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Lessons from the results of smallholder irrigation technologies (IWMI)

Simon Langan, Head, International Water Management Institute (IWMI), East Africa and Nile Basin Office, Addis Ababa, Ethiopia

Abundant research evidence confirms that smallholder farming is the main engine for economic growth, poverty reduction and food security in Ethiopia. However, farmers frequently suffer from limited access to technology and market infrastructure. The technologies are usually not capital intensive and can be financed by farmers themselves. They can be used on diversified types of water sources, such as lakes, rivers, ponds and shallow groundwater wells. These small-scale affordable technologies and approaches enable farmers to produce crops in the dry season, which will provide them with an additional income through the production of cash crops for markets. Smallholder irrigation technologies provide an opportunity for women farmers to earn an income, as they can be used for backyard cultivation and cultivation of horticultural crops. All these great potentials necessitated the AgWater Solutions Project to identify factors that influenced the adoption of water-lifting technologies (particularly motor pumps) by smallholder farmers and to look for market access.

Trends and data collected from four regions (Amhara, Oromia, SNNPR and Tigray) and also across the country (Ethiopia, Ghana and Burkina Faso) show that investing in smallholder irrigation technologies is crucial to enhance income and livelihoods of the rural people.

Findings on smallholders' awareness of various irrigation technologies and average costs of investment for water-lifting pumps showed that 77-87% of smallholders had a very high awareness about irrigation technologies. Nevertheless, actual adoption of the technologies is low (ranging from 27-30%). The technologies were mostly adopted by better-off and male farmers. Adoption rate was very low among women farmers. Various types of taxes made up 36% of the price of the motor pumps.

The major factors found to hamper adoption of the irrigation technologies were as follows:

- High upfront investment costs involved in implementing the technology, and lack of credit and information about markets.
- Poorly developed equipment supply chain, low-quality pumps, limited choice, high taxes and transaction costs.
- Frequent breakdown of pumps, high maintenance cost, limited supply of spare parts and maintenance service.
- Farmers lack of information and knowledge on irrigation, and poor access to inputs such as improved seeds and markets.

To address these problems various interventions are needed at different stages of the smallholder irrigation technologies input supply chain.

Plenary discussion

The discussion on the small-scale irrigation session was facilitated by Simon Langan, IWMI. The following key points were raised during the discussion.

- In the Ethiopian irrigation sector, the focus so far has mainly been on physical infrastructure with limited attention being paid to the agronomy part and also to irrigation value chains. We need to move away from sub-sector debates and discussions dominated by irrigation engineers, and include other aspects of irrigation. There should be better integration between the small-scale irrigation unit under NRMD and extension section within MoA. Although both MoA and ATA are working to build the capacity of various actors in the irrigation value chain, starting from production to marketing, more effort is needed to improve involvement of the private sector.
- Farmers' affordability of household irrigation technologies was discussed. Participants suggested there may be a need for subsidies for irrigation technologies to improve adoption by farmers. According to the results of the AgWater Solutions project, about 38% of the cost of the pump is tax. Cutting down some of this tax can be one way of making the pumps more affordable and improving the adoption rate.
- Quality of water-lifting pumps used for irrigation is a serious challenge in the sector. Some of the imported pumps do not fit the local context and farmers refuse to adopt the technology once they experience failures. To address the need for quality control of pumps, the Ethiopian Revenues and Customs Authority has set up a standard, and all the engine pumps pass through the examination of the authority.
- Efficient use of irrigation water is an area where there is a huge gap in the country. Participants appreciated the presentation made by the Melkassa Agriculture Research Center on irrigation water-use efficiency, but noted some of the water measurements may be difficult to explain to farmers. They also asked about the plans to document and disseminate the researcher recommendations. It was explained that the experiments are all field trials and need to be verified on farmers' plots before they can be recommended to end users. Although the water management measures used in the study are difficult for farmers, there are simple water measurement devices that can be suggested.
- A comment was made about the need to improve regulation of water use. With the increased use of pumps for lifting water from surface water sources, drying up of rivers can occur, if done without proper regulation.
- In the household irrigation program, it was discussed that lack of ownership of the program at *woreda* and regional levels has been the main challenge. Learning from experience in the first year of the pilot project, the program has included *woreda* administrators and zonal-level staff in the program coordination and governance structures, in addition to putting the program activities in the annual work plans of government staff. As a result of these changes, the program is seeing positive results in the current year's implementation.
- Collaboration between MoA and MoWIE is raised as a crucial point. Participants suggested the AWMP can support collaboration and all the relevant ministries, including the MoWIE.
- A comment was made that initiatives on AWM technologies should work to integrate water provision for livestock as well.

Session IV: Discussion on the Way Forward for the Platform

The last session on the way forward was facilitated by Simon Langan, IWMI. Accordingly, Simon invited Helen Pankhurst, Senior Advisor, CARE, and HE Ato Sileshi Getahun, State Minister, Ministry of Agriculture, to lead the closing session.

Helen Pankhurst thanked the organizers of the workshop and summarized some of the main themes that emerged. These included the fact that there was much to be learned from the different initiatives currently in place by different actors, the government, NGOs, research institutions and the private sector. The need for better information flow, collaboration and coordination was also very clear. She reiterated the fact that Ethiopia was a country where there was significant potential for water-smart agriculture, but in a context of complexity and variation. This was particularly the case given that the solutions cut across water, land and climate considerations, and involved people and their different motivations and livelihood choices. Solutions had to be tailored to specific contexts, which themselves were liable to change. There was a clear will to continue the dialogue across differences, and she hoped the AWMP under MoA would do just that.

In his concluding remarks, HE Ato Sileshi Getahun underlined that during the two days of the launching workshop of the AWMP, a series of papers were presented and discussed. The topics covered included lessons and experiences of innovation platforms, research findings and recommendations of irrigation technologies, and improved water management practices, particularly in the area of SWC and small-scale irrigation development. In addition, agriculture sector policies, strategies and priority interventions for enhanced AWM were highlighted. The presentations and discussions have helped to share experiences, draw lessons and identify important issues that need attention and action.

At the end of the concluding remarks given by HE Ato Sileshi Getahun, action points were suggested on immediate and future priority areas to further strengthen the AWMP:

- After returning back to their respective working areas or organizations, participants are expected to provide short debriefs or feedback reports on the main issues entertained during the launching event, and the main objectives and operational modalities of the platform to create awareness among the officials of the respective institutions/ organizations.
- The proceedings of the launching event will be finalized and distributed to all participants and members of the platform to facilitate the experience sharing and learning more widely.
- The chair, in close consultation with the co-chair and secretariat of the platform, will further refine the draft ToR developed for the AWMP by taking into account the inputs obtained from participants during this launching meeting, and further decisions will be taken based on consultation with key stakeholders regarding the need for two co-chairs for the platform to encourage participation of stakeholders.
- In order to keep the momentum, it will be very important to arrange agenda items and call the next meeting as soon as possible, focusing on outstanding issues that emanated from the launching meeting.

- Considering the critical research gaps observed, there is a need to call core members of the platform to prioritize research agendas and identify key research institutions, both national and international, to involve, assist or fund identified researches.
- To keep the momentum going and move forward, it is suggested that the annual action plan developed by the former SSI-TF and endorsed by the SLM TC needs to be adopted and used by the AWMP to kick-start the process. For this purpose, a hard copy of the former SSI-TF action plan developed and endorsed for the 2007 Ethiopian Fiscal Year (2014/2015) is circulated to all members of the platform.

Finally, HE Ato Sileshi Getahun thanked all the participants for their active contribution to the discussions. He appreciated presenters and facilitators for effective deliberations and shared experiences. The active involvement of co-organizers, CARE, Ethiopia, and IWMI, in initiating discussions, organizing this launching event, and supporting logistics and the provision of the conference hall with full facilities was also acknowledged.