

OXFAM AMERICA
Evaluation Report

POLICY ANALYSIS OF WATER FOR PRODUCTIVE USE AMONG SMALLHOLDER IRRIGATORS IN ETHIOPIA

**WITH ILLUSTRATIVE CASES FROM OROMIA
AND TIGRAY NATIONAL REGIONAL STATES**

Tesfaye Zeleke and Seleshi Bekele Awulachew
HARO Water Program
February, 2014



OXFAM
America

As part of our commitment to accountability and learning, Oxfam will share conclusions and recommendations from evaluations. Internally we will share with relevant stakeholders, ensuring that they have an opportunity to participate in discussion of those results in meaningful ways. We will also publish the evaluation reports on our website in accessible language.

As a rights-based organization, accountability, particularly to the communities we seek to serve, is of the highest importance to us. For Oxfam, accountability requires Oxfam to regularly and honestly assess the quality of its work, share and learn from its findings with primary stakeholders, and apply that learning in future work.

This is part of an external evaluation of Oxfam America's program in Ethiopia on water for productive use. The program has been operating in Ethiopia since 2010 and this evaluation covers the work undertaken between 2010-2013.

This component of the evaluation focused on analyzing the policy and strategy environment in which the water program operates on smallholder productive use in Ethiopia and recommended possible leveraging points for Oxfam America. The major activities took place between July and August 2013. The evaluation was carried out by Tesfaye Zeleke and Seleshi Bekele Awulachew through a competitive process and reflects the findings as reported by them as validated with stakeholders. The evaluation was managed by Retta Gudisa, Monitoring, Evaluation and Learning Coordinator from Oxfam America, and commissioned by the Learning, Evaluation and Accountability Department at Oxfam America.

For additional information regarding the evaluation Terms of Reference, please refer to the report appendices.

CONTENTS

Preface.....	iii
List of Figures.....	iii
Abbreviations and Acronyms	iv
Executive Summary.....	01
Objectives of the Evaluation	01
Methodology.....	01
Summary of Findings/Conclusions	01
Key Terms.....	04
Introduction and Overview	05
Overview of the Intervention	
Structure of the Report	
Intervention Context	
Rationale and Objectives of the Study	
Methodology and Data Used	
Limitations and Challenges of the Study	
Evaluation Design	xx
Summary of Findings.....	11
Policy, Strategies, and Institutional Analysis on Irrigation and Water Management	
The Practices of PWU Policies, Strategies, and Institutions	
Improving Agriculture Water-Focused Investments in Ethiopia	
Conclusions and Recommendations	38
References.....	43
Appendix 1 – Interview Interactions: Sample Questions with OA Staff....	48
Appendix 2 – Interview Interactions: Sample Questions with Key Government Staff Members	50
Appendix 3 – List of Research Participants and Institutional Affiliations..	52
Appendix 4 – Typologies of Irrigation Development in Ethiopia	54
Appendix 5 – Technologies of Irrigation Development and PWU.....	55

PREFACE

LIST OF FIGURES

Figure 1. (The Three Ethiopia Based on the Rainfall Patterns)	07
Figure 2. (The Data Collection Techniques and Sources).....	08
Figure 3. (Integration of the Policies and Strategies on PWU in Ethiopia)	15
Figure 4. (Key Challenges of PWU among Smallholder in Ethiopia)	16
Figure 5. (Platform, network and policy interfaces on smallholders PWU)	31
Figure 6. (Donors' Agricultural Investment Trends in Ethiopia)	34

LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ADLI	Agricultural Development Led Industrialization
AIR	Annual Impact Reflection
ATA	Agricultural Transformation Agency
AWM	Agricultural Water Management
CDI	Centre for Development Initiative
CRGEs	Climate Resilient Green Economy Strategy
CSO	Civil Society Organization
ECEX	Ethiopian Commodity Exchange
EDRI	Ethiopian Development Research Institute
EPRDF	Ethiopian People's Revolutionary Democratic Front
EIT	Ethiopian Irrigation Trust
ESIF	Ethiopian Strategic Investment Framework
ETB	Ethiopian Birr
EPA	Environmental Protection Authority
FAO	United Nations Food and Agricultural Organization
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Group Discussion
FTC	Farmers Training Centre
GB	Great Britain
GDP	Growth Domestic Product
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
Ha	Hectare
HARO	Horn of Africa Water Program Office

ICT	Information, Communication and Technology
IDP	Irrigation Development Policy
IFAD	International Fund for Agricultural Development
IWRM	Integrated Water Resource Management
INGOs	International Non-Governmental Organizations
IWMI	International Water Management Institute
JICA	Japan International Cooperation Agency
KII	Key Informant Interview
LIVES	Livestock and Irrigation Value Chain for Ethiopian Smallholder
LSI	Large Scale Irrigation
M	Million
M & E	Monitoring and Evaluation
MEI	Monitoring, Evaluation and Impact
MGDs	Millennium Development Goals
MoFED	Ministry of Finance and Economic Development
MoA	Ministry of Agriculture
MO	Memorandum of Understanding
MoWR	Ministry of Water Resource
MoWIE	Ministry of Water, Irrigation and Energy
MSI	Medium Scale Irrigation
NEDS	National Economic Development Strategy
NGOs	Non-Governmental Organizations
OA	Oxfam America
OA-HARO	Oxfam America-Horn of Africa Regional Office
OIDA	Oromia Irrigation Development Authority
OGB	Oxfam Great Britain
O & M	Operation and Maintenance
OPADC	Oromia Pastoral Area Development Commission
PA	Peasant Association

PASDEP	Plan for Accelerated and Sustainable Development to End Poverty
PPP	Public-Private Partnerships
RCWDO	Rift Valley Children and Women Development Organization
ROPE	Right Oriented Programming for Effectiveness
PWG	Program Working Group
PWU	Productive Water Use
REST	Relief Society of Tigray
RWH	Rain Water Harvesting
SHF	Smallholder Farmer
SEDA	Sustainable Environment and Development Action
SLM	Sustainable Land Management
SPRDP	Sustainable Development and Poverty Reduction Program
SNNPR	Southern Nations, Nationalities and Peoples Region
SSI	Small Scale Irrigation
SSI TF	Small Scale Irrigation Technical Task Force
US	United States
WB	World Bank
WF	Water Fund
WRI	Water Research Institute
WRMP	Water Resources Management Policy
WSM	Watershed Management
WUA	Water Uses Association

EXECUTIVE SUMMARY

OBJECTIVES OF THE EVALUATION

The purpose of this study on productive water use (PWU) among smallholder irrigators (agriculturalists, agro-pastoralists, and pastoralists) in Ethiopia is to learn from policy and strategic perspectives. The policies and practices on PWU in the government bureaus and donors' investments on smallholders were taken into account, as well as the experiences of international nongovernmental organizations (INGOs), including Oxfam America (OA).

EVALUATION METHODOLOGY

The primary data were generated through qualitative research methods involving interviews and group-led discussions. The interview consultations were held with relevant federal ministries, regional level bureaus, INGOs, research institutes, and higher education institutions. Extensive reviews of documents supplemented these primary data sources.

SUMMARY OF FINDINGS/CONCLUSIONS

1. Ethiopia has abundant water resources with its 12 river basins, ground water, and relatively high rainfall. Agriculture represents over 80 per cent of smallholders' livelihoods. Vital for agriculture, water initiates policy debates and is central to strategic development in Ethiopia.
2. Despite its endowments of productive resources-land and water-it was only in the past decade that Ethiopia sought to boost agricultural productivity and change the livelihoods of smallholders in the regions. In particular, water-centred development has included the utilization of water resources, gender mainstreaming, institutional capacity development, climate change adaptations, integrated watershed management (IWSM) approaches, and use of technologies
3. The benefits of smallholder schemes were significant and continue to accrue over time. Users of irrigation are on average 22 per cent less poor than their counterparts in exclusively rain-fed systems and are able to graduate from food insecurity faster, while enjoying better nutrition. The irrigating community is able to provide job opportunities to youth and the landless poor, and the improved household income benefits of women. Environmental benefits include agricultural intensifications-green bright spots

in the dry seasons-and the use of small-scale reservoirs as sanctuaries for wildlife, such as birds. Regional bureaus credit the re-generation of eco-systems to PWU and also laud its positive effect on water tables. In addition, regional water bureaus claim that close to 80 per cent of model farmers in Oromia and nearly 70 per cent of the households that graduated from the Productive Safety Net Program (PSNP) in Tigray were smallholders using irrigation systems. Consequently, irrigation has resulted in improved livelihood, higher adaptation (less risk) to climate variability/change, increased social capital through water user associations (WUAs), and a healthier ecosystem.

4. Agricultural developments for smallholders are largely due to successful enactment of relevant policies and strategies such as the Agricultural Development Led Industrialization (ADLI), the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP), and the current Growth and Transformation Plan (GTP). More contextually, the Water Resource Management Policy (WRMP), Water Sector Strategies (WSS), and the Irrigation Development Policy (IDP) emphasized proper usage and management of water resources for smallholders' growth in the country. The policies and strategic frameworks have set mutual targets in food self sufficiency, wealth accumulation, natural resource management, and a reduction in rural poverty.
5. Donor involvement in PWU has greatly increased over the years. Besides allocating funds, donors have provided technical assistance, enhanced capacity, made education available, designed smallholder irrigation programs, and implemented them as well.
6. Implementing its water program over three years, OA's Horn of Africa Regional Office (HARO) advocated on legalizing WUAs, protecting water sources, empowering women, and improving market operations. Driven by its humanitarian vision, OA advocated for equal access to resources among those with little power, particularly women. The annual impact reflection (AIR) programs took into account the practices and influences in the communities.
7. Nonetheless, the policies and strategies relevant to Ethiopia's PWU (such as WRMP) were rather theoretical and lacked solid instruction for actual implementation. Gaps in policy and strategy include institutional instabilities and sector fragmentations-at levels all the way from the community up to federal. In the last few years, the Ministry of Water, Irrigation, and Energy (MoWIE) has been undergoing reform, as have bureaus for regional water and irrigation. These changes have resulted in poor coordination and deterred the actual implementation of the strategies, particularly in connection with mandate issues. Another factor involved resource constraints, including people, logistics, and funds. There was no regulatory framework regarding market inputs and outputs, the quality of agricultural inputs, or tax exemptions for smallholders. WUA operations were not regulated; nor were prices, fees, or practices for cost recovery, needed for operation and maintenance expenses.
8. Taking these gaps into account, OA and other stakeholders need to consider the following:

- a. Limited access and control over water resources for production still prevails as a key constraint, which is further impeded by malfunctioning institutions, absence of technology choices, and poor market linkages. Persistent investments and co-investments on PWU would lessen the problems of access to productive resources.
- b. Alongside the investments and co-investments on new irrigation systems, enhancing the performance of existing schemes is crucial. Diagnostic studies on scheme-by-scheme cases help to identify the actions to be taken. Measures related to infrastructural maintenance, improvements on canal and conveyance systems, and sustainability of resources inevitably seek strategic interventions.
- c. The strategy of PWU in pastoralist areas has not been well articulated; interventions are limited and mainly focus on access to drinking water. Key PWU-centred interventions include adopting perennial pastures for livestock grazing, planting tree crops for biomass production, improving pasture and range land management, and developing irrigation wherever possible. Connected to this, there should be measures of livestock productivity, such as market linkage and livestock energy conservation.
- d. Further advocate legal frameworks on the operation of WUA, establish standard input regulations, impose legal interventions in the operations of vegetables and horticultural market, and introduce water pricing practices.
- e. Support, catalyse, and enhance approaches to capacity development at institutional, community and individual levels.
- f. Enhance coherence and coordination among NGOs, donors, regional organizations, and federal institutions to disseminate best scenarios and lessons. The initiatives by OA (on multi-stakeholder forums) and the Program Working Groups (PWG) are good beginnings.
- g. Establish gender and equity principles through projects and leverage the accumulated practices of OA in PWU to benefit regional programs.
- h. Water for agriculture needs to be used in a more efficient and sustainable manner. Watershed Management (WSM) helps to promote efficiency and sustainability among upstream and downstream users. Gearing productive water programs through WSM created more advantages in diversifying livelihood, enhancing water availability and ecosystem functions.
- i. Develop and lead Monitoring, Evaluation, and Impact (MEI) approaches for PWU. Approaches such as impact pathway analysis and theory of change could be further mainstreamed in project formulation, implementation, outcome, and impact monitoring through systemic linkages.
- j. Make a shift toward outcome-oriented research (i.e., advocate applied research) on institutional dynamics and mandates,

enforcement of regulations, gender equity, innovative technologies, climate adaption, land use and administrations, etc.

9. To influence policy and strategic issues related to PWU among smallholder irrigators in Oromia and Tigray, OA-HARO should consider the following: building institutional capacity at lower levels, strengthening gender mainstreaming, encouraging the legal operation of WUAs, advocating legal interventions on the vegetables and horticultural market, strengthening the practices on minor operations and maintenance, gearing toward integrated watershed management approaches, and collaborating on regulations for water fees and pricing at smallholders levels.

KEY TERMS

Productive Use of Water, Policy, Strategy, Institutions, Co-investment, Theory of Change, Oxfam America, and Ethiopia

INTRODUCTION

OVERVIEW OF THE INTERVENTION (PROGRAMS, CAMPAIGN, HUMANITARIAN RESPONSE)

Oxfam America holds the vision of a just world without poverty. Its mission is also to create lasting solutions to hunger and social injustice through influencing global and national institutions, policies, and practices (Oxfam, 2008). Serving this mission, OA's water program (2010–2020) in Ethiopia targets smallholders-particularly women-to achieve greater and equitable access to water, move toward sustainable use, and to manage water resources for more productivity.

Co-investment was adopted as its water program strategy. The strategy, in principle, draws a social contract and mutual engagement among government institutions, donors, partners, NGOs, and the smallholder communities in the development of productive water systems. The co-investment framework consolidates farmers' capacities to realize their access rights to water. However, the practice so far has suffered drawback that have hindered full implementation, including federal financial regulations, government and NGO budget calendars, and limited commitment from relevant stakeholders to mobilize resources for the co-investment framework.

In addition, some government institutions don't have a firm grasp on the concept of co-investment. Although the practices of sharing responsibilities, resources, and even risks among key stakeholders were demonstrated in their respective operations, there were limited applications of the principles of co-investment in strict sense. The study illustrates how co-investment strategies are successful if supported with a Memorandum of Understanding (MoU) and backed up with detailed plans for the water programs, including short-term, medium-term, and long-term. The stakeholders in the co-investment agreements would be monitored in line with the MoU. Particularly, relevant for co-investment strategies were advocating water fees, cost-recovery, and O & M.

OA worked with partners on policy and strategic perspectives, access to productive water and land resources, climate change adaption, empowerment of women, improved water resource management, cost recovery for minor O & M, and the legal operations of WUAs (Oxfam America, 2011). The principles of ROPE-II, the theory of change, and the strategies of co-investment were core frameworks that substantially influenced the policies, strategies, and regulatory frameworks pertaining to PWU at federal and regional levels.

STRUCTURE OF THE REPORT

This paper is organized in eight sections. Section 1 briefly provides some background on land and water resources in Ethiopia. Section 2 introduces the context of Oxfam America on WPU programs. Section 3 provides the rationale and objective of the study. Section 4 discusses key concepts, methodology, and approaches. Section 5 is an overview of policy, strategy, and institutions from broader perspectives. Section 6 examines practices, policies, and institutional frameworks on WPU in Ethiopia. Section 7 puts forth discussions on improved agricultural water management and also distills OA's major considerations for future policies and practices. Section 8 presents the major conclusions and recommendations.

INTERVENTION CONTEXT

Ethiopia is endowed with a large quantity of rainfall, water resources, and land potential. It has an approximate total rainfall of one trillion m^3 a year (Awulachew 2010), falling on its land area of 1,127 million km^2 (Awualchew et al.. 2009), yielding an annual average runoff of 125 billion m^3 through its 12 major river basins. The distribution of the rainfall is not uniform and so creates three kinds of areas: those with high rainfall, those that are moisture deficit, and pastoralist regions. Awulachew (2010) categorized Ethiopia this way as an important entry point for analysis to look at agriculture and productive water uses. Moisture-deficit and pastoralist areas (excluding Gambella) have lower rainfall. Ethiopia's water resources vary not only by region but also by season of the year.

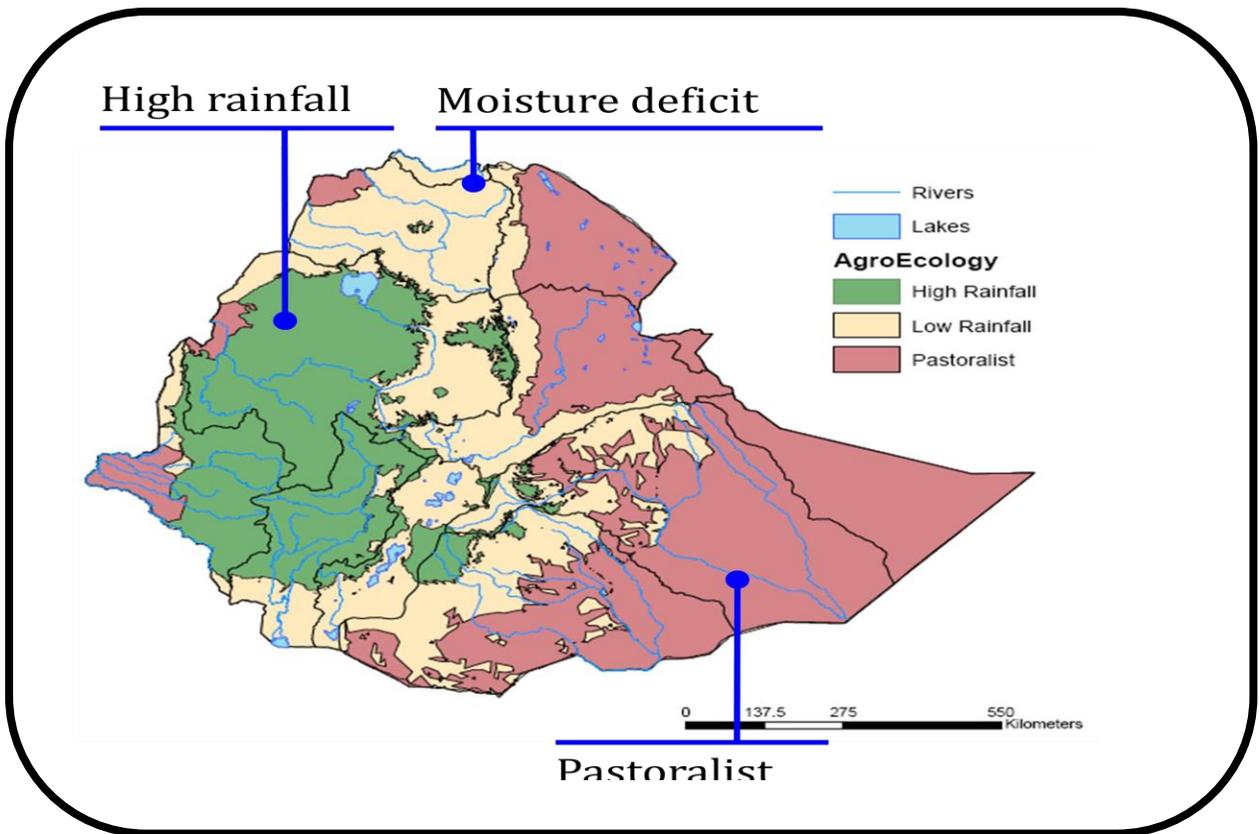


Figure 1: Ethiopia's regions based on rainfall patterns (Source: Awulachew, 2010)

Agriculture relies mainly on rain-fed systems, with some traditional diversions and modern irrigated systems. Agricultural investments on smallholder systems help to improve water access and agricultural water management. Yet, past performances and future plans present numerous challenges about the road to take. Regardless of the challenges, investments in PWU remain indispensable and transformative.

RATIONALE AND OBJECTIVES OF THE STUDY

Rationale

The study scrutinizes relevant policies and strategies on PWU in Ethiopia to draw lessons among donors, INGOs, government institutions, and other stakeholders. OA-HARO aspired to learn from the water program in the first phase. Then, those findings fed into the next phase of OA's water program, facilitating the learning processes and disseminating best-case scenarios among those who influence policy in the areas of PWU.

Objectives of the Study

This study sought to analyze the policies and strategies on water for productive uses in Ethiopia so as to identify and also recommend key policy themes for OA-HARO's future policy engagement work. Specifically, the study aims to advise Oxfam and stakeholders on how to position themselves for more influence on the

policies and practices of PWU in changing the conditions of smallholder irrigators in Ethiopia.

Overall, it synthesizes the changes from the last decade on PWU policies and practices in government institutions, donors, and smallholding communities in Ethiopia.

METHODOLOGY AND DATA USED

Approach

The methodological framework relied on the review of existing policy documents and generation of primary facts from relevant institutions. The details of the visited institutions and corresponding numbers of individuals were pasted in the annexes (See Annex 3).

Data Sources and Methods of Data Collection

Both primary and secondary data collection techniques were utilized. The primary data were collected through in-depth interviews, Key Informant Interviews (KII) and Focus Group Discussions (FGDs), while the secondary sources were collected through extensive reviews of research reports, publications, and policy and strategic documents available at lower and higher levels of government institutions, including donors or INGOs. Figure 2(below) illustrates the data collection techniques used in the study.

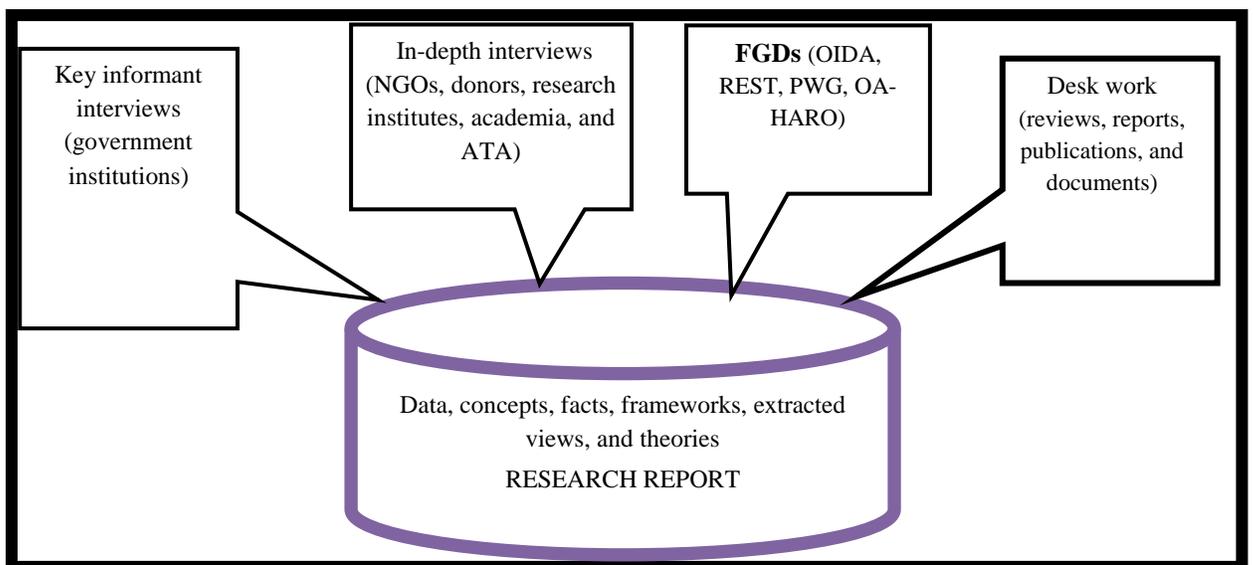


Figure 2: Data collection techniques and sources

LIMITATIONS AND CHALLENGES OF THE STUDY

Lack of trust from a few stakeholders made data collection difficult, and some government stakeholders were uneasy answering questions that involved policy and strategic issues.

Poor documentation practices at regional levels also hindered a thorough examination of the practices on policies and strategic issues. Some of the donors, (including the World Bank), federal institutions, and regional bureaus did not want to be interviewed. Time constraints and the heavy load of official assignments on the government experts and representatives of institutions also made the study challenging.

The views and experiences of women participants were underrepresented in the study as there were fewer women in the relevant positions and institutions.

EVALUATION DESIGN

KEY EVALUATION QUESTIONS

The following were the key evaluation questions:

- What are the current policy trends that affect smallholder irrigation?
- What is needed in the policy environment conducive to the long term operational success of WUA/cooperatives, successful food security, sustainability of investment, and benefit to women?
- What, if anything, needs to change in the programme's approach to engaging with policy formulation and/or implementation?
- What is the policy vision of the WUA in terms of how they should operate in the future?
- What are the challenges of the current large scale irrigation projects for smallholders and how can Oxfam contribute for the successful benefit of these projects for small holders?
- What look like the donor environment on water for productive use and major actors in Ethiopia for water for productive use?
- What are the threats and opportunities of the commercial investors (private sector) for smallholder farmers on competing scarce water resources?

EVALUATION TEAM

The evaluation team was composed of Seleshi Bekele Awulachew (PhD) and Tesfaye Zeleke.

EVALUATION METHODOLOGY

The consultant

- Reviewed related program and different study documents at relevant government ministries/agencies (MOA, MOWR, ATA etc.) and relevant donors (like IFAD, World Bank, JICA, AFD etc.),
- Reviewed relevant national policies and strategy documents, Conduct discussion with relevant staff at Oxfam head quarter (Boston and DC) Ethiopia,
- Conducted discussions with the partners and PWG (water program working group)
- Conducted discussions with relevant federal ministries/agencies (with senior technical experts, directorates and relevant people working at the policy and program areas), and regional bureaus,
- Conducted interviews with research and academic institutes, and
- Analyzed the policy and strategy environment on water for productive use in Ethiopia (with specific relevance to the Rift Valley), and advise Oxfam and stakeholders on how to position for more influence in the future with actors such as the government, donors, and NGOs on the topic of water for small scale farmers and pastoralists.
-

EVALUATION LIMITATIONS

Lack of trust from a few stakeholders made data collection difficult, and some government stakeholders were uneasy answering questions that involved policy and strategic issues.

Poor documentation practices at regional levels also hindered a thorough examination of the practices on policies and strategic issues. Some of the donors, (including the World Bank), federal institutions, and regional bureaus did not want to be interviewed. Time constraints and the heavy load of official assignments on the government experts and representatives of institutions also made the study challenging.

The views and experiences of women participants were underrepresented in the study as there were fewer women in the relevant positions and institutions.

SUMMARY OF FINDINGS

POLICY, STRATEGIES, AND INSTITUTIONAL ANALYSIS ON IRRIGATION AND WATER MANAGEMENT

Broad Land and Water Administration Policies and Institutions: Past and Present Situations

During the *Derg* period (1975–1991), the government of Ethiopia was highly centralized and authoritarian. It had nationalized all land, industries, and urban private houses; private ownership of land was made impossible (Merry and Gebresellassie, 2010).

Due to the poor governance of rural land and its property during the *Derg* regime, there was significant deterioration of natural resources, such as forest and land degradation. In those periods, land was periodically redistributed to ensure a balance between family size and needs of land allocations, sometimes related to political motives. This trend continued into the early years of the present government in some of the regional states. Land redistribution, or its threat, has also been an important mechanism for political control (Crewett et al., 2008). Farmers' uncertainty about land tenure security has been blamed for their reluctance to invest in water and land management.

Under the incumbent government structure (which upholds a federal system), the regional states have substantial legislative, executive, and judicial powers and responsibilities, especially for preparing and implementing development plans and providing basic social services. The regional states have strong mandates on land and water management (except for waters shared by two or more states or international waters, which come under the federal control). Other powers retained by the federal government can also be delegated, including land administration. The current federal government favours decentralized management of productive resources through participatory approaches.

However, the administration of access to land has been a controversial issue facing the government. It retained the previous government's legal position against private ownership of land; but in principle, every citizen has the right to use land for agriculture, the right to pass down land to their children, and the right to lease out land to a third party (Merry and Gebresellassie, 2010).

In the regional states, recent programs, on mapping and certification of land use rights hold positive impacts on tenure security. In a 5-year period, over 20 million parcels of land have been registered by six million households at a cost of about \$1 per parcel (Haile et al., 2005; Hailelassie et al., 2008; Deininger et al., 2008a, b). In the absence of government decreeing “no private land ownership,” land certification and guarantees of inheritance and lease rights become useful interventions and, in this writers’ opinion, significantly increased citizens’ stewardship of the land and their investment to improve the forest cover, protect the wellbeing of the ecosystem, and possibly ensure long-term sustainability of Agricultural Water Management (AWM). In practice, the presence of positive and significant correlation between possession of land certificate and increased tree planting was identified through research, among rural smallholders in Oromia (Amare, 2013). Land ownership improves investment, ensures access to PWU, and secures the rights of possessions, thus augmenting productivity.

Relevant National Policies & Strategies on PWUs

Ethiopian policy makers have identified water as a key resource for agricultural development and as a structural enabler to guarantee resilient food production in addition to its hydropower generation and industrial use. Accordingly, a range of policies and development strategies were devised and implemented by the government to overhaul past failed policies and institutions. The formulated policies and development strategies aimed at reducing poverty, which would accelerate economic development, especially agricultural development through effective use of water and land resources. Hence, the agricultural sector and its efficient usage of water resources are central to the nation’s development. The following are policies and development strategies that are significant to PWU:

Ethiopia’s Agricultural Development Led Industrialization (ADLI) policy has been a strategic pillar in the development programs of the country since the early 1990s. Its goals were to derive agricultural growth and tremendously boost smallholder irrigators’ productivity in rural and pastoral areas of the country (Techane, 2010; Awulachew, 2010).

The Ministry of Water Resources (MoWR), as noted in the WRMP, stipulated that the National Economic Development Strategy (NEDS) place greater emphasis on the agricultural sector to enhance food-self-sufficiency and ensure food security for households among smallholding irrigators. The MoWR (now the Ministry of Water, Irrigation, and Energy, or MoWIE) also developed water sector strategies and programs to be implemented from 2001 to 2016, the goal being to translate national water sector policy into action. These programs focus on institutional development, feasibility and planning studies, infrastructure investment, and more. The Water Sector Program (WSP) provided a 15-year plan of action that covers the inventory of prioritized projects, including SSI for smallholders in all areas. After the formulation

of policies, strategies, and programs, the mandate of SSI was transferred to the MoA while the MoWIE took over MSI and LSI systems.

Both the WMP and WSS of Ethiopia envisaged the establishment of the Water Fund (WF) and the Water Research Institute (WRI) at the federal level. Yet, these goals were not reached.

The establishment of an independent water institution would alleviate the problems of coordination among stakeholders at national levels. Among the significant actions the institute could undertake would be leading national research on PWU of smallholders; advising them on technological innovations, market regulations, and water fees; and ensuring the mobilization of funds.

Other policies on smallholders' agriculture include but are not limited to:

- **Rural development policies and strategies**-Formulated by MoFED in 2003, these policies set broader parameters in rural and agricultural development sectors, covering a broad range of topics on water resources and soil conservation. Due to its comprehensive nature, however, it has minimal application on the ground. In addition, a dearth of capital resources, limited capacity to generate domestic revenue, lower domestic savings, and fluctuations in weather conditions all limited the policies' effectiveness

- **Successive national development plans since 2000**-Each of the three plans spelled out sectoral policies and strategies, set priorities, included implementation plans, and provided budgets for putting these policies, practices, and strategies into action.
 1. The Sustainable Development and Poverty Reduction Program (SDPRP2000–2005) was built on ADLI and focused on rapid overall development; liberation from dependency; promotion of a market economy; deepened de-centralization; and introducing more extension packages, micro-finance, autonomous cooperatives, and better marketing infrastructure.
 2. The Plan for Accelerated and Sustainable Development to End Poverty (PASDEP2005–2010) was built on SDPRP and ADLI and aimed to capitalize on farmers' private initiative and support the shift to diversification and commercialization of agriculture, in addition to improving pro-poor agriculture, local support services, and SSI.
 3. The current Growth and Transformation Plan (GTP) (MoFED, 2010) provides more resources to developing irrigation on all scales, and puts equal emphasis on big commercial farmers. According to FDRE (2010–2014/15), Ethiopia specifically plans to add 658,340ha of medium- and large-scale irrigation by 2014/15, which is five times the number (i.e., 127, 243ha) developed during the base year (2009/10). Similarly, the projected development of SSI is an increase of additional 1,000,000ha by 2014/15,

which would more than double the current 853,100ha developed in the base year of 2009/10. Although successfully putting these plans into effect would certainly attain rapid growth in the irrigation sector for smallholders, the actual practices on the ground delivered lack luster results, most likely due to its overambitious nature.

- **National food security strategy** -Proposed in 1996 and modified in 2002, this plan aimed at ensuring food security at the household level within the ADLI framework. The PSNP (financed by major donors) has a public work component involving soil and water conservation activities using WSM. This work enhanced the re-charge and discharge rates of the water, increasing the water table in previously dry areas. The strategy resulted in reversing environmental degradation, promoting water harvesting technologies, and producing high value crops.
- **Livestock development and conservation policy and strategy**-Prepared by MoA, this strategy envisions improved livestock production and productivity; an adequate quantity of good, sustainable livestock products to industries; and enhanced foreign exchange earnings through marketing of quality by-products.
- **Ethiopian Strategic Investment Framework (ESIF) for Sustainable Land Management (SLM), or National SLM Framework** -Through this investment framework, the government and donors promote good practices of watershed management. SLM is the key program for addressing land and water degradation. It started in 2009 and will continue up to 2023.
- **Climate Resilient Green Economy Strategy (CRGE)**-Established by EPA in 2011 and now under MoFED, CRGE analyzes the anticipated climate change impacts on Ethiopia and also deals with adaptation and mitigation strategies. Water management is seen as a key link in implementing this strategy.
- **Ethiopia's Agricultural Policy Investment Framework (PIF) and Agricultural Growth Program (2010/11–2019/2020)** -PIF presents the strategic framework for prioritizing and planning investments in order to drive Ethiopia's agricultural growth and development, which is in line with the national vision of becoming a middle-income country by 2025. Water utilization and the expansion of smallholder irrigation are the program's primary strategies.
- **Gender mainstreaming** -The field manual for water supply and sanitation projects by MoWIE (2005) prioritizes women's involvement and empowerment to address gender inequality. Water Sector Strategies (WSS) also emphasize gender mainstreaming in water resource planning, development, and management. The manual includes recognizing the contributions of women in irrigation development; allocating seats for women in the management structures; empowering women in decision-making positions; and providing training for women on O & M and technology.

- **Family Law** –The enactment of family law at a national level—followed by the regions Oromia and Tigray in 2000 and later—boosted a woman’s power to make decisions about property, including land and assets. These laws are integral to the equitable division of properties in case of divorce and reduce the segregation and suffering of divorced women.

As a whole, the policies and strategies highlighted in the preceding parts hold incremental growth in lessons and achievements since the endorsement of ADLI. The figure below (figure 3) captures the integrations of the development policies and strategies ranging from higher ideological levels to the smallholders community at grass roots levels.

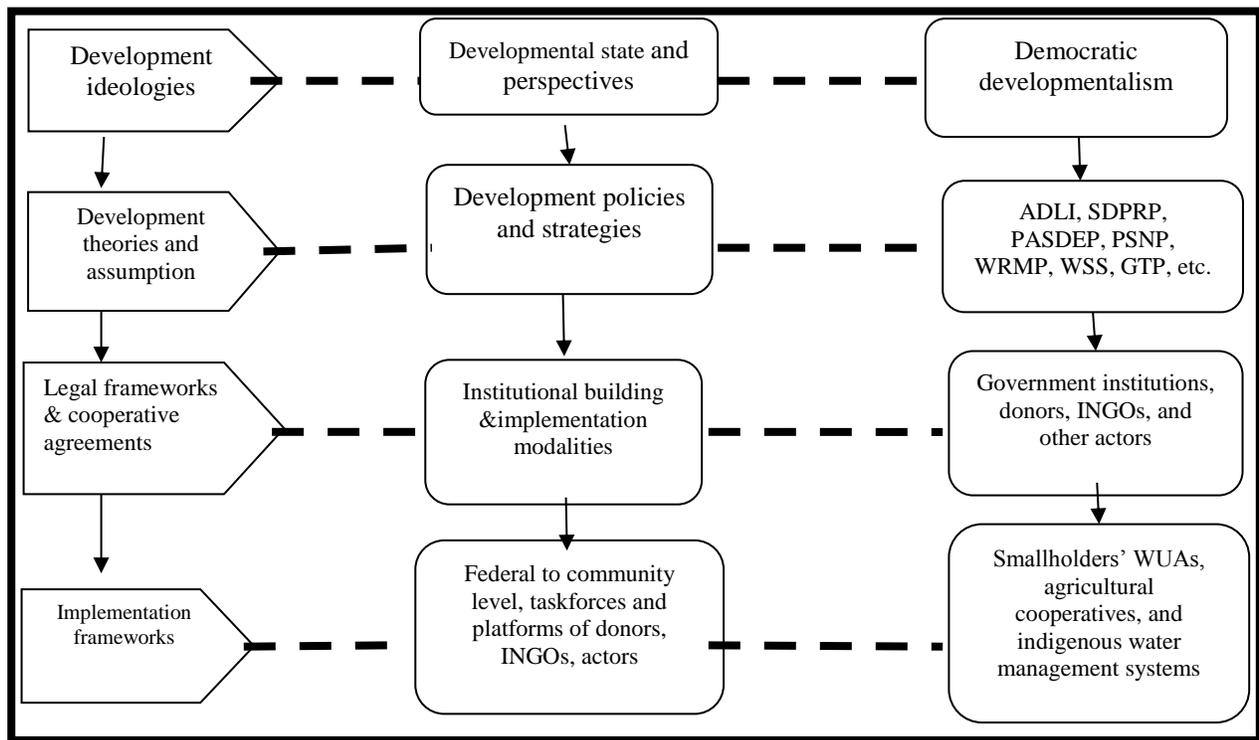


Figure3: Integration of the policies and strategies on PWU in Ethiopia

Water for Productive Use: Management Challenges in Ethiopia

The discussions pertaining to the typologies of irrigation, technologies, and their application continuum in agriculture are presented in Annex4 and Annex5, respectively. Users of this report need to bear in mind that smallholder technology remains a core policy and strategic component. Proper consultations of the continuum on technologies and their combinations help to alleviate the practices of reliance on a single technological application introduced by some NGOs and private actors. It also responds to the choices of technological usage by women and other groups across the ecological zones (e.g., the three Ethiopia's in the first section).

The challenges to PWU in Ethiopia are depicted by extracts from interviews and discussions, as well as reviews of related literature. Figure 4(below) presents an overall picture of these challenges.

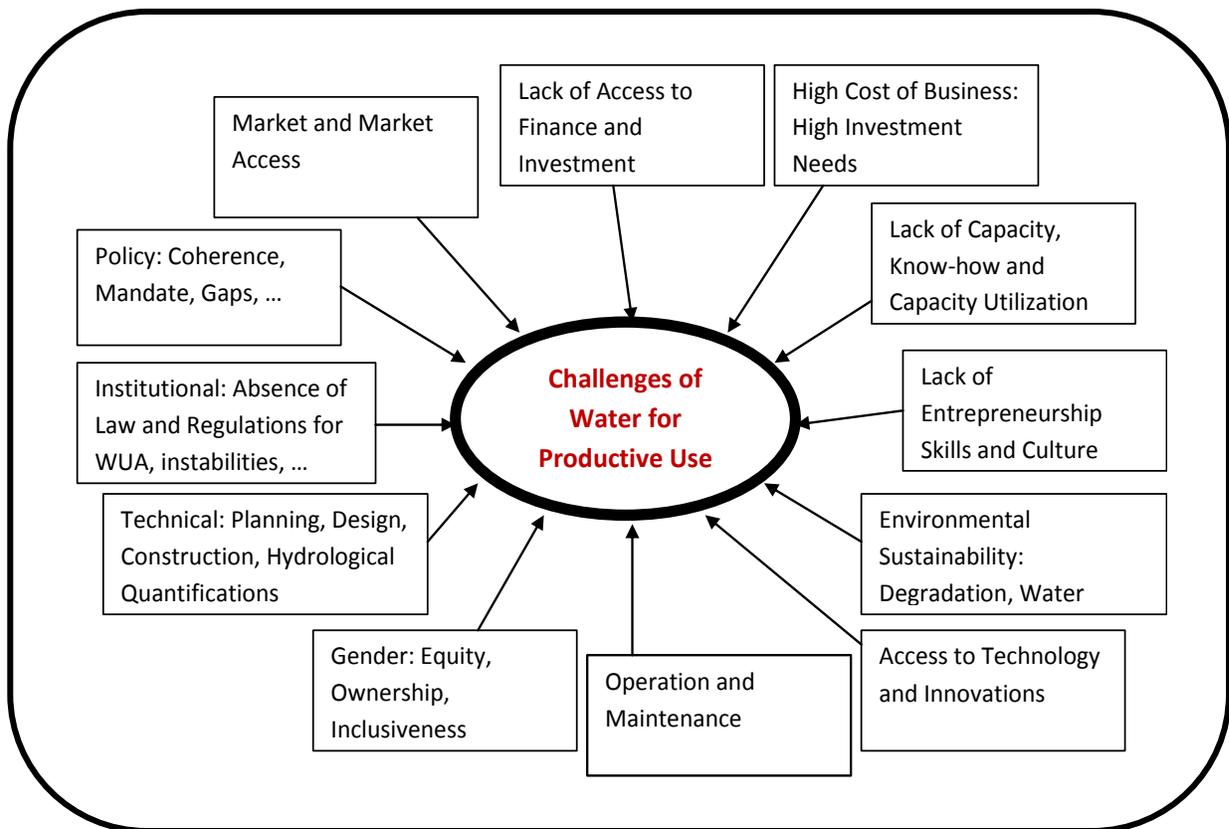


Figure 4: Key challenges of PWU among smallholders in Ethiopia

THE PRACTICES OF PWU POLICIES, STRATEGIES, AND INSTITUTIONS

The analysis of policies and strategies related to PWU in Ethiopia presents the practices, constraints, and lessons among the government institutions, donors, NGOs, research institutes, academic institutions and government-affiliated agencies.

PWU Policy and Strategies

The irrigation policy of Ethiopia states its purpose “to develop irrigated agriculture for the production of food crops and raw materials needed for agro industries, on efficient and sustainable basis without degrading the fertility of the production fields and water resources base” (MoWR, 2001:31). Specifically, the policy advocates enhancing small-, medium-, and large-scale irrigation to combat poverty by ensuring food security and food self-sufficiency, both at household and national levels.

The WSS (MoWR, 2001:23) provided due emphasis on the following:

- sound interactions among stakeholders
- promotion of economic and financial norms
- technical and technological uses
- environmental aspects
- institutional and capacity development of the whole operating systems at diverse levels

Interviews revealed that, before ten years ago, smallholders viewed the government’s commitment as theoretical. Policy makers were limited in capacity and paid less attention to smallholder irrigation as a strategy for community development. Government institutions (both federal and regional) were criticized for failing to mobilize resources and accelerate smallholder investments, overlooking smallholder PWU in favor of infrastructure.

In the last decade, PWU has been the center of political debate at diverse levels. Water is key to development, and rural communities are beginning to appreciate its social and economic values. In the last five years, regional governments have committed to huge budgets to aid in smallholders’ irrigation. Current water-harvesting strategies, such as micro-dams and home gardens, have received good results, and other methods are ensuring water options or tanks for households among smallholders (Tigray & Oromia).

The recent trends-particularly after the wake of the 2002/2003 drought that affected nearly 15 million Ethiopians-reflect the acceptance of water as a true engine of growth. Agricultural transformation programs in the country and regional states

include hydropower developments and the expansion of water supply schemes and irrigated agriculture of all scales.

The water programs of development partners (such as OA) supplemented government's strategic directions, particularly on the issues of access to water resources for productivity among smallholders and also on the empowerment of women. Across stakeholders (government, smallholder communities, NGOs, donors, etc.) water has been considered a precious resource, an economic good, and vital input for agriculture transformation.

Nonetheless, major gaps resulted in poor implementation of the policies and strategies across the board, which persistently impeded smallholder irrigation. These gaps include an absence of a regulatory framework on water fees, O & M, water access, and water resource management; a lack of regulations on input standards; and no incentives. All of this further exacerbated the prevailing uncertainty surrounding the irrigation schemes and hampered many projects from being realized. (See also Awulachew 2010). In short, the WRMP offered general and directive principles rather than showing the institutional arrangements, decreeing mandates, and activating procedures.

Institutional Arrangements and PWU Policies and Strategies

Institutions that are appropriately structured and functional are indispensable to carrying out the policies and strategies of the water sector. With respect to regional small-scale irrigation institution, the mandates of the MoWIE and MoA keep changing, duplicate efforts, and lack accountability. A number of factors have reduced the effectiveness of the PWU systems and continue to impede implementation of policies and strategies:

- unclear mandates for O & M at lower district or scheme levels, across regions
- poor inter-sectoral and inter-departmental coordination and communication, such as between bureau of agriculture and irrigation agencies
- lack of clarity and even some conflicts regarding lead responsibilities (e.g., among federal, regional, and *woreda* levels)
- ineffective enforcement of regulations, such as absence of legal instruments on WUA
- inadequate instruments to address gender equity, ownership, and inclusiveness
- lack of systematic monitoring and evaluation systems on programs and strategies
- significant reliance on top-down approaches
- continued reform and reorganizations of the sector, particularly at regional level, (numerous reforms and destabilization of irrigation agency over the last 20 years in Amhara, Tigray, and Oromia)

- failure to build more effective indigenous informal institutions
- gaps in coherence of management of resources
- inadequate attention to watershed levels
- lack of institutional management of resources at basin

Institutional arrangements for productive water uses at lower levels relied much on irrigation cooperatives and WUAs. Proclamation No. 147/1998 gave legal grounds for the formation, governance, and operation of irrigation cooperatives in Ethiopia. The proclamation was amended in 2004 by proclamation No. 402/2004. Despite the lack of comprehensive cooperative policies and strategies in Ethiopia, the agricultural cooperatives relied on these prevailing legal frameworks and proclamations.

Despite the draft being submitted to the respective government bodies some time ago, WUAs have yet to be legally ratified. The growth of agricultural cooperatives may have negatively affected WUAs. Regional bureaus suspect that these irrigation cooperatives are dominant because they are already functioning legally. In addition, the two are established through different principles: WUAs rely on coercion, whereas cooperatives are voluntary. WUAs are still operating without legal backing and definitions, which has greatly hindered WUA operations of smallholders. Consequently, WUAs have little in the way of facilities, bank accounts, financial documents, permanent offices, or resources.

Recently, irrigation command posts have been established and made to operate from the federal level, led by MoA, to the smallholders units. In Tigray, smallholder communities have been mobilized for campaigns of 30 to 40 days per year. The campaigns are arranged to implement IWSM with a particular focus on irrigation developments. Priority is given to female-headed households. As a result of natural resource management and environmental rehabilitation, progress has been made regarding the discharge of water for productive uses at household and community levels.

The government, NGOs, donors, and other private sectors continue their efforts to overcome institutional deficiencies in implementing irrigation policy and strategies. The efforts to improve the management of natural resources (including water) received strong support from development partners and NGOs, as evidenced by OA'sWater Program.

Moreover, donors and other INGOs, such as OA, have partnered through the existing government institutions and structures to implement these policies rather than developing their own approaches. It was common to form joint project management task forces with groups at regional, zone, district, and community levels. At the national level, technical committees and sub-committees were chaired by government officials but had donors or NGOs as co-chairs to offer input

Gender and Productive Water Use Strategies

Gender mainstreaming continues to be a crucial component in water sector strategies and policies. As part of the introduced land planning and administration of regions, the land certification programs have started to create entitlements for women, enhancing their access to land and water resources. These programs empower women, engage them in resource use, their empowerment, and recognize their decision-making capacities.

At the regional level, Oromia and Tigray report that more women are involved in irrigation and livestock. The strategic direction in Tigray is to promote women to leadership positions in cooperatives and WUAs. Tigray's strong coordination around water for productive use and its commitments to promote women, mobilize labor, and encourage women to involve in decision making could make it a model for other regions. The federal government (particularly MoA) is working toward gender mix comprising 30 per cent of the leadership positions and increased participation of women on PWU programs and projects. In principle, this would mean three out of seven committee members would be women. However, in reality, women don't often participate in the decision making or take roles at lower levels.

OA-HARO's water program also focused on gender. One of its three strategic change objectives is devoted to women and their empowerment. Indicators-such as the per centage of women in leadership's positions, the level of access to productive use of resources, and the degree to which women were participating-were used to judge outcomes in the theory of change and Monitoring Evaluation Learning Systems (MEL) of OA-HARO's water program. Consequently, OA and its partners added rules, regulations, and affirmative action to WUA by laws that would favour women. Hence, gender was a key issue for policy makers, partners, smallholders, and other stakeholders.

Recently, there has been a shift of attitude among smallholders in regard to gender and business skills. To fulfil the goal of diversifying employment opportunities in rural communities, gendered enterprise models have emerged in INGOS, such as OGB. Similarly, donors modelled gender-sensitive smallholder irrigation developments. On specific counts, the guiding principles of AfDB and IFAD support much of these models. For example, IFAD, in its Gender Equality and Women's Eempowerment Policy (2011–2015), considers gender dimension in all its policies and strategic frameworks, particularly in agricultural and rural developments (IFAD, 2012).

Productive Water-Use Enablers

Large-Scale Irrigation Development Practice for Smallholders

The decade-old practices of project-based small-scale and smallholder irrigation interventions have now moved toward participatory and community-driven initiatives in water productivity. The change in approach entrenched the ownership values besides ensuring the sustainability of the smallholder irrigation investments in the region.

As an example, Fentale and Koga irrigation schemes are large in size but designed for smallholders and implemented through a partnership of regional bureaus, federal ministries, and donors. In the past, MSI and LSI were dominated by public schemes. The Koga irrigation scheme was supported by AfDB. International private sectors also involved Chinese and British firms for the construction and supervision of the project. This is one of the major emerging cases for the Public-Private Partnerships (PPP) in PWU, which involves international financing as well as engaging people in decision making at the federal, regional, and community levels. The project implementation basically adhered to and refers to the co-investment framework advocated by OA.

The Fentale scheme is another PWU development model that engages federal and regional governments to benefit the pastoralist and semi-pastoralist communities by leveraging a national water fund for investment, using locals for construction planning and development, and arranging cost recovery for users. Similar examples could be cited in the area of SSI development, where innovative approaches have been used for co-investment, cost recovery, land reallocation, and PPP. The strategy of co-investment maximizes and lays fertile ground for cost-sharing, co-investment, water fees, and cost recovery advocacies.

Land and Land-Use Practices on PWU in Regions

The efforts undertaken by the government to implement land certification (in both Oromia and Tigray) have been remarkably successful in ensuring access to land. Despite the introduction of the land-use plan and administration, appropriate studies were not made on irrigable plots of land across regions.

Land-use planning occupies a crucial part in smallholders' development, although the practice is less common at the national and regional levels. For example, a recent ambitious plan targets 50 per cent of the regional agricultural land in Tigray for smallholders' irrigation investments. The land exchange practices among smallholders (particularly in Oromia) had been identified as a supportive framework that would work well with the intended strategy. Yet, land exchanges still require legal enforcements and genuine interventions. In addition, land insecurities were not entirely addressed among smallholders in the face of growing commercial investors

and competition over agricultural land. The land use plan was not been backed up with specific details and the necessary technology.

Market Coordination and PWUs: Input-Output Linkages

Improved access to inputs and outputs in market linkage was also a key policy concern in PWU. Smallholder farmers enjoy local-level added value and benefit more from participating in markets. Market participation provides competition and the opportunity to adapt their livelihoods from subsistence level to commercial. It also opens the door to entrepreneurship and industrial systems. Research in East African countries (comparing Ethiopia to Kenya and Sudan) shows these farmers grappling with market operations on agricultural inputs and outputs. Generally markets fail to adequately serve the needs of poor smallholders (Adeleke et al., 2010).

Input market challenges include

- insufficient supply and access to improved seed varieties, fertilizers, insecticides, and pesticides
- lack of standards for imported inputs¹ including technologies for PWU
- absence of tax exemption
- lack of intermediate technologies for harvesting and postharvest(e.g., storage and packaging)

Output market challenges include

- market access
- under pricing
- price fixing
- sabotage by brokers or middle men

Hence, both the input and output sides of market operations present unfavorable exploitations. Getachew & Mohammed (2012) point out a number of challenges to smallholders:

- no standard units of measurements
- irregular licensing arrangements
- lack of incentives for legal operators
- lack of specific vegetable market rules and regulations
- absence of active input regulatory systems as policy
- strategic bottlenecks for market operations in the Central Rift Valley area of Oromia

¹A regulatory systems or standards would ban the imports of sub-standard pumps, protecting the purchaser and punishing importers who sell pumps that become non-operational within a few days or weeks after they are purchased.

Smallholders have continued to suffer significantly from the absence of uniformly applicable regulations across regions and states.

Of course, the policy makers in Ethiopia recognize the gaps in agricultural markets and address it through a number of policy reforms, including market liberalization and the establishment of the Ethiopian Commodity Exchange (ECEX). However, due to constraints in the vegetable market, problems persist. Farm revenue losses can be due to seasonal fluctuations of the market on farm products, market inaccessibility, and lack of market information, absence of value added, or low bargaining power. Creating a thriving market environment for smallholders in irrigation systems requires the support of policy and legal interventions.

By enhancing market linkages (inputs and outputs), increasing smallholders' bargaining power, and improving their business skills, OA-HARO could integrate water programs with the marketing component. INGOs, such as Oxfam Intermon, may reconsider their approaches, given that production is likely to be market driven in the coming years, especially on value chains. OGB offers substantial marketing linkage for farmer entrepreneurs, envisioning the establishment of agro-processing at local levels. From the government side, MoA had similar ideas. However, in the writers' opinion, clear operational policy and strategic directions must be developed-and supported by strong market regulations-before agro-processing is established. Or they could be developed side by side. Addressing the loose legal interventions and practices in vegetable and fruit markets could be an area for OA's future advocacy work, as part of PWU.

Operation and Maintenance (O&M) of Schemes and Structures

Constructing smallholder systems and structures is fairly simple and is a one-time expense, which is covered either by the government, a donor, or an INGO, or it could get funded through collaborations and co-investments. However, the biggest problems of SSI had to do with operation and maintenance. The number of failed, underutilized, and abandoned schemes has increased over the years. The regional bureaus of water identified O&M as the main component that needs a higher level of strategic interventions to ensure their sustainability.

Smallholders are responsible for minor, regular maintenance as part of the cost-recovery practice. When the problem is beyond a user's capacity, lower-level offices deliver technical assistance. The regional bureaus, the MoWIE, and MoA all consider INGO involvement in O&M as crucial. The government lacks the resources to supervise schemes and allot sufficient budgets for continued O & M of these systems.

The regional bureaus proposed two possible interventions for OA to undertake in this area. One answer is to make OA responsible for the O&M of structures built for

its water programs. The second intervention involves establishing a regional project to keep structures functioning. This would make use of schemes that are under-functioning or abandoned due to lack of minor maintenance. JICA identified this practice on the ground among smallholders in Oromia and now undertakes the rehabilitation of operationally defective schemes that were once implemented by IFAD and OIDA.

Further complicating smallholder irrigation management, there are no strategic guidelines and manuals on O & M. Currently, JICA are preparing O & M manuals in collaboration with OIDA. IWMI is also planning to create manuals and strategic guidelines on O & M of schemes it oversees. OIDA and institutes such as IWMI indicated that the major challenges to O & M were associated with legal frameworks on the government side. Distributing manuals, training operators, and applying these guidelines would certainly help even if it doesn't completely fix the problem. OA could further benchmark the lessons of these organizations while influencing policy on O & M for smallholders. Promoting and considering simple, low-cost, agro-climatic and women-friendly technologies would be particularly beneficial.

Conflict Prevention/Management over PWU

The proclamation on the registration and regulation of the Charities and Societies of Ethiopia (Proclamation NO. 621/2009) precludes direct involvement of OA America and its partners to participate in conflict resolutions over productive use of resources among smallholders. The practice at the regional levels demonstrated the limited engagement of the government in conflict itself at lower levels. Grimble and Wellard (1997)² categorized conflicts over resource use as micro-micro and micro-macro. The micro-micro refers to the conflicts erupting among community groups or between households over water resource uses. The micro-macro refers to conflicts between the community and the government or states. Currently, the regional states (Oromia and Tigray) are experiencing micro-micro conflicts among the smallholders themselves.

The emphasis on the vitality of water resources for agricultural development and claims on access rights trigger the intensity and scale of conflicts among smallholders. Water deficits, water abstractions, water scheduling, and discussions of irrigable items are all issues that regularly provoke disagreement. When resources are being depleted by a growing population, adequate engineering is unavailable, supplies are limited, and infrastructures are at capacity, conflicts over the use of resources are inevitable. Although these risks are common to both regions, fear was higher at Tigray because of the diverse options available to smallholders there (ranging from micro basins to large schemes) and also due to the multitude of water usage strategies.

²cited in Desalegn et al., 2007

The interview held at EDRI clearly showed that in the next 10 to 15 years, or even beyond, conflicts are likely to arise over usages of water resources in agriculture. The absence of riparian laws and regulations-laws that dictate water use on the basis of stream location (upper, middle, and down/tail)-increases the possibilities of emerging conflicts. The practical benefit of a legal framework for WUAs is evident. Enforcing the WUA proclamation would prevent conflicts-or at least minimize their intensity-as it lays the groundwork for the legal and proper management of water resources.

In addition to the weak laws covering productive water uses, the lack of systemic and proper linkages between customary institutions and government strategies results in poor conflict management. In the regional states, for example, the elders at Oromia (Borena, or *abbagadaa*) and Tigray (water fathers) have always been responsible for resolving conflicts. Yet, these systems were not integrated into the government's legal frameworks. OA, through the AIR program, boldly signified the importance of using customary practices to prevent conflicts. Authors also feel that OA could further consolidate its earlier policy influencing practices and extend it to conflict management over PWU in its operational areas.

Integrated Watershed Management (IWSM) and SLM

Watershed management involves the treatment of land through appropriate biological and physical measures. IWSM promotes economically feasible, environmentally adaptable, and socially acceptable use of natural resources. It also promotes education in order to create better income-generating opportunities for smallholders. Partnerships including GoE, the World Bank, and others introduce watershed management through SLM programs, bringing with it practical changes for smallholders in the country.

Smallholders' irrigation investments lack appropriate matches with watershed management approaches at lower levels. The NGOs and donors also underlined the importance of implementing IWSM approaches to see the overall impacts on smallholders. In this respect, the federal MoA seems to be shifting toward IWSM approaches with the goal of benefitting smallholders. Components of the IWSM program include honeybees, silk worm production, livestock development, protection of catchment areas, and conservation of resources.

Ethiopia has already committed to a green economy. It has embarked on nationwide re-greening programs to conserve soil and water. Indeed, the IWSM and SLM are highly pertinent to their broader goals related to climate change adaptation, conservation of resources, and a sustainable irrigation system.

In terms of IWSM, OA is geared toward implementing smallholders' irrigation investments and livestock water supply. The program involved scheme delivery, community organization around water use, and supplies to livestock. Either missing

or in limited supply around the schemes were training and entrepreneurship programs to develop capacity. Thus, OA's approach in PWU overlooks full integration of watershed management in ways to raise the level of impact among smallholders. REST, as a partner of OA, clearly presented its position that OA could address the needs of smallholders if it were to adapt IWSM in its productive water use program.

Pastoralist Communities in the Broader Agendas of PWU

OA-HARO considers pastoralists a key segment of the rural smallholding population in Ethiopia. Pastoral communities have suffered marginalization from humans and nature. The man-made problems involve the central government neglecting pastoral communities, which has resulted in adequate development policies and strategies for the country and respective regions. Pastoral areas have received little in the way of financial or human resources, which resulted in poor infrastructure.

Livestock, land, and water are key resources in pastoral communities. Policies and strategies that fail to address these three components interactively and adequately do not allow for productive returns in these communities. Regardless of the poor integration in policies and strategies in recent years, tremendous progress has been achieved in these communities. The government introduced crop cultivation practices-including smallholder irrigation-transforming pastoralist communities into sedentary settlements.

Moisture-stressed pastoral areas (e.g., Borena) have been commonly considered as devoid of water, including shallow ground water. Yet, in the past few years, the development of deep underground water for human and livestock consumption and irrigation development have been found, which represent a great breakthrough for pastoral communities. Water resources are key to pastoral community development and livestock productivity.

The socio-economic transformations and agro-settlements in pastoral communities have also been credited with increasing vegetable harvests and hectares of land under smallholder irrigation coverage over the years. Starting from early 2007, there was reported progress both in income and the hectares of land irrigated under smallholder practices. The government already began implementing an integrated water development program based on ground water that covers over 2000kms of pipeline systems in the Borena area. This integrated water development targeted human domestic utilities, cattle consumption, and irrigation systems. It would also invite the expansion of social services in pastoral communities. In fact, agro-pastoral settlements would also strengthen attachments with land and possessions within the broader communal systems.

Smallholder irrigation investments also accelerated the supply of fodder for livestock population. Availability of fodder ensures the production of milk and other cattle products. In Tigray, for example, irrigation schemes and water points have been

identified as sustainable sources of forage for livestock production. In the case of Oromia, the pilot activity of planting artificial grass to introduce the IWSM to pastoral smallholders is already underway.

However, the lack of relevant policies dealing with the livestock component of PWU demands thorough reconsideration. At the community level, smallholders' irrigation developments and the livestock component were not well aligned. OA has already identified the pastoral communities in its intervention programs. However, policy and strategic advocacies on the integration of PWU with land and livestock components still requires the attention of all stakeholders.

Cost Recovery and Water Fees: Policies and Strategic Practices

The WMP and WSS of Ethiopia put emphasis on cost recovery and water-pricing systems. Accordingly, the MoWIE attempted to introduce cost recovery practices on large-scale irrigation investments. The recovery includes investments incurred during the construction and the operation of the schemes. Examples of full-cost recovery include the Fentale irrigation scheme in Oromia and the Koga irrigation scheme in Amhara region. Water-pricing practices were also attempted under Awash Basin Authority, mainly for commercial farming at the approximate price of 3 Birr per 1,000m³ of water. As such, water pricing is not yet a widespread practice for irrigation in Ethiopia.

Attempts in cost recovery have not succeeded in bearing the anticipated impacts. The absence of strategic guidelines and manuals on cost recovery jammed the process. It is not clear how to proceed or who should proceed. The regional bureaus claim that directives and regulations need to be in place before they are carried out across lower operational levels. According to the MoWIE, there are plans to consolidate the practices of cost recovery among large-scale and commercial irrigation investors, and long-range plans include SSI. INGOs and donors working with smallholders are expected to collaborate with the government to systematize cost recovery practices across regions and schemes.

IWMI is currently drafting the guidelines for cost recovery mechanisms through its Livestock and Irrigation of Value Chain for Ethiopian Smallholder (LIVES) project. The manual could be supplemented with the water pricing initiatives underway by the MoA, indicating that the issue of water pricing has already caught the attention of the government. Regardless of the bold claims stated in the policy and strategies on PWU, regional interviews revealed that there were no appropriate service charges for water used by smallholders, larger scale investors, and commercial developers (except to some extent in Awash River Basin). The gap is clearly evident.

Irrigation investment is capital intensive; and when considering development of dams and canal systems, it could get very expensive (about US\$ 5,000 –15,000 per hectare). Large investment systems would benefit not only poor farmers but also

project developers, input suppliers, output marketers (including brokers), the government, and others who are part of the whole value chain. Targeting only farmers will unfairly overtax smallholders, when they are only one component of the larger system.

Changes in Policies and Practices on PWUs for Smallholders

The recent decade witnessed the articulation of water resource policies, strategies, and water sector programs. The endorsement of these working instruments paves the road map to uplift the implementation of irrigated agriculture. The federal and regional interviews substantiated the previous haphazard practices in the overall implementation of irrigated agriculture. The lack of policy, strategy, directives, and regulations of clear water usage caused many problems in Ethiopia.

In addition to policy and strategies that recognize water-centred investments, other remarkable shifts have occurred:

- Smallholders and policy makers are considering irrigation as an option to ensure food self-sufficiency, growth of income, and higher land and labour productivity. The shift in outlooks also prevailed among donors and citizens. The government also made attempts to create a harmonious environment to mobilize efforts and resources toward PWU programs.
- The government's approach is now to organize smallholders around large-scale investments to promote water productivity. A drastic shift was noted from state-owned agricultural investments to those of smallholders.
- The expansion of the micro- and small-scale projects to rural areas (e.g., Tigray) provided opportunities to landless and unemployed youth to move out of poverty by organizing themselves around water and natural resource development. Smallholder irrigators-particularly landless youth and women-benefited from income-generating activities, such as the use of small ruminants, beekeeping through modern schemes, production of higher quality seedlings, and supplying nearby markets.
- Household-level irrigation boosted water harvesting in the community. In the last three years, ATA initiated household-level irrigation in collaboration with the MoA.
- In pastoral and other smallholding communities, there is an increase of constructing large-scale irrigation structures by the government. These large, medium, and smallholder irrigation projects maximize the government's water-harvesting strategies and transform communities from traditional production systems to ones that are technology supported.
- Greenhouses and horticultural developments have multiplied. While the policy directions supported these developments and the income collected from green industries were large, the competition over water use and other environmental consequences to the smallholder community were controversial, mostly because the government supported investors that expanded greenhouses at the costs to evict residential communities, but also for other environmental implications.

- Implementation of land certification practices boosted issues such as land tenure security, a woman's right to own land, and the sustainable use of land resources, including water for productive purposes. Land certification ensured the usage of land for long-term investments in addition to encouraging ownership, land access, and entitlements.

IMPROVING AGRICULTURE WATER-FOCUSED INVESTMENTS IN ETHIOPIA

Lessons in Productive Water Uses: Consolidating Model Practices

Among the encouraging practices was farm-level training, demonstrating good practices to smallholders. A few donors and INGOs made substantial contributions. JICA and OIDA lead these initiatives in Oromia. Skill building at farms helps the dissemination of technologies and model practices to smallholders. The existing Farmers Training Centres (FTC) could serve as places for sharing lessons and modelling best practices. So far, the training has been successful. However, FTCs often suffer from lack of commitment from local administrations, absence of coordination, poor logistics, inadequate supplies, and difficulty in understanding the lessons.

REST customized innovative technologies and approaches to smallholders in the region. Experiences in South American and Asian countries were adopted for applications among smallholders in Tigray. In Oromia, the prototypes mentioned were in Pakistan, South Africa, India, Tunisia, Israel, and Egypt. However, the concrete efforts on the ground were less extensive, and Oromia did not develop a strategy to adapt successful technologies or implement best practices. During the FGDs and interviews, regional experts reported limited instances of going abroad or even researching on the Internet in order to adapt to smallholders' developments in the region. Partners of OA in Oromia, unlike REST in Tigray, did not establish strong research components in their program that would hunt for new technologies and adapt them for smallholder use.

Specific lessons in the areas of productive water uses:

- Empowerment of the poor, marginalized groups, and women. Women in leadership and decision-making positions showed changing patterns, as did the rights to use resources.
- The initiatives to instigate multi-stakeholder forums on PWUs brought together the experiences of academicians, policy makers, and researchers.

- Livelihood options are more diverse and resilience capacity is building. Smallholder irrigation is recognized as a way to deal with droughts, crop failures, and related crises.
- Smallholder households in the intervention areas have seen improvements in health, income, and nutrition. In Tigray, for example, many smallholders who previously imported vegetables and fruits now eat from their own home gardens and even export to local markets. The pastoral communities and irrigators in Central Rift Valley areas experienced similar changes.
- In the operational areas of OA and its partners, smallholders' access to land and water improved due to efficient explorations of water and land resources for local, regional, and national developments. The applications of pertinent policy and strategies supported these changes.
- Despite its poor functioning in some areas, market linkages have created opportunities for smallholders.
- The use of technology in PWU greatly benefited regional states.
- The access to institution-supported savings and credit facilities positively affected smallholders' overall growth.

As a whole, labour productivity increased. Also demonstrated were a commitment to change and a determination to achieve the goals of reducing poverty and ensuring a food supply to smallholders. From the government side, particularly MoA, programs are being organized to share lessons among regions through technology, field-level observations, and other techniques. Such programs have already got the attention of the highest government structures.

Stakeholders Collaborations and Inter-Linkages

The MoWIE and MoA realized that learning forums at the national level have been poorly organized and unable to mobilize resources to reach their targets. The efforts by the government to establish strong networks and platforms to coordinate stakeholders have been undermined by a lack of money and information. Inter-regional and inter-district coordination on water for productive use is almost nonexistent. Given these gaps, OA could coordinate inter-zonal or inter-district forums that regularly deliberate over policy, strategy, and program issues. After it has been addressed at those levels, issues could be fed to the PWG or a multi-stakeholders forum. This coordination could boost mutual understanding to easily disseminate lessons and best practices.

There was an initiative under the auspices of the MoA called the Small-Scale Irrigation Technical Task Force (SSITF), which has been operational since August 15; 2001. Its responsibility is to offer technical support for effective and efficient implementation of SSI projects. Currently, it is part of the SLM Program. Because

this initiative has been so successful in reaching its objectives, it should not be compromised by limited resources or other constraining factors.

INGOs, such as OGB, have established and run actively functioning multi-stakeholder forums that operate at national levels. OGB reports interactions among smallholders, private actors, and policy makers. OA is involved in comparable forums operating at various levels, including a national-level irrigation task force through its partners. The goal of OA establishing such a forum is to narrow the gaps noted at national and regional levels. Discussions include policies, technology, strategies, bottlenecks and best practices in PWU.

Additionally, the PWG represents a collaborative platform of strategic partners that help to implement policy, make strategic and tactical decisions, and communicate regularly with key stakeholders on the progress made.

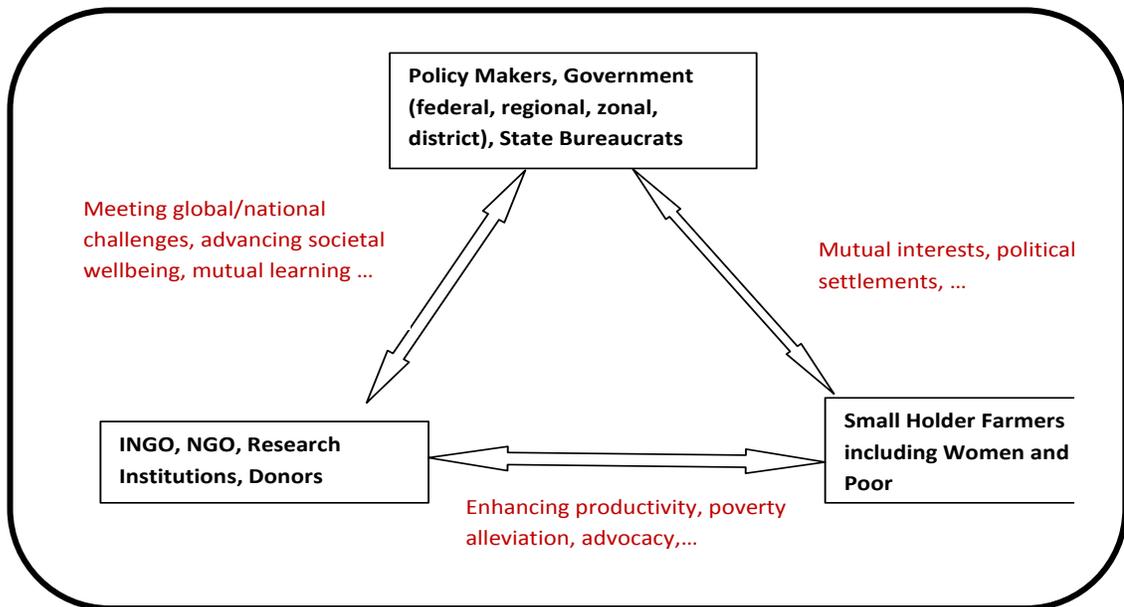


Figure5: Platform, network, and policy interfaces on smallholders' PWU

Figure 5 (above) describes the relationship that defines conditions for successful interactions among government bodies, NGOs, research groups, private groups, donors, and smallholder farmers. The clear lessons and practices on the ground indicate very little effective communication, not only between one group and another, but also within each of the three main groups. Effective PWU development requires clear and regular interactions among these stakeholders. Cognizant of this gap, IWMI is striving to promote interaction among research institutions, development practitioners, NGOs, and farmers' organizations. Such interactions are mandatory for concrete change at grassroots levels.

Donors and Productive Water Use

The last few years have witnessed progress in smallholder agricultural development. There have been dozens of initiatives around the world both at policy level and funding levels on the ground, driven by multilateral, bilateral, corporate, NGOs, and multi-sector coalitions (FSG, 2010). Ethiopia has received close to 4 per cent of global funding, mostly through PSNP since 2009, when its percentage was much lower than other countries.

Donors' interventions in PWU correlate with government strategic directions. National-level development priorities and directions are formulated by the federal government, usually MoFED. Donors follow the strategic directions set by the government for supports: financial, technical, logistic, and capacity development. Since the early 1990s-when ADLI and other rural and agricultural development policies and strategies were endorsed-donors' involvement to attain the policy elements and strategic directions have been crucial. Their common goals with government include poverty reduction, food security, empowerment of women, fair distribution of income, and job creation through sustainable and proper exploration of naturally available resources-land and water.

The government also aspires to build on the experiences and lessons of donors on smallholders' irrigation programs. Their experiences and lessons turn out to be vast and instrumental in promoting appropriate sector-wide strategies and policies governing water resource use and management. Common goals include:

- Community empowerment and the formation of water users' associations,
- The introduction of cost-recovery and cost-sharing arrangements,
- Ensuring access to irrigated land and productive resources, and
- Formulation of pertinent institutional and legal frameworks.

Donors operating in Ethiopia, such as WB, IFAD, AfDB, and JICA, support agricultural programs. IFAD, for example, has been supporting the implementation of smallholder irrigation developments at the national level for the last 7 years. Similarly, AfDB has been supporting smallholder irrigation developments for over a

decade in Ethiopia. The smallholder-focused programs that are supported by donors and also follow the Ethiopian government's strategies are

- the Participatory Small Scale Irrigation Development Program by IFAD,
- the Agricultural Growth Program by World Bank, and
- the Small-Scale Irrigation Development by AfDB (already completed)

In implementing PIF (extending up to 2020), closer to 40 per cent of the agricultural investments are expected to be covered by donors, which amounts to US\$6.2 billion (MoA, 2010). As already mentioned in preceding sub-sections, PIF emphasizes smallholders' irrigation developments and agricultural investments.

Like NGOs, donors collaborate and operate through the institutional working procedures of federal and regional government structures. An interview held with the national coordinator of AfDB at MoA confirmed donors' involvement in both appraising government-designed projects and in their implementations.

The fact that donors supported government strategies and filled in the gaps was evident. In addition to providing financial and technical support, donors took on supervisory roles and implemented interventions that benefited smallholders in the country. The experiences of JICA present a lesson for attaining the envisaged targets on smallholders. JICA not only provided irrigation project grants, but also consistently engaged on the transfer of skills and technologies.

A growing number of donors have sought to develop programs for smallholders' irrigation in recent years. Even donors and INGOs that were previously uninterested in PWU have now revised their strategies toward PWU. Accordingly, smallholders' water for productive uses remained a common and cross-cutting agenda of both government and donors. KOICA (both at MoA and OIDA) represents a typical case among the donors recently beginning to support smallholder irrigation in Ethiopia.

Figure 6 (below) captures a sample of the trends in donors' agricultural investments in Ethiopia, from 2000 to 2005 (on the Ethiopian calendar). The numbers below are in US\$ millions. The figures generally indicate the growing allocation of grants and technical assistance to smallholders' agriculture, particularly in the case of IFAD and JICA.

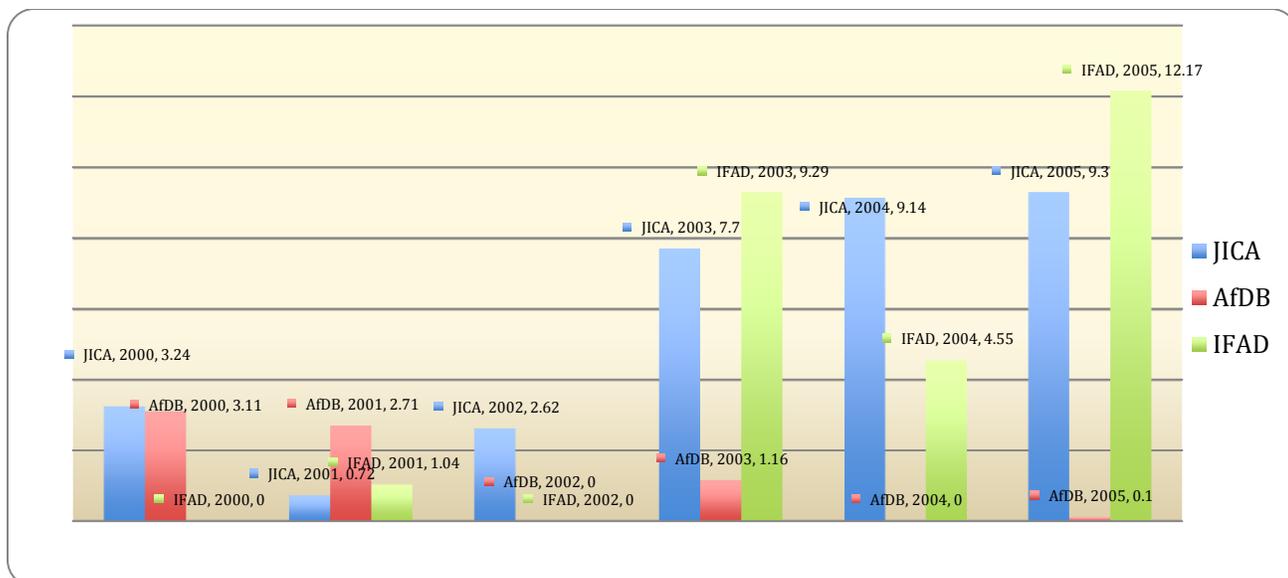


Figure6: Donors' agricultural investment trends in Ethiopia and grants on PWU investments

Nonetheless, many systems obstructed donor operations. There was always some doubt on the part of the donors as to the institutional capacity of the federal and regional arrangements. An interview held at OIDA indicated that while there were several donors seeking to work with the region, they had concerns about the institutional capacity to directly mobilize funds for smallholders' investments and infrastructures. Lack of transparency in operations, failure to meet commitments, and the late release of funds were limitations mentioned in the side of donors.

Leveraging Themes for OA-HARO: Future of the Water Program

Driven by a theory of change and the strategy of co-investment, Oxfam America-HARO is implementing PWU programs that last more than 11 years, broken into three phases. Phase one is completed. The current study identifies policy and strategic elements to implement in phase two below.

1. Support to Policy and Strategies

In terms of policy enhancement, high-impact strategies include

- articulating PWU policy implementation mechanisms
- sharing experiences
- leveraging funding
- removing barriers to tax exemptions on PWU technologies
- clarifying rights for water access and use
- empowering women

When policy makers collaborate with INGOs, donors, or other organizations, the results are greater than when any of them acts independently. Strengthening the operation and scope of the already-existing forums and platforms on PWU will provide great benefits.

2. Investment on PWU

The core entry point for OA's Water Program is investing in PWU, which helps achieve water access, increases agricultural productivity, and creates more employment through conservation opportunities. OA has already identified a co-investment strategy as a way forward, building on specific models systematically developed by government institutions and donor.

3. Institutional Capacity Building

Capacitating the institutional operations of water for productive management seeks robust involvement of OA, particularly for its strategic policy. This should also incorporate the influences associated with access rights to water and land. The land tenure system is still impeding the expansion of irrigated agriculture because landowners are still favored in claims overwater rights.

The institutional capacity development of government is addressed in two ways: (1) through direct support of the government structures and multi-stakeholders operating at regional, zonal, district and *kebele* levels, and (2) strengthening the operations of WUA. Both institutional dimensions are crucial to implementing PWU policies and strategies. Without the development of required capacities in these institutions, policies alone will achieve nothing. Failures of previous policies and strategies were partly attributed to institutional constraints. And the current study show that these development programs require genuine and coordinated involvements from stakeholders.

4. Water Pricing-Fee Practices

The growing exploitation of productive resources such as water necessitates the shift from free use to charging fees. These strategic shifts require information and agreement before creating pricing structures. And steps are being taken at different levels beyond discussion and theories. Strategies and regulations have been introduced to a certain extent. However, water pricing at the smallholders' level is likely to be challenging. Correspondingly, involvement of INGOs such as OA would make for smoother transitions toward productive ends. Manuals have been created, on the procedures of distribution but they have not yet implemented. OA could introduce and spearhead such national and strategic agendas to smallholders through its co-investment frameworks.

The Water Sector Strategy of Ethiopia (2001) proposes the users' fee be tied to the level of cropping patterns, farm-level profits, and scheme efficiency; and it should be

part of a simple and clear cost-recovery system. The introduction of the fees needs to consider the costs associated with regular O & M, as well as the season of agricultural production itself.

5. Marketing Input and Output Linkages

The orderly operation of a smallholder market requires legal support and appropriate regulatory interventions. OA's PWU program would allow it to develop market linkages. Oxfam's remarkable experience with their coffee companions can be replicated for PWU irrigators (especially for the horticulture sector at national and international levels) in terms of operating markets and introducing regulations and mechanisms to assess the quality of inputs and outputs.

6. Operation and Maintenance

OA could also be involved in the development of O & M manuals and legal support for smallholders' investments. Efficient operations for PWU programs require technical assistance to convert earlier systems to mobilize resources.

7. Gender Streamlining

Through much effort, considerable achievements have been attained with regard to gender mainstreaming across sectors and bureaus starting from the federal level to local initiations. OA's commitment to inducing practical changes in gender dimensions of smallholders' irrigation development has paid off.

Past experience tells us that to be successful, gender mainstreaming needs to be smoothly integrated with the local-level institutions, using mechanisms such as household-level gender-sensitive technologies and irrigation expansions. Policy makers can influence WUAs to promote leadership among women and youths. OA already demonstrated good lessons in gender mainstreaming, women empowerment through resource access, leadership positions, and income generation. OA should continue in its efforts toward gender mainstreaming.

8. SLM, WSM and Investment

Investments in SLM through WSM interventions/investment are critical for the sustainability of rural Ethiopia and its environment. OA needs to continue its high-impact interventions, such as creating PWU policy, developing land use laws, and creating awareness among smallholders. These can be done with partners or in its own programs.

9. Technology access and uses

We have provided a table with a menu of technology options in Annex 5. OA may consult this table in order to think through appropriate technologies for diverse strategic options. The current constraint in some NGOs is advocating technology

without due analysis on costs, benefits, and impacts. The menu of options provides diverse scenarios for OA's water program.

10. Monitoring impact and evaluation

One of OA's major strengths is its MEL framework and theory of change, which outlines project planning, design, evaluation, generating desired outcomes, and ultimate impact. This should definitely be a part of OA programs for the purpose of developing sustained capacity at various levels.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

Consultations with the various stakeholders, including policy makers, development partners, and researchers revealed that Ethiopia has made considerable progress in smallholders' productive use of water. The success of smallholders' irrigation developments in Tigray and Oromia are indications of that progress. Policy and strategic directions in relation to smallholders' water-centered developments since the 1990s are now bearing fruit. ADLI, PASDEP, and the currently overriding GTP provided supportive frameworks that expanded schemes in type and scale, maximized water use options and mechanisms, ensured food self-sufficiency, and used productive resources to confront rural poverty among smallholders.

The pragmatic shifts on policies and strategies related to PWU involve a change of outlooks among smallholders and policy makers toward irrigation investments. Strategic shifts in the government are illustrated in many ways: organizing smallholders around large-scale investments, extending small-scale micro strategies to rural smallholders, developing household-level irrigation, creating water options, and introducing land certification practices. Moreover, smallholder irrigation developments accompanied the transformations and sedentary settlements of pastoralist communities. Consequently, particular emphasis was paid to water resource development policies and strategies involving water-centered growth, the launch of ATA, plans of large-scale irrigation (including ones for smallholders) at federal level, SSI at regional levels, and SLM through massive public mobilization.

Despite these remarkable contributions that transformed water-focused developments among smallholders in Ethiopia, constraints still exist. Practical challenges include inadequate resources, funds, logistics, and institutional arrangements, as well as the absence of detailed regulatory frameworks governing input and output linkages in market operations represented. In addition, the absence of regulatory and enforcement frameworks on water fees, cost recoveries, and O & M further constrained the full-scale realization of the changes planned. The problems of implementations were, for example, evident in gender mainstreaming, which did not reach expected levels. Limited institutional capacity, infrastructures, and technology were also drawbacks. And finally, poor coordination, lack of lesson sharing, and inadequate discussion platforms among stakeholders, donors, research institutes, and the government were major challenges.

As key partners of development in the agricultural sector and promoters of efficient resource utilization, donors in Ethiopia contributed by allocating grants, offering technological transfers and support, providing logistics supervision, and by designing programs that supplement the government's PWU for smallholders.

Similarly, INGOs like OA and its partners have collaborated to effect change at lower grassroots levels, particularly in creating wider opportunities and resource access for poor people and women. To this end, OA leveraged resources to implement pilot projects in moisture-stressed areas in Tigray and Oromia.

To be successful, OA and its partners need to work more closely with the communities to pilot, test, promote, and scale up institutional and technological innovations for PWU. In collaboration with the government, they need to strengthen relevant policy support and institutional mechanisms. And with the private sector, they need to leverage technologies, innovations, and better markets for poor farmers. Hence, OA should focus on the following: enhancing institutional capacity and legal operations of WUA, empowering women, developing legal frameworks for the operations of markets (particularly horticultural and smallholders products), supporting water fee programs that gradually move to full-cost recovery systems of smallholders investments, and aiding in the O & M of schemes. In fact, fully recovering capital costs requires valuing the whole chain of actors and distributing cost recovery accordingly.

RECOMMENDATIONS

The following are key PWU interventions proposed for OA in crop, livestock, and horticulture sectors working in partnership with the government, donors, and its partners, as well as end users.

1. Continue investment and co-investment of smallholders' productive uses of water. This will help them adopt suitable technologies, educate them on irrigation and water management, support community institutions that ensure equitable access to land, water, and market. Investment and co-investment models can be out scaled to achieve the targeted level in the three regions of Ethiopia. During the signing of the memorandum of understanding, specific co-investment plans and regulations need to be developed by the government and other donors via a co-investment strategy as a sign of enforcement. At the same time, clear percentages of shares among the parties and types of contributions corresponding to timelines could be green lighted. This would boost confidence in the concept of co-investment and encourage smallholder agricultural investment.

2. Promote Integrated Watershed Management (WSM). Not all of OA's partners in PWU programs are well anchored with their own watershed management programs. WSM is key to sustainable development and the conservation of natural resources. If properly applied, integration of PWU and WSM can reduce potential conflict within the community due to competing water use. It can improve the hydrology and water availability, increase diversification of livelihoods (by benefiting non-irrigators who have no access to land or water), and improve ecosystem functions overall. PWU based on WSM will have strong leveraging and provide ample opportunities for co-investment with the government, other partners, and the community. It is recommended that OA and its partners work in tandem on both the WSM and PWU programs.
3. Support the creation and implementation of legal frameworks pertaining to institutions operating on PWU. In order to alter the current scenario, these frameworks must recognize community institutions (such as water user associations) as legal entities that can own infrastructure and are capable of accessing finance (credit) and the market. Thus, in order to introduce concrete changes on productive use of water throughout the country, OA should take the lead in supporting and advocating legal frameworks for WUAs.
4. Enhance coordination among all relevant parties. Coherence between INGOs and institutions (both regional and federal) is essential to create robust policies, develop strategies, and build programs. Communication is important. Current dissemination platforms operate in an ad-hoc manner and lack inclusiveness, consistency, and sustainability. Those platforms that were functioning well lasted only a short time. Lesson-sharing forums on PWU policy—both from abroad and within the country—should occur on a regular basis, but they are practically non-existent.
5. Enhance performance of existing schemes. OA, like other development partners and the government do not pay sufficient attention to operation of the existing schemes, yet improving their performance could bring significant value to the PWU sector. This can be achieved in many ways: through O & M, by improving the skills and capacities of water users, by scaling up operational cost-recovery mechanisms, by setting technology standards for the irrigation infrastructure, and by following up on a regular basis. These components of the program were either missing or not performing well.
6. Enhance input/output market linkages. These linkages are critical to the performance of schemes and are necessary to obtain benefits to the fullest

extent. Market linkage-supplemented by agro processing, value addition, and supported by cooperative and institutional mechanisms—can help farmers take advantage of these opportunities. The absences of legal and regulatory frameworks on market-related operations exacerbated the situation that already had its challenges. To change the existing trends in the country will require policy and strategic influence.

7. Ensure equitable resource use and management rights for women and other marginalized groups of the rural community. Gender equity exists in the country at various levels. Policy and implementation rhetoric is gender-sensitive and participatory. Despite advancement in recent years, well-intended participatory programs tend to exclude the poorest people and women from benefit sharing and decision making. Stubborn attitudes, old behaviour, and certain segments of the culture are impeding progress in establishing equitable use of productive resources for women, but education is key in turning the tide. OA and its partners have strong programs addressing gender and social equity, and these can be models for government programs to address these challenges.
8. Influence policy on large-scale irrigation investment for smallholders. OA should consider advocating for the provision of public large-scale schemes to smallholders. Initially there would not be full cost recovery, but mechanisms could be established to scale up operational cost recovery on an incremental basis. This would require strong regulations and more concrete actions toward cost recovery and cost sharing of smallholders' irrigation infrastructures. To ensure that smallholder farmers and pastoralists benefit from large-scale commercial investments and not be victims of such development, initiatives need to be in place first.
9. Value water. In its role as a policy influencer, OA should address regulations that would support water pricing and encourage smallholders to use more efficient irrigation technologies and invest in crops that will ultimately contribute to the sustainable use of water.
10. In addition to the PWU policy and strategic recommendations, outcome-oriented research outlined these areas as deserving of attention:
 - Land use plans and administration for productive uses of water, land, and agronomic practices across regions
 - Agro-processing of vegetables and fruits at local levels, introduction of local industries and storage technology
 - More in-depth studies of social, technological, gender, and institutional dynamics on water resource developments
 - Assessments on selected irrigation schemes for cost effectiveness

- piloting cost recovery systems (including scaling them up)
- Identifying best land and labor integrations to maximize the productivity of smallholder irrigation (considering unemployed youths and landless population)
- Identifying suitable technologies and institutional setups that enhance women's economic empowerment and equitable access to productive resources

The authors believe that this report has identified numerous gaps and useful opportunities for enhancing policies, strategies, and practices on PWU. Some suggestions were also made in key areas toward more effectiveness and focus, which should prove useful for the next phases of the OA-HARO water program.

REFERENCES

Adeleke Salami, Abdul B. Kamara and Zuzana Brixiova. 2010. "Smallholder Agriculture in EastAfrica: Trends, Constraints and Opportunities." African Development Bank Groups: Working Paper Series.

Amare Belete. 2013. "Potential Impact of Land Certification on Households' Land-related Investment Intentions in Southern Ethiopia." Msc. Development and natural resource economics School of economics and business Norwegian university of life sciences (UMB).

ATA. 2013. "Realizing the Potential of Households Irrigation in Ethiopia. Vision, Systemic Challenges, and Prioritized Interventions." Household Irrigation Sector Strategy: Working Strategic Paper. MoA and ATA. Draft.

Awulachew, Seleshi Bekele, Smakhtin, V., Molden, D., Peden, D. (eds) 2012. *The Nile River basin : Water, Agriculture, Governance and Livelihoods*. International Water Management Institute. First edition published 2012 by Routledge, 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN.

Awulachew. S Bekele. 2010. "Irrigation Potential in Ethiopia: Constraints and Opportunities for Enchaining the System." International Water Management Institute.

Awulachew, SB, T Erkossa, V Smakhtin, & A Fernando, compilers. 2009. *Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile*. Intermediate results dissemination workshop, Project on "Improved Water and Land Management in the Ethiopian Highlands: Its Impact on Downstream Stakeholders Dependent on the Blue Nile" [CP 19]. Addis Ababa: IWMI.

Awulachew, S.B.; Yilma, A.D.; MakonnenLouseged; Willibald Loiskandl; Mekonnen Ayana; TenaAlamirew. 2007. *Water Resources and Irrigation Development in Ethiopia*. Working Paper: International Water Management Institute.

Bill and Melinda Gates Foundation. 2010. *Accelerating Ethiopian Agriculture Development for Growth, Food Security, and Equity*. Synthesis of Findings and Recommendations for the Implementation of Diagnostic Studies in Extension, Irrigation, Soil Health/Fertilizer, Rural Finance, Seed Systems, and Output Markets (Maize, Pulses, and Livestock).

- Crewett, W, A Bogale, & B Korf. 2008. *Land Tenure in Ethiopia: Continuity and Change, Shifting Rulers, and the Quest for State Control*. CAPRI WP 91. www.capri.cgiar.org.
- Deininger, K, DA Ali, & T Alemu. 2008a. *Impacts of Land Certification on Tenure Security, Investment and Land Markets: Evidence from Ethiopia*, World Bank Policy Research Working Paper 4764. World Bank: October.
- Deininger, K, DA Ali, S Holden & J Zevenbergen. 2008b. Rural Land Certification in Ethiopia: Process, Initial Impact, and Implications for Other African Countries. *World Development* 36 (10): 1786-1812.
- Desalegn Chemed, Seleshi Bekele, Regassa Ensermu, Mukaand Singh and Ashim Das Gupta. 2007. "Indigenous Systems of Conflict Resolution in Oromia, Ethiopia." In *Community-Based Water Law and Water Resource Management Reform in Developing Countries*. Edited by B. van Koppen, M. Giordano, J. Butterworth. Comprehensive Assessment of Water Management in Agriculture. CAB International.
- Fanadzo, M.; Chiduz C. and. Mnkeni, P. N. S. 2010. "Overview of smallholder irrigation schemes in SouthAfrica: Relationship between farmer crop management practices and performance" In *African Journal of Agricultural Research Vol. 5(25)*, pp. 3514-3523. Academic Journals.
- FAO. 2006. *The New Generation of Watershed Management Programmes and Projects*. FAO Forestry Paper 150, Rome.
- Federal Democratic Republic of Ethiopia. 2003. "Rural Development Policy and Strategies. Ministry of Finance and Economic Development." Economic Policy and Planning Department, Addis Ababa Ethiopia.
- Federal Negarit Gazeta. 1998. *Proclamation No 147/1998, a Proclamation to Provide for the Establishment of Cooperative Societies. 5th Year No. 27, ADDIS ABABA – 29th December, 1998*. Federal Democratic Republic of Ethiopia: Berhanena Selam Printing Enterprise.
- Federal Negarit Gazeta. 2000. The Revised Family Code Proclamation No. 213/2000: Extraordinary Issue No. 1/2000. Addis Ababa.
- Federal Negarit Gazeta. 2009. Proclamation No. 621/2009, *Proclamation to Provide for Registration and Regulation of Charities and Societies. 15th Year, No.25, Addis Ababa*. . Federal Democratic Republic of Ethiopia: Berhanena Selam Printing Enterprise.
- FSG. 2010. *Smallholder Farmers Development: International Donors Funding Trends*. A Trend Analysis of the Corporate Leadership Coalition for Smallholder Farmer Livelihoods. Social Impact Advisors.

- Getachew Legese and Mohammed Hassena. 2012. "Assessment of Vegetables Marketing and its Challenges in Central Rift Valley, Ethiopia." Oxfam America. Addis Ababa, Ethiopia.
- Haile, M, w Witten, K Abraha, S Fissaha, A Kebede, G Kassa, & G Reda. 2005. *Land Registration in Tigray, Northern Ethiopia*. IIED Research Report 2. Mekelle University. Mekelle, November.
- Hailelassie, A, F Hagos, E Mapedza, C Sadoff, SB Awulachew, S Gebreseleassie, & D Peden. 2008. *Institutional settings and livelihood strategies in the Blue Nile Basin: Implications for upstream downstream linkages*, IWMI WP132.
- IFAD. 2012. *Gender Equality and Women's Empowerment: Policy*. Enabling Poor Rural People to overcome Poverty. GMB Akash: Varigrafica, Rome.
- Intermon Oxfam. 2010. "Livelihood Context Analysis in Tena, Shirka And Amigna Woredas, Arsi Zone." Prepared By: Jarco Consulting and Funded by Agencia Espanola De Cooperation Para El Desarrollo (Aecid).
- Mapedza, Everisto and Wichelns. 2010. "Evaluating Baseline Indicators Pertaining to Oxfam America's Water Program in Ethiopia." Revised Report. International Management Institute. Pretoria, South Africa, and Colombo, Sri Lanka.
- Merry, D., Genresellassie, T. 2010. Lessons from Projects and Programs to Promote Improved Rainwater and Land Management in the Blue Nile (Abay) River Basin in Ethiopia. Report prepared for the Challenge Program on Water and Food (CPWF) Nile Basin Development Challenge Project-1.
- Ministry Of Agriculture. 2010. "Ethiopia's Agricultural Sector Policy and Investment Framework (PIF), 2010-2020. The Federal Democratic Republic of Ethiopia.
- Ministry of Finance and Economic Development (MoFED). 2010. "Growth and Transformation Plan (2010/11-2014/15)." Addis Ababa, Ethiopia.
- Ministry of Water Resources. 2001. *Ethiopian Water Resources Management Policy*. The Federal Democratic Republic of Ethiopian, Ministry of Water Resources.
- Ministry of Water Resources. 2001. *Ethiopian Water Sector Strategy*. The Federal Democratic Republic of Ethiopian. Addis Ababa, Ethiopia. Berhanena Selam Printing Enterprise.
- Ministry of Water Resources. 2005. "Gender Mainstreaming Field Manual for Water Supply & Sanitation Projects." Ministry of Water Resources Women's Affairs Department, in collaboration with Ethiopian Water Resources Training Center and Japan International Cooperation Agency (JICA).

Ministry of Water Resources. 2009. "Strengthening Water Sector Monitoring and Information System in Ethiopia. GIRWI-Ethiopia Project - Phase 2: Methodological Phase. Legal Aspects for Institutionalizing Regular Monitoring of the Whole Water Sector." Final Report. In collaboration with United Nations Department of Economic and Social Affairs (UN-DESA).

Mohammed Reshid. 2013. Stakeholders Mapping on Oxfam America's Productive Water Use Program. Final Report – submitted to SEDA, Partner of OA: Addis Ababa.

Molden, D, ed. 2007. *Water for Food, Water for Life: The Comprehensive Assessment of Water Management in Agriculture*. Earth scan, UK.

Oxfam America. 2008. "ROPE II: Rights Oriented Programming for Effectiveness Designing and Evaluating Long-Term Programs." Learning, Evaluation & Accountability Department.

Oxfam America. 2009. "Water Program Strategic Paper (2010-2020)." Addis Ababa, Ethiopia.

Oxfam America. 2010. "Water Program Working Group Meeting Report Organized by Oxfam America Horn of Africa Regional Office." October 26 and 27, at Adama-German Hotel. Compiled by Alemayehu Diro.

Oxfam America. 2011. "Establishment of the Ethiopia Water Trust (EIT): A Draft Concept".

Oxfam America. 2011. "Water Program Annual Impact Reflection" Hosted by Center for Development Initiative (CDI), Shashemene Town, June 6 & 7. Addis Ababa, Ethiopia.

Oxfam America. 2012. "Water Program Policy Issues: For Internal Discussion."

Oxfam America. 2012. "Water Program Annual Impact Reflection-Air 2013 A Brief Summary of the Process." Organized by AFD. Yabello, Borena.

Oxfam America. 2013. "The Second Air Share." Horn of Africa-Regional Office, Addis Ababa, Ethiopia.

Oxfam American. Nd. "Brief Summary: How Water Program Policy Advocacy Work Co-exists with the new CSO Law." Addis Ababa, Ethiopia.

Techane Adugna. 2010. "Ethiopia's Agriculture Sector Policy and Investment Framework (2010/11-2019/20)." Ministry of Agriculture, Addis Ababa: Ethiopia.

Wichelns, Dennis; Fethia Ahmed and Balasubramanya, Soumya. 2012. Institutional Sustainability of Smallholder Water Systems for Productive Use: Examining Oxfam America Water Program Interventions in Ethiopia. International Water Management Institute and Oxfam America.

World Bank. 2006. Agricultural and Rural Development: Note. Public Disclosure Authorized. Prepared by Jon Naugle of Enterprise Works and Daniel Sellen. Revised by Salah Darghouth , and ArielDinar.

APPENDIX 1 INTERVIEW INTERACTIONS – SAMPLE QUESTIONS WITH OA STAFF MEMBERS

Please relate your response to the full agricultural systems (i.e., crops, horticulture, livestock, agro forestry, and other related areas)

- What are the key policies and strategies in Ethiopia that are relevant to the OA water for productive use program?
- What are the involvements of OA in the implementation of water for productive use policies and strategies in Ethiopia so far?
- How are the national policies and strategies of water for productive use in Ethiopia related to the water program of HARO-OA?
- What policy gaps and challenges did OA notice over the course of implementing its water for productive purposes?
- How could those policy gaps and challenges be filled/bridged?
- What were the core policy and strategic shifts in water for productive uses in the last decade? (Focus on government policy directions, institutional changes, gender, resource mobilizations, and community-level changes)
- How does OA address the gender issue in productive use?
- What are the best lessons of OA on the implementation of its water programs among smallholder agriculturalists including pastoralists in Ethiopia?
- OA uses theory of change concept to influence outcome and impact. How is this designed and what are the core elements?
- How is OA's theory of change linked with the national water strategies or programs of the country?

- What are the experiences and lessons of OA in following theory of change and co-investment approaches toward the realization of its water for productive use program?
- What institutional arrangements have been designed and used toward the implementation of smallholder irrigation policies/strategies by OA?
- What are the strategic and policy issues dealing with WUA, irrigation cooperatives, conflict management, adoption of innovative technologies, and market linkages?
- What policies, strategic elements, and program intervention area options are to be considered by OA within the framework of its limited resources?
- What strategic mechanisms would OA pursue to influence the implementation of water for productive use policies, strategies, and programs among stakeholders in Ethiopia, including policy makers?
- State the linkage of OA with donors and other INGOs (Oxfam affiliates) working on water for productive uses policies and strategies in Ethiopia.
- What are your key recommendations on the enhancement of water for productive uses in Ethiopia?

APPENDIX 2 - INTERVIEW INTERACTIONS – SAMPLE QUESTIONS WITH KEY GOVERNMENT STAFF MEMBERS

1. What are the policies/strategies that guide water for productive use at national level?
 - For smallholders irrigation
 - For livestock consumption
2. Are irrigation development policies and strategies ensuring gender equity? What are the experiences in the country in this respect?
3. What major gaps, weakness and constraints prevailed in the policy and strategic environs of the water for productive use in Ethiopia?
4. What key lessons were acquired in water for productive use policy and practice at federal and regional levels?
5. How do we scale up best lessons in the dissemination of water for productive use policy and program developments and what needs to be done?
6. Did commercial farming affect in any regard the benefits of smallholder irrigators?
7. Are there specific irrigation legal frameworks pertaining to
 - Water users associations?
 - Cooperatives?
 - Fair market accesses (input supply and output market, particularly with vegetable crop productions)?
 - Post-harvest storage?
 - Conflict-handling mechanisms for smallholding irrigators in Ethiopia?
 - Infrastructure standards?
 - Land access/ownership (tenure) issues?
8. What overall changes in the policy and strategic climate on water productive uses were seen?
 - Discuss key progress evident both in policy and practice
 - State the key actors in the changes on policy area, strategy, and program

9. Are there experiences in Africa or elsewhere that should be adapted to the Ethiopian smallholder irrigation practices or water for livestock purpose?
10. What were the institutional constraints and bottlenecks in the realization of smallholder irrigation policy and strategies in Ethiopia in terms of
 - Institutional arrangements?
 - Coordination?
 - Financial?
 - Authority?
 - Technological?
 - Technical?
 - Functional set ups/structures?
11. What should the specific roles be for the community, INGOs, donors, government, academia, and research institutes in terms of establishing and managing schemes and usage of water for productive purposes?
12. Forward your suggestions on ways which OA could influence policy makers and other stakeholders through its programs of water for productive uses in Ethiopia.

APPENDIX 3: LIST OF RESEARCH PARTICIPANTS AND INSTITUTIONAL AFFILIATIONS

S/N	Name of the Institution	Position/Affiliations of Individuals Contacted	Number of Individuals
1.	Ministry of Water, Energy and Irrigation	Irrigation Directorate	2
		Team leader- Large Dams	
2	Ministry of Agriculture	Small-Scale Irrigation and National Learning and Accountability Forum Team Leader	3
		IFAD-National Coordinator	
		AfDB-National Coordinator	
3	Oromia Environmental Protection, Land Administration, and Use Bureau	Vice Head	1
4	Oromia Cooperative Promotion Agency	Irrigation Cooperatives-Team Leader and Expert	2
5	Oromia Pastoral Area Development Commission	Irrigation Team Leader	3
		Gender Advisor	
		Natural Resource Management Team Leader	
6	Oromia Irrigation Development Authority	Vice Head	7
		Experts-FGD	
7	Tigray Agricultural Bureau	Vice Head	3
		Cooperative Promotion- Team Leader	
		Agricultural Technology Expansion-Team Leader	
8	Tigray Water Bureau	Irrigation Team Leader and Expert	2
9.	Donors	AfDB-Irrigation Coordinator and Senior Expert	5
		IFAD-Coordinator	
		JICA- Irrigation Team Leader and Expert	
10	INGOs	Oxfam GB-Program Manager on Agriculture	2
		Oxfam IO-Program Manager	

11	Research Institutes	International Water Management Institute–Senior Researcher	2
		Ethiopian Development Research Institute –Head of agricultural department	
12	ATA	Small Scale Irrigation-Team Leader	1
13	Oxfam America Partners	Program Managers and Leaders (REST, SEDA, RCWDO, CDI) including FGDs participants	15
14	Oxfam America -HARO	Vice Program Manager, Water Program Coordinator and MLE-Coordinator, Water Expert	4
15	Academic Institution	Arbaminch University- Director of Water Resources Research Centre	1
Total			53

APPENDIX 4 - TYPOLOGIES OF IRRIGATION DEVELOPMENT IN ETHIOPIA

Irrigation schemes vary widely in size and structure, from micro irrigation to Rain Water Harvesting (RWH), to river diversion, to ground water pumping, and small or large dams. These schemes can be generally subdivided into the following categories:

Small scale-Irrigation (SSI), which is often community based and uses traditional methods, can also be smallholder irrigation, covering less than 200 hectares. Examples of SSIs include household-based Rain Water Harvesting (RWH), hand-dug wells, shallow wells, flooding (spate), individual household-based river diversions, and other traditional methods. In recent years, the scheme size has become extended above the upper limit of 200ha. Example: Oromia SSI extends to 400ha.

Medium-scale irrigation (MSI), which is community based or publicly sponsored, covering 200 to 3,000 hectares. However, there are many examples of MSI owned by smallholders and community based, such as Hare irrigation scheme in Southern Region Nations and Nationalities Region (SNNPR).

Large-scale Irrigation (LSI), which covers more than 3,000 hectares, is typically commercially or publicly sponsored. Examples of LSIs include the Wonji-shoa, Methara, Nura Hera, and Fincha irrigation schemes. In recent years, however, smallholder-owned large-scale farms are emerging. Typical examples are the Fentale irrigation scheme in Oromia Region and the Koga irrigation scheme in Amhara Region.

SSI schemes are under the auspices of the regions and the Ministry of Agriculture (MoA) at the federal level, MSI are under Ministry of Water, Irrigation and Energy (MoWIE) and at the regional level; while LSI are mainly under the responsibility of the MoWIE, with a few exceptions, such as the Fentale and Koga irrigation schemes in the Oromyia and Amhara regions, respectively. Figure 2 shows the location distribution and typology of the major operational schemes (Awulachew, 2010).

APPENDIX 5 - TECHNOLOGIES OF IRRIGATION DEVELOPMENT AND PWU MANAGEMENT

The table shown below, according to Awulachew et al. (2012) provides a good summary and categorizes combinations of technologies based on scale; source of water, water management options, etc., and is used as a reference in developing AWM options.

Scale	Water source	Water Control	Water Lifting	Conveyance	Application	Drainage & Reuse
Small-holder farm-level	Rain water	<ul style="list-style-type: none"> In situ water Farm ponds Cistern and underground ponds Roof water harvesting Recession agriculture 	<ul style="list-style-type: none"> Treadle pumps Water cans 	<ul style="list-style-type: none"> Drum Channels Pipes 	<ul style="list-style-type: none"> Flooding Direct application Drip 	<ul style="list-style-type: none"> Drainage of water logging Surface drainage channels Recharge wells
	Surface water	<ul style="list-style-type: none"> Spate and flooding Diversion Pumping 	<ul style="list-style-type: none"> Micro pumps (petrol diesel) Motorized pumps 	<ul style="list-style-type: none"> Channels Canals Pipes (rigid, flexible) 	<ul style="list-style-type: none"> Flood & Furrow Drip Sprinkler 	<ul style="list-style-type: none"> Surface drainage channels Drainage of water logging
	Ground water	<ul style="list-style-type: none"> Spring protection Hand dug wells Shallow wells 	<ul style="list-style-type: none"> Gravity Treadle pumps Micro pumps (petrol diesel) Hand pumps 	<ul style="list-style-type: none"> Channels Canals Pipes (rigid, flexible) 	<ul style="list-style-type: none"> Flood & Furrow Drip Sprinkler 	<ul style="list-style-type: none"> Surface drainage channels Drainage of water logging Recharge wells
Community or catchment	Rain water	<ul style="list-style-type: none"> Soil water conservation Communal ponds Recession agriculture Sub-surface dams 	<ul style="list-style-type: none"> Treadle pumps Water cans 	<ul style="list-style-type: none"> Drum Channels Pipes 	<ul style="list-style-type: none"> Flooding Direct application Drip 	<ul style="list-style-type: none"> Drainage of water logging Surface drainage channels
	Surface water	<ul style="list-style-type: none"> Spate and flooding Wetland Diversion Pumping Micro dams 	<ul style="list-style-type: none"> Micro pumps (petrol diesel) Motorized pumps Gravity 	<ul style="list-style-type: none"> Channels Canals Pipes (rigid, flexible) 	<ul style="list-style-type: none"> Flood & Furrow Drip Sprinkler 	<ul style="list-style-type: none"> Surface drainage channels
	Ground water	<ul style="list-style-type: none"> Spring protection Hand dug wells Shallow wells Deep wells 	<ul style="list-style-type: none"> Gravity Treadle pumps Micro pumps (petrol diesel) Hand pumps Motorized pumps 	<ul style="list-style-type: none"> Channels Canals Pipes (rigid, flexible) 	<ul style="list-style-type: none"> Flood & Furrow Drip Sprinkler 	<ul style="list-style-type: none"> Surface drainage channels Recharge wells and galleries
Sub-basin, Basin	Surface water	<ul style="list-style-type: none"> Large dams 	<ul style="list-style-type: none"> Gravity Large scale motorized pumps 	<ul style="list-style-type: none"> Channels Canals Pipes (rigid, flexible) 	<ul style="list-style-type: none"> Flood & Furrow Drip Sprinkler 	<ul style="list-style-type: none"> Surface drainage channels Drainage re-use

OA is advised to use combinations of the above continuum as a menu of options in selecting appropriate technologies while implementing its water programs.

Forty percent of the people on our planet—more than 2.5 billion—now live in poverty, struggling to survive on less than \$2 a day. Oxfam America is an international relief and development organization working to change that. Together with individuals and local groups in more than 90 countries, Oxfam saves lives, helps people overcome poverty, and fights for social justice. To join our efforts or learn more, go to www.oxfamamerica.org.



HEADQUARTERS

226 CAUSEWAY STREET, 5TH FLOOR
BOSTON, MA 02114-2206
(800) 77-OXFAM

HORN OF AFRICA REGIONAL OFFICE

DH GEDA TOWER, BOLE SUB-CITY KEBELE 02
ADDIS ABABA, ETHIOPIA
(251) 116-624281

www.oxfamamerica.org

© 2013 Oxfam America Inc. All Rights Reserved. Oxfam America is a registered trademark of Oxfam America Inc., and the Oxfam logo is a registered trademark of Stichting Oxfam International.