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Feed the Future Innovation Lab for Small Scale Irrigation

SMALL SCALE IRRIGATION DIALOGUE SPACE: Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling in Ghana

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Contents

1. INTRODUCTION

Through the Feed the Future Innovation Laboratory for Small Scale Irrigation (ILSSI), the Small Scale Irrigation (SSI) Dialogue Space was established in 2019 as a unique strategy to bring stakeholders together to encourage collective thinking across sectors and explore new opportunities and solutions to scaling SSI in Ghana. IWMI held the start-up meeting on October 24th, 2019. At the meeting, participants agreed on operational principles, governance and the regular activities of the SSI Dialogue Space. During June-July 2020, participants from the SSI Dialogue Space participated in a series of virtual events jointly organized by the World Bank, Daugherty Water for Food Global Institute at the University of Nebraska, Global Water Partnership, and IWMI discuss key issues and identify a way forward for operationalizing sustainable and inclusive scaling of farmer-led irrigation development.

Access to credit or financing products is a critical determinant for irrigation technology adoption. Lenders are often hesitant to develop products for smallholder irrigation. Interactive learning and collaboration on financing for irrigation would help to identify financing products that help to accelerate access to SSI and agricultural water management solutions in Ghana. The second meeting of the SSI Dialogue Space took place virtually on August 27th 2020, bringing together participants to:

- Introduce the new SSI scaling partnership between ILSSI and PEG Africa in Ghana;
- Share insights into challenges and opportunities in financing irrigation to benefit smallholder farmers, gender equity and the youth;
- Discuss emerging innovative financing solutions to enable farmer-led irrigation investment; and
- Enhance interactive learning among stakeholders.

Under the circumstance of COVID-19 pandemic, the meeting was virtual, attracting 87 registrations from 60 organizations showing the great interest of policy makers, government agencies, private sector companies, farmer organizations, social enterprises, financial institutions, development partners and researchers on this topic in Ghana. Of those who registered, more than 40 registrants were new and showed interest to engage with the multi-stakeholder Dialogue Space. The largest portion of registrations (40%) came from universities and research organizations while only 8% represented the value chain actors (Figure 1a). Out of the 87 registrants, 45 participants actually attended the meeting. It is noted that a large ration of attendants (21%) came from universities and research organizations while only 3% represented the government agencies and departments (Figure 1b). The project is reflecting on the high drop rate of around 50% of registrants as well as the highest drop rate of registrants from government agencies and departments group (14%). The low representation of the value chain actors was observed in this meeting

as well. Virtual setting and access to internet could be a constraint to this group to participate. Finally, participants from irrigation technology and equipment supply sector significantly reduced, compared to the first SSI Dialogue space meeting. Private sector prefers the physical space for sharing information and networking, therefore, might not see the value in virtual platforms for the learning purpose.

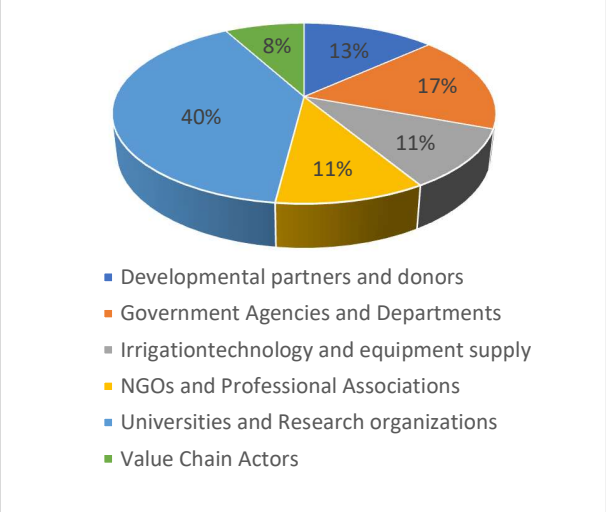

Figure 1a. Different groups of registrants

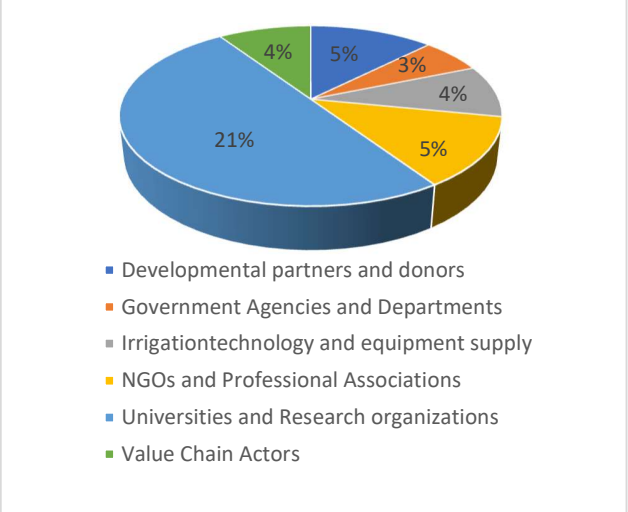

Figure 1b. Different groups of attendants

The meeting started with the welcome speech from Dr. Olufunke Cofie, Country Representative, IWMI Ghana. She highlighted important contributions of farmer-led irrigation (FLI) development to the strategy of the Ghanaian government to improve food security, job creation and to the food system resilience. Ongoing efforts in FLI development align with initiatives of ECOWAS with support from the World Bank across West Africa region. Dr. Cofie also emphasized that the country-level multi-stakeholder dialogue processes in Ghana has been informing the regional and global discussions on the scaling of FLI development through IWMI and Texas A&M researchers' participation and sharing insights from the dialogue processes. Dr. Nicole Lefore, Director of ILSSI project at Texas A&M University gave an official announcement of ILSSI and PEG Africa SSI scaling partnership. Joseph Mensah, Project manager at PEG Africa, then gave an inspiring presentation, sharing insights into scaling of SSI in Ghana with PEG and the partnership. The meeting continued with Dr. Nicole Lefore's presentation on '*Finance and Technologies to Scale Irrigation*', followed by a presentation by Dr. Abraham Salomon, University of California, Davis and Agriworks Uganda, on '*Experiences with Financing for Smallholder Irrigation*'. The meeting closed with breakout group discussion and 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, and key actors in the Ghana MSD space supporting the designing, testing, implementing or scaling the identified financial solution(s) in specific setting.

2. RESEARCH AND PRIVATE SECTOR PARTNERSHIP ANNOUNCEMENT

2.1 Partnership establishment

ILSSI through the first phase has been building up a sturdy rationale for partnering with private sector to scale farmer-led irrigation (FLI) development. FLI has high potential and the great impact on nutrition, food security and local economy. Yet, optimizing FLI development is obstructed by farmers' access to irrigation equipment and information and, importantly, finance. In the geographical areas where farmers have invested into irrigation, enhancing the entry points to support market growth, equitability, and the economic sustainability aspects are crucial. Furthermore, FLI is already a sub-sector in the irrigation sector

that is growing and is very dynamic and fully dependent on the private sector. Hence, the private sector is already leading in FLI development and often overlooked by donors and public institutions. Finally, there is high potential for FLI development but there are under developed markets which limits the reaching of scale. As private sector has played a crucial role, co-identification of ways that private sector can accelerate scaling become core activity of ILSSI project.

From this backdrop, ILSSI with USAID aims to support private sector companies through **competitive catalyst grants** to test different scaling pathways**.** The call targeted for-profit business company proposals. Submissions have gone through a rigorous competitive process which included the evaluation against the following criteria: 1) the financial solutions for smallholder farmers and business models to strengthen irrigation supply chains, 2) the potential linkages between that company and irrigated value chain actors, and 3) the willingness to explore, together with research partners, how to enhance equitable access for women, young, and resource poor farmers.

PEG Africa has been awarded the catalyst grant (2020-2023) in June 2020 for several reasons. First, PEG Africa has offices in Ghana and in other countries in West Africa, showing its experience in solar energy solutions and distribution network of their solar home systems. Second, the company has a unique consumer financing pay-as-you-go system and a very rigorous credit assessment system to look at the business case and water resources for each individual farmer. Finally, PEG Africa has invested in looking at potential customers and potential challenges PEG might have with payments and trying to facilitate PEG success as a part of making the company equitable and of growing the market in Ghana. The ILSSI-PEG partnership was announced in the second SSI Dialogue Space meeting.

2.2. Insights into PEG Africa's SSI scaling in Ghana

PEG Africa's approach (Figure 2b) to SSI scaling in Ghana is guided by the company's core values of *people make PEG* (placing the clients at the heart of every service), entrepreneurial spirit and mindset (managing challenges with cost effectiveness) and owning it (holding everyone accountable for decisions making)[1]. Furthermore, PEG's SSI business targets farmers located in high irrigation potential areas, which are constrained by accessing irrigation technologies due to underdeveloped irrigation equipment supply chain, unfavorable product terms, limited access to capital, input and output markets and services and agronomic extension on the field (Figure 2a).

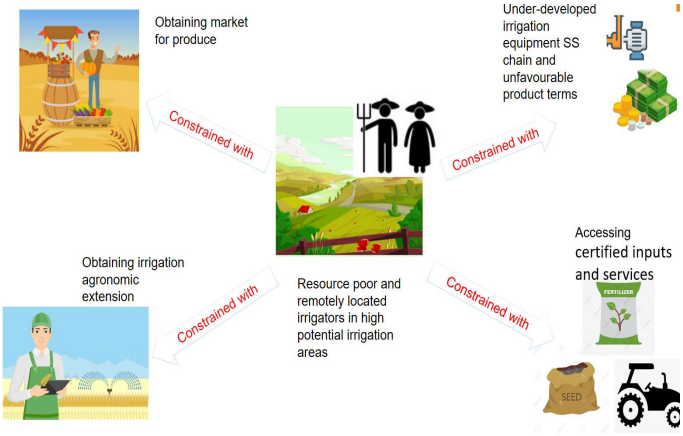

Figure 2a. SSI situation in Ghana (Source: Joseph Mensah's presentation)

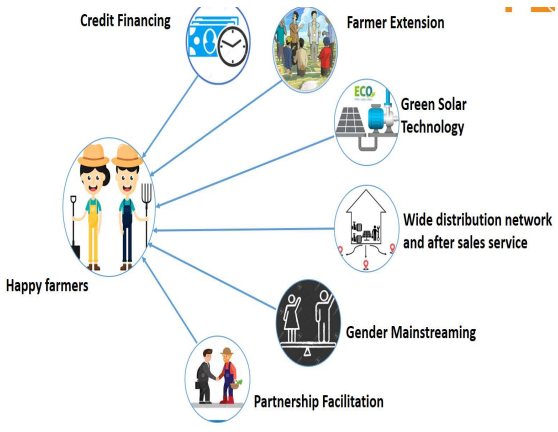

Figure 2b. PEG approach to SSI business

[1] Joseph Mensah's presentation on 'PEG Africa', the second meeting of Small Scale Irrigation Dialogue Space on 'Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling in Ghana', 27 August 2020

PEG Africa's vision in Ghana is to reach 80,000 households by the end of 2020, thereby improving living conditions and incomes of rural and Peri-urban populations. Building from home solar system product portfolio, PEG introduced so-called new growth products, such as larger solar systems for off-grid or on-grid backup solutions and different types of solar-based pumps depending on water resources (e.g. groundwater depth) required by farmers for their irrigation (i.e. pump capacity). PEG established a sale network with around 28 service centers close to remotes locations, and 250 direct sale agents to provide farmers with sale and after-sale services. PEG's call centers operate seven days a week to receive and address farmers' complaints about the products.

Importantly, PEG Africa offers installment financing by which farmers make a minimum deposit and spread the rest of the payment over the productive period of 18 months. PEG Africa has used a three stage credit rating process to assess potential clients' financial capability to de-risk the installment financing model. In addition, PEG Africa provides clients with farm extension, economic advice, and market linkages to reduce farm level failure. Commitment to the clients' equitable access, PEG has been developing several strategies such as:

- Mainstreaming gender and youth by customizing the credit rating process preferable for these target;
- Understanding PEG product competitiveness with farmers by conducting competitive analysis with 150 farmers to compare existing solution(s) used by farmers (or farmer solutions) and PEG solutions in terms of power and cost saving as well as environmental friendliness and health benefits; and
- Establishing partnership with processing and trading companies (e.g. HortiFresh) to pre-finance the minimum deposit for farmers (e.g. HortiFresh pre-finances 70% of the first payment for farmers).

PEG Africa, within the partnership with ILSSI, is working on investigating business cases that are workable for farmers and catering suitable solutions to scale as well as customizing PEG's pay-as-you-go for solar home systems to new growth products and solutions for solar energy irrigation.

3. FINANCING SOLUTIONS FOR SUSTAINABLE AND INCLUSIVE FLI

3.1. Financing irrigation ecosystem and process

Addressing irrigation scaling has to be situated within an irrigation financing ecosystem[2] which includes several services and needs across the irrigation financing – inputs and services, market information access and digital services to de-risk farmers' and equipment suppliers' investments (Figure 3). These ecosystems involve actors and stakeholders operating and facilitating (irrigated) agricultural value chains. Of those actors and stakeholders, private irrigation equipment companies are taking risks to fill current financing gaps by providing financing directly to farmers and to purchase equipment. This factor has shifted the

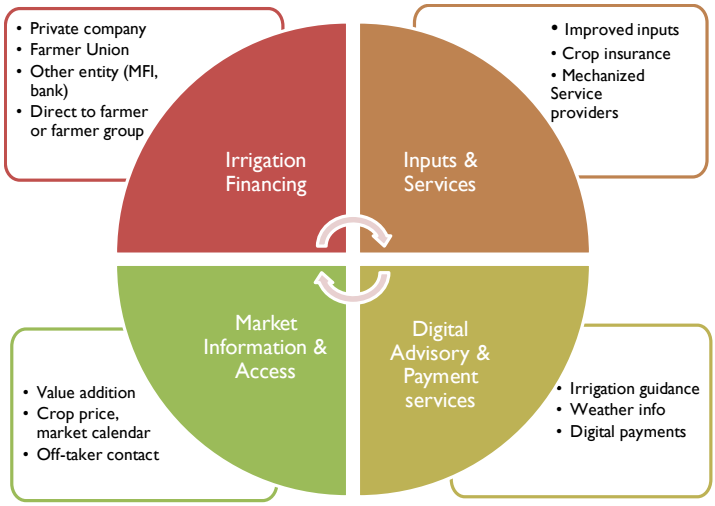

Figure 3. Irrigation financing ecosystem (Source: Nicole Lefore's presentation)

[2] 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 in Ghana', 27 August 2020

thinking about financing solutions centralized around bank or microfinance institutions to de-risking private sector's investments.

Financing irrigation needs to tackle risks across multiple points in and various part of the ecosystem. This is particularly important as the credit gap is alongside other gaps influencing farm profit, which on its turn creates risk for defaulting on equipment financing, creating a risk for the company. A single tech solution for finance is inadequate to make irrigation accessible to farmers across various parts of the irrigation financing ecosystem. Hence, financing irrigation is a four-step cycling process in order to identify where risk can be reduced and where there is feasibility for technological solutions (Figure 4).

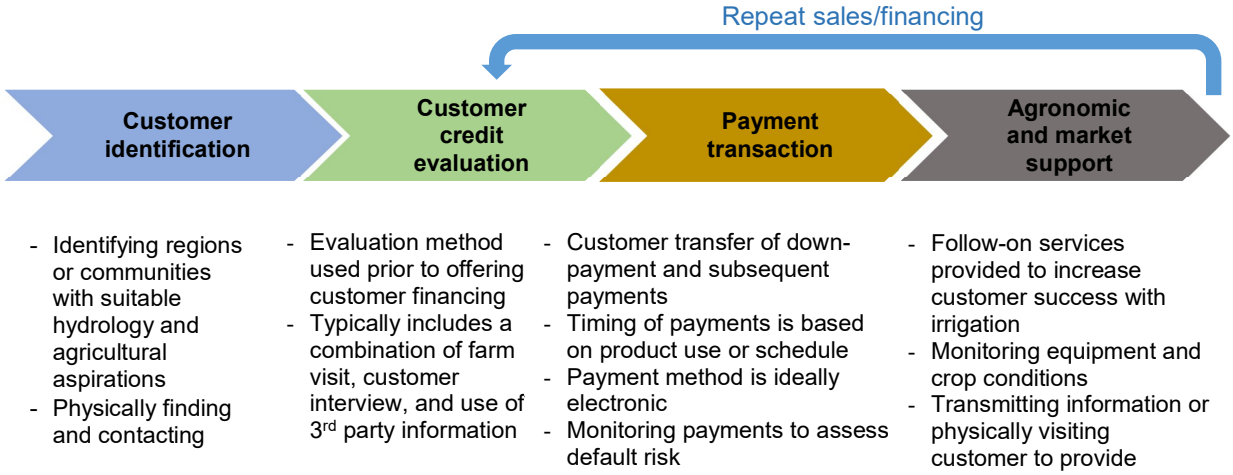

Figure 4. Financing irrigation process (Source: Nicole Lefore's presentation)

In the four-step cycling process, identifying customers and assessing their credit worthiness and setting up functional payment systems are critical first steps. In addition, understanding agronomic and market systems as well as providing agronomic and market information and support are important conditions to capitalize on the functional payment systems. Yet, there are few examples of initiatives that provide market support alongside financing. **Agriworks** in Uganda completes this four-step process as it supplies irrigation equipment to smallholders with asset financing[3]:

(1) ***Customer identification***: Agriworks identified to target subsistence farmers to create social impacts. These farmers do not have much collateral and irrigation technologies to begin with. These farmers often experience high income variation and are subjected to frequent shocks in their daily life. Therefore, they are unsure of their own ability to invest and/or do not want to take risk in investments like irrigation given high production uncertainties and crop failures (e.g. as pests, diseases, livestock damage, theft, natural hazard). In a first step, **Agriworks** identifies where (surface) water sources are available, demonstrates and evaluates suitable technologies with farmers.

(2) ***Customer credit evaluation*****:** Agriworks loan officers go to the village to conduct application and due diligence processes. The application process is simplified to ensure that subsistence farmers are able to understand and complete the process. The due diligence process helps to identify less

[3] Abraham Salomon's presentation on 'Experiences with Financing for Smallholder Irrigation', the second meeting of Small Scale Irrigation Dialogue Space on 'Partnerships and financing solutions for sustainable and inclusive farmer-led irrigation scaling in Ghana', 27 August 2020

committed or higher risk applicants, reducing the risk for the company. Finally, the total product price, interest rates and structure of repayments are discussed in detail to reduce payment failure.

(3) ***Payment transaction:*** Agriworks offers several financing approaches depending on the applicants' credit conditions. The **Pre-Equipment Credit** provides smaller loans for agricultural inputs before extending credit for irrigation. This fosters a commitment for both the farmer and the company, helping farmers improve their yields while building their confidence and trust with the company. The **group Finance** give financial asset to a small group of farmers who are all equally liable to repay. This is applied in places where farmers have a history of working together and owning assets as a group, proven ability to share assets and have trust in group loans – a form of social collateral. The **Promotional Use** allows farmers to use promotional equipment a few times before purchase. The **Hire Purchase** involves a down-payment with a series of repayments, including 'grace period' or a larger down-payment. Over a period of time the farmer pays the balance without strict repayment dates. The **Financial Partner involvement** refers clients to a bank or microfinance organization who has agreed to take up loan applications for the company's clients.

(4) ***Agronomic and market support:*** For farmers, the credit is worthy when it comes together with agronomic and market support. Agriworks introduces new technologies, like hybrid seed, which are much more profitable for clients once the clients get irrigation equipment in the first place.

3.2. Solutions used in financing irrigation and risks

The breakout group discussion aimed at identifying suitable financial solutions to increase access to irrigation technologies and services in the Ghana setting and identify associated risks for doing so. The solutions aimed at addressing gaps in the identified irrigation financing ecosystem and could be divided into 3 groups: (1) Financing and credit solution, (2) Bundling finance with other technologies and services, and (3) Production and market organization. Risks associated with these solution categories are presented in Table 1.

The group discussion also highlighted key actors in Ghana's SSI MSD space that can help to design, test, implement or scale the identified financial solutions in Ghanaian settings. Actors along irrigated agricultural value chains such as equipment suppliers, input dealers, output buyers, agronomists and agricultural extension officers can provide irrigation and agronomy solutions and market access that fit farmers' needs, thereby, helping farmers get better yields and incomes. Agricultural Development Bank and other commercial banks, such as Ecobank and Fidelity Bank, can provide finance to reach more farmers and share the burden with private sector on cash collection. Microfinance institutions, farmer associations, and insurance companies help to reduce farmers' and private sector's investment risks. The Ministry of Food and Agriculture, local Government and Rural Development agents can help to access to the cooperatives so that for the private sector's re-payment can be more economically and operationally effective. Development partners, universities, and research organizations support the financing ecosystem with capacity building on financial management and marketing of products post-harvest, information on water and energy resource availability and suitability to enhance the sustainable irrigation investment. These roles highlight the importance of multi-actor partnerships and collaboration to successfully address gaps in the irrigation financing ecosystem.

Table 1. An overview of financing and bundling solutions for irrigation and associated risks

Category of financing solution	Associated risk	Common risk
(1) Financing and credit solution - The equipment company uses credit evaluation and repayment schemes to assess financial capability, water resources, appropriate technology, and risk. Based on the assessment, supply and payment agreement are designed with farmers to offer various down-payment (and loan) schemes. - Regular payment using mobile money is used to monitor and flag risk of default - E-wallet farmer groups enable farmers to save toward and build up the down-payment over time - Apps to link irrigation customers to produce buyers to increase output market access - Remote sensing and monitoring of pump is widely used which can alert to default risk - Bundle smart phone with pump to upload water use information and send agronomic advice and marketing information	- Lack of trust between farmers and company can stop any collaboration before starting - Farmers who do not pay as intended may collapse the credit system - Farmers may not be able to afford the initial deposit for investing due to low incomes and little or no collateral - Limited internet connection	- Poor yields can pose risk to private sector and farmer. Farmers losing their harvest due to natural hazards, being unable to pay back loan thereby risking losing some of their assets (as collateral) - Inaccessibility to markets for crops cultivated under SSI - Environmental risks such as low soil fertility and floods can make it impossible for loan re-payment - Death of the farmer may bring the partnership to a sudden end without the private sector recouping their costs - Farmers may not own the land on which they farm, being impossible or reluctance to invest in solar equipment or other permanent infrastructure - Extension services for irrigation is low in both rural and urban areas.
(2) Bundling finance with other technologies and services - Bundled technologies and service such as solar energy pumps, credits and finance services, productivity and market access (inputs and outputs) are offered - Irritrack collates suppliers and microfinance information together with simple business plans and farmer's agricultural history integrated into a simple app shared with financers and suppliers - Insurance incorporates to forestall any disaster such as drought. The government can offer help in securing such insurance as not all insurance companies may be willing to bear such risks.	- Private sector will have funds locked up for longer periods especially for crops that take years to harvest and sell if SSI repayments are made taking into account crop yields - Not all insurance companies may be willing to bear such risks	
(3) Production and market organization - A Village Savings and Loan Association (VSLA) to invest in irrigation technologies is a group of farmers who collectively support a structured process for saving money and offering loans at a local-level. They develop their own saving constitution and payments are saved in mobile money accounts. Four people keep different codes, and each of the codes has to be entered to be able to withdraw money from the account. The savings are usually shared at the end of 9-12 months. The members are able to pay full or part of the input cost to input dealers during "share out" days and pay the rest at the next "share out" day. - Out-growing works through nuclear farmers, often medium and large scale farmers. The nuclear farmers have a number of small scale farmers who work under them. They have bankable balance sheets which they use to guarantee for the input supply to the smallholders as well as the binding contract of the output purchase.	- Financial demands from family members which makes members to take unplanned loans from the savings - Default in loan repayment by some members may lead to tensions as these members are not entitled to interest during "share out" days - Theft of savings box from Village Savings and Loans Associations - Real demands and local markets might not be created due to in kind and cash subsidies	

Note: Category (1) was extracted from the presentations, while categories (2), and (3) were synthesized from the breakout group discussion's results.

4. REFLECTION AND CLOSURING REMARKS

Participants reflected and highlighted several key messages from the meeting. *First*, technologies have been dynamically used to support SSI business and financing irrigation. Scaling of these technologies requires scaling of the whole ecosystem of FLI development. *Second*, a single technology or financing solution is not adequate to enable farmers to invest in irrigation; it must be tackled from the whole value chain perspective, bundling credit, after-sale services, agronomic extension, input and output market access, and insurance services together. *Third*, financing solutions for smallholder famers are still missing. Many irrigation technologies and financing solutions need to be tailored to the local context and smallholder farmers' conditions. *Finally*, (strategic) partnership is valuable for the success of financing irrigation as multiple partners such as relevant government, research and farmer organization, and financial and insurance institutions can both contribute and support to ensure credibility for credit access by, especially smallholder farmers.

Through this meeting, ILSSI gained a first experience in hosting the SSI multi-stakeholder dialogues in a virtual space. In the COVID-19 Pandemic situation, virtually meeting is an effective instrument to keep the dynamic momentum during the dialogue process. Although the attendant rate is relatively high (around 50% of registrant) compared to the global statistical data on the webinar attendee rate[4], a virtual modality of the MSD is likely insufficient to engage all actors in an equitable way, especially value chain actors.

The attendees showed a high interest in discussing value chain and market system approaches to scaling of small scale irrigation in the next MSD (Figure 5).

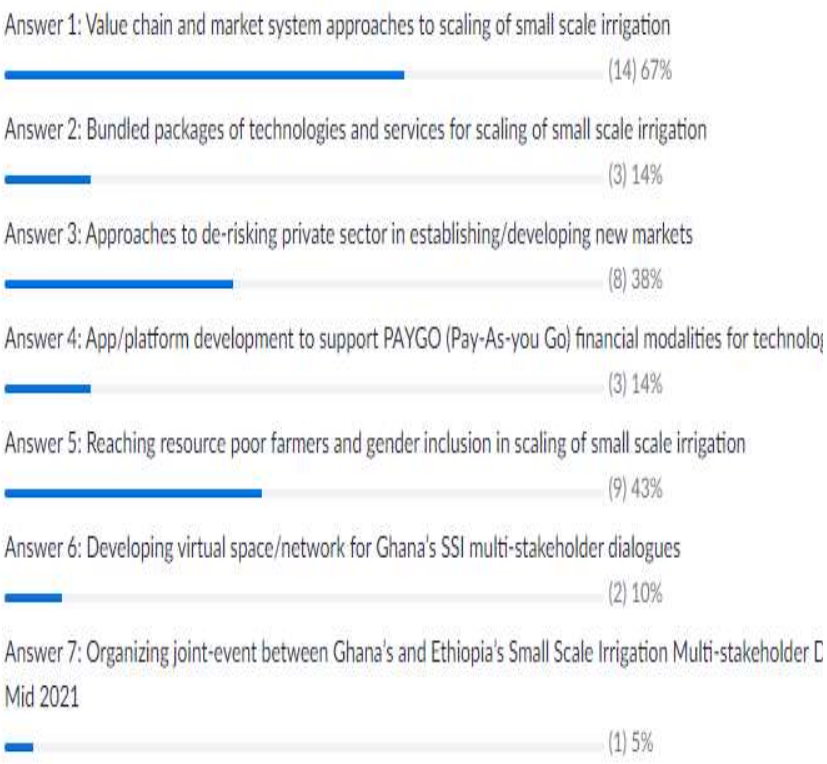

Figure 5. Topics for the next multi-stakeholder dialogues

[4] https://bloggingx.com/webinar-statistics/: 40-50% is the average webinar attendee rate