WS Engineer, Water resource engineer, sanitary Eng, Hydraulic engineer, Civil eng., Aid Engineer, technicians	Electomechanical Engineer, Electrician	Chemist, biologist, Lab technician	Sociologist, Economist	Hand Pump technician	Administrative Expert, accountant, Procurement expert
RequiredHuman power	1,700	3,293	2,102	4,722	2,125	1,877	2,346	8,804	3,128
Existing Human power	674	410	1651	2887	1124	596	673	420	1619
Gap	1,026	2,883	451	1,835	1,001	1,281	1,673	8,384	1,509

5.4. Equipments and Materials Need

Required major equipments and materials are shown in table below.

Table 24:Major Equipments and Materials Requirement

I.No.	Description	2,011	2,012	2,013	2,014	2,015	Total
1	Rope Pump	3,564	4,835	5,009	5,775	5,976	25,159
2	Afridev Pump/Indian Mark II Pump	8,122	8,828	8,830	9,317	9,009	44,106
3	Submersible Pumps Q=5l/s, H=100m	737	739	733	749	718	3,677
4	Submersible Pumps Q=8l/s, H=250m	795	439	435	406	380	2455
5	Casings 6" (in meters)	73,725	73,925	73,300	74,925	71,775	367,650
6	Casings 8" (in meters)	159,050	87,800	87,000	81,200	76,000	491,050
7	Rigs	54					
8	Maintenance Rigs	18					

5.5. Human Resources Development Consideration

The country has 23 governmental universities, a few private universities a number of colleges and learning institutes. Addis Ababa, Mekele, Arba Minch and Bahir Dar universities have well organized departments that graduate a considerable number of engineers, hydrogeologists, accountants and other professionals at graduate and post graduate levels. The ministry of education as a WASH partner could facilitate the linkage of these and other universities with the WASH sectors and help in tailoring individual exercises, group exercises and dissertations for solving actual technical problems of the various sectors. At international level, the experience of Germany, the Netherlands and India could be used as a bench mark for preparing practical course modules that can improve study, design and implementation capacity.

The various colleges, TVETS and other learning institutes could build their capacity through interaction with well organized local and foreign universities. Moreover, they shall use the launching of the huge GTP program as an opportunity and build their capacity with modern IT equipments, Workshops, laboratories, surveying equipments and other teaching aids. GTP implementers including the WaSH sector shall open their door for apprenticeship so that the water technicians, electromechanical surveyors, draftspersons, etc. can be skilled enough for handling WASH activities at kebele and Woreda levels.

The human resource need indicated in Annex 9 shall be realized through the concerted effort of the universities, colleges and other training centers under the umbrella of the GTP.

The water sector TVETS could improve their teaching quality in a similar manner by specifically enhancing the skills of their instructors through a TOT program to be arranged in the Ethiopian Water Technology Center.

On the job practical training could also be arranged for those technicians already assigned in the woredas. It is expected that the pilot capacity building of a few water sector TVETS by UNiCEF, SNV and Water aid could be scaled up with the use of capacity building funds being generated by support giving organizations. The GTP Capacity building program is also expected to strengthen not only the water sector TVETS but the other TVETS which are assumed to be training centers for skilled human power of road, building, energy and other sectors that complement the water sector in achieving the GTP.

5.6. Organizational Development Consideration

The Ministry Of Water Resources is now organized as Ministry of Water and Energy. The Water bureaus have also organized themselves as Water and Energy bureau. This will create an opportunity for enhancing not only hydropower but other renewable energies like wind, solar and bio gas energies for water supply development.

The water and energy sector as an organization shall build capacity at kebele and woreda levels like the health and agricultural sectors. The effort towards assigning water technicians at kebele level in the kebele water desks to be established shall be started at least in bigger kebeles with more than 3 schemes in the coming 5 years time.

The sector requires the establishment of an active water and energy professional association, practitioner groups including water and energy advisory group in the process of undertaking a huge universal access plan.

The BPR implementation launched by the sector shall be fine tuned by incorporating energy in the re engineered processes.

A strategic map for measurement of UAP progress in line with balanced score card (BSC) shall be undertaken immediately.

6. Implementation Strategy

6.1. Key principles

- ✓ Be in pursuit of Water Resource Management policy and strategy and Growth and Transformation Plan (2011-2015).
- ✓ **Integrated WASH Activities:** Ensure integration of WASH activities at community, woreda, regional and federal levels.
- ✓ **WIF Compliant:** Any activities in water supply irrespective of actors have to be in line with the principle and in compliance to the revised WIF.
- ✓ **Demand Responsive:** Design water supply activities primarily in response to need and to requests made by the user community over to those that are supply driven.
- ✓ **Safe Water Supply is Not Free of Charge:** Besides the sense of ownership that comes with users' contribution for infrastructure development, cost sharing by the user community will remain one source of income filling the huge financial gap to achieve UAP. Priority to invest would be given to those communities that bare their share of financial responsibilities in advance.
- ✓ **Feasible, Simple and not Complex Schemes:** As far as conditions allow first priority should be given to those technically feasible options that are simpler to build and sustain, at the communities level.
- ✓ **Minimum Design Period:** A minimum of 5 years of service duration / lifetime has to be guaranteed prior to investing on new rural water supply schemes.
- ✓ **No Investment Where No Guarantee To Sustain with a special attention to the marginalized and pastoral communities:** The capacity for the day to day O&M of the scheme has to be built within the user rural community. Furthermore, for rural water supply, the bare minimum requirement is that all costs associated to operation and maintenance costs are to be borne by the user communities. Hence schemes with minimal recurrent costs are in the user's community's interest. Since ascertaining the financial capacity and skill for O&M is essential prior to any investment in water, any construction work will not start prior to that. In the case of marginalized and pastoral communities additional efforts for increasing awareness and building capacity will be done in cooperation with the ministry of federal affairs and concerned stakeholders.
- ✓ **Assessment of Social Issues:** An assessment of human settlement patterns, human activities, and people's perception and community willingness to contribute towards initial investment and operation and maintenance has to be central in WASH intervention.
- ✓ **Marginalized Communities:** Water is the felt needs for these communities; their willingness to contribute is evident. Although there could be real challenge in finding technical solution and reliable resource, yet prioritization need to be given to these communities.

- ✓ **Optimum Use of Resources:** In UAP ultimately all communities and institutions will be supplied with water, yet since implementation cannot start at the same time for all communities, priority is to be given to those activities with optimum cost efficiency. Where the per capita cost of rehabilitating, expanding or making operational the un-functional existing schemes is minimal those would be given priority over building new ones.

- ✓ **Defined Roles:** The role of every stakeholder should be defined in advance, in consultation. Users' role at all phases of implementation right from the beginning should be defined and conferred with.

- ✓ **Informed Decision on Technology:** The decision as to the kind of investment Awareness creation about all the feasible technical options along with its cost implication is essential for the communities to choose the technology they want, afford, and maintain. Eventually the entire responsibility to sustain scheme serviceability lies under the shoulder of the user community. Under such circumstance, knowledge about what it takes to sustain in advance is central to the user community.

6.2. Strategic Areas of Focus

Knowledge about the pros and cons of the different technical options in terms of sustainability, cost effectiveness, efficiency, service year etc. are some of the vital concerns that need to be considered in depth prior to any investment and prior to making proper technical choice in regard to the kind of activities or measures that need to be taken.

6.2.1 Sustainability

In a country like Ethiopia where resources are limited in all aspect, focus on sustaining system serviceability period to its utmost becomes vital both for existing and the new ones that would be developed. Sustainability in terms of service period and service level is crucial and is in line with the GTP infrastructural development focus, on quality of service. The key considerations as one focuses on sustainable schemes are to ensure that the water supply schemes are:

- ✓ **Easily operated and maintained at the community level.** First and foremost the appropriateness of the technology in terms of its O&M requirement should be assessed in terms of community operational skill and financial capacity in advance prior to investment. Further it is also vital to ensure the user community's commitment to meet all the requirements of O&M and to institute consistent sound operation and maintenance practices.

- ✓ **Provide reliable water supply** meeting as a minimum the daily demand of the community on a daily bases over the designed lifetime of the scheme. Ensuring the reliability of the yield prior to developments and any improvements measures is very essential. Knowledge on the seasonal fluctuation and verifying what the basic water resources management activities are also vital to sustain yield.

- ✓ **Have sustained quality of water** meeting the minimum set standard throughout its service period. Sustaining the quality of water with the improvement measures identified in advance including the environmental protection and regular disinfection are vital throughout the operation period.

6.2.2 Cost Effectiveness

A comparison of cost of infrastructure development and the respective O&M arrangement over the schemes lifetime and the benefits / effects in terms of desired service level in terms of adequacy, reliability and quality of water has to be considered in advance for the different options and communicated clearly prior to deciding the technical choice. Prior to providing water to any community it is therefore vital to reach consensus as to the kind of improvements the people wanted in regard to the water that is to be supplied.

As far as the user community is concerned what matters most is the **quality** and **quantity** of water that is made available at **a place or at an access level desired** at a **price that is affordable** regardless of the process (abstraction, transmission, purification and distribution) that the water has to go through. Cost effective design or appropriate design for the local condition is thus determining the technology that avails the desired service at the desired time, place, quality and quantity at an affordable minimum possible cost.

6.2.3 Efficiency

Implementation period of five years for UAP remains to be an enormous challenge even with due consideration of well planning and resource mobilization. To improve efficiency areas of focus while planning of UAP at all level includes but not limited to the following:

- ✓ Preparation of financial planning: Prepare at all level of the 5 year plan and also an annual financing plan, operating and capital budgets; a cash flow analysis, and a fund-raising strategy.
- ✓ Optimization of available resources: Conduct capacity assessment and know what is locally available in terms of human, material and financial resources. Priority to be given to that which is readily available locally and optimizing the use of available resources which also sustains water supply impacts.
- ✓ Community Mobilization: Facilitate participatory decision making processes. At community level, the user community/beneficiaries involvement right from the planning period influences their contribution towards the water supply project and their decision in technical choice.
- ✓ Shortening Delivery time: Spend sufficient time in planning which ultimately shortens the time to deliver result.
- ✓ Harmonization of efforts: Identify actors at all level and build consensus on the strategy of implementation. Accordingly planning for who is doing what and when then improves efficiency.

6.2.4 Service Year/Design Period: -

In rural water supply context, the useful lives of an asset are affected by factors like the environment, construction material used, water quality and maintenance. Hence service year in terms of these factors should be assessed and technology choice should take into consideration investment against service years.

6.2.5 Technology Selection

It is important that communities choose the technology that will give them the highest service level they want, afford, and can maintain. Service level is determined by a number of factors, including the quantity and quality of the water, the amount of time needed to collect water, and the reliability of the system.

The bases for community choice of technology are dependent on:

- ✓ The availability of adequate source for human consumption and for animal consumption as well where there is a need;
- ✓ The quality of raw water;
- ✓ Affordability of the scheme and willingness of the community to pay';
- ✓ Operational and management capability';
- ✓ Geographical settlement or source distance from the beneficiaries; and
- ✓ Community size which also determines the need for distribution public points.

Technical Considerations

Water Supply Schemes: Steps for identifying viable alternative schemes for the community include:

- ✓ Identifying potential water sources for clean water supply;
- ✓ Identifying a range of technology options that are viable for the community under consideration based on the potential sources of supply and service levels requested by the community;
- ✓ For each technology options identified, finding the estimated per capita investment cost and operation and maintenance (O & M) cost;
- ✓ Determining the affordability level of the community particularly for covering cost of O & M; and
- ✓ Comparing the O & M costs of the different feasible technology options with the expressed commitment of the community in regard to covering O&M cost. Also work out the commitment of the community to share in the investment cost.

Water Supply Technology Choice: This has to take into consideration: cost of construction scheme, reliability of yield particularly during drought period, operation and maintenance requirement. The cheapest and simplest option to construct, operate and maintain having greater priority. Groundwater has a number of advantages over surface water and is recommended as the source of water supply whenever it is available within the community. Groundwater particularly from deeper source is more reliable throughout the year and even during the periods of drought, and generally this does not require treatment. Springs are usually the preferred source of water for they are relatively inexpensive and provide good

basic service. More expensive machine drilled boreholes should not be encouraged if springs are available. Generally, hand dug wells would be the least cost option, but relatively less reliable and adequate source. In all cases care must be taken that the source provides a year round supply of water. Surface water treatment for small piped systems should be based on slow sand filtration preceded by roughing filters and should make use of hydraulic rather than electro-mechanical processes. Infiltration galleries can provide even better and more reliable treatment at lower costs and should be used whenever technically feasible.

6.2.6 Gender Issues

Gender issues are crosscutting issues in WASH services. Men and women often have different roles, levels of demand and preferences for WASH. It is women who most often manage WASH activities at the household level. Since women and girls may spend a large amount of time fetching water, they have a strong incentive to contribute towards improved WASH services and to strong desire to maintain and sustain the facilities once they are in place. To address these differences, community consultation processes for system planning demands for the participation of both women and men. It is vital to engage both women and men in all phases of WASH activities or project cycle but with more emphasis for the engagement of women:

- ✓ During promotion, women need to be better sensitized. The promoter should not only clarify the practical need but also the strategic need regarding women's right, role women plays and her contribution;
- ✓ Women involvement in making the initial demand for an improved service;
- ✓ Project preparation and planning – again to allow women to fully participate without inhibition during project preparation and planning;
- ✓ Women's need to have a more say in site selection;
- ✓ Implementation and post implementation – the contribution of women is immense i.e. involve in construction, contribution of labor, and in-kind, food, cleaning and clearing sites during construction. Due importance need to be given to women during post construction – for safekeeping and guarding the water point area, water distribution, hygiene education can better be done by women. Women need to participate equally with men;
- ✓ Monitoring & Evaluation – assure women's participation in M & E. Lack of on-time monitoring and supervision would result at adverse consequences. As women are the top most beneficiaries of clean water in close proximity, they would involve in supervision and monitoring more effectively than others; and
- ✓ To facilitate this, in rural context at least two of the five WASH committee members will be female. Two pump caretakers will be trained, one male and one female, while in urban women need to be members of the Water Board and also hold positions in the utilities to ensure their participation in decision-making process.

6.2.7 Community Mobilization

The involvement of the community is to start with the expressed community demand for WASH activities in their locality. The community involvement at every stage of the project cycle, their contribution, in cash and in-kind, the move to community management thus creating a sense of ownership and their active involvement of the private sector in communities initiatives will all contribute to the sustainability of WASH programs. It is important to note that ownership in this context refers not necessarily to the legal status, but more importantly, a sense of ownership developed through genuine participation in planning and investing in facilities that respond to real needs. Thus assigning responsibility for WASH services to user communities who have the most at stake will improve the efficiency, functionality and sustainability of service.

Community Consultation: - Community consultation is required for all the proposed WASH activities. The following sequence of activities need be undertaken:

- ✓ Public discussion on the alternative projects;
- ✓ Agreement on the service – level based on an understanding of the required community contribution;
- ✓ Selection of preferred alternative from among the various feasible options
- ✓ Consultation about the locations of water point /Women needs to be involved/; and
- ✓ Also work out the commitment of the community to share in the investment cost and where agreed communities to start mobilizing the cash contribution.

6.3. Planning for Implementation

The disparity in water supply coverage and implementation capacity between regions and between Woredas is noteworthy. In the reported water supply coverage of 2008/9 alone the difference in coverage between two regions is reported to reach about 40%. Similar marked disparity also exists between the Woredas even within the same region. Proper planning for implementation is therefore to be sought at all level in order to provide water to all within 5 years particularly in a situation where such disparity exists. This includes defining where and what should be the focus areas, what should be the prioritization criteria for all activities and when to do what.

Primarily as noted above until the national UAP and regional UAPs are cascaded down to woreda level, success of UAP will again be frustrated as before. The Woredas have to revise their previous woreda UAP plan or to prepare afresh where there is none. Nevertheless, the UAP has to include as well detail plan for implementation.

6.3.1. At Federal Level

This particular draft UAP plan will be circulated for review and comment and regional consultation will be carried out at national level shortly prior to finalization of UAP. Once the UAP plan is finalized at national level, the national WASH coordination unit will then take the responsibility of securing resources, overall oversight and monitoring of this UAP. The primary task of Ministry of Water and

Energy (MoWE) would be to ensure that the respective regional bureaus have reviewed and finalized their regional UAP plan and cascaded down the same to zonal and Woreda level in the first year of implementation.

The (MoWE) will continuously manage the national UAP, give all required support to Regions; monitor, evaluate and as necessary revise UAP implementation; review periodic financial, procurement and physical accomplishment reports from Regions; prepare and consolidate periodical progress reports.

6.3.2. At Regional / Zonal Level

Some of the regions still have zonal water offices to perform the regional water bureau function on its behalf. In such instances the regional water bureaus then play similar roles as the Ministry of Water and Energy. The main step by step activities that need to be carried out at regional/zonal level are:

S.No	Activities	Time Frame
1.	Where zonal water offices are operational, ensuring that the regional respective zonal offices are equipped adequately in terms of manpower and resource: both material and financial.	2011
2.	Building the capacity of all those Woredas in the region/zone that have no donor financed WASH programs with priority given to marginalized Woredas and those with the most pressing needs.	2011-2012
3.	Ensure that all Woredas have adequate capacity to plan, resource, implement and monitor the UA plan. Some donor financed Woredas may also need refreshing trainings and equipping.	2011-2012
4.	Carrying out the responsibility of ensuring that all Woredas in its region either revises or prepares afresh its Woreda wide UA plan.	2011 -2012
5.	Review the regional WASH plan based on the woreda based UA plan.	2011-2012
6.	Package and procure regional/zonal level services, works and goods contracts. (Refer the procurement section for details)	2012-2015
7.	**Continuous follow up and monitoring of implementation.**	**Quarterly**

6.3.3 At Woreda Level

As before a stepped approach has been designed for implementation of UAP. This includes when to do what: planning, community mobilization, implementation, operation & maintenance, and monitoring & evaluation.

The Stepped Approaches:

The UAP implementation is to start in all the Woredas simultaneously in spite of the capacity limitation that needs to be enhanced in an accelerated manner. Though every Woreda shall set its prioritization criteria and steps later at Woreda level during its strategic planning phase, the principles set below however remain key at all time. Tools like Community development fund (CDF) and other tools that will emerge as innovative and acceptable will be deployed in the realization of the stepped approaches.

Step 1: Capacity Building: In every Woreda the first undertaking at Woreda level is the establishment of WASH team where there is none. The established team will then be at least equipped as per the designed minimum capacity building package for woredas. (Conducting baseline survey and WASH inventory, means of transportation, undertaking O& M activities etc.)

Step 2: Baseline survey and WASH inventory: In order to be realistic about the water supply situation that the Woreda WASH team needs to address, the Woreda WASH team performs as part of the planning process baseline survey including Woreda wide inventory as per the guideline and format prepared at national level.

Step 3: Planning: On the bases of the realistic situation and taking into consideration the strategic areas of focus mentioned above, Woreda wide UAP planning will be prepared using the planning model for UAP at Woreda level. The planning team at Woreda level defines in its planning the resources needed to achieve the UA objective in terms of human resources, financial resources, and material in terms of goods, works and services. The outputs of these plans are:

1. **The requirements for physical improvements in Water Supply: -** The required number and volume of work for rehabilitation of existing point sources, rehabilitation and expansion of small schemes with distribution, construction of new point sources including hand-dug well, spring protection and drilled shallow boreholes, and new small schemes with small distribution either form spring or drilled borehole source. The plan also includes packaging the services, works and goods and preparation of procurement plan.

2. **Management system improvements of Water Supply facilities: -** The list of requirements for strong and active community involvement at all stages of the project cycle, for the formation and training of WASH committee that manages the scheme, training of attendants for operation and maintenance, and for making spare parts available with reasonable time and cost.

3. **Capacity improvement to support the development of water supply systems and carry out monitoring and evaluation in a decentralized environment: -** The list of required

training materials and the number of on the job trained and formally trained staff, artisans, promoters, LSP teams, etc. and a system for monitoring, evaluation and reporting.

Step 4: Resource Mobilization: This is a continuous process throughout the implementation period. Identifying potential partners and involving the key partners in the planning process is the first step to ease resource mobilization. The key players for UAP at Woreda level are the local level Government, NGOs, private sectors and communities. The Woreda WASH not only ensures involvement of these partners during the planning stage but also assesses first the resources available at Woreda level by these key players in addition to what the regional and national government, donors and international development agencies, and regional and national NGOs and private sectors can do. The resources assessed are in terms of human resource need, financial and good, works and services. Once resources are assessed the WASH team then sets the priorities for mobilization bearing in mind the strategic areas of focus.

Step 5: Implementation: - This would be mainly activities at community level which is supposedly to start with community mobilization, formation and equipping of WASHcos, followed by community technical choice, contribution towards the cost of the scheme and contracting out as necessary the study and the construction work either for new or existing scheme rehabilitation and expansion.

Step 6: Operation and Maintenance: - The woreda ensures for both existing and newly constructed schemes if there is the capacity both skill and financial wise to operate and maintain schemes at community level. In case of newly constructed schemes the Woreda ensures that the necessary skill for operation and minor maintenance, is developed and the required fast moving spare parts are made available prior to commission of water schemes for community use. For existing schemes the Woreda also assesses the need for trained schemed attendants whether they are still in the area or are in need of refreshing skill development trainings.

Step 7: Monitoring and Evaluation: - Regular monitoring at all times during study, construction and operation period of water supply schemes need to be undertaken at community, Keble and Woreda level. Monitoring formats for recording both progress indicators to track program activities and result based indicators after implementation are to be distributed at community and Keble level.

6.4. Procurement Procedures

6.4.1 Procurement Items

Procurement items for rural water supply work include services, works and goods.

Services:

The service required under Rural Water Supply - UAP at different levels includes the following:

1. Local Service Providers licensed at Woreda level providing at least one of the following services:

   - ✓ Plan/design of water supply schemes;
   - ✓ Sitting and surveying;
   - ✓ Help communities to plan and manage their facilities;
   - ✓ Training of community and care takers;
   - ✓ Community mobilization and training of WASHCOs.

2. Consultants licensed at Regional or National level to at least perform one of the following:

   - ✓ Build capacity of Woreda WASH team, prepare 5 years strategic plan
   - ✓ Conducting hydro-geological investigation including borehole sitting and drilling supervision.
   - ✓ Carryout study and design of Rural Piped Scheme
   - ✓ Conduct rehabilitation and expansion studies for rural piped scheme
   - ✓ Supervise construction of rural piped scheme
   - ✓ Supervise rehabilitation and expansion works of rural piped scheme

Works:

The different work contracts for rural UAP include:

1. Local Service Providers licensed at Woreda level constructing at least one of the following tasks:

   - ✓ New hand dug wells and installation of pumps
   - ✓ New on spot spring capping
   - ✓ Rehabilitation of existing point sources

2. Drilling contractors licensed at regional or national level

   - ✓ Drilling of shallow boreholes and installation of hand pumps
   - ✓ Drilling of deep boreholes, installation of pumping mechanism and construction of distribution system

3. Water works contractors licensed at regional or national level

   - ✓ Rural piped gravity schemes from spring sources
   - ✓ Rural piped motorized schemes from spring sources
   - ✓ Rehabilitation and expansion of existing rural piped schemes

Goods:

The different supplies for rural UAP include:

1. Local Service Providers licensed at Woreda level supplying at least one of the following tasks:

   - ✓ Supply spare parts at community level
   - ✓ Supply of building materials

2. Suppliers licensed at regional or national level

   - ✓ Tools for HDW contactors
   - ✓ Woreda Office Goods
   - ✓ Hand pumps and spare parts
   - ✓ Submersible pumps with all its accessories and spare parts
   - ✓ Generators with all its accessories
   - ✓ Pipes and fittings

6.4.2 Procurement Methods

Procurement of Services, Works and Goods will be carried out in alignment with the Government of Ethiopia Federal Public Procurement Directive principles and procedures. All procurements are to be done at Woreda level as much as possible, except in cases where remarkable advantages are gained through packaging them at zonal or regional levels.

Where CDF approach is being implemented, Local Service Providers licensed at Woreda level either for provision of services or construction works will be procured independently at community level with support from Kebele and Woreda stakeholders.

Services:

Procurement of design and construction supervision works of Local Service Providers licensed at Woreda level will be done at Woreda level by the Woreda finance office in collaboration with the Woreda water office. Four to five scheme design and supervision works in one Keble can be packaged together as one contract.

Consultants procurement for services like capacity building, design and construction supervision of rural piped schemes as much as conditions allow need to be procured either independently or packaged at Woreda level by the Woreda finance office in collaboration with the Woreda water office.

Services for Hydro geological investigation, at least 10 borehole siting and drilling supervision for different Woredas can be packaged at zonal or regional level in order to attract qualified consultants to participate in the bidding process.

Works:

Similar to services procurement of Local Service Providers licensed at Woreda level for construction works will be done at Woreda level by the Woreda finance office in collaboration with the Woreda water office. Four to five scheme point source schemes construction or rehabilitation works in one Kebele can be packaged together as one contract.

Contractors procurement for construction of rural piped schemes as much as conditions allow need to be procured either independently or packaged at Woreda level by the Woreda finance office in collaboration with the Woreda water office.

Drilling contractors for at least 10 boreholes drilling for one or more Woredas can be packaged at zonal or regional level in order to attract drillers and to optimize cost.

Goods:

Procurement of locally available goods and materials need to be procured at Woreda level by the Woreda finance office in collaboration with the Woreda water office while supply of imported goods like Hand pumps, Submersible pumps, pipes and fittings can be packaged for different woredas at zonal or regional level.

6.7. Contract administration and construction control

Tender document preparation, tender evaluation, contract award and contract administration work as much as possible need to be done by the procuring body. In CDF approach the woreda water offices in collaboration with the Keble may assist in the tender document preparation and tender evaluation but contract award, contract administration and construction control work however will be done by the user community. It is essential however that the people responsible for supervision are named, trained and held accountable for authorizing work.

Day to day supervision work of construction will be done by the service providers where they are engaged to perform construction control work. Yet it is essential that the Woreda water office ensures that adequate supervision is taking place. This can be done by inspecting the progress of work and checking it against the supervision checklist.

7. Financing Strategy

7.1. Financing Infrastructure Development

7.1.1. General

Financing the construction of new schemes and rehabilitating/ expanding existing schemes would be undertaken by the government, donors, NGOs and the community. The community will contribute at least 5% in cash and 5% in labor and kind. Accordingly, the summary of government , donors, NGO's and Communities contribution will be as shown in table 7-1 below.

7.1.2. Financing and Disbursement Strategy at Various levels

The following main strategies of financing and disbursement are undertaken at each level of administration**.**

At Federal Level

i. Searching for finance by preparation of financing proposals for various donors/lenders,

ii. Direct disbursement of government's or donors money to Woredas using the financing plan and government's formula through Regional BoFEDs,

At Regional Level

i. Searching for finance by preparation of Regional level financing proposals for various donors/lenders,

ii. Direct disbursement of government's or donors money to woredas using the financing plan and Regional government's formula through Regional BoFEDs,

At Woreda Level

i. Searching for finance by preparation of Woreda level financing proposals for various donors/lenders,

ii. Direct disbursement of government's or donors money to Kebeles using the financing plan and Woreda government's formula,

7.1.3. Funding Sources

The sources of finances for the implementation of rural water supply of the program are identified as: government, donors, utilities' deposits, NGOs, and community participation.

7.1.4. Financial Disbursement Modalities

Two financial disbursement modalities are proposed: First, disbursement to the Woredas through the coordination of the Ministry of Water and Energy (MoWE) without offset, and Second, disbursement to the Woredas through the finance sector without offset. The second option is favored to be accepted as financial disbursement strategy of the program. The finance allocated annually by the government or secured through grants will be disbursed to regions through a formula. Woredas embraced in food security program will allocate some amount of finance from the food security fund and blocked grant.

7.1.5. Issues in Financing and Disbursement:

Even though the government has allocated 293.5 million and and 174.8 million is expected from the community in kind and labor the anticipated contribution for the gap of funding can't be fully ascertained at this stage. Continuous dialogue with donors NGOs and other stakeholders is required to ensure the materialization of the funding by the donors and NGOs as indicated in table 7-1. In the past suggestion for integrated implementation of water, sanitation and hygiene through coordination of WaSH teams from water, health and education sectors was introduced. However, coordination has been weak since detailed coordination strategy and mechanism was lacking. This mechanism shall be put in place through MSF. The strategies for cooperation shall be outlined in the MoU and WIF which are being revised at the time of UAP2 preparation.

In the past strategies didn't show how Woredas allocate budget for the sector from their block grant with the exception of the food security budget. Strategies in the WIF are expected to show how woredas can allocate budget from their block grant to address the issue.

7.1.6. Material supply, Procurement and Distribution

Delay in procurement might be one of the problems, which hinders progress of the program with good pace as most of the materials are imported from abroad. Thus it suggests standardization of materials and equipments and procurement in bulk. Moreover, enhancing production and assembly in the country is also envisaged as a solution.

The following main strategies of material supply and procurement are undertaken at each level of administration**.**

At the Federal Level

i. Facilitate the standardization of materials and equipments for procurement in bulk,
ii. In collaboration with the relevant bodies, encourage/facilitate production and assembly of materials in the country. In this regard, the program suggests the following:
iii. Production of PVC pipes by federal and Oromya Water Works Construction Enterprise,
iv. Production of GI pipes by Kality Metals Factory,

v. Assembling of submersible and centrifugal pumps and generators by kality Spare Parts Factory, National Tools Factory, Mesfin Engineering, Maru Metal Works and others,
vi. Manufacturing of generators by EI generating sets PLC and others to come,
vii. Manufacturing of manual pumps by Kality Spare Parts and others,
viii. Assembling of medium rigs by Mesfin Engineering, Maru Metal Works and others,
ix. Various spare parts by Kality Metal Works and others.

At Regional Level

i. The Region collects data on materials and equipments needed for new construction and rehabilitation for one year together with the source of funding in advance from all Woredas the and facilitate bulk procurement.
ii. The region will also make sure that adequate number of sub regional outlets for selling spare parts are established by selected suppliers as a condition for awarding supply contracts.
iii. Regions will establish OMSUs that would gradually be transformed to private companies for supporting maintenance at recommended prices.

At Woreda Level

i. Service providers (Youth group organized for producing concrete rings, artisans etc,) produce concrete rings based on request by the woreda.
ii. Woreda undertake procurement of concrete/PVC rings for hand dug wells and distribute to the communities,
iii. Supply or procurement of cement is undertaken by local service providers or cement supply outlets at woreda level.

At Community Level

Materials required for household hand dug wells are supplied by the beneficiary himself.

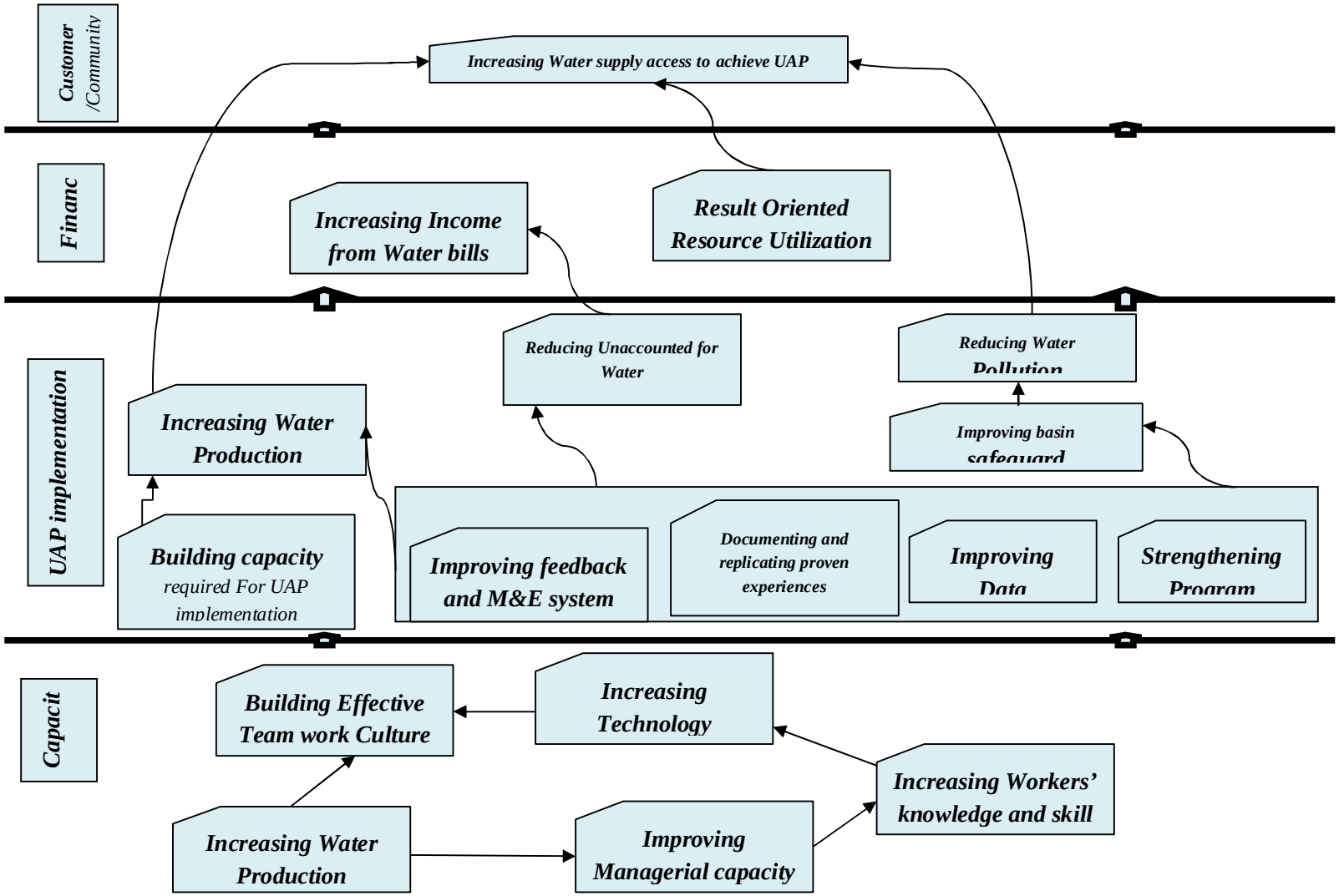
7.2. Financing Institutional Development

Institutional development would be enhanced through capacity building and process reengineering. Evaluation will be done through balanced score card (BSC). The capacity building pooled fund which requires to be strengthened and diversified, could be used as a funding source for institutional development. The estimated capacity building requirement of USD 36,839,414.11 as indicated in section 4-13 could be generated by stakeholders and donors and put in the capacity building pooled account for use as per regional requirements. To be effective and systematic formats for preparing institutional capacity

development proposals could be prepared and distributed to the woredas. Priorities could be given to strategically important proposals that enhance institutional development.

As per strategic map for realizing UAP implementation shown in figure below, in the coming 5 years time increasing water production building effective team work culture, increasing technology application, improving managerial capacity at all institutional levels, increasing workers' knowledge and skills ,strengthening M&E, improving data management, documentation and replication of proven best practices etc. are required to realize institutional development and achieve the UAP. The capacity building pooled fund could contribute towards the success of this objective with the seed money mentioned above and additional fund to be generated as required.

Table 25:Strategic Map For Water Supply Provision and Distribution Through UAP



7.3. Financial Sources

Financial Sources for implementing UAP are shown in table below. The figures are expected to change progressively through dialogues and interaction with support organizations once the UAP2 document is disseminated.

Table 26:Investment Needs and Related Sources for UAP Implementation

I. No	Financial Source	Amount in USD	Percentage
1	Government	293,507,629.63	17%
2	Donors	562,945,481.48	32%
3	NGOs	67,020,148.15	4%
4	Rural communities	174,770,752.81	10%
	Total	1,098,244,012.07	63%
	Required	1,747,707,528.14	100%
	Gap	649,463,516.07	37%

The financial gap indicated in the table could be about 0.75 billion USD including 15% contingency. The indicated amount should be generated as soon as possible to make UAP 2 a reality.

7.3. Operation and Maintenance Expenses

Operation and maintenance expenses would mainly be covered from the water bills in line with the water resources management policy. The estimated financial requirement of USD 20,200,000.00 indicated in table 4-11 is planned to be used for providing support to the utilities through availing of maintenance rigs, mobile garages and facilities for OMSUs to be established by the regions.

7.3.1. Water Schemes Operation and Maintenance Management Strategy

- ✓ Rural water supply schemes are managed by the community through water, sanitation and hygiene committees (WaSHCO) elected by the community,
- ✓ Half of the WaSHCO members are required to be women,
- ✓ Giving legal status and certification for WaSHCOs will be given priority as the process is already started,
- ✓ A means of organizing pumped and larger gravity schemes under water users' unions, associations and leagues will be dealt with associations, organizing commissions and Bureaus,
- ✓ WaSHCOs under strict supervision of Kebele Water, Sanitation and Hygiene committees will be accountable to their electorate and submit performance reports,

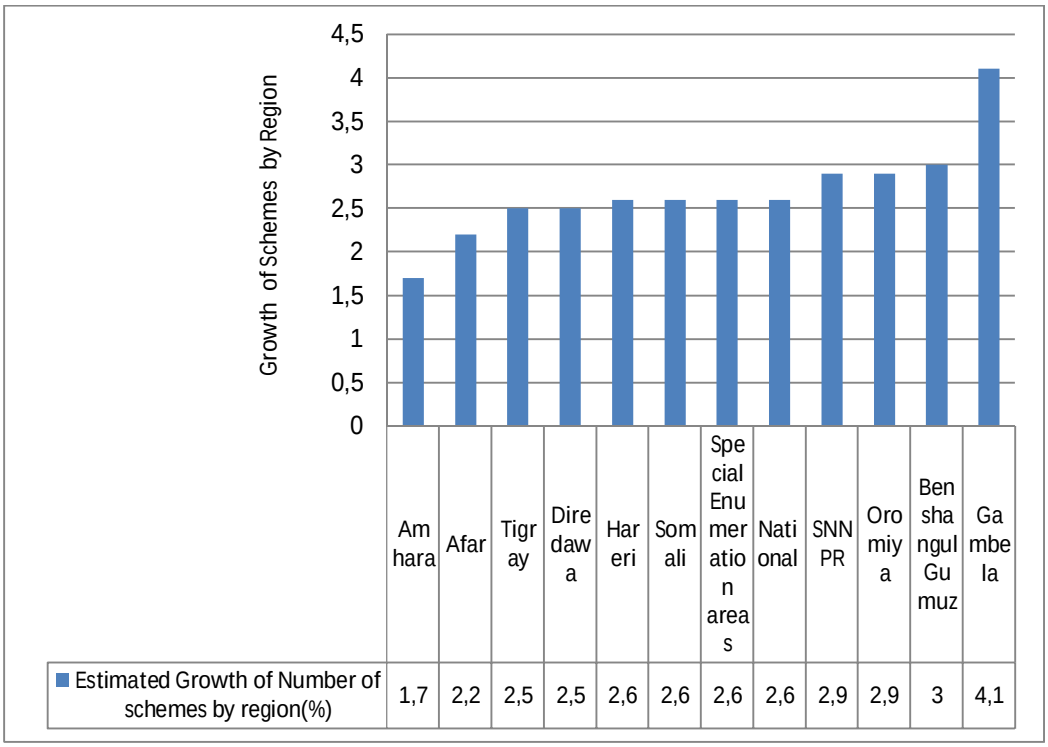
- ✓ The community covers the operation and maintenance cost whereas they get support from the Woreda or Zonal water desks for major maintenance,
- ✓ The accounts of WaSHCOs will be audited every six months.

8. Post UAP Needs

8.1. What will be the focus areas: Sustaining the service or improvement of service levels.

What would be critically important beyond 2015 would be the sustaining of the service levels. Those who will hopefully get the 100% access by 2015 and those additional people beyond 2015 shall get sustained service if we target 100% access by 2015 and beyond. This would mean an annual increment of schemes by at least 2.6 % nationally assuming that the number of schemes grows roughly based on population growth. The following table gives an indication of the regional growth of number of schemes beyond 2015.

Table 27:Estimated Growth Rate of Water Supply Schemes



Sustaining the Service

Sustaining the service is part and parcel of the operation and maintenance implementation. As noted above since the user communities bear all the responsibilities for operation and maintenance. To adequately prepare for operation and maintenance, the following should be done at users/ community level:

a) Selection and training of caretakers during construction phase
b) Training of WASHCOs in the management of schemes
c) Community consensus on the management of the scheme

The following issues should be discussed and agreed upon:

- ✓ Rules on the use of scheme: The user community should agree on the rules and guidelines regarding the operation hours, protection of scheme, and restriction of certain activities in the use of the scheme and its surrounding.
- ✓ Scheme maintenance: The community should agree on who and how to maintain: both preventive and curative maintenance of the scheme and its surrounding including agreements on roles and responsibilities among men and women, payment for water and modalities of paying.
- ✓ Meeting all the Supplies and other O& M Requirement: Arrangement for supplies of tools, spare parts, labor, finance equipments and other materials need to be made in advance.

Improvements of Service Level

As stated above the National, regional and Woreda level stakeholders concern after the UAP will be mainly on the improvements of Service level and provision of water to the additional population. All Citizens are expected to move from unprotected sources to protected sources by 2015 and beyond at least for drinking purpose. It is vital to find out first of all what service level is desired and valued by the community. As a matter of fact any system that has been put in place but that does not satisfy the need or accomplish the functions that the user desires is a wasted effort. Prior to improving the water service water to any community it is therefore very important to determine what improvements in water supply the people want in regard to:

- Quality: What quality of water would satisfy the user for different use of water
- Quantity: What amount of water would satisfy the user?
- And its access level (place and time): where does the user want to collect water?

8.2. Improvement on Service radius and per capita consumption

The service radius of 1.5 km and per capita consumption of 15 litres would be improved based on income level and demand. Improvement of service in terms access levels from public taps to yard connections and from yard connections to house connections would be at the centre of post UAP2 intervention. In places with densely populated areas and in places where Multi village gravity schemes could be constructed, the possibility of improvement will be very high due to the additional benefit of economy of scale that helps in lowering the tariff. The lower the tariff and the higher the awareness creation, the higher will be the demand for yard connections and higher volume of water per capita.

83. Improvement on the planned and existing connection profile

The exact existing connection profile would be known after the WASH inventory. For the time being it could be estimated that about 98% 0f the rural population which has access to water supply is fetching water from public taps. About 2% are getting service from yard connections. During the post UAP period

(2015- 2020), it will be impressive to increase the 2% to at least 10%-20% and proceed in improving the connection profile based on economic development to be achieved.

8.4. Gradual transformation of community management to public private partnership without disrupting community ownership

At the moment it is assumed that management of water supply schemes is being undertaken by communities in rural areas though communities often require technical and administrative support. Most communities are being represented by water committees that manage the scheme. Water committees of multi village schemes have gone one step ahead by forming water boards that mange the schemes. In the case of water committees, presently being promoted to WASH committee levels, operators and public tap attendants are being employed to carry out routine administration and O & M activities. In the case of multi village schemes delegated water administration offices are handling routine administration and O & M activities. Though community management has considerably improved community empowerment in the past, lack of incentive and limitation of awareness level are hampering progress in terms of reliable and sustainable service. One feasible way of enhancing community management beyond 2015 would be to introduce public private partnership that would allow the roll of operators, spare part suppliers etc. to grow. The water committees and water boards can eventually get organized as water consumer's association that monitors service quality and regulates tariff. The link between operators and spare part suppliers doesn't only improve water sustainability but maintains affordable tariff due to increasing economy of scale.

8.5. Gradual transformation towards covering depreciation tariff by addressing the rural poor

A few rural schemes are attempting to cover depreciation and O&M tariff in Ethiopia at the moment. This trend shall be strengthened during the post UAP2 period and extended towards other schemes as this will lead to financial sustainability. Some innovative strategies for such a transformation would be the construction of more and more multi village schemes with higher economy of scale, voluntary villagization program that reduces cost of initial investment, applying cost effective design, increasing number of connections by allowing customers to pay over a longer period of time, utilizing water for productive use etc. In all cases innovative ways for addressing the rural poor shall be given particular importance. One such way could be allowing the poor to pay in labor.

9. References

i. Country status Overview, 2010

ii. EWTC, Training Needs Assessment Survey by Ethiopian Water Technology Center, 2010

iii. MoE, Education Sector Development program (ESDP),2010

iv. MoFED, GOE GTP 2011-2015(Final Document 2011)

v. MoH, Health Sector Development Plan(HSDP IV,2010

vi. MoWE, WASH UAP (2005) and 2009 Revision

vii. MoWE, National WASH Inventory Guidelines, 2010

viii. MoWE, Region Specific Supply Chains for Hand pumps and Spare Parts in Ethiopia with the assistance of the world bank, 2010

ix. MoWE, Proven Management Models for Multi Village Water Schemes in Ethiopia with the assistance of the world bank, 2010

x. MoWE, Woreda WASH capacity mapping and benchmarking project documents with the assistance of UNICEF, Water Aid and SNV, 2010

xi. MoWE, Volume IV : Water Supply and Sanitation Report of the Draft Water Sector Development Program, August 2010

xii. MoWE, MoH and MoE, WASH MoU(2006) and 2010 draft Revision

xiii. MSF Task Force, MSF undertakings(Oct 2009)

xiv. Regional Bureaus, Regional Development plans, 2010

xv. UNICEF, gender audit, 2010

xvi. UNICEF & MoE, School WASH Manual, 2010

xvii. UNICEF & MoWE, Unicef/Government situation analysis (Sitan),2010

xviii. WaSH Coordination Office ,Latest WASH Progress Reports,2010

Annexes

Annex 1: Number of Schemes to Be Constructed (2011-2015) Without Considering Population Density

I.No	Region	Types of Schemes													
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
1	Tigrai														
	2011	-	-	236	46	-	196	46	34	0.35	-	-	-	-	559
	2012	-	-	267	52	-	222	52	39	0.40	-	-	-	-	632
	2013	-	-	236	46	-	196	46	34	0.35	-	-	-	-	559
	2014	-	-	236	46	-	196	46	34	0.35	-	-	-	-	559
	2015	-	-	236	46	-	196	46	34	0.35	-	-	-	-	559
	Total	**-**	**-**	**1,211**	**237**	**-**	**1,005**	**238**	**176**	**2**	**-**	**-**	**-**	**-**	**2,868**
2	Gambella														
	2011	-	35	26	6	-	12	2	2	-	-	-	-	-	83
	2012	-	35	26	6	-	12	2	2	-	-	-	-	-	83
	2013	-	35	26	6	-	12	2	2	-	-	-	-	-	83
	2014	-	35	26	6	-	12	2	2	-	-	-	-	-	83
	2015	-	35	26	6	-	12	2	2	-	-	-	-	-	83
	Total	**-**	**175**	**129**	**32**	**-**	**62**	**11**	**8**	**-**	**-**	**-**	**-**	**-**	**416**
3	B/Gumuz														
	2011	-	-	41	14	-	13	4	3	-	-	-	-	-	75
	2012	-	-	41	14	-	13	4	3	-	-	-	-	-	75
	2013	-	-	41	14	-	13	4	3	-	-	-	-	-	75
	2014	-	-	41	14	-	13	4	3	-	-	-	-	-	75
	2015	-	-	41	14	-	13	4	3	-	-	-	-	-	75

I.No	Region	Types of Schemes													
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
	Total	**-**	**-**	**205**	**69**	**-**	**64**	**18**	**17**	**-**	**-**	**-**	**-**	**-**	**373**
4	D/Dawa														
	2011	-	-	10	-	0.33	2	0	1	-	-	-	-	-	14
	2012	-	-	10	-	0.33	2	0	1	-	-	-	-	-	14
	2013	-	-	10	-	0.33	2	0	1	-	-	-	-	-	14
	2014	-	-	10	-	0.33	2	0	1	-	-	-	-	-	14
	2015	-	-	10	-	0.33	2	0	1	-	-	-	-	-	14
	Total	**-**	**-**	**50**	**-**	**2**			**3**	**-**	**-**	**-**	**-**	**-**	**69**
5	Harari														
	2011	-	9	9	-	-	4	0.64	0.81	0	3	-	-	1	28
	2012	-	9	9	-	-	4	0.64	0.81	0	3	-	-	1	28
	2013	-	9	9	-	-	4	0.64	0.81	0	3	-	-	1	28
	2014	-	9	9	-	-	4	0.64	0.81	0	3	-	-	1	28
	2015	-	9	9	-	-	4	0.64	0.81	0	3	-	-	1	28
	Total	**-**	**47**	**43**	**-**	**-**	**21**	**3**	**4**	**0**	**13**	**-**	**-**	**6**	**139**
6	Somali														
	2011	-	-	256	-	-	34	5	46	-	128	385	23	-	876
	2012	-	-	256	-	-	34	5	46	-	128	-	23	-	492
	2013	-	-	256	-	-	34	5	46	-	128	-	23	-	492
	2014	-	-	256	-	-	34	5	46	-	128	-	23	-	492
	2015	-	-	256	-	-	34	5	46	-	128	-	23	-	492
	Total	**-**	**-**	**1,279**	**-**	**-**	**169**	**26**	**232**	**-**	**638**	**385**	**114**	**-**	**2,842**

I.No	Region	Types of Schemes													
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
7	Amhara														
	2011	1,031	2,511	1,174	251	2	396	17	8	-	-	-	-	-	5,391
	2012	1,031	2,511	1,174	251	2	396	17	8	-	-	-	-	-	5,391
	2013	1,031	2,511	1,174	251	2	396	17	8	-	-	-	-	-	5,391
	2014	1,031	2,511	1,174	251	2	396	17	8	-	-	-	-	-	5,391
	2015	1,031	2,511	1,174	251	2	396	17	8	-	-	-	-	-	5,391
	Total	**5,157**	**12,553**	**5,871**	**1,254**	**12**	**1,978**	**86**	**42**	**-**	**-**	**-**	**-**	**-**	**26,954**
8	Afar														
	2011	-	-	-	4	-	19	4	7	-	-	-	-	32	65
	2012	-	-	-	4	-	19	4	7	-	-	-	-	32	65
	2013	-	-	-	4	-	19	4	7	-	-	-	-	32	65
	2014	-	-	-	4	-	19	4	7	-	-	-	-	32	65
	2015	-	-	-	4	-	19	4	7	-	-	-	-	32	65
	Total	**-**	**-**	**-**	**22**	**-**	**93**	**18**	**33**	**-**	**-**	**-**	**-**	**159**	**325**
9	SNNPR														
	2011	729	681	364	441	14	316	40	31	-	96	-	-	7	2,719
	2012	729	681	364	441	14	316	40	31	-	96	-	-	7	2,719
	2013	729	681	364	441	14	316	40	31	-	96	-	-	7	2,719
	2014	729	681	364	441	14	316	40	31	-	96	-	-	7	2,719
	2015	729	681	364	441	14	316	40	31	-	96	-	-	7	2,719
	Total	**3,643**	**3,404**	**1,821**	**2,207**	**69**	**1,579**	**200**	**153**	**-**	**482**	**-**	**-**	**37**	**13,596**
10	Oromya														

I.No	Region	Types of Schemes													
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
	2011	-	-	1,045	773	5	349	86	69	-	-	-	-	-	2,327
	2012	-	-	1,045	773	5	349	86	69	-	-	-	-	-	2,327
	2013	-	-	1,045	773	5	349	86	69	-	-	-	-	-	2,327
	2014	-	-	1,045	773	5	349	86	69	-	-	-	-	-	2,327
	2015	-	-	1,045	773	5	349	86	69	-	-	-	-	-	2,327
	Total	**-**	**-**	**5,224**	**3,865**	**27**	**1,744**	**430**	**343**	**-**	**-**	**-**	**-**	**-**	**11,633**
11	National														
	2011	1,760	3,236	3,160	1,536	22	1,341	205	201	0	227	385	23	41	12,136
	2012	1,760	3,236	3,191	1,542	22	1,366	211	206	0	227	0	23	41	11,825
	2013	1,760	3,236	3,160	1,536	22	1,341	205	201	0	227	0	23	41	11,751
	2014	1,760	3,236	3,160	1,536	22	1,341	205	201	0	227	0	23	41	11,751
	2015	1,760	3,236	3,160	1,536	22	1,341	205	201	0	227	0	23	41	11,751
	Total	**8,800**	**16,180**	**15,832**	**7,685**	**110**	**6,728**	**1,031**	**1,012**	**2**	**1,133**	**385**	**114**	**203**	**59,216**

Annex 2: Number of Schemes to Be Constructed (2011-2015) Considering Population Density

I.No	Region	Types of Schemes													Total
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	
1	Tigrai														
	2011	-	-	319	81	-	196	46	34	0	-	-	-	-	676
	2012	-	-	361	91	-	222	52	39	0	-	-	-	-	765
	2013	-	-	319	81	-	196	46	34	0	-	-	-	-	676
	2014	-	-	319	81	-	196	46	34	0	-	-	-	-	676
	2015	-	-	319	81	-	196	46	34	0	-	-	-	-	676
	Total	-	-	1,636	414	-	1,005	238	176	2	-	-	-	-	3,471
2	Gambella	-				-		-	-	-				-	-
	2011	-	119	317	102	-	56	2	2	-	-	-	-	-	598
	2012	-	119	317	102	-	56	2	2	-	-	-	-	-	598
	2013	-	119	317	102	-	56	2	2	-	-	-	-	-	598
	2014	-	119	317	102	-	56	2	2	-	-	-	-	-	598
	2015	-	119	317	102	-	56	2	2	-	-	-	-	-	598
	Total	-	595	1,583	512	-	279	11	8	-	-	-	-	-	2,988
3	B/Gumuz	-				-		-	-	-	-	-	-	-	-
	2011	-	-	378	164	-	44	4	3	-	-	-	-	-	593
	2012	-	-	378	164	-	44	4	3	-	-	-	-	-	593
	2013	-	-	378	164	-	44	4	3	-	-	-	-	-	593
	2014	-	-	378	164	-	44	4	3	-	-	-	-	-	593

I.No	Region	Types of Schemes													Total
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	
	2015	-	-	378	164	-	44	4	3	-	-	-	-	-	593
	Total	-	-	1,891	821	-	220	18	17	-	-	-	-	-	2,967
4	D/Dawa	-	-			-		-	-	-				-	-
	2011	-	-	12	-	0	2	0.42	1	-	-	-	-	-	16
	2012	-	-	12	-	0	2	0.42	1	-	-	-	-	-	16
	2013	-	-	12	-	0	2	0.42	1	-	-	-	-	-	16
	2014	-	-	12	-	0	2	0.42	1	-	-	-	-	-	16
	2015	-	-	12	-	0	2	0.42	1	-	-	-	-	-	16
	Total	-	-	60	-	2	12	2	3	-	-	-	-	-	79
5	Harari	-				-		-	-	-				-	-
	2011	-	9	10	-	-	4	1	1	0	3	-	-	1	30
	2012	-	9	10	-	-	4	1	1	0	3	-	-	1	30
	2013	-	9	10	-	-	4	1	1	0	3	-	-	1	30
	2014	-	9	10	-	-	4	1	1	0	3	-	-	1	30
	2015	-	9	10	-	-	4	1	1	0	3	-	-	1	30
	Total	-	47	52	-	-	21	3	4	0	13	-	-	6	148
6	Somali	-				-		-	-	-				-	-
	2011	-	-	2,192	-	-	108	5	46	-	405	6,106	115	-	8,977
	2012	-	-	2,192	-	-	108	5	46	-	405	-	115	-	2,871
	2013	-	-	2,192	-	-	108	5	46	-	405	-	115	-	2,871
	2014	-	-	2,192	-	-	108	5	46	-	405	-	115	-	2,871
	2015	-	-	2,192	-	-	108	5	46	-	405	-	115	-	2,871

I.No	Region	Types of Schemes													Total
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	
	Total	-	-	10,960	-	-	538	26	232	-	2,025	6,106	575	-	20,461
7	Amhara	-				-		-	-	-				-	-
	2011	1,031	2,511	1,174	316	2	396	17	8	-	-	-	-	-	5,456
	2012	1,031	2,511	1,174	316	2	396	17	8	-	-	-	-	-	5,456
	2013	1,031	2,511	1,174	316	2	396	17	8	-	-	-	-	-	5,456
	2014	1,031	2,511	1,174	316	2	396	17	8	-	-	-	-	-	5,456
	2015	1,031	2,511	1,174	316	2	396	17	8	-	-	-	-	-	5,456
	Total	5,157	12,553	5,871	1,582	12	1,978	86	42	-	-	-	-	-	27,282
8	Afar	-				-		-	-	-				-	-
	2011	-	-	-	46	-	55	4	7	-	-	-	-	32	143
	2012	-	-	-	46	-	55	4	7	-	-	-	-	32	143
	2013	-	-	-	46	-	55	4	7	-	-	-	-	32	143
	2014	-	-	-	46	-	55	4	7	-	-	-	-	32	143
	2015	-	-	-	46	-	55	4	7	-	-	-	-	32	143
	Total	-				-		18	33	-				159	**325**
9	SNNPR	-				-		-	-	-				-	-
	2011	729	681	364	503	14	316	40	31	-	96	-	-	7	2,781
	2012	729	681	364	503	14	316	40	31	-	96	-	-	7	2,781
	2013	729	681	364	503	14	316	40	31	-	96	-	-	7	2,781
	2014	729	681	364	503	14	316	40	31	-	96	-	-	7	2,781
	2015	729	681	364	503	14	316	40	31	-	96	-	-	7	2,781
	Total	3,643	3,404	1,821	2,517	69	1,579	200	153	-	482	-	-	37	13,906

I.No	Region	Types of Schemes													Total
		House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with hand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	
10	Oromya	-				-		-	-	-				-	-
	2011	-	-	1,622	1,555	5	349	86	69	-	-	-	-	-	3,686
	2012	-	-	1,622	1,555	5	349	86	69	-	-	-	-	-	3,686
	2013	-	-	1,622	1,555	5	349	86	69	-	-	-	-	-	3,686
	2014	-	-	1,622	1,555	5	349	86	69	-	-	-	-	-	3,686
	2015	-	-	1,622	1,555	5	349	86	69	-	-	-	-	-	3,686
	Total	-	-	8,110	7,777	27	1,744	430	343	-	-	-	-	-	18,431
11	National	-				-		-	-	-				-	-
	2011	1,760	3,320	6,388	2,769	22	1,525	205	201	0.41	504	6,106	115	41	22,957
	2012	1,760	3,320	6,430	2,779	22	1,551	211	206	0.45	504	-	115	41	16,940
	2013	1,760	3,320	6,388	2,769	22	1,525	205	201	0.41	504	-	115	41	16,851
	2014	1,760	3,320	6,388	2,769	22	1,525	205	201	0.41	504	-	115	41	16,851
	2015	1,760	3,320	6,388	2,769	22	1,525	205	201	0.41	504	-	115	41	16,851
	Total	8,800	16,600	31,984	13,854	110	7,653	1,031	1,012	2	2,520	6,106	575	203	90,450

Annex 3: Indicative Budget Requirement for National drinking water Quality Monitoring

Ser. No	Key activities	Years of strategy implementation					Total (USD)
		2011	2012	2013	2014	2015	
1	***System strengthening and mainstreaming:***						
	National public health laboratory (EHNRI)	5,000	5,000	5,000	5,000	5,000	25,000
	Regional Public Health laboratories	55,000	55,000	55,000	55,000	-	275,000
	Provision of water quality test kits to Woreda health offices			2,002,500	2,002,500	-	4,005,000
	Provision of simple water quality test kit Health Posts (for HEW)			850, 000	850,000	-	1,700,00 0
	Training for health professionals at all levels	6,000,000	6,000,000			-	12,000,000
	Guideline (development printing and distribution)	10,000	50,000			-	60,000
	Development WQM database system		100,000			-	100,000
2	***Advocacy and promotion***						
	Multi-level advocacy		1,500,000	-	-	-	1,500,000
	Media communication (print and electronic)	20,000	20,000	20,000	20,000	20,000	100,000
	Sanitation marketing				400,500	400,500	801,000
	Operational research			100,000	-	-	100,000
3	***Monitoring and Evaluation***						
	National rapid water quality assessment sanitary		200,000	-	-	-	200,000
	Review meetings and Supervision	15,000	15,000	15,000	15,000	15,000	75,000
	Regular reporting	-	-	-	-	-	-
	Total budget requirement	***6,341,300***	***10,923,800***	***3,047,500***	***495,500***	***495,500***	***21,403,600***

(Adopted from National Drinking Water Quality Monitoring and Surveillance Strategy document (First Draft)

Annex 4:Woreda, Regional and Federal WASH water Program Management Financial Requirements

a) Woreda WASH-water Program Management Financial Requirements based on Woereda Minimum Package (2011-2015)

I.No	Region	Number of Zones	Number of Woredas	2011	2012	2013	2014	2015	Total
1	Tigrai	6	36	1,813,320.00	1,867,719.60	1,923,751.19	1,981,463.72	2,040,907.64	9,627,162.15
2	Gambella	3	12	604,440.00	622,573.20	641,250.40	660,487.91	680,302.55	3,209,054.05
3	B/ Gumuz	3	20	1,007,400.00	1,037,622.00	1,068,750.66	1,100,813.18	1,133,837.58	5,348,423.41
4	D/Dawa	1	1	50,370.00	51,881.10	53,437.53	55,040.66	56,691.88	267,421.17
5	Harari	1	1	50,370.00	51,881.10	53,437.53	55,040.66	56,691.88	267,421.17
6	Somali	9	42	2,115,540.00	2,179,006.20	2,244,376.39	2,311,707.68	2,381,058.91	11,231,689.17
7	Amhara	12	153	7,706,610.00	7,937,808.30	8,175,942.55	8,421,220.83	8,673,857.45	40,915,439.12
8	Afar	5	28	1,410,360.00	1,452,670.80	1,496,250.92	1,541,138.45	1,587,372.61	7,487,792.78
9	SNNPR	14	125	6,296,250.00	6,485,137.50	6,679,691.63	6,880,082.37	7,086,484.84	33,427,646.34
10	Oromya	19	249	12,542,130.00	12,918,393.90	13,305,945.72	13,705,124.09	14,116,277.81	66,587,871.52
11	Total			33,598,801.00	34,606,705.70	35,644,847.51	36,714,133.55	37,815,498.13	178,369,920.89

b) Regional and Federal WASH-water Program Management Financial Requirements (2011-2015)

I.No	Region	Total WASH-Water Experts	Expert Fee	Perdium	Transport	Seminars	Stationary	Communication	Total
1	Tigray								
2	Gambela	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
3	Benshangul Gumuz	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
4	Diredawa	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
5	Hareri	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
6	Somali	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
7	Amhara	13	780,000.00	57,352.94	127,450.98	14,705.88	7,352.94	13,764.71	1,000,627.45
8	Afar	9	540,000.00	39,705.88	88,235.29	14,705.88	7,352.94	9,529.41	699,529.41
9	SNNPR	13	780,000.00	57,352.94	127,450.98	14,705.88	7,352.94	13,764.71	1,000,627.45

I.No	Region	Total WASH-Water Experts	Expert Fee	Perdium	Transport	Seminars	Stationary	Communication	Total
10	Oromiya	13	780,000.00	57,352.94	127,450.98	14,705.88	7,352.94	13,764.71	1,000,627.45
11	National	18	1,080,000.00	79,411.76	176,470.59	29,411.76	14,705.88	19,058.82	1,399,058.82
	Total	102	6,660,000.00	489,705.88	1,088,235.29	161,764.71	80,882.35	117,529.41	8,598,117.65

Total Regional 7,199,058.82

Total Federal 1,399,058.82

Annex 5: Financial Requirement for Capacity Building of MoWE, BoWEs, TVETS and EWTEC (2011-2015)

a)Capacity Building for MoWE and Regions

I.No.	Region	Regional distribution Factor for Training	Training					Manual preparation (2011)	Procurement of Softwares (2011)	Vehicles and Motor Bikes (2011)	
			2011	2012	2013	2014	2015				
1	Tigrai	0.06	6,295.00	6,484.00	6,679.00	6,879.00	7,086.00	57,881.00	50,000.00	525,500	
2	Gambella	0.01	978.00	1,007.00	1,038.00	1,069.00	1,101.00	8,993.00	50,000.00	215,000	
3	B/ Gumuz	0.02	2,205.00	2,271.00	2,339.00	2,409.00	2,481.00	20,271.00	50,000.00	242,000	
4	D/Dawa	0.01	519.00	534.00	550.00	567.00	584.00	4,770.00	50,000.00	86,000	
5	Harari	0.01	519.00	534.00	550.00	567.00	584.00	4,770.00	50,000.00	84,500	
6	Somali	0.06	6,095.00	6,278.00	6,467.00	6,661.00	6,861.00	56,043.00	50,000.00	666,500	
7	Amhara	0.25	25,938.00	26,716.00	27,517.00	28,343.00	29,194.00	238,481.00	50,000.00	1,558,000	
8	Afar	0.03	3,177.00	3,273.00	3,371.00	3,472.00	3,576.00	29,214.00	50,000.00	355,000	
9	SNNPR	0.22	22,587.00	23,265.00	23,963.00	24,682.00	25,423.00	207,677.00	50,000.00	1,507,500	
10	Oromya	0.31	32,017.00	32,978.00	33,967.00	34,986.00	36,036.00	294,375.00	50,000.00	2,339,000	
11	Federal	0.03	2,994.00	3,083.00	3,176.00	3,271.00	3,369.00	27,525.00	50,000.00	200,000	
	Total National	1.00	103,324.00	106,423.00	109,617.00	112,906.00	116,295.00	950,000.00	550,000.00	7,779,000.00	
	Grand Total								9,827,565.00		

b) Capacity Building for TVETs

I.No.	Description	Estimated amount Required in USD									
		Assella	Welliso	Jijiga	Awassa	Maichew	Bahir Dar	Combolcha	Lucy(Afar)	Assosa	Total
1	Physical resources	2,332,754.82	1749566.118	2,332,754.82	1749566.118	1312174.588	984130.9412	2,332,754.82	2,332,754.82	2,332,754.82	17,459,211.88
2	Training and curriculum development	168981.4706	126736.1029	168981.4706	126736.1029	95052.07721	71289.0579	168981.4706	168981.4706	168981.4706	1,264,720.69
3	Leadership development	8119.411765	6089.558824	8119.411765	6089.558824	4567.169118	3425.376838	8119.411765	8119.411765	8119.411765	60,768.72
4	Inter and Intra Organizational Linkages	3388.235294	2541.176471	3388.235294	2541.176471	1905.882353	1429.411765	3388.235294	3388.235294	3388.235294	25,358.82
5	Facilities	6875.294118	5156.470588	6875.294118	5156.470588	3867.352941	2900.514706	6875.294118	6875.294118	6875.294118	51,457.28
6	Apprenticeship & field trip expenses	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00	294,118.00
	Total	2,814,237.24	2,184,207.43	2,814,237.24	2,184,207.43	1,711,685.07	1,357,293.30	2,814,237.24	2,814,237.24	2,814,237.24	21,508,579.40
	10% Contingency	281,423.72	218,420.74	281,423.72	218,420.74	171,168.51	135,729.33	281,423.72	281,423.72	281,423.72	2,150,857.94
	Grand Total	3,095,660.96	2,402,628.17	3,095,660.96	2,402,628.17	1,882,853.58	1,493,022.63	3,095,660.96	3,095,660.96	3,095,660.96	23,659,437.34
	Based on indicative cost estimation of part II Capacity assessment and development support plan for WASH TVETS Capacity mapping and benchmarking project synthesis report, October 2010										

c) Capacity Building for EWTEC(2011-2015		
I.No.	**Description**	**Salary**
1	**Additional Instructors**	
	Salary	**2,100,000.00**
	DSA	**100,000.00**
	Transport	**294,117.65**
2	**Facilities**	
	Dormitory for 50 students	**247058.8235**
	Class room for 50 students	**56470.58824**
	Miscellaneous Facilities	**50000**
3	**Plasma TV communication with TVETS**	**200,000**
	Sum	**3,047,647.06**
	Contingency(10%)	**304,764.71**
	Grand Total	**3,352,411.76**

Annex 6: Estimated financial requirement for Enhancing Self Supply within Rural water supply Context

a) Assistance for construction and Upgrading

I.No	Description	Component	planned Quantities	Unit Rate	Total Amount in USD	Self Supply Assistance to be provided		
						Technical @ 30% of Total amount	Financial	
1	Household Dug wells(taken from the Rural Water UAP)	Rural water supply	8,835	48	428,231	128,469		
2	Communal Dug wells(taken from the Rural Water UAP)	Rural water supply	16,324	604	9,865,795	2,959,739	4,932,898	50% support
3	Upgrading of Communal Dugwells(To be sorted out and identified with regions)*	Rural water supply	100,000	302	30,218,681	9,065,604	15,109,341	50% support
	Sum					12,153,812	20,042,238	
	Total Seed Finance for Local Action and Supply Chain					12,153,812	20,042,238	
	Grand Total Technical +Financial					32,196,050.17		

*Includes household dugwells that will be converted to communal dugwells upon willingness of the households

b) Direct Action Pump production Assistance

Region	No of pilot youth groups	Training cost per Youth group (USD)	Training cost per Region (USD) (1)	Loan money for establishing workshop and initial raw materials per youth group(USD)	loan money for establishing workshop and initial raw materials per region (USD) (2)	Overhead expense for organizing the training , selection of youth groups that qualify for the production and establishment of workshops (USD) (3)	Total requirement (USD) (1)+(2)+(3)
Harari	1	1,705.00	1,705.00	56,818.00	56,818.00	18,750.40	77,273.40
Gambella	1	1,705.00	1,705.00	56,818.00	56,818.00	18,750.40	77,273.40
Benishangul	1	1,705.00	1,705.00	56,818.00	56,818.00	18,750.40	77,273.40
Dire Dawa	1	1,705.00	1,705.00	56,818.00	56,818.00	18,750.40	77,273.40
Afar	2	1,705.00	3,410.00	56,818.00	113,636.00	37,500.80	154,546.80
Somali	2	1,705.00	3,410.00	56,818.00	113,636.00	37,500.80	154,546.80
Tigrai	2	1,705.00	3,410.00	56,818.00	113,636.00	37,500.80	154,546.80
SNNPR	3	1,705.00	5,115.00	56,818.00	170,454.00	56,251.20	231,820.20
Amhara	3	1,705.00	5,115.00	56,818.00	170,454.00	56,251.20	231,820.20
Oromia	4	1,705.00	6,820.00	56,818.00	227,272.00	75,001.60	309,093.60
Total	20	1,705.00	34,100.00	56,818.00	1,136,360.00	375,008.00	1,545,468.00
Total			68,200.00		2,272,720.00	750,016.00	3,090,936.00
** The youth group can also serve as supply chain outlets by keeping spare parts for Afridev & indian mark II hand pumps,etc							

Annex 7: Financial requirements for Construction of New Schemes

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with mand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
Tigrai														
2,011	-	-	2,445,913	333,030	-	5,229,248	6,732,657	3,137,424	1,024,465	-	-	-	-	18,902,737
2,012	-	-	2,515,666	310,128	-	5,209,405	7,625,489	4,198,893	1,499,604	-	-	-	-	21,359,185
2,013	-	-	2,512,729	300,073	-	5,175,752	7,576,227	4,432,981	1,699,052	-	-	-	-	21,696,813
2,014	-	-	2,638,105	279,165	-	5,192,450	7,600,670	3,897,779	795,465	-	-	-	-	20,403,634
2,015	-	-	2,566,730	292,674	-	4,945,218	7,238,773	3,670,595	-	-	-	-	-	18,713,989
Total														-
Gambella														-
2,011	-	30,724	224,900	57,352	-	161,353	247,435	93,909	-	-	-	-	-	815,673
2,012	-	28,481	281,014	59,072	-	158,280	242,722	-	-	-	-	-	-	769,569
2,013	-	23,903	269,888	55,774	-	-	-	-	-	-	-	-	-	349,565
2,014	-	21,263	314,243	57,447	-	201,503	309,004	-	-	-	-	-	-	903,460
2,015	-	13,832	311,222	43,033	-	-	-	-	-	-	-	-	-	368,087
Total														-
B/Gumuz														-
2,011	-	-	88,485	47,793	-	248,725	364,083	281,728	-	-	-	-	-	1,030,814
2,012	-	-	75,950	39,381	-	256,187	375,005	659,826	-	-	-	-	-	1,406,349
2,013	-	-	39,114	25,352	-	263,873	386,255	566,351	-	-	-	-	-	1,280,945
2,014	-	-	56,403	31,335	-	-	-	-	-	-	-	-	-	87,737
2,015	-	-	33,197	21,517	-	223,791	288,131	-	-	-	-	-	-	566,635
Total														-
D/Dawa														-
2,011	-	-	14,077	-	204,893	32,606	47,728	179,281	-	-	-	-	-	478,585

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with mand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
2,012	-	-	14,500	-	239,937	33,584	49,160	314,917	-	-	-	-	-	652,097
2,013	-	-	14,934	-	247,135	-	-	324,364	-	-	-	-	-	586,434
2,014	-	-	19,228	-	254,549	29,839	38,417	334,095	-	-	-	-	-	676,129
2,015	-	-	3,961	-	131,093	7,683	11,247	114,706	-	-	-	-	-	268,690
Total														-
Harari														-
2,011	-	4,888	52,789	-	-	8,396	12,290	179,281	512,233	3,910	-	-	40,979	814,766
2,012	-	3,021	54,373	-	-	-	-	209,945	-	4,028	-	-	71,981	343,347
2,013	-	3,111	56,004	-	-	16,340	21,038	216,243	-	4,148	-	-	74,140	391,026
2,014	-	3,205	57,685	-	-	16,830	24,636	222,730	-	4,273	-	-	76,365	405,724
2,015	-	3,301	59,415	-	-	17,335	25,375	229,412	-	4,401	-	-	78,656	417,896
Total														-
Somali														-
2,011	-	-	188,869	-	-	-	-	4,319,828	-	54,248	179,525	112,203	-	4,854,674
2,012	-	-	234,236	-	-	184,716	237,822	5,978,423	-	66,168	252,933	164,242	-	7,118,542
2,013	-	-	253,531	-	-	197,575	289,209	6,513,032	-	71,183	274,055	169,170	-	7,767,755
2,014	-	-	240,077	-	-	188,428	275,820	6,220,538	-	67,078	261,367	156,820	-	7,410,129
2,015	-	-	277,647	-	-	240,661	352,277	7,789,089	-	81,945	319,460	197,419	-	9,258,499
Total														-
Amhara														-
2,011	75,227	1,965,408	4,873,392	2,454,820	6,146,791	1,045,779	1,346,440	2,646,535	-	-	-	-	-	20,554,391
2,012	122,210	2,676,464	6,638,706	3,347,419	9,483,213	1,152,889	1,687,591	3,199,156	-	-	-	-	-	28,307,648
2,013	131,882	2,845,654	7,054,773	3,553,858	10,120,759	1,196,144	1,750,906	3,398,104	-	-	-	-	-	30,052,079
2,014	164,325	3,342,039	8,295,581	4,182,720	11,878,947	1,544,499	2,260,826	3,606,109	-	-	-	-	-	35,275,044
2,015	176,799	3,556,519	8,816,060	4,445,125	12,609,866	1,609,225	2,355,571	3,714,292	-	-	-	-	-	37,283,457

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with mand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
Total														-
Afar														-
2,011	-	-	-	9,993	-	124,399	182,095	1,472,669	-	-	-	-	583,457	2,372,613
2,012	-	-	-	10,293	-	165,817	242,722	1,724,545	-	-	-	-	656,970	2,800,346
2,013	-	-	-	5,301	-	131,975	193,184	1,776,282	-	-	-	-	649,612	2,756,354
2,014	-	-	-	5,460	-	175,915	257,503	-	-	-	-	-	557,583	996,462
2,015	-	-	-	5,624	-	-	-	1,884,457	-	-	-	-	574,311	2,464,391
Total														-
SNNPR														-
2,011	6,108	303,516	1,367,499	2,789,371	22,830,937	7,951,679	11,639,609	4,695,465	-	202,344	-	-	351,245	52,137,773
2,012	6,444	323,170	1,453,404	2,980,456	27,192,828	8,197,992	12,000,161	5,698,497	-	222,479	-	-	1,005,449	59,080,880
2,013	6,875	342,743	1,543,232	3,148,229	28,597,029	8,475,917	12,406,984	6,178,370	-	247,591	-	-	823,783	61,770,753
2,014	7,325	365,233	1,644,466	3,351,873	30,061,008	-	-	6,575,846	-	275,366	-	-	484,855	42,765,973
2,015	7,712	383,526	1,727,752	3,476,880	31,711,940	7,667,267	9,900,275	5,789,926	-	222,151	-	-	349,580	61,237,009
Total														-
Oromya														-
2,011	-	-	10,725,484	6,213,084	11,708,173	7,645,234	11,223,536	12,976,558	-	-	-	-	-	60,492,068
2,012	-	-	11,737,701	6,488,980	14,281,947	7,972,008	11,703,255	14,996,045	-	-	-	-	-	67,179,936
2,013	-	-	12,018,716	7,006,308	13,651,257	-	-	15,239,980	-	-	-	-	-	47,916,261
2,014	-	-	12,818,778	7,406,405	15,030,504	-	-	16,545,676	-	-	-	-	-	51,801,364
2,015	-	-	12,260,246	6,699,473	13,234,117	-	-	15,731,120	-	-	-	-	-	47,924,955
Total														-
National														-
2,011	81,335	2,304,536	19,981,409	11,905,442	40,890,794	22,447,419	31,795,871	29,982,680	1,536,698	260,503	179,525	112,203	975,681	162,454,095

Region	Types of Schemes													
	House Hold Dug well with Rope Pump	Community Dug well with Rope Pump	Dug well with Indian Mark II/Afridev Pump	Spring at a spot	Spring with piped system	Shallow Borehole with mand pump	Shallow Borehole with submersible pump	Deep Borehole with Piped Scheme	Multi Village piped scheme	Rain Water harvesting	Cystern	Hafir Dam	Others	Total
2,012	128,654	3,031,137	23,005,549	13,235,729	51,197,925	23,330,879	34,163,925	36,980,246	1,499,604	292,675	252,933	164,242	1,734,400	189,017,900
2,013	138,757	3,215,411	23,762,921	14,094,894	52,616,179	15,457,576	22,623,804	38,645,707	1,699,052	322,922	274,055	169,170	1,547,535	174,567,983
2,014	171,650	3,731,740	26,084,566	15,314,404	57,225,008	7,349,465	10,766,877	37,402,773	795,465	346,717	261,367	156,820	1,118,803	160,725,656
2,015	184,511	3,957,178	26,056,229	14,984,326	57,687,015	14,711,180	20,171,650	38,923,597	-	308,497	319,460	197,419	1,002,547	178,503,608
Total	**704,907**	**16,240,001**	**118,890,674**	**69,534,795**	**259,616,921**	**83,296,519**	**119,522,127**	**181,935,003**	**5,530,819**	**1,531,315**	**1,287,341**	**799,855**	**6,378,965**	**865,269,243**

Annex 8: Financial Requirements for Rehabilitation and Expansion

I.No	Region	Annual Rehabilitation and Expansion					
		2011	2012	2013	2014	2015	Total
1	Tigrai	857,325.00	816,712.75	798,512.91	822,468.29	738,418.19	4,033,437.14
2	Gambella	1,118,950.00	1,173,247.25	1,114,501.97	1,130,344.13	1,100,832.03	5,637,875.38
3	B/Gumuz	297,850.00	306,785.50	298,908.58	303,477.61	308,051.76	1,515,073.44
4	D/Dawa	23,100.00	35,689.50	49,013.58	63,104.98	86,664.18	257,572.24
5	Harari	46,200.00	118,965.00	122,533.95	126,209.97	129,996.27	543,905.19
6	Somali	619,500.00	765,702.00	828,106.71	789,768.44	962,208.74	3,965,285.89
7	Amhara	16,993,200.00	20,273,799.00	26,114,212.64	30,877,268.79	34,057,840.32	128,316,320.74
8	Afar	123,200.00	126,896.00	130,702.88	134,623.97	138,662.69	654,085.53
9	SNNPR	4,722,375.00	6,026,118.00	7,431,127.10	8,939,107.86	10,514,334.48	37,633,062.43
10	Oromya	826,875.00	681,345.00	1,060,475.64	1,325,204.67	1,013,379.99	4,907,280.30
		4,891,425.00	6,908,081.25	9,216,780.93	11,256,208.15	12,363,235.94	44,635,731.26
	National	30,522,011.00	37,235,353.25	47,166,889.88	55,769,800.85	61,415,639.57	232,099,629.56

Annex 9: Indicative Human Power Requirement for Implementing UAP (2011-2015)

I.No	Region	Estimated Number Of Skilled persons /Professionals																					
		Artisans	Water Technicians	Electromechanical technicians	Aereal Mechanics/Hand Pump technician	Chief Drillers	Assistant Drillers	Water supply Engineers	Hydrogeologists	Electrical-mechanical engineer and related	Chemist, biologist lab technician	Socioeconomists	Accountants	Community Facilitator Teams	Woreda Support Groups	Caretakers	WASH Coordinator	Water supply Engineers	Procurement Experts	Other National Consultants	Supply Chain Expert	M&E experts	Total
1	Tigray	615	615	435	615	172	516	399	144	180	144	180	240	95	41	8,503	1	2	2	2	1	1	12,902
2	Gambela	61	61	14	61	6	17	35	13	16	13	16	21	4	1	664	1	2	2	2	1	1	1,010
3	Benshangul Gumuz	22	22	21	22	8	25	15	5	7	5	7	9	5	2	339	1	2	2	2	1	1	523
4	Diredawa	4	4	4	4	1	4	3	1	1	1	1	2	1	1	93	1	2	2	2	1	1	135
5	Hareri	11	11	5	11	1	3	8	3	4	3	4	5	1	2	182	1	2	2	2	1	1	263
6	Somali	100	100	55	100	20	59	75	27	34	27	34	45	26	38	1,905	1	2	2	2	1	1	2,653
7	Amhara	3,769	2,929	114	3,769	46	137	1,647	593	741	761	951	1,268	131	14	30,592	1	3	3	3	1	2	47,476
8	Afar	8	8	36	8	9	26	16	6	7	6	7	10	7	9	466	1	2	2	2	1	1	636
9	SNNPR	1,382	1,339	714	1,382	279	837	841	303	378	311	389	519	281	105	18,244	1	3	3	3	1	2	27,316
10	Oromiya	2,832	2,832	705	2,832	282	846	1,683	606	757	606	757	1,010	339	79	33,602	1	3	3	3	1	2	49,779
11	National																1	4	4	4	2	3	18
	Total	8,804	7,921	2,102	8,804	823	2,470	4,722	1,700	2,125	1,877	2,346	3,128	890	292	94,589	10	23	23	23	10	13	142,711