AGWATER SOLUTIONS

Improved livelihoods for smallholder farmers

PROJECT METHODOLOGY

Opportunities – Constraints = Successful Uptake of Innovations

Improving the success rate of agricultural water management projects and investments with a new, easy-to-use approach

While there are a number of well-documented methods for screening and evaluating agricultural and natural resources technologies, there is not an approach tailored to the specific challenges of Agricultural Water Management (AWM). Such an approach could greatly increase the percentage of AWM initiatives that succeed, while enhancing benefits and reducing associated negative externalities.

To fill this gap, the AgWater Solutions project is developing and testing an approach known as Participatory Rapid Opportunities and Constraints Analysis (PROCA). PROCA provides a systematic analysis of different types of innovations (technology, policy, community empowerment) in order to identify solutions for improving agricultural water management and ultimately smallholder livelihoods.

Donors, ministries, investors and NGOs can use PROCA to:

- design and refine AWM investments or projects,
- monitor and evaluate on-going projects to improve implementation, and
- assess the impacts of completed projects.

Putting PROCA into action

PROCA has three basic steps (see Table 1). The steps are not necessarily linear and not all may be needed to identify appropriate innovations – depending on whether the innovations under consideration are software (e.g., policy changes) or hardware (e.g., small-scale irrigation technologies) and how well tested they are. In addition, the steps can be adjusted to suit ex ante or ex post evaluation

Table 1. The three interactive steps of PROCA

Step	Activity	Methods	Key evaluation criteria
Step 1: Situational analysis & initial screening	identification & prioritization of possible AWM solutions	literature reviews, secondary data collection & analyses, brainstorming, surveys, workshops, gender mapping, priority setting using scoring and ranking techniques	impact potential, gender-equity, scale potential, implementation pathway (ex-ante)
Step 2: In depth case studies	further evaluation of AWM solutions that passed step 1	field research, modeling	access, economics, social and institutional dynamics, backwards linkages, forward linkages, resource sustainability, externalities
Step 3: Analysis of outscaling impacts	analysis of sustainability & externalities at larger scales	hydro-economic modeling, partial equilibrium analysis (e.g., cost benefit analysis, economic surplus analysis), GIS /RS applications	sustainability, externalities

Situation analysis and initial screening

This step starts with making an inventory of existing initiatives, ideas and projects: Who is doing what? What approaches work and where? What are the factors that influence success or failure? The idea is to cast the net wide and look not only at technologies but also policy and management innovations.

Next, the resulting long list of possible AWM solutions must be screened using four key criteria (see 1st Box below) to identify those that deserve a closer look. In the AgWater Solutions project, an important element in this process is the national consultation meeting where stakeholders make a first selection of promising solutions for their country. This national scoring and priority setting exercise not only facilitates rapid identification of the most appropriate AWM solutions, but also improves linkages among stakeholders and builds a spirit of collaboration.

In depth study to analyze opportunities and constraints

Step 2 is to analyze opportunities and constraints for the promising solutions identified in Step 1, while looking for ways to enhance the former and ease the latter. PROCA focuses on seven clusters of constraints that must be addressed for a technology or a policy/management innovation to succeed (see 2nd Box below and right). Some of these constraints will be internal to the community and can often be resolved locally; others will be the result of external forces and will require action at higher levels (for example, changes in national policy). This analysis will result in an even shorter list of possible solutions and a better understanding of the circumstances under which they can be successful.

The four hurdles: Criteria for identifying promising solutions

Possible solutions are evaluated and compared according to four key criteria. These criteria can be thought of as hurdles that the possible solution must pass in order to qualify for the next step. The four criteria are:

- **Contribution to smallholders' livelihoods:** it increases smallholder income, food security and household water availability and decreases drudgery, income fluctuation and risk.
- **Gender and equity considerations:** it benefits women as well as men, does not place an undue burden on women or children, and does not increase income disparity in a community.
- **Out-scalability:** it has the potential to benefit a relatively large number of people over a wide geographic area.
- **Ease of implementation:** it has an implementation and dissemination pathway that is sustainable and cost-effective and an identifiable champion to carry it out.

Analysis of outscaling impacts

Although it's important to consider outscaling impacts from the beginning of the process, a more in-depth impact assessment is required before promoting the spread of an innovation. Step 3 is to evaluate the likely positive and negative impacts and externalities of outscaling the promising AWM solutions identified in Step 2 – looking at the potential to positively or negatively affect water resources, the wider economy and the environment.

Key questions for evaluating opportunities and constraints

1. **Technology access:** How accessible is the innovation at the household level and in particular to women?
2. **Technology economics:** How affordable is the innovation to adopt and maintain? What are the costs (in terms of money and labor) and benefits (in terms of income and food and livelihood security) and how are these distributed among different members of the household and community?
3. **Techno-institutional, social and policy dynamics:** What institutional structures are necessary to support uptake and optimal performance of the innovation? To what extent are these present, functioning and accessible to men and women?
4. **Backward linkages:** How strong (or weak) are the input linkages necessary to adopt and benefit from the innovation?
5. **Forward linkages:** How strong (or weak) are the market linkages—roads, communication, cold-chains, etc.—necessary to derive optimal benefit from the innovation?
6. **Resource sustainability:** How reliable is the resource base in terms of its ability to sustain the innovation?
7. **Managing externalities:** What are possible social, health and environmental consequences from large-scale uptake/implementation and how can these be eliminated or ameliorated?

What are the advantages of PROCA?

It's participatory – PROCA involves a variety of people at different stages and levels: farmers, policy makers, donors, researchers, and key informants. Thus it takes advantage of local knowledge and ensures solutions are tailored to the context and the needs of end users.

It's rapid – PROCA relies on participation of stakeholders to identify tentative solutions and then screen and prioritize the most promising ones for more in-depth analysis. This phased approach saves time and resources and demonstrates results up front, which helps keep stakeholders engaged.

It's multidisciplinary – To provide a more complete picture, the conceptual and theoretical basis of PROCA draws from the fields of hydrology, water resources management, sociology/ social-anthropology, economics, management science, and irrigation engineering.

It's scalable – PROCA can be used at a variety of scales—farm, community or watershed—and can be used to assess the potential for further outscaling.

It's adaptable – PROCA gives the user the freedom to use a variety of tools and methods as long as they provide robust answers to the evaluation criteria defined in the protocol. Table 1 provides an overview of some compatible tools and methods. By outlining a common but adaptable approach, PROCA facilitates comparison of AWM interventions across types, sectors and countries.

Project outputs

- A **proven methodology** to assess AWM interventions.
- A **portfolio of promising interventions** by country, selection criteria and circumstances under which they succeed or fail. These results will be synthesized in a series of **intervention briefs**.

AgWater Solutions is a three year research program funded by the Bill & Melinda Gates Foundation. Its objective is to identify investments in agricultural water management with the greatest potential to improve incomes and food security for poor farmers and to develop tools and recommendations for policy makers; donors and other investors; NGOs and government agencies working in water, agriculture, and rural development; and smallholder farmers themselves. The research is being carried out in six countries in sub-Saharan Africa and South Asia: Burkina Faso, Ghana, Ethiopia, Tanzania, Zambia, and India. Partners include six international organizations - with expertise in research, implementation, and outreach - as well as many national and regional partners. See **http://awm-solutions.iwmi.org/** for more information.