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Research Report

Institutional Gender Mainstreaming in Small-Scale Irrigation: Lessons from Ethiopia

Likimyelesh Nigussie, Thai Thi Minh and Petra Schmitter



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IWMI Research Report 185

Institutional Gender Mainstreaming in Small-Scale Irrigation: Lessons from Ethiopia

Likimyelesh Nigussie, Thai Thi Minh and Petra Schmitter

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Project

INNOVATION LAB FOR Small Scale Irrigation

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Acronyms and Abbreviations

AGP	Agricultural Growth Program
ATA	Ethiopian Agricultural Transformation Agency
CGPSSIT	Considering Gender when Promoting Small-Scale Irrigation Technologies
FGD	Focus group discussion
GILIT	Gender in Irrigation Learning and Improvement Tool
GIS	Gender Integration Strategy
GoE	Government of Ethiopia
GPII	Gender Performance Indicator for Irrigation
GTN	Growth through Nutrition
IFAD	International Fund for Agricultural Development
IGA	Income-generating activity
ISGID	Integrated Shallow Groundwater Irrigation Development
IWUA	Irrigation water user association
KII	Key informant interview
M&E	Monitoring and evaluation
MFI	Microfinance institutions
MoA	Ministry of Agriculture
MSD	Multi-stakeholder dialogue
NGO	Nongovernmental organization
NSAP	Nutrition-Sensitive Agriculture Project (GIZ)
PASIDP	Participatory Small-Scale Irrigation Development Program
SAA	Social analysis and action
SEDA	Sustainable Environment and Development Action
SMIS	Small and Micro Irrigation Support Project
SNNPR	Southern Nations, Nationalities, and People's Region
SWEEP	Water for Food Security, Women's Empowerment, and Environmental Protection
TGM	Transformative gender mainstreaming
VSLA	Village Savings and Loan Association
WASH	Water, sanitation, and hygiene

Summary

Achieving gender equality in irrigation can result in greater production, income, and job opportunities for both men and women smallholder farmers from diverse social groups, while building climate resilience in sub-Saharan Africa. In Ethiopia, national irrigation agencies, donors, and researchers have been assisting project implementers to mainstream gender issues into the planning and implementation of irrigation programs. However, although efforts to close gender gaps in irrigation have been increasing, little is known about how interactions among institutions at different scales may determine the success of gender-mainstreaming strategies. This study presents a qualitative analysis of how the interaction of institutions at multiple levels can shape the success of gender-mainstreaming strategies. Specifically, the study analyzed how institutions' rules, roles, and capacities at state, market, community, and household levels shaped strategies in Ethiopia's nine small-scale and micro irrigation development projects. The findings show that 'rule-based' strategies adopted by small, scheme-based irrigation projects emphasize policies and rules for equal rights and opportunities for equal participation in individuals' and institutions' decision-making and capacity development. 'Role-based'

strategies adopted by projects promoting small-scale and micro irrigation technologies focus on challenging social norms to address the imbalance of power and workloads by developing the capacity of all stakeholders. Both strategies focus on women and use participatory approaches to ensure gender equality. Negative stereotypes about women from families, communities, and the private sector often make it difficult for gender mainstreaming to succeed. Furthermore, institutional biases and limited capacities reproduce gender inequality by reinforcing stereotypical gender norms. Transformative gender mainstreaming strategies are critical to holistic approaches that facilitate change at different scales through broad-based partnerships between actors. It calls for 1) enacting policy, creating an institutional environment, and developing governance mechanisms for mainstreaming gender; 2) enhancing the accountability system and adoption of gender-transformative approaches to involve more women farmers in designing, planning, and management; 3) creating a supportive institutional environment at market, community and household level that helps women farmers invest in irrigation; and 4) applying an intersectional lens in gender analysis and mainstreaming.

Institutional Gender Mainstreaming in Small-Scale Irrigation: Lessons from Ethiopia

Likimyelesh Nigussie, Thai Thi Minh and Petra Schmitter

Introduction

In sub-Saharan Africa, irrigation development has improved food security and reduced rural poverty by increasing production, income, and job opportunities, in addition to building climate resilience (Gebrehiwot et al. 2015; Namara et al. 2010). Yet, gender inequality remains an issue in the sector (Imburgia 2019; Lefore et al. 2019). Designing and implementing an irrigation development project with little or no understanding of gender relations can unintentionally exacerbate gender disparities and even create gender inequalities and new barriers for women (The World Bank, FAO and IFAD 2009; van Koppen 2002). Therefore, understanding gender dynamics in small-scale irrigation is crucial to designing sound technical and policy interventions (Domènech 2015; Theis et al. 2018a). Recognizing this, national irrigation agencies and donors have been helping project implementers formulate gender-mainstreaming strategies to support the integration of gender issues in the planning and implementation of irrigation projects.

Gender mainstreaming is about removing disparities between men and women regarding their access to resources, inclusion and participation in the public sphere, representation in government, and empowerment (Jamil et al. 2020). However, there is considerable skepticism about the success of this approach in achieving gender equality (Joseph et al. 2011) and whether the visions of transformative gender mainstreaming can ever be realized (Sweetman 2015). The approach is criticized for being technocratic and integrationist (Joseph et al. 2011; Shortall 2015; Sweetman 2015) and for focusing on the development institution rather than the project beneficiaries (Moser and Moser 2005).

To incorporate gender into irrigation development, scholars have provided tools like the Gender Integration Strategy (GIS) (Jordans 1998), Gender Performance Indicator for Irrigation (GPII) (van Koppen 2002),

Gender in Irrigation Learning and Improvement Tool (GILIT) (Lefore et al. 2017) and Considering Gender when Promoting Small-Scale Irrigation Technologies (CGPSSIT) (Theis et al. 2018b). Although these tools help stakeholders improve the gender performance of irrigation development projects, they rarely aid in holistically understanding multi-level, gender-based opportunities and barriers. Furthermore, despite increased attempts to close gender gaps in irrigation, little is known about how institutional interactions at different scales can influence the success of gender-mainstreaming strategies.

Therefore, this study focused on understanding how multi-level institutions and their interactions influenced gender mainstreaming in irrigation development projects in Ethiopia. The following questions are addressed in this paper:

1. What gender mainstreaming strategies did the irrigation development projects adopt?
2. How did interactions between multi-level institutions determine such strategies?
3. How can transformative gender mainstreaming be achieved?

This paper discusses the gender-mainstreaming approach and synthesizes other approaches for gender integration into irrigation development. It then presents a multi-level institutional framework and provides case studies and a methodological approach. The results show how interactions among different institutional levels can shape the outcomes of two gender-mainstreaming strategies: rule-driven and role-based. Lastly, we provide a conclusion and practical recommendations for developing a holistic and multi-level view of transformative gender mainstreaming (TGM) to achieve better outcomes on equality in the irrigation sector of Ethiopia.

Analytical Framework

Gender Mainstreaming

Gender mainstreaming was designed by feminist development practitioners in the 1970s and mandated by the 1995 Beijing Declaration and Platform for Action at the United Nations (UN) Fourth World Conference on Women (UN Women 1995). It is considered key to advancing women's rights and gender issues in development by governments and development institutions of all sizes, shapes, and scales (de Waal 2006; Joseph et al. 2011; Sweetman 2015) and at different stages of a project cycle (Sweetman 2015). It has been used as a public policy concept to assess the implications for women and men of any planned policy action, law, or program (de Waal 2006).

In principle, gender mainstreaming is transformative, challenging the status quo (Cole et al. 2014; Daly 2005; Woodward 2008). Many feminists are skeptical about whether it is an effective strategy for gender equality (Baruah 2005; Chant 2016; Cornwall 2000) and argue that the approach is far from its lauded vision of transformation (Sweetman 2015). They argue that the approach is technocratic and does not focus on transformation in terms of gender equality (Joseph et al. 2011; Shortall 2015; Sweetman 2015). It relies on training, tools, frameworks, experts, and ticking boxes and checklists to ensure gender concerns have been addressed in policies (Joseph et al. 2011; Shortall 2015; Sweetman 2015). It requires long-term commitment, an adequate budget, regular monitoring, management support, staff engagement, and appropriate strategies (Lee-Gosselin et al. 2013).

Many development initiatives use an integrationist approach, adding women's concerns to existing policies and projects (Sweetman 2015). This means that existing gender hierarchies within society and in policies that perpetuate gender inequality and their impact on policy actors, policymaking, and implementation remain unchallenged (Daly 2005; Joseph et al. 2011; Shortall 2015; Sweetman 2015; van Eerdewijk and Davids 2014). Blindness to existing structural power relations and dynamics often obscures how gender-mainstreaming policies can help promote gender equality in society (van Eerdewijk and Davids 2014) and makes their impact difficult to measure (Walby 2005).

The impacts of gender mainstreaming on gender equality are often evident in development organizations. However, they are usually not felt by project participants or are not reported (Moser and Moser 2005). Social institutions – including the market, state, and nongovernmental organizations (NGOs) that reflect the norms and values of the surrounding society – play a key role in perpetuating or challenging gender inequality (Sweetman 2015). Masculine values and practices, cultural and religious principles, and patriarchal culture at different scales

affect how gender mainstreaming is implemented. However, gender-mainstreaming approaches focus on gender units and experts rather than creating a space for women.

Despite these drawbacks, many development organizations increasingly adopt a gender-mainstreaming strategy (Arora-Jonsson and Sijapati 2018). For this reason, responding to backlashes in gender-mainstreaming practices calls for strategies that focus on social transformation and change (Jamil et al. 2020; Sandler and Rao 2012) and transformational institutions and processes at different levels (van Eerdewijk and Davids 2014). Also, it requires a holistic approach that forms and facilitates a broad-based partnership strategy between different actors at different scales (Cole et al. 2014), including policy, legal arenas (Stern et al. 2018), market, communities and family.

Different Approaches for Integrating Gender into Irrigation Development

In the debate on gender equality in irrigation development (Lefore et al. 2019; Nigussie et al. 2017; Senanayake et al. 2015; Theis et al. 2018b), several tools have been developed for integrating gender into irrigation, including Gender Integration Strategy (GIS), Gender Performance Indicator for Irrigation (GPII), Gender in Irrigation Learning and Improvement Tool (GILIT), and Considering Gender when Promoting Small-Scale Irrigation Technologies (CGPSSIT). The **GIS** provides strategies for integrating gender into irrigation planning at three levels simultaneously – policy, institution, and implementation – for more equitable, effective, and efficient management of irrigation systems. At a policy level, it addresses the need for international, national, and regional planning and governing institutions to recognize gender issues as legitimate political concerns and to address gender issues as a goal. At an institutional level, this tool emphasizes the need for institutions and service entities to implement gender-sensitive programs, enhance their management capacities, and improve communication between farmers and policymakers. At an implementation level, it highlights the need to involve households, farmers, and communities in the planning and coordinating of irrigation activities to ensure that gender-specific needs are satisfied.

The **GPII** is a generic analytical tool for gender analysis that enables change agents to answer how gender can be considered in scheme-based irrigation and design action for more gender equity. It helps with the empirical analysis of two factors in any scheme: (1) whether the farm decision-makers are predominantly male, female, or mixed; and (2) the inclusion and exclusion processes of female farmer decision-makers. As such, the tools help assess gender performance by investigating gender-based differences in how people access water at the farm level

and participate in forums or networks in collective water management arrangements.

The **GILIT** tool helps assess whether an irrigation scheme's current conditions allow both men and women to participate equally. It identifies areas of policy and practice in formal irrigation projects that have been successful or need adjustment to promote gender equity. The tool provides the basis for discussion, reflection, and evaluation across actors and stakeholders to fix weaknesses, share lessons, and realign a project toward gender goals. It outlines questions to help managers design governance and services that meet women's needs by evaluating the following four areas.

1. The broader national and subnational regulatory context in which each project operates is essential and a major area of focus.
2. Bylaws and other regulations that govern access to scheme resources, i.e., information, land, water, and other inputs, should be examined to determine if they equally provide for men and women.
3. The conditions influencing effective participation in scheme membership, leadership, and decision-making may determine whether women can participate.
4. Certain conditions that may provide access to the scheme benefits, such as access to market information, packaging, and payments from sales or processing, should also be examined.

The **CGPSSIT** is a tool that helps actors identify key gender-related issues that should be considered at the awareness, tryout, and continued adoption of technology stages to effectively integrate gender into project implementation (Lambrecht et al. 2014; Lindner et al. 1982; Theis et al. 2018b). The tool provides questions to guide gender inclusion during small-scale irrigation technology promotion. It helps to avoid unintentionally excluding women during implementation, identify the resources required for, and the benefits of, adopting new technology, and understand the intra-household relations and broader social norms that enable or constrain women's ability to benefit from the technology.

The GILIT, GPII, and GIS are all tools that help small-scale irrigation scheme development actors understand the areas that may need adjustment to address gender issues for developing equitable and sustainable irrigation. They specifically help us to tailor services to women's needs and provide equal opportunities to both men and women so that women have better access to and control over scheme resources and can participate fully in formal and informal forums as members and leaders. The GIS tool helps identify gaps in developing gender-sensitive strategies for irrigation planning. However, the GILIT, GPII, and GIS tools rarely address sociocultural landscapes such as intra-

household dynamics, cultural norms, informal networks, and other underlying drivers for gendered differences (Aker et al. 2017). In the case of CGPSSIT, the tool provides a checklist of questions and a set of action points and indicators to integrate gender into irrigation interventions. Although these tools guide irrigation development project implementers in mainstreaming gender, they are rarely useful for driving policy and generating a deep understanding of the natural consequences of inequality such as gender-based barriers at multiple levels.

A Multi-Level Institutional Framework to Analyze Approaches for Mainstreaming Gender

In this analysis, a gender-mainstreaming strategy is defined as a process to ensure that men and women have equitable opportunities and capabilities to participate in and benefit from irrigation interventions. This includes the general approaches, operational mechanisms, and specific activities adopted to achieve gender equality. The *general approach* specifies irrigation projects' and programs' strategies to guide planning and implementation. It refers to a particular way of thinking about or dealing with gender mainstreaming in the project. The governance structure is a set of key *operational mechanisms* that specific implementers develop using relevant external and internal rules from various institutions at state, market, community, and household levels and different forms of coordination translated from these rules (Baland et al. 2010). It is a process established and followed by the project and its implementing organizations. The *activities* are simply the tasks carried out by any actors at state, market, community, and household levels to ensure that the gender-specific needs of men and women are met. Figure 1 illustrates an analytical framework for analyzing gender mainstreaming from an institutional perspective.

The unit of our analysis is an irrigation development intervention or project. Therefore, each level informs the way(s) that the intervention or project responds to gender issues embedded in different levels of institutions. Institutions are essentially the endogenously emerging equilibrium outcome of roles and rules and the interaction between them (Gagliardi 2008). The role-based aspect refers to institutions that create order by allocating defined roles and tasks to specified actors at each institutional level. The rule-based aspect refers to formal and informal regulatory arrangements, such as customs or sets of formalized rules like law and policy, that lead to repetition and the emergence of stable, predictive patterns of response and action. The role-rule interaction reflects an actor's ability to play their role under the guidance of the embedded rules. We analyzed what and how role, rule, and the interaction between the two within and across the different levels shape gender-mainstreaming strategies to incorporate gender approaches, governance, and activities in an irrigation project.

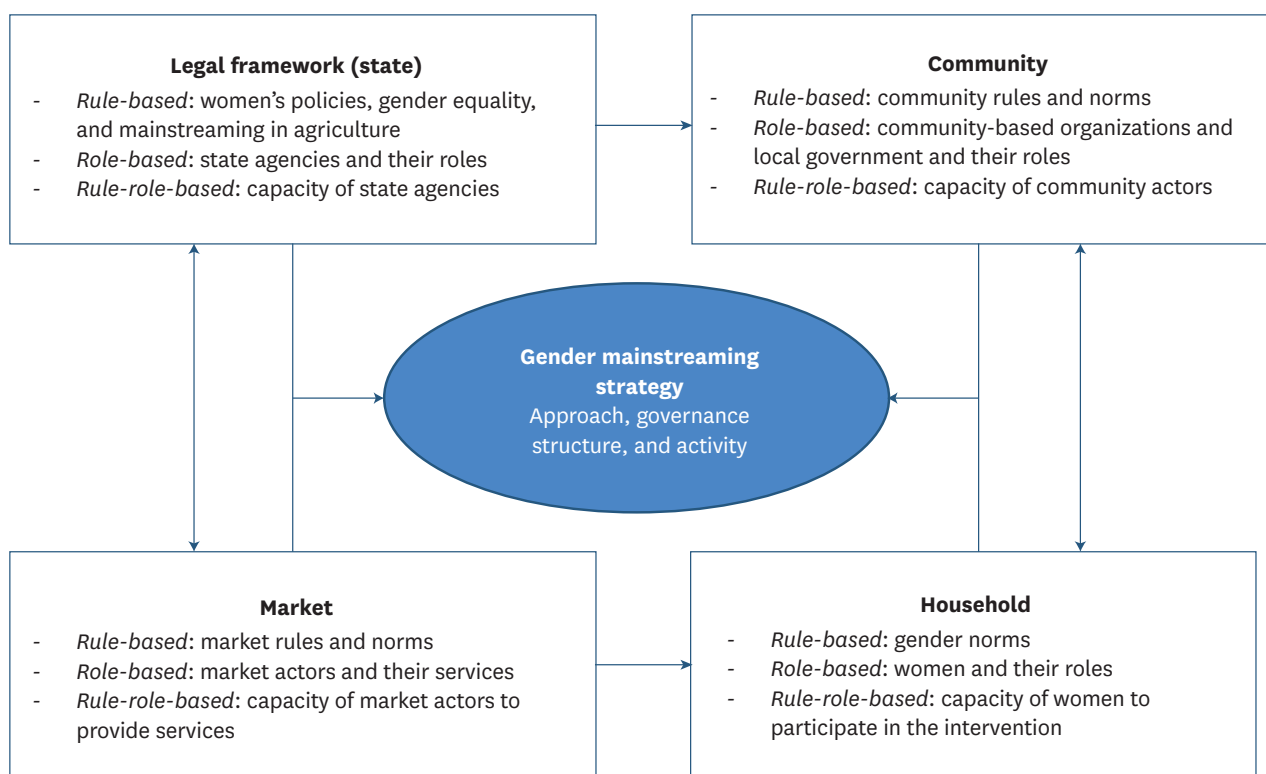


Figure 1. Institutional framework for analysis of the impacts of gender mainstreaming strategies.

Inequalities are embedded within institutions at multiple levels and are influenced by historical, social, organizational, and individual factors. The complex, interrelated, multi-level, institutional factors determine gender-mainstreaming strategies' outcomes on

women's rights, status, participation, and inclusion. March et al. (1999) reported that interconnected and overlapping state, market, community, and household institutions all work to shape the outcomes of gender mainstreaming.

Methodology

An Overview of Irrigation Projects Analyzed in this Study

In Ethiopia, irrigation and drainage are the primary drivers of agricultural growth and transformation (MoANR, MoWIE and ATA 2016). They stimulate other activities in the value chain and contribute more to the economy in terms of increased production, income, and job opportunities than rain-fed agriculture. The Government of Ethiopia (GoE) and its development partners have made substantial investments to support small-scale irrigation and have attempted to mainstream gender to ensure gender equality. However, a study by Tsige et al. (2020) indicated that it is impractical to do so in agricultural development in Ethiopia. Among others, some of the drivers involved in gender mainstreaming included a lack of local strategies and guidelines, the adoption of a technocratic approach, and limited human resources to implement gender mainstreaming (Tsige et al. 2020).

Initially, the study aimed to understand the processes and approaches that were used to integrate gender into projects that promote farmer-led irrigation development. However, national and regional data are scant because projects supporting small-scale irrigation under the Ministry of Agriculture (MoA) are mainly for scheme-based irrigation and do not focus on farmer-led irrigation development. As a result, we used a snowball technique to identify nine projects for the analysis (Table 1).

Small, scheme-based irrigation projects aim to develop small-scale irrigation infrastructure on less than 100 ha of land to improve smallholder farmers' income, productivity, commercialization, and food security. The MoA implements these projects in selected *woredas*¹ of targeted regions, which have been chosen for their potential to expand irrigation based primarily on agroecological conditions and market access. The project participants are smallholder farmers living in these areas

¹ *Woreda* is the third-level administrative division of Ethiopia.

who own land in the command area. *Woreda* experts, particularly development agents and extension workers, are locally responsible for implementing project activities.

Projects promoting small and micro irrigation development aim to improve food and nutrition security and empower women and resource-poor farmers by promoting irrigation technologies for individual

households to use or to share in small groups. The projects are supported by international donors and implemented by development agents and extension workers from *woreda* agriculture offices. The activities raise technology awareness by training or providing technologies to women and resource-poor farmers or by training landless youth in manufacturing these technologies.

Table 1. An overview of irrigation projects reviewed.

Project and objective	Key activities	Location, funding sources
Small scheme-based irrigation projects		
The Participatory Small-Scale Irrigation Development Program (PASIDP II) (2016–2024) to reduce the impact of climate change, enhance economic growth and reduce rural poverty	<ul style="list-style-type: none"> - Develop capacity for sustainable program development, and monitoring and evaluation (M&E) - Invest in small-scale irrigation infrastructure 	Supported by the International Fund for Agricultural Development (IFAD) implemented in Amhara, Oromia, Tigray, and the Southern Nations, Nationalities, and People's Region (SNNPR)
The Agricultural Growth Program (AGP II) to increase the productivity of targeted commercial smallholder farmers to improve their dietary diversity and household consumption	<ul style="list-style-type: none"> - Promote public agricultural support services, agricultural research, smallholder irrigation development, agriculture marketing and value chains - Strengthen capacity and M&E 	Implemented in 157 <i>woredas</i> (districts) selected from seven national regional states: Oromia, Amhara, SNNPR and Tigray, Gambella, Benishangul Gumuz, Hareri and Dire Dawa.
The Small and Micro Irrigation Support Project (SMIS) (2014–2019) to support the GoE through the MoA with the implementation of the adopted Small-Scale Irrigation Capacity Building Strategy	<ul style="list-style-type: none"> - Develop and promote micro and small-scale irrigation capacity - Develop the capacity of agricultural technical vocational education and training colleges 	Funded by the Government of Canada and the Government of the Netherlands, implemented in Tigray, Amhara, Oromia, and SNNPR
Small-scale irrigation technology promotion projects		
The Growth through Nutrition (GTN) (2016–2021) project by Save the Children to improve the nutritional status of women and young children	<ul style="list-style-type: none"> - Deliver nutrition-sensitive livelihoods and agricultural activities, and social and behavior-changing communications - Promote quality nutrition services and water, sanitation, and hygiene (WASH) - Strengthen capacity and multi-sectoral coordination 	Five-year flagship multi-sectoral nutrition and WASH project was implemented in the Amhara, Oromia, SNNPR, and Tigray regions
The Nutrition-Sensitive Agriculture Project (NSAP) (2015–2023) aims to improve mothers' and infants' food and nutrition security	<ul style="list-style-type: none"> - Improve nutrition-sensitive agriculture, nutrition practices, and healthcare - Strengthen multi-sectoral coordination for nutrition security 	Commissioned by the German Federal Ministry for Economic Cooperation and Development, implemented in Amhara and Tigray regions

Continued >

Table 1. An overview of irrigation projects reviewed. (continued)

Project and objective	Key activities	Location, funding sources
The Water for Food Security, Women's Empowerment, and Environmental Protection (SWEEP) project by CARE Ethiopia to improve the food security and resiliency of chronically food-insecure households, especially rural women	<ul style="list-style-type: none"> - Promote social analysis and action, village savings and loan associations, demand-driven, women-focused, and community-managed approach - Promote community-managed technologies, participatory planning, M&E, cost sharing, partnerships, and adaptation 	Commissioned by the Australian Development Cooperation and implemented in East and West Belesa <i>woredas</i> of the central Gondar zone
Sustainable Environment and Development Action (SEDA) designs and implements life-changing programs and livelihood schemes that alleviate environmental degradation, climate change risks, and deepening poverty to ensure holistic sustainable development	<ul style="list-style-type: none"> - Enhance environmental education, conservation, and rehabilitation - Enhance food and livelihood security - Build capacity and social development of communities, mainly women - Support rural community economic and enterprise development 	Funded by multiple funding agencies and operates in the Ethiopian Central Rift Valley of Oromia National Regional State: i) Adamiyulu Jido-Kombolcha, Dugda, and Bora districts of East Shoa Zone; and ii) Ziway Dugda district of Arsi Zone
Component 1 of the Integrated Shallow Groundwater Irrigation Development (ISGID) project, implemented by the Ethiopian Agricultural Transformation Agency (ATA), to enhance smallholder farmers' access to groundwater-based irrigation to increase the production and productivity of vegetables, field crops and fodder	<ul style="list-style-type: none"> - Map shallow groundwater - Promote business groups around shallow groundwater development, irrigation equipment supply chains and retailing, and high-value and nutrient-dense crop production and marketing 	Implemented by ATA in Oromia, Amhara, SNNPR, and Tigray regions
Component 2 of the ISGID project, implemented by iDE, to increase smallholder farmers' income using a market-based approach to promote manual well drilling and irrigation technologies	<ul style="list-style-type: none"> - Provide end-to-end services to farmers to capacitate well drilling groups with drilling techniques and enable them to run well drilling as a profitable business 	Commissioned by ATA, and implemented in, Oromia, Amhara, SNNPR, and Tigray regions

Data Collection

Primary and secondary data were collected to identify the institutional rules, roles, and capacities at four levels that influenced gendered outcomes of irrigation interventions, and the approaches, governance mechanisms, and activities adopted by projects to mainstream gender in these interventions (Table 2). Secondary data were collected from relevant documents on policy and projects and from analysis, strategy, and mainstreaming guidelines on gender.

Primary data were collected from key informant interviews (KIIs). For scheme- and micro-scale-based irrigation projects, informants were selected from irrigation projects or institutions supporting such development based on their knowledge of the gender-relevant project implementation processes and approaches. However, the method is limited to citing international literature about

gender mainstreaming, eight national gender policies and strategies in Ethiopia focusing on agriculture, five gender project guidelines/documents, and 11 key informant interviews.

Data Analysis

Data were analyzed through the coding and thematic analysis of primary and secondary qualitative data collected. A coding scheme was developed to capture the four-level institution's roles, rules, and capacities in gender-mainstreaming work. During the analysis, we evaluated the adoption of gender mainstreaming in three parts: approach, governance, and activities. Guided by the analytical framework presented, we analyzed how approaches, governance mechanisms, and project activities may interact with multi-level institutions and shape gendered outcomes of irrigation projects.

Table 2. An overview of the data.

Description
Key Informant Interviews (KIIs) with organizations supporting irrigation farmers in Meki Town
<ul style="list-style-type: none"> - Dugda Woreda Agriculture and Natural Resource Office - Meki Batu Fruit and Vegetable Grower's Cooperative Union
Small scheme-based irrigation projects
<i>Small and Micro Irrigation Support Project (SMIS) in Addis Ababa</i> <ul style="list-style-type: none"> - KII with a gender expert - Gender-responsive strategy and action plan - SMIS gender situation analysis
<i>Agricultural Growth Program (AGP II) in Addis Ababa</i> <ul style="list-style-type: none"> - KII with a gender expert - AGP II gender mainstreaming guideline
<i>Participatory Small-Scale Irrigation Development Program (PASIDP) in Addis Ababa</i> <ul style="list-style-type: none"> - KII with a gender and nutrition specialist - Gender-mainstreaming guideline
Small-scale irrigation technology promotion projects in Addis Ababa
<i>Component 1 of the Integrated Shallow Groundwater Irrigation Development (ISGID) project,</i> <ul style="list-style-type: none"> - KII with a gender expert
<i>Component 2 of the ISGID project,</i> <ul style="list-style-type: none"> - KII with a gender expert
<i>Water for Food Security, Women's Empowerment, and Environmental Protection (SWEEP) project</i> <ul style="list-style-type: none"> - KII with a learning, design and measurement specialist
<i>Growth through Nutrition (GTN) program in Addis Ababa</i> <ul style="list-style-type: none"> - KII with a gender specialist
<i>Sustainable Environment and Development Action (SEDA) in Meki town</i> <ul style="list-style-type: none"> - KII with the project coordinator
<i>Nutrition-Sensitive Agriculture Project (NSAP) in Addis Ababa</i> <ul style="list-style-type: none"> - KII with a food and nutrition security officer - Project document
Policy documents from the government <ul style="list-style-type: none"> - National Policy on Ethiopian Women (TGoE 1993) - Ethiopian Federal Civil Servants Proclamation (Revised), Proclamation No. 1064/2017 (FDRE 2017) - National Gender Mainstreaming Guideline in Agriculture Sector of Ethiopia (MoA 2020) - National Smallholder Irrigation and Drainage Strategy (MoANR, MoWIE and ATA 2016) - Proclamation of the Constitution of the Federal Democratic Republic of Ethiopia (FDRE 1995) - Ethiopia Rural Land Administration and Land Use Proclamation No. 456/2005 (FDRE 2005) - Gender Equality Strategy for Ethiopia's Agriculture Sector (MoANR 2017) - Realizing the Potential of Household Irrigation in Ethiopia (MoA and ATA 2015) - Agricultural Extension Strategy of Ethiopia (MoANR and ATA 2017) - Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia, Proclamation No. 916/2015 (FDRE 2015)

Results

Overall Multi-Level Institutional Factors in Irrigation Projects in Ethiopia

In this section, we share the findings on overall

institutional settings in irrigation projects in Ethiopia. Nine institutional setting groups based on the interplay between multi-level institutions are presented in Table 3.

Table 3. An overview of multi-level institutions in irrigation development projects in Ethiopia.

Rule	Role	Capacity
Institutional structures and approaches to gender		
<ul style="list-style-type: none"> - Embed equality issues in policies, strategies, and institutional structures, M&E (<i>state</i>) 	<ul style="list-style-type: none"> - The Women's and Social Affairs Directorate of the Ministry of Agriculture develops and implements a gender-mainstreaming guideline and strategy and provides gender-related support to projects (<i>state</i>) 	<ul style="list-style-type: none"> - Limited budget for raising awareness about gender policies and strategies (<i>state</i>) - Inadequate accountability and information management systems (<i>state</i>)
Access to and control over land and water		
<ul style="list-style-type: none"> - Grant equal land rights and create a joint land certificate program (<i>state</i>) - Design simple, user-friendly schemes to enhance access to water for women (<i>state</i>) 	<ul style="list-style-type: none"> - MoA implements policies on land and water for small-scale irrigation (<i>state</i>) 	<ul style="list-style-type: none"> - Limited M&E system to monitor the effective implementation of the land use and control rules (<i>state</i>)
Participation in and benefit from development and the public sphere		
<ul style="list-style-type: none"> - Grant equal rights to participate in all spheres of development, public function, and decision-making, as well as equal recruitment opportunities and benefits (<i>state</i>) - Assume that men and women have equal status and benefit from any intervention and irrigation infrastructure (<i>market</i>) 	<ul style="list-style-type: none"> - GoE formulates and implements gender -sensitive policies and programs that recognize and provide legal and gender equality initiatives (<i>state</i>) - Consulting firms design and construct schemes and hire daily labor for managing schemes (<i>market</i>) 	<ul style="list-style-type: none"> - Limited budget to raise awareness about policies, train non-gender experts and implement gender activities (<i>state</i>) - Limited understanding of gendered differences in preferences, needs, and access to irrigation technology and infrastructure (<i>market</i>)
Participation in Irrigation water user associations (IWUAs)		
<ul style="list-style-type: none"> - IWUA and cooperative membership is contingent on land ownership (<i>community</i>) - Prescribes at least 30% of women taking leadership roles in IWUAs (<i>state</i>) - Women exposed to the public sphere are perceived as uncultured (<i>community</i>) 	<ul style="list-style-type: none"> - IWUAs provide irrigation water, related scheme resources, services, and benefits to their members (<i>community</i>) - IWUAs act as an entry point to reach farmers (<i>community</i>) 	<ul style="list-style-type: none"> - Limited budget to raise awareness about policies (<i>state and community</i>) - Limited capacities to participate as members and leaders (<i>household</i>)

Continued >

Table 3. An overview of multi-level institutions in irrigation development projects in Ethiopia. (continued)

Rule	Role	Capacity
Intra-household gender dynamics		
<ul style="list-style-type: none"> - Irrigation, farming, mechanical work, decision-making, control of valuable assets, and engaging in rewarding and collective activities are perceived as primary activities for men (<i>community</i>) - Bias against the education value for women (<i>community and household</i>) - Women's primary roles are implicitly assumed to be as mothers and wives (<i>household</i>) 	<ul style="list-style-type: none"> - Women are responsible for all domestic activities, backyard cultivation, and farm activities (<i>household</i>) - Men dominate farming, marketing, and decision-making around high-value market assets such as inputs and technologies (<i>household</i>) 	<ul style="list-style-type: none"> - Limited women's participation in household- and IWUA-related decision-making and control over harvests and bargaining power (<i>household and community</i>) - Subordinate position for women (<i>household and community</i>) - Risk-averse nature, illiteracy, restricted mobility, low self-esteem, and limited access to resources (<i>household</i>)
Access to irrigation technologies		
<ul style="list-style-type: none"> - Private-sector actors assume that a one-size-fits-all model of irrigation serves men and women equally (<i>market</i>) 	<ul style="list-style-type: none"> - MoA formulates and implements policies on irrigation technologies (<i>state</i>) - Private-sector institutions participate in manufacturing, operating, maintaining, and disseminating technologies (<i>market</i>) 	<ul style="list-style-type: none"> - Limited gender-disaggregated data on technology needs (<i>state</i>) - Limited number of available technologies that meet women's needs (<i>market</i>) - Limited understanding of gender inclusion and mainstreaming to develop women-friendly services and technologies (<i>community</i>)
Access to extension services		
<ul style="list-style-type: none"> - Grant equal access to extension services (<i>state</i>) - Development agents assume everyone has equal access to and benefit from extension services (<i>community</i>) - Implementing gender-related activity is the responsibility of gender-focal people (<i>community</i>) - It is considered inappropriate for women to network with boys and men outside the home (<i>household</i>) 	<ul style="list-style-type: none"> - Development agents and extension agents are responsible for implementing gender-related project activities (<i>community</i>) - Gender activities are add-on responsibilities for development agents and extension agents (<i>community</i>) 	<ul style="list-style-type: none"> - Lack of a system to hold non-gender experts accountable for gender work (<i>state and community</i>) - Extension workers (who are mostly men) prefer to work with men farmers (<i>community</i>)
Access to finance		
<ul style="list-style-type: none"> - Bureaucratic processes make it challenging to obtain informal credit services (<i>market</i>) - Men and women need to show up and sign a loan contract (<i>market</i>) 	<ul style="list-style-type: none"> - Financial institutions and NGOs provide loans to smallholder farmers (<i>market</i>) - Village Savings and Loan Associations (VSLAs) provide opportunities for networking and leadership (<i>market</i>) 	<ul style="list-style-type: none"> - Limited availability of women-friendly loans (<i>market</i>) - Small loans, short loan periods, and lack of loans at required times (<i>market</i>)
Access to input and output markets		
<ul style="list-style-type: none"> - The brokers set the market prices (<i>market</i>) - Private sector actors assume that uniform input delivery systems serve men and women equally (<i>market</i>) 	<ul style="list-style-type: none"> - Markets provide platforms for men and women farmers to buy inputs and sell products (<i>market</i>) - Private providers, cooperatives, unions, and agricultural offices supply inputs and services (<i>market</i>) 	<ul style="list-style-type: none"> - Absence of market links to access output markets equally (<i>market</i>) - Limited access to inputs from the private sector in big or zonal capital towns due to restricted mobility (<i>household</i>)

Institutional structures and approaches to gender mainstreaming. Synthesized insights from the policy documents review indicate that to achieve gender equality, GoE must enforce state-level rules that promote capacity development, gender-sensitive approaches and quota systems, and water and land rights. To ensure equitable development for all men and women, the National Policy on Ethiopian Women (TGoE 1993) prescribes creating an appropriate institutional structure to institutionalize women's political, economic, and social rights. The Gender Equality Strategy for Ethiopia's Agriculture Sector (MoANR 2017) addresses key systemic barriers by promoting gender-transformative, rights-based, and capacity development for individuals and systems. It also recognizes the importance of indigenous knowledge for understanding the causes and consequences of inequalities and for challenging and transforming power relationships. The National Gender Mainstreaming Guideline in Agriculture Sector of Ethiopia (MoA 2020) focuses on developing the capacity of systems and individuals, including implementing a gender-responsive M&E system and providing gender mainstreaming in capacity development for staff to increase accountability.

MoA has established the Women's and Social Affairs Directorate to enforce these rules. The directorate provides general guidance, advice, and technical support to gender and non-gender experts at other directorates, regional bureaus, and *woreda* offices responsible for mainstreaming gender. It coordinates and integrates the Gender Equality Strategy for Ethiopia's Agriculture Sector (MoANR 2017) at different levels. Accordingly, the Women's and Social Affairs Directorate of MoA developed gender-mainstreaming guidelines and gender-equality strategies for Ethiopia's agriculture sector to embed equality issues into policies, strategies, institutional structures, and M&E systems at the state level. However, several challenges have made implementing these policies ineffective. For instance, the budget is limited, the accountability system is inadequate, and a gender information management system is not yet in place. The lack of financial resources is particularly problematic because, without sufficient funds to provide training on gender, project leaders will have a limited understanding of gender policies and strategies.

Access to and control over land and water. The Constitution of the Federal Democratic Republic of Ethiopia (FDRE 1995) and the Rural Land Administration and Land Use Proclamation No. 456/2005 (FDRE 2005) grant women and men equal rights to use, transfer, administrate, and control land. The constitution also prescribes equal treatment in the inheritance of property. To emphasize equity and joint ownership, GoE introduced a joint land certificate program where landholding certificates are issued in the name of all stakeholders, including spouses. A key informant at the *woreda* level described this in his own words:

"Since I am from a farming family, I know how decisions are made regarding land. Men used to do anything with the land without their wives' knowledge. They used to rent, or crop share their lands without their wives' knowledge or agreement. However, no one will rent it after the joint certification program, if wives do not sign the land renting agreement with their husbands. This made them participate in decisions made over the land to some extent."

Agriculture, natural resource and horticulture expert from the *Woreda* Agriculture Office

The purpose is to raise awareness about women's rights, avoid discriminatory laws, and ensure that women can participate as members of land administration committees. MoA is responsible for implementing policies on land administration and use. However, competing customary land tenure systems among households and communities have limited the Ministry's effectiveness in implementing these policies. The result is that girls and women are less likely to inherit land from their parents than boys and men. Furthermore, women landowners with limited access to labor and finances are less likely to benefit from the land they rent, as they contract out for sharecropping, or use it to grow low-value crops. To give women better access to water, state rules require schemes to be simple and user-friendly.

Participation in and benefit from development and the public sphere. To ensure that women participate in and benefit from the development and public spheres, GoE has implemented gender-sensitive policies and programs that recognize and provide legal and gender equality initiatives. The Constitution of the Federal Democratic Republic of Ethiopia (FDRE 1995) grants women equal rights with men to participate in any development sphere and decision-making process. The revised Ethiopian Federal Civil Servants Proclamation (FDRE 2017) grants women rights to equal pay, equal work, and equal access to recruitment and training in the public sector. Ethiopia's Agricultural Extension Strategy (MoANR and ATA 2017) was developed to give women and youth equal access to such services. Article 10.3 of Proclamation No. 916/2015 (FDRE 2015) reinforces the strategy by including a statement requiring GoE ministries to address women's and youth affairs when preparing all policies, laws, and development programs and projects.

At the market level, private sector actors assume that men and women benefit equally from any intervention. However, they fail to recognize the many differences that influence the participation of women—differences in status, privilege, access to resources, participation in decision-making, need for irrigation technology, and infrastructure. The actors also assume that women contribute less to designing and constructing irrigation schemes, so they conclude that women should be paid less.

Among households, views such as the public sphere is the men's domain, a woman should seek permission from her husband to go out in public, or a girl should marry rather than further her education are commonly and strongly held beliefs. These beliefs restrict women's ability to participate in any project. Yet, another problem is women's lack of time because local norms often limit them to productive and reproductive roles at home. A female participant in the focus group discussion (FGD) expressed her views about women's participation in the public sphere:

"The main challenge is [that] husbands, even the literate ones, are unwilling to send their wives to be a member of cooperatives/associations and attend meetings/training. They said, 'I am a member, and you don't need to be,' 'I attended the meeting, why you?,' 'What I have is yours'. These views are dominant. A norm also considers public gatherings as men's role."

A female participant of the FGD

Capacity between states, communities, and households, including rules at the household level, usually discourages women from participating in project activities and enjoying any benefits equally with men. There are limited budgets at the state and community levels to raise awareness about policies, train experts, and implement gender activities. The result is that actors implementing irrigation project activities have a limited understanding of how to work with women. A key informant offered the following opinion about this issue:

"There is limited human capacity at a lower level to effectively implement gender activities. In most local-level offices, no gender-focal person is assigned for gender activity. Gender is an add-on responsibility that receives little attention. Even if a focal person is assigned, the person may not have the right knowledge, concepts and skills to effectively implement gender programs. Sometimes, the position is considered a gap filler, where demoted employees will be assigned. Further, lack of interest in the subject and limited availability of budget poses a challenge to cascade gender programs and practically implement them."

A gender expert in a small scheme-based irrigation project

At the household level, several issues limit or prevent women from participating in project activities. They include the lack of time available because of women's large workload, restrictions on mobility, and the widespread bias against women getting educated. According to one key informant:

"Market agents for marketing irrigation technologies are young men and women between the ages of 15 and 29 who completed at least Grade 8 and have good

communication skills. Participation of young women is lower due to restricted mobility and is driven by lack of confidence to travel alone long distances in fear of gender-based violence and workload."

A gender expert key informant from projects that promote small-scale and micro irrigation

Participation in irrigation water user associations (IWUAs).

IWUAs and cooperatives in communities are entry points for projects to reach farmers. They provide members with irrigation water, related scheme resources, services, and benefits. Currently, membership is based on household headship and land ownership and is restricted to one person per land certificate. A key informant described this as follows:

"The bylaws of the cooperatives prescribe that only one person from a household, usually the head of the house, can become a cooperative member. However, spouses are normally invited for training and demonstrations. Despite that participation, only the member has the right to vote."

A gender expert in a small, scheme-based irrigation project

However, the criteria for getting a land certificate tend to favor men, as only 25% of household heads in Ethiopia are women. Coupled with the norm of patrilineal inheritance, both rules and capacities among households also limit the ability of women to participate fully as members and in leadership positions of IWUAs and cooperatives.

Both authority and responsibility are distributed unfairly, which leaves women with little time for participation. Women and girls are regarded as unfit to network with men and boys, which limits their ability to move around in public. Women also have a much higher illiteracy rate, and many suffer from low self-esteem. Moreover, women have limited knowledge of their roles, rights, and responsibilities as members and leaders. All these factors limit or prevent women from participating in these institutions. The result is that women have limited access to inputs, information, and services, such as training and extension services from these institutions, and limited participation in decision-making processes.

Intra-household gender dynamics. Sociocultural norms are the most proximate determinants of men's and women's place and status. In many parts of Ethiopia, men and women assume that men perform the real and more challenging jobs and oversee every privilege in the household. This includes being household heads, being regarded as socially legitimate community figures, and dominating decisions concerning land and high-value resources.

In contrast, women in many rural societies are assumed to be primarily mothers and housewives. In line with these

assumptions, women are overburdened, which means their contribution to agriculture is less valued, and their participation in decision-making is limited. Women tend to dominate activities based at home, for which they get little support from their spouses. A female participant of the FGD described:

“Women are responsible for almost all domestic activities and support men in farming. Men never support women in domestic work. Sometimes, men fetch water and firewood. Boys often think like their fathers that domestic work is for women and girls. The girl child always supports her mother. It is the role that God assigns to us. We do not see a change in our life. We are always the same and remain the same.”

A female participant of the FGD

However, because any productive work women do is considered an extension of their primary function, their contribution usually goes unnoticed. As a result, it is taken for granted that farmers are always men. Women also have limited participation in making decisions for many reasons: their subordinate status, their heavy workload, the lower value given to women's work, the biased view against women's education, and their inexperience in practicing and developing leadership skills. Among women, household heads have more liberty to make decisions. But for those in male-headed households, at best, they are considered joint decision-makers. At the same time, men tend to dominate decisions around high-value market assets, such as inputs and technologies.

Access to irrigation technologies. At the household level, men and women have different needs for irrigation technologies, so they have different preferences in crop types and access to land and water resources and markets. Acknowledging this, policies on irrigation development and management have highlighted the importance of prioritizing gender considerations and reaching women to make sure they are participating in and benefiting from irrigation projects equitably. This is precisely what the National Smallholder Irrigation and Drainage Strategy (MoANR, MoWIE and ATA 2016) and the Realizing the Potential of Household Irrigation in Ethiopia Strategy (MoA and ATA 2015) prescribe. Policies also require evidence-based and data-driven research on gender and irrigation to collate data on women's challenges. Yet, such data and research are scant. For example, the Gender Equality Strategy for Ethiopia's Agriculture Sector (MoANR 2017) and the National Gender Mainstreaming Guideline in Agriculture Sector of Ethiopia (MoA 2020) have sections on small-scale irrigation and micro irrigation. However, gender issues are discussed mainly in the guidelines for rainfed farming. Irrigated farming is similar, except in a few cases, such as the irrigation technologies that include gender equality in scheme-based and irrigation technology promotion projects. Also, the number

of women participating in the manufacturing and marketing of rope and washer pumps is relatively low because of the assumption that mechanical work is for men and the restrictions on where women can work.

However, the private sector actors' ability and intrahousehold gender dynamics are primarily what determine whether men and women farmers take up and use irrigation technologies equitably. Women farmers cannot do so because the private sector's one-size-fits-all model ignores the different needs, priorities, and concerns of men and women.

There is limited gender-differentiated data and information on irrigation technology preferences, needs, and practices, so technology suppliers often use a uniform design. For example, women prefer technologies that can save time and labor and provide alternative water sources for homestead farming/backyard gardening. A key informant described it as follows:

“One of the challenges for women to use motor pumps for irrigation is that the pumps are located near water sources far from residential areas. Further, the timing for watering is either in the morning or late afternoon, peak hours for domestic work and not convenient for most women.”

A key informant from a project that promotes small-scale irrigation technologies

However, the number and type of technologies that meet women's needs in the market, at farmer training centers, or in the plots managed by model farmers are inadequate. Furthermore, poverty, women's position within the household and the community, and their limited access to natural and financial resources make it difficult for women to access and adopt irrigation technologies equitably.

However, even though it is relatively small, backyard cultivation allows women to make decisions, try new technologies, manage their plots, and control the income generated from low-value garden products. Backyard cultivation is considered a woman's domain because it is done at home, and it is easier for them to care for small gardens near their homesteads. Most women learn how to manage their vegetable plots from their mothers and grandmothers.

Access to extension services. Ethiopia's Agricultural Extension Strategy (MoANR and ATA 2017) recognizes gender mainstreaming as a critical approach to gender equality. At the community level, development agents and extension workers implement project activities on the ground. They are responsible for developing the capacity of farmers by, for example, introducing new technologies and organizing field days, demonstration trials, and other agricultural events. However, these experts are limited in what they can do to develop, promote, and disseminate women-friendly services and technologies. With no access

to training that focuses on gender, gender analysis, or gender mainstreaming, they do not know how to provide inclusive extension services. They lack an understanding of the different powers, needs, and interests of men and women farmers and are unable to conduct a gender analysis while developing services and technologies. As such, they use uniform content, access, and methodology, which results in an extension service offering that is less sensitive to the daily reality for most women.

A weak accountability system and the limited number of female extension workers only exacerbate the problem. Gender mainstreaming activities are not valued; it is an 'add-on' responsibility for development agents and extension workers, and there is no system to hold them accountable for gender work. Most extension workers are men, so they tend to favor working with male farmers because of the community perception that females should remain in the household and not socialize with boys or men. However, there are attempts to change this perception. Given that there are few female extension workers, cultural restrictions on contact between men and women negatively affect women's access to extension services. The country's Agricultural Extension Strategy (MoANR and ATA 2017) also shows that sociocultural constraints, poor capacity for planning and implementing gender programs, and lack of gender-disaggregated data have created a bottleneck for mainstreaming gender.

Access to finance. Financial institutions granting loans for irrigation technologies and farm inputs include farmers' cooperative unions (located in *kebeles*²), microfinance institutions (MFIs), savings and credit cooperatives, VSLAs and NGOs. Each institution has its procedure for granting loans. Savings and credit cooperatives provide affordable credit for low-income farmers. VSLAs provide a safe space for women to access loans for farming because they are a self-selected, informal, small group that helps them pool their money into a fund from which members can borrow. They also offer women the opportunity to network and develop leadership skills. According to a key informant from Ziway Dugda *woreda*:

"In villages, there are self-help groups to encourage women to save money and ease access to credit to support engagement in income-generating activities (IGAs). This has a dual benefit as it enhances IGA opportunities and serves as a platform where women come together and discuss their social issues."

A key informant from the *woreda* office

However, the problems with VSLAs are inadequate loans, short loan periods, and a lack of loans at critical times. Some groups prefer specific financial sources over others, depending on the rules and procedures for granting loans. To promote equitable access to loans and ensure repayment, MFIs have adopted approaches requiring

spouses to sign a loan contract for buying irrigation technologies. However, rules and capacities in markets and households often make it difficult for women to do so. At the market level, the rules of MFIs, which require collateral such as land certificates, command high interest rates, demand short return periods, and have a very bureaucratic process, hinder women's access to finance. There are also limited or no women-friendly loan services. Among households, women find it hard to access loans because they are anxious about not being able to meet the criteria and/or pay back the loan. They also have limited access to trusted credit information sources and have smaller plots of land to take out loans against.

Access to input and output markets. Women usually buy fertilizers and certified seeds from cooperatives and unions. They also buy seeds for some vegetables and pesticides from agriculture offices. Input suppliers assume a uniform input supply system that serves men and women equally. However, the rules and capacities among households often restrict or prevent women from accessing input and output markets. Women with restrictions on where to go have limited access to input suppliers in big towns. Furthermore, economic poverty, limited capacity to participate in sales decisions, a lack of bargaining power, and restricted access to information on market prices and input quality all lead to low rates of women participating in markets.

Gender Mainstreaming Strategies in Irrigation Projects in Ethiopia

Rule-driven Participation Strategy in Small Scheme-based Irrigation Projects

Small, scheme-based irrigation projects use a rule-driven participation strategy for mainstreaming gender. This strategy emphasizes policies and rules for equal rights and opportunities to participate in development and decision-making and to develop the capacity of both individuals and institutions. In this study, the three projects adopting a rule-driven participation strategy included the Participatory Small-Scale Irrigation Development Program II (PASIDP II) (2016–2024), the Agricultural Growth Program (AGP II), and the Small and Micro Irrigation Support Project (SMIS) (2014–2019). These projects used three governance structures to mainstream gender: internalization, participation, and capacity development.

Internalization institutionalizes the state's gender policies and guidelines to show political commitment, guide mainstreaming, and create sensitivity among individuals and organizations to shift gender-related attitudes, values, and cultures. Across the three projects, specific activities were carried out to ensure internalization. The activities entail conducting a gender analysis to

² *Kebele* is the smallest administrative unit of Ethiopia.

understand the causes of gender inequality, develop guidelines, and allocate human and financial resources to gender mainstreaming. To recognize and address gender concerns in all operations and to support non-gender experts at all levels, at least one gender expert should be recruited nationally. Capacity development for non-gender experts provides technical support, such as developing gender-inclusive irrigation water management and extension advisory services, gender-sensitive data collection and analysis, and gender-responsive planning, monitoring, and evaluation.

Participation reflects the approaches projects use to engage women in small irrigation schemes. Participatory approaches incorporate the concerns and experiences of women and men. The three projects use different mechanisms to ensure the participation of women and men. Project implementers use participatory approaches to incorporate the concerns and experiences of women and men during site identification, studies, and design of small-scale irrigation schemes. They held separate discussions with men and women farmers and gave wage employment priority for landless and unemployed women and youth in the construction of the schemes. Furthermore, they used a quota system so that each group had an optimal ratio of females to males. They tried to ensure that the venue and timing of meetings, training, or other capacity development events suited female farmers. To enhance the participation of women and youth in male-headed households in training sessions, demonstrations, and demonstration sites, AGP II and PASIDEP II projects adopted gender-responsive approaches such as ‘couple’s training’ or ‘family training’.

Providing women opportunities to participate in capacity development events without addressing the power imbalance and heavy workload at household levels will not bring change. In recognition, the SMIS project adopted a ‘gender family model’ – a gender-transformative approach to reshape gender relations in households and communities that hinder women from participating. The ‘gender family model’ engages all family members to positively influence gender relations by reducing women’s workload, enhancing their participation in the public sphere or development, and enhancing their control over assets to improve gender relations. In this approach, men and boys become champions and allies of women to empower them and ensure equitable gender relations between their organizations, partner organizations, and the communities they serve.

Capacity development is the investment that projects make to bring about shifts in attitudes, values, and cultures, to create a gender-responsive organizational culture, and to implement and respond to gender gaps in communities. To enhance the participation of women in IWUAs, the three projects trained female IWUA members to build their confidence and raise awareness about the roles and responsibilities of being a member or leader. The SMIS project supported women in

establishing special interest groups (or women sub-committees) within the IWUAs to share their needs and concerns in small groups and practice effective leadership. All three projects also trained development agents and extension workers to sensitize them on gender and equip them with the knowledge and skills to work with women farmers.

These governance structures show the predominant influence of three institutional groups on the controversial outcomes of the strategy of gender mainstreaming, i.e., new institutional structures that apply gender analysis, the necessary guidelines, tools, and frameworks, and hiring of at least one gender expert to coordinate activities that internalize gender into irrigation projects. However, the limited commitment and knowledge of gender experts, a weak accountability system, the high turnover of extension workers and development agents, and the lack of funds for a gender component all pose major challenges to effectively implementing the guideline.

When institutions adopt various methods, such as a quota system and participatory, gender-responsive, and transformative approaches at different levels, women can actively participate in projects and the public sphere and benefit from development. However, without the human and financial capital needed to do so, most projects end up focusing on providing equal opportunities for men and women to participate without addressing the underlying social norms that cause unequal division of labor and power in households and the gender stereotypes that do not allow women to effectively participate in the first place.

Finally, women get better leadership training through improved access to extension services and participation in IWUAs. However, providing women with opportunities to participate in such events without addressing the underlying challenges they face every day, such as imbalances in power and workloads in their households, is unlikely to bring about change. Furthermore, insufficient budgets prevent project implementers from following up on changes in gender relations at the household level and addressing the root causes of inequality by encouraging households to share workloads and power equitably.

Role-based Strategy in Small-Scale Irrigation Technology Promotion Projects

Small-scale irrigation promotion projects use a role-based strategy to help women participate and receive benefits. This strategy emphasizes gender equality by challenging household norms and encourages men and women to distribute power and work more evenly; it also develops the capacity of extension workers, project partners, and individual farmers. Such projects use three governance structures for gender equality: internalization, transformation, and capacity development. The six projects that adopt this strategy include Component 1 of the Integrated Shallow Groundwater Irrigation Development (ISGID) project implemented by ATA,

Component 2 of ISGID implemented by iDE, Water for Food Security, Women's Empowerment, and Environmental Protection (SWEEP), Growth through Nutrition (GTN), Sustainable Environment and Development Action (SEDA), and Nutrition-Sensitive Agriculture Project (NSAP).

Internalization institutionalizes gender by conducting gender analysis, developing a strategy for integrating gender, hiring a gender expert, documenting changes in gender relations, taking mitigation measures, and promoting and scaling positive outcomes. Of the six projects, SWEEP and GTN institutionalize gender by conducting a gender analysis and developing a gender integration strategy. In addition, for the GTN project, a gender expert is hired. The gender expert is responsible for documenting changes in gender relations at all levels to identify adverse outcomes, carry out mitigation measures, and promote and scale positive outcomes.

Transformation refers to gender-transformative approaches that address power asymmetries and ensure equitable participation. Specifically, the WSF project applied the social analysis and action (SAA) methodology, where informal channels, such as a coffee ceremony, are used for discussions and exchanging ideas about power and labor imbalances. Furthermore, NSAP, GTN, and SWEEP engaged men and boys to improve gender relations. NSAP developed a comprehensive social and behavior change communication (SBCC) strategy. The GTN project also built networks and solidarity among women to improve their leadership and participation skills and access to information and to encourage them to effectively articulate their social and economic needs.

Capacity development refers to investing in developing the ability of men and women farmers and experts to implement gender interventions on the ground. For example, the WSF and GTN projects invest in the capacity development of agricultural extension workers and development agents so that they can promote the agricultural work of women farmers or 'female model farmers'. Promoting these model farmers aims to recognize women's contribution to agriculture, increase their representation in various platforms, and improve their access to technologies. Also, the WSF project trains government partner organizations on SAA tools that help

justify and promote women's mobility, participation, access to information, and leadership. In addition, the project trains female farmers, focusing on two areas. The first focuses on raising awareness about their rights in critical laws, such as family law and legislation about gender equality, property rights, and the rights of persons with disabilities. The second focuses on leadership to build self-confidence and women's ability to speak in public.

This trio of governance structures shows how various institutional groups influence the controversial outcomes of the role-based strategy of gender mainstreaming. First, participating in and benefiting from development and the public sphere shapes the internalizing of innovative approaches to address household barriers, such as imbalances in power and workload. Few projects have the resources to institutionalize gender by conducting gender analysis, developing a strategy for integrating gender, hiring a gender expert, and documenting changes in gender relations at all levels. In most projects, gender is not institutionalized, so such activities are given less value and priority. Although GoE encourages efforts to generate knowledge on gender and irrigation, the impacts of adopting a specific transformative approach to gender relations are limited.

Second, intrahousehold gender dynamics influence the ability of projects to adopt various approaches to transform gender relations within households and achieve equity in all spheres, including taking up and using technology. These approaches include training women on leadership, public speaking, and building networks, which will help them boost their solidarity with other women and their self-confidence. Finally, the investments in equipping extension workers with the knowledge to effectively work with women beyond mere representation will shape access to technologies for women and thus improve their access to extension services. Some projects train extension workers and experts from partner organizations to engage more women. Others provide technologies for resource-poor women or use a quota system to ensure more women can participate in training. However, projects usually do not have enough funding for such investments in extension workers to improve the quality of their work with women stakeholders.

Discussion

Reflecting upon the two strategies shows that when implemented correctly, gender mainstreaming can be transformative. Transformative gender mainstreaming (TGM) can be achieved when the process of transforming social and gender norms (rules) and practices (roles) takes place and yields the outcomes of abilities to continue the changes (capacities). Such gender mainstreaming helps households to share labor and power equitably, raise women's (and men's) awareness of their rights and their ability to exercise their rights, and increase their participation in the public sphere and their voices in decisions. It also changes the common perception of men as farmers by valuing the contribution of women in agriculture, discontinuing discriminatory cooperative bylaws (that favored household heads' participation in the public and development sphere, including IWUAs), and ensuring women farmers have equal access to extension and financial services, and to input and output markets.

TGM must address the **discriminatory fundamental rules** and negative stereotypes that limit women's role in the domestic sphere, which restricts their participation in and benefits from irrigation projects. These include, for example, discriminatory rules that inhibit women from participating in IWUAs and benefitting from equal access to water on farms and to irrigation schemes' benefits (Lefore et al. 2017, 2019; van Koppen 2002). It also includes the community perception that women networking with boys and men from outside of their household is not a culturally acceptable practice. In households and communities, men are usually considered farmers and socially legitimate figures, while women are implicitly assumed to be primarily mothers and wives. The patrilineal customary land tenure system, the bias against women's education, and their limited social networks are challenges to increasing their participation in collective actions as equal members and leaders.

TGM must **redefine the critical roles** essential to driving the transformation process at the grassroots level. These roles include but are not limited to breaking the one-size-fits-all assumption to customize the irrigation interventions to gendered differences and preferences regarding needs and concerns, access to resources, and decision-making power. Male farmers report that they

favor technologies based on their potential to generate income. In contrast, women prefer multivalent ones, installed at or near the home, that are useful for domestic and productive purposes and are labor-saving (Nigussie et al. 2017; Theis et al. 2018a).

The role also facilitates changing IWUA membership criteria, regardless of the contingent on land ownership and household headship and unfavorable borrowing conditions that make it difficult for women to access credit. It is also essential to developing institutional structures for coordinating and monitoring gender mainstreaming, implementing responsive budgeting for gender experts to coordinate gender-related activities, and investing in training staff to raise awareness of the concepts of gender, the environment/agriculture (climate change) and gender mainstreaming in development plans, as well as gender analysis and gender-mainstreaming guidelines.

Finally, TGM must address the **institutional and individual capacity gaps** to continue the transformation process. At the institutional level, these include adopting participatory and gender-responsive approaches to understanding the needs, concerns, and issues women face before designing schemes and transforming the gender power imbalance and gender relationships that hinder women from participating. These also involve accountabilities of the grassroots system to design sound technical, social, and policy interventions, enhance gender information management, monitoring and evaluation, and manage gender-disaggregated data to track progress and inform policymakers and practitioners.

At the individual level, these capacities include the ability to jointly make decisions in the household for acquiring new technologies and to have control over land (which constrains their access to irrigation technologies). Project leaders must be gender sensitive and use appropriate gender-related tools and approaches to reach and work with women farmers while addressing the challenges that inhibit them from participating. They need to engage men and boys to positively influence gender relations, raise awareness among women about their rights, build networks and solidarity, and train women in leadership and public speaking.

Conclusions and Recommendations

Using a multi-level institutional framework, this study identified rule-driven participation and role-based strategies for mainstreaming gender in irrigation projects in Ethiopia. The **rule-driven strategy** is used by small scheme-based irrigation projects to achieve equal rights and access to individual and institutional development and decision-making. This strategy internalizes the state's gender policies and guidelines to show political commitment and create gender sensitivity among individuals and organizations. It also adopts various approaches to get more women farmers involved in designing, planning, and managing small scheme-based irrigation. It invests in training for individuals and institutions to bring about changes in attitudes, values, and cultures to build a better response to addressing gender gaps in communities.

The **role-based strategy** is employed by projects that promote small-scale irrigation technology to achieve gender equality through increasing women's participation in projects and enhancing the benefits they may receive. In this type of strategy, a gender analysis is carried out to understand the causes of gender inequality in irrigation technology access and use. Projects adopting this strategy use a gender-responsive and gender-transformative approach to balance power and workloads among households to enhance women's access to the benefits of irrigation technologies. In this strategy, investment in the capacity development of agricultural extension workers, development agents, and staff from government partner organizations is often used to tackle issues related to women's mobility, participation, access to information, and leadership.

Transformative gender mainstreaming (TGM) is embedded in institutions, and its effectiveness is influenced by historical, social, organizational, and individual factors. Institutions at multiple levels govern the gender division of labor and the gender distribution of resources, responsibilities, agencies, and power. Given these factors' complex and interrelated influences, we argue that using an institutional perspective geared toward TGM is critical. Analyzing rules, roles, and capacities at all levels allows institutions to develop a holistic and multi-level view of gender equality and mainstreaming. Such perspectives provide practitioners with insights about opportunities and barriers to gender equality at each level, the interconnections among barriers and opportunities, and areas where transformation may be needed.

The analysis provides several implications for TGM in irrigation development in Ethiopia. **First**, TGM should enact policy, create an institutional environment, and develop governance mechanisms for mainstreaming gender. This means establishing and maintaining a gender-information management system, which allows policymakers and practitioners to understand

the potential impacts of policies and interventions. This requires developing and implementing gender-transformative strategies, guidance, and mechanisms to meaningfully engage diverse women's groups in irrigation and agricultural value chains, supply chains, and governance.

Programs focusing on transforming gender relations with precise monitoring and evaluation (M&E) and accountability systems are needed. This also requires engaging and facilitating the existing multi-stakeholder dialogues (MSDs) at multiple levels to bring together private-sector actors, government, community-based organizations, and cooperatives to discuss the factors influencing the barriers to and opportunities for women from diverse social groups. MSDs help all actors to better understand formal and informal rules around irrigation so intervention plans can be improved to begin redressing unequal power dynamics. Partnerships among these actors also help create direct demand and supply links to ensure women from various social groups benefit from markets.

Second, TGM should enhance the accountability system and adoption of gender-transformative approaches to involve more women farmers in designing, planning, and management processes. The focus is on making institutions more effective by training individuals, improving accountability, and creating gender-responsive M&E systems. Ensuring gender equality in irrigation is critical to establishing organizational structures in government agencies and investing in capacity development for authorities, non-gender experts, IWUAs' and farmer associations' members and leaders, and private sector actors. Irrigation projects should enable these actors to use bottom-up, demand-driven, participatory, service-delivery approaches to identify topics, pilots, demonstrations, research-extension links, locations, and times to provide tailor-made services. This can only be achieved when sufficient resources and cross-sectoral training opportunities are available to the actors. Documenting the gender needs and priorities, gender inequality causes, and mechanisms addressing such inequality of diverse women groups will help policymakers, private sector actors, development agents, and extension workers make the most effective, informed decisions and practices.

Third, TGM should create a supportive institutional environment at the market, community, and household levels to encourage women farmers to invest in irrigation. There must be sufficient resources to implement gender-transformative mainstreaming to challenge the male-dominated hegemonic social structure and train self-selected households, as well as to follow up on the progress of the implementation and document the processes and changes. Facilitating changes in communities and households requires strengthening female leadership by training in assertiveness, public

speaking, conflict management and resolution, and building awareness of women's rights, roles, and responsibilities in IWUAs. It is necessary to mobilize and prioritize female extension workers and women farmers who could act as a 'frontline' technical resource. They would provide policy, technical, institutional, financial and market information, farmer collectives on irrigation, irrigated agricultural value chains, local service providers, and government policies. Addressing financial challenges can only be done by developing tailored and inclusive financial products and services, raising awareness about the various services, and helping women to become financially literate. Innovative financial modalities such as rent-to-own,³ layaway plans,⁴ forward financing with future production,⁵ and processing can all help improve access to finance.

Finally, TGM should apply an intersectional lens to develop impactful, tailored programs and interventions. This means applying an intersectional lens to understand how multiple layers of identities shape the preferences

of farmers in participation, technology, and the benefits they earn from irrigation projects to customize and bundle different interventions, innovations, and services that best serve diverse women's groups and enhance gender equality in access to resources and services. Gender-responsive subsidy programs can improve access for women to climate-resilient irrigation equipment, inputs, information, and financial and market services, and improve their understanding of financial management and the capacity and investment potential of women from diverse social groups.

Although this research report focuses on Ethiopia, gender mainstreaming is a global issue, and applying a multi-level institutional lens to understand it in irrigation development is broad. This report calls for further analysis of women's desire to be involved in irrigation. Follow-up research to assess what worked and did not work in irrigation-related interventions elsewhere in the world would be useful to generate an overview of the main components of TGM approaches across scales.

³ A rent-to-own agreement - a deal in which you commit to renting a property for a specific period, with the option of buying it before the lease runs out.

⁴ Layaway plans - a purchasing method by which a consumer places a deposit on an item to "lay it away" for later pickup when they return and pay the balance.

⁵ Forward financing with future production - a contract between two parties to buy or sell an asset at a specified price or enter a loan transaction at a future date.

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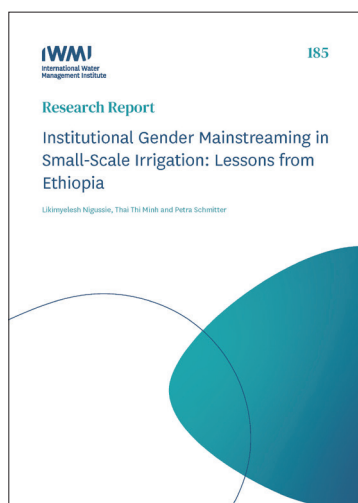
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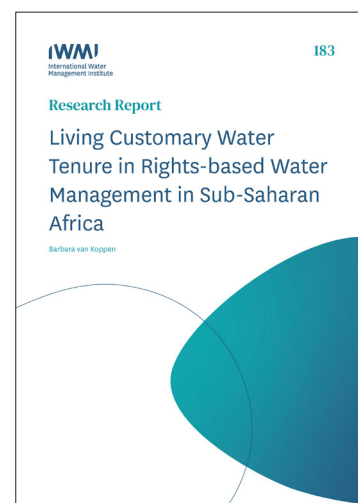
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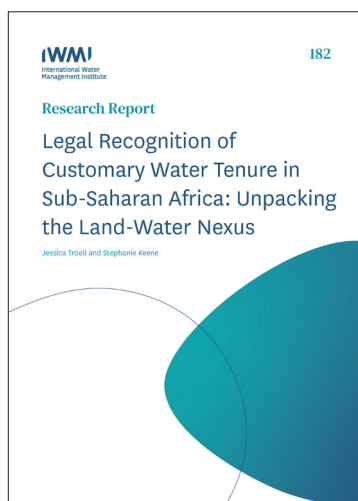
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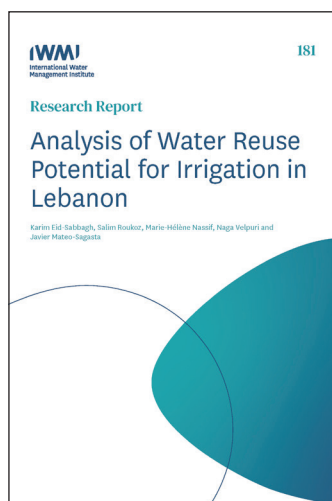
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