



## Feed the Future Innovation Lab for Small Scale Irrigation

# FARMER-LED IRRIGATION MULTI-STAKEHOLDER DIALOGUES:

Financing solutions for scaling sustainable and inclusive  
farmer-led irrigation in Ethiopia

Dagmawi Melaku

Thai Thi Minh

Petra Schmitter



October 2020

## Contents

|  |    |
|--|----|
| Contents.....  | 2  |
| INTRODUCTION.....  | 2  |
| HIGHLIGHTS .....   | 3  |
| <b>Irrigation policy review updates</b> .....                                      | 3  |
| <b>Financing gaps, ecosystem and risks</b> .....                                   | 4  |
| <b>Different financing models to FLI in East Africa</b> .....                      | 5  |
| <b>Contextual challenges and opportunities for financing FLI in Ethiopia</b> ..... | 8  |
| <b>Technologies for financing FLI</b> .....  | 9  |
| Reflection and closing .....   | 11 |
| APPENDIX - AGENDA .....  | 13 |

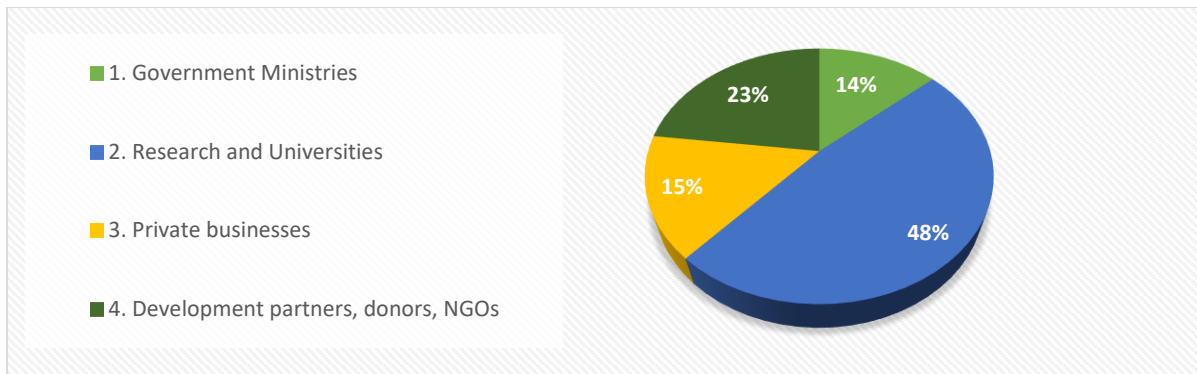
## INTRODUCTION

The Feed the Future Innovation Laboratory for Small-scale Irrigation (ILSSI) has addressed small-scale irrigation (SSI) challenges through facilitating multi-stakeholder engagement, dialogues and initiatives. ILSSI’s approach to facilitating Small Scale Irrigation Multi-stakeholder Dialogues (SSI-MSD) is to engage and interact with relevant, existing platforms to include, where feasible, sustainable SSI scaling and agricultural water management (AWM) agendas. Accordingly, in Ethiopia, the first SSI-MSD was co-organized by Agricultural Water Management-Task Force (AWM-TF), the Ministry of Agriculture and International Water Management Institute (IWMI) on February 22, 2020.

Access to credit or financing products is a critical determinant for irrigation technology adoption. The second SSI-MSD took place virtually on September 23, 2020 with the main theme *“Financing solutions for sustainable and inclusive farmer-led irrigation scaling,”* The session provided an interactive learning and collaboration space on financing for irrigation to help identify financing products that could help to accelerate access to SSI and agricultural water management solutions in Ethiopia. Hence, the objective of the dialogue was bringing together participants to:

- Share insights into challenges and opportunities in financing irrigation to benefit smallholder farmers in a sustainable and gender and youth-inclusive manner;
- Discuss emerging innovative financing solutions to enable farmer-led irrigation investment, building on efforts and initiatives from private and public sectors; and
- Enhance interactive learning among stakeholders

The second SSI-MSD brought together 41 individuals from 15 stakeholder organizations. The participants represented a diverse group of stakeholders, including government ministries, research and universities, private enterprises (actors in agriculture and irrigation supply chain, information technology), development partners, NGOs and donors. Nearly half of the participants came from “Research and Universities” (48%) followed by “Development partners, donors and NGOs” (23%), “Private sector” and “Government Ministry stakeholders” (15% and 14% respectively) (Figure 1). Nearly 80% of the 51 people who registered actually attended the dialogue, which is a high for virtual events.



*Figure 1. Participants' stakeholder groups*

The dialogue started with an opening and welcome speech by Eva Ludi, IWMI Ethiopia Country Director, highlighting 1) the importance of Farmer Led Irrigation (FLI) in local (Ethiopian) and regional (African) context and how different actors including IWMI are supporting the development of FLI; 2) financing irrigation development and addressing scaling challenges; and 3) bringing together key stakeholders in identifying feasible financial solutions as well as the need to adapt these to local context. Zeleke Belay provided an update on the irrigation policy review conducted by the AWM-TF, the Ministry of Agriculture. Afterwards, Nicole Lefore, Director of ILSSI project at Texas A&M University shared insights into financing FLI and technologies, followed by a presentation by Yafet Abera on “Experiences of Moss ICT company with M-Birr: A mobile app payment model in Ethiopia.” The last two presentations shared by Hack Stiernblad, Director of Business Development at Sunculture, and Joy Busolo, Senior Water Resources Specialist Regional Coordinator, World Bank 2030 Water Resources Group on “Smallholder solar irrigation in Ethiopia: Challenges and opportunities” and “Financing models for scaling sustainable and inclusive farmer-led irrigation in Ethiopia,” respectively. The meeting closed with the reflection on suitable financial solutions to increase access to irrigation technologies and services, risks associated with the implementing of these solutions for private sector, and farmers in specific setting. The next section provides key messages on irrigation policy review updates, financing gaps ecosystems and risks, different financing modalities, contextual opportunities and challenges for farmer led irrigation in Ethiopia and technologies for financing remarks.

## HIGHLIGHTS

### Irrigation policy review updates

Recently, the AWM-TF has contributed to the revision of agriculture and rural development policies with focus on smallholder irrigation development. The review confirms the impact of smallholder irrigation on income, poverty alleviation and employment, as well as enhanced nutrition and greater resilience to seasonal weather variability and climatic shocks. The potential for smallholder irrigation in Ethiopia was highlighted: with over 11 million ha of potential area out of which only about 1.2 million ha is irrigated, and an availability of over 24.64 Bm<sup>3</sup> shallow groundwater to irrigate around 2.71 million ha to potentially benefit more than 6.4 million households<sup>1</sup>. Justifications for the policy revision include:

- Lack of comprehensiveness regarding smallholder irrigation development in the existing policies
- Lack of clarity and regulatory framework (the earlier “Green book” is outdated and lacks brief policy for irrigation agriculture)
- No multi-purpose development packages, and

<sup>1</sup> Zeleke Belay’s presentation on “Updates on AWM-TF’s ongoing activities.” The second meeting of Small-scale Irrigation Dialogue Space on ‘Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling, September 23, 2020, Ethiopia.

- Unclear policy statements and implementation instruments.

Accordingly, key areas in the policy revision are

- Improving efficiency of water use with technical, financial and economic efficiency,
- Promoting equitable access to irrigation through inclusive irrigation for all communities (females, youths, rural areas, upstream/down streams) and shared water access, and
- Environmental and institutional sustainability.

The revised documents will include smallholder irrigation infrastructure and water management, financing mechanisms, and groundwater development for smallholder irrigation development. Policy and institutions, finance and market, technology and technological supply chain were given as main challenges to an inclusive and sustainable development of smallholder irrigation. The review pointed out that inclusive and smart policy is a standpoint for implementing FLI and smallholder irrigation.

### Financing gaps, ecosystem and risks

Finance is one of the main constraints to expanding small-scale irrigation in other African regions. Various stakeholders are testing different modalities and approaches to find out solutions, and there are general lessons from these efforts<sup>2</sup>. First, appropriate finance products are necessary to increase access to irrigation equipment. This remains a major issue and is one of many constraints hindering farmers and irrigation equipment market. Therefore, credit gap alongside other gaps must be considered. Second, linkages between access to credit for farmers and their investment in irrigation should be contextual to ensure appropriateness. And third, equipment companies are filling the gap in credit markets and reduce the reliance on banks or microfinance institutions. Hence, equipment companies increase their risk to provide financing directly to farmers and to purchase equipment. This factor has really shifted how we think about credit constraints facing farmers.

Another important understanding is that financing by itself is not a solution on its own. Successful irrigation scaling has to be embedded in a wider **financing ecosystem** (Figure 2) which involves irrigation financing, inputs and services, market information and access, and technology (digital payment and advisory services). Stakeholders and key actors are an important part of this ecosystem for example private companies, farmer organizations, and microfinance service providers have a critical role in irrigation financing.

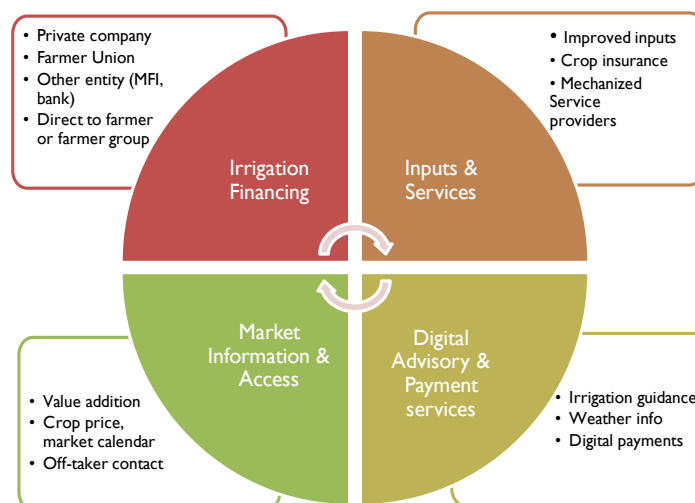


Figure 2. Irrigation financing ecosystem (Source: Presentation by Nicole Lefore)

<sup>2</sup> Nicole Lefore's presentation on "Finance and Technologies to Scale Irrigation," the second meeting of Small Scale Irrigation Dialogue Space on 'Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling, September 23, 2020, Ethiopia.

Financing irrigation has risks for both the private sector that provides loans / credit services and equipment as well as the farmers who invest in irrigation. These risks have to be addressed at multiple points as they occur across the financing process (Figure 3). Therefore, the following four-steps in the financing process will help to identify potential customers, risks, technology solutions, and relevant supports and follow up. The production risks that farmers face on the field in turn increases the risk of defaulting on equipment loans, which creates a risk for the company. If a farmer fails in the field, and he/she fails in the market, and therefore can fail to repay the loan. This is a risk for the equipment supplier, as they are the main financier right now for irrigation equipment providing direct loans to farmers. Even though rarely included in irrigation financing projects, agronomic and market support has to be present to make the whole system work. Informed decision making based on understanding of customer in the local context, use of technology, suitable payment modalities, and provision of critical support to help customers succeed are all important to reduce risks at multiple points.

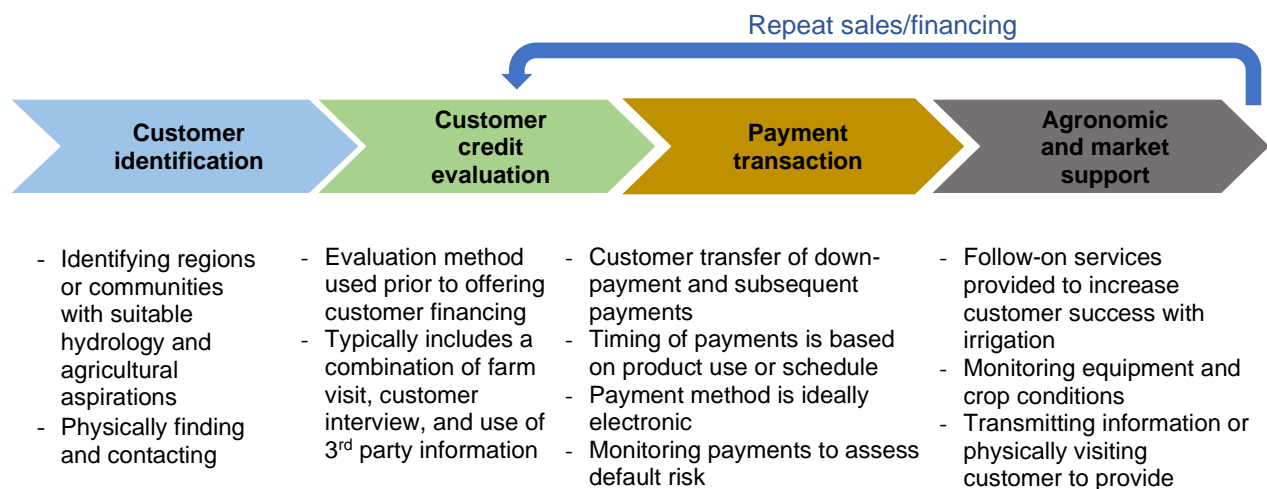


Figure 3. Process of Financing Irrigation (Source: Presentation by Nicole Lefore)

### Different financing models to FLI in East Africa

World Bank's 2030 Water Resource Group (2030 WRG) has supported initiatives that promote multiple use of water beyond irrigation (e.g., sanitation) at household level, which is important especially at the time of COVID19. The 2030 WRG is promoting FLI in different countries including Kenya, Tanzania, Uganda and Rwanda by supporting the design and development of financing approaches and modalities based on local context<sup>3</sup>. The different financing models are discussed below.

**First Loss Guarantee Financing model:** Where the 2030 WRG catalyses innovative financing by leveraging partnerships with value chain actors for off-take markets and incorporating weather and multi-peril insurance products for high-value crops in Kenya (Figure 4). This targets farmers with land holdings between 0.5 – 2 acres and forms partnerships and linkages between the farmers, equipment suppliers, financial institutions, and the output market (buyers). In a partnership model, the farmer gets to access equipment on loan from the equipment supplier, the farmer will have a contract with the buyer (output market) which will serve as a collateral to access financing and as a market guarantee. One key learning here is that financial products and services for agriculture have to be designed in a different way to match cropping seasons.

<sup>3</sup> Joy Bosolo's presentation on "Financing models for scaling sustainable and inclusive farmer-led irrigation in Ethiopia." Second meeting of Small Scale Irrigation Dialogue Space on "Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling," September 23, 2020, Ethiopia.

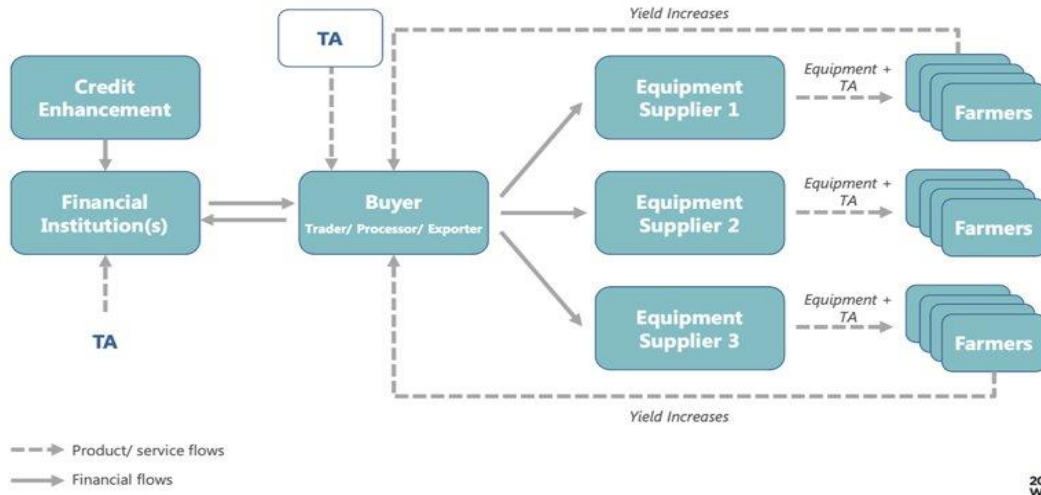


Figure 4 First Loss Guarantee Financing model (Source: presentation by Joy Bosolo)

**Irrigation Financing Facility Model:** the 2030 WRG provides technical assistance to incubate farmer-group initiatives and develop a pipeline of bankable irrigation project proposals, coordinating all actors and leveraging partnerships for off-take markets in Tanzania (Figure 5). Identifying the right target groups, supporting proposal development, ensuring output markets, group dynamics and regulatory requirements and incubation are key components.

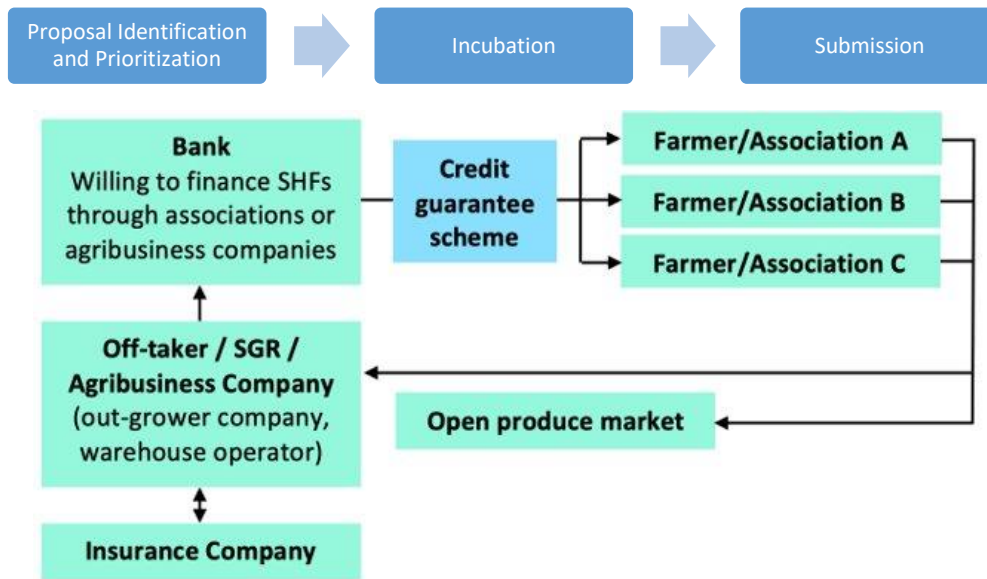


Figure 5 Irrigation Financing Facility (Source: Presentation by Joy Bosolo)

**Small-Scale Irrigation Technology (SSIT) Subsidy Model:** The 2030 WG supports the assessment of the financing model, with the aim to accelerate development of sustainable, demand-driven, affordable, farmer-led and -owned irrigation systems in Rwanda (Figure 6). In this model, public and private funds are used to increase access to equipment. The Rwandan Agriculture Board (RAB) provides 50% subsidy and farmers come up with 50% from their savings, MFIs, equipment suppliers or other actors to acquire irrigation equipment.

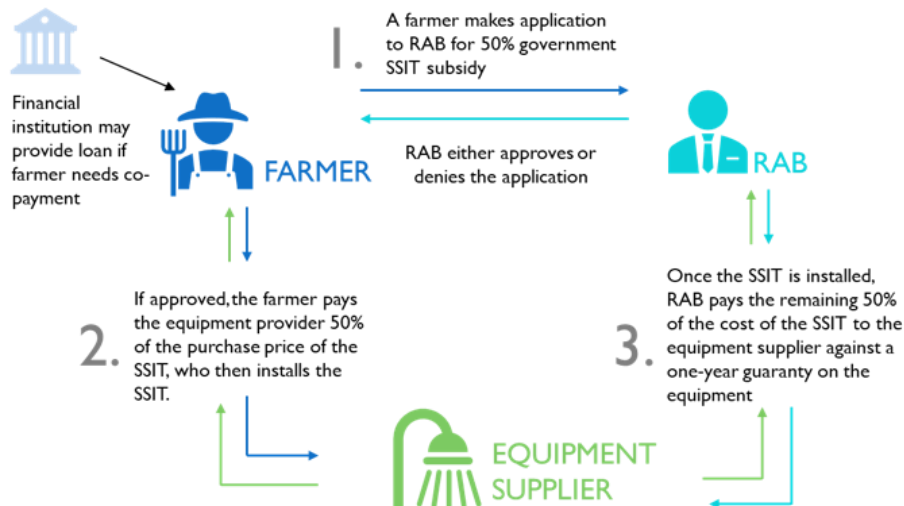


Figure 6 Financing Model for Small-Scale Irrigation Technology (SSIT) Subsidy Program  
(Source: Presentation by Joy Bosolo)

**Financing model for Micro-scale Irrigation Program:** The 2030 WRG supports smallholder farmers ( $\leq 1$  ha) to access individual irrigation equipment and extension support through a matching grant system in Uganda (Figure 7). This is a subsidy-based approach where government provides a certain percentage and farmers are required to pay the remaining amount to acquire irrigation equipment. The farmer's share can be from own pocket or through a loan/credit. The government will create awareness, assess requests from farmers, prequalify irrigation equipment suppliers and also partner with them to provide equipment and installation services.

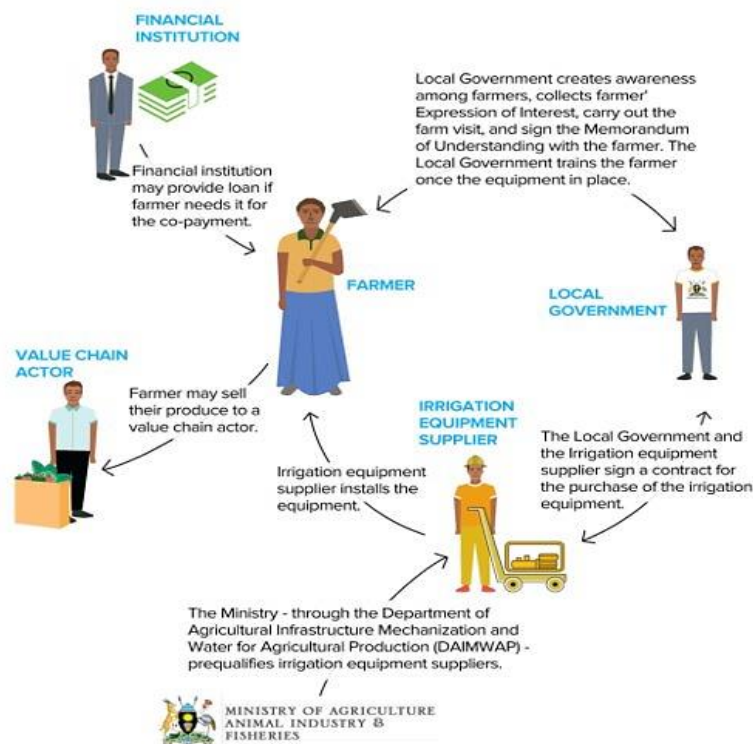


Figure 7. Financing model for Micro-scale Irrigation Program  
(Source: Presentation by Joy Bosolo)

According to Sunculture's experience,<sup>4</sup> pay-as-you-go systems coupled with government subsidies to the farmer on the monthly payments (only when the farmer pays to the distributor) is one of the strongest subsidy-based financing models which lowers financial pressure on farmers. In addition, it is recommended to explore how farmer cooperatives can take part in financing complex irrigation systems as a potential model in Ethiopia.

There are risks (along the financing ecosystem) in the different financing models discussed above. The models put different risks to different actors and at multiple points in the ecosystem.

### Contextual challenges and opportunities for financing FLI in Ethiopia

Sunculture<sup>5</sup> is a technology and knowledge company based in Kenya. In the partnerships and businesses with partners in Ethiopia, Sunculture has identified four key challenges when it comes to financing farmer led irrigation in the Ethiopian context (Figure 8). Limited access to forex affects local production and import of technologies, while the importation process is lengthy and complicated, and lacks standardization in its process and costs. Another challenge is access to finance where there are few Pay as You Go companies, legal complexities, high collateral requirements and a service characterized by high interest, low loan period and high deposit. Fragmented and complex market structures pose another challenge as most companies don't consider value chain approaches or long-term customer services.

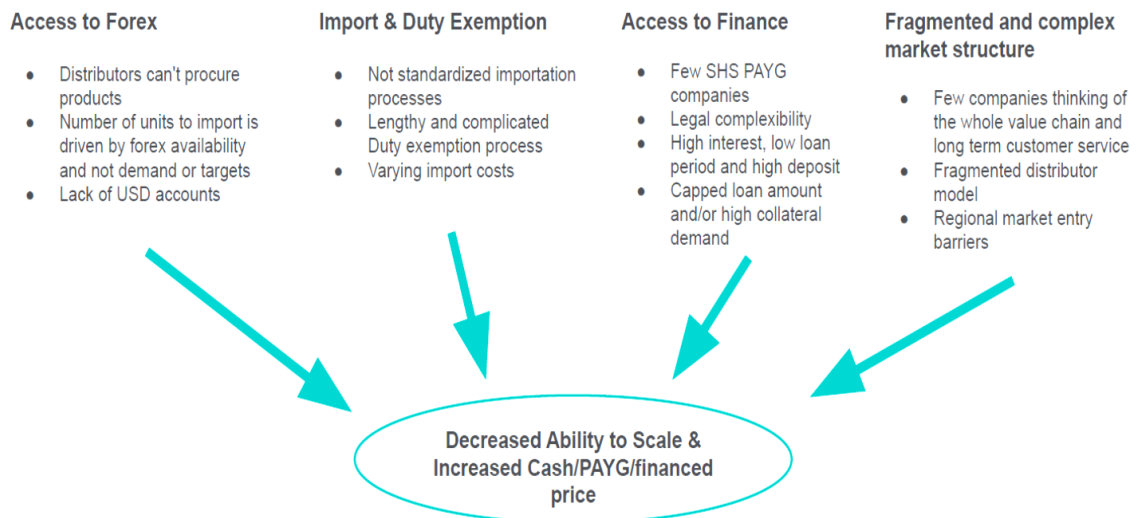


Figure 8. Challenges in financing Farmer Led Irrigation in Ethiopia  
 (Source: Presentation by Hack Stiernblad)

Enabling opportunities that will allow distributors to invest, increase farmer accessibility and scale (Figure 9) would include: streamline import and duty exemptions, increase access to finance using different modalities and information communication technologies, increase access to forex,

<sup>4</sup> Hack Stiernblad's presentation on "Small holder solar irrigation in Ethiopia. Challenges and Opportunities," the second meeting of Small Scale Irrigation Dialogue Space on "Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling," September 23, 2020. Ethiopia.

<sup>5</sup> Sunculture's mission is to develop and commercialize life-changing technology that solves the biggest daily challenges for the smallholder farming households. Solar powered irrigation solutions and pumps are the company's main products. Sunculture has adopted a climate-smart approach in its technologies and uses network of sales agents to distribute its products and services. In Ethiopia, Sunculture partners with Solar Village, Solar Development, Rensys, Hello Solar, and Rensys as distribution partners. Sunculture is also involved in activities to enable partnership including Smallholder Solar Pump Alliance and solar pump demonstrations with Agricultural Transformation Agency and Soar Village.



incentivize scaling through different mechanisms, and increase ground water access through borehole drilling.

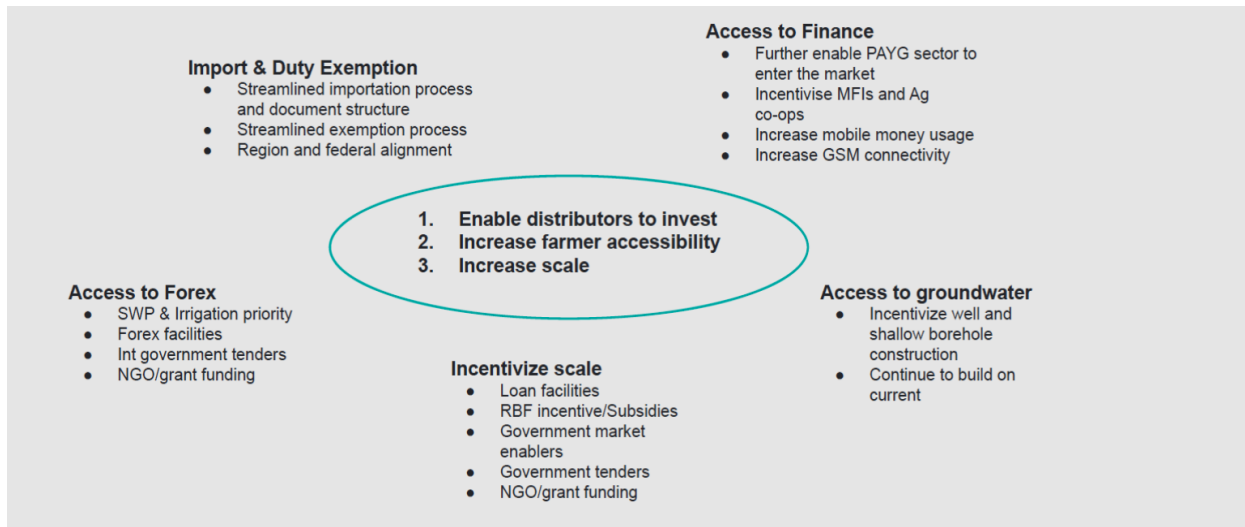


Figure 9. Key enabling opportunities for financing farmer-led irrigation in Ethiopia  
 (Source: Presentation by Hack Stiernblad)

### Technologies for financing FLI

It is important to look at how technology can be applied to address some of the financing challenges. Evidence shows that technologies can improve communication and information and therefore support financial products and reduce risks for the equipment suppliers and for farmers. Presentation by Nicole Lefore provided an overview of promising technologies, and technologies that need to be developed and tested further to be more effective. E-wallet, mobile apps, mobile money, remote sensing, and credit scoring tools are some of the examples that can be applied at different points in the financing ecosystem].

Another key learning is that technology is not the only solution and has to be part of the overall ecosystem as it does not replace everything. To make irrigation accessible to farmers, it is essential to look across the financing ecosystem and processes and see where there is flexibility and where risk can be reduced. In addition, there are a range of the scenarios in which technological solutions can be applied. This is based not only on the level of tech and data development but also on how developed the market system is. For example, in a situation with low market system development and a low level of technology-based platforms and data – likely the best solutions will be offline, field-level technical support and market information, low cost pump rental services and E-wallets. For example, PayGo financing, pump monitoring via remote sensing, and lease to own financing are solutions best suited in a situation with highly developed market and tech-based platforms (Figure 10).

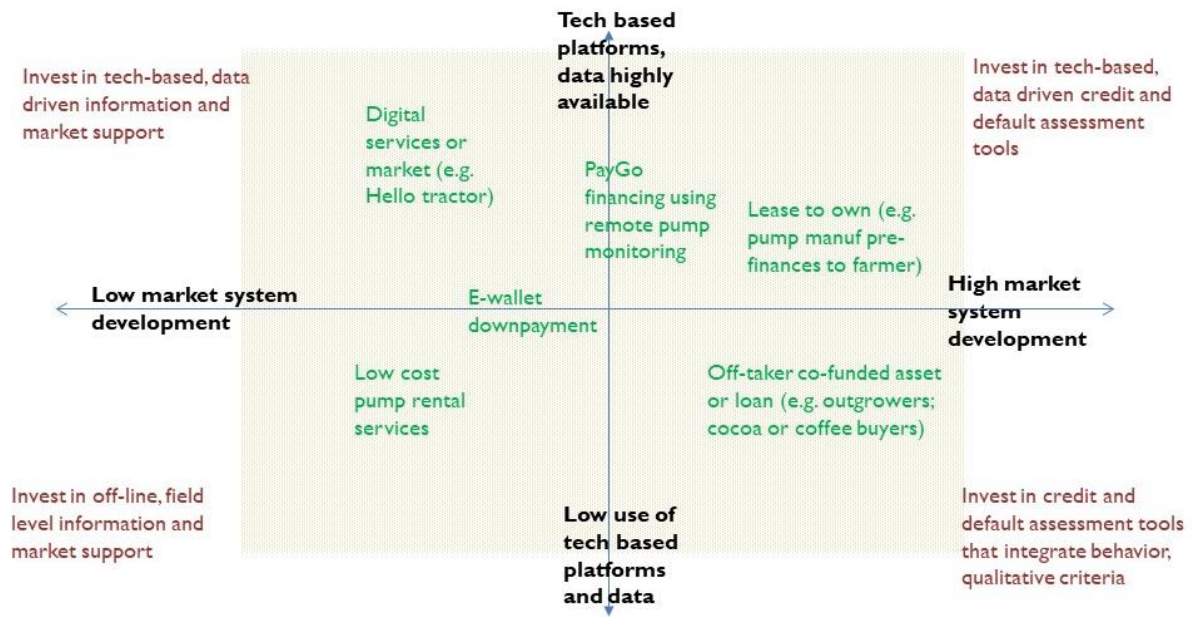


Figure 10. Different scenarios and technology solutions.

(Source: Presentation by Nicloe Lefore)

One example of technology used in financing modality which has potential for supporting FLI financing is M-Birr<sup>6</sup> mobile payment system developed by MOSS ICT company in Ethiopia<sup>7</sup>. M-Birr uses simple technology (i.e., no mobile apps to download, no internet and smart phone required) to make transactions. The system uses hashtag – dial that can be done from any type of phone - which creates an easy and significant access to rural communities. This technology allows farmers to send money, pay bills and loans, deposit and withdraw money, interest-bearing savings accounts, buy mobile airtime and buy goods and services. There is also an option to pay by cash via M-Birr agents in different locations. If farmers do not have cell phones there are alternative options like biometric data or pin card systems that can be used instead. The services can be accessed in remote areas via agents and small retail shops or mobile phones. M-Birr’s mobile interface therefore benefits farmers as it improves access to capital and financing, uses an innovative way to pay bills and loans from partner MFIs which are all critical in scaling FLI.

M-Birr has experience with PayGo systems and providing off-line payment services - which can be applied in scenarios with Tech-based platforms as well as in less developed market systems respectively (Figure 10). Therefore, M-Birr presents an opportunity for facilitating financial transactions between different actors in the irrigation financing ecosystem by providing a simple technology platform that is also suitable for farmers.

Furthermore, Moss ICT’s approach in integrating information communication technologies with financing services involves developing action plans, registrations on the system and integration, piloting, awareness creation and implementation. MOSS ICT also has experience in integrating its M-Birr services with Pay as You Go platform providers and equipment suppliers so that farmer can have

<sup>6</sup> M-Birr is the first mobile payment system operating in Ethiopia and delivered by MOSS ICT Company - provides technology for financial solutions. Its clients include farmers, financial institutions like microfinance and saving and credit institutions. M-BIRR is available at 14,000+ branches and agents across Ethiopia including in Addis Ababa, Dire Dawa & Harar, Oromia, SNNPR, Tigray.

<sup>7</sup> Yafet Abera’s presentation “M-Birr as financial model: How it works?” Second meeting of Small Scale Irrigation Dialogue Space on “Financing solutions for sustainable and inclusive farmer-led irrigation scaling.” September 23, 2020, Ethiopia.

access to high value assets. Pay As You Go systems are consumer financial models that can be applied in FLI where irrigation equipment is provided on credit and then farmers pay back based on arrangement (seasonally, monthly, or hybrid of both) via the mobile payment while the company maintains relationship with the farmers throughout the period and when applicable providing support and information. Although M-Birr currently does not provide E-wallet services, they are willing to pilot and test.

## Reflection and closing

Reflecting upon the environment in which the attendants interact with farmer-led irrigation, several options were identified as potential financial solutions to increase access to irrigation technologies and services in Ethiopia.

- **Financing and credit-focused actions:** subsidies through Pay as You Go systems and Result Based Financing, incentives & enhanced cost sharing mechanisms for key actors in the financing ecosystem, tailored finance solutions for diverse farmer groups, revolving fund options (with MFIs) for potential groups, organizing and supporting community-based group saving and lending systems.
- **Bundled solutions and services:** solutions should come in packages to be more effective. For instance, credit access should be facilitated via suitable payment systems and arrangements, and be coupled with agronomic services and technical support, insurance against crop failures, operation and maintenance services, dependable input supply, etc.

Risks associated with the implementation of these solutions for the private sector and farmers in Ethiopia include:

- **Environmental risks:** climate and weather shocks including extreme events like drought, flood and extreme temperature, challenges in accessing water.
- **Finance related risks:** lack of tailored payment solutions, high loan defaulting risk, lack of access to MFIs, high price of irrigation technology, insufficient foreign currency for importers, high transaction costs for suppliers.
- **Technology related risks:** low adoption rate of technologies, poor quality and efficiency of irrigation equipment/ technologies, lack of technical know-how and after-sales services.
- **Production and Market related risks:** crop and market failures, insufficient links to value chain actors, market access, lack of insurance in the face of environmental shocks, limitations in accessibility of agricultural input and services required to ensure productivity and financial feasibility.
- **Systemic risks:** lack of contract enforcement, lack of monitoring and follow up mechanisms, lack of trust among farmers and business ventures, lack of well-functioning infrastructure (eg internet, mobile phones), government policy.

Before closing, the attendants also reflected on the key lessons from the dialogue. **First**, the attendants highlighted the need for innovative and tailored financing solutions and mechanisms. Specifically, sorting out solutions via adopting suitable financing mechanisms is as important as providing technological solutions for FLI. Different financial models work in different contexts and innovative and tailored financing is mandatory for increased adoption of irrigation technologies and scaling. **Second**, when developing financing solutions one should target different actors such as farmers, financial service providers and irrigation technology suppliers. **Third**, bundled solutions have shown to have the highest impact. Therefore, financing solutions should be packaged with other relevant technologies and services to be effective, for example, technology and financial solutions (Pay-As-You-Go systems) plus insurance, financing solutions with risk management and market access, financing for farmers and fixing forex shortage for importers, and access to irrigation technologies coupled with financing solutions and technical support. **Fourth**, private sector investment and engagement in financing re-enforces that the private-sector-centred solutions are most effective in

financing and promoting FLI. Finally, there should be more opportunities for experience sharing on best practices and innovative approaches with regards to financing FLI.

When asked about the topic for the next MSD, 70% of the attendants voted for discussing value chain and market system approaches to scaling of small-scale irrigation.

Organizing this event virtually for the first time has presented new challenges and opportunities to learn as well. Time management was a challenge and due to that, attendants were asked to quickly submit their individual responses to the key discussion questions via an online system (instead of group breakout sessions as planned). As a result, some of the inputs and responses collected were in form of short phrases, less complete and coherent. Another issue with virtual events in Ethiopia is unstable internet connection and power cuts – which is a major risk as it is unpredictable.

The MSD attendance rate was quite satisfactory, as about 80% of persons who registered actually attended. This rate is high when compared to SSI - MSD in Ghana (about 50%) and a global data on webinar attendance - where 40-50% is the average webinar attendee rate<sup>8</sup>. This could be because of the organizers' continued follow up and repeated reminders - which should be adopted for future events as well. Depending on the COVID19 situation and the respective mitigation actions in place, the next event may be in person or virtual.

---

<sup>8</sup> <https://bloggingx.com/webinar-statistics/>:

## APPENDIX - AGENDA

### Financing solutions for sustainable and inclusive farmer-led irrigation scaling

#### Objectives

- Share insights into challenges and opportunities in financing irrigation to benefit smallholder farmers in a sustainable and gender and youth-inclusive manner;
- Discuss emerging innovative financing solutions to enable farmer-led irrigation investment, building on efforts and initiatives from private and public sectors; and
- Enhance interactive learning among stakeholders.

**Time:** 15.00 – 17.00 (Ethiopia time) on 23 September 2020

| Time                       | Activity  | Remarks   |
|----------------------------|---|---|
| 15.00 – 15.10              | Welcome by IWMI and AWM-TF  | Zelege Belay, Ministry of Agriculture<br>Eva Ludi, IWMI   |
| 15.10 – 15.15              | Warming up: Have you been working on farmer led irrigation over the past six months? if yes tell us on what and where?  | All participants  |
| 15.15 – 15.25              | Updates on AWM-TF's ongoing activities  | Zelege Belay,<br>Ministry of Agriculture  |
| <b>Financing solutions</b> |   |   |
| 15.25 – 15.35              | Finance and technologies to scale irrigation  | Nicole Lefore<br>Texas A&M  |
| 15.35 – 15.45              | The mobile money app as financial model: How it works?  | Yafet Abera, Business relation<br>Officer<br>M-Birr, Ethiopia   |
| 15.45 – 15.55              | <b>Q&amp;A</b>  | All participants  |
| 15.55 – 16.05              | Smallholder Solar Irrigation in Ethiopia, Challenges and Opportunities  | Hack Stiernblad<br>Director of Business Development,<br>Sunculture  |
| 16.05 – 16.15              | Financing models for scaling sustainable and inclusive farmer-led irrigation in Ethiopia  | Joy Busolo<br>Senior Water Resources Specialist<br>Regional Coordinator, 2030 Water<br>Resources Group Program in Eastern<br>Africa |
| 16.15 – 16.25              | <b>Q&amp;A</b>  | <b>All participants</b>   |
| 16.25 – 16.50              | <b>Menti questions:</b><br>1. What are suitable financial solutions to increase access to irrigation technologies and services in your particular setting?<br>2. What are risks of implementing these solutions for (i) private sector, and (ii) farmers? | All participants  |
| 16.50 – 16.55              | <b>Reflection</b><br>- What key messages have come out from today's discussions?<br>- What topics do you think the next multi-stakeholder dialogues should address?   | All participants  |
| 16.55 – 17.00              | Meeting closure and next steps  | Eva Ludi, IWMI  |