2009

Report of the Proceedings of the National Stakeholders Workshop:

The Link between Climate Change & Investment on Water

Jointly organized by:

Poverty Action Network of civil society organizations in Ethiopia (PANE) and Research-inspired Policy and Practice Learning in Ethiopia and the Nile Region (RiPPLE)

Global Hotel,
Addis Ababa

26 November 2009

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Contents

ACRONYMS

AAU	Addis Ababa University
AFD	Action for Development
AIDS	Acquired Immuno-Deficiency Syndrome
APR	Annual Progress Review
BDS	Business Development Service
BPR	Business Process Re-engineering
CLTS	Community Lead Total Sanitation
CDF	Community Development Fund
CDS	College of Development Studies
CSA	Central Statistical Agency
CRS	Catholic Relief Agency
CSOs	Civil Society Organizations
CIP	International Potato Center
CIAT	International Center for Tropical Agriculture
DAs	Development Assistants
DFID	Department for International Development
EIAR	Ethiopian Institute for Ag Research
ECC-SDCOH	Ethiopian Catholic Church-Social & Development Coordination Office Harar
EARO	Ethiopian Institute for Ag Research
FGDs	Focus Group Discussions
FTCs	Farmers Training Centers
GoE	Government of Ethiopia
HCS	Hararghe Catholic Secretariat
HEWs	Health Extension Workers
HH	Household
HWEA	Household Water Economy Analysis
HEA	Household Economy Analysis
HIV	Human Immuno-deficiency Virus
HRF	Humanitarian Relief Fund
IPI	Interfaith Peace building Initiative
IPCC	Intergovernmental Panel on Climate Change
IRC	International Water and Sanitation Center
IWRM	Integrated Water Resource Management
IWMI	International Water Management Institute
LARS	Long-Term Action Research Studies
JEOP	Joint Emergency Operation Plan
MIS	Management Information System
MWA	Millennium Water Alliance
MUS	Multiple Water Use System
MDG	Millennium Development Goals
MoWR	Ministry of Water Resources
NGOs	Non-Governmental Organizations
NAPA	National Adaptation Plan of Action

NMA	National Meteorological Agency
ODI	Oversea Development Institute
OVC	Orphans and Vulnerable Children
PSNP	Productive Safety Net Program
PHAST	Participatory Hygiene & Sanitation Transformation
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PANE	Poverty Action Network of civil society organizations in Ethiopia
RiPPLE	Research-inspired Policy and Practice Learning in Ethiopia and the Nile Region
SNV	Netherlands Development Organization
SLF	Sustainable Land use Forum
SILC	Savings and Internal Lending Communities
SNNPR	South Ethiopia Nations, Nationalities and Peoples State
TOT	Training of trainers
TVETs	Technical, Vocational Education and Trainings
UAP	Universal Access Program
WSS	Water Supply and Sanitation
WaSH	Water, Sanitation and Hygiene
WVE	World Vision Ethiopia
WAE	Water Aid Ethiopia
WaSHCom	Water, Sanitation and Hygiene Committee
WatSan	Water and Sanitation

Executive Summary

This Report is the product of a day-long workshop of multi-stakeholders working on water and associated issues. The workshop was held on the 26th of November 2009 at the Global Hotel in Addis Ababa, Ethiopia, under the theme: **The Link between Climate Change and Investment on Water**. The workshop was jointly organized by Research-inspired Policy and Practice Learning in Ethiopia and the Nile Region (RiPPLE), in collaboration with Poverty Action Network of civil society organizations in Ethiopia (PANE). Other organizations have also contributed to the success of the workshop in different ways.

The workshop was organized with a view to generating evidence-based policy recommendations that could feed-in the poverty eradication efforts of the Ethiopian government. More specifically, it aimed at bringing to the fore useful lessons, evidences and program experiences of different organizations on those issues that would inform the Annual Progress Review (APR) of the government's 5-year national development plan, otherwise known as Plan for Accelerated and Sustained Development to End Poverty (PASDEP), whose implementation period is due in 2010. It also seeks to inform the next generation of PASDEP (2011-2015) on the link between water, poverty reduction and growth.

Ten study papers focusing on three major thematic areas were presented in the workshop. The three thematic areas were: (1) Improving livelihoods through access to water supply, mainstreaming climate change in food security programs and (2) targeting water supply investments to increase adaptation to climate change and (3) linking IWRM and WASH.

In line with the above-mentioned thematic areas, various recommendations were put forward based on the findings of the studies and the program experiences of different NGOs. This executive summary seeks to highlight the major points discussed by the different presentations.

Four case studies and two longitudinal action researches by RiPPLE, as well as program experiences of the Hararghe Catholic Secretariat (HCS) and the Catholic Relief Service (CRS) on water-based investments in improving livelihoods of communities suggest for ways and means to be sought to enhance efficient use of water for irrigation. One recommendation for achieving this aim was the introduction of sprinkler and drip irrigation technologies. The development of additional irrigation schemes was also suggested as a necessary measure to increase the number of beneficiaries. Lack of access to physical infrastructure such as roads, business services and local microfinance and credit institutions were mentioned as hindrances for farmers' income diversification activities. Hence, it was recommended, GOs and NGOs should put in place revolving credit schemes to enhance income diversification activities. The need to give due attention on non-farm and off-farm income sources was also mentioned as imperative to improve income diversification of households. The importance of strengthening farmers' training centers with a view to providing training for farmers on agronomic practices, marketing, irrigation management, food preparation and preservation has also been underlined.

For irrigation water development projects to bring about lasting positive impact on farmers' livelihoods, it was recommended that they must be accompanied by investments and interventions creating market access. Such interventions would contribute to the sustainability of production by significantly reducing

marketing costs and price differences between markets and thereby contribute to marketing efficiency. Structural problems in the marketing system should be gradually reduced by forming and strengthening producer-controlled and consumer-affiliated marketing groups (producers' cooperatives) to protect both producers and consumers. Marketing agents throughout the marketing chain should be informed about the nature and operation of the marketing system. This will be possible by creating extension services on horticultural production and marketing systems and establishing market information service delivery centers.

Other key recommendations include the urgent need to address the unequal distribution of irrigation water; the need for regular maintenance of canals to minimize water seepage and the importance of providing training to development agents, experts and community members on conflict management and resolution, among others.

Investment in, water need to encompass both domestic and productive uses and be linked to measures to support market access, employment and income generation. Packages of investment should be developed, linking programming under UAP for water and sanitation with productive water services and investment in market, credit and training. A simple assessment should be made of the major constraints to income generation, to develop appropriate, cost-effective investment packages. This approach should also be coordinated with investment in water made under the Productive Safety Net Program (PSNP). This approach would enhance the benefits from investment in water, beyond improving health, and contribute to achieving wider goals of securing livelihoods, building resilience to climate change, and creating opportunities for pro-poor growth.

The other issue that was underlined is the need for water service delivery to take account of actual patterns of water use, based on an understanding of users' needs and preferences. To this effect, generating reliable and consistent information on distribution of water schemes – both for domestic and productive purposes, was mentioned as essential for decision makers prior to planning. This would help ensure equitable distribution of WSS investments – both in spatial and social terms. Decision makers need access to reliable information on available water resources, infrastructure and demand for water services for different uses by different users. It is suggested that such kind of information is also included in the proposed woreda inventories, which currently focus only on domestic water supply.

The preliminary findings of a study by Action Contre La Faim on Household Level Climate Change Adaptation in Pastoral and Agro-Pastoral Communities in Borena Zone, show that an understanding of the social, economic and political context is critical to the design of climate change sensitive development policies and strategies. The study illustrates how hazards such as adverse climate variability and change affect different social groups differently and exacerbate existing livelihood stressors for some. It also provides further evidence for the tight relationship between poverty, vulnerability to climate-related impacts and the capacity to adapt.

Another interesting issue discussed in the workshop relates to the emergence of new risks and new vulnerabilities that come with the changes in the type and severity of shocks and stressors. Current climate and non-climate trends (changes in assets due to social and economic factors) are changing vulnerabilities, but trends are not necessarily increasing vulnerabilities proportionally. In fact, vulnerability is increasing, as a result of many counteracting trends. Coping with a single shock is

achievable for most households. For example, the poorest are supported by the wider community, while middle income groups employ various strategies to survive. However, when one shock is compounded by another, repeatedly, over a number of years, households' ability to bounce back becomes compromised, and resilience diminished. Increasing climate uncertainty adds another layer of stress for rural households, putting more pressure on traditional coping methods. This indicated the need for multiple and integrated responses for multiple shocks.

As shown in the study, the perception of local institutions varies between and, more importantly, *within* communities. The study pointed out that access to supportive institutions is a key asset for making informed livelihood choices, sharing risk and opportunities and engaging in activities which an individual household might otherwise not take up. As this access varies across wealth, gender and age groups, it is a significant factor in shaping a household's response strategies to climatic and other stressors. Therefore, the study recommends, climate change researches need to focus on analyzing these options and advising rural communities to make decisions that have long-term economic and social benefits. The adaptation strategies more or less confirmed by this and other studies form a sound basis for interventions.

The workshop also entertained study findings that focused on climate change adaptation and vulnerability to climate variability and change. According to papers presented in this area, some of the planned adaptation strategies in the NAPA create, enhance and protect livelihood assets, while others also reduce exposure to hazards. It was pointed out that small-scale irrigation based on surface water sources may create assets for some wealth groups. While such interventions enhance coping capacity, they however do not reduce exposure to climate variability and climate change impacts. On the other hand, it was indicated, small-scale irrigation schemes based on ground water sources create and enhance the asset base of communities, which in turn builds the capacity of communities to cope with climate change impacts while reducing exposure to climate variability and change. Owing to the fact that small-scale irrigation is a location specific supply side intervention, it was recommended that issues of equitable access must be taken into account when promoting this option.

Another issue capitalized on these studies includes the need for interventions under rangeland management to build on existing coping capacity and fill gaps where this capacity is being undermined. The importance of initiatives aimed at promoting local management practices to build on aspects related to social and human capital has also been dully stressed. This is more important to addressing conflict situations that might be exacerbated by climate variability and change induced impacts. Introduction of fodder species and the management of invasive alien species have also been mentioned as having the potential of securing the asset base of pastoral communities. Moreover, it was pointed out, enhancing access to water resources will complement the identified planned adaptation interventions under rangeland management.

Multiple Water Use Services as a climate buffer requires inter-sectoral integration and as such its planning and implementation requires buy-in from a number of stakeholders at different administrative levels, including local politicians and planning officials from different line departments. As MUS requires a well coordinated management system, the organization and training of beneficiaries and stakeholders is essential. MUS can only achieve its objective of providing a multiple services if there is sufficient water to support multiple uses. Thus, planning under MUS must focus on assessment of available water resources and invest in water resource management to enhance the availability of water.

A study on Household Water Economy Analysis indicated that integration of water security into traditionally food-centered assessments would contribute to the formulation of more effective and creative multi-sectoral responses. Water interventions often have long-term impacts and consequences. Thus, the study indicates, if planned for properly, it would also strengthen prospective risk management. In planning responses to water and food insecurity, the study underlines the importance of building on information from different wealth groups, and from different livelihood zones, so as to adequately assess vulnerability to climate change, and the options needed to reduce it. The study draws specific policy implications at local, regional and national levels.

The program experiences of Action for Development (AFD) in Borena Zone reveal that Sand Dam has a vital role to play in facilitating adaptation to climate change. They are found to be good solutions to avail water in the dry land parts where people used to face severe water scarcity problems. Sand dams are defined as small dams built across sandy rivers to accumulate sand, which is a good aquifer, on the upstream side so that water will be stored in this potential aquifer media.

The study elaborates the functions of a sand dam as well as its advantages as compared to surface dams/ponds. Some of the key advantages of a sand dam as compared to ponds or surface dams are protection against evaporation, reduction of water contamination, filtration of water as it flows through the sand, its unsuitability for breeding of mosquitoes and other insects. In terms of cost, sand dams are said to be inexpensive structures, particularly if they are implemented with high level of community involvement.

Another area of focus on the workshop was Integrated Water Resource Management (IWRM). In this regard the workshop benefitted from the program experiences of ECWP on IWRM & Wash Interface. Like in the other sectors, the traditional practice in WASH sector is extraction of water without conservation. But, as indicated in the ECWP study, this traditional practice could not bring sustainability of schemes as it is being challenged by water scarcity, water quality/pollution, and conflicts in water allocation. As pressures and demands on this limited resource increase, the need for finding new and innovative approaches become more apparent and urgent. IWRM emerges as a means to move away from the traditional sectoral approach to a more holistic or integrated approach to water management. The WASH sector is an important user of water resources, dependent on availability of adequate water resources of good quality. Yet, the study points out, It is also responsible for many negative impacts on water resources. The study stresses on the importance of ensuring integration between water resource management and WASH service provisions in the context of the 'Integrated' approach to water resources management. The study thus made the following key recommendation towards strengthening the integration of water resources management with WASH services:

All WASH sector actors need to understand and appreciate that water resources management for WASH sector is key to ensure the sustainability of WASH services. IWRM will help WASH to conserve water through a more efficient use of the resource; solve conflicts among competing uses and users; account for the social, economic and environmental value of water; and increase the participation of communities in decision-making related to water resources management. This will further enable it to meet the needs of communities for water for various purposes. WASH stakeholders need also to understand that integrated and multiple-use interventions will address various needs of water demands by communities and other

users, and also address water resource development and management issues. This is because water is demanded for various uses like for agriculture, drinking, animals, environment, etc. More piloting and learning is needed for scaling up the shift in approaches from sectoral to integrate. As IWRM is a long and complex process, the study suggested that ownership of the change process by all stakeholders, especially by government is key. The study underlined the importance of wider participation for building the necessary partnership. While capacity building and awareness rising would facilitate the IWRM change process, the study capitalizes on the importance of creating a mechanism for institutionalizing this change in the government framework.

The program experience of World Vision-Ethiopia corroborates the assessment of ECWP as it also reiterates IWRM as an important approach for sustainable management of WASH that can bring a change. The participatory nature of the process, whereby users, planners and policy makers are all involved at different phases of the project has been mentioned as one of the strong sides of IWRM. The successful organization of the community has immense role in the sustainability of the project. Provision of farm inputs has got sufficient consideration. Capacity building with critical follow up of its application has brought about visible changes in the WVE project.

The program in its recommendation stated that both development and management of water and other related resources including the environment should be considered together. Water allocation and management decisions should consider the effects of each use on others, as well as different social, economic and environmental aspects.

Opening Session

Weizero Zinash Kefale from PANE introduced the workshop schedule and called upon Ato Zemede Abebe, Director of RiPPLE to deliver a welcoming speech. Following is the full text of the welcoming address by Ato Zemede Abebe, and then the Opening Remarks by Ato Mathewos Hundee.

* * *

Welcoming Address by Ato Zemede Abebe, Director of RiPPLE

Dear Ato Mathewos Hundee,
Dear Participants from various institutions,
Ladies and gentlemen,

First of all, I would like to welcome you all to this workshop on behalf of RiPPLE, PANE and the organizing committee.
This workshop is jointly organized by PANE, and RiPPLE as the lead institution, while other member organizations have also contributed to the organization of this workshop.

Research-inspired Policy and Practice Learning in Ethiopia and the Nile Region (RiPPLE) is a five-year research concerting program funded by DfID. The program is designed to advance evidence-based learning on water supply and sanitation (WSS), focusing on issues of planning, financing, delivery and sustainability to improve equitable access to water.

Since 2006, a number of case studies, action research and dissemination works have been made. Very recent studies include, climate change adaptation and multiple use of water and income diversification, water inventory, household economy analysis, and budget process and financing.

There are a number of action research activities going on in various parts of the region. So, we are closely working with PANE and other CSOs in disseminating these research findings. There are also other studies by various organizations, and action research undertaken on WaSH, on water source management, on multiple uses of water, climate change adaptation and food security.

However, there is limited opportunity to come together and discuss on working models and use to improve implementation at various levels. This workshop has been organized to start the way of bridging the gap between knowledge, relation and usage of that knowledge. It focuses on thematic areas [such as]:

- Link between adaptation to climate change;
- Investment in WaSH, and
- Poverty reduction

The overall objective of the multi-stakeholder forum is to generate evidence-based recommendations on how investment in the water sector can contribute to poverty reduction and adaptation to the climate change.

It is believed to contribute to the government and other development actors' initiative working in the poverty reduction and fostering economic growth through collaborative multi-stakeholder partnership.

The workshop is expected to bring about lessons, evidence and program experiences of organizations on those issues that will inform the Annual Progress Review of the PASDEP, and development of the next generation of poverty reduction strategy document on the link between water, poverty reduction and growth. It will also provide regular recommendation through the formation of thematic working group in PANE.

I would like to thank PANE for co-organizing [the workshop] with RiPPLE and institutions who are prepared to share their research findings and program experiences on this forum, and their commitment to follow up on this.

Finally, I would like to thank also Ato Mathewos to be with us to formally open our workshop.

Dear Participants, finally I would like to ask your full reflection and engagement for better achievement in this forum and also after this forum in the implementations of the recommendations.

Thank you very much.

Opening Speech by H. E. Ato Mathewos Hundee

Director for Early Warning & Response Directorate

Distinguished Guests;
Ladies and Gentlemen!


Ato Mathewos Hundee

I am very pleased to be honored to deliver the opening address at this workshop which is organized by PANE and RiPPLE to discuss on the link between climate change and investment on Water, poverty reduction and growth. I wish to take this opportunity to express my sincere thank to the organizer of the workshop for giving me the opportunity to preside over this important workshop. The workshop provides an important forum for stakeholder discussion of an important issues concerning access to water supply and growth.

Lack of access to water and sanitation facilities and poor hygiene practices are identified as major causes of morbidity and mortality in Ethiopia and significantly hinder the achievement of the Millennium Development Goals (MDGs). Commitment to increasing water, sanitation and hygiene services has been made in the Government of Ethiopia's Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and, despite the enormous challenge of achieving Universal Access, impressive improvements have already been made. Water and sanitation coverage on average across Ethiopia currently stand at around 47% and 30% respectively. Policies and strategies encompassing modern principles of suitable water and sanitation resource management are generally in place in Ethiopia. The Universal Access Program (UAP) has now been adopted by the government and has been integrated into the PASDEP.

Access to water supply and sanitation services has immense contribution to growth and poverty reduction. There are economic benefits from the domestic and productive uses of water. Access to safe water supply and sanitation has health, labor and time saving benefits and enhances household's production and productivity. Productive uses of water contribute to households, food security availing water as assets that can be used in income generation and food production.

Access to water is also recognized as a vehicle for growth in Ethiopian policies. In the water sector expanding safe water access is expected to increase productivity and in the agriculture sector irrigation is promoted to enhance land productivity. The national food security strategy has mitigating water shortage as its key component and promotes water harvesting, watershed management and small-scale irrigation for income generation and household food security.

However, the contribution of water to growth and poverty reduction is limited by various factors. Household's ability to benefit from productive uses of water or using water as an asset is dependent on their ability to access other livelihood assets and capitals such as human, physical and financial capitals. Climate change and water stress also limits household's ability to move out of poverty through access to water. Seasonal shocks and climate change further erode households' other assets and livelihood strategies. Understanding these limitations and identifying ways of overcoming them helps to maximize the livelihood benefits from access to water and to reduce vulnerability of households to climate change shocks.

The workshop is expected to bring out lessons from evidence and program experiences of organizations on those issues that will inform the Annual Progress Review (APR) of PASDEP and development of the next generation poverty reduction strategy document on the links between water, poverty reduction and growth touching the sectors of water, agriculture and disaster risk management and food security. And hope that participants will share their knowledge and expertise through your active participation.

With these brief remarks, I declare the workshop is officially open.

* * *

PART I

[Following the opening session, participants were asked, by the facilitator, to introduce themselves, which they did. (See Annex 1 for list of participants.) Weizero Zinash Invited Dr. Woldamlac Bewuket, AAU Department of Geography & Environmental Studies.**]**

Presentations:

Performance Review and Reformulation of Plans and Strategies of Rural Water Supply UAP for Accelerated Implementation

By Dr. Alemayehu Mekonnen, WaSH National Consultant, MoWR

Due to the constraint of time created as a result of the late start of the workshop, Dr. Alemayehu said he would focus on the main issues of his slide presentation. More over, he said, his presentation had been delivered in many [similar] workshops, and expressed hope that some participants might have attended those workshops and had the opportunity to share the contents. Thus, he said, he would present only the major issues of his slide. **[**See Dr. Alemayehu's Presentation Slide in Annex #1**]**

Dr. Alemayehu started with background information on Ethiopia's commitment to achieve the target of the Millennium Development Goal in water supply by the year 2015. He said the target of the MDG in water supply is to reduce the number of people who have no access to safe water supply by half. Accordingly, he said, Ethiopia has committed itself to attain 66 percent access coverage in rural water supply.

Moreover, he said, the Ethiopian Government has ratified the Universal Access Program (UAP) in 2005 to provide access to safe water for 98% of the rural population of the country by the year 2012. (i.e., more target with relatively short time compared to the MDG)

The implementation of the UAP started in 2006, and it has currently been four years since implementation of this seven-year program started. Initial assessment of the first 3 years (2006-2008) implementation indicated that performance is lagging behind the set targets. So, the MoWR established a study Task Force, assessed the situation and reformulated the strategies and the plan.

He then presented an extract from the major findings of the study conducted by the Task Force. The Objective of the Assessment was to:

- Evaluate the 3 years (2006-2008) performance of the [rural water supply] UAP;
- Reformulate the UAP plan for rural water supply [for the period 2009-2012] focusing on low cost household and community technologies;
- Reformulate strategies for accelerated UAP implementation, with due emphasis given to low cost household and community technologies

The Methodologies used for the assessment study was as follows:

- A format was developed by the MoWR and dispatched to the regions on which data on Three Years Program Performance (2006 – 2008) and 4 Years Plan (2009 – 2012) was collected, compiled and analyzed;
- Various documents related to sector policies, strategies, development programs, other legal documents and the existing UAP document are reviewed and summarized with a view to identifying gaps;
- Grass-roots level best practices in household and community level technologies have been assessed through field observation and consultation with relevant ministries and bureaus;
- Assessment on low cost technologies experiences of other African countries was carried out from literature review as well as from relevant workshops;
- Data obtained from regions compiled and systematically analyzed;
- Experiences obtained from the field, literature, workshops, discussion, etc compiled and evaluated;
- Consultation carried out with stakeholders on the draft findings of the report. The report is currently almost finalized.

Dr. Alemayehu outlined the major policy directives of the Ethiopian government in Rural Water Supply. The policy directives are thus:

- Every Ethiopian citizen shall have access to safe water supply as far as conditions and capacity permit. Dr. Alemayehu noted that the Ethiopian government's commitment and endeavor to provide access to safe drinking water to the people in a short period of time is driven by this policy;
- Decentralized and participatory management of water supply with full participation of users [and central role of women.] According to Dr. Alemayehu users of a water scheme are expected to play key roles in the implementation of water schemes through labor and financial contribution as well as in the management of water facilities. This policy directive, he said, is now reflected in the reformulated strategy of the UAP.
- Support community's self initiative and direct involvement.
- Encourage participation of financial institutions in water supply development
- Encourages partnership of community, government, private sector, and external support agencies with a partnership framework. The efforts of all these stakeholders in the water sector should have to be coordinated and integrated. This point has also been included in the revised strategy;
- Promote and encourage the use of labor-intensive technologies. According to Dr. Alemayehu, this is one of the core issues reflected in the reformulated strategy of the UAP. The strategy should focus on low-cost technologies which could be implemented with minimum financial expense and with maximum participation of the community in labor as well as in financing water supply schemes implementation.

- Promote development of indigenous technologies (local experience and material). This is, according to Dr. Alemayehu, as opposed to using high cost technologies which require high skill and huge financial resource.

So, Dr. Alemayehu said, the performance evaluation of the three-year UAP implementation focused on four major points, namely: (1) Physical, financial and coverage (beneficiary) performance; (2) Analysis of the technology options used; (3) Financial analysis in terms of source, utilization, and financial efficiency; (4) Analysis of the trend of performance for the last 3 years and possible projected target results by the end of UAP.

The performance evaluation of the three-year UAP implementation revealed that the physical plan performance was around 62 percent [against the plan]. According to Dr. Alemayehu, out of the 41,347 water supply schemes planned to be undertaken at national level in the 3-year period, only 25,686 (62%) have been executed. Nearly half of the water supply schemes (46%) were financed by the government, while the remaining was financed by donors (26%) and NGOs (28%). He noted that NGOs have played key role in financing water supply schemes.
[The performance range of regions in this undertaking was between 21% and 96%]

With regard to the Financial Plan Performance, it was planned at the national level to utilize 3.4 Billion Birr. Some 55% of this amount was to be allocated by the government, while 28% was to come from donors, and 17 percent from NGOs. However, only 2.4 Billion Birr (73%) has been utilized. Out of this, the government earmarked 51%, while Donors and NGOs earmarked 27% and 22%, respectively.

The Financial Utilization Efficiency was assessed using average per capita cost per person as an Indicator. As per the UAP Plan at National level, the per capita cost is around 144 Birr/person. But the actual performance at national level revealed that it was 181 Birr/person, which is 20% more. This may be partly due to the inflation of the price of construction materials, labour and so on. But, this is not the only reason. The focus of regions and the implementers as a whole on high-cost technologies, rather than on low-cost technologies has also contributed to the increase in the per capita cost.

While the actual per capita cost for low cost technologies is Birr 87, the actual per capita cost for high cost technology is Birr 252. And the Regions' Performance indicated that their per capita cost ranged between 102 – 541 Birr/person. This might have resulted from inclination to high cost technologies in implementation.

With regard to Beneficiary (Coverage) Plan Performance, the planned performance for the first three years of the UAP at the national level was 20.1 million beneficiaries (i.e., to reach 64% coverage until 2008). But, the achievement in coverage until the year the assessment conducted was 13.5 million people (with coverage reaching 54%). That is only 67% of the plan. But, this is up to 2008. When we add what has been implemented since 2008, i.e., in 2001 & 2002 Eth. C.,

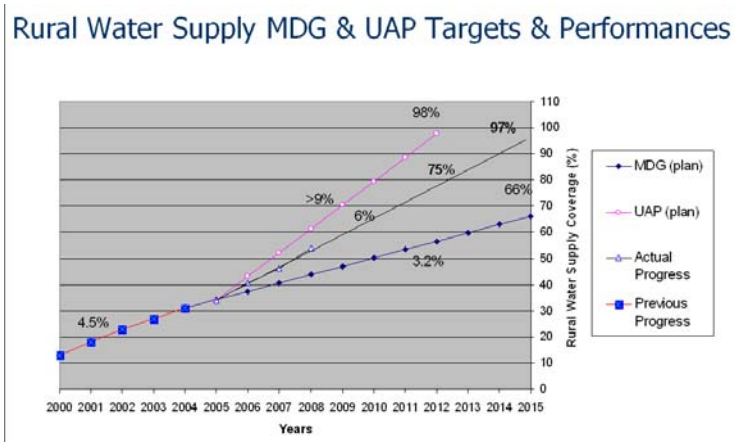
the national coverage would currently stand at around 60%. Hence, Dr. Alemayehu noted, the figure mentioned in the opening speech needs to be corrected.

Of the stated number of beneficiaries, 51% have been financed by the government budget, 29% and 20 % have been financed by donors and NGOs, respectively. Regions' performance range between 41% and 106%.

Speaking of the performance in terms of use of low-cost technologies, Dr. Alemayehu said, around 53% of the beneficiaries were planned to be served with low-cost technologies at National level. The actual performance indicated that some 43% of the beneficiaries were served by low-cost technologies, which indicates that 83% of the plan was achieved. Due to this, he said, the actual average per capita cost increased to Birr 181, (against the planned Birr 144.) The low performance in use of low cost technologies has contributed to the increase of the actual average per capita cost.

5.2. Trend Analysis with the Last Three Years

This chart analyses the trend of the water supply coverage from year 2000-2015. From 2000 to 2005, when the UAP was initiated, the coverage was growing by 4.5% annually. In order to achieve the UAP target, the coverage should grow annually by at lease 9 percent and more. But the actual implementation since 2005 reveals that coverage is growing by 6% annually. And if this trend continues, by the year 2012, the coverage will reach 75%, against the UAP target of 98%. This is one of the reasons that prompted the MoWR to assess UAP implementation during the first three years and reformulate the strategy. Dr. Alemayehu said, in order to achieve the UAP target by the year 2012, it requires doubling the beneficiaries being served each year for the last 3 years at National level, i.e., 8.7 million and above. This has called for Performance Efficiency Improvement to Achieve the UAP Target. Thus, achieving the UAP target with the existing implementation approach only would be a real challenge to the sector. This resulted in the demand for Reformulation of the existing UAP Implementation Strategy and Plan.



<u>Strategies for UAP Accelerated Implementation</u>:

The implementation of the UAP has been constrained, among others, by:

- Low strength of program management at all levels

- No UAP plan with a national target at the lowest administration level (Zone, Woreda and Kebele)
- Inadequate advocacy and promotion of the program at Region and below level
- Allocation of Budget for the Program from the government treasury is relatively low and donors fund disbursement is slow
- Weak implementation capacity
- Inclination of implementers to high cost technology
- Inadequate use of the community's resources, i.e. labor, local skill and material, finance

The key implementation strategic issues that have been addressed in the reformulated strategy of the UAP are: (1) Program Management; (2) Planning, (3) Advocacy and Promotion, (4) Budget allocation, (5) Capacity Building, and (6) Technology Option.

The UAP Management aspect:

With regard to the management aspect, one of the issues that has been given due attention in the reformulated strategy is **strengthening of the water sector institutions at all levels.** The issue of increasing the role of Zones in program implementation has also been addressed by the Business Process Reengineering (BPR). The reformulated strategy has also identified the need to **establish water sector institution at the lowest administration level** (Kebele) at least with one or two WEWs. This is currently well in progress in some regions. The reformulated strategy also provides for the **adoption of the WaSH implementing structure** at all levels. Hence, there would be intensive use of WaSH implementing structure at all levels (Federal to the Community level) for the program implementation as an integral part of the WaSH plan. This aspect is also on progress with some gaps, though. The establishment of a WaSH coordination structure at Zonal (regional branch) and Kebele (lowest administration level) levels is on progress in some regions.

UAP Planning:

A clear guideline has been set on how to prepare UAP four years (2009-2012) strategic and annual plans at all levels with verification of the annual targets of the plan by the nearest higher administrative level. However, there has been little progress in this regard below the regional level. A guideline has been prepared for UAP planning and management. Emphasis is given to give priority in planning at all levels for low cost technologies to be implemented with major participation of beneficiaries. The proper use of the UAP plan as a guiding tool for implementation, monitoring and evaluation at all levels is emphasized and monitoring mechanisms have been set at all levels.

Advocacy and Promotion:

The UAP was not advocated well in the first three years of implementation. That has been identified as one of the major gaps, and the importance of promoting and advocating the UAP up to the community level has been dully recognized in the reformulated strategy.

As the reformulated strategy has already entered into implementation, now the UAP is being advocated up to the community level.

Financial Allocation:

With regard to financial issues, woreda administrations were not allocating budget for the water sector. This is identified as one of the major gaps in the implementation of the UAP. Who is the responsible body to allocate money [for water sector development] at the woreda level was not clear. Now, with the reformulated strategy, it has been made clear that the woreda government is responsible for the allocation of the budget from the government financing.

Capacity Building:

The other issue is capacity building. Capacity from the Federal to the community level is very low. That is why even allocated budget had not been fully utilized. It was only around 73% of the allocated budget that was utilized. So, that is why the capacity building is addressed in the reformulated strategy.

Technology Options:

Technology option is also one of the issues addressed in the [reformulated] strategy. The reformulated strategy states that we should have to focus on low-cost technologies where it is feasible. Of course, low cost technologies are not feasible everywhere. But where hydro-geological feasibility is possible, we should have to focus on low-cost technologies which can be implemented by the community themselves.

[Dr. Alemayehu's presentation was cut short at this point. Remaining slides deal with **Implementation Approaches**, a tabular presentation of **Planned Water Supply Access Coverage** and on "**What to do after 2012 if UAP met**" for which readers are kindly advised to see Annexed Slide I. (**Rapporteur**)]

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Income Diversification through Improved Irrigation Schemes: Evidence from LARS Study in Gorogutu Woreda, Eastern Ethiopia

Presented by Ato Samson Eshetu, (Haromaya University)

Ato Samson first acknowledged that the research whose finding he was about to present was conducted by a 10-member research team. The team was composed from Haromaya University, Woreda Agriculture and Rural Development Office, HCS, RiPPLE, the LARS (Long-Term Action Research Studies) Leader and ODIE.

He gave a background about the research study. Accordingly he said RiPPLE was doing action research study in two thematic areas namely, Growth and Access. The Growth thematic area is concerned under the RiPPLE conceptual framework which is stated as: The cycle of "money into water supply and sanitation" and "water supply and sanitation into money." This cycle has two phases. The first phase focused on the "Money into water supply and sanitation (WSS)" and the second phase on the reverse -- "WSS into Money".

The first cycle has been conducted through its two studies namely, "MUS" and "Water and Food Security Linkage" in Eastern parts of the country, particularly in Babile and Gorogutu woredas.

The second phase, which was the interest of the research presented by Ato Samson, and which is called LARS, was focusing on the findings of the first phase to complement the second cycle namely, "WSS into money". Generally, Samson said, LARS has examined four aspects of the water-poverty-growth interface which, he said, are of high relevance in Ethiopia: (1) Water use for income generation and poverty reduction, (2) Increasing the resilience of vulnerable groups to water and climate-related risks, (3) Equity and (4) Household water economy analysis.

Out of these four aspects, Ato Samson's presentation focuses on the first issue, which is Water Use for Income Generation and Poverty Reduction. [The second and third aspects would be presented in the course of the workshop by other presenters.]

Rationale of the Study:

According to some research findings, it is indicated that generally water development, and in particular irrigation development induces many direct and indirect benefits which include:

- Increased cropping intensity and crop diversification opportunities;
- Increased farm employment opportunities [for farming families as well as for hired laborers in the locality.]
- It also provides opportunities for rural livelihood diversification: providing development opportunities for income diversification,

- Increased *income,* farm consumption and increased permanent wealth (permanent asset accumulation due to irrigation),
- Improved rural infrastructure development, such as roads
- Improve food security situation, reduce poverty substantially and increase economic growth at the national level

However, the planning, designing and implementation of improved irrigation is not addressed in a holistic manner to realize these benefits. Important questions remain as to whether investing in such water-dependent productive activities enables households to move from vulnerability to secure livelihoods through income diversification in the context of frequent droughts and the prospect of increased water scarcity in eastern Ethiopia and the study site in particular,

Therefore, Ato Samson said, the study was designed to examine the impact of water investment in increasing resilience in relation to income diversification where investment on productive use of water is made.

The specific objectives of this research study are thus:

- To assess the existing income diversification patterns and change in situation with differing accesss to improved water for productive uses;
- To investagte how income diversifcation from proudctive use of water affects livelihood in different agro-ecological setting;
- To identify constraints and opprtunities for improved water based income diversification for rural livelihood in different agro-ecological setting;
- To draw out possible improved water based income diversification alternatives and intervnetions that enhance the ability of rural household to diversify income

Research Methodology:

Generally the study was conducted in Gorogutu Wereda, East Hararghe zone of the Oromia region. Three agro-ecological zones (3-5 years) were selected, namely Werji Jalela (from highland), Ifadaba (from mid-land), and Erer Mede Enchini (from lowland).

Quantitative and qualitative data

- Primary (Household and community level) and
- Secondary (CSA, RiPPLE studies, and woreda and zonal level)

Primary data collection techniques used include, wealth ranking, FGDs, key informant interview, household survey, case studies with typical households, market value chain analysis.

Data Analysis:

- Both qualitative and quantitative analysis techniques have been used, including market chain analysis & business development service (BDS);

- To compare Income, Expenditures and Asset values, (Y, E and A) for the before and after improved irrigation, we have used price deflator index to accommodate price inflation;
- A quantitative data were analysed for before and after improved irrigation situation using Paired sample mean comparison.

Findings in relation to objective one:

In relation to the first objective, the research team has seen the land allocation for different crops. Particularly, Ato Samson said, they have seen whether there is change in terms of land allocation, for cereal and horticultural production. They found out that even if statistically it is not significant, there is a slight change in terms of land allocation, particularly for horticultural production. As a result, the income obtained from horticultural production show significant increase. The reasons are beneficiaries have started using [their land] more than two or three times per year.

With regard to sources of income, most income is obtained from on-farm activities. But, because of short duration of these irrigation schemes, the results or incomes obtained from on-farm and non-farm activities are statistically not significant, but it is showing changes. This is also the result of irrigation.

Fruits and vegetables are the most dominant enterprises, which brought income changes for the beneficiaries.

In terms of agro-ecological settings, the highland is the most dominant [agro-ecological zone] in terms of bringing changes in income particularly with the sale of Khat, fruits and vegetables. Where as in the mid-land sale of grain harvest, fruit and vegetable is common. However, in the lowland, since their livelihood is based on livestock, the changes are exhibited in livestock products. As a result, they have been able to increase the forage using irrigation.

In relation to the second objective, one of the effects of income diversification for the household is that it brought some nutritional improvement. Focus group discussants have also approved this finding. They have improved their nutritional status by consuming the produce and products as well as spending more money for other food items from the income they are obtaining. This benefit is emphasized towards children, because it reduces malnutrition. As a result, it brought health benefits in general, which in turn has reduced expenditure on health care, which is the indirect effect.

So, the overall effect is reflected in the household's annual cash income as well as the total assets, and the change is statistically significant.

Constraints of Income Diversification:

Some of the constraints in relation to assets are that land is very scarce in the area. There is also scarcity of agricultural input and water for irrigation. In terms of market, Ato Samson said, they have also made market chain analysis, but could not discuss this aspect in detail due to time constraint. Nevertheless, he pointed out that it indicated some problems along the market chain. There are also some problems in relation to the market structure, number and size.

Again due to time strain, Ato Samson was forced to jump to the conclusion and recommendations that came out of the study.

Conclusions and Recommendations:

1. There is limited irrigable land holding, shortage/inadequate supply of irrigation water, limited availability (in quantity and quality) and untimely distribution of inputs, unfair distribution of irrigable water have negatively impacted income diversification benefits from improved irrigation.

In relation to the above-mentioned problem, Ato Samson put forward the following recommendations:

- Ways and means must be sought to increase irrigation water use efficiency through, among others, the introduction of sprinkler and drip irrigation technologies so that beneficiaries could reap maximum benefits from irrigation schemes.
- Development of additional irrigation schemes is necessary to increase the number of beneficiaries in the study sites.
- Intensification of production staggered cropping of high yielding varieties of crops with short production cycle and use of improved inputs is a move in the right direction.
- Availability of quality seeds of high economic value crops in adequate quantity and at the right time is extremely important if beneficiary households are to increase their income through irrigation. This could be materialized through establishing/strengthening producer-based organizations (marketing cooperatives).

2. There is lack of local micro-finance/credit institutions, which is hindering farmers' income diversification activities.

    - Hence, Ato Samson recommended, governmental organizations and NGOs should put in place revolving credit schemes so as to enhance income diversification activities.

3. Emphasis on non-farm and off-farm income sources is imperative to improve income diversification of farm households. In this regard, the possible options include actions that promote the development of micro- and small-scale enterprises (activities that lie beyond the traditional crop and livestock production activities such as pottery, local handicrafts (weaving), trading, etc)

4. Limited post-irrigation development support has reduced the income diversification benefits of improved irrigation schemes.

- Hence, he recommended:
- Strengthening FTCs in the study sites would help crate conducive condition to give training to farmers on agronomic practices, marketing, irrigation management, and food preservation and preparation;
- Irrigation schemes must be accompanied by creation of market access and development of infrastructure to guarantee sustainability of production and bring about marketing efficiency;
- Unfair practice of distributing irrigation water must be addressed immediately by reinforcing the existing by-laws
- Huge amount of water was being lost due to breakage of canals. Hence, an urgent need to repair and maintain these canals so as to minimize water seepage
- It is also important that training be given to development agents, experts, and water user committee members on conflict management and resolution
- Means have to be sought to upgrade productive use of water to MUS to utilize the water efficiently
- Newly developed water schemes should be multiple use system rather than productive use (irrigation use) only
- Household income sources should be diversified through establishment of water schemes as an adaptation strategy for climate change.

Ato Samson suggested for participants to visit RiPPLE's website for further information, which is www.rippleethiopia.org and also contact him through his email address samsondiredawanati@yahoo.com

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Program Approaches, Practices and Results on Multiple Uses of Water Systems (MUS)

Presentation by Ato Bekele Abaire, CRS/Ethiopia

Ato Bekele stated by giving a brief background of the Catholic Relief Service. CRS has undertaken 33 different water-related projects in Ethiopia since 1958. It implements projects and programs in partnership with local partners. It has 15 different Church and non-church based partners.

Programs supported by CRS include, among others, Water and Sanitation, Health and Education, HIV and AIDS, Agriculture and Livelihoods, Food Security, Emergency Response and Recovery and Micro-finance.

CRS has been working in five regional states across the country, namely in Tigray, Amhara, SNNPS, Oromia, Harari and Somali regional states, as well as in Dire Dawa Administration.

With regard to the Water & Sanitation program, CRS mainly focuses on promoting multiple uses of water: Domestic Use and Productive Use. CRS also engage in Ecological Sanitation, in partnerships with International Water Management Institute (IWMI), Universities, Millennium Water Alliance (MWA), the government and communities.

In its Agriculture & Livelihood program, CRS mainly focuses on Natural resource management, using water shade approach.

CRS has partnerships with research institutions such as International Center for Tropical Agriculture (CIAT), International Potato Center (CIP) and Ethiopian Institute for Agricultural Research (EIAR).

Multiple Uses of Water Systems (MUS):

Ato Bekele read out the definition of Multiple Use Water Service (citing Van Koppen and others, 2006), which, in the interests of the poor stands for water services planning and design that take people's multiple water needs as a starting point and searches for incremental improvement in access to water across the range of needs within informal settings and a highly variable water situation.

MUS include Domestic uses (drinking, washing, cooking and sanitation), productive uses (irrigation, livestock) and micro-enterprise (traditional drink making, brick production, etc).

Traditionally, investment in potable water supply has been considered to benefit the people's health through increasing access to safe drinking water and adequate sanitation. But in reality

water supply systems are also used for productive purposes providing vital incomes and food security to the poor.
Indigenous water supply systems typically take into account the multiple needs that people have for water. For example, people may make use of a piped domestic system for drinking and other household activities, a well for watering livestock and gardening and rainwater harvesting for domestic and supplementary irrigation during the rainy season.

Yet in most projects, uses and users are not well integrated, leaving much scope for improvements in water use efficiency and equitability, and livelihoods. Examples of such improvements are: more accessible and cleaner water for households, expanded water services that allow productive uses, more reliable water supplies through new institutions that enable effective interactions between end users and providers of water, and greater scale and sustainability due to the return from the productive uses of water..

CRS/Ethiopia interventions in MUS

- In supporting water and sanitation development and related behavior change, CRS/Ethiopia, in partnership with the International Water Management Institute (IWMI) and implementing partners promotes the multiple uses of water approach that takes into consideration human
- Water interventions may include rehabilitation of existing water sources or developing new water points or structure. A cluster of structures that meet multiple needs of the community are developed where sources and users are effectively integrated
- CRS/Ethiopia supports community access to low cost water technologies for lifting water (such as hand and treadle pumps) and for irrigation (such as drip systems) to increase both labor and water use efficiency
- CRS/Ethiopia's water and sanitation strategy also emphasizes the linkage of sanitation and hygiene to the development of water sources for domestic and productive uses.
- CRS/Ethiopia and its partners establish and/or strengthen water committees for every water point developed. They receive basic training in water source operations management including collection of user fees to ensure sustainability. By utilizing such strategies, CRS/Ethiopia aims to reinforce human and social assets within communities.
- PHAST (Participatory Hygiene and Sanitation Transformation) is used to support community planning and management, community mobilization and individual and community behavior change. Once water points are developed for multiple uses, CRS/Ethiopia undertakes monitoring of water quantity and quality, promotion of a variety of simple latrines, personal hygiene and establishment and strengthening of community health management structures and water user associations ensuring women are able to influence decision-making.

APPROACH FOLLOWED

The Core Strategy adopted is Integrated Watershed Management. By integrating MUWS to other actions within a defined watershed to achieve desired objective.

- Creating Learning Alliance Opportunities (with community, government, universities, research institutes including IWM, NGOs and partners)
- Integrated Watershed Management Approach (IWM) generally defined as integrating natural and human resources taking into account social, political, economic, environment institutional factors within a defined watershed. In this context integrating MUW to other actions within a defined watershed to achieve desired objective

Gender implications in managing multiple use water services: the case of Adidaero in northern Ethiopia

Participation in management of single and multiple purpose water systems. These facilities improved the access to water by men and women water users. Especially, villagers who acquired access to water points have increased the volume of water they used. Although the amount was still not sufficient to significantly improve personal hygiene, they have acquired access to better quality of water within their reach. In terms of irrigation, some farmers have been reported to have earned good income from the irrigated land and a few farmers in the multipurpose system have developed the plots where they used their share of irrigation water. Among the committee members of each facility, women did not assume any leading position as chairperson or vice chairperson but worked as treasurer, clearing or observer.

In the study area, gender roles were clearly defined: men assumed most of the productive and community roles while women looked after the households. In the case of female headed households, tenants or male members of the families substituted the role of the male spouses to some extent. Participating in the meetings for management of facilities and paying users' fees were mostly considered as the community role of the individuals, women were less visible in participating in the meetings or the operation and maintenance activities.

The management of multipurpose water systems was more challenging than the separate multiple source single purpose systems. Two challenging factors were indicated. One was the difficulty in coordinating the various uses. For instance, the negotiations between women washing clothes and male irrigation users were difficult as the women did not quite share the understanding of water quality which was raised by the irrigating farmers. The other factor was the perception of quality of the filtered drinking water from the river. This was the concern of both male and female community members. To solve these problems, the committee members were required to interact with the users, which might take a long time. Furthermore, the women committee members could get more actively involved in the process of communicating with women rather than male committee members dominating discussions. However, to enable women to play such a role, more women need to be educated in life skills and literacy to develop their self confidence, which would lead them to participate in the predominantly male "community roles". In other words, better management of multiple use water services is not only an issue of management skills but also a matter of challenging the existing social structure and empowering women.

Conclusion:

The analysis of impacts induced by establishment of multi purpose water supply facilities presented the positive impacts upon users' livelihoods in Burak and Gorobiyo scheme in East Hararghe Zone of Oromiya Region. Despite the positive findings of the case studies, the application of the MUS model should depend on the socio-cultural context. Therefore, further case studies of the similar nature are necessary. To effectively carry out such studies, the adoption of the SLF as an analytical framework would be effective as it was demonstrated by this case study and allow us to assess both positive and negative changes of livelihoods induced by multi purpose water use facilities.

Although the current water policies in Ethiopia are still segmented by domestic and productive water sub-sectors, the lessons learned form the on-going efforts by various organisations on multiple water supply facilities could help the policy makers to incorporate the elements of MUS. For that reason, a multiple stakeholder platform, learning alliance, could facilitate their learning process and could create an enabling environment for MUS (van Koppen et al., 2006).

Collaboration with other stakeholders:

- Communities to enable managing watershed closely
- Government, CRS and its partners capacitate and backstop the communities
- Universities -- in doing research based on local reality and appropriateness like water quality and good variety seeds in linkage with water for productive uses

Link Water Source Development to Water-shade Management as main approach

- Water quantity increases
- Groundwater level increases
- Water quality improves
- Production increases & Health improves

These can be achieved through:

- Enhancing soil and water conservation
- Enhancing afforesting with indigenous trees
- Avoiding afforesting groundwater field with plants that need more water as the plants deplete the groundwater

Integrated Water Resource For Multiple Uses:

- Water for Domestic, Productive and livestock uses will help to improve health and food security.
- All the water sources developed/rehabilitated by CRS and its partners are designed for multiple uses
- A lot have been learned through promotion of multiple uses of water

Environmental Sanitation and Personal Hygiene:

- Sanitation- generally represents issues related to water resources management including both on- site and off – site water dependent sanitation. In this context it includes each house hold

should have sanitation, dry waste disposal means and knowledge on importance of environmental sanitation
- Personal hygiene focuses on preparation of food, use of food and sanitation facilities
- Malaria prevention and control include keeping environment clean to avoid mosquito breeding and use of mosquito net
- Linking environmental sanitation and hygiene with water source development helped to improve health, social and economic status of target communities.

The approach CRS used is Participatory Hygiene and Sanitation Transformation (PHAST) with particular focus on:

- Understanding current human disposal situation and knowledge of community
- Health education for improving sanitation and the beneficial impacts
- Promotion of self help construction of pit latrine

Promotion of Personal hygiene is carried out contextually with four indicators:

- Safe disposal of feces
- Hand Washing after defecation
- Hand washing before food preparation
- Hand washing before child feeding

Water quality:

AAU, CRS and ATCC have good experience in water treatment and water quality monitoring
- Conducted research on defluoridation for borehole water around Alemtena
- The research focused on: community managed and affordable technology

Community Management:

All partners have taken imitative and are moving forward. HCS promoted good community management system

Major focus areas include:
- Fee collection
- Community ownership of their water sources is loose
- Strengthening backstop to community water sources M and O
- Strengthening cost recovery plans
- Build up community awareness safe water, sanitation and hygiene
- Integrating gender, HIV/AIDS and nutrition to WatSan

Results obtained:

- Watershed activities mainly soiled and water conservation activities conducted

- Water sources development based on local reality including spring development, hand dug well, borehole etc. including irrigation schemes constructed for multiple uses
- Sanitation facilities constructed
- Health and water management trainings conducted
- Water quality monitoring and treatment done as required
- Communities got access to safe and adequate water within reasonable distance
- Work load on women and children reduced
- Community health and food security showed improvement

Opportunities for learning alliance:

- Existing relation with research institution (like Government, Community, partners IWMI, AAU etc.)
- Existing of development and emergency projects
- High capacity of partners' qualified and experienced staffs
- High demand of knowledge and technology transfer by community to sustain projects

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Costs and benefits of multiple use water services: a case from Eastern Ethiopia

Presentation by Ato Zemede Abebe

RiPPLE is research program funded by DfID. It is a consortium of ODI, IRC, CDS, HCS, WAE ECC-SDCOH is the key development partners in Ethiopia involved in a multiple use water service development among diverse programs.

The study on multiple use of water was conducted in Goro Gutu Woreda, Eastern Hararghe Zone of the Oromia Region. As has been mentioned by Ato Bekele, an increased access of multiple use services have multiple impacts. Some of the impacts are, it improves the household nutrition and health, generates income and diversification of livelihood, enhance food security and also enhances social equity and empowerment.

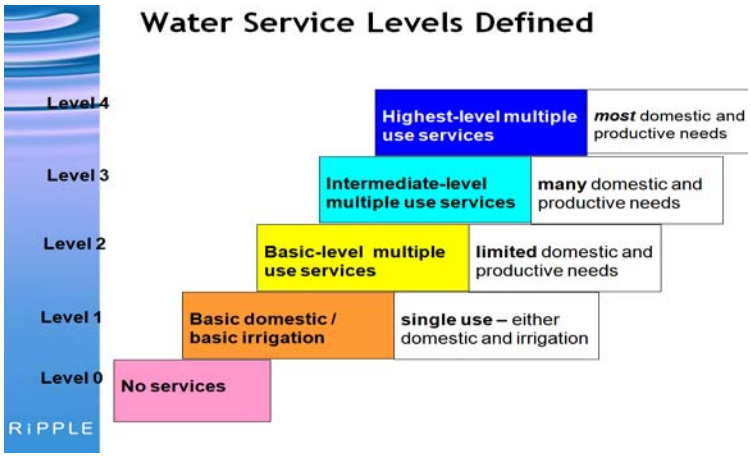
Multiple use facilities

Study Goal: The goal of the study was to provide input to inform prospective water sector investments assess the potential of multiple-use water services to sustainably meet the water needs of the rural people.

Objective: To provide a better insight in the costs and benefits of going up the water service ladder in the developed water schemes and contribution to the sustainability.
Ato Zemede has also mentioned the limitations of the study. Some of the limitations mentioned include, among others:

- It does not adequately considered impact benefits

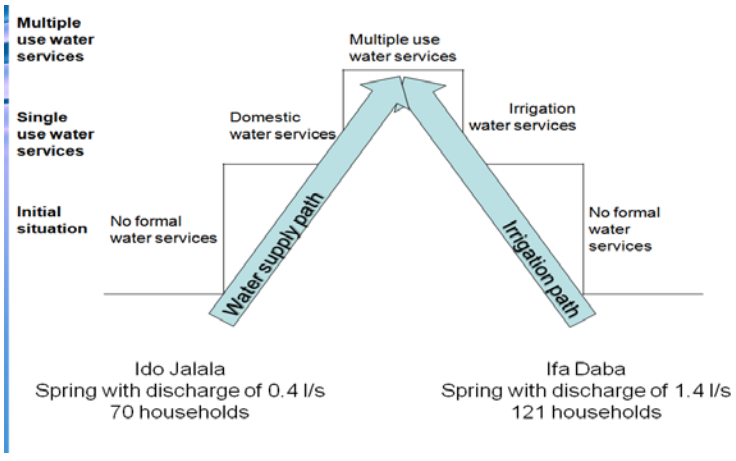
- Impact from the complementary integrated watershed management not considered
- It was difficult to single out some of the impacts
- Valuation of cost was a challenge



This figure defines the water service levels. But, Ato Zemede said, due to the scope of the study, they didn't go beyond the third level, which is basic level multiple-use services.

In this specific study, they tried to compare single use services with multiple use services. However, in order to do so, other factors influencing costs and benefits will have to be kept constant as much as possible. That, according to Ato Zemede, can only be done if sample size is big enough or assumptions are made, or when comparing similar systems going from single use to multiple use.

This figure shows the framework which has been used in the study. The Water Supply Path moves from no service to domestic use and then to multiple use water services. The right path which they called Irrigation Path, it moves from no service to irrigation water services, and then to multiple use water services. The costs and the benefits have been assessed in the two project locations, namely Ido Jalala and Ifa Daba. In terms of cost, they have tried to see initial capital investment, operating and maintenance expenses, and other support costs. The costs have been calculated for the two areas. Generally, Ato Zemede said, the incremental benefit has been found to exceed the incremental cost. In terms of the irrigation path as well, the incremental benefit is more justified than moving from domestic use to irrigation. That is because there will be competition in the use of the water system when users move from domestic use to irrigation. He mentioned that the projects in these



locations have been implemented in partnership with CRS. He recommended for participants to refer to the RiPPLE Policy Brief for the summary of the cost analysis and the linkage. [See also annexed slide of Ato Zemede.]

There are also Non Financial Benefits which, Ato Zemede said, were not properly valued. These include:

- Health benefits,
- Food security and nutrition,
- Diversifying livelihoods and reduced vulnerability to drought, and
- Social equity and empowerment especially for women.

Key Findings:

- *Strategic investments in multiple-use services can cost-effectively maximize poverty impacts of water services while enhancing sustainability*
- Most rural poor have assets necessary to benefit to some extent and improved water services enhances productivity of these assets
- Communities with higher water service levels have more income, livestock and productivity

Conclusion:

- Multiple use services cost more but generate greater income and poverty impacts and offer greater potential for sustainability
- Introducing single use water services can have impact on the multiple uses of water
- Limited water availability at the source means that different water uses might compete with each other
- Multiple use services seem to be more cost effective than single use systems (in case of spring systems)
- In case of spring systems, the benefits of going from irrigation services to multiple use services, are high compared to the costs

Acknowledgements: RiPPLE MUS research team: Zemede Abebe, Marieke Adank, Belayneh Belete, Samuel Chaka, Adissu Delelenge, Martine Jeths, Jaleta Gebru, Zelalem Lema and Demeksa Tamiru.

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Discussion Session I

Questions to Dr. Alemayehu:

Q.1. In your presentation, you have informed us that the Ministry [of Water Resources] has reviewed the UAP in order to double the coverage rate in the years 2009 to 2012. I think we are finishing year 2009, and I think the ministry has been monitoring the progress of this reviewed rate [of coverage] in the year 2009. So, how is your monitoring result? Is the reviewed rate working well as intended or the UAP is still subject to second review?

Q.2. We know that the water sector policy on paper is very attractive, [and] comprehensive. For instance, we know that it includes the full participation of the users, and the private sector. But the policy has been criticized by lack of other implementation guidelines. As a result of this its intended objectives have not been met -- Like, we don't have full-fledged involvement of the private sector, and there is lack of full participation of the users. What is your reflection and observation on this?

Q.3. On the UAP, if I understood it correctly, there is one strategy which the program is trying to implement, that is the community to finance their own water schemes. I would be happy if there is any assessment --- to what extent are communities being able to support or finance their own water initiatives?

Q.4. I need explanation from Dr. Alemayehu concerning the issue of encouraging the participation of financial institutions in water supply development. What mechanism is there in the policy, and what incentives, to encourage financial institutions to participate in the water sector? We, at Oxfam America, have been thinking about working with financial institutions to develop water for productive use. So we want to learn if there are best practices in this area.

Q.5. I need clarifications on the first presentation related to the UAP evaluation report, particularly on the monitoring approach adopted in the water policy. Performance, coverage, cost, efficiency etc. are well indicated in the presentation. But I haven't seen the issue of women, and the use of indigenous knowledge evaluated. I would like to know if the water policy at the federal level is in a position to address the issue of women and indigenous knowledge.

Q.6. It's very good that we are focusing on low cost, and indigenous sort of technologies. But the counter challenge we are having practically on the ground is the quality and the standard aspects of these technologies. What direction or provision is there in the strategy to ensure that these low-cost, indigenous technologies are really to the required standard [with sustainability and durability in mind?]

Answers and Reflections by Dr. Alemayehu:

A.1. Concerning the first question, which relates to the UAP's envisaged target of doubling coverage – actually the assessment revealed that the coverage growth rate is by half less than [the required level] in order to reach the target by 2012. So, it requires doubling the annual coverage. The annual growth of coverage was around 6%, now it should have to be increased to more than 11%. This study was conducted by the end of 2008. The coverage [growth rate] by the year 2009 is also 6% -- it has not doubled. So, actually the reformulated strategy has started to be implemented by mid-2009. So the actual coverage which is implemented in 2009 doesn't show the impact of the reformulated strategy. We expect the result [of the reformulated strategy] this [*Ethiopian*] year -- 2002, or in 2010. Actually, now implementation of the reformulated strategy has started, and it is being well advocated up to the community level. The regions have now committed themselves, and the coordinated management is also being strengthened. So, even though we will not reach doubling of the coverage, we expect improvement in the annual growth rate of the coverage. We are monitoring it. The MoWRs is planning to have inventory, and also establish MIS. We hope the impact [of the reformulated strategy will be shown this year.

A.2. As to the second question – which relates to the *absence* of supporting guidelines for the water sector policy…? Actually, based on the policy there is a water sector strategy, a sector development program etc. -- all these documents are based on the policy. In order to implement the policy a water sector strategy and a sector development program have been developed. And regarding the UAP, currently the rural water supply package is under preparation. It is in fact being finalized. This package includes community mobilization guideline, planning guideline, and technology options guideline. So, the UAP is also supported with various guidelines.

A.3. With regard to community financing of water schemes … the reformulated strategy is not focused only on community financing. It has also addressed so many … five, six other strategic issues. Of course, one of those is that communities should have to significantly finance their own water supply schemes. For this purpose, the water supply schemes should have to be low-cost, as much as possible. Because otherwise communities could not afford high-cost technologies. In this regard, nowadays, communities are financing from 5% to 100%. In some regions, there are even communities which are building their own low-cost technologies at household level.

A.4. Regarding the financial institutions, I think there is a good example in Amhara region. There is a program called Community Development Fund (CDF) approach, which is financed by the Finland government. This approach involves the financial institution… the Amhara Credit and Saving Institution is one of the key players in the CDF approach. The program supports the institution, and the institution is facilitating the disbursement of the fund. But, the target is to enable this institution to involve in financing community water supply system. You can contact the Finnish government agency that is supporting the program. They are also working in Benishangul-Gumuz, and also communicate with pertinent bodies in Amhara Regional State. I think it is a good example and you can take their experience.

A.5. Regarding women and indigenous issues, actually one of the objectives of the assessment was to assess the participation of women in the implementation, operation and maintenance of water supply schemes, but we have not got reliable and comprehensive data. Therefore, we have not finalized it. But, as per the guideline, the participation of women was anticipated to be around 30% or more particularly at the community level, and in other water supply organizations.

A.6. With regard to the standard and quality of low-cost water schemes, the ministry, as I have said earlier, is developing a rural water supply package. One of the components of the package is technology options that should have to be implemented at household level. This is being addressed in that technology package. Thank you.

Questions to Ato Bekele:

Q. 1. Many donors and NGOs are applying the CLTS approach, than the PHAST approach, which is an old approach. So, is CRS adjusting itself to apply the CLTS approach, which is more cost effective and efficient?

Q.2. Multiple water use system is interesting in principle. But, when it comes to implementation, it requires the integration of different sectors. The use of the multiple services requires the different sectors to work together. How did you find the integration of those multiple sectors at all levels of intervention starting from designing stage to implementation? What challenges have you encountered in integrating the different sectors to work together?

Ato Bekele's reaction on the questions:

A.1. The first issue I would like to point out in relation to PHAST and CLTS, is that they are both old, and imported; but they are adopted. CLTS cannot outshine PHAST because of age. PHAST is generally participatory and smooth methodology. This is by the way my own perception, it is not official stand of CRS. PHAST is a friendly research approach.

We, at CRS, don't separate PHAST and CLTS. Because, we take some of the CLTS components and adapt them within the PHAST approach… because the government supports innovations. PHAST is innovation for us. …. We coordinate with government and others who are developing CLTS, but as innovation we use that one [PHAST]. So we have not experienced conflicts using that one.

A.2. Regarding the issue of integration in the multiple uses of water services among various stakeholders, the challenge especially on the ground is huge. The other is over use competition, especially when you link productive use; over use of the water is a challenge. The other is conflicts on water supply systems. These are the challenges we usually observe. Also the designs and technology issues are among the challenges. In our experience, the solution we are taking is that we work with all stakeholders when we are planning. We also bring research on board. We

work with International Water Management Institute, and universities, especially in Eastern Hararghe we work with Haromaya University, and in Tigray with Mekele University, we bring students so that to bring new technology in the implementation. We design with the government so that we can address the conflicts [among different sectors]. We design in such a way that it should not be over-used. The volume of water to run in a day is *determined* based on the plan. We also bring elders on board for the purpose of resolving conflicts over the water.

Questions to Ato Samson:

Q.1. Ato Samson in his presentation mentioned that there is unfair practice of distributing irrigation land. Hopefully this lack of fair and just distribution might have created some sort of conflict between the upstream and down stream communities, [or] water users. So, Samson, have you encountered any sort of conflict between the upstream and downstream communities using the same water source? If so, what mechanisms have they been using to settle these conflicts and what have been the implications of the conflicts, if they have any?

Q.2. On the presentation related to the impact of irrigation on household income, the presenter has mentioned about improved and unimproved irrigation approaches. I really want to see which one is improved and which one is not. Talking about the improved ones, I would like to know who constructed those improved schemes. While comparing the improved and unimproved irrigation schemes, the improved ones have succeeded in increasing household income by some amount. But has the before and after assessment considered the construction cost of those improved irrigation schemes?

Q.3. Ato Samson, you tried to conduct your research in three different agro-ecologies. Towards your conclusion, you referred to this shortage of irrigable water. I don't know if have tried to see the shortage or availability of irrigable water across the different agro-ecologies: highland, mid-land, and lowland. Thank you.

Responses by Ato Samson:

[**Rapporteur's Note**: Before the third presenter responds to the above three questions, the Moderator intervened, in the interest of time, asking Ato Samson to respond to only one of the three questions, which is related to the shortage of irrigable water vis-à-vis the different agro-ecological zones in the study area.**]**

A.1.Thank you for your critical observation. Yes, we have indicated there is shortage of irrigable water. But that is not uniform for all agro-ecological zones. Particularly the shortage of irrigable water refers to the middle and the highlands. And that is due to the capacity of the water schemes structure. As you know, due to the climate change, the rainfall pattern is short, and as a result the irrigable water is very small. In the lowland the water is there, the problem is blockage of this canal. That is why we have recommended that the canal needs an urgent maintenance to increase the available irrigable water.

PART II

Adapting to Climate Change in the Water Sector: Assessing the Effectiveness of Planned Adaptation Interventions in Reducing Local Vulnerability

By Ato Million Getnet

[Research conducted by RiPPLE and the Research Team include Nanki Kuar, Million Getnet, Beneberu Shimelis, Gebeyehu Seyoum, Zegeye Tesfaye and Endale Assefa.]

Climate change is a change in the long-term mean value of a particular climatic parameter. It is a persistent long-term change.

The reality of global as well as regional climate change is no longer disputable

"**Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising average global sea level"** (IPCC, 2007)

Climate affects almost all walks of life but some sectors are more sensitive than others: *Agriculture (food security), Water, supply, Health, Energy supply*

This study was initiated to look at the impacts of climate change on the *water sector*

The Aim of the study was to assess if planned adaptation interventions have the potential to facilitate mainstreaming of CC into development planning.

It also seeks (1) to assess the vulnerability of socio-economic and ecological systems to current and previous climate change impacts, (2) to document local coping strategies and (3) to assess the effectiveness of proxy-planned adaptation strategies in the water sector

Study Sites

- Oromia Region, Easter Hararghe Zone, Gorogutu Woreda: Chefeaneni Kebele
- Oromia Region Easter Hararghe Zone, Meta Woreda: Bekelcha Oromia Kebele
- Somali Region, Shinile Zone, Error Woreda: Billa and Ayidora Kebeles

Ato Million said the study sites are mandate areas of RiPPLE and HCS

FINDINGS:

Local Perceptions of Climate Change

Temperature: Increasing

Indicators:

- Getting hotter
- Animals drinking more water
- Disappearance of the pasture and fodder trees
- Reduction of rivers flows
- Prevalence of malaria
- Shift to lowland crops like sorghum
- Shift to more drought resistant crops were

Rainfall: Variability and decrease in the amount

Indicators:

- reduction in the vegetation cover of the range land
- stunned growth of plants and distortion of agricultural calendar were mentioned as indicators
- The 'belg' rain is reducing significantly and it is even disappearing totally

Soil Moisture: Reduced

Indicators:

- Drying-up of grazing lands
- Crack formation in farm lands
- Difficulty to plough with oxen driven plough and difficulty of seed germination
- Increase in irrigation water requirement

River Discharge: Decreasing

Indicators:

- Reduction in the amount of river water
- Reduction in distance traveled by the river

Humidity: Getting dry

Indicators:

- Change in wind direction
- Dry-up of skin
- Disappearance of morning dew

Impacts of Climate Change on Economic Use of Water

- Climate change is impacting the ecological systems:

- Production trend of major food crops like maize and sorghum is on decline
- In pastoral areas herd size per household is significantly decreasing over the last 30 years.

Impact of Climate Change on Domestic Use of Water:

Domestic sources of water in the study sites include deep and shallow hand dug wells (in pastoral lowland areas), irrigation canals (in the agro-pastoral site), and developed and undeveloped springs (in the agricultural sites).

Climate change, in terms of decreased rainfall, has resulted in decreased spring discharge and river flows. In times of water stress, communities tend to de-prioritise sanitation concerns.

The summary of the above findings is that there is greater capacity to deal with climate variability than the extremes like the flood and drought. The better-offs have better copping capacity than the poor. The better-offs rely more on supply side, which brings more water, but the poor have to look into the demand side options.

The research team have selected four different interventions to see the effectiveness of planned (or proxy-planned, as they were not meant for climate change) adaptation options.

The interventions considered were (1) Small Scale Irrigation, (2) Productive Safety Net Program, (3) Improved Rangeland Management and (4) Multiple Water Use System.

With regard to the small scale irrigation, the concern the research team tried to address was whether surface water or ground water is used as water source for irrigation schemes. And that was because when surface water is used as a source for such intervention, climate change would become a very serious issue, because surface water irrigation could be threatened by climate change extremes, especially drought. Surface water small scale irrigations enhance coping capacity, but do not reduce exposure to climate change impacts, while ground water small scale irrigations create and enhance the asset base, hence, builds capacity to cope with climate change impacts and reduces exposure to climate change. The research recommends for irrigation interventions to give priority to ground water sources, whenever that is possible. Small scale irrigation is a supply side intervention that is location specific. Issues of equitable access must be taken into account when promoting this option.

Another issue discussed was rangeland management. The study recommends that interventions under rangeland management need to build on existing coping capacity such as mobility, and fill gaps where this capacity is undermined. Especially, this should look into and address conflict issues. Conflict is mentioned as a serious issue in the study area that need to be taken care of when rangeland management interventions are planned. Initiatives aimed at promoting local management practices should build on aspects related to social and human capital in order to address conflict situations that are execrated by climate change induced impacts.

Introduction of fodder species and the management of invasive alien species also have the potential of securing the asset base of pastoral communities. Enhancing access to water resources could also complement the identified planned adaptation interventions under rangeland management.

With regard to the **Productive Safety-Net Program**, the research team recommended for social protection programs to be climate-proofed. Moreover, the research recommended, for targeting of both PSNP beneficiary areas and individuals to be carefully undertaken so as to be able to reach the most vulnerable groups. The need for coordination and proper planning is also identified as essential to start activities on time and avoid overlap with the normal agricultural calendar.

Concerning **Multiple Water Use System**, MUS requires inter-sectoral integration Planning and implementation requires buy-in from a number of stakeholders at different administrative levels. MUS requires a well-coordinated management system. The organization and training of beneficiaries and stakeholders is essential. MUS can only achieve its objective of providing a multiple services if there is sufficient water to support multiple uses.

Planning under MUS must focus on assessment of available water resources and invest in water resource managemen**t to enhance the availability of water.**

* * * *

Household level Climate change adaptation study in Pastoral and agro pastoral communities: A case study from Borena Zone, Oromia Region, Ethiopia

Presented by Dr. Bayou Abera

Background:

Climate change is already happening - scientific evidence suggests that human-induced climate change is already taking place, and will lead to increasing risks to livelihood and food security, particularly among the poorest.

Africa has often been identified as one of the most vulnerable regions to climate variability and change because of multiple stresses and low resilience.

Climate-related risks have significant impacts on African populations and economies and drive large allocations to emergency resources. Furthermore, Africa has more climate sensitive economies than any other continent; the Horn of Africa represents a region particularly subject to chronic droughts accompanied by a high prevalence of malnutrition

Ethiopia is a country that has been exposed to and suffered from severe forms of drought, flood etc in recent history.

This clearly indicates how the lives and livelihoods of the people of Ethiopia (rural population in particular) are affected by drought – the principal climate induced shock.

Objectives:

- To improve the understanding of climate related local situations and processes that shape vulnerabilities and resilience in the research sites

- To recommend pertinent policy and programmatic responses that will assist vulnerable populations facing climate variability and change, considering evidence-based analysis.

According to LIU, Dire belongs to Southern Agro-pastoral (SAP), while Dhas belongs to Borana-Guji Cattle Pastoral (BGP) Livelihood Zone. A total of eight kebeles (4 kebeles in each woreda) have been selected for purposive sampling.

The key findings common to both livelihood zones is that drought is the main climate related shock affecting both pastoral and agro pastoral communities with increasing frequency of occurrence. More recently, multiple shocks are happening such as drought, conflict, and inflation (re-enforcing one another).

Drought affected equally all households regardless of wealth group reflected by the reduction of assets, but the magnitude is very sever in poor and very poor. Especially, female-headed households are affected because of their poor adaptive capacity.

There is also an increased deforestation because of increased firewood collection and charcoal making.

He showed the frequency of drought and variability of rain fall in the study area using graph (which can be seen from the annexed slide).

Variability of rainfall – from community perception.

- Change in temperature – increase in temperature is expressed by the communities
- Bush encroachment – invasion of the grazing lands
- Absence of formal financial institutions hindering adaptation capacity.

Pastoral:

Impact of pressure on pasture/water from several corners to a single point (e.g. Case of Gorrile in Dhas).

There is also tendency to reduce movement because of conflict and scarcity of resources outside the zone.

Change from savannah grassland to bush land. They have nowhere to grass their livestock.
…the range land is degraded, and located in the conflict area

Agro-Pastoral:

- Increased pest infestation: army worm, caterpillar and soil borne disease
- Weather/climate pattern has been changing (late start and early cessation of rain)

Adaptation Strategies:

Pastoral areas:

- Diversifying/increasing the rearing of species that can adapt the changing vegetation cover
- Enclosure of pasture land
- Clearing & burning of bushes that encroach pasture land
- Increase gum and incense collection
- Digging traditional wells

Agro pastoral:

- Growing crops in valleys/depression areas
- Growing short cycle crops (e.g., Katumale, teff)
- Increased gum and incense collection and mining (salt, stones
- Protection /enclosure of pasture during rainy season

Conclusion & recommendations:

Climate change is already labelled as "one of the major development challenge of the 21st century". Failure to respond to this challenge would reverse any gains in poverty reduction so far.

There is a widespread view that developing countries like Ethiopia contributed very little, if any, to carbon emission because of their low level of industrialisation. Therefore, those responsible for contributing to the adverse effects of climate change, the industrial countries, should help the former implement cleaner development plans.

There is emerging evidence that moderate climate change may actually favour some farmers.
There is no similar evidence suggesting that climate change might benefit pastoral and agro-pastoral communities.

An understanding of the social, economic and political context is critical to the design of climate change sensitive development policies and strategies.

Regional and federal policy makers need concrete evidence of the benefits and costs of internalising climate change into the policy making process.

Multiple shocks need multiple and integrated responses - Communities in the research areas have identified a number of shocks and response strategies specific to their context. Regional and federal policy makers should take these into account in the design of climate change adaptive policies and strategies.

Conflict mitigation -There is a desire to leave in peace. Government and development partners and civil society organisations should work together to find lasting solution to conflict. They should also design their interventions carefully so as not to trigger new conflict or fuel existing conflict.

Poor and very poor households should be supported with special credit or asset transfer in 'normal' times so they can build their livelihoods and withstand shocks.

The research team have recommended future researches to be conducted to fill gaps in knowledge in the two livelihood zones concerning the climate change.

Economic analysis of response strategies – more work needs to be done on the economics of the various 'strategies' adapted by pastoralists and agro-pastoralists to help them make informed decisions and move away from unsustainable response strategies.

The most appropriate safety net/social protection mechanism for pastoral and agro-pastoral areas
More research is required to better understand the emerging plant and animal diseases and pests
Existing conflict resolution/mitigation strategies should be re-examined. In this respect, the presenter (Dr. Bayou) said new research is required to examine the strength and weaknesses of conflict resolution/mitigation strategies used so far in the research area and recommend new approached to conflict mitigation/resolution.

* * *

Experiences [of AFD] on Sand Dams in Borana

(Presented by Alemu Seifu)

AFD is an NGO that is currently implementing an integrated development projects in different parts of the country. The Borana Zone in Oromia Regional State is one of AFD's project sites. Ato Alemu defined Sand Dam as a small dam build on and into the riverbed of a seasonal sandy river.

- sedimentation of coarse sand upstream of the structure,
- the natural storage capacity of the riverbed aquifer is enlarged
- aquifer fills with water during the wet season
- subsurface storage

Ato Alemu explained how a sand dam works, using graphic illustrations as well as real pictures of sand dams constructed by AFD in the project site.



[See presentation slide in Annex #_]

Functions of a Sand Dam:

Dam drops the flow velocity and results in sedimentation and percolation of water
Increasing the water availability by storing water in the riverbed and banks

Increased availability of water for domestic and other uses such as livestock, irrigation and regeneration of natural vegetation

He spoke about the advantages of Sand Dams by comparing it to other types of surface dams and ponds. In this regard, he spoke in favor of sand dams as they protect against evaporation. The evaporation rate is minimal as the water is not exposed to sunlight. Sand dams also reduce water contamination, because sand dams filter the water as it flows through the sand. The other advantage of sand dams is that it is unsuitable for the breeding of mosquitoes and other insects. In terms of cost, sand dams are inexpensive structures, particularly with a high-level of community involvement, and the use of local material available in the area.

The comparison made between sand dams and cisterns has also revealed that sand dams are more advantageous over cisterns with respect to their ability to store more water. In terms of cost,

investment cost per liter of harvested water is very minimal (0.2 birr/lt for sand dam & 2.85birr/lt for cisterns with open G.C).

The other advantage is that with sand dams, it is possible to raise the ground water table and make the environment green. Clean water that last for longer time can be harvested by using sand dams. In the case of cisterns, the catchment is open and silt may easily enter into the system, undermining the quality of water. Sand dams are also good for small-scale irrigation practices, which is not usually so in the case of cisterns.

AFD has constructed 4 dams in Kerssa Dembi, Kompo, El Wariyo and Ougelle in 2007 and 2008. The last two dams are supplying water and the local people are getting water for domestic use and to water their livestock. But the first two have not yet started. Some defects have been observed on stilling basin structures. Silt barrier between well and sand (infiltration gallery) need to be provided.

Ato Alemu has also mentioned some of the limitations of Sand Dams. The fact that they cannot be constructed everywhere except on sandy rivers is mentioned as one limitation. Sand dams also require intense geological and hydrological investigation, and they are susceptible to flood risks and siltation. The other limitation is that sand dams are typical to each and every river in terms of design and construction. There is no blue-print for sand dams, because the geological and hydrological data doffers from one river to another.

The other problem or limitation of sand dam cited by Ato Alemu is that it is difficult to exactly know the amount of water stored in the dam during the dry season unless an inspection well is installed.

Sand dams also take longer time to avail water. It takes some time until the water level rises and enters into the abstraction well.

Ato Alemu explained the sites that are feasible for Sand Dam construction. An area that has scoop wells with good quality of water is mentioned as most feasible for sand dams. The presence of a scoop well during the dry season is an indication that there is an impervious layer or a consolidated formation just under the accumulated sand.

Scoop well on Sandy River

- Having an impermeable or bed rock layer at shallow depth
- Slope of the river bed not more than 5%
- Coarse sand on the bed with less silt/clay content
- No big boulder on the bed of the river
- Stable and high enough river banks

- Free from sources of contamination

As with any other water project, Ato Alemu said, an intervention for the construction of sand dams also has to consider various social issues. In this regard, he mentioned the need to carryout community sensitization work before project implementation. Community participation during site selection and construction stages is also essential to create ownership. He also underlined the need to form a Water Committee that will work based on an agreed bylaw. Training should also be given for care takers of pump/well. There must also be a fee collection system. To that effect agreements on fees for operation and maintenance need to be established.

Concluding his presentation Ato Alemu mentioned a few points that would help upscale the use of sand dams. The first recommendation he made is prompted by the fact that there is lack of awareness on sand dams. Hence awareness creation for different stakeholders is recommended as a way of scaling up the use of sand dams where applicable. Facilitating exposure visits to potential sites is the other thing that AFD is considering. Preparation and distribution of manuals on sand dams is another point mentioned for up scaling sand dams. In this regard he mentioned that a good manual is currently prepared, and can be accessed on websites.

He also recommended the introduction or inclusion of sand dams in the project plans of different actors from district to the federal level as a way of up scaling sand dams.

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Household Water Economy Assessment in Oromiya and Somali Regions

By Ato Kahsay Woldeselassie

The Household Water Economy Analysis is conducted by RiPPLE, Water Bureaus and other organs like HCS.

Household water economy analysis was developed in order to improve the ability to understand water access at household level and its role in ensuring food and livelihoods security. Water is crucial – both for survival, and as an input into production – for the ability to protect livelihoods

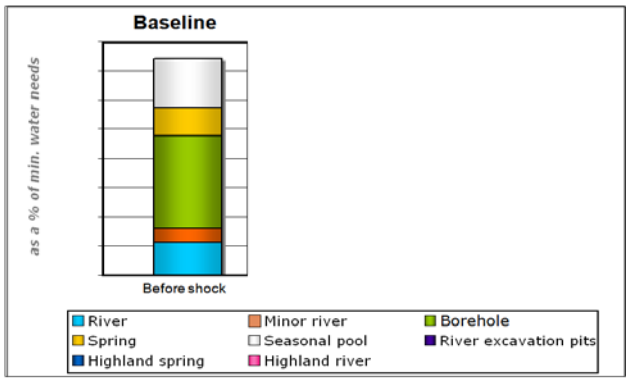
The HWEA was conducted with the objective to: (1) assess differential water access for different wealth groups and characterise the nature of vulnerability of these groups to water-related hazards; (2) quantify household water access across seasons; (3) project the impact of current and/or future shocks on household access to water and (4) assess the effects of changes in household access to water on access to food and income.

<= This graph presents a pictorial representation of a water household economy hazard impact analysis. It is meant to illustrate the **concept** of the analysis only. The graph shows the different water sources people access – for instance, the household (in green) accesses most of their water from the borehole, those in white from seasonal pools, and those in blue from a river.

But what happens when a hazard hits, like a drought: the boreholes that people depend most on for water fail. In drought, boreholes may break down due to falling water tables and increased population demand from groundwater sources such as boreholes. [See Graph 3 on Annex _]
What can the households do to increase their access to water during the drought?

In this case, they are able to increase their access to water at rivers in the highlands, where water stress isn't as great. But – there's a cost to this: much greater distances traveled and time spent on water collection. This is the 'final picture' – where we've quantified household water access after taking into account coping strategies.

A Water HEA has just been completed in East and West Hararghe in Oromiya Region, and Shinile in Somali Region under RiPPLE. We looked at 3 livelihood zones, one in the highlands, one in the midlands, and one in the lowlands.



The three livelihood zones are **Highland:** Wheat, Barley, and Potato (WBP) livelihood zone, **Midland**: Sorghum, Maize & Chat (SMC) livelihood zone, and **Lowland:** Shinile Agro-Pastoral (SAP) livelihood zone.

Assessing water availability:

At zonal/regional level: groundwater availability mapping for identification of areas likely to have groundwater present during drought;
At local level: rock samples and geological observations made to assess hydro-geological makeup of local aquifers
At local level: investigation of high yielding and abandoned water sources to assess why sources are successful/unsuccessful in relation to hydrogeology

Assessing water access:

- District level interviews identify broad patterns of water availability and inventory of water sources
- Community level interviews with key informants to identify seasonal trends and water source characteristics / management systems
- Wealth group interviews to assess and quantify household access to water across seasons / uses and identify coping strategies in hazard years

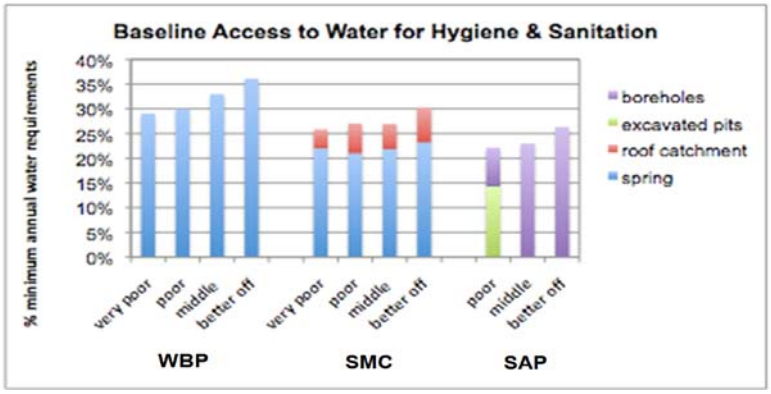
Some initial findings

- Some initial findings:
    1. Water access varies considerably – water access decrease as altitude drops

2. The importance of water access varies with types of livelihoods strategies pursued

- Water is most crucial to livelihoods strategies (i.e. agro-pastoralism) where water availability is poorest and access constraints are greatest

We are only in Phase 1 of the study; the next phase will look at the impacts of climate change on water access and livelihoods. However, some findings of the water HEA baselines include that water access & availability vary considerably among the livelihood zones assessed. Water stress and access constraints are much higher in the lowland agro-pastoral areas. Significantly, it is in those most water-stressed areas that water is most crucial to livelihoods strategies – in other words, the agro-pastoralism that people in Shinile Agro-Pastoral Livelihood Zone depend on for survival.



3. Water-based conflicts are significant issues in all livelihood zones due to high competition over limited water resources
    - Conflict costs lives and resources
    - Water use and allocation rights over irrigation water are often the source of conflict. Use and extraction rights are often poorly defined.

What also emerges from the RiPPLE Water HEA is that water has become a source of conflict all of these areas – and will continue to be one as long as water resources are limited and appropriate water use and allocation rules and systems are not effectively and fairly set up. Why should we care about water-based conflict? Because it costs lives and resources – and is effectively creating a running emergency in Ethiopia.

What water sources are the majority of people using for domestic uses? Are they getting enough water to survive?

The presenter has illustrated access to water for human consumption or for domestic purposes across the three livelihood zones using the graph ← shown in the left.

There are four wealth groups in the first two livelihood zones, while in the third livelihood zone, three wealth groups have been identified.

As indicated in the graph, residents in all three livelihood zones have got access to water from different sources. For the first two livelihood zones the main source of water are springs, while people in the SMC livelihood zone also get access to water from roof catchments. In the Shinile Agro-Pastoral livelihood zone, the source of water is somehow different from the first two livelihood zones, as they use mainly the boreholes. The poor and middle income households in the SAP livelihood zone also have access to water from excavated pits. These are the major sources of water for domestic use in the baseline year, and the three livelihood zones are getting access to the survival threshold of water in the baseline year.

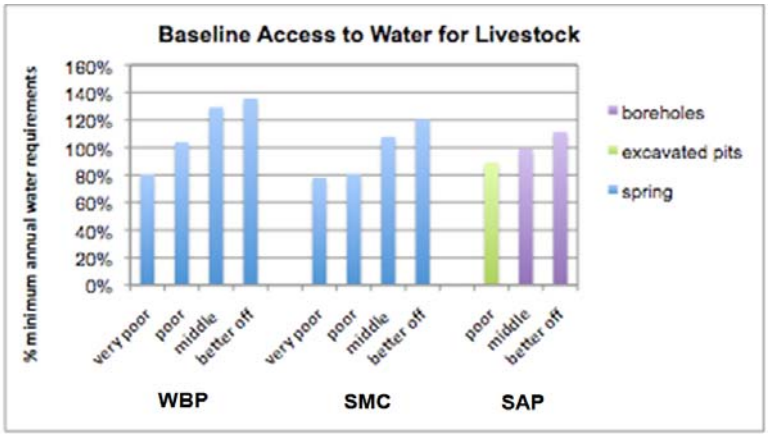
The graph on the right indicates that the poor in the SAP livelihood zone are using only excavated pits to water their livestock. This, according to Ato Kahsay, is related with their resource management or capacity. The middle and better offs have enough labour and financial resources to send their livestock to get water from the boreholes, something the poor households can't afford.

According to Ato Kahsay, even in a normal year, the poor cannot secure enough water for their livestock in the hot dry (*hagaya*) season because they cannot mobilise enough labour, money, or time to do so. This has implications for the quality of livestock and cash obtained from livestock sales – the major livelihoods strategy pursued in the zone. Middle and better off households obtain 80 to 95% of baseline income from sale of livestock/products (ETB 4200 to 7500). The poor only get ETB 1000 – 50% of income. This, according to Ato Kahsay, is related with water scarcity. With the shortage of water for livestock, income from livestock also would diminish. This is also reflected in the low milk production by the poor households. Securing enough water for lactating livestock is key for milk production. Milk production contributes 20 – 25% of kilo calorie needs for the middle and better offs, but only around 5% for the poor, whose livestock are not well-watered.

Ato Kahsay said seasonal water deficits can inform response planning. Given the large water deficits (inability to secure enough water) for livestock in the dry seasons of a *normal year* in SAP. …Livestock of poorer households may need targeting earlier in drought years, which may increase with climate change. Understanding deficits across seasons enables responses to reach most vulnerable herds *before* their condition deteriorates past the point when interventions can still protect livestock assets.

Ato Kahsay said using these baseline, different scenarios can be developed. Some of the possible analyses are outlined below.

- The most likely climate change hazards in each agro-ecological zone can be projected;
- Climate change impacts on access to water, and by extension, food and income, will be assessed
- Differential impacts on wealth groups will be key
- As well as the varying ability of wealth groups to mobilize and take advantage of adaptation strategies such as irrigation.



Discussion Session II

After lunch break, discussion (questions and answer) based on the presentations took place for about 15-minutes. The chairperson invited participants to forward questions or comments.

Participant from NMA: Regarding the projection matter, there are varieties of global climatic models, and each model has its own limitations. We can reach at different outputs by using different models. Therefore, when we project, we should also consider this point. I am not defending the output of NAPA, but I have different idea as far as my understanding is concerned. Since we have different climatic features, the impact or the projection would vary from place to place. Even the IPCC studies confirm that the condition of climate change varies from place to place, depending upon the climatic feature of that specific area. Even the response to climatic conditions of crops varies for different types of crops. It is said that c-4 crops are more affected by the change in CO_2.

So, we should see the impacts of climate change in different ways: from variety to variety, from place to place and from crops to crops. Therefore we should not generalize in a country like Ethiopia, where there is a variety of climatic features. I tried to calculate the length of growing period by using different time frame. With 30-ytears and above data I come across with different outputs in some areas. Also I used this agricultural rainfall index analysis by using 80% dependable rainfall condition. So I came across with different outputs. For example in south and eastern parts of Ethiopia, we can see a decreasing trend by seeing this length of growing period and the agricultural rainfall index. We can see a shift in length of growing period, and the length of growing period is minimal in that area. When we come to the central parts of Ethiopia like *Kulumsa*, there is no difference in terms of length of growing period. and when we go to Bahir Dar, there is no difference in terms of length of growing period. Where as when we see the temperature condition, I got the R value point of 58, which is significant, and shows an increasing trend. When we see the Northeastern parts of the country, like Maichew, we can see an increasing trend in LGP. When we compare the mean value, the mean value is showing increasing trend. When we come to Hosa'ena, we can see the increasing trend towards the second half of the year. So, we can see varieties of situation, when we talk about climate change. So we shouldn't generalize when we talk about Ethiopia as a whole. We have to see in terms of these varieties. That is my comment.

Participant from SNV: On the first presentation after tea break, the coping strategies for climate change, particularly the one – the observed – in relation to community experience verses the recommendation on the proxy interventions, I feel that the proxy interventions are mostly general and external. I don't know how it can answer the coping mechanism by the community.
With regard to the second presentation, I love to see the effect of climate change in livestock potentials in Borena, especially the role of gender in climate change, and coping mechanisms.

We know that in Borena the issue of Abba Gadda in the absence of Emma Gadda is a point for further discussion.

In the third presentation, the point is a comparison of technologies. The presenter tried to compare the technology of Sand Dam vis-à-vis only Cisterns. I know that in Borana area Cistern is the easiest technology to promote, but the comparison should have been done in all other technological options.

In the presentation related to household water economy analysis, the household water access is expressed in terms of sources only. All the wealth groups – the poor, the middle income and the better off – use springs. But, what about in relation to the quality of the water accessed by the poor and the rich? It would also be good to discuss in terms of water governance issues. That might tell us the governance element of water -- how the poor, the middle and the well-to-do can access water.

Participant from Haromaya University: [To Dr. Bayou] You have indicated different adaptation mechanisms at household level. Initially, you have indicated that female-headed households are vulnerable to the effects of climate change. But, when you present the findings of adaptation mechanism, you did not specifically indicate what are the adaptation mechanisms used by female-headed households. If you came across in your findings, would you please tell us that?

Reactions from Presenters:

Ato Alemu: I agree on the first comment on not generalizing about Ethiopia in view of the varied climatic features across the country. The effects of climate could be quiet location specific. That is true. But sometimes, you will be asked to talk about Ethiopia, and you need to speak about Ethiopia when you are asked. You use the available data, and information that you have. That is why we talked about Ethiopia. Otherwise, the places mentioned by NAPA are samples. They took those places as samples and did the projections on Ethiopia.

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Ato Kahsay: Concerning the issue of water quality, actually it is in the paper. I only gave you the highlight of the paper. For instance, in the highland area, out of the seven schemes, one is protected. If you go to midland livelihood zone, out of the five schemes, one is protected. The boreholes in SAP livelihood zone are also protected. But, the majority – the poor – are getting from excavated pits. We can also say that in all livelihood zones, the majority are getting unprotected, and therefore poor quality of water. So the household water economy analysis focuses on the majority of the people in terms of their access to water. So I don't think the majority in all livelihood zones are getting quality water. There are a lot of water schemes developed especially in the highland areas. But most of these schemes are not functional due to

different reasons. Even the water experts at the woreda level complain about a lot of things. They don't have maintenance, they don't have transport, no budget etc. so, due to all these problems, I don't think this time there is quality water at the rural household level.

Presenter from AFD: I think Befekadu raised a good question. I tried to compare sand dams with rainwater harvesting tanks because I presented our experience in Borena. As many of you may know, Borana is a dry land area, and availability of other surface source of water is very rare, except in some hill areas, where springs are found on the pick of the hill. Of course there are traditional wells where people water their livestock. Usually cisterns are widely constructed in the area, and I tried to compare the cisterns with sand dams because both have almost the same purpose. It is just for harvesting water during the rainy season, and to store water so that people will use it in the dry season. That is why I mainly focused to compare the sand dams with the cisterns.

Dr. Bayou: I think there are two questions for me. The first one is the livestock potential in Borana, and the second on the role of the Emma Gaddas. I think, in the Gadda system, the title of the Abba Gadda is officially given to the males. Otherwise, the role of the women is very crucial in providing ideas and also in supporting the Abba Gaddas in decision making. So, it is not reflected in the presentation, but it is mentioned in the study report.

With regard to the livestock population issue, the figure in the report shows, though I didn't present it there, that it is declining from the community perception, which is similar to Million's findings.

The other one, related to adaptation mechanisms by female-headed households … I think the one which I mentioned there is more which is practiced. Again incense and gum collection is practiced by the women. Petty trading is conducted by the women, as an adaptation. So it is already there. It is not specifying the women, but it is the major activity of the women in that area.

As a final remark, I agree with Almaz on the projection issue. It is the modeling… it has different results at different places. Even in the models themselves, there is a variation in precision and accuracy. So we are not sticking to these models. Actually there is no model that suits the tropical countries. Most of them are applicable and are high precision tools in the European countries. That is the debate regarding the projection of the rainfall.

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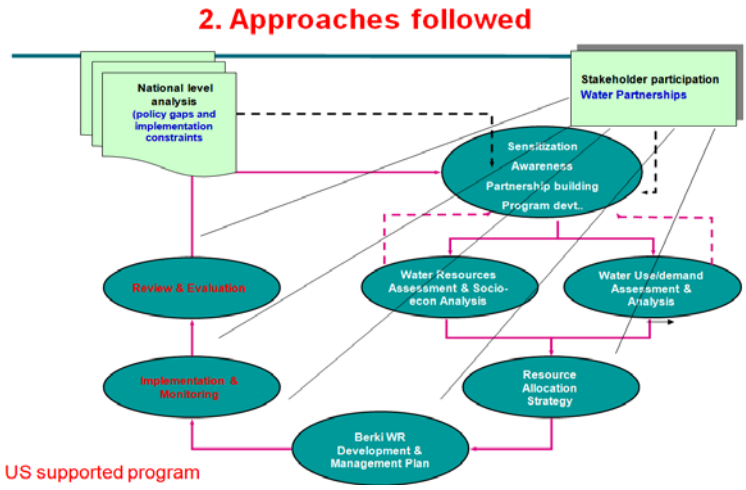
PART III

Experience sharing in implementing IWRM at catchment and WASH Program levels

Kidanemariam Jembere
Ethiopia Country Water Partnership (ECWP)
26 Nov 2009
Addis Ababa, ETHIOPIA

Through IWRM approach, water resources are good if they could be managed according to natural hydrological boundaries - that is the key principle. I am going to share with you one case where integrated water resource management could be implemented when we take hydrological boundaries as integral units of planning and management by taking Berki. It doesn't matter whether that hydrological boundary is shared by different administrative units if we could manage them following some hydrological boundaries or basins.

Suppose you are one of the stakeholders or actors to operate with in this catchment area, like a WaSH actor [here]. What are you going to do within the broader framework of IWRM? If you are going to develop for example a water pump within that bigger framework, WaSH sector actor should consider: (1) What would be its impact to other water users, downstream users and ecological systems?, and (2) What would be the impacts of other activities that could affect the WaSH activity? These are the two key questions that have to be asked in terms of integration.



Ato Kidanemariam shared with participants an IWRM implementation by Water Action in Tigray Regional State. He illustrated the approaches followed using the above graph.

First they tried to carryout national level policy assessment, implementation constraints and partnerships at different level from country to woreda level. Then they have carried out different sensitization, awareness-raising, partnership building. Then they carried out water resource assessment and socio-economic analysis at catchment level. They also conducted assessment of the different water use or demands by different sectors. By compromising the two, they tried to develop integrated water resource development and management plan for the whole Berki catchment area, which is 410 square kilometers.

According to Ato Kidanemariam, they tried to introduce knowledge-based decision-making and IWRM. This was carried out by conducting baseline assessment through which they made water resource assessment and socio-economic studies. They have made demand assessment and the 10-year projected IWRM Plan. The plan also includes supply side management, the demand management and some of the regulatory instruments.

In order to make the process participatory, they have organized field trips for upstream and downstream communities so that each side could appreciate the nature of the problem.

Multi-stakeholder forums were organized with a view to forge partnerships among stakeholders, and to make the planning and decision-making process participatory. Awareness-raising trainings have also been organized and experience-sharing took place.

The key lessons they have been able to learn from the process are outlined as follows.
IWRM is a long and complex process. It took them about three years. Integrating the human system was particularly challenging -- how you can bring the different interests of stakeholder is a big challenge.

Ownership of the change process by all stakeholders, particularly the government is useful. A shared vision for Berki is important.

Capacity building and awareness-raising is key in IWRM change process. This involves changing beliefs and practices.

It is good to build on existing systems rather than bringing another shift of the whole approach. Scarcity of water is appreciated by all stakeholders.

The other important lesson mentioned by Ato Kidanemariam is that the IWRM approach is also useful in managing conflicts.

Then Ato Kidanemariam shifted to sharing the experience of ECWP in IWRM at WASH project level. ECWP is involved in the project particularly to promote water resource management as it is linked to the WaSH program.

The project, which is called Worka-Gara Large Gravity project, is being implemented in Dendi Woreda, West Shoa Zone of the Oromia State. The project has aimed at serving a projected 54,435 people in 2021 in 14 rural and two semi-urban kebeles. It is implemented by Water

Action, in partnership with local government and communities with financial support by Oxfam-Intermon.

The project is being implemented in three phases. Phase one of the project has already been completed in six kebeles, while Phase two of the project is underway. The third phase of the project would be implemented after 2010.

The project has four components, namely Water supply, Hygiene education and sanitation, Environment (physical and biological measures) and Community Development (training and capacity building).

The IWRM-related challenges in this project include water scarcity, water quality, poor management of water resources, poor coordination and poor level of stakeholders' participation. The challenge related to water scarcity is manifest with the increasing demand for water, and the prevalence of competing water uses, including for small-scale irrigation, grinding mills, livestock etc.

There is conflict at the spring sources. The source is located (shared by) two woredas – the Dendi and the Elfeta woredas, which are also upstream and downstream users.

Normally, ownership of the springs is linked to traditional opinion leaders, who are respected by the communities. The project was delayed for about six months particularly while dealing with the conflict issues.

Water quality was also another problem. This is related to environmental degradation and poor sanitation practice.

With regard to management of water resources, Ato Kidanemariam said, there is inefficient water use, and the use of water for traditional small-scale irrigation. There is also poor administration.

Sectoral approaches - Poor coordination

- Poor level of stakeholders participation and awareness

IWRM interventions:

- Including environment/WRM as part of the WASH program:- physical & biol. measures, and training; catchments treatment & hygiene promotion
- Water resources assessment to ensure source sustainability
- Training and awareness raising as part of the program:- to win the political support of the authorities and to mobilize key stakeholders.
    - Conflict management as part of the program-tools: utilizing the role of opinion leaders;

- awareness raising, providing facts about the available WR potential use of other water sources for irrigation (e.g. Debis river)

Lessons from an on-going process:

- Linking IWRM as part of WASH program contributes to sustainability of the WASH services;
- Partnership building and wider participation is key for IWRM and conflict management;
- Ownership and management of WASH schemes and NRs by communities contributes to sustainability;
- Capacity building and awareness raising are key factors in IWRM change process;
- One key sector actor could lead the bigger IWRM process in a catchment.

Ato Kidanemariam summarized his presentation by mentioning the fact that the WASH sector is being challenged by scarce water resources (linked to Climate Change impacts), competing and conflicting water uses. Communities need water for various purposes. Single purpose interventions (WASH) is not addressing multiple demands. IWRM helps to address the above challenges and contributes to the sustainability of WASH services.

In this regard, he said, IWRM helps to ensure sufficient access to water resources, availability of water for productive use, and environmental functions of water.

IWRM would also serve as a tool for adaptation to climate change. Better water management makes it easier to respond to changes in water availability. Basin planning would also allow for risk identification and mitigation. He also mentioned the importance of stakeholder participation as it helps in mobilization for action.

Therefore there is a need to shift our approaches from sectoral to integrated water resource management, and try to learn more on how to do it through sharing experiences. He also underlined the need to institutionalize WASH and IWRM integration in the national WRM framework.

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Impact of IWRM at Fessa Water, Sanitation and Hygiene Project

Presented by Abraham Asmare
World Vision Ethiopia (WVE), WASH

Ato Abraham started with a breif explanation on the overriding criteria for Integrated Water Resource Management (IWRM). In this respect, he mentioned **Economic Efficieny**, **Social Equity** and **Environmental and Ecological Sustainability** as the overriding criteria for IWRM. With regard to Economic Efficiency, he mentioned that "due to increasing scarcity of water and financial resources, its finite nature, its necessity for all aspects of life on the planet, and the increasing demands, water must be used with maximum possible efficiency.

With respect to the criteria of Social Equity, he noted that the basic right for *all* people to have access to water of adequate quantity and quality must be recognized. And in relation to Environmental and Ecological Sustainability, he underlined the need for present use of water to be managed so as not to undermine the life-support system, thereby compromising use by future generations.

He outlined the reasons why IWRM is critical. Accordingly, he mentioned that IWRM approaches are integrated, and that they incorporate social, economic and environmental considerations directly into policy and decision making. This, according to Ato Abraham, is a key element in the national water policy. He also mentioned the participatory aspect of IWRM as, he mentioned, it directly involves the stakeholders. He also described IWRM as a tool for optimizing investments under tight financing situation.

Ato Abraham also mentioned the various challenges facing IWRM. The need to secure water for various purposes, such as for drinking and food production, while at the same time protecting vital ecosystems; dealing with variability of water in time and space; Managing risks (in the case of Ethiopia out of the 12 river basins, 60% of the water resource potential is available in three river basins). The other challenge is forging the will of political and natural leaders to act and ensuring collaboration across sectors and boundaries.

In order to properly address all these aspects, there is, according to Ato Abraham, a need to shift towards a new paradigm that would enable better management of water resources. And that is, a shift from fragmented, sectoral sub-optimization to Integrated Cross-sectoral optimized water resource management at all levels: local, national and international.

The IWRM research, which was the focus of Ato Abraham's presentation, was thus conducted to evaluate Water, Sanitation and Heigine project with respect to IWRM.
The basic objectives of the research were:

- To explore the existing policies and regulatory mechanisms available with regard to IWRM;
- To examine the application of IWRM in this project;
- To explore the impact of IWRM approach on Fessa WASH Project;
- Find out and propose good lessons for the present and future WASH programs planning and implementation.

The research was conducted in Edja Woreda (district), in Guraghe Zone of the South Ethiopia Nations, Nationalities and Peoples State (SNNPR). He also presented a tabular summary of the Baseline survey which was conducted in fiscal year 2001(E.C.). [Pls. see Annex #_.]

Having summarized the situation in the particular area, Ato Abraham then went on to **exploring existing policies and regulatory mechanisms vis-à-vis IWRM**, which is the first objective of the research project.

Ato Abraham tried to assess the existing policies and regulatory mechanisms in the light of three basic principles provided in the National Water Sector Policy. These are:

- Enhance the integrated and comprehensive management of water resources that avoids fragmented approach.
- Recognize that water resources development, utilization, protection and conservation go hand-in-hand and ensure that water supply and sanitation, irrigation and drainage as well as hydraulic structures, watershed management and related activities are integrated and addressed in union.
- Recognize water as a scarce and vital socio-economic resource and the need to manage water resources on strategic planning basis with long-term visions and sustainable objectives.

In view of the above policy statements, Ato Abraham said, one can say that there is generally, good enabling environment for IWRM application. He added that there is a good policy, strategy, program and river-basin master plan studies. The challenge, according to Ato Abraham, lies in translating the agreed principles and policies in to concrete action.

The second objective, which sought to examine the application of IWRM, outlined positive observations that relate to Environmental Aspects. Some of the observations listed by Ato Abraham around the project site are thus:

- Up stream environmental protection works (physical and biological) are carried out even though limited;
- Water sources are well fenced;
- Overflow from the source has joined the nearby river without creating any problem;
- The community have planted both trees and perennial crops that can contribute for the soil and water conservation in addition to their primary benefit;

Based on the above observations, Ato Abraham pointed out that the positive environmental impact of the project is immense. The negative environmental impact mentioned by Ato Abraham, is the social conflict among the downstream and upstream users, though rarely.
The other aspect that the research tried to assess in the framework of the second objective, i.e., application of IWRM, was Multiple Use of Water. The major observations in this regard are:

- Water is primarily used for domestic purposes (such as drinking, cooking);
- All institutions in the catchment has got water supply;
- Used by the community for sanitation and hygiene;
- The community also use the water for planting precious fruit trees (like apple) and nutritional vegetables for their own consumption and sales;
- They also used the same source for livestock consumption;

Accordingly, Ato Abraham said, multiple use of water is well demonstrated in the particular project area. The pictures below illustrate this fact.



Other observations made in relation to the application of IWRM (the second objective) are:

- Both women and children are the primary beneficiaries of water schemes.
- Capacity building trainings provided to the community in WASH and horticulture development;
- Farm inputs provided with experience sharing visits;
- Besides to the promotion works, technical supports are provided in the construction of HH sanitation facilities;
- Community capacitated and organized to own, run & maintain the scheme;
- Leakage observed at the water points and cattle troughs that require urgent measure;

The other aspect assessed in the framework of Objective 2 - Application of IWRM – relates to Water quality and quantity. In this regard, Ato Abraham mentioned the following findings:

- The spring capping structure is well-sealed;
- There is periodic (once in six months) water quality monitoring carried out by the woreda water office;
- Periodic water treatment carried out based on the monitoring, and using recommended chemicals and dosage at the source, reservoirs and with in the system based on the test results taken at different points;
- No spring discharge reduction so far;

- No significant water pollution problem encountered yet except some bacteriological pollutions at few water points.

The other aspect assessed in light of the application of IWRM, was the sustainability aspect. In this regard, he mentioned that in the particular project site the community have formed a board and organized WASH committees to ensure the sustainability of the scheme. The water board has 11 members and it is accountable to the woreda administrator (Four water committee chairmen, water resource office, health office, women affairs, education, agriculture and finance). The water board has governing bylaws and serves for two years. The board has opened savings account in Omo Micro Finance Institution and the required financial systems and legal financial vouchers, goods receiving note and issue tickets are all employed;

One thing which Ato Abraham described as peculiar to this project site is that the board has established a water tariff of Birr 1.50/month and fee collectors are entitled to 10% of the total fee collected every month. [For more on this, see annexed slide #__]

With respect to the Sanitation and Hygiene aspect, Ato Abraham said that more than 90% of the community has Household latrine (with its quality under quotation). The hygiene of the community has been significantly improved (hand washing, cloth washing & shower).

Impact of IWRM approach on Fessa WASH Project:

- Some 30,000 people in 8 kebeles have got access to safe water from this water project;
- The prevalence rate of water borne diseases has been considerable reduced;
- The severe water fetching burden on women and children significantly reduced; (walking distance to fetch water is reduced on average to 15 minutes.)
- The community has got extra time for productive purposes;
- There is remarkable reduction on problems related to rape and violence;
- Considerably reduction on school drop outs and absence;
- One apple seedling sold with 25-40 Eth Birr - income generation;
- Significant contribution for poverty reduction;
- Improved the food diversity and nutritional status of the community.
- The existing opportunities and the full potential of the project is not still fully tapped.

Ato Abraham concluded expressing belief that IWRM can bring the change that we all aspire. IWRM is an important approach for sustainable management of WASH. The process is participatory, as it involves users, planners and policy makers at different phases of the project.

Based on the findings of the research in the particular project site, he said that both the hardware and software WASH components have got sufficient attention. More over multiple uses of water resources is considered to balance competing demands and resource allocation. The successful organization of the community has immense role in the sustainability of the project. Provision of

farm inputs has got sufficient consideration. More over, he said, capacity building with critical follow up of its application has brought visible change.

Finally he made the following recommendations:

- Management plan should be prepared for efficient utilization of water and other related resources;
- Water allocation and management decisions should always consider its social, economic and environmental effect;
- The water leakage from the water points should be managed and used for other purposes;
- Utilization of the night flow should get the right consideration;
- Indigenous trees plantation in the area enclosed at the source need due attention;
- Increase the water tariff;
- Promote high value crops through the extension system;
- Create market link;
- The need to promote private investors to invest on apple processing plants in that locality,

* * *

Discussion Session III

Comment: My comment is on the last presentation by Ato Abraham. While presenting the impact of IWRM on the project area he mentioned that there is remarkable reduction on problems related to rape and violence; and also a considerable reduction in school drop outs and absence, increase in the price of some commodities etc. There must be some mechanism to make a dichotomy as to which problems are resolved as a result of a particular project. Reduction in the problems related to rape and school drop out might have been brought about by some other factors, other than this specific project. A number of other factors might be playing in bringing about such impacts. If our analysis is not empirically justifiable, it should at least be identifiable. Otherwise, the impact might be mixed up and it would be difficult to make it justifiable. Increase in school enrollment, or reduction in the incidence of rape or school dropout etc. are not expected to be brought up by this intervention alone. These impacts might be observed even in the absence of this particular intervention, as a result of other factors such as prevalence of legal frameworks and their enforcement etc. So, it is better to have some methodological tools, so that we would be able to identify the impacts of the specific intervention from impacts brought about by other factors.

Comment: In the morning we were talking about the importance of mainstreaming of climate in all aspects of water resource management. But most of the time, we are dealing with water sources like lakes, rivers, ground water and so on. But, we ignored one of the primary sources of all these resources which is rainfall. Why are we ignoring this primary resource?

Comment: IWRM vis-à-vis multiple use of water (MUS) – I feel that both are somewhat similar as they both meant for the maximum socio-economic transformation at optimal water allocation. The IWRM concept focuses more on the planning stage. The papers in the morning sessions as well as what Abraham presented … the sources are designed for specific intended purposes – for catering certain number of population. But later on with the concept of multiple use of water, people are planting crops, like apple and other types of crops, which still require water. The point is that project design for specific purpose may not meet, or serve for the duration they have been designed for. If you take a very specific example, if you have a source of 2liters/second, that might produce a maximum of one hectare. But, 2liters/second might give service for 11,000 people for water supply only. So, if we encourage on uni-system water source development program, in multiple-use approach, it is important to recheck the demand-supply [aspect]. I would like to hear from all the presenters as to whether they are checking back the current water demand after injection of the multiple use of water source with the previous plan.

Question: Are you aware of, -- it may not be in Ethiopia, I don't think if there is any in Ethiopia, but even elsewhere, [a situation] where the public system is able to implement IWRM approach. Or is it an NGO thing only?

On Public System (Government) Role on IWRM (*the last question*):

[Ato Kidanemariam]: There are principles for IWRM. The second principle of IWRM is to bring multi-stakeholders, or [ensure] participation of all stakeholders. The principle is, once you define your hydrological boundary, you will identify who are the users or stakeholders, and you establish a participatory process. So, the approach we followed was, even though we are piloting two water shade areas – one in Amhara and one in Tigray – it is a pilot learning for the whole country.

We started partnership building at the national level. So, for example, when we say we have Ethiopia Country Water Partnership, that is bringing all stakeholders [on board] including non-water actors. We have a steering committee chaired by the MoWRs. So, government leadership in the process is important. We have government leadership at national, regional and woreda levels. The partnership is basically led by government. But it also brings other stakeholders like NGOs, the private sector at national and regional levels and the universities as well. Particularly, the technical aspects – like in the case of the Berki hydro-geological studies – the hydrology, the environment etc... everything were carried out with the leadership of the Mekele University.

You can include also mobilization of technical experts, and other resources. So, I would say it was exemplary case for us, because it was a very big buying by the government leading the process and the participation of all other stakeholders. The partnership also brings donors, as financial partners, the private sector, the media, the youth, and the women. So that is very important and a shift in approach.

But, I am not saying it is easy. For us, it was a very big challenge. For example, when we first go to Tigray with this new program, we talked with the deputy head of the Water Resources Bureau. Initially, he didn't buy the idea. He asked: how much money do you have for the program? We said this much. So, he said, we can put one diversion structure on the Berki River. So, we said, no, first we have to assess how much resource we have, before we invest on some of the physical structure. So we had to make more sensitization at the decision making level. But, once he was convinced, actually it was easy for us to bring all other stakeholders through him. So, it is still a challenge, but it is also possible to do it.

With regard to the comment made by Almaz [NMAE] on the need to consider rainfall as a water source and including rainfall variability into the equation --- that

On IWRM vs. MUS:

On Befekadu's [SNV] comment… IWRM Vs. MUS – and your concern for planning to be based on the available water resources. I think that's IWRM. That's why we said once we define hydrological boundaries – that is your planning and development unit, you need to really assess how much water resources do you have. That is the potential that you can do. And which

particular places is that available, including the quality aspect? Then you can think of what you can do with that available resource. That is I think the basis for planning for development or service delivery in that catchment area. So, I think, knowledge of the water resource potential of that area is very useful for planning whether it is for a single purpose or multi-purpose. Thank you.

On attributing impacts to specific project:

Presenter: Thank you for the feedbacks. I will try to address the first question, which is about other factors which may contribute for the impacts in that particular area. Actually, we did a baseline survey when we design that particular scheme. In that baseline survey, we have tried to address almost everything – social, economical and other aspects. The output from that baseline survey was the reference to evaluate the impact of that particular project in that area. But, when we say this, we can't say that the impact brought in the project area is solely the outcome of that particular project. But, one thing we can confirm is that the particular project has contributed the major portion of the visible impact in the project area.

* * *

[The Chairperson gave another chance for participants to forward questions or make comments on the presentations. And thus followed a second round of the discussion.]

Question: **[By Dr. Alemayehu]** My question is to Ato Kidanemariam. Actually this IWRM has been highly advocated two or three years ago. And it was streamlined in the implementation of water resource development works in the government. I know that in Amhara Region, a committee was established from different stakeholder from the Region to Kebele levels to plan based on hydrological boundaries. Some planning activities were also underway. But I don't know whether it is currently sustainably going on. One of the problems in our country is that some new ideas or approaches are introduced, and then they fade up. I don't know whether this approach is now being streamlined in the government as it was started.

[Chairperson gives stress to the question with a comment]: I think that is a good comment. Most of the initiatives are coming as an idea or as technologies through projects. When projects phase out, their continuity is under question mark, or they are just stopped. Sometimes even the reports may not be found what that project has achieved.

Kidanemariam: When we started the program [...] we selected two pilot water shades in Amhara and Tigray. When we go to Amhara, Amhara was having a very good enabling environment for implementing IWRM. Because, as Dr. Alemayehu described, the regional government decided that its approach will be water shade approach. And it has established regional level steering committee, led by at that time, if I am not mistaken, by the head of the regional government. And it brought together different stakeholders and the key sectors. The structure also go down to zonal, woreda and up to community level. For us it was a very good

kind of advantage in Amhara region. But, as it is said, even a change in one leader can bring very big kind of changes. So, I am afraid, I would say that tone is now a little bit at a reduced level. But on the opposite side, when you go to Tigray, we didn't have that type of structure in existence at that time. But now, if you go to Tigray, they have big buying by the regional government authorities. By our regional water partnership is chaired by the deputy head of the regional state. But, I think the opposite is happening in Amhara.

The other interesting point is the Productive Safety Net Program is also following the community-based micro water shade as a planning and management units. That is also another encouraging side. I think it requires some work.

* * *

The chairperson thanked participants for the questions, comments and the clarifications by the presenters and handed over the floor to the organizers to speak on the way forward.

Formation of Working Group

Weizero Zinash (PANE). Thanked the chairperson, all the presenters and the participants for their active participation. She then suggested, though it was time for a coffee break, as it is only one short session that was left, to conclude the session, and then go for tea afterwards. All agreed and the final session continued.

Weizero Zinash recalled that the main objective for the organization of this particular workshop was to produce evidence-based policy recommendations for the next generation of PASDEP, as well as to gather input for the Annual Progress Review report for the civil society perspective. PANE, as a network of civil society organizations, is responsible for producing this APR from the civil society perspective. So, one of the objectives of this workshop, Zinash said, was to generate inputs for this APR. The third objective was to share some best program experiences for others who are engaged in the area of water and development.

Weizero Zinash then suggested, on behalf of the organizers, for the establishment of a Working Group whose task would be to assess some of the research outputs presented and discussed on this workshop, and pick out concrete policy recommendations for the next PASDEP.

RiPPLE Representative: As Zinash said the main objective of this workshop is (1) to have experience sharing forum on what we are doing in this area, and to see the link between the two variables; (2) in addition to that PASDEP is being reviewed for the next generation. Today a lot of evidence has been shared, and programmatic experiences have been discussed. So, the key issue is not to leave all these recommendations and experience so that it will not be an input for the PASDEP. So, the way forward is very important so that our ideas and inputs may be considered in the review of the PASDEP. So, this is an important part of this workshop. What do

you think of the way forward? On our part, as Zinash said, we propose forming a Working Group from among participants of this workshop. If there is an option that you suggest, we can discuss and decide together.

Participant: I think it is not very clear when you say a Working Group. What form is the working group going to have? Is it by organization or by individual? Please make some clarification on this.

Weizero Zinash: I think, it is better to make it by organization, rather than on individual basis.

RiPPLE Representative: We have a kind of proposal on the way forward. But, we wanted it to be participatory. From what you have seen the whole day today, we have come up with a kind of proposal of institutions that we think are very relevant to take this issue forward, so that all the ideas can be incorporated in the review. We have a proposal of certain organizations.

Participant: First if you have a proposal, please let us hear. Then, if we agree we will accept. If we disagree, we will comment. Then we will finalize. We better have your idea first.

Participant: My suggestion is we have to define the work of the working group first. Is it just collecting the messages and developing a kind of document, or it goes beyond that? You may specify what would be the work of the working group. Then we can assume what would be the composition.

Participant: My idea is a bit similar to the previous speaker. If you have a full ToR, or a kind of ToR for this objective-oriented structure that you are going to establish, let's hear it starting from the structure, the objective and some of the expected tasks, even including the time schedule. So if you have developed some kind of proposal, let us hear and comment on that.

RiPPLE Representative: Actually, the key role of the Working Group is to develop a kind of policy recommendation based on the evidence that we have on the ground, and the experiences of different organizations. The working group will make a draft policy recommendation for the review of PASDEP. So, the key role of the Working group will be to provide recommendation based on programmatic experience and research-based evidence that we have on the ground. And for this purpose, if you allow me to go further, we have a proposal of five organizations that have participated in this workshop today.

(1) National Meteorological Agency,
(2) ACF
(3) PANE
(4) ECWP
(5) RiPPLE

This is just a proposal. Now you can have your say on that. We can make amendment based on your suggestions.

A **participant** suggested for the inclusion of universities in the working group. And the suggestion is accepted by the organizers.

A participant suggested for the inclusion of Forum for Environment in the Working Group.

Participant from Forum for Environment: I will inform my organization and let you their decision. I can't accept or decline, particularly as I am new for the organization.

ACF Representative: Thank you for proposing ACF. Personally I have no problems. But organizational and personal commitments are different. I have to inform my organization, and tell you if I can join you or not.

Another participant recommended World Vision to be a member in the Working Group. And invited the WV representative to comment on the proposal. The World Vision Representative said he has been out of the country for some time, need to update himself with his organization's position.

Participant: I think we better have organizational working groups. They better be all NGOs, I think, avoiding universities. It might be possible to include individuals from universities on individual (personal) basis. But, because universities might have their own line on these issues, it could be difficult for individuals to represent their university at an organization level.

Participant: As far as my understanding is concerned, this working group is to be established to come up with some recommendations for the next generation of the PRSP, specifically in relation to climate change and water. I know that PANE has more than 90 members. So, can you give some other NGOs who are working on these two areas, but who are not participating in this workshop today?

RiPPLE: We have now reached to almost nine members. All are important from our side. But, organizational commitment might differ when you give back the feed back of today's discussion. So let us take these nine proposed organizations as it is, with PANE as the lead and legal network to take this issue forward. RiPPLE is also willing in cooperating to taking the issue forward. Both organizations will take the issue forward and discuss with the proposed organizations and finalize the issue to be given to the working group, if you agree.

1. NMA,
2. ECWP,
3. PANE,
4. RiPPLE,
5. MoARD,

6. University (HU or AAU),
7. CRS,
8. ACF,
9. Forum for Environment and
10. World Vision.

The proposed ones and further nominations of organizations for the working group have been agreed upon by participants. And, with that the workshop was concluded.

* * *

List of participants

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Schedule of the Forum

Session 1: Opening Session	8.30 - 9.00	**Registration**	**Presenter**	**Facilitator**
	9.00-9.15	Opening Address	Ato Zemede Abebe-RiPPLE Director	
		Honor Guest Opening Speech & Participants Self Introduction	Ato Matiwase Hunde, EWRD Director, MoARD	
Session 2:	**Panel I- Improving livelihood through access to water supply: successes & challenges**			Dr Woldeamlak Bewket, CSNCC, AAU, Geography & Environmental Studies
	9.15 - 9.30	Policy presentation on A-UAP	MoWR-Dr Alemayehu	
	9.30 – 9.50	RiPPLE sub-LARS-Water for income diversification/ID	Ato Sameson Eshetu- from HU/Haromaya University	
	9.50– 10.15	CRS- Program Experiences on MUS	Ato Bekele Abaire	
	10.15- 10.30	HCS- Program Experiences on MUS	Ato Zemede Abebe	
	10.30-10.45	Discussion	Participants	
	10.45-11.00	Tea Break	Organizers	
	Panel II- Mainstreaming climate change in food security programs and targeting water supply investments to increase adaptation to climate change: recommendation for policy			
	11.00- 11.20	RiPPLE- Climate change sub-LARS presentation	Ato Million Getnet-from HU	
	11.20- 11.40	ACF/ Action Conta La Faim- climate change research report on Borena Zone	Dr. Bayou Aberra-from ACF	

	11.40- 11.55	AFD/ Action for Development - Program Experiences on sand dam and adaptation to climate change	Ato Alemu Siefu-from AFD	
	11.55- 12.15	RiPPLE- HWEA/Household Water Economy Analysis presentation	Ato Kahasy W/selase-from	
	12.15-12.30	Discussion	Participants	
	12.30-13.30	Launch	Organizers	
Session 3:	**Continuation …**			Dr. Bayou Aberra-from ACF
	13.30- 13.45	Discussion	Participants	
Session 4:	**Panel III-Linking IWRM and WaSH: some recommendations for policy**			
	13.45- 14.00	ECWP- Program Experiences on IWRM	Ato Kidanemariam Jembere-from ECPW	
	14.00- 14.15	World Vision- Program Experiences on IWRM	Ato Abrahame Asmare-from World Vision	
	14.15- 14.30	Discussion	Participants	
	14.30-14.45	Tea and coffee	Organizers	
Session 5:	**Panel IV-Way forward**			Zinash…, Program Officer -PANE & Tamene Chacka, NC - RiPPLE
	14.45- 15.00	Discussion on the pre-workshop two pages draft policy recommendations and Working Group establishment	Participants	
	15.00-15.30	Closing remarks		