Using the Learning and Practice Alliance Model to Promote Water-Smart Agricultural Technologies in Otuke District

The Learning and Practice Alliance (LPA) is an approach used by the Global Water Initiative East Africa (GWI EA) to facilitate learning, information dissemination to promote water-smart technology adoption, and influence policy at local and national levels. LPA has been described as multistakeholder engagement (Lundy *et al.,* 2005), a platform, (Yasabu, 2008), and a multisectoral, multistakeholder framework that uses stakeholder-led research to inform interventions (Kennedy *et al.,* 2014). It has been used to deliver the GWI EA strategic outcomes, contributing to the goal of "smallholder farmers achieving greater food security through more sustainable access to and productive use of water." The outcomes of the program are greater political attention to water for smallholder production achieved through changes in policies and plans and their effective implementation; increased investment in smarter, affordable, and innovative solutions to provide water for smallholder production, especially for women farmers; and greater say for women smallholders in institutions that regulate and control access to water for agriculture.

Problem statement

Agriculture extension is the key to the transformation of Uganda's agriculture sector. The sector supports 86% of rural livelihood (MAAIF, 2014). Different extension approaches have been adopted over time (Bashaasha, 2008): Train and Visit (T&V), which is a unified extension system adopted in the late 1980s, was implemented through the public service delivery system with funding from the state. More recent models are aligned to public service reforms; flexible, pluralistic, with focus on efficiency, relevance, and appropriateness, recognition of the role of private sector and increased participation of farmers in decisionmaking, thus addressing issues of cost effectiveness of extension services (Bashaasha, 2008).

In spite of these positive attributes, Nahdy (2014) observes that weak linkages among the actors are responsible for the stagnant growth in agricultural productivity. The Otuke baseline (2013) established that farming households, on average, realized only 15–20% of target yield in a season and only 10% practiced soil and water conservation practices. Yet, the area is fairly dry, receiving between 700 and 1,300 mm of rainfall annually.

Such findings are partly attributed to limited access to and use of technologies due to poor linkages among actors (Naluwairo, 2011). The high farmer to extension worker ratio was estimated at 1:1,500 (Rwakakamba *et al.*, 2008), accounting for only 10% of farmers being served (Rwamigisa, 2014) despite the presence of many actors in the sector. Adopting the LPA approach by all stakeholders along the water-smart agriculture value chain is an opportunity to find solutions that increase farmers' resilience and capacity to cope with weather variability. LPA partly responds to a call by participants in the 2006 African Advisory Services Symposium (AASS) and the recommendation by Naluwairo (2011) to the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) to foster cooperation, linkages, interactions, and feedback mechanisms between and among players in the agricultural sector.

Implementation methods and tools

The LPA is an opportunity to implement the 2006 AASS participants' recommendation to adopt an extension system that supports interconnectedness and enhances feedback (Nahdy *et al.*, 2006). The LPA employs farmer-led action research with an in-built mechanism that involves all actors and provides feedback during the process.

Steps in establishing an LPA

1. *LPA formation/setup phase*

Stakeholders are identified and brought together to build a common understanding and a shared purpose for their existence.

a. *Stakeholder identification and consensus building.* A thorough institutional and stakeholder mapping at the national and district levels is conducted. This helps to place the LPA in the wider context. The most relevant actors are brought on board right from the start. The institutional and stakeholder mapping (2013) identified the most relevant actors as smallholder

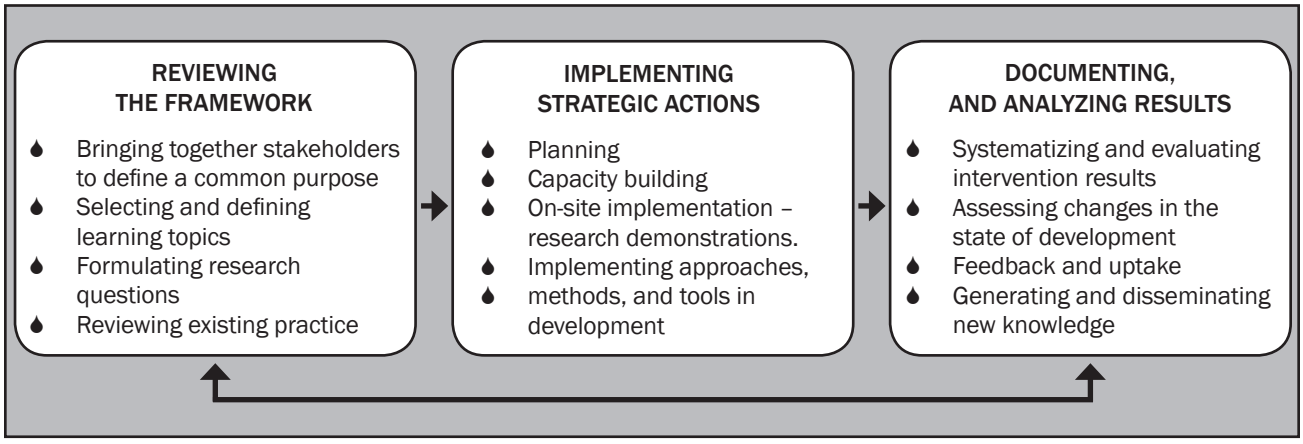

Fig. 1. *Double loop learning cycle in a learning alliance (Adopted from ILAC Brief).*

farmer forums, local government technical departments (e.g., community development, production and marketing, agriculture, water and environment), politicians at subcounty and district levels, research institutions like the Zonal Agriculture Research Institute (ZARDI), teaching universities, nongovernment organizations (NGO), media, and private sector. The diverse level of expertise of LPA stakeholders requires building a common understanding. This takes the form of training, providing information, and exposing members to different contexts of the LPA. The key issues covered include the what, how, when, who, and why of LPA. These experiences were used by the participants to establish their own LPA in Otuke District.

b. *Establishment of management structure, committees, and roles, and responsibilities.* Clarity of purpose, scope, and governance are central to the success of the LPA. Members are supported to constitute a task force that drafts the terms of reference for LPA to approve. Roles are articulated, a governance structure is agreed upon, and office bearers are nominated. The Otuke LPA formed a steering committee to provide an oversight function to the LPA. The action research teams undertook research activities on agreed topics and GWI EA served as the LPA secretariat.

2. *Planning and reviewing the existing approach*

a. *Review of existing practice.* The LPA is supported to review existing technologies, approaches, and practices. They identify what is working and the challenges of adoption. Using different participatory appraisal tools such as question-and-answer, brainstorming, or focus group discussions, they analyze and prioritize issues generated and agree on how to tackle them.

b. *Selection and definition of research topics and questions.* The issues earlier generated are further discussed and refined with the farmers' input. Together with farmers, they rank them in the order of importance, agree on three priority issues, and form topics for action research. The steering committee refines the topics and drafts the research questions.

c. *Formation of research teams.* Based on the topics and using the self-select principle, members were asked to choose a research topic of their interest, knowledge, technical competence, and with a potential to contribute to their institutional mandates. Each research team comprises five to nine members. This ensures that the formed research teams remain committed throughout the research cycle. Each team has two researchers from a teaching university and an agricultural research institute, a technical person from local government, farmers, a politician, a media person, an NGO representative, and where available, a woman.

3. *Implementing strategic actions*

a. *Design and adaptation of methods and tools.* The research teams identify chairpersons and secretaries to guide the execution of the action research. The secretaries are the custodians of minutes and documents generated during the research cycle. The steering committee supports the research team to refine the research questions and develop objectives of the action research. The research team designs the methodology and data collection tools. They work with the farmers to develop criteria for selecting farmers to host the technologies. The criteria in Otuke include ownership of at least 2 ha of land; willingness to learn and train others; readiness to host, maintain, and develop technology demonstration sites; and commitment or support from a spouse. All tools were reviewed and approved by the steering committee on behalf of the LPA.

b. *Capacity building and action research activities.* Both research team and champion farmers undergo a series of training to harmonize understanding and expectations. At the farmer level, the focus of the training is setting up and managing the demonstration plots. For the research teams, the training focus is support of champion farmers, data collection, and analysis skills and the team agrees on the role of each member in the research process. This increases the sense of ownership and commitment and members feel valued. Capacity building is a continuous process in the action research cycle and strengthens learning within the LPA.

4. *Documenting results and learning*

a. *Assessment of changes in the state of development.* The research teams pretest data collection tools for reliability and they review farmer's records during routine monitoring. This ensures compliance with agreed on

standards for managing demonstration plots. After each monitoring exercise, teams convene to review experiences and agree on how to deal with challenges; three to five meetings are recommended in the entire research cycle.

b. *Analysis of results. Individual research teams review the collected data:* They process, sort, analyze and interpret data. This is consolidated into a research report which is enriched with qualitative data in the form of farmers' experiences with different water-smart technologies. The draft report is shared with the steering committee and the secretariat for further input and refinement.

c. *Experience sharing and learning meetings.* The chairperson of the LPA, with support of the steering committee and the secretariat, convenes the LPA meetings. Research teams are invited to provide updates on research and present the research reports at the district level. Meetings for targeting the champion farmers who hosted technology demonstration sites are also convened to share experiences. These platforms encourage peer learning among the champion farmers. In these meetings, common challenges are identified and solutions agreed upon by all the champion farmers. These meetings are also used to corroborate the results.

GWI EA has already achieved a degree of success through the LPA framework. Noteworthy accomplishments to-date include the strengthened relationship between local government and champion farmers and new interactions among diverse LPA members. (Independent evaluation, August 2014 – Emory student interns)

Monitoring and evaluation

The LPA has a built-in and well-structured monitoring and evaluation system that allows feedback, dialogue, and hence internal reflection. It also allows continuous review of progress and identifies lessons and challenges during the research cycle, which supports joint problem solving.

In order to track behavior change, outcome mapping is used to gauge progress. Outcome journals are kept by the GWI EA teams on selected boundary partners that are critical to assessing behavior with regard to adoption of the water-smart agriculture technologies in households and the community districts that form the LPA.

Lastly, an external review was conducted by a team of Masters' research students to assess the LPA achievements. Their findings confirmed that LPA's systematic feedback mechanism builds a strong sense of ownership. This instills commitment both from farmers and decisionmakers, thus increasing the potential of stakeholders to adopt water-smart agricultural technologies.

Key achievements

- District ownership of the process: The district agricultural officer chairs the LPA and relevant district departments are active members. The District Production Department allocated and prefer UGX 4 million on a drip irrigation system on a demonstration site in Olilim sub-county.
- Increased adoption of water-smart practices and techniques that were not in Otuke before: Initially, the project started with 24 champion farmers, 16 of whom were women; by the end of the first cycle, the number of adopters had increased to 27 youth, 20 of whom were men and 7 were women.

New farming techniques such as ridges, minimum tillage, and cover crops have been adopted by farmers. The farming members of the LPA have demonstrated willingness to procure their own agro input and are expanding the land under improved agricultural practices in anticipation of higher yields.

Members of the LPA come possessed with diverse technical and practical experiences. Once research topics have been agreed upon, members choose to participate in an action research study where they feel comfortable to provide technical knowledge, or where the organizations they represent have an interest because of mandate or where the individual has personal interest. This helps keep the research teams committed throughout the entire cycle.

Results

The immediate outcome has been the increase in knowledge and skills in the production of vegetables. Champion farmers earned extra income from growing and selling tomatoes. Farmers earned between UGX 330,000 and UGX 1 million from plots ranging in size from 200 to 600 square meters. This compares very favorably to the previous experience when farmers with very low incomes grew several crops on larger pieces of land (see box). This motivated farmers to procure inputs for the second cycle and attracted the youth to participate in agriculture where all 27 are below 35 years of age.

To date, a number of techniques and practices of soil and water conservation such as surface runoff, groundwater management, and conservation agriculture have been successfully piloted with the initial 24 farmers who were taken on as champion farmers. More noteworthy, 27 adopters are also practicing the soil and water conservation techniques learned from the champion farmers.

Conditions for long-term cooperation and coordination within the sector have been created through joint learning between farmers, researchers, extension workers, and policymakers and farmers informing the learning agenda as observed by Jillian Kenny in her blog (http://www.gwieastafrica.org/lpa-the-glue-that-binds-smallholders-and-district-officials-in-otuke/).

Local-level action research activities are now linked to the national level process through the research oversight committee with the Uganda parliamentarians' forum on food security further galvanizing the learning.

Key challenges

The LPA is a new concept that involves working with many stakeholders to generate action research results in a short period of time. Therefore, a flexible approach that emphasized building members' knowledge and concurrently working on the LPA establishment was adopted. Participation in the LPA is voluntary, and balancing the demands from their mainstream work would have been difficult in the critical research stages. Pegging the membership of research teams to individuals' interests and institutional mandate maintains commitment.

> Santa Opio Acen, a champion farmer in Orum subcounty says, "Last season (December 2013), from 3 acres of land, we harvested 3 basins of beans, 4 bags of unhulled rice, and 200 kg of millet. We only earned UGX 175,000 from the sale of 2 bags of rice. The plot size for Santa Acen was 400m^2 from which she earned the family earned a gross income of UGX 359,700."

The LPA activities were tied to the cropping cycle, which was delayed by late onset of rains. This meant that LPA field research activities were also delayed. However, the time was used to plan, design the research, develop data collection tools, mobilize communities, develop criteria, and select champion farmers as well as support training and establish, manage, and monitor the demonstration plots.

Conclusion

The LPA is an effective tool when complemented with action research driven by farmers whose behavior and practices are being influenced. With only 18 months of implementation, the LPA approach has demonstrated great potential to influence adoption using experiential learning through observation and reflection, which are embedded in the entire process. This supports action and accountability at different levels.

The LPA has demonstrated that promotion of water-smart agriculture technologies should be promoted together with marketable crop enterprises. This has been the incentive that attracted the youth to take up technologies because it was economically feasible as crop loss was minimized and there was ready market for the produce. It is important to select water-smart technologies together with crops and assess the viability of the entire value chain to minimize risks.

Adopting a structured process with jointly agreed milestones and timeframe ensures that all stakeholders are engaged. This harmonizes expectations and supports members to hold one another responsible. It is also imperative that financial resources are mobilized before introducing the LPA. Over time, external funding should decrease as efforts to integrate the LPA into the existing government structure is ensured from the start as a sustainability measure.

The government and other actors are encouraged to adopt the LPA approach as a mechanism to enhance coordination, synergy, learning, and feedback and ensure increased adoption of the water-smart agricultural technologies because of their effectiveness.

Authors

Violet Alinda
Policy and Advocacy Manager
GWI EA at CARE International in Uganda
Email: Valinda@co.care.org,
Alinda.violet@gmail.com

Clement Mayanja
The Monitoring and Evaluation Coordinator for the Global Water Initiative East Africa.
Email: Cmayanja@co.care.org

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