

Research in development: Learning from the CGIAR Research Program on Aquatic Agricultural Systems



RESEARCH IN DEVELOPMENT: LEARNING FROM THE CGIAR RESEARCH PROGRAM ON AQUATIC AGRICULTURAL SYSTEMS

Editors

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LEARNING FROM THE IMPLEMENTATION OF THE RESEARCH-IN-DEVELOPMENT APPROACH

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Background

Approximately 500 million people in Africa, Asia and the Pacific depend on aquatic agricultural systems for their livelihoods. Of these, an estimated 137 million live in poverty¹ (Béné and Teoh 2014). They live in coastal zones and along river floodplains and other wetlands, where they are vulnerable to increasing population pressure, natural resource depletion and degradation, biodiversity loss, climate change, sea level rise, and increasingly frequent and severe extreme weather events. The men and women who live in and depend on these systems are an integral part of the systems themselves. Socio-cultural systems are inseparable from natural systems in that livelihoods make use of both ecological processes and the diversity of productive options for growing and harvesting food and other products that generate income and well-being (Chiesura and de Groot 2003; AAS 2011). Aquatic agricultural systems are vulnerable, diverse, complex social-ecological systems² to which people continue to apply traditional management and productive practices in many societies.

A central role for agricultural research in complex social-ecological systems is to learn how to use research processes and outputs in ways that build the capacity of smallholder farmers and fishers to innovate faster, more effectively and more equitably as a means to poverty reduction. Men and women farmers and fishers living in aquatic agricultural systems have always innovated to adapt to change based on their indigenous and local knowledge. Today, the increasing rate and scale of change demands that smallholder farmers and artisanal fishers innovate better and faster than ever before if they are to maintain a state of well-being. Vulnerability varies by socioeconomic group. Women and marginalized peoples tend to be more vulnerable to sudden change and

often have less access to the range of resources and factors needed to support innovation (time, acceptability of risks in experimenting, networks, etc.). Furthermore, inequities in access to agricultural resources reduce productivity and the ability to secure sufficient nutritious food throughout the year.

The CGIAR Research Program on Aquatic Agricultural Systems (AAS) began operation in 2011 with the aim of reducing poverty and improving food security for small-scale fishers and farmers dependent on aquatic agricultural systems (AAS 2011). As well as seeking to generate outcomes that directly improve the productivity and resilience of aquatic agricultural systems through agricultural research, the program set a goal of better understanding how agricultural research can itself innovate such that it meets the challenge framed above—helping poor and vulnerable people achieve more equitable and more sustainable livelihoods from the social-ecological system they are part of. To capture the intent of this goal and to contrast the program's approach with "business as usual" agricultural research, AAS coined the term "research in development" (RinD).

In this document, business as usual refers to the common problem-solving process used in science where the researcher is understood to stand objectively outside the system under study and produce a research output, which is then adopted and adapted by users to solve a specific problem. In the business-as-usual model, adoption or adaptation is usually not the researcher's concern. Typically, researchers are neither recognized nor rewarded if users adopt their output (Campbell et al. 2015). The result is a disconnect between researcher and user, resulting too often in research technologies that do not meet local needs and are abandoned. Consequently, much technology development does not necessarily have development impact. The optimistic but common term used to describe these technologies is "on the shelf." The business-as-usual model has also been called the "pipeline"

approach (Sumberg 2005), the “central source of innovation” model (Biggs 1990), and in industry, the “delivery” mode or “over the wall” approach (Leonard-Barton 1998).

In contrast, the term “research *in* development” implies an approach where the research is carried out within and as part of a more complex social-ecological system. In this approach, the distinction between “inside” and “outside” becomes less obvious and innovation is seen as a process that links across them. This does not mean that all research must be implemented directly with farmers and fishers; indeed, there is a need for basic research to support improved productivity in aquatic agricultural systems (such as developing a new variety of rice) that requires scientists to work away from the farm. The emphasis on linking and innovation, however, calls for all agricultural research to be cognizant of how its outputs support and engage with local processes of innovation to achieve development outcomes. This recognition pushes agricultural researchers to think beyond the specific problem they are aiming to address and embrace a broader perspective on how development is achieved.

Approaching systems through only their parts means we run the risk of not appreciating the whole. Poverty in social-ecological systems is multifaceted, and the causes of inequality are often hidden (Pelling 2010; Kabeer 2012). Consequently, an approach to agricultural research that aims to support poverty alleviation and is particularly concerned about marginalized peoples must look beyond the easily identifiable agricultural problems that business-as-usual models are good at solving. It must also understand underlying social dynamics and the patterns of interactions between stakeholders that may inhibit equitable outcomes for all. This more complex and socially aware approach to agricultural research builds on and extends the experience and learning from farming systems research (e.g. Gilbert et al. 1980; Scoones et al. 2009) to embrace underlying development processes and appreciate patterns of interactions. It is aligned with a growing field of research and practice in development that acknowledges complexity (e.g. Jones 2011; Ramalingan 2013). RinD intends, therefore, to take a more holistic

approach and look beneath the surface so that agricultural research can equitably support capacity to innovate and achieve sustainable development outcomes.

Overview

The AAS program proposal (AAS 2011) defined an RinD approach to agricultural research as one that is cognizant of the multifaceted nature of poverty and one that aims to address challenges in complex social-ecological systems. The RinD approach as it is now understood by the program has evolved from the initial intent to greater articulation of its elements and requirements as the proposal has been operationalized. As of October 2015, AAS has been in operation and developing the RinD approach for 3 ½ years in five hubs.

Hubs are defined as “locations within key aquatic agricultural systems where innovation and learning can bring about development outcomes” (AAS 2013, 5). As of May 2015, AAS was working in five hubs: the Barotse floodplain in Zambia; the Southern Polder Zone of Bangladesh; the Tonle Sap floodplain in Cambodia; the Visayas-Mindanao region in the Philippines; and Malaita and Western provinces in Solomon Islands.

The biophysical and socio-cultural context of each of the hubs is unique and requires adaptation of the implementation approach to each context to address relevant development challenges. Consequently, the RinD approach is being developed through a case study approach to learning from implementation, with each hub as a case of RinD implementation. This forms a core part of AAS research on the RinD approach, which aims to generate lessons that are useful more broadly in the field of agricultural research and development practice.

This working paper aims to synthesize and share learning from the experience of adapting and operationalizing the RinD approach to agricultural research in the five hubs. It seeks to share learning about how the approach is working in context and to explore the outcomes it is achieving through initial implementation over 3 ½ years. This learning can inform continuation of agricultural research in the second phase of the CGIAR research

programs and will be useful to others aiming to implement research programs that seek to equitably build capacity to innovate in complex social-ecological systems. In the next section, we describe what RinD was understood to be in 2013 (Dugan et al. 2013), providing a starting point for the chapters that follow, which explore lessons about particular aspects of the approach and their outcomes.

The RinD approach

The first step under the RinD approach in the hubs was to articulate a hub development challenge collectively with stakeholders through a participatory planning process. Scoping and diagnosis of particular challenges, both biophysical and socio-cultural, was undertaken by multidisciplinary research teams. The resulting hub development challenges provide the guiding collective vision for how agricultural research in each hub can contribute to achieving development outcomes and set up the program of work. Stakeholders then agree to tackle the hub development challenge and implement interventions. Planning the interventions requires further articulation of specific research agendas.

The approach used to implement these interventions, described in Figure 1, utilizes four elements: commitment to people and place, participatory action research, using a gender-transformative approach, and facilitating learning and networking. The approach also requires two enabling conditions: partnerships and capacity development. The elements build on a range of theories on and experience from agricultural research-for-development experiences (e.g. Hawkins et al. 2009; Hall et al. 2014).

Commitment to people and place is based on the assumption that people have the potential to innovate and bring about meaningful change, and that a sustainable way to improve livelihoods is to leverage this potential for deeper and longer-lasting change (e.g. Chambers and Ghildyal 1985; Hickey and Mohan 2004). AAS aims to foster development within communities through engaging the poor and marginalized across scales to help improve their access to and use of the process of agricultural research, as well as the research outputs produced. This takes time and commitment from researchers working collaboratively with local stakeholders as everyone learns together how to make the most of the potential that lies within the system.

Participatory action research (PAR) is the core engagement process that RinD uses to ensure beneficiaries are co-owners in the process of finding solutions to their own problems and in building their own capacity to reflect and innovate (Reason and Bradbury 2008), and is described in Apgar and Douthwaite (2013).

A gender-transformative approach embodies a commitment to and strategies for social transformation that result in equity and equality among diverse actors (Cole et al. 2014b). A gender-transformative approach frames the research process as one that combines technical knowledge generation with equity-oriented transformative learning. AAS seeks both to address the visible aspects of gender and other social gaps and to create opportunities for actors to shift the underlying norms, attitudes, practices or policies that shape these gaps.

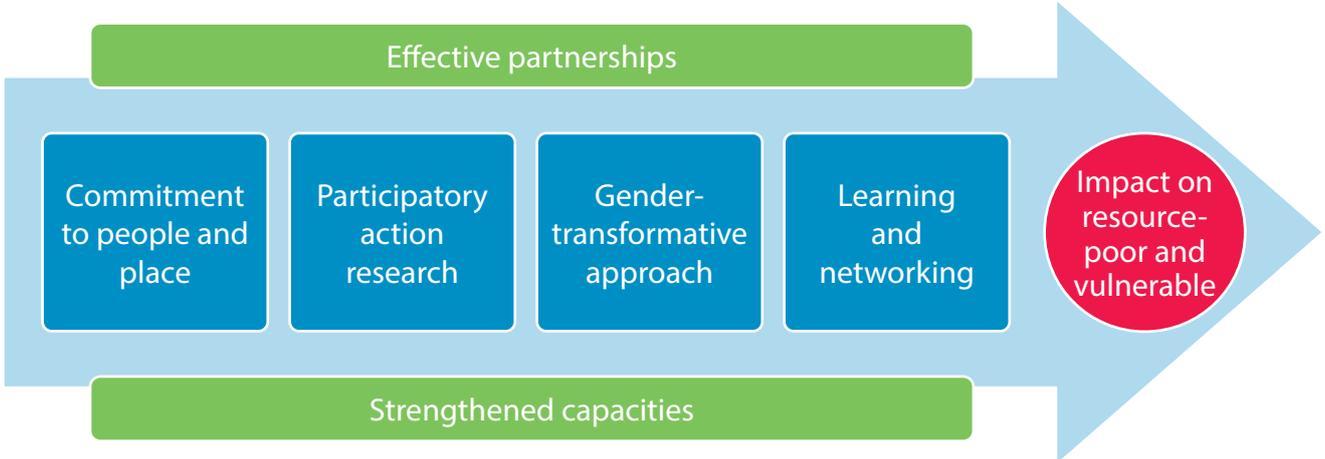


Figure 1. Six elements that constitute the AAS RinD approach (adapted from Dugan et al. 2013).

Learning and networking stress the need for adaptive management, learning and adapting as hub programs of work are implemented, as well as using monitoring and evaluation as another set of tools to ensure this happens (Douthwaite et al. 2014). RinD requires those involved to be aware of their own mindset throughout the implementation and to learn new skills, such as facilitation and networking. Effective partnerships acknowledge that intervening meaningfully requires working with others, and that building partnerships at all levels is the pathway to greater development outcomes.

Methodology

This paper is the result of program-level PAR. Action researchers recognize that there are multiple and overlapping levels of inquiry, referred to as first-, second- and third-person action research (Reason and Torbert 2001). First-person research refers to learning through individual self-inquiry. Second-person research is relational and includes reflecting and learning with peers in a community about a particular area of theory or practice. Third-person

research refers to learning with stakeholders about the broader issues that are the focus of a specific inquiry. AAS engages all three levels to surface and document learning that is used to improve practice and enable others to learn and to answer research questions about RinD, contributing to the global discourse through the production of international public goods (Figure 2).

As the basis for identifying and measuring AAS outcomes, AAS has implemented a learning system that includes hub RinD implementation teams who engage in third-person research with hub stakeholders. These teams engage in their own second-person research and annually consolidate their learning around specific research areas. Once a year, representatives from hub teams come together for a cross-hub review and engage in another level of second-person research with their peers from other hubs. Cross-hub learning is facilitated by a global RinD team of researchers based outside the hubs. This working paper is an output of this cross-hub learning.



The participatory process of data collection.

In January 2015, the AAS cross-hub review brought together hub staff and the global team at WorldFish headquarters in Penang, Malaysia (AAS 2015). The review process enabled hub teams to share what they had learned across contexts and to articulate common themes. Prior to the cross-hub review, each hub team had carried out their own review with stakeholders in which they reflected on three topics: what worked and what did not in implementing and building capacity for RinD; early evidence of outcomes; and the continued relevance of the overall hub strategic framework (AAS 2014).

This review process identified the following six areas of collective learning about RinD from across hubs:

- learning from community engagement
- learning about partnerships
- learning from the integration of the gender-transformative approach
- learning about how to make science more inclusive
- learning about capacity development
- generating a better articulation of RinD and its value.

In the following chapters of this working paper, the first four areas of learning are investigated.

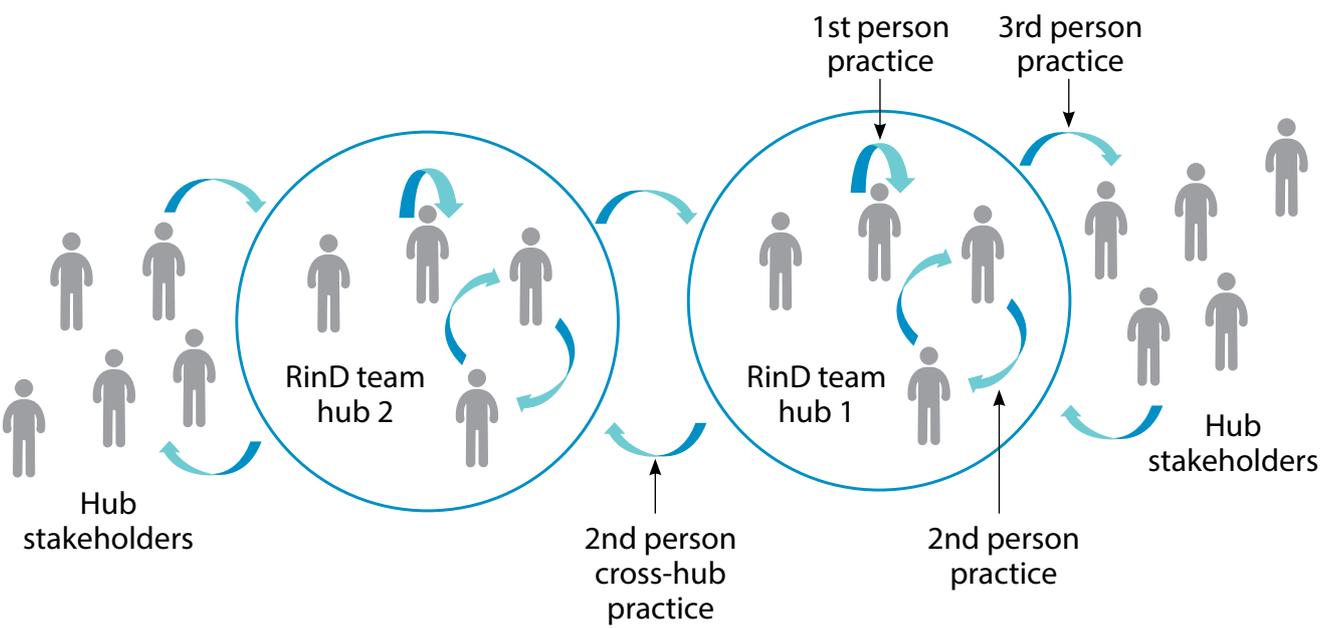


Figure 2. AAS learning system, including first-, second- and third-person action research.

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Introduction

A core aspect of the AAS RinD approach is its focus on engaging with communities through a process known as PAR. This is a methodology used in many practitioner-based fields to support engagement of stakeholders in the process of research in order to promote empowerment and behavior change (e.g. Reason and Bradbury 2008). AAS builds on the long history of farmer participation in agricultural research (e.g. Chambers and Ghildyal 1985; Biggs 2008; Scoones et al. 2009) and extends it through a purposeful approach to community engagement.

The AAS RinD approach assumes that using participatory engagement with stakeholders in designing, planning, implementing and learning from agricultural research will lead to empowerment and ownership such that more lasting outcomes can be achieved. Examples from health (e.g. Tindana et al. 2007; Nakibinge et al. 2009), education (e.g. Weerts and Sandmann 2008; Butin 2010), business (e.g. Bowen et al. 2010) and community development (e.g. Tamarack 2007) illustrate that better results can be achieved when communities are involved in development processes that affect them. AAS believes that engagement with a select number of communities in a hub over the lifespan of the program can inform and build a joint research agenda.

This chapter examines what we have learned about community engagement and PAR.



Community members in the Khulna hub attending an AAS meeting, Bangladesh.

Design of community engagement within RinD

Commitment to people and place: PAR across scales

Commitment to people and place and PAR are both elements of the AAS RinD approach. In AAS, PAR is composed of iterative, facilitated cycles of planning, acting, observing and reflecting with stakeholders at the community and hub levels. Through this process, stakeholders identify and begin to address their own development challenges through agricultural research. This process allows communities to reflect on how change is happening, thus becoming an integral part of the monitoring and evaluation system. Figure 3 shows the two levels at which the program engages with stakeholders.

The AAS PAR process starts with a multidisciplinary research team scoping the biophysical and social dimensions of the aquatic agricultural system to identify opportunities and development challenges. This scoping leads to the selection of local sites for community engagement and articulation of a hub development challenge that guides

the program. Then, researchers engage with communities and document community visions, priorities and action plans, which are owned by the communities. The final step of planning during the first cycle is a workshop that produces a program of work for the hub, including research initiatives that address community visions and support community action.

The next cycle of stakeholder engagement starts with initiative planning. An initiative includes research and development activities with partners that directly support community action plans and answer identified research questions. Concurrently, communities continue their cycle of planning, acting and reflecting on what they have learned through implementation. An annual review workshop provides opportunity to adjust initiatives and community actions. The intent of continued engagement at two levels is to build and strengthen links between the local actions and achievement of outcomes on the ground with system-level processes of research and change. Together, the two levels of engagement aim to tackle the hub development challenge.

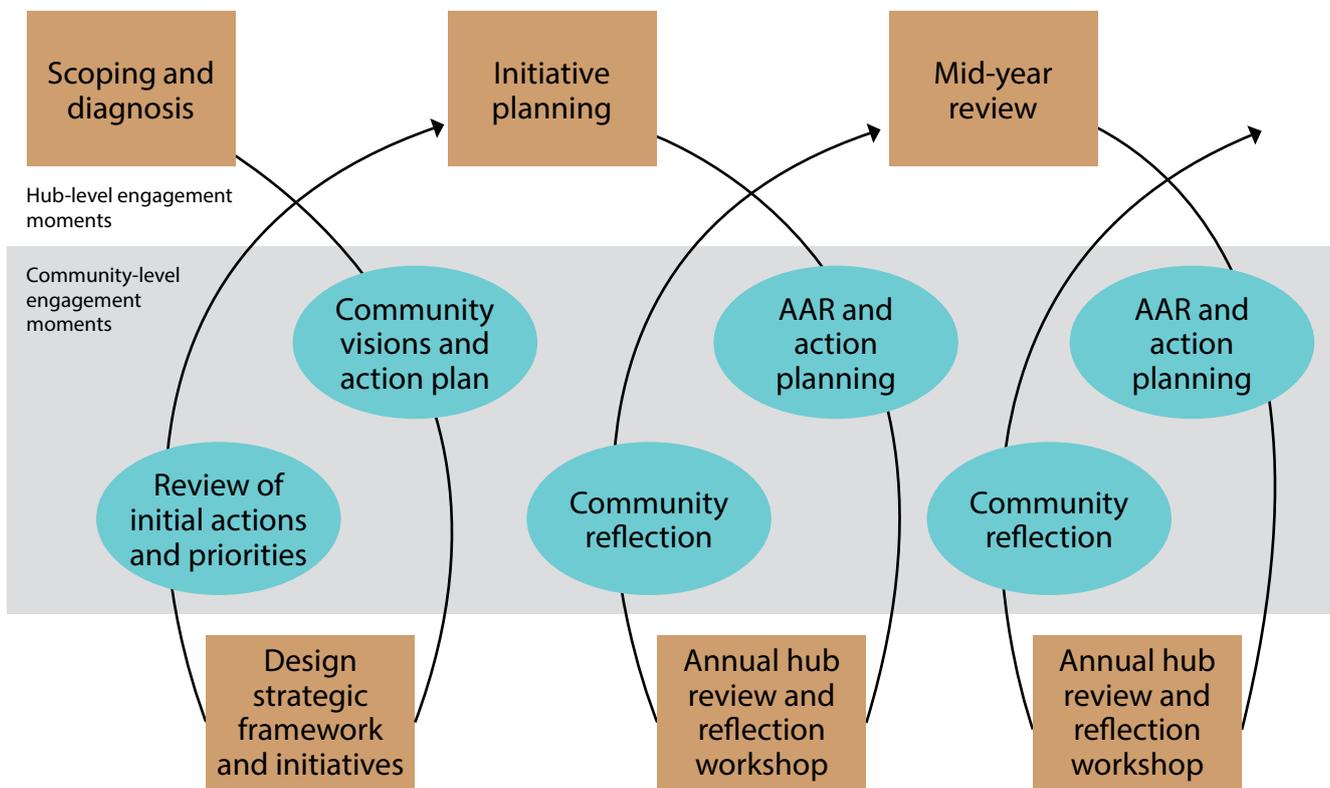


Figure 3. AAS program engagement cycle across scales in hubs. (AAR stands for after-action review.)

Principles of engagement

Engagement with hub and community stakeholders through PAR is designed to ensure that agricultural research helps achieve community goals relating to production, food security, nutrition, income, environmental conditions, etc. The focus on practical solutions to real-life concerns (e.g. reduced soil fertility, water availability, reduced incomes, etc.) means that the process is context specific. Many issues and concerns, however, occur across different farming communities, thus enabling sharing of learning and scaling of impact. For consistent implementation across AAS hubs, we identified four principles to guide PAR implementation (Box 1). These principles are consistent with similar analyses (e.g. McTaggart 1991; Stringer 2007; Reason and Bradbury 2008).

Ownership. The first principle assures that by returning to their own community visions to reflect on what has been achieved, the men, women and youth of the locality co-own the process of research and the learning that emerges throughout the implementation of their action plans and the supporting initiatives.

Equity. This principle helps ensure that facilitation teams (co-researchers) pay attention to the multiple voices that influence the community vision and action plans and the processes through which they are developed, implemented and reflected upon. This principle is further strengthened through the program's transformative approach to gender (see the gender chapter for further explanation of the approach to gender).

Ensuring equity in the PAR process requires strategies for the creation of "safe spaces" where men, women and youth can freely express themselves and safely question underlying norms that contribute to inequity and inequality. Specific research interventions to support the achievement of community visions need to be designed and implemented in ways that are cognizant of social differentiation and implications for participation and benefit. This requires initial research to understand why inequities and inequalities related to gender, ethnicity and religion exist, as well as how they affect choices and outcomes. That knowledge can then be used to design activities that facilitate change in underlying attitudes and beliefs and manage any consequent tradeoffs.

Shared analysis. The third principle focuses on an area of research practice: analysis. Implementing this principle means that researchers who are facilitating the PAR process enable other stakeholders who are co-researchers to take part in the analytical steps that lead to greater understanding of a particular issue that relates to the collective concern. Appropriate data collection and analysis methods are used, depending on the specific question being addressed. Researchers have a responsibility to proactively involve stakeholders in the process such that the group as a whole can learn, rendering the results of the research process more useful and able to address real-life concerns.

Feedback. The fourth principle emphasizes the commitment to support ongoing development and enablement of joint learning. By emphasizing feedback mechanisms, researchers are required to think beyond production of a research output and consider how to keep the research connected to community visions, particularly in relation to how outputs are used and how they may contribute to achieving desired development outcomes.

Box 1. Principles for PAR design and implementation across AAS hubs

Ownership:	The process is owned by the participants, who define real-life problems to address through PAR.
Equity:	Facilitators recognize multiple voices and power relations and are mindful of who is participating and how.
Shared analysis:	The process emphasizes jointly shared responsibilities for data collection and analysis to support improved understanding and action.
Feedback:	Results of the process are fed back to the participants for ongoing learning that supports adaptation and transformation.

Initiating community engagement: The community life competence process

AAS recognized that implementing community engagement was outside CGIAR's area of expertise when designing the program. Consequently, the program developed a partnership with Constellation,³ an international nongovernmental organization (NGO) with relevant experience who shared similar goals of building local capacity to respond to development challenges (see the partnership chapter for more on shared partnership learning). The community life competence process developed by Constellation was adapted to RinD and used to initiate engagement with community-level stakeholders in all five hubs during the first cycle of engagement. Constellation coaches worked closely with hub teams and implementing partners to build their capacity and guide implementation.

The community life competence process is a strength-based approach in that it emphasizes a particular mindset among facilitators (Box 2). The process comprises a number of steps that lead to development of community action plans. Community mobilization is initiated through visits to selected communities to build relationships, identify community strengths and stimulate members of the community to think critically about their situations. Mobilization involves identifying local facilitators (both men and women) who can act as a bridge between the program and the community and who become community researchers.

The next step is "dream building" to develop a community vision of success. Men, women, old and young are first engaged separately to create safe spaces for their own visioning

processes. Consolidation of the different visions to develop a collective vision is facilitated where desired and appropriate. From the dream as articulated, community members (as a collective or in separate groups, depending on the context) then identify priority areas for action. They conduct a self-assessment as a critical reflection on their situation in order to identify constraints. This exercise is aimed at identifying gaps between their present situation and their desired state. Next, they prioritize areas and identify actions that a group of people in the community are motivated to undertake to move towards achieving their vision of the future (in many cases these are actions for the whole community, such as building a community-owned market). This stage is called "prioritization and action planning." The result is a set of community-owned action plans (some collectively owned and some owned by smaller groups or by a particular social group such as women or youth) with commitment to implement the plans using local resources.

Ongoing community engagement through PAR

Communities then proceed to implementing their action plans. The local community facilitators work with program staff, who support them in implementation. As the research initiatives take shape and implementation begins, areas of more specific joint inquiry are identified. Examples include productivity research in Bangladesh supporting implementation of technologies for shaded ponds; research on the impact of savings and lending groups for income generation in Zambia; research on access to markets in fish value chains in Zambia; productivity research to identify suitable sources of seed for SUPA rice⁴ in Zambia; and piloting rice field fisheries management practices in Cambodia.

Action plans and associated research lead to the observation and reflection step that enables those involved to understand the changes that may be occurring and to measure their achievements. As Figure 4 illustrates, the ongoing community engagement process is the main vehicle for a village-level participatory monitoring and evaluation system focused on outcomes and learning. Community action plans are revised on an annual basis, building on what was learned the previous

Box 2. Strength-based approach

When facilitators meet with people in communities, they look for their strengths. They do not start from their weaknesses. A strength-based approach, or SALT, is a mode of interaction with communities.

S : Stimulate, Support, Share

A : Appreciate

L : Listen, Learn, Link

T : Transfer, Team

year. Documentation of this process feeds into program research to understand if and how the RinD approach is working.

Community engagement implementation models

In this section, we illustrate how the community engagement design was implemented in the AAS hubs. Table 1 describes the implementation models used. The hubs vary in their biophysical contexts, ranging from inland water systems (Barotse and Tonle Sap floodplains) to coastal marine systems (Visayas-Mindanao and Malaita) and delta systems (Southern Bangladesh Polder Zone). These systems face varying degrees of ecosystem degradation, and a large portion of the population in each are poor and marginalized and depend heavily on the social-ecological system for their livelihoods through the provision of multiple ecosystem goods. The issues associated with achieving community-defined development aspirations and goals are different in each hub, as they are driven by the context and the program of work.

Contextual variations shaped how community engagement was implemented:

- **Different biophysical systems and varying agroecological zones.** These differences influence the degree of livelihood dependence on capture fisheries, aquaculture, agriculture, livestock rearing and wild biodiversity harvesting.
- **The hub development challenge and its associated theory of change.** While all hub challenges focus on the potential of the aquatic agricultural system, the specifics of the potential vary from the flood pulses in the Barotse and Tonle Sap, to the salinity gradient in the Southern Bangladesh Polder Zone, to the rich natural resources in Malaita.
- **The cultural and social diversity found within the hubs.** The Barotse floodplain in Zambia and the Malaita hub in Solomon Islands are both territories of indigenous peoples and use traditional governance systems. In Cambodia, the Tonle Sap floodplain is home to a majority of ethnic Khmer and several other ethnic minorities, but due to the area's political history is managed through a hierarchical government system.

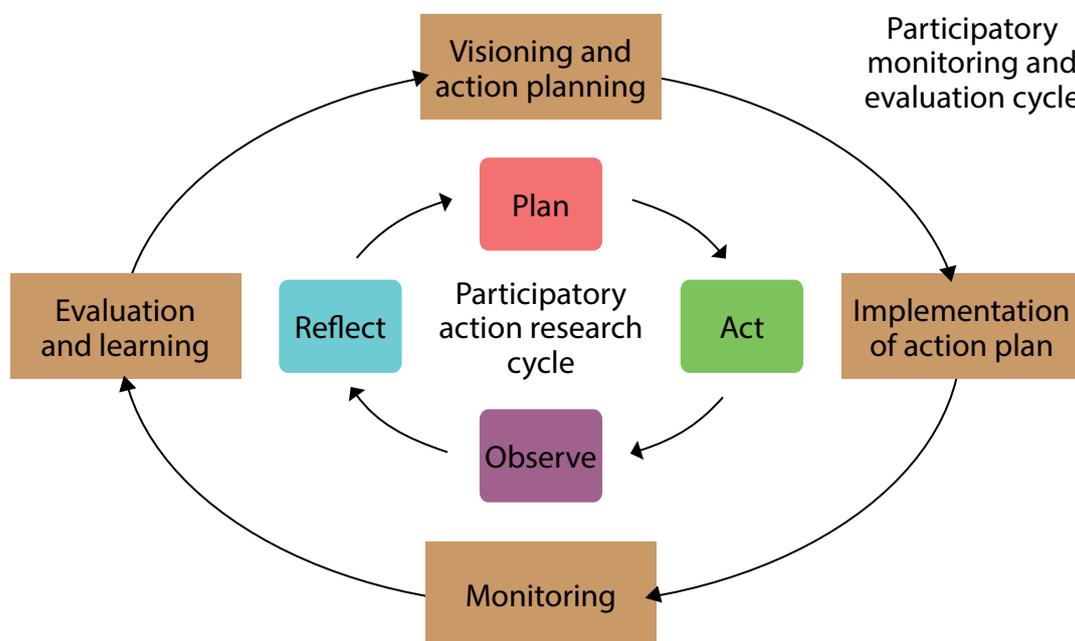


Figure 4. Community engagement process designed as PAR and participatory monitoring and evaluation for learning.

- **Local, district and national research and development systems in place.** The presence of formal national or international agricultural research systems in the hubs varies, as does the level of development intervention.
- **History of WorldFish and CGIAR work and the presence of ongoing bilateral projects.** The hubs sit on a continuum from areas with a long history of CGIAR and WorldFish work in-country and large bilateral programs also implementing research (Solomon Islands and Bangladesh), to areas with moderate bilateral funding (Cambodia and the Philippines), to one area with no prior WorldFish presence or bilateral projects (Barotse floodplain).

The community engagement implementation model in each hub has been significantly influenced by previous partnerships with the program in the hub and which relate, in part, to the previous and ongoing CGIAR work in the area and the existing local capacities (see the partnership chapter for more detail on partnerships). As is shown in Table 1, the implementation model in all hubs consists of a mix of local facilitation teams and external support provided through NGOs or other partners and AAS staff. The support arrangements vary depending on who the main program-implementing partners are. For example, in the Visayas-Mindanao hub, the primary supporting partners are government organizations, while in Zambia and Cambodia they are local NGOs. In Zambia, the Barotse floodplain hub is the traditional territory of the Lozi people, which requires the program to work with the traditional governance system (the Barotse Royal Establishment), and as a consequence the village chiefs are members of the community facilitation teams.

All hubs used the community life competence process and were supported directly by Constellation during the initial visioning and action planning. This produced a similar yet locally adapted process. The outputs included a broad long-term vision for each community and a number of community-owned action plans that indicate where communities are motivated and able to move towards achieving their dream. In most cases, communities identified the support they required from external agents to implement their action plans, creating

opportunities for linking with support networks and agricultural research. In all cases, these outputs informed the development of the hub strategic framework and the initiatives designed to address the hub development challenge.

During initial community visioning and action planning, there was some adaptation of the community life competence process steps. In most cases, separate groups of male, female and youth participants first developed their own visions. A notable difference among hubs was the extent to which research was discussed during the initial visioning and action planning. In the Southern Bangladesh Polder Zone, for example, the presence of many development NGOs and projects coupled with researchers playing a facilitation role in communities led to a narrower focus of engagement on farmer-led PAR, while in other hubs community action plans were broader.

Building on the initial use of the community life competence process, after-action reviews became the main vehicle for implementing the reflection step (Figure 3). Different strategies were used to create links between the community-owned action plans and implementation of interventions that form the stakeholder-driven research initiatives in each hub. For example, in Zambia, an early opportunity to work with savings and internal lending communities through partner support created a unique way of implementing research on use of PAR and the gender-transformative approach while supporting community action on increasing income.

Hub	Hub context	Implementation model
Malaita, Solomon Islands	Remote coastal marine setting with little infrastructure and few development interventions. Mainly subsistence livelihoods. Declining quality of marine and land resources and increasing populations. Engaged with three clusters of communities. Total hub population: 137,596 (2009 census).	Community facilitators facilitate activities and mobilize communities, while community champions support them and provide a link between the community and the program team. Both roles are voluntary. AAS staff (particularly a community coordinator) supports facilitation and documentation of the process. Partner NGOs and universities provide technical support as required through implementation of research activities.
Barotse floodplain, Zambia	Floodplain of the Zambezi River, traditional territory of the Lozi people. Dual governance system: the traditional authority referred to as the Barotse Royal Establishment and the central government. Lozi culture and livelihood strategies intimately linked to the flood pulse; seasonal movement of people and animals from low to high lands. Poorest province in Zambia. Fisheries important beyond the floodplain and a recent decline in natural resource management systems due to shifting governance. Engaged with 10 communities. Total hub population: 522,298 (Central Statistics Office 2010).	Community facilitation teams include community facilitators selected by communities, traditional leaders and extension officers (Ministry of Agriculture and Livestock staff). Community facilitators are paid a small amount to cover their day-to-day expenses. The local teams are supported by an NGO partner. Specific interventions that support community action plans are implemented with the support of NGO partners and CGIAR scientists, who provide technical expertise and implement capacity-development activities. Minimal presence of other NGOs in the 10 communities.
Tonle Sap biosphere, Cambodia	Seasonal flood pulse of the Tonle Sap Lake and floodplain offers opportunities for improved productivity, while water governance is a major challenge for those who rely on it. Communities looking to improve water governance for rice productivity and fish farming. High incidence of poverty despite the benefit from the flood pulse, particularly among floating villages where livelihoods depend heavily on fishing. Engaged with 12 communities. Total hub population: 1.5 million, of which 900,000 live in water-based or stilted villages.	Community facilitators from each of the communities facilitate activities and mobilize communities for the ongoing process. Facilitators provide links to NGO partners and the AAS team. Facilitators are volunteers and receive a small per diem when they attend events hosted by the AAS team and NGO partners. NGO partners directly support community facilitators with facilitation and documentation. The AAS hub team, mainly AAS staff, provides support for capacity development.
Southern Bangladesh Polder Zone, Bangladesh	Coastal delta system with varying salinity gradients in polders (floodplains enclosed by embankments) affected by climate change. Agriculture- and aquaculture-dependent livelihoods. High population density and disparity between land owners and landless. Engaged with 16 communities in six districts. Total hub population: 7.42 million.	Program officers are AAS staff assigned to each polder zone and who together with NGO partner staff are responsible for facilitation of all activities in communities. Scientists from CGIAR and partners provide technical support to AAS program officers as they implement PAR agendas. Hub staff provide support on systematic documentation and the participatory monitoring and evaluation system in place.
Visayas-Mindanao, Philippines	Coastal marine areas of Visayas and Mindanao provinces. High poverty rates and dependence on fishing and agriculture and highly vulnerable to climate change. Development challenges on governance of fisheries and access to markets. Engaged with eight communities. Total hub population: 18.6 million.	Local community facilitators are employed as field research aids. Partner community facilitators are staff of government partner organizations who work closely with local facilitators. AAS staff are organized as community immersion teams and provide direct support to partner and local community facilitators, particularly with documentation and monitoring and evaluation.

Table 1. Community engagement implementation models in each hub.

Learning about the community engagement process

Through reflection and analysis within and across hubs, we have identified the following lessons about how the community engagement process is working and what its outcomes are.

Start with a community vision

In all hubs, the community life competence process enabled a broad vision to be articulated. At first, there was concern that such a broad vision would raise unrealistic expectations and move outside the CGIAR mandate. However, the process gives communities the freedom to think about their future on their own terms. By not limiting their understanding of their livelihoods and lives from an external perspective and not using program language to frame issues on which to focus, communities were able to identify their strengths and take actions based upon those strengths. In reflection sessions during which community members discuss their learning and achievements, returning to the broad community vision motivates them to continue their journey. In this way, the role of research is understood as supporting that journey from the beginning, rather than leading the definition of solutions to identified “problems” from the start.

For AAS, the visioning process has helped ground an approach that looks at the whole system in the local reality of the hub. Through building a much broader understanding of the communities and their aspirations, stakeholders can begin to identify the relationships between various system components. For example, in the Barotse hub, fisheries management was a major concern in 10 community action plans. This concern stimulated action at higher levels, requiring strengthened collaboration with important stakeholders such as the Department of Fisheries, the Barotse Royal Establishment and fish trader associations. In this case, locally defined concerns resulted in a hub-level response: the formation of village-based fisheries management committees as part of a co-management approach that brings together government, the private sector, traditional leadership and the community. Understanding local systems in the context of a broad vision provides a big picture that helps inform the research agenda, build on local strengths and create links across scales.

Deepening engagement requires staging and building trust

Across all hubs, the implementation phase of initial community action plans was accompanied by strategies to deepen engagement. These strategies included building a better understanding of the critical and underlying issues that create opportunities for research, and developing strategies that include marginalized groups.

Varying strategies were used to build a better understanding of the issues to be addressed through interventions and that enabled agricultural research to directly support the actions of different groups within communities. For example, in Bangladesh, homestead agricultural systems are mainly managed by women and are critical for household food security and nutrition. Separate focus group discussions with women led to a better understanding of the challenges they faced, such as not having access to quality seeds. As a result, women farmers set up research trials together with professional researchers from local universities and government agencies and have developed their skills for identifying the best seed varieties for their household plots.

In the Philippines, focus group discussions identified illegal fishing gear as one of the critical issues, leading to a multistakeholder dialogue to bring illegal fishers into fisheries management discussions. The trust built through AAS researchers spending time in the communities enabled the Balingasag community to engage with a deeply rooted issue. In Cambodia, the use of a coding system enabled communities and facilitators to collect and analyze qualitative data to better understand the local situation and to feed directly into the planning of the three hub initiatives. One of them, the land and water management initiative, now includes a case study on Tram Pear Lake rehabilitation, which was informed by the results of cross-village analysis that illustrated the need to improve water supply to increase rice and fish productivity.

No participatory process is perfect, and no community is ever fully engaged from the outset. Consequently, implementing the principle of equity in community engagement

requires hub teams to be cognizant of who was engaged in the process to begin with and who was left out. Different strategies can be used to build this understanding, and over time strategies may be developed to reach out to those who were not part of the initial broad visioning process.

For example, in Malaita, the visioning process in Alea and Kwai communities began by bringing residents from surrounding villages together at one location to develop community visions and action plans. During implementation, however, it became clear that even though people were from the same tribe, families and church, they were not accustomed to working together. In contrast, in Fumato'o, where the participants live closer together and consider themselves one community, action plans were collectively implemented with little difficulty. Ensuring broad participation, implementation and ownership of a vision or an action plan in the context of Malaita, therefore, required adaption of the strategy to work with smaller groups that are geographically close and have the experience of working collectively. A strategy was developed to deepen engagement with a cohesive cluster and to plan to scale the approach to neighboring hamlets to develop different action plans.

In Cambodia, there are high levels of inequality in villages. Here, the program works through NGO partners who have been working in the same villages for some time. This creates a challenge for us to understand if the NGO engagement process is broad enough and reaches the marginalized. In order to better understand who the program was engaging with in relation to the whole community, participatory well-being ranking was conducted and used together with a coding grid and a monitoring map. The coding system allowed monitoring of who the program was engaging with and provided a planning tool to help identify the poor and marginalized within communities. For example, in Tram Pear village, use of the coding system enabled the team to see that an action plan around rehabilitation of the lake was the result of participation by a group of people who all lived close to and benefited from the lake. This knowledge allowed the team to develop a more household-focused strategy to reach out to the

most marginalized who lived far from the main part of the village.

In Bangladesh, while the engagement process remained open to all, farmers were selected on the basis of their interest and motivation to do research, which did not fully address the gender or social difference dimension. Further engagement led to research on small homestead shaded ponds intended to help women overcome the challenge of low productivity. Similarly, separate discussions with men led to research on field crops. To understand the wealth status of the participants, a participatory wealth ranking method was developed. Community members set up wealth ranking criteria for their community and divided themselves according to family income. This helped AAS staff understand that the poorest sections of some communities did not participate in PAR, as they had neither land nor ponds.

In Zambia, 3 of the 10 communities in Senanga District are home to two tribes: Mbunda and Lozi. The Lozi are the original inhabitants, and the Mbunda are immigrants who have integrated over time. During the engagement process, it was discovered that the Mbunda coming into the communities found the fertile land all taken by the Lozi. This pushed the Mbunda into non-agriculture enterprises. Discussions during the visioning exercise led to action on canal clearing to free more land for cultivation, which led to improved access to land and more involvement by the Mbunda in agricultural activities.

From across the cases, we see that starting with a broad vision that can be implemented through a relatively consistent methodology across contexts must be accompanied by contextualized strategies to dig deeper and understand how to support communities and groups within them to tackle their own issues while avoiding elite capture. The deepening process is also critical to identifying areas for agricultural research. Treating community members as co-researchers requires diagnostic studies along with the engagement process such that research interventions support community motivation and change.

Digging deeper in the community engagement process and fully embracing the equity principle of PAR has not been easy. One challenge faced is further discussed below regarding the research teams' mindsets and capacity to bring social analysis and a critical lens into agricultural research processes (see also the gender chapter). Our experience suggests that staging when to deepen engagement is important to ensure the research process first builds trust. Working through a stronger relationship built on trust means research is better able to contribute to the development process and can act upon hidden challenges that do not tend to surface in initial action planning. With time, the program can reach out to more, ensure the marginalized are involved and begin to address challenges that require deeper, transformative change.

Responding to broad issues requires networking and partnerships

Not all concerns and opportunities identified by communities as a starting point are ones that a CGIAR research program could engage with directly. Hub teams were initially concerned about their inability to respond to all the identified areas, and feared that community residents might lose interest. This created a tension between holding onto a broad and holistic view of the development process and staying true to the agricultural research mandate of CGIAR. This tension was managed by developing a strategy for responding to broader community needs through partnerships and playing a bridging role so communities could connect to relevant stakeholders with the capacity and mandate to address concerns relating to infrastructural development, health and sanitation, or delivery of agricultural inputs.

For example, in the Philippines, the community's dreams and action plans were presented to various stakeholders during a consultation workshop that led to government responses. In Pinamgo community, one of the priority dreams was the repair of a solar water system. As a result of sharing these plans, the local government unit committed to providing funds to buy a water pump. In a case where the issue was education, in Mancilang, the Department of Science and Technology provided a number of scholarships

that enabled some of the youths to pursue a college education. This has built trust in the program and created an opening for the role of agricultural research to contribute.

In Cambodia, NGO partners participating in the engagement process have found ways to link communities in order to address some of their priority concerns. For example, as a result of community visioning in one village, people realized that to achieve their dream of improving and diversifying livelihood activities they needed to renovate a bridge that connects them to the market and other communities. Realizing that they needed further financial support, villagers shared their action plan with various stakeholders, including a mung bean association, a tour association and local fish traders, to raise funds. Stakeholders provided financial support, and during a reflection workshop in March 2014, villagers reported that with the bridge renovated they could focus more on fish farming, as they had easier access to the market. In this way, the program can support responding to broader needs that are linked to the ability to address agricultural concerns through research.

In Bangladesh, two complementary strategies were used. First, a research support team was formed in Khulna in 2013 with scientists from national research institutes and universities to provide science and technical assistance to farmers to carry out field experiments. During implementation, it transpired that the support team was unable to deliver services at the expected level to communities far from Khulna city. In response, the hub team created a second layer of research and technical support. The new system consists of two layers of support to communities: the original research support team members (the first layer) still provide science and research support, but now include more researchers from local research stations, while the new second layer is made up of members of local extension services (e.g. the Department of Agricultural Extension and the Department of Livestock) who can provide support on an ongoing basis in more remote areas. This system linked farmers to local service providers and provided an enabling environment to access technical advice. Second, a process of building relationships between development organizations, government

departments and farmers was facilitated, which has resulted in farmers receiving poultry and livestock vaccination and deworming services from the Department of Livestock, thus addressing one of their main concerns.

We have learned that the use of partnerships as a strategy to address broader issues works well, but is dependent on the presence of stakeholders with the necessary expertise working in the geographic area. For example, in Malaita, some of the prioritized areas were sanitation and health clinics. Although the program does have links to relevant stakeholders such as the Ministry of Health and NGOs, the challenge remains that these agencies do not have the funds nor the capacity to assist the communities at this time. A similar challenge—aligning the geographic focus of the program with that of partners—emerged in the Barotse floodplain. The local NGO that is anchoring the community engagement process has had to work outside its normal focal areas, which has required more investment for the NGO to build its presence in these locations and creates a continued dependence on program funding to support the broader development needs.

We are learning across cases that for an agricultural research program to start with a broad community vision and thus engage with areas outside the agricultural field, partnerships and networking to support broad development agendas should be in place or must be developed alongside implementation of research initiatives. This contributes to trust and supports the holistic view of development that communities pursue.

Systematic reflection and documentation enables adaptation

Community engagement as a process of PAR includes a facilitated reflection step during which community participants take stock of their learning and achievements and assess the progress of their action plans. The reflection step allows the program to adapt the engagement process. This is part of the system of monitoring and evaluation for learning that functions across scales of engagement—from community to hub and across hubs. Implementation of this part of the process was less scripted than the initial community visioning and action planning (which was informed by the community life

competence process), yet similar approaches have been taken across hubs. All involved systematic use of facilitated reflection meetings and documentation that captured outcomes and lessons learned. The reflection step is proving to be a good vehicle for supporting program adaptation.

For example, in the Malaita hub, AAS researchers, along with partners and local resource people, connect with the community through local facilitators and community champions. After every visit to communities, a trip report is written and circulated to the whole program team. This documentation process helped identify that Alea was facing a challenge in implementation of their action plans. Then, during the community after-action review in Alea, the hub team could better appreciate the community dynamics that were challenging the implementation of their plan. The joint reflection helped the community develop a strategy to adapt the action planning and implementation process. Community members confirmed that they prefer coming together for learning. They use a central demonstration site (for ongoing work with development projects) for some of their activities so that the surrounding villages can join in but can also implement their own actions in their own villages. Documentation of the reflection process provides input to the strategy and is monitored on an ongoing basis.

In the Barotse floodplain, community facilitators also reflected on their performance and challenges during the community after-action reviews, which are implemented every 6 months and include development of new action plans informed by learning and outcomes achieved. These reflections have helped the program and community facilitators understand the challenge of an exponentially increasing workload, as more activities are underway relating to the research initiatives and evolving requirements for documentation. This understanding led to the development of a strategy to invest in supporting emerging champions and leaders who are already facilitating and guiding various smaller PAR groups. Reviewing documentation tools with community facilitators in this way helps adapt the system and builds capacity.

A similar strategy is used in Bangladesh to build leadership capacity in emerging champions, which helps to ground the engagement model in communities. A system was designed that emphasizes documenting the process during the planning of each intervention and prior to subsequent actions. This generates a running record of what was done at each stage of a development or change process, as well as the outcomes associated with each step. Program staff are responsible for running and monitoring the process. This documentation system has helped adapt the program design. Also in Bangladesh, the documentation picked up on an opportunity to support changes in women's access to land. At the beginning of the program, some female farmers faced difficulties, as they did not have access to good land for horticulture research. The model was adapted to include household participation in the action research, thus enabling women to use small household plots.

In Cambodia, the facilitation teams used post-session recording sheets and after-action reviews to document their learning after every facilitated event. Learning from the post-session recording sheets has led to improvement in how specific tools are used during sessions and in the way the team facilitates the participation of villagers overall. For instance, the facilitation teams learned that community participation was limited to a few groups in some of the villages. A contributing factor to this narrow participation was the village meeting style of the first sessions. In response, the team adjusted the facilitation technique to start with a SALT visit to households (Box 2) and then implemented focus group discussions across different wealth groups in the village. Reflections on how to engage both men and women to improve the gender focus led to a decision to have separate groups for most activities.

In the Philippines, the initial strategy of community immersion teams was implemented in all communities. Through reflection and learning about what was or was not working, the teams adjusted their strategy. For example, in communities where the pressing issue was enforcement of fishery laws and the community thought that it could easily be resolved by employment of fish wardens, systematic

reflection and documentation indicated that a multistakeholder consultation workshop was necessary before the employment of fish wardens. In another case, abaca farmers reacted to the recommendation of experts on how to eradicate a virus that infested their plants (see the inclusive science chapter for more details on this case). The experts recommended the removal of all potential host plants of the virus, one of which is a crop that farmers presently have on their farms and that provides good income. Abaca farmers reacted strongly against the recommendation, so the experts conducted further research to confirm whether the insect thriving in the replacement crop is the host of the virus causing the disease. Another strategy implemented was to conduct several focus group discussions to fully understand the perspectives of community members and further enhance the credibility of experts to the community. This approach put the community members and the experts at ease with each other and led to a satisfactory resolution and a higher level of engagement.

Across the hubs, we have found that implementation teams have embraced reflection processes and are systematically facilitating reflection on specific activities and on the overall engagement process. In all hubs, the engagement process has evolved and is being refined as we learn together with communities. Understanding the nuances of how program implementation takes shape in each location is only possible if reflection is happening across scales. The cross-scale nature of the AAS monitoring and evaluation for learning system builds on these nested reflection steps within the PAR process. Challenges remain in designing, testing, adapting and building capacity to use documentation systems that support reflection and learning across scales. The documentation challenge is not surprising given that use of PAR requires co-ownership of processes and learning and thus documentation should support the learning of various stakeholders. It therefore cannot be designed in advance by researchers working alone, but requires a meeting of researchers and stakeholders to define needs. Through our experience, we are learning how to find the right balance of facilitation, ownership, trust and documentation skills.

Shifting dependency mindsets and managing expectations is an ongoing challenge

The rates of poverty in all the hubs are high. There are varying degrees of development interventions across hubs (lowest in the Malaita hub, highest in Bangladesh). In all the hubs we have found a strong dependency mindset. Taking a strength-based approach within these contexts is challenging, as we cannot immediately meet community expectations, which are based on years of experience with development projects that have provided aid through a delivery approach and research projects that have viewed them as passive subjects. While communities appreciate the use of visioning and action planning, it was not in all cases a novel experience, and some assumed that once the action plan was defined, the project would deliver support and inputs. Getting people to believe that they own their action plan takes time.

Setting up research initiatives to build on and support community action plans also takes time, as these initiatives require stakeholder engagement at hub level and at times further scoping to identify researchable topics. During the initial implementation phase, hub teams felt pressure to deliver something tangible to maintain momentum. How community expectations and the resulting tensions have been managed provide valuable lessons for programs adopting a strength-based approach. In the Malaita hub, the team developed and signed community research agreements with the communities. These played an important role in managing people's expectations, as the agreement clearly spells out the areas of involvement by both parties. This helped to facilitate discussions on sensitive issues such as payment of community members. The ongoing management of expectations now happens through the direct interactions of the team with communities. Local resource people, community facilitators and community champions communicate important information using local dialects and are honest about what to expect.

In Bangladesh, an important strategy that helped manage expectations was to ensure that implementation of a few simple activities started early. The PAR process started quickly

to address the issue of seed selection, with a focus on homestead horticulture carried out by women. With support from the research team, farmers designed experiments to test the productivity of five okra varieties. The farmer-researchers set up research plots, monitored, recorded and analyzed the data, and shared their results with the wider community. This research was not cutting edge, but it focused on tangible actions that helped build capacity and motivate participants. The groups are now progressing to more complex research that requires more expert support, but they do so from a strong base. The initial activity helped maintain momentum while communities learned to arrange for delivery of local expert support.

Dependency mindsets are most often associated with the experience communities have had with other programs that, in spite of good intentions, treated them as subjects and delivered solutions. Shifting this mindset is an explicit objective of the RinD approach. Emerging outcomes that have been evidenced in hubs provide positive signals that some communities have started on a journey towards relying on their own strengths. In Bangladesh, increased capacity to do research by farmers participating in PAR activities is leading to greater self-confidence and increased leadership by the poor. Similarly, in Malaita, the program is documenting changes in attitudes and behaviors of villagers who are now starting to collectively address resource management issues. In the Barotse hub, increased knowledge is leading to more participation in collective decision making. Similarly, in the Tonle Sap hub, collective action has emerged that is in part catalyzed by people engaging in processes of learning and reflection around their own visions. These early outcomes suggest that communities are moving along a pathway that starts with shifts in their ability to organize and tackle collective challenges, recognizing that these changes are still fragile and limited to those involved in the program.

Transforming ourselves is part of the process

From its inception, the program was cognizant that engaging communities through PAR is not a core skill of CGIAR. The program therefore invested in capacity development. This started with support from Constellation across all hubs and has continued through varying support

strategies. The main modality for developing the behaviors and skills required for PAR has been through on-the-job training, coaching and ongoing mentoring. As noted above, in all hubs a culture of implementing after-action reviews after every event has been institutionalized, and teams have been using this process to reflect and learn—not just about the changes they see occurring in the hubs, but also about their own capacity to use a strength-based approach and implement PAR.

All hub teams have embraced a new way of working with communities and with each other. The first steps of community engagement were taken with the specific guidance of the community life competence process, which required adaptation and contextualization. As teams moved into the implementation phase, they had less direct guidance and were encouraged to design processes based on their own experience with backstopping support. For many, the lack of specific guidance and clearly defined boundaries has been challenging. Some have had little experience with a learning-focused approach that starts with a broad framework and requires contextualization. Many were used to project implementation in which the project has already decided what it will focus on and comes in with a rigid plan that is implemented according to a logical framework and a schedule.

Teams also grappled with learning how to let communities be in control of their own development process. The Constellation SALT mindset that was introduced to all teams (Box 2) is an example of how capacity development has focused in part on shifting our own mindset from a project-driven mentality to a strength-based program approach. As implementation teams, we appreciate that we also are in a process of transformation.

We have identified facilitation skills as important for ensuring quality in the community engagement process, implementing PAR, and understanding and using a gender-transformative approach. Facilitation skills include the capacity for active listening and critical reflection. To ensure a strength-based approach, teams have found it important to build team spirit to achieve a common vision and understand our own role as bridges and

brokers rather than providers of solutions. Identifying networking opportunities and pursuing them is a skill that has enabled teams to manage expectations and look across scales. Rigorous and systematic documentation and having a good plan for information management and sharing are equally important.

Community ownership in agricultural research

The program set out to implement an approach to community engagement by embracing community ownership as a principle of PAR informed by practice and theory (e.g. McTaggart 1991; Stringer 2007). The use of PAR within RinD has intentionally reached beyond a narrow lens of farmers participating in research, or the “research-driven farmer participation” model as described by Okali et al. (1994). The program took as a starting point a hypothesis that achieving better and longer-lasting development outcomes through agricultural research requires that researchers engage with the development process in earnest. Thus, the program is not interested in participation simply as a means to achieving efficiency in the agricultural research process (Sumberg and Okali 1997) but attempts to understand how improved lives and livelihoods of the poor and marginalized can be supported through agricultural research. Researchers use learning to reflect back on the intent of broadening the agricultural research agenda through community engagement to see if there is evidence that using PAR and starting from a broad development-oriented agenda will enable agricultural research to have greater impact.

From our learning, we can distinguish two ways in which PAR builds community ownership. First, at community level ownership means that the research program is being led by community members and is focused on achieving *their* dreams, not those of the researchers and facilitators. In practice, this happens through the local facilitation teams and their capacity to enable meaningful participation of community members in planning activities to be implemented, in the implementation itself and in the learning that emerges.

Our experience indicates that starting with a broad community vision of success is instrumental in building community leadership

of the program, and we are finding that this vision can begin to shift dependency mindsets. Systematic facilitated reflection that relates back to the vision keeps this ownership alive and the focus of the program on the community development process, enabling research to directly contribute to the change process. Local anchoring of the learning process requires ongoing reflection by the program to adapt to the evolving nature of community engagement. Important steps include working in context to identify appropriate partners, selecting appropriate facilitators and building the support systems required. Our experience suggests that entering with a strength-based mindset is critical to helping us adapt, learn and support communities to believe in their own capacities. These findings provide evidence that the initial intention to broaden agricultural research through PAR is indeed supporting a journey of shifting mindsets in communities and ourselves and is paving the way for agricultural research to unlock the potential that lies within.

Second, community ownership means recognizing community members as co-researchers in the joint research agendas that emerge. Researchers must recognize that community members co-own the identification of research opportunities, design of interventions, implementation and harvesting of lessons. As we have illustrated with examples throughout this chapter, community members have been able to identify entry points for research. In these cases, we are identifying spaces for joint inquiry that build on local motivation and specific development challenges and feed into the overall research interests of scientists working nationally and globally. Early signs indicate some success in supporting community voices to inform research agendas, the most notable being how the community PAR process has directly informed the development of stakeholder-owned interventions in Cambodia, such as the development of pilots and case studies on land and water management technologies.

The idea of communities co-owning joint inquiry is not new to CGIAR, where farmers have participated in the research process over many years (see Becker 2000 for a review of participatory research in CGIAR). A notable experience is the work of the International

Center for Tropical Agriculture with local agricultural research committees, known by their Spanish acronym CIALs (Ashby et al. 2000). Evaluations of years of work with CIALs have shown that what started as a methodology to build capacity of farmers to implement formal research protocols together with scientists led to an appreciation of the processes of engagement. This led to adapting the methodology to look beyond the field experiment and being cognizant of the broader development process (Humphries et al. 2000), as well as the value of the PAR process for organizing and learning (Bentley et al. 2006) that can lead to broader impacts. Our findings build on this appreciation for the broader process and move towards a deeper sense of co-ownership of the research process by communities.

Our reflection on how we have been shifting our own mindset to enable communities to lead in research suggests that building co-ownership is a process that needs to be nurtured over time. The program has begun to make headway in overcoming some of the challenges through institutionalizing reflection processes and allowing for adaptive and flexible planning and implementation models. As Becker (2000) suggests, historically some of the challenges faced in using a participatory approach within CGIAR have included a narrow understanding of what science should do and weak institutionalization. Our findings provide evidence that using PAR to guide community engagement within the RinD approach is enabling a broader view of how science can contribute and has begun to institutionalize the processes required to shift ourselves towards a model of research that supports community ownership. Thus the program is moving beyond the historical challenges.

Perhaps the most significant contribution of these findings is to illustrate that supporting participation within a technical research agenda alone is not sufficient to build community ownership. It is the link between the ongoing PAR process of engagement to support a broad community-owned and community-driven development process and the participation within specific interventions that agricultural research can support that makes for a stronger program that is more likely to build local capacity to innovate and adapt.

Conclusion

We have explored and provided evidence from the six areas of learning that help us appreciate how community engagement can be successful in building community ownership:

- Starting with a broad community vision is important for setting the tone of engagement and helping the program ground its systems approach.
- Multiple contextualized strategies are required to build trust and support a deepening of engagement to achieve authentic participation in the PAR process and to find researchable topics that become the opening for specific technical agendas.
- Given the broad starting point, programs need to have contextualized strategies for responding to critical development agendas that fall outside their often limited scope of expertise. Partnerships are critical for this aspect of community engagement.
- The iterative systematic reflection of the PAR process leads to learning and adaptation of the implementation strategy to meet local needs. Good documentation is a major challenge in this process and one the program is learning how to build capacity for.
- An ongoing challenge in community engagement is the expectations that come with a dependency mindset. Creative strategies have been developed for different contexts to manage this tension.
- The most important shift within the program is the shift in our own mindset towards a more strength-based approach. This, we hope, is the beginning of a process of transformation towards RinD.

If we reflect upon the initial espoused theory on how community engagement would be implemented, we find that the emphasis on a strength-based model has indeed led to a shift within the program team and within communities. The transition from rollout to implementation and from building a broad agenda for community change to specific agendas for agricultural research was not as straightforward as the PAR cycles might lead one to expect. The tension between managing group consensus versus taking a critical lens to understanding power dynamics and building authentic participation across all interest groups started to play out. This tension does align, however, with a view of PAR

as a nonlinear process that grows organically through relationships. While it was never anticipated to be linear, to actually understand this we had to build the skills of the program teams around managing complexity. The program initially underestimated what it takes to build relationships and foster partnerships to support broader research agendas and community trust. On the other hand, the aim of designing the program's monitoring, learning and adaptation mechanisms through PAR at the community level seems to be working as imagined. The institutionalization of after-action reviews has been pivotal in building learning into the program. The documentation requirements of bringing a research lens to bear on PAR may have been underestimated and underplanned, and initial assumptions about the capacity of development partners will need to be revisited.

COLLABORATING FOR DEVELOPMENT IMPACT: LEARNING FROM RESEARCH PARTNERSHIP EXPERIENCES

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Introduction

Since AAS was first designed, effective partnerships have been central to the RinD approach and essential to achieving the program's goals. The 2011 proposal outlined a partnership strategy that drew on intensive discussions with multiple partners during proposal development and was built on three core premises:

1. CGIAR is only one of many organizations and networks engaged in working in aquatic agricultural systems. Other research, development and policy players together spend many hundreds of millions of dollars annually to improve the lives of people who depend upon aquatic agricultural systems.
2. To add value in this complex institutional environment, we need to identify where and how the science insights we provide can strengthen the focus and delivery of other partners, and where the convening and catalytic roles we play can foster more effective coalitions of partners around our approach.
3. Partners will devote the time and effort required to work together only if the value of doing so is clear. This requires that we identify mutual needs and expectations. It was anticipated that partners would be engaged as core institutions, key implementing partners and general partners.

In 2012, the program began implementation in three of its five hubs (Figure 5): Bangladesh (Southern Bangladesh Polder Zone), Zambia (Barotse floodplain) and Solomon Islands

(Malaita Province). A rollout phase guided by an AAS rollout handbook (CGIAR 2012) reaffirmed the centrality of partnerships to program success and required hub teams to engage with new partners and consolidate existing ones as early as possible. The handbook identified opportunities and specific activities for partner engagement and communication throughout the rollout phase. In the planning phase, methodological guidance focused on communicating, using existing relationships, lobbying and convincing; in the scoping phase, the focus was on stakeholder consultation workshops; and in the diagnosis phase, the emphasis was on the engagement of partners as members of design and diagnostic teams and in the participatory workshop to design hub strategic frameworks. In 2013, program implementation was extended to the Philippines (Visayas-Mindanao) and Cambodia (Tonle Sap).

Rollout transitioned into community- and stakeholder-led research design and implementation in 2013 and 2014 (Figure 5). This process, facilitated and supported by AAS, resulted in the articulation of research initiatives, theories of change and structured research agendas to address hub development challenges. At the same time, AAS staff in focal hubs and across the program's science themes gave high priority to identifying and engaging more effectively with both science and development partners.

A sharper focus on improving partner quality and performance was supported by a draft partnership framework, increased program investment from the 2014 budget allocation and additional funds from a results-based management pilot program initiated by the CGIAR Consortium (Downing et al. 2014). The specific focus of this pilot was to increase levels of support to a small number of existing hub partnerships that had the potential to accelerate current research design and implementation, and to identify opportunities to scale the learning from this work.

Methodology

As described in the introductory chapter, in January 2015, the annual cross-hub after-action review brought together people from across hubs and the global team at WorldFish headquarters in Penang, Malaysia. Effective partnerships was one of the common themes identified from which useful learning was emerging. Six case studies were identified during the workshop, which have subsequently been expanded upon by a group of partners and AAS program staff. In this chapter we describe the six case studies. For each, we reflect on the processes and the journey that led to the emerging outcomes. We also synthesize lessons from the case studies in context of current literature around collective and knowledge partnerships and offer guidance for finalizing the AAS draft partnership framework.

Case studies

Global

The AAS proposal notes that “global partnerships are needed to leverage our national and regional achievements and help change development thinking and policy globally” (AAS 2012a, 59). Global *development* partners were expected to participate in program implementation in the hubs, while global *research* partners were expected to develop collaborations on research themes. The program outcomes were anticipated to be achieved through three impact pathways. One of these, pathway 3, seeks to use the international public goods produced by the program with the partners for “raising awareness in the broader regional and global community” (AAS 2012a, 27). This case study examines the AAS experience with several research and

development partners who have the potential to contribute to that global partnership mandate: CARE, PROLINNOVA (a name based on its mandate of “promoting local innovation in ecologically oriented agriculture and natural resource management”) and Constellation.

CARE

CARE’s interest in a partnership with AAS was linked to the AAS program’s intent to have deep impact in the lives of poor and marginalized smallholder farmers and fishers through systems research and a commitment to gender-transformative change within aquatic agricultural systems. These goals aligned well with CARE’s approach to gender equality and work addressing the underlying causes of poverty and marginalization. CARE is a key global partner that participates in the program leadership team, and in this role was able to contribute to and learn from AAS conceptualization of gender-transformative change and RinD in the early stages of the program, as well as to contribute lessons from various countries as AAS developed its rollout process.

Later, attempts were made to deepen the partnership within specific AAS hubs. In Bangladesh, AAS sponsored the participation of two staff members from CARE Bangladesh to attend the Summer School on Gender organized by the University of East Anglia in collaboration with AAS. In Zambia and Cambodia, while interest was high, CARE did not have the capacity to expand to the same geographical location as AAS. This means that within the hubs, the relationship has not progressed to the stage of including CARE activities in AAS core communities but remains at the level of higher-level influencing and advocacy.

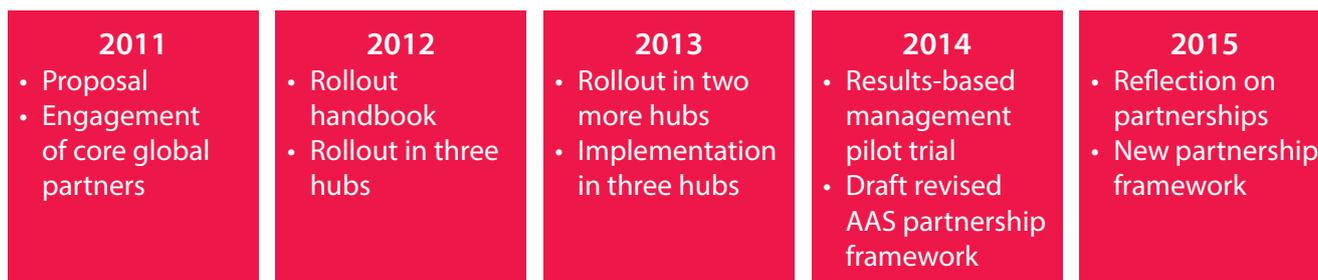


Figure 5. Timeline of development of documents and activities specifically related to partnerships during program rollout and implementation.

CARE continues to see value in this partnership, including participating in meetings at the CGIAR Consortium, explaining the value proposition and potential of the partnership between AAS and CARE, and collaborating on significant events such as International Rural Women's Day and a scaling dialogue organized by AAS in Rome in December 2014.

The partnership is not without its challenges. In the absence of more visible work at the hub level, it has been difficult to maintain close collaboration and dialogue and to convince some stakeholders of the value of the partnership. Planning to scale impact is beginning to address this challenge. Another challenge relates to staff transitions. A lesson learned here is the importance of investing time and effort within both organizations to orient new people to the partnership. CARE is hoping to partner with AAS beyond research hubs and to make links to other CARE programming.

PROLINNOVA

As AAS reviewed the literature on what works in RinD, it approached PROLINNOVA for their expertise in community-led research and development. PROLINNOVA has a long-established presence in European discussions on the merits of the approach and saw AAS as an ally. Their AAS-contracted review of the impact of farmer-led research supported by civil society organizations revealed evidence of successes and highlighted the opportunity for learning from existing evidence and documentation. Together with AAS, they are proposing follow-up research to understand the mechanisms that lead to enhanced capacity to innovate through farmer-led research approaches. The results of the initial research were presented in a European forum and were published as an AAS working paper (Wettasinha et al. 2014) and as a scholarly article (Waters-Bayer et al. 2015), both of which have been promoted through additional media and other CGIAR research programs. A member of PROLINNOVA joined the program's strategic leadership group (formerly the program leadership team) and has become an active ambassador for AAS and the RinD approach.

PROLINNOVA values the partnership with AAS because it provides widely recognized evidence to strengthen their case for promoting farmer-led participatory research in ways that

strengthen capacity to innovate at the grassroots level. The network, which spans Africa, Asia, Latin America and Europe, hopes that through their link with AAS, greater influence can be exerted at higher levels to create an enabling policy and institutional environment for grassroots innovation. Accordingly, the collaboration between PROLINNOVA and AAS is now primarily through impact pathway 3: to influence the global agricultural research and development community. The partnership also allows the PROLINNOVA network to gain deeper insights into how community-driven agricultural research and development can be supported more effectively. Thus, the partnership provides a platform for joint learning and advocacy for those within the CGIAR system who are committed to a transformative approach in research.

Constellation

A core feature of the RinD approach is the use of PAR to guide engagement with stakeholders at hub and community level. This is our strength-based engagement of women, men and youth at the local level through a visioning and action-planning process that identifies opportunities for agricultural research to support community goals. From the outset, AAS and WorldFish recognized that we did not have all the skills required to implement this approach, so we approached the Belgian-based international NGO Constellation.

Constellation shares the goal of supporting community-driven change as a vehicle for achieving development outcomes and has over 10 years of experience in engaging with communities. The partnership was established through a memorandum of understanding in 2012, with the main objective being to use Constellation's community life competence process model for initiating and supporting ongoing community engagement and ensuring consistency in the approach across hubs. A core principle of the partnership was the desire to learn together about using a strength-based approach to engaging communities in an agricultural research program.

The partnership has been implemented over 3 years in all five hubs (see the community engagement chapter). It is based on Constellation's networked structure of international and local coaches working closely with the hub teams and hub partner

organizations responsible for implementing community engagement. The Constellation global point-person for the partnership has engaged in joint planning with AAS program leadership globally to adapt the community life competence process model to the implementation processes in hubs, as well as participating in after-action reviews throughout the first 2 years. In 2014, a joint learning paper was developed in which the following partnership lessons emerged.

The partnership improved and was increasingly successful over time due to systematic joint planning activities across scales. This included the involvement of Constellation coaches in a number of hub activities during rollout that helped them understand the complexity of RinD and their role in supporting it.

The adaptation and use of the community life competence process as a PAR process within RinD required learning together how to support a research process built on a strength-based development approach.

After-action reviews enabled shared learning and adaptation along the way. This is critical in an emergent partnership that aims to address collective goals within and across contexts. The systematic use of after-action reviews enabled the partnership to evolve and mature and even influence the memorandum of agreement structure to ensure effective implementation and joint learning.

A recent joint after-action review led to the identification of challenges and tensions that we have been able to manage through the partnership, as well as the mutual understanding that we needed to evolve the partnership to a different modality. The hubs are now implementing research initiatives, some of which use PAR to work with communities and build on the community life competence process work led by Constellation. A more critical research stance on community engagement as a process within an RinD program is now required as the overall research agenda around RinD evolves.

This leads us to shift the emphasis of the community engagement process to evaluating how the approach works in context. The current work on community engagement therefore

moves beyond the expertise and interest of Constellation. During 2014, writing up joint learning was a challenge, which was recognized as an indicator that Constellation was working outside their area of core strength. In this new phase of the program, the network of local community facilitators that Constellation has helped form becomes part of the AAS program strategy for a different way of working with communities.

Constellation recognizes that the joint work with AAS has supported the growth of their global movement of communities, facilitators and coaches, stimulating community response through the community life competence process. They are pleased that this network will grow and evolve beyond the extent of the memorandum of agreement for program implementation. While the relationship between Constellation and AAS has significantly changed, the collective goal of learning how to do things differently and use a strength-based approach to working with communities is expected to enable us to find new ways of working in partnership.

Zambia: Barotse floodplain

Partner engagement activities started in the Barotse hub in 2012. Organizations were engaged primarily because of their expertise in areas that would effectively contribute to tackling the hub development challenge. Each organization's strengths were analyzed to determine their main role during rollout, and memorandums of understanding were signed. This case study aims to highlight how partnerships are transitioning from contractual agreements to arrangements built on mutual respect, joint planning, shared goals and honest feedback. We argue that the transition is due in part to critical reflection processes that help create spaces for partnerships to grow, develop and gradually transform from contractual to collaborative.

Case study trajectory (2012–2014)

This case study summarizes experiences of partnerships with the Ministry of Agriculture and Livestock, Catholic Relief Services (CRS), Caritas-Mongu, and the Peoples' Participation Service (PPS). These organizations were all part of the rollout and subsequent research and development activities. Caritas-Mongu, the

Ministry of Agriculture and Livestock, and PPS were involved in community engagement and scoping studies in 2012. In 2013, the Ministry of Agriculture and Livestock conducted mapping and census exercises. The Department of Fisheries, Caritas-Mongu and PPS all took part in a fish value chain study. CRS and Caritas-Mongu staff helped carry out an agro-biodiversity assessment. Memorandums of agreement were first signed by partners before implementing activities; however, it became clear that these agreements could have been improved with additional planning to ensure a common understanding of objectives, an agreed-upon process to develop integrated work plans, and identification of the key people to be involved. In early 2014, the planning process was adapted to reflect the learning from 2013. In April 2014, an after-action review involving partners and team members was convened by AAS. This was a pivotal moment in the program's evolution. Importantly, a collective accord was reached that agreements and work plans would be co-developed while acknowledging that this joint planning would take time, effort and coordination. This event was followed up with another planning and reflection meeting in September 2014.

Activities and processes that influenced the case study trajectory

Certain activities and processes contributed to shifts in the way AAS in Zambia is now engaging in partnerships. Most notable are the opportunities the program creates for staff and partners to critically reflect on and adjust ways of working. For example, the April 2014 meeting provided a safe space for partners to express dissatisfaction with their lack of involvement in developing agreements and work plans. Discussions were held soon after the April meeting between Caritas-Mongu, CRS and WorldFish. All parties decided that a contractual relationship was unsatisfactory, and that the partnership arrangement should involve greater interaction in planning, implementing and reporting on AAS activities.

Another positive influence on the quality of partnerships was the additional support provided by the results-based management pilot. This catalyzed a deeper relationship with Caritas-Mongu and the Ministry of Agriculture and Livestock that resulted in the design of a

joint pilot project aimed at improving the ways agriculture and nutrition extension services are provided and knowledge is generated and shared among partners, with the goal of increasing productivity, improving nutrition and contributing positively towards achieving the Barotse hub development challenge.

Emerging outcomes related to partnerships

Over the course of 2014, the Barotse program witnessed improved planning between staff and partners, which in some cases led to partners planning and using their own funds to implement activities together based on shared interests. This represented a shift from purely contractual arrangements to partnerships that were more collaborative. Joint planning has led to better links between overall program goals and research and development activities that aim to address the needs of people in the 10 AAS focal communities. During the 2014 annual stakeholder reflection workshop, participants highlighted that there is now greater collaboration among partners. In addition, funds to some partners were dispersed faster than in years past. Nevertheless, not all memorandums of agreement with partners were approved in a timely manner by WorldFish. This was one reason why some partners were unable to complete all activities in their work plans.

A shift from contractual to collaborative partnerships takes time to fully realize. For example, during the annual reflection workshop, PPS expressed dissatisfaction about being excluded from certain 2014 planning activities. Providing honest feedback is a necessary first step towards better ways of communicating and working together. The concern was revisited in early 2015, and a strategy to improve the partnership was agreed upon. Such examples of partnership strengthening are becoming more common in AAS in Barotse, enabling staff and partners to improve relationships, build trust and develop shared understandings through learning by doing *together* as AAS evolves.

Bangladesh: Southern Bangladesh Polder Zone

AAS recognizes that in Bangladesh a large number of research and development organizations are working to enhance the well-being of people dependent on aquatic agricultural systems. The program is

implementing RinD through partnerships in 16 communities and considers these partnerships the key to successfully achieving outcomes and impacts at scale. A number of the partners have been involved in AAS since 2011 and have been implementing the RinD approach to address community-defined development goals. In this case study, we describe some of the strategies adopted for fostering multisectoral and cross-disciplinary collaboration in the crowded partner landscape of Bangladesh.

Case study trajectory (2011–2014)

Through the community life competence visioning process conducted during rollout, farmers, particularly women, expressed concern about poor access to quality seeds for vegetable production and subsequent household consumption and sale. The challenge was addressed through a hub productivity research initiative as one part of a suite of activities to tackle the hub development challenge. A cross-disciplinary, multidimensional research support team was convened. The research support team was made up of scientists from research and development organizations to provide science support for community-led action research on seed quality and productivity of homestead-based horticulture crops.

Scientists from nine government and nongovernment organizations made up the research support team (Table 2), which was led by a scientist from the Bangladesh Agricultural Research Institute. A memorandum of understanding outlined specific roles for each member, and the program supported the participation of individuals through payment of a small honorarium. Subsequently, a second research support team was formed under the leadership of BRAC to support livestock fodder research in 2013.

The primary responsibility of the research support teams was to understand and analyze the root cause of community-identified problems (e.g. poor access to seed) and design action research with people from the communities to solve the challenge. Their broader role was to build the AAS hub team members' research capacities and to help identify the likely (best bet) technical options for farmers and fishers to base their research efforts on. The research teams were to support this through regular visits to farmer research plots.

Year	Partner	Expertise	Role
May 2013	Bangladesh Agricultural Research Institute (BARI)*	Agricultural research	Research support in community RinD
May 2013	Khulna University*	Agricultural research	
March 2013	Department of Agricultural Extension*	Agricultural extension	
March 2013	Agricultural Training Institute*	Agricultural training	
August 2013	BRAC*	Research and development	
August 2013	Department of Livestock Services*	Livestock extension service	
October 2014	International Maize and Wheat Improvement Center	Agriculture field crops	
July 2014	Shushilan	Action research program implementation	Facilitating community RinD
October 2014	Ashroy Foundation	Gender	Gender support

* Also involved in the subsequent research technical support system.

Table 2. Organizations involved in the research support teams and research technical support system teams in Southern Bangladesh polder zone.

Within the first 6 months of forming the first team, it became clear that members were not able to deliver timely technical services to communities located far from research stations or universities where members were based. During an after-action review attended by research teams and AAS staff in 2013, strengths and weaknesses of the model were identified and potential solutions discussed. The model was reimagined as a research and technical support system, in which research support team members continue to work in the same way but an additional layer of supporting partners is offered, including local extension service provider offices in more remote districts. The technical support system aims to link farmers not only to new technologies and scientific knowledge but also to local service providers (public and private) who have a presence in communities and are able to be more responsive.

Activities and processes that influenced the case study trajectory

The development of the research technical support system model was influenced by a number of converging factors. First, during the community visioning process it became clear that the interests of people in focal communities were diverse and efforts to address those interests needed to come from multiple sources, not just the WorldFish staff assigned to the communities. Second, to get the science “right,” multiple research support teams were needed, each with a specific area of agriculture-related expertise. Third, the theory of change developed by stakeholders suggests that farmers and fishers need to be better connected to high-quality science, and scientists need to engage more closely with farmers and fishers to ensure the science is aligned with the challenges farmers and fishers face. Fourth, although the initial research support team model began to create stronger farmer-scientist relationships, research team members had only a limited amount of time. When the support team was expanded to a system that included locally based research extension and development actors with specific expertise, a support mechanism was created that was both science-based and locally responsive.

Through after-action reviews in 2013 and 2014, partners identified some of the challenges, emerging outcomes and ways forward. For example, engagement between research support team members was difficult given their respective bureaucracies, and their overall work requirements were demanding and often conflicted with those related to AAS. There were few women researchers on the teams, and capacity to conduct PAR was low, which prevented some members from participating in research activities. Also, contracts developed with research support team members made it difficult to engage with farmers and fishers outside a specific scope of work.

Emerging outcomes related to the case study partnership

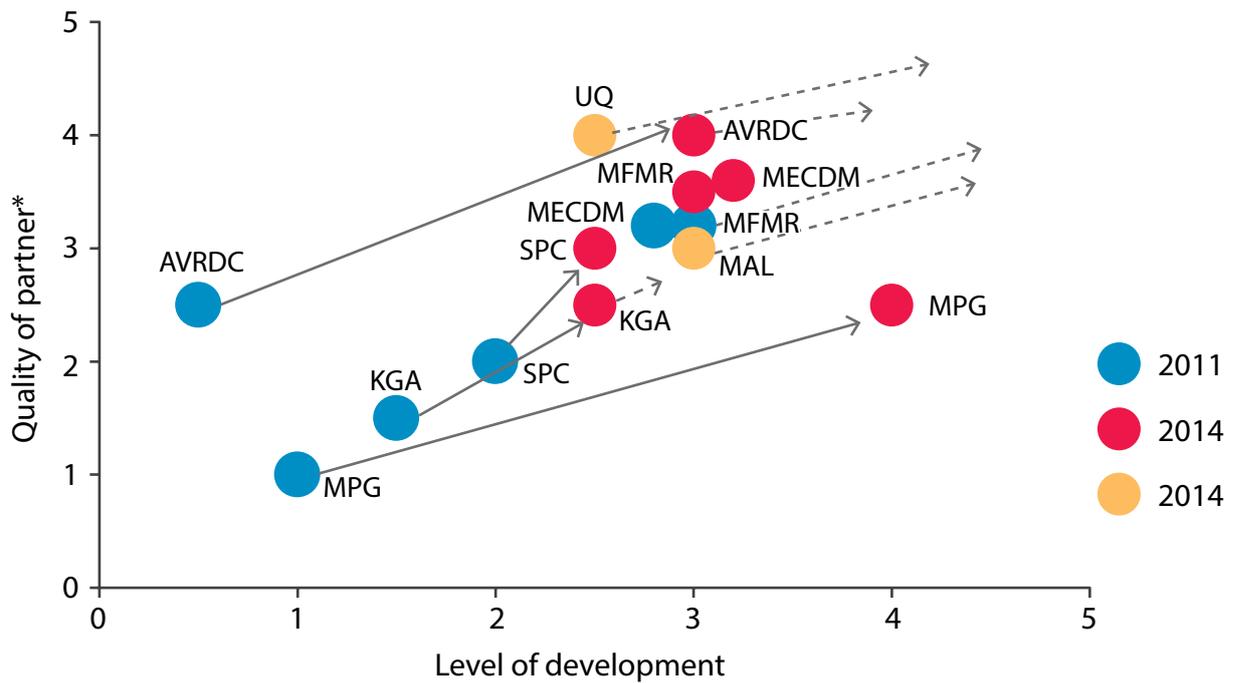
By 2014, individual research technical support system members had come to appreciate the value of RinD; however, it is less clear how much that appreciation has become institutionalized. Technical support system team members now appreciate fishers’ and farmers’ capacities to innovate and are interested in using this capacity to influence their individual programs of work. Capacities and confidence levels of farmers have been enhanced. For example, farmers are regularly using science toolkits that include simple measuring and weighing tools to monitor the growth of their crops and are better able to communicate with and access expertise from scientists and other service providers.

The technical support system has been improved through an increased sense of ownership and through formal agreements with members’ respective organizations. Improvements can still be made by being more inclusive of multidisciplinary expertise and private sector actors and by linking to other platforms supported by AAS in the hub, such as the knowledge sharing and learning platform. The focus for the technical support system moving forward is on strengthening support systems that ensure farmers and fishers can access information, new technologies and other services for continued adaptation and innovation.

Solomon Islands: Malaita hub

In 2011, WorldFish had been operating under a memorandum of understanding with the Solomon Islands government for more than 20 years and had collaborative relationships with ministries responsible for fisheries and environment, as well as with most NGOs working in the resource management sector. Interactions outside this sector were incidental (for example, if WorldFish was invited to attend multisectoral workshops). Partnerships within the sector also tended to be largely transactional when funds were available through WorldFish grants to contract locally based NGOs or were limited to organizations sharing information at partner workshops. Joint planning was not a feature of these partnerships except for specific donor projects when explicit partners were named. When AAS began to roll out in Malaita, a markedly different approach to partnerships began to emerge.

Research capacity in agriculture and fisheries is generally low among organizations in Solomon Islands, so there were two challenges. The first was to engage with partners outside the traditional fisheries sector, and the second was to seek partners with the capacity to conduct quality research to complement the fisheries research capacity of WorldFish in order to address the hub development challenge. As community priorities emerged during rollout, and because implementing CGIAR Centers (the International Water Management Institute [IWMI] and Bioversity International) did not work in Solomon Islands, it became clear that research partnerships in the agricultural sector would need to be identified and cultivated. This case study reflects on the evolution of partnerships around one community priority area of research, articulated as a research initiative called “sustainable farming for and nutrition and income,” a cross-sectoral research partnership with AVRDC – The World Vegetable Center (AVRDC).



Legend

- Orange circles represent new key implementing partners not identified in 2011.
- AVRDC = AVRDC – The World Vegetable Center
- MPG = Malaita provincial government
- KGA = Kastom Gaden Association
- SPC = Secretariat for the Pacific Community
- MAL = Ministry of Agriculture and Livestock
- MFMR = Ministry of Fisheries and Marine Resources
- MECDM = Ministry for Environment, Climate Change, Meteorology and Disaster Management
- UQ = University of Queensland

* Alignment of purpose, trust and common results

Figure 6. Trajectories (arrows), including aspirational trajectories (dotted lines), of core and key implementing partners in Solomon Islands between 2011 and 2014.

Case study trajectory from planning and rollout to 2014

At a WorldFish science week in Penang in July 2011, partnerships were identified to implement AAS in Solomon Islands. At that meeting, a version of Figure 6 was developed by WorldFish staff to plot the status and trajectory of some important relationships. Aspirations for higher-quality relationships were identified for most of the partners. These were particularly ambitious for AVRDC and the Kastom Gaden Association (KGA). The ministry responsible for agriculture did not figure in our planning at that time. Revisiting the diagram in 2014, the KGA partnership had progressed somewhat, but most notable is a markedly strengthened (more collaborative and with more alignment of purpose) relationship with AVRDC, plus the inclusion of the Ministry of Agriculture and Livestock and the University of Queensland.

Activities and processes that influenced the case study trajectory

In 2012, Solomon Islands AVRDC staff were consulted during the scoping phase and were participants in the first stakeholder consultation workshop, followed by the design workshop where the hub development challenge was validated by stakeholders. A change in senior in-country staff at AVRDC in 2013 stalled progress somewhat. Efforts concentrated on building relationships at the senior management level through one-on-one meetings and communication between Solomon Islands AAS program leadership and the global theme leader responsible for AVRDC projects in Solomon Islands, influenced by other one-on-one meetings with managers in Taiwan and at WorldFish headquarters in Penang.

AVRDC has a common mission with the CGIAR Centers. AVRDC has shown that vegetable production is an integral part of livelihoods in Solomon Islands. More than 90% of surveyed households on Malaita and Guadalcanal engage in vegetable production, which can contribute on average more than 50% of total household income. From the perspective of AVRDC, the collaboration with WorldFish under AAS creates opportunity for enhanced outcomes and impacts for AVRDC's projects funded by the Australian Centre for International Agricultural Research that, since 2007, have focused on sustainable intensification of high-value

vegetables. The RinD and system concept is new to AVRDC and so is considered a learning opportunity.

In 2014, WorldFish invited local AVRDC staff to contribute technical expertise to a publication on food and nutrition among hub communities. This joint publication (Jones et al. 2014) further highlighted to both partners where our efforts could be complementary. This led to AAS funds being used to contract AVRDC national staff to visit focal communities and scope opportunities for supporting community action plans. Seed funds were also provided to initiate some farmer trials.

KGA and AVRDC local staff were involved in developing the initial theory of change for the sustainable farming and nutrition research initiative for the Malaita hub. In late 2014, as part of the results-based management pilot, a participatory theory of change was developed that included AVRDC, the University of Queensland, the Ministry of Agriculture and Livestock, and KGA. Developing joint theories of change has been a powerful tool to develop a coalition around the sustainable farming and nutrition research initiative and to build capacity in the hub team and partners to implement field trials as PAR.

Emerging outcomes related to partnerships

Through the relationship with AVRDC, AAS has gained legitimacy with other agricultural partners who play a larger role in extension and networking than research organizations do. Both the Ministry of Agriculture and Livestock and KGA have committed to actions in a participatory theory of change for the research initiative. Hence, a collaborative coalition has been built that acts as a bridge to a broader network of agricultural partners. AVRDC is able to take a leading role on the agricultural research tasks with communities, while WorldFish provides the bridge to the communities and provides the opportunity for joint reflection and learning through after-action reviews at the community, hub and national level. The broader coalition has expressed commitment to collective action around the hub development challenge. In the coming years, AAS anticipates supporting structured reflection and learning to strengthen the coalition's capacity to address the hub development challenge.

Philippines: Visayas-Mindanao hub

AAS implementation in the Visayas-Mindanao hub started in February 2014 after a year of regional and community-level consultations with stakeholders in the five regions that make up the Visayas-Mindanao hub: Central and Eastern Visayas, Zamboanga Peninsula, Northern Mindanao, and Caraga. These culminated in a design workshop and the development of a hub-level strategic framework and theory of change. To address limitations in resources regarding the hub development challenge, WorldFish pursued multilevel partnerships to ensure successful implementation. The regional consultations secured the buy-in of collaborators and partners. This case study focuses on the partnership approach used to engage multiple partners to address the hub development challenge.

Case study trajectory from planning to rollout in 2014

As many local and international organizations are working to improve the lives of people living in aquatic agricultural systems in the Philippines, the Visayas-Mindanao hub program focused on where and how the program's science outputs could support the work of our partners, and where the program's convening and catalyzing role could foster coalitions to deliver more effective development outcomes.

In the early stages of program rollout, the convening role was evident in partner network analysis (Figure 7a), where WorldFish was identified as being the central link for many of the partners. After community engagement, the network map took a very different form (Figure 7b). There were much stronger links across a wider range of organizations, and WorldFish was no longer the primary link between them. We examine some of the processes that appear to have influenced this change.

Activities and processes that influenced the case study trajectory

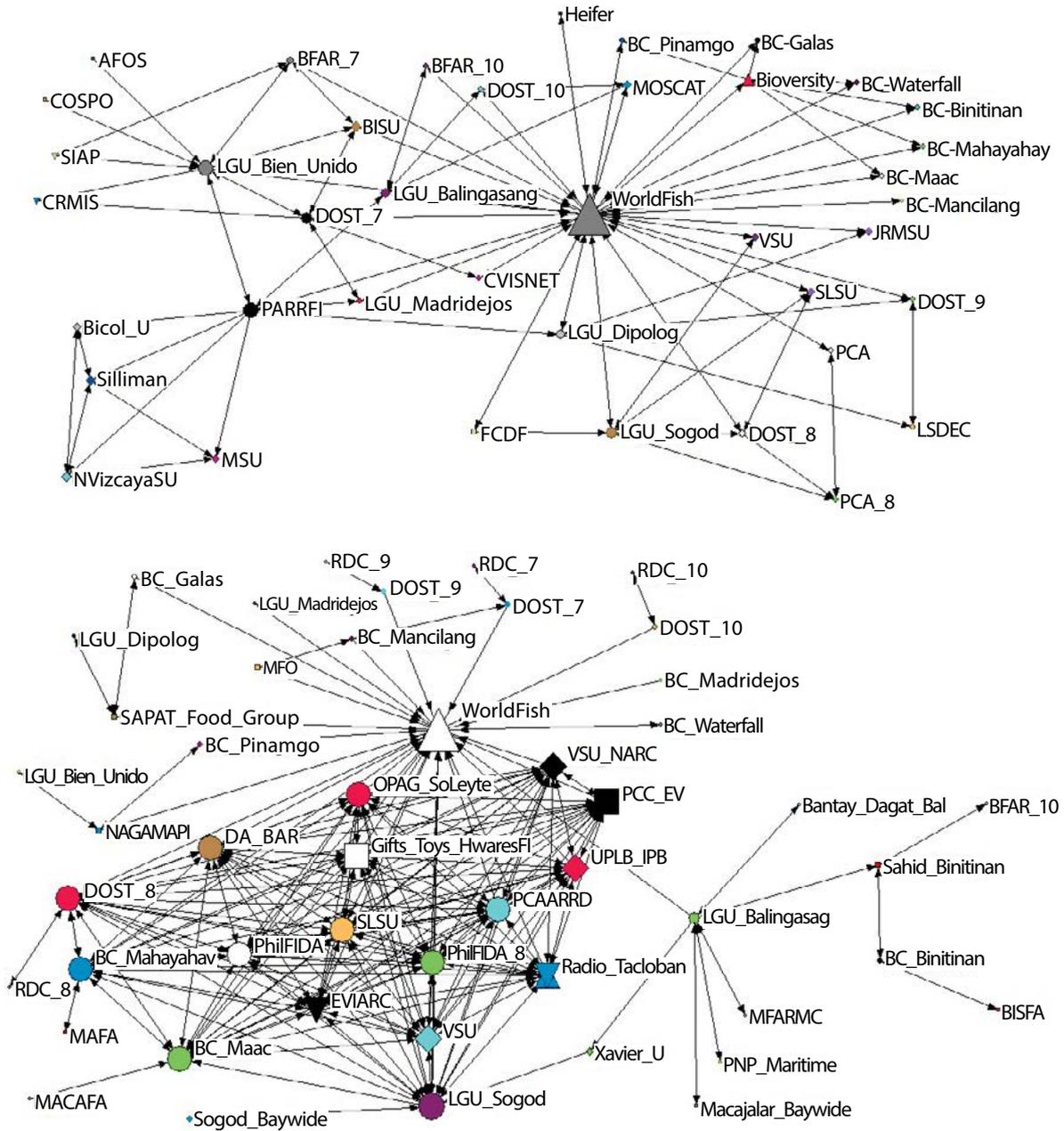
Partnerships at the national level involved engaging partners who have a mandate to cover all regions in the country and whose programs range from commodity-specific to industry-based. These partners provide funding for research that complements the research initiatives of AAS. The Department of Science and Technology's Philippine Council

for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) and the Department of Agriculture's Bureau of Agricultural Research, in particular, have been involved since program rollout in activities, including regional and stakeholder consultations and the design workshops. These agencies are mandated to formulate policies, plans and programs for science and technology research and development in agriculture, fisheries, forestry and natural resource management through a network of public and private research institutions.

PCAARRD and Bureau of Agricultural Research investments were instrumental in facilitating scaling out and delivery of sustained support for some main initiatives. A memorandum of understanding was signed between WorldFish and PCAARRD in 2012, followed by a specific implementing agreement for AAS in 2013 that specified roles for each organization and principles for collaboration. This resulted in access to the industry science and technology plans developed by PCAARRD and direct investments in abaca rehabilitation and aquaculture development in Southern Leyte. The Bureau of Agricultural Research, on the other hand, invested in AAS capacity-building efforts (PAR, theories of change, scenario building, etc.) for both the communities and other local partners.

A number of partnerships are not only influential for implementation and research, but by being embedded in local processes are anticipated to improve sustainability. At the community level, partnerships were pursued with local state universities and colleges to provide more sustained technical support. Through their engagement in regional consultations and design workshops, state universities and colleges identified opportunities for linking with the program through their graduate students and ongoing research activities. These links proved essential in securing funding for AAS initiatives from PCAARRD in 2014, as the state universities and colleges aligned research efforts with community action plans.

Another important partnership for sustainability was with local government units in the communities where AAS works. Local government units picked up the initiatives



Legend
 Icons represent organizations and stakeholders, while lines show who they are connected to through information sharing, funding or activities. The larger the icon, the greater the number of direct connections. In both diagrams WorldFish is represented by the large triangle.

Figure 7. Organizations engaged in AAS in the Visayas-Mindanao hub as mapped during a partner analysis (a) during the early stages of the rollout and (b) after the community engagement phase.

for home gardening and made these a basis for a city-wide program on organic vegetable production and marketing. They were involved especially at the *barangay*⁵ level in community visioning and action planning and in identifying the theory of change and hub development challenge.

Partnerships with other international NGOs (CRS and Heifer International) also started at rollout. For example, CRS recently contracted WorldFish to assist in the rehabilitation of typhoon-affected communities in Eastern Visayas, allowing the scaling out of the program in Eastern Samar and Leyte.

In 2014, the private sector (the Chamber of Commerce and the Chamber of Handicrafts) proved useful in helping partners consider implications of technology development from a business perspective. Their experience of working within and shaping markets is influencing state universities and colleges, government agencies, and other partners to rethink their research agenda to ensure adoption sustainability.

Emerging outcomes related to expanded partner networks

Among the most significant outcomes are the following:

- **Abaca Coalition.** An alliance of agencies, state universities and colleges, local government units, and private sector representatives have come together to complement activities and co-invest in efforts to rehabilitate abaca in Southern Leyte.
- **PCAARRD memorandum of understanding.** In addition to funding a study on fisheries demand and supply, PCAARRD invested PHP 3.3 million to do comparative testing of abaca hybrids and considers Southern Leyte a testing area for abaca technologies developed by the network.
- **Bureau of Agricultural Research investments on capacity building.** The Bureau of Agricultural Research has so far invested more than USD 300,000 on training for PAR, theories of change and scenario building, as well as community visioning and action planning. Communities, along with the local government units, are now preparing projects for potential funding from the Bureau of Agricultural Research.

- **Community Empowerment through Science and Technology Program.**

Regional offices (e.g. the Department of Science and Technology) are now adopting the RinD approach of community action planning for the Community Empowerment through Science and Technology Program that will facilitate scaling out. With local government unit investments, this will ensure that community plans and visions for development will be supported by science.

Cambodia: Tonle Sap hub

In this case study, we explore the experience of engaging with partners during the initial 2 years of the program. We stress the importance of capacity building in research methods and design that can help develop collaborative research capabilities and transform development research from a contractual arrangement led by scientists, external institutions and programs into research that is co-defined and co-managed by local partners, stakeholders and communities to collectively address complex development issues.

Engagement of partners with AAS began as an informal sharing of information involving partners who had a relationship or had worked with WorldFish previously, and included national government research institutions and international development agencies. In late 2012, as AAS was formally initiated in Cambodia, a relevance assessment interview instrument (McInnes and Johnstone 2012) was developed to assess and evaluate the expertise of local partners, their level of participation and experience in the six AAS research themes (productivity, markets, resilience, gender, governance and knowledge sharing), and their familiarity with and use of participatory research methods. A total of 18 local partners were selected and interviewed. Of these, eight were identified as having relevant or potential expertise and experience and were invited to participate in AAS and the scoping of the Tonle Sap hub in April 2013. The scoping provided an initial mechanism for joint research discussions, helped build mutual trust and resulted in the first draft of the hub development challenge.

Whose research agenda is it, anyway?

To undertake research in Cambodia, an agreement with a government institute or ministry is required. If the focus of the research is people, then an arrangement is needed with a government department to assist with approvals at local government and community levels and may also require their involvement to facilitate various aspects of the research. WorldFish has been formally recognized as a research institution in Cambodia since 2003 and has a memorandum of understanding with the Ministry of Foreign Affairs and the Fisheries Administration. The memorandum describes the principles, conditions and timeframe of the partnership and also provides WorldFish with the means to carry out research with other organizations. This is facilitated through separate agreements that frame the research and expected outputs from a partner. The use of memorandums of agreement or understanding is a top-down process that reinforces an externally defined and externally led research agenda.

Under AAS, a more inclusive collaborative research process in which researchers, stakeholders and communities work in partnership to exchange information, identify and define research issues, and frame these as development challenges has been tested in Cambodia. The process supports the development of a partnership that co-manages research that, with the appropriate levels of investment in capacity building in research methods and design, can decentralize the research process and empower communities to undertake collective action to address their issues.

AAS Alliance development in 2014–2015

AAS has memorandums of agreement with 18 partners at local and national levels. Initially, the main challenge was to bring the different elements and expertise of the partners together into a sustainable and focused arrangement that could share and generate learning and knowledge with the CGIAR Centers, other partners and communities. The rollout process in 2013 was structured to enable partners to become engaged in the research development process and included scoping, diagnosis, community engagement and research design phases, which collectively defined the AAS research program.

In early 2014, 10 of the partners operating in the hub formed the AAS Alliance (AASA), whose goal was to generate research and development knowledge, technologies, institutional arrangements, methods and insights and to share with partners and communities across villages and the hub. The stimulus for AASA was the various efforts made by the program to build research capacity in PAR as well as more traditional methods, such as key informant interviews and focus group discussions. The partners recognized that sharing knowledge across the hub made it more effective to operate collectively. The process was documented through community and stakeholder reflections and reviews that generated PAR guidelines (Nurick and Apgar 2014), case studies (Joffre and de Silva 2015) and outcome evidencing. Capacity building was not limited to design and data collection but included analysis and interpretation, much of which was carried out in the community with partners and community facilitators and resulted in cross-village analysis.

By mid-2014, despite the existence of individual partner contractual agreements with WorldFish, the research agenda and dialogue was being discussed collectively and directly with AASA. The AASA included eight organizations operating in the focal villages and two national partners, Gender and Development in Cambodia and a national research NGO, the Analyzing Development Issues Centre (ADIC). ADIC was contracted to coordinate the documentation and communication of research data between partners and also operated as a facilitator between the CGIAR Centers (WorldFish, IWMI and Bioversity) and AASA partners. By the end of 2014, the idea of formally recognizing AASA as a collaborative research body was realized through additional funding from the CGIAR results-based management pilot that aimed to build upon the existing AASA initiatives to develop a backbone organization.⁶ AASA was provided with funds and technical support to employ a partnership officer to coordinate partner engagement, as well as funds to undertake research processes and produce materials to share and generate knowledge and evidence of impacts from the research.

By early 2015, AASA had developed a joint proposal for funding submitted to the Water, Land and Ecosystems Research Program, and had developed a 3-year collective vision for the organization with the goal “to work together and share best practices at local, national and international levels toward improving livelihoods and welfare of the people, especially the very poor, poor and vulnerable, and improve natural resources management in the Tonle Sap region.” AASA has identified three objectives to realize this goal:

- Encourage men and women at all levels to analyze and explore solutions in relation to agricultural and fish production and processing, and establish and maintain market networks.
- Build capacity for climate change resilience to improve agricultural productivity and manage water resources in an equitable way and in collaboration with local authorities.
- Improve the research and development capacity of AASA and links to research and development networks.

Building partner capacity is the key to collaborative research

Building research capacity in AASA partners has been instrumental in formulating and transferring research that is not principally

defined externally, but is instead a program of research that is co-managed by local partners and communities (Pomeroy and Berkes 1997). Figure 8 conceptualizes the role and potential of researchers, partners and communities in using collaborative research where the subjects of the research are people and the natural resources they rely on. One extreme of the spectrum is where scientists, who are external to the location and whose lives will not be personally affected by its outcomes, have full control over research, knowledge and learning. The other extreme represents community-controlled research, in which knowledge is generated from within the community through self-reflection and used primarily to address development issues faced by people in a specific area. The AASA partnership, together with researchers and communities, represents a middle ground of collaborative research that draws upon the strengths of both approaches, where research institutions can co-manage research and learning with local partners and communities and provide technical inputs to address development challenges that have been co-defined with communities.

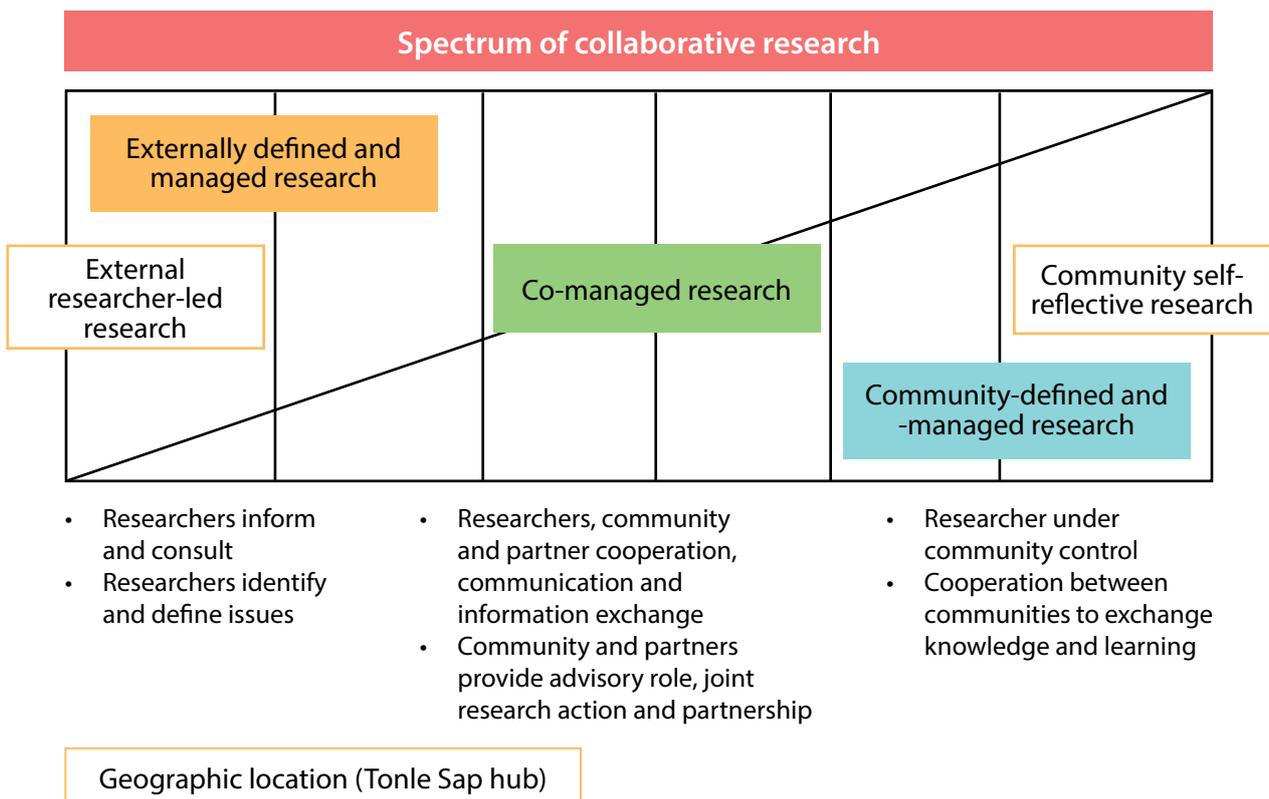


Figure 8. Spectrum of collaborative research. Source: Pomeroy and Berkes (1997).

Synthesis

The case studies represent six partnership journeys and emphasize different areas of learning. The global case study illustrates the experience of nurturing partners as part of the RinD approach across the program, while hub cases reflect different starting places in terms of capacity, relationships and partnership contexts within the program staff and partner organizations. Learning has been distilled into three areas that were initially identified in the draft partnership framework: learning about conditions required to convene partners, learning about how we sustain partners, and learning about how we strengthen capacities for leadership and to foster change (Table 3).

Conditions required to convene partners

It takes time and commitment to identify the right partners who can understand and connect with the hub development challenge and create a shared vision for change through agreed-upon action. This, combined with the need for certain partners only at critical stages of the program's implementation, creates what has been referred to elsewhere as a partner continuum (Horton et al. 2009). In recognition of this, AAS hub teams aim to create additional spaces to convene new partners who bring fresh insights, new understandings and capacity to tackle the hub development challenge.

The hub cases, in particular, suggest that more collaborative (rather than transactional) partnerships are beginning to occur, in part because processes have been set up and supported by the program for staff and partners to critically reflect, share learning and experiences, and use these to adapt their action plans. The collaborative partnerships that have evolved require trust and take time, effort and coordination to mold and maintain. Without sustained effort and commitment on the part of

all, there is the risk of lapsing back into old ways of working. Effective collaborative partnerships need to go beyond simple consultation. Inclusive and participatory processes have proven to be crucial.

Successful partnerships have been cultivated through efforts to search for organizations that have common goals and agendas, enabling the development of a shared vision for addressing hub development challenges. Recognizing members of alliances as experts on local conditions and priorities helps create a better working partnership, as it considers the interests of affected parties, fosters informed debate, and exposes the costs, benefits and appropriateness of any planned programs. Dialogue that includes the partners' ideas and priorities helps shape research projects and leverage funding in support of community action plans. Some partnerships move from transactional to more collaborative ways of working with little effort, while others require more effort to ensure a successful transition.

Mutual understanding can take years to emerge and require—at a minimum—the sharing of a common purpose or goal (ADB 2011). Global partner CARE participated in hub rollout activities in Cambodia, but this did not result in close collaboration in the hub despite ongoing interest. A mutual understanding has been reached that the most effective part for CARE to play may result in a role that is not directly in the hubs, but at a larger scale. Similarly, in the Solomon Islands case, having implementing partners involved from the scoping stage did not initially seem to bear fruit, but through ongoing participatory processes, alignment of purpose was eventually established as a foundation on which the AVRDC and AAS partnership is now building. Program funds are sometimes required to enable partners to move outside the geographical range of their projects.

Learning	Global	Zambia	Solomon Islands	Bangladesh	Cambodia	Philippines
Conditions required to convene partners	X	X	X	X		X
How we sustain partners	X	X	X		X	X
How we strengthen capacities for leadership and foster change				X	X	

Table 3. Where the three areas of learning were emphasized across case studies.

We now have enough experience to begin to comment on the enabling conditions in a partnership framework, which will be explored further in subsequent papers. These conditions include the following:

- **Establishing systems for shared measurement and reflection.** Facilitating data collection and measurement of results consistently across all participants ensures that efforts remain aligned, processes are equitable, and participants hold each other accountable through shared analysis and reflection.
- **Mutually reinforcing activities.** Partner activities are differentiated, yet are still coordinated through a mutually reinforcing plan of action. This approach will help leverage the best capabilities of each partner.
- **Effective communication and learning.** Consistent and open communication occurs in ways that build trust and mutually beneficial relations among all, supporting ongoing learning that is potentially transformative.

Learning to sustain partnerships

It is the individuals within institutions who undertake partnership activities (ADB 2011), and the case studies have emphasized that one-on-one relationship building is essential for sustaining partnerships. Mutual trust in a collaborative research partnership has to be nurtured and developed over time and requires a commitment of technical and financial resources by external research institutions and programs. A further challenge to sustaining partnerships relates to staff transitions, and this highlights the importance of investing time and effort to orient newcomers to the partnership.

Relationships should be institutionalized with co-investments for shared action and advocacy. Building on past gains while breaking new ground, such as through joint publications, is sometimes a useful way to build a common vision for research. It may also be necessary to modify the team makeup to include technical service providers to local communities.

Learning to strengthen capacities for leadership and foster change

As partnerships and coalitions began to mature, lessons about deepening those partnerships began to emerge. One lesson is the critical importance of having strong leadership across AAS: within communities, partners and the three

managing centers to model new behaviors, embrace emergent thinking, and be successful in convening and sustaining partnerships. This reflects learning (Kania and Kramer 2011) that a backbone support organization that has the time to perform functions such as facilitation, data collection and reporting is one of the necessary conditions for collective success. For global partnerships, this needs to be multilayered (local to global) to ensure co-ordination happens at multiple levels (Patscheke et al. 2014).

In the case studies, AAS lead centers within hubs either initially (e.g. Philippines) played that supporting role or in some cases (Solomon Islands) still do. With strong leadership there is greater potential to delegate responsibility for the research process to other partners. Capacity building in science methods for AAS hub teams and partner organizations was identified as critical to the development of collaborative research, and this capacity has to be incorporated into the resourcing of the partnership from the beginning of the research design.

Conclusion

These reflections on what is being learned across scales are part of the journey toward sustained, equitable partnerships and coalitions that deliver increased benefits for the poor and marginalized in program countries. A core principle is the idea that interventions in a complex system *without* a fixed agenda can be a powerful lever for change. The dialogue and action space created in hubs was “safe” precisely because our starting point was not a fixed intervention agenda. The “safe space” is one where a diversity of actors operating in one geographical area can openly and critically explore and eventually adjust their interventions in the system. This also offers an opportunity for evaluating the processes that are emerging for generation and exchange of knowledge (ADB 2011) within partnerships and coalitions. Most importantly, neither partners nor partnerships are static. The RinD approach offers a practical and increasingly proven methodology for engaging stakeholders in dynamic complex systems.

IMPLEMENTING A GENDER-TRANSFORMATIVE RESEARCH APPROACH: EARLY LESSONS

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Introduction

Agriculture research has made notable scientific and productivity contributions over the past decades (Alston 2010), yet the sustainability and equity of its impacts have been questioned in relation to its ability to benefit women, the poorest of the poor and socioeconomically marginalized groups (Meinzen-Dick et al. 2003). AAS has sought to address these limitations by combining three streams of research-related processes around an agreed-upon set of development challenges:

- **Contextually relevant social and biophysical agricultural research drawing on participatory and other methods.** This is “technical” AAS research and includes research on aquaculture productivity, fish value chains, floodplain management, ecosystem services, and community-based land and water governance.
- **Ongoing engagement of communities and other actors in social learning processes related to their jointly identified development challenges,** including PAR that seeks to nurture innovative capacity. These are referred to as core RinD processes.
- In relation to both of the above, **engagement of diverse local actors in transformative reflection and change processes** regarding underlying forces and factors that shape equality and equity, such as gender and social norms, attitudes, practices and rules. This is the gender-transformative approach.

The RinD approach aspires to develop scientific insights and technologies, to combine knowledge generation with enhancing the innovative capacity of local actors, and to increase the equity of the social, economic and political structures that influence the livelihoods of poor and marginalized households who depend on aquatic agricultural

systems (Kantor 2013). In going beyond more common gender-mainstreaming aspirations such as increasing women’s participation in and access to technologies, the gender and socially transformative aspect of RinD is expected to contribute to a stronger foundation for more equitable and lasting contributions of research to development processes. We refer to this socially transformative, equity-oriented element of RinD as the gender-transformative approach (see Kantor 2013; Kantor et al. 2015).

The AAS journey towards implementing a gender-transformative approach has been a learning-based process, combining conceptual grounding, drawing on learning from others, and experiential learning among research teams. Given the newness of gender-transformative research in the field of agricultural research and to the teams, the journey has involved teams encountering and addressing multiple challenges. With the understanding that other programs or teams may face similar challenges in the pursuit of gender-transformative research, the goals of this chapter are to (i) highlight some of the key challenges and learning regarding how these can be effectively addressed and (ii) share identified strategies for gender-transformative research and examples of such research that is in progress in AAS.

The reflections and insights presented in this chapter were generated through a two-stage process: (i) identification of challenges and related learning generated in a cross-hub after-action review held in January 2015, involving representatives from each of the five hubs, and (ii) drawing on and synthesizing across new and existing written contributions by hub team members regarding challenges, learning and emergent examples of the gender-transformative approach. The result is a snapshot of the challenges faced in the start-up phase of gender-transformative research, highlights of learning about how to overcome these, and a sketch of current gender-transformative strategies and examples from AAS research to date.

What is a gender-transformative approach?

A gender-transformative approach to research is an approach that “can be applied within research to examine, question and, most fundamentally, enable changes in inequitable gender norms, attitudes, behaviors and practices and the related imbalances of power (IGWG 2010). Through encouraging critical awareness among men and women of social inequality and practices, [gender-transformative approaches] help people challenge and re-shape distribution of and control over resources, allocation of duties between men and women, and access to and influence in decision making (Caro 2009). They also enable men and boys to question the effects of harmful masculinity, not only on women, but also on men themselves” (Meng 2015, 1). In other words, a gender-transformative approach seeks to generate understanding regarding gender and the visible manifestations of gender inequalities and inequities⁷ (such as gendered roles and relations and their outcomes), and to catalyze shifts in the norms, attitudes, and formal and informal rules that underpin these visible manifestations of inequality.

The need for a gender-transformative approach “emerges from the gap between research (and development) practice and the field of gender’s conceptual development. In particular, it emerges from the predominant focus of gender efforts in research and development on interventions that address individualized demonstrations of gender inequality—gender resource gaps—but ignores their wider social causes” (AAS 2012b, 3). While this recognition is relatively new in the field of agricultural and development research, it has been recognized, and progress has been made in gender-transformative approaches in other fields over the past decades, most notably the field of health.

A gender-transformative approach differs from more commonly applied gender mainstreaming approaches in agricultural and development research in terms of the framing of issues to be addressed (Cole et al. 2014a). Gender mainstreaming focuses on addressing visible manifestations of a gender gap, such as women’s limited access to training or resources.

A gender-transformative approach adds a level at which the central problem is framed. It does so by adding a focus on the formal and informal institutions underlying the visible gender or social gaps — in particular, on (gendered) social norms, attitudes, practices, processes, and rules or policies. The reason for this focus is that it is at this level that gender and social inequality is produced and reproduced (Kabeer 1994).

This difference in framing translates into a difference in goals as well. The goal of gender-transformative research involves addressing not only gender inclusion or more effective technical innovations, but also catalyzing the potential for shifts in any underlying informal and formal institutions that inhibit equality. The aim is to engage with and influence these institutions at multiple scales (from households to communities to larger scales). As such, a gender-transformative approach seeks to engage women and men in research as a social change process. Transformation towards equity expands the range of aspirations, options and opportunities available to individuals, households and communities, as well as increasing the agency of previously marginalized actors, and thus their ability to effectively act on their own potential (Cole et al. 2014b).

A gender-transformative approach operates by creating space for and sparking increased critical questioning and awareness (consciousness raising) of underlying attitudes about rights, roles, capacities and values and how these forces influence individuals, families and communities in relation to their livelihoods, other aspirations and well-being. Bringing to the surface the generally unquestioned norms and practices and their influence or costs for individuals, families and communities can spark cognitive shifts (McDougall and Ojha forthcoming) towards more equity-enhancing mindsets. These shifts in perceptions and thinking can lead to more equitable roles, relationships and practices between women and men, and ultimately more equitable development outcomes (Salazar 2014). Box 3 outlines the main characteristics of a gender-transformative approach.

Looking back: Challenges in developing and getting started

Conceptual challenges: Understanding a gender-transformative approach and moving from concept to application

All hub teams identified a fundamental challenge from experience to date: the conceptual complexity of a gender-transformative approach, and difficulty in translating it from a broad conceptual understanding to effective practice. Compounding this challenge, the pioneering nature of the concept within the field of agricultural research means that there were few concrete examples on which the teams could draw to ground their understanding.

Some team members suggested that the focus on *transformation* is intimidating in that it suggests new, profound or socially destabilizing strategies. Similarly, some said that the fact that the concept is almost always referred to by its acronym (GTA) obfuscates the meaning and reduces accessibility to the concept, even

for research team members who themselves use the acronym. Taken together, these issues reinforced difficulties in translation into practice.

Reflection on these challenges motivated teams to identify an underlying and previously unaddressed need for a more definitive, shared and implementable understanding across the program about what the gender-transformative approach is in practice. Three questions and their related challenges emerged:

- What does the approach mean and what are its goals in each hub? (the framing challenge)
- How and through what strategies, when, with whom, and by whom should teams and partners apply this approach? (the capacity challenge)
- How can it be integrated with the overall hub research program involving core RinD processes, such as PAR and community-level visioning and reflection, as well as technical research initiatives around productivity, governance, floodplain management and so forth? (the organizational challenge)

The framing challenge: Gender-only focus

Hub teams identified as a challenge the emphasis of the approach in practice around gender as women and men (i.e. rather than starting by engaging with broader issues of social equity and equality early in RinD and then extending this to gender in combination with other socially constructed roles, relations, values, and meanings and categories of social difference, such as wealth, ethnicity and caste, class, and age). The Philippines hub team, for example, found it challenging to foster a collective sense of interest in and ownership of a gender-transformative approach as an element of RinD. Teams there were focused on issues relating to men and women; subsequent reflection surfaced that gendered norms were perceived by hub stakeholders to be less generally significant than power relations and inequalities in opportunity structures among other social groups in that context. An overly narrow de facto framing of the approach around gender (as a binary women-men construct) may thus have operated as a constraint on the approach's development and implementation.

Box 3. Characteristics of a gender-transformative approach

A gender-transformative approach

- seeks to understand people within their context, including in terms of how culture, age and other aspects of social-economic identity and other exogenous factors and livelihood strategies (such as remittances) affect and are affected by gender;
- makes explicit how social inequalities intersect to affect their choices and outcomes;
- provides space for women and men to engage in an iterative process of critical learning, reflection, questioning and action;
- engages both women and men, as transformative change stems from a shared vision;
- engages with different actors across scales to redress the underlying norms and power relations that enable social inequalities.

Adapted from Kantor (2013).

The capacity challenge: From conceptual understanding to practical application

All teams observed that shifting from a gender-transformative approach as a concept to the approach as an applied strategy required building capacity among research staff and partners, and this involved multiple challenging factors. For example, the Zambia team said that at the outset of the program the lack of capacity to integrate the approach spanned multiple levels and spheres: from research staff designing activities, to partners integrating gender-transformative approaches in activities, to community facilitators facilitating PAR processes. Specifically, they noted that while formal training appeared to be reasonably effective in developing staff and partner capacity, it was less effective at the community facilitator level. For example, the team's own evaluation of the effectiveness of community facilitator training indicated that after the training of trainers, only 6 of 22 community facilitators felt confident about their capacity to facilitate gender-transformative sessions. A second factor observed by all hub teams relates to the point regarding conceptual challenges. While building capacity in the sense of knowledge and understanding is relatively achievable through formal training, gender and gender-transformative training may still leave a significant capacity gap in terms of teams being able to make an effective shift from concept to practice. Gender transformation training was useful to lay a foundation of knowledge, but only where the training linked directly to hub-specific issues and research plans in progress was the team able to make the shift to effective practice in a relatively short time.

The organizational challenge: Working in silos

All hub teams noted organizational and institutional challenges to operationalizing a gender-transformative approach. One aspect of this was that the gender-transformative work was organized within the research program in parallel to, rather than directly in connection with, the PAR and community engagement processes. For example, in Zambia, for most of 2013–2014, the gender-transformative initiatives and PAR activities were being conceptualized, planned and implemented separately. The lack of joint planning delayed research team and partner understanding

of what the various initiatives and activities were doing and slowed learning about how to integrate gender transformation within these. One hub researcher observed that it was as if gender transformation and PAR were trying to bypass one another.

These reflections, along with the realization that this separation was less than optimally effective, laid the groundwork for more integrated planning and strategies. This challenge was also reflected in organizational structuring in the hubs and in the global program, which involved generally separate gender and PAR staff and partners. Teams said that while the PAR staff worked in the hubs, the gender staff was in many cases embodied, at least initially, in a single gender research analyst. The gender analysts being (generally) relatively junior and working on their own reinforced the conceptual and capacity challenges outlined above, including overall difficulties of communication, integration of gender into hub programs of work, and translation of the gender-transformative approach into practical strategies.

Looking ahead: Meeting challenges, making progress

While these challenges posed considerable difficulties, the teams persisted in seeking ways forward with the gender-transformative approach. These efforts, illustrated with examples from Bangladesh, Zambia and Solomon Islands, have led to a number of insights.

Conceptual clarity and identifying principles and strategies for action

The importance of demystifying the concept within the research teams and among partners has emerged as a fundamental lesson. Implicit in this is encouraging and enabling the understanding that a gender-transformative approach need not be complex in terms of strategies or separate from existing community and multiscale engagement. In line with this learning, teams are now aiming to translate the big ideas of the gender-transformative approach into action through a range of practical strategies. The development of strategies has come through a combination of literature reviews, partnerships and capacity-building processes. As outlined below, the

teams anticipate that taking a reflective learning-by-doing approach to these strategies, treating them as learning opportunities, and being ready to adjust as they progress will be central to their success.

A second point of learning relates to understanding gender-transformative research as one type of gender research among several. Central to this understanding is that not all research activities in the program need to be gender-transformative in nature. Rather,

gender in research can be seen as ranging across a spectrum from all research involving basic descriptive gender and social diversity analysis (gender integrated), to strategic gender research, to research involving a gender-transformative approach (Box 4). Across all of these, good practice for scientific quality and ethics indicates that research activities need to be designed and applied such that research processes are accessible to and effectively and equitably engage with or draw on a balance of actors (i.e. be gender inclusive).

Box 4. Rough typology of gender in agricultural research

Gender-integrated research (or descriptive gender and social analysis): Scientific quality relies on research addressing gender and social difference in terms of data being effectively and accurately disaggregated, as appropriate to the context. Effectively assessing and analyzing contexts and research results through a gender lens contributes to laying the foundation for future gender-transformative work by increasing the collective understanding of the context and the needs, opportunities and entry points for social change.

Strategic gender research distills widely applicable learning regarding gender, including research in which women are the primary subject of the research. This could include, for example, gendered dimensions of community access to decision making and benefit sharing in community-based fisheries and natural resource management, and in particular how governance can increase the flow of benefits to women. Gender-strategic research helps enable achievement of development outcomes at scale by understanding the gendered aspects of technical, agricultural and governance learning available for use by a range of development actors, including governments, bilateral agencies and civil society actors.⁸

Gender-transformative research is research that leverages the research process itself to directly catalyze and contribute to gender-equitable shifts in the formal and informal rules, norms and behaviors that underpin gender inequality in processes, practices and outcomes. Building on the foundation built in AAS and the CGIAR Research Program on Livestock and Fish (such as Cole et al. 2014a), this body of research aims to contribute to achieving the gender cross-cutting sub-intermediate development outcomes of gender-equitable control of productive assets and resources, reduced time burdens, and improved capacity of women and young people to participate in decision making. For example, this could include research to catalyze shifts in norms and rules addressing gender-equitable access to and control over key financial and productive assets. This process could involve development, application and assessment of strategies within or in connection to the research process to spark critical questioning by men and women regarding gendered rules, norms and behaviors. Questions could relate to how gender-inequitable access to and control over key fish agri-food system assets and resources (including aquaculture technologies and training, and financial and other assets) influences the achievement of household and community aspirations; what factors shape access and control; and how these factors can be addressed to create more equitable access and control—and in connection to these—greater and more equitable achievement of local aspirations.

Source: Adapted from WorldFish et al. (2015).

Re-framing gender in complex systems

Reflection on experience, reinforced by the literature (such as Resurreccion and Elmhirst 2008), underscores that the implementation of a gender-transformative approach benefits from a broader, more nuanced and integrated framing and implementation. This can be seen as comprising a re-grounding of the analysis and transformation in terms of both (i) addressing multiple forms of socioeconomic power and marginalization, which implies a focus on poor or minority socioeconomic groups (of both sexes), and (ii) engaging with the multidimensional nature of gender.

In theory, the approach recognized the above points from the program outset. Learning from experience, combined with progress in analysis of findings, has further underscored their significance and the need to translate these effectively into practice. Working with multiple socioeconomic groups, enabling reflection, and undertaking analysis of the gendered norms, practices, attitudes and power relations that often disproportionately impact women enables both more effective and more inclusive social analysis for change than does a narrow framing. Taking this forward involves the research engaging with gender as dynamic and context specific, and recognizing that neither women nor men represent a homogeneous category. Each gender category is now being increasingly recognized as cross-cut by, shaping, and in turn re-shaping multiple other dimensions of social difference, such as wealth, ethnicity or caste, religion, and relation to place. Additionally, this nuancing is being connected with systems thinking and political ecology perspectives (Resurreccion and Elmhirst 2008; Locke et al. 2014) in terms of understanding gender as involving a dynamic and complex interplay of these categories of difference, running across multiple scales. This understanding will avoid interpretation of gendered roles or relations as static or pre-determined, and instead re-emphasize the mutual creation and re-creation at play among socio-political, ecological and economic factors.

This more nuanced, integrated framing also brings to the surface the political nature of gender-transformative work. Given that natural resource and development contexts are inherently political and embody ongoing

contestation, conflict, alliances and re-shaping of power dynamics, both innovation and change processes are likely to be unpredictable and potentially conflict-laden. As such, gender-transformative research processes (as a form of socio-technical change) should not be anticipated to be predictable or smooth. Rather, they will reflect the complex and contested nature of the context and the systems in which they are embedded, and will need to address conflict management from an early stage. Some external research has indicated that this surfacing of latent tensions can ultimately be constructive if the necessary supporting factors are in place (McDougall and Banjade 2015). This has already begun to be recognized in AAS research (Kantor et al. 2015; Morgan et al. 2015), and early strategies have begun to be developed to work with this more complex perspective on the system. For example, intrahousehold tensions and conflicts are being recognized and addressed within the gender-transformative research in relation to the microcredit initiative (see the savings and internal lending communities, known as SILC+GTA, illustration below).

Moving from concept to practice

Developing capacity through training, partnerships, research and learning by doing

The program has taken a blended learning approach to capacity building, combining formal training with iterative learning in and from the application of ideas (Sarapura Escobar and Puskur 2014). A number of insights have emerged from experience in relation to capacity building through formal training:

- Teams recognized that conceptual formal training in gender-transformative approaches is important, but insufficient. To build practical ways forward, training initiatives need to directly connect with the specific plans, activities and issues of the program.
- Teams observed that focused capacity development should start early, when specific research initiatives are identified in the program, rather than wait until other aspects of the research are underway.

Teams identified that capacity development around gender, along with the application of gender research, is more effective when the responsibility is shared across the team, rather than being the sole responsibility of one or two individuals.

The connection between partnerships and capacity building emerged as significant. This was both in terms of involving local partners in capacity development around gender (to build their understanding of its value in the research) and for team members, including researchers and community facilitators (to build relevant skills, as well as in relation to scaling through building networks and coalitions). Seeking partners from outside the field of agriculture and development research who could lead capacity development and engage in the work as partners was extremely valuable. To date, a combination of global partners played this key role: The University of East Anglia in developing capacities on gender theory and analysis; Promundo in developing capacities to implement gender-transformative approaches in context; and Johns Hopkins University in developing capacities in the specific area of gender-transformative communication and research.

The knowledge generated through formal research has played an important role in capacity development for informing and operationalizing the gender-transformative approach. For example, in Zambia, drawing on the early social and gender analysis findings enabled the team to base their research on empirical data. This built credibility and thus confidence and momentum among engaged actors. It also enabled the team to target their gender research and gender-transformative approaches more effectively than if they had been working from general knowledge. Literature reviews and expert dialogues have similarly helped to ground and focus the research. For example, in Bangladesh, targeted reviews helped to identify priority areas for gender-transformative work in relation to aquaculture.

Teams recognized the value of research findings in building a contextual understanding of gender early in the program and using these findings as a foundation to identify opportunities and entry points for gender-transformative work. In four of the five hubs, delayed gathering and analyzing of social and gender data and in-depth gendered context studies led to a lack of useable information regarding important local issues and entry points for gender-transformative work in the overall research. These teams agreed it would

have been better to undertake this analysis earlier in the research and use it to inform strategic planning around gender in various RinD processes and initiatives. For example, it could have been used to feed back into community and hub PAR to spark gender and social equity dialogue within those processes.

“Just go ahead” and “learn by doing” emerged as important rules of thumb for implementing a gender-transformative approach. Given the challenges outlined in this chapter, it is easy to see how researchers are tempted to postpone doing anything on gender issues. Teams said in the reflection sessions that it was important to build on the capacity and information they had and simply start with some small effort in a learn-by-doing mode. As one researcher commented, “We can’t wait for the perfect time or perfect strategy: we need to just dive in with GTA and learn as we go.” For example, participatory tools that were eventually used in the social and gender analysis, such as participatory wealth or well-being ranking, could have been integrated usefully into the community engagement processes early on.

Learning by doing expedites the learning process. Some would say it *is* the learning process. Moreover, from a systems perspective, such an approach is appropriate to complex systems. As such, formal training can be complemented with space for and a culture of team members regularly sharing, learning and discussing the concept and its application and then implementing another iteration of the action-learning cycle. Moreover, team members reported in the reflection sessions that they had begun to “develop our own habits or mindsets as researchers of asking the ‘why’ questions in relation to all aspects of the research and context” (World Café session notes). Teams also reported that it was also extremely useful to have “outside eyes” on hub work to help recognize when and where the gender-transformative approach is evident (or not) and how well it is or is not working.

Personal, relational and institutional shifts and commitments

One factor that has enabled the teams to make progress has been their commitment to the gender-transformative approach at the level of the individual researchers and the institution

involved. In several cases at the individual level, this has been reflected in the commitment of the gender analysts and the unanticipated but welcome commitment of other researchers to gender issues. In Zambia (Barotse hub), the relatively effective operationalization of the gender-transformative approach relied first on establishing strong bonds and trust within and between research and development organizations. Once established, stakeholders coalesced around salient social and gender issues and began working together to achieve better, more sustainable gender equality development outcomes (Cole et al. 2014b).

At the institutional scale, WorldFish's commitment to gender is reflected in the resources invested, interest at the senior scientist and management scales across research themes and sites, and explicit integration of gender into its overall aim. This commitment has played a critical supportive and enabling role in terms of institutional willingness to support gender capacity development and allow teams the freedom to engage relatively uncharted territory in agricultural research.

Emerging insights about a gender-transformative approach

Overall insights

Several insights have emerged in relation to implementing a gender-transformative approach:

- A gender-transformative approach is not just about getting both women and men together in the same room; it is about bringing to the surface and initiating critical reflection and identifying options for change. Its role is to engage diverse local women and men in such critical reflection and change processes regarding underlying forces and factors that shape equity, such as gender and social equity-related norms, attitudes, practices, processes and policies.
- Building strong relationships among scientists (and especially between social and natural scientists), government and development actors, and women, men and youth in program communities is critical and a prerequisite before change processes can be initiated and realized.
- Part of a researcher's role is to facilitate

critical reflection by asking questions throughout the PAR process. These are questions that help probe and bring to the surface the underlying causes of imbalances and the implications of the social and gender status quo. These are the "why" and the "so what" questions.

- Transformative gender work is a form of social change, and as such it can only be seeded, not forced or controlled.
- Early understanding of the context, such as through social and gender analysis and gender benchmarking studies, can help researchers understand the landscape and inform core RinD processes from the beginning. This type of early analysis can also be fed back into these processes to help researchers identify entry points for gender-transformative work.
- Gender-transformative research is a long-term process that can be worked into the research from the scoping stage, through core RinD processes and throughout technical initiatives.
- There is no single strategy on which the approach is based; rather, there are numerous strategies relating to the principle of facilitating critical reflection (see below).

Examples of strategies for a gender-transformative approach

There are multiple possible strategies for taking a gender-transformative approach. What they have in common is that they promote critical reflection and dialogue on gendered norms, attitudes, behaviors and values and promote the development of positive alternatives. Moreover, the strategies also have in common that they seek to empower individuals to take up these gender-transformative practices by, for example, promoting women's agency to participate actively in agricultural production or enabling men to share household decision-making power with their partners. Here we present five interconnected and overlapping strategies or—more accurately—bundles of strategies that AAS has been focusing on: critical questioning, experiential learning, tools for reflection, communication for social change, and networking.

Critical questioning for learning

Questioning deeply entrenched harmful gender norms and practices is at the core of

the gender-transformative approach, and is carried out via fostering group reflection and open dialogue within socially safe spaces. While it is woven throughout all the strategies presented, here we begin by presenting it as a strategy within the community visioning and reflection cycles of RinD (i.e. community engagement). Key points include the following:

- Community and subcommunity processes (such as visioning, planning and after-action reviews) can prompt community members to reflect on harmful gender and social norms and power relations. Questioning harmful gender norms opens up spaces for men and women to increase their awareness of how unequal power dynamics and harmful gender norms affect them as individuals, their relationships, their families and their communities, including in relation to community goals and visions.
- Critical questioning by community members can be routinized through regular tracking of gender and social equity in community-based participatory monitoring.
- There are no specific sets of questions, but rather facilitators and researchers can help to prompt regularly asking “why” and “so what” questions. In other words, researchers, facilitators and community members engaged in this critical dialogue seek to go beyond reflecting simply on roles and responsibilities. Sex-disaggregated data can help identify the root causes of gender inequalities and their negative impact on communities.
- Strategic research on gender—such as gender and social analysis findings from the site—can help to inform the researchers and facilitators, as well as sparking critical questioning.

Experiential learning

This strategy applies critical questioning (above) in combination with action. In other words, it combines critical questioning and reflection with identifying and trying new ways of acting or relating (such as new gender roles, or shifts in gendered decision making). This action-reflection nature means this strategy fits with or can be situated in PAR cycles of various kinds or other action and learning-oriented activities. This is illustrated in relation to microcredit and aquaculture development in the Zambia and Bangladesh illustrations described in the next section. Key points include the following:

- Experiential learning can take the form of facilitated group sessions that integrate critical questioning around gender with a specific topic or activity (such as microcredit) that is related to the overall goal of a project or community action plan. Participants in these group sessions unpack how gender norms (as well as roles, relations and behaviors) influence the activity and shape positive and negative outcomes in relation to individuals, households and the community’s identified aspirations. Where the outcomes are negative or inequitable, women and men identify potential alternative norms, roles, relations or behaviors (such as sharing household work so that women can go to savings meetings, or women and men in households identifying joint goals to reduce conflict over spending choices, or identifying ways in which women can engage in local markets). Participants put their identified solutions into action, testing them and seeing to what extent they work. They then return as a group to reflect on and learn from these experiences, and iterate through further cycles of action and reflection.
- Within these facilitated processes, facilitators seek to create safe spaces for women and men to reflect on how gendered norms, practices and rules shape local realities and would impact on desired (ideal) futures, in relation to specific technical issues such as fish production, markets and resource governance.
- Experiential learning as a gender-transformative strategy is potentially potent because it can combine experiential learning with new economic or technical opportunities, as well as new capacities, and potentially collective action. Together these can contribute to building “power within”, “power with” and “power to”, as well as shifting gender relations.
- It is also a potentially powerful strategy in that it can merge the social with the technical by engaging in dialogue around gender issues within technical interventions. A main gender hypothesis of AAS is that it is through implementing a gender-transformative approach, hand-in-hand with technology-focused and livelihood-enhancing interventions, that optimal results from both are achieved

(AAS 2012b). Achieving this marriage of the social and technical requires rethinking how technical interventions are delivered (i.e. the process) and to whom, as well as planning how purely social interventions can be sequenced and layered with technical ones. Examining whether and how integrated packages of social and technical interventions foster gender-transformative change across contexts and social groups, and how they affect technology adoption and use, is a central research agenda for gender-transformative approaches in the agricultural sector.

Using participatory tools to spark dialogue and questioning

Tools can be used as a strategy to support critical questioning and dialogue, including within a range of PAR processes. Examples include the following:

- Problem tree analysis that is applied to unpack underlying roots of prioritized technical issues can also effectively bring to the surface underlying social and gender issues.
- Farming system analysis of roles and relations of farming households can help to illuminate contributions of women and men to the household and bring to the surface dialogue on working together within households (see Solomon Islands mini-case).
- Household-based visioning (Oxfam and GADC 2014), or the gender road map, is a powerful gender-transformative strategy that has been tested in Cambodia. It is designed to address unequal power relations within the household. The model is targeted specifically to vulnerable couples facing various issues such as poverty, domestic violence, gambling and alcohol abuse. Combining tools and experiential learning, there are four steps to implementing the gender road map:
 - o building capacity for beneficiaries on gender concepts;
 - o conducting monthly meetings with beneficiaries to identify gender issues they are facing within the family;
 - o guiding couples to design their family gender road map (a core step of the model focused on household visioning—what they want to be in the future compared to their current situation);

- o guiding couples to develop their action plans and to hold monthly follow-up sessions to monitor their progress.
- There are a growing number of resources that present specific gender-transformative tools and how to use them, including in the context of aquatic agricultural systems. Examples include the following:
 - o The Bangladesh mini-case (this chapter) drew on a range of social-consciousness-raising exercises that included family members, especially mothers-in-law and spouses, based on the Helen Keller International resource *Nurturing Connections* (http://www.fsnnetwork.org/sites/default/files/TOPS_Nurturing%20Connections_English_FINAL_P.pdf)
 - o The Zambia mini-case (this chapter) drew on tools presented in a forthcoming manual by Promundo on savings and loans groups with a gender-transformative approach.
 - o A range of gender-transformative tools for use on their own or as a series of sessions in a workshop are presented in Promundo and WorldFish's forthcoming manual, *Engaging with Men and Boys on Gender*.

Communication for social change, including media and entertainment

- **Inspiring dialogue through media.** Media programs can take many forms, including multimedia campaigns, radio and TV programs, video productions, and social media platforms. They contribute to behavioral and social change by providing a common language to address concerns, role modeling positive choices, demonstrating options for action, and above all, inspiring people to talk about the issues raised within their families, peer groups and communities and throughout the country. Dramatic stories and real-life testimonials where people hear firsthand how someone similar to them has been able to overcome gender and economic challenges have proven effective in motivating others to take actions they may have previously felt were too difficult to try. National dialogue programs, where broadcasters across the country discuss the same topic from various angles for a set period of time (e.g. the role of women and men in the fish value chain) can be particularly useful for stimulating national

dialogue and provoking conversations. This dialogue encourages social normative change, increases support for healthy practices and actions, creates opportunities for communities and groups to plan for action, and, ultimately, enables improved and sustainable health-enhancing action.

- **Participatory community theater for development.** This form of entertainment-education methodology engages community members to reflect on their key problems (e.g. gender and livelihoods) and encourages them to voice their concerns, plan together to overcome barriers, mobilize the needed resources, and work in concert with support from others when necessary. In community theater for development, scripts are based on investigations conducted on the audiences' lives to ensure they are grounded in reality. Breaks are often taken in the performance to get input from those watching about how they would solve the dilemma faced by the characters. Discussions follow the performance to further stimulate dialogue and reflection about the topics

raised in the drama. These discussions often feed into the script for the next performance.

- **Community radio programs.** Radio is still the most accessible medium in much of the developing world. Community radio is particularly important, as stations are primarily established to be the "voice of the people" within a set geographic area. Programming focuses on topics the community is concerned about and offers an outlet for listeners to voice their concerns, share their challenges and solutions, and work together to solve community issues. People who live within the community or who go on a regular basis to collect firsthand accounts of stories usually do the reporting. Community radio provides much-needed information, often in almost real time, about events that are unfolding within communities that are affecting people's daily lives. Programming can disseminate information to increase knowledge, motivate change, and inspire dialogue and action around a variety of factors that perpetuate gender inequality.



Community members in the Barotse hub attending an AAS meeting with partners, Zambia.

Champions, coalitions and networks

This strategy involves partnering with well-known and respected people, organizations and networks at all levels to advocate for gender transformation. At the community scale, this can include local men and women who display more equitable gender relations and behaviors and can act as role models in the community and in relation to the research initiative. They can help to create safe spaces to spark local discussions about gender norms through feeding back information from benchmarking. Beyond the community and across scales, coalitions at the subnational and national levels can advocate for systemic, legal and regulatory changes that are necessary to create an enabling environment for gender-transformative action in communities, institutions and households (e.g. Bangladesh National Gender Working Group, Gender Coalition in Southwest Bangladesh, and knowledge sharing and learning platforms).

Examples of gender-transformative research in action

Zambia: Savings and Internal Lending Communities (SILC+GTA)

Introduction

Women and men living in or along the Barotse floodplain in Western Province are not only some of the poorest in Zambia, but are also vulnerable to demographic, socioeconomic and climatic challenges (Cole et al. 2015). The Lozi-speaking people who comprise the majority population of this area depend on the aquatic agricultural system for a variety of livelihood opportunities. In an effort to enhance the equity of the socioeconomic and political structures that influence the livelihoods of the people dependent on the floodplain, AAS operationalized a gender-transformative approach in selected communities (Cole et al. 2014a; 2014b). One of the first actions was the formation of the Savings and Internal Lending Communities + Gender-Transformative Approaches (SILC+GTA) pilot project.

SILC+GTA builds upon the CRS savings and internal lending community (SILC) model—a savings-led microfinance initiative that helps people in rural areas (where access to formal financial institutions is poor or nonexistent) to create accessible, transparent, flexible and

self-managed savings groups. The savings accumulated are used to meet emergencies, pay for anticipated expenses, capitalize on business opportunities, and invest in productive resources. The plus sign in SILC+GTA denotes the integration of a gender-transformative approach into this well-established microfinance methodology. SILC facilitators were trained to implement gender-transformative sessions using PAR processes that promote critical reflection and spark dialogue, action and learning with women and men. Pre-pilot phase it was found that SILC groups generally comprise women, yet women's domestic responsibilities, other socially assigned roles and power struggles within their homes make it difficult for them to attend meetings and contribute larger sums of cash to enable the pool of savings to grow. Spouses of SILC group members were often unaware of the purpose of their wives' involvement in SILC groups, felt jealous or insecure about their wives' participation and improved access to credit, and provided little home support to their wives when they were called for meetings. Additionally, men did not tend to join SILC groups because they believed that the financial contributions would benefit other members more than themselves, among other reasons (e.g. that such groups are for women only). In some circumstances, gender-based violence occurred when men perceived their wives as economically more empowered. On the positive side, SILC has been shown over time to allow women to build their business skills and use their capital to pay school fees for their children or invest in businesses and increase household incomes.

With support from Promundo-US, development officers from Caritas-Mongu and CRS, along with researchers from WorldFish, designed and began piloting the SILC+GTA model. The rationale for the pilot was that by involving men in SILC group formation and group activities using PAR processes, it would be possible to address harmful social and gender norms and power relations that prevent SILC groups from flourishing, as well as improving gender relations within and outside the home, and as a result, to achieve better and longer-lasting development outcomes.

Methodology

The SILC+GTA project is being implemented by a group of multisectoral partners representing

local, provincial, national and global organizations working in the Barotse floodplain region. The project was informed by a social and gender analysis conducted in 2013. Data obtained from the social and gender analysis is being used as one benchmark against gender-transformative changes that are monitored during SILC+GTA group meetings. As part of the SILC+GTA project, a series of 12 focus group discussion sessions were started. These SILC+GTA sessions aim to stimulate discussion with women and men on conceptual issues such as gender and power, as well as on gender-based violence and substance abuse, which were key issues identified during the social and gender analysis. PAR processes were embedded in the SILC+GTA implementation methodology to promote and foster spaces for reflection, action planning and knowledge sharing during the sessions.

Results and discussion

PAR processes have allowed women and men to begin to realize that working together and giving women the opportunity to be part of economic activities can help enable them to improve their livelihoods. At the same time, a key outcome has been that communication and engagement is contributing to building social cohesion, trust and bonds among group members. These features help individuals support one another to improve their lives through increased investments that lead to increased savings and incomes. Women and men have learned how to deal with conflict, as they demonstrated when they had to deal with common issues within their community and households. As a result of (usually) bi-weekly encounters, both women and men have been able to strengthen their leadership skills and self-confidence. One of the aims of the project is to help facilitate women's access to microfinance to improve their skills and capacities to participate in household and community decision making. Emerging results show that women are gradually strengthening their decision-making abilities and gaining respect from husbands, as well as starting small businesses and increasing their savings and incomes.

In sum, findings have demonstrated that efforts to achieve institutional changes in the communities, as well as changes to socioeconomic and political structures, are needed. In addition, the SILC+GTA pilot project

is beginning to show that increases in income and assets, as well as enhancement in resilience and adaptive capacity, are necessary at the individual level.

Bangladesh: Aquaculture technologies

Introduction

Bangladesh is one of the world's most densely populated countries, with deep and widespread poverty. Its water resources play an important role in alleviating the country's poverty and ensuring food security through its fisheries. Approximately 20% of the rural population (4.27 million households) own a household pond. These ponds are usually very small in size (50–150 decimals or 2023–6070 square meters) and are owned by a single or several families for various purposes, which may or may not include aquaculture. As almost every household in southern Bangladesh has small ponds situated in the courtyards of households (called homesteads), introduction of more intensified fish farming to the women in the households (who usually face mobility constraints) is usually seen as the way forward to combating nutritional and consumption needs, enabling an extra income from an underutilized pond, and further enabling women to take more control over a household asset from which they can contribute an income.

However, a recent CGIAR Research Program on Climate Change, Agriculture and Food Security and AAS-funded study that looked into gender relations and technology adoption in two projects funded by the United States Agency for International Development (i.e. the Cereal Systems Initiative for South Asia in Bangladesh [CSISA-BD] and Aquaculture for Income and Nutrition) has found that targeting women for homestead fish technologies does not necessarily mean that women are able to use and adopt the technologies or receive the benefits that the technologies promise (Morgan et al. 2016). The study findings show that women and men live in multidimensional layers of relationships that need to be understood and addressed when disseminating a technology. The study findings led to the piloting of a revised extension approach in CSISA-BD's Faridpur hub (in southwest Bangladesh) that tried to use the lessons learned from the study. The revisions had to be made within the

project's time and budgetary constraints and under pressure to deliver on numbers, which many such donor-funded projects face.

Methodology

The new approach involved merging the technical sessions, with social-consciousness-raising exercises, including exercises on trust and teamwork. The strategies and exercises were derived from the Helen Keller International *Nurturing Connections* manual that aims at challenging intrahousehold inequalities and gender-discriminating practices that hinder women's successful adoption of and benefits from a technology. This merging of the technical with the social aimed to help women combat challenges they may face while trying to apply the new knowledge that is gained. The training was further modularized and spread out across the entire production cycle, enabling real-time application of the technical knowledge. Other major changes in this pilot included discarding the demonstration and model farmer approach, forming smaller preference-based learning subgroups, including

other family members in various sessions, and using community theater groups in events to create awareness on gender issues.

Results and discussion

Survey research methods and process documentation are being used to monitor the results of this gender-transformative pilot. Based on the findings and the ability of the approach to foster gender-transformative change while supporting technology adoption, this pilot will be scaled out. Preliminary findings reveal women's better scientific understanding of pond management, which the women report has led to a better status and respect within the household. Other community members were reported to seek out these household members for advice on managing their own ponds. Women's self-confidence and decision-making ability increased and they gained trust and respect from their husbands and other family and community members. Specifically, the smaller preference-based learning subgroups and exercises on trust and teamwork helped to counter some of the group power



Training session underway in Barisal, Bangladesh.

dynamics that the study helped to identify. The inclusion of family members in the training paved a way for women to attend the training without hindrance. Two social and gender analysis participants confirmed, “Because our husbands, fathers-in-law and mothers-in-law were included in some sessions, it was easier for them to understand what we told them. They don’t create any barriers to our participation.” Likewise, “Since they [other family members] were included they heard it from the masters themselves. They believe us now about the benefits of investing.” Also, since input support was uniform across all trainees as a result of discarding the demonstration farmer model, more harmony among the groups was created.

Finally, the technical livelihood incentive made the attendance of family members and participants more permissible in the social messaging exercises, which involve games and discussions around sensitive gender behaviors and attitudes. For example, the women reported behavior changes from household members after an exercise on intrahousehold food distribution. Accordingly, a consolidated comment from the women participants was as follows: “There was an exercise with family members on distributing food and on how we usually make sure they eat better before eating ourselves. So usually we don’t have much on our plates. In the past, men didn’t notice this. As long as they got a big piece or the head, they were happy. Now, following this exercise men check what we are eating. They acknowledge that we work hard all day and make sacrifices and should eat equally.” Another woman commented, “Our husbands ask us before making purchases more than before. It is because husbands are aware of the benefits of asking their wife’s opinion and since we women were able to learn a lot from the training.”

In sum, initial observation and feedback revealed that understanding intrahousehold gender dynamics and providing spaces for women and men to reflect on harmful practices that prevent them from increasing their household income, food supply and nutrition through a gender-transformative approach in technical initiatives increases participation for change.

Solomon Islands: Involving women and men in aquaculture workshops, Malaita hub

Introduction

In Solomon Islands, women and men are involved in a diverse range of livelihood activities. Terrestrial and freshwater resources, inshore coastal areas, islands, and islets provide opportunities for the people living in and depending on these systems to capitalize on their aquatic agricultural resources, of which approximately 90% are held under customary tenure.

In rural communities, both men and women are involved in community activities, in producing food and generating income, and in preparing food and taking care of their families, but their roles vary by gender. Men may have more opportunities to travel outside the community to meetings and training sessions than do women, who have the primary responsibility for child care and work longer hours. These different roles can affect whether and how men and women are able to participate in decisions about livelihoods and resource management, as well as how they are impacted by these decisions (Schwarz et al. 2014). When opportunities arise for both men and women to participate in meetings and workshops, there may be social and cultural reasons that mean women are less likely to speak up or contribute toward decisions. It has been observed that when selection of participants for training opportunities relies on male community leaders, most participants are men, even when the leaders are explicitly requested to invite women to events. When women do attend community events with external organizations, they often have a dual role of preparing food for the participants, and as a result can spend much of the meeting moving in and out, losing the opportunity to participate fully.

To improve opportunities for both women and men to benefit from an emerging diversified livelihood opportunity, gender-transformative strategies were integrated into an aquaculture project. Between 2012 and 2014, WorldFish worked with more than 40 fish farmers in the central region of the Malaita hub. Fish farming is a new and emerging technology in Solomon Islands. Farmer workshops and training had been exclusively attended by men,

although researchers noticed that women were participating in activities related to pond husbandry.

Methodology

To facilitate greater engagement of women in accessing information and knowledge about fish farming, in April 2014 the research team made explicit efforts to engage married couples in farmers' workshops in which gender-conscious facilitation was employed.

The workshops were organized and jointly facilitated by AAS researchers who included social and natural scientists specializing in aquaculture. The facilitation process used a tool that encouraged men and women to draw a farming systems diagram in which they mapped out their respective roles in their daily livelihoods. They did this separately in groups of women and men and then shared their drawings with the full group. This demonstrated that although men were the "face" of fish farming, it was clear that women and children were playing a significant role.

Results and discussion

The farming systems diagrams highlighted that the men were fishing, farming, gathering firewood and building houses. Women highlighted reproductive roles such as food preparation, water gathering, child and elder care, house cleaning, and clothes washing, as well as productive activities together with men such as tending vegetable gardens, pig farms and fish ponds. In aquaculture activities, men were more involved in constructing the ponds, stocking fish and harvesting, but depended greatly on women's and children's support. Women often fed the fish or took on all roles in the absence of their husband.

When men and women shared these stories, a couple that was already working together in partnership and sharing roles around their fish pond stood up and shared their experience, encouraging other couples in the room that they too could benefit from working together as a team. Women and men had the space to identify the ways they could work together and share the work that arises from operating a homestead pond.

Since that time, women actively participated in and contributed to a farmers' meeting in March 2015 and another farmers' workshop in June 2015. They have shown increased confidence to speak in front of men, and the men have accepted the women's presence and participation in recognition of the role they are playing in this livelihood. As AAS plans future gender-transformative approaches within PAR with these fish farming families, reflections from these recent meetings show that women felt that household-scale ponds were well integrated into their daily livelihoods and did not add a significant burden to their daily work.

This integration of a gender-transformative approach into PAR processes with pond farmers has not only increased awareness among men and women farmers but has also increased the AAS team's knowledge of the roles that men and women are playing and the power of employing gender-conscious facilitation in PAR activities.

Conclusion

Poet Antonio Machado proposed that "paths are made by walking." In this chapter, we have highlighted some of the challenges involved in developing and implementing a gender-transformative approach within RinD and shared team learning to date regarding how these can be effectively addressed. This learning has led us to multiple strategies and a solid footing for our efforts. Moreover, in doing so, our reflections have suggested a revisiting of Machado's proposition. Our journey to date has underscored the significance not only of learning by doing, but also of working to bridge silos in this process, of being critically reflective together, and of learning from and with research partners and diverse local people over time. As such, in the context of a gender-transformative approach, we might propose that "paths are made by walking together."

MORE INCLUSIVE SCIENCE FOR THE POOR: LINKING FARMERS TO RESEARCHERS USING THE RinD APPROACH

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Introduction

Other chapters in this working paper reflect on elements of the RinD approach. In this chapter, we look at cases in hubs where the implementation of RinD has led to more inclusive science; that is, where farmers and researchers are working together differently than might be expected from conventional research-for-development approaches. Better relationships between farmers and researchers are an important outcome in the overall AAS theory of change. This is because farmers in aquatic agricultural systems are vulnerable and becoming increasingly so as populations increase, natural resources are depleted and degraded, sea levels rise, and extreme weather events become increasingly frequent and severe. Farmers have always innovated to adapt to change; however, their increasing vulnerability requires that they innovate faster and more effectively. Better links to researchers have provided farmers with more connections to sources of information and technology and more opportunity to experiment and innovate.

In this chapter, after 3 ½ years of AAS implementation, we reflect on what four best cases tell us about how RinD works and how it is different from research-for-development approaches that focus more on the generation of new technology than on the relationships between the people who generate and use it.

Methodology

At the workshop in January 2015 described in the introductory chapter, we identified four best cases to illustrate where RinD has led to more inclusive science. We agreed to adopt a case study methodology after Yin (1989), building our respective cases to structure cross-hub learning and ensure the internal validity of our conclusions. We choose to learn from the best cases because in understanding

innovation, there is often less to learn where things have not worked (Perrin 2002). The cases were chosen as best examples of where implementation guided by RinD has led to researchers working with and responding to the needs of farmers and fishers in ways consistent with overall program objectives. Hub case study authors completed a first draft of the cases using a range of data sources, including their own experience as participants, as well as workshop and other process reports. Then began an iterative process in which the lead author queried the hub authors to produce final versions. As case study methodology suggests, we paid particular attention to the sequence of events and the plausibility of the causal explanation linking them as a way of ensuring the internal validity of each of the cases. Case authors checked their narratives with other members of the AAS hub teams to confirm the sequence of events, explanations and inferences.

Case studies

Abaca rehabilitation in the Philippines

Lando LA and Perez M

In the Philippines, AAS works in the areas shown on the map in Figure 9. The hub includes areas of Visayas and Northern Mindanao.

AAS carried out community visioning and action planning in eight *barangays*. In June 2013, two *barangays* in Sogod, Southern Leyte, identified their main priority as rehabilitating their abaca⁹ plantations from an infestation of abaca bunchy top virus (ABTV).



Legend

Brgy. = *barangay* = smallest government administrative unit.

Figure 9. Visayas-Mindanao hub and the location of the AAS focal *barangays*.

The problem of abaca bunchy top disease in the Visayas-Mindanao hub

In the early 2000s, an ABTV epidemic began to seriously affect production in most of the producing provinces (Raymundo et al. 2001). Production fell by 15% from a high of 77,000 metric tons in 2000 to 65,000 metric tons in 2013 (Bureau of Agricultural Statistics 2014). Government support for tackling ABTV largely went to funding programs to eradicate infected plants. These programs lacked grassroots support because farmers wanted to continue to grow abaca, not have it removed from their farms. In Sogod and many other communities, basic communication was hampered by a misunderstanding resulting from the local word for “medicine” being the same as “herbicide.” Farmers expected that plants would be treated with medicine and recover. Instead, technicians sprayed them with herbicide and killed them. This led to a breakdown in trust and poor implementation of replanting programs. Technicians were afraid to go back to communities because farmers were angry. As a result, in 2013, farmers in Sogod and elsewhere were not practicing eradication and field sanitation voluntarily or regularly. Despite the failure, farmers still relied on the government to “do something.”

Abaca rehabilitation programs only worked in areas that had strong local government units that had the power to mandate recommended eradication and production practices. Agencies working on abaca have tended to be jealous of their mandates and treat each other as competitors for funding. Researchers have tended to see farmers as a source of sample materials for disease management and for breeding work and use their fields for multilocation trials of varieties. Hybrids are not yet available for general release. Some institutions hold field days for farmers to show the progress of research work, not to acquire feedback on whether the research is something that farmers would use or even need.

Community engagement

The idea of rehabilitating abaca emerged during the community life competence process visioning and action planning in June 2013. Participants agreed that there would be no more poor people in Sogod if abaca were “given back to them.” The AAS response was

to commission the National Abaca Research Center (NARC), part of the Visayas State University (VSU) based in Leyte and just 2 hours away from Sogod, to conduct a rapid appraisal of the feasibility of abaca rehabilitation. The survey, completed in November 2013, found that the two *barangays* were losing USD 2 million per year as a result of the drop in abaca production (Tabada et al. 2013), a very substantial fall in earnings given that about 6 in every 10 people in the two *barangays* are living below the poverty threshold. The farmer consensus appeared to be well founded.

A feasibility study was carried out by a team of VSU-NARC researchers led by Drs. Tabada, Abamo and Madayag. In setting up the research, the AAS country program leader, Maripaz Perez, used her professional relationship with the VSU-NARC director, Dr. Ruben Gapasin, and VSU president Dr. Jose Bacusmo, which had developed when she worked as undersecretary of the Department of Science and Technology. In engaging the researchers, AAS staff stressed the Rind principle of putting farmer priorities first and so underlined the importance of involving the farmers from the start to build their understanding and ownership. The VSU-NARC team began by visiting farmers’ homes to invite them to come to a meeting to discuss survey design and, more fundamentally, whether it was still feasible to grow abaca in Sogod. Through this process, they confirmed farmer interest before beginning their usual rounds of focus group discussions and key informant interviews. Engaging farmers before the survey work paid dividends when *barangay* officials coordinated with the local police to escort the research team up the mountains to the abaca farms, something that would not normally have been expected to happen.

Their report concluded that abaca can be restored in Sogod but only with the strict implementation of eradication and production protocols, including the use of resistant varieties developed by the University of the Philippines in Los Baños and VSU. AAS provided the opportunity for VSU-NARC researchers to share their results with the farmers, present their recommendations for action and build farmer buy-in for the proposed actions.

The farmers agreed to implement the protocols. They initially asked for planting materials and financial support. AAS agreed to provide planting materials in the form of tissue-cultured hybrid seedlings, but not money. A key principle behind the community life competence process is that participants should own and be responsible for their own action plans motivated by a collective desire to achieve a shared vision rather than receive cash handouts. Constellation has learned that programs that rely on achieving participation through financial inducements are unlikely to lead to any sustained change in behavior. Other strength-based approaches subscribe to the same principle.

AAS monitoring in May 2014 revealed that none of the farmers had acted on their action plans because the strict eradication protocol dictated that they had to eradicate *karlang* (a variety of taro) from their farms, as it is an alternative host to the aphids that carry ABTV. Also, farmers wanted seedlings of their traditional varieties, believing that the fiber quality was better. *Karlang* is their cash crop replacement for abaca and so, not surprisingly, they refused to kill it.

AAS met with the VSU team to discuss the impasse and what the next steps should be. The researchers agreed with the farmers that they would first determine whether the aphids found on alternate hosts, especially *karlang*, were *Pentalonia nigronervosa*, the specific vector for ABTV. If they were not, then the *karlang* would not have to be eradicated. The researchers also prepared a poster of frequently asked questions written in the local language and posted it in *barangay* halls.

During group discussions to negotiate the *karlang* compromise, farmers suggested including the neighboring *barangays* of Javier and Maria Plana in the abaca work to reduce the risk of reinfection. AAS staff saw this as evidence of the farmers beginning to understand the epidemiology of ABTV through engaging with researchers. Farmers took on the responsibility of talking to their peers in these other *barangays*.

AAS facilitated a revisiting of community dreams in all eight *barangays* in July 2014 as part of an annual PAR cycle. Despite the

onslaught of various typhoons (e.g. Haiyan) and other natural disasters (e.g. landslides) affecting the hub, AAS staff found that what their Constellation coach had told them was true—dreams don't change until they are fulfilled. Despite farmers not yet having received planting materials, they confirmed their dream to bring back abaca. They also re-emphasized their preference for traditional but ABTV-susceptible abaca because it produces higher-quality fiber.

Part of the delay in providing farmers with planting materials was due to the fact that seedlings are produced using tissue culture and there were not enough for everyone. As a result, the researchers had to design and negotiate a seedling distribution system that would be agreeable to all. After a series of conversations, they agreed to start out with 70 farmers who would receive 50 seedlings each. These farmers would then repay the planting materials in 4–5 months when their seedlings produced suckers. Each mother plant can produce 3–6 suckers in that period, and each farmer would repay with 2 suckers from each mother plant (thus 100 suckers). These would then be given to two other farmers to plant, and so on until all members of the abaca farmers committee received 50 seedlings.

The interaction between farmers and researchers over the provision of seedlings and *karlang* proved a watershed. For the Rind team, it marked the point where farmers collectively started to believe they could help themselves. Farmers started asking the researchers about doing research on their own emerging questions about abaca, and about whether they could adjust the experimental protocols. For example, one farmer suggested comparing tissue culture materials against those growing naturally that have been certified virus-free by NARC. Another farmer requested that he do his tissue culture trials on flat land closer to his house rather than in the hills where abaca is usually grown. AAS staff facilitated agreements that both farmers and researchers would take actions based on each other's opinions, preferences and priorities.

In August 2014, farmers and researchers agreed to have regular quarterly meetings. Farmers were excited and agreed they would meet on a

monthly basis (even without AAS facilitation) to compare their data and continue discussions on eradication of the virus. However, many farmers were still looking for financial support and often broached the subject at reflection meetings. In reply, AAS staff continued to argue for the RinD strength-based focus of relying on their own resources. Fellow farmers also urged them to work on their farms instead of “complaining.” The hub RinD team has found that the farmers who ask for financial support continue participating but return at the next meeting with the same request for financial support. The RinD team is learning that changing this dependency mindset will be a long process and will entail continuous reinforcement of strength-based principles.

Engagement with hub and national-level agencies

Two major events in national and hub-level engagement were the stakeholder consultation workshop and the design workshop, held in September and November 2013, respectively. The November design workshop produced a strategic plan for AAS in the Philippines. Abaca rehabilitation emerged as a priority of an existing productivity initiative. An initial theory of change workshop was then held in January 2014 that further established abaca rehabilitation as a main element of the productivity initiative and improved partnership for productivity enhancement as one of the three abaca outcome pathways. The theory of change workshop introduced participants to articulating how an initiative will bring about change and then detailing and testing that theory during implementation as a way of better appreciating how to leverage change.

AAS staff worked to engage relevant agencies in support of this outcome pathway. There had been a coalition called Abaca Disease Management and Research Team (ADMART), which was set up by a former vice governor. This coalition stopped working in 2009 when the vice governor was not re-elected and funds given to the program could not be accounted for. When AAS provided assistance to each hub for strengthening partnerships, the AAS team decided to use the funds to build on lessons and old friendships from this coalition. AAS facilitated a stakeholder meeting in July 2014 that included key research organizations (VSU-NARC and Southern Luzon State University),

Sogod and Southern Leyte local government units, and regional line agencies (Department of Science and Technology Region 8, Department of Agriculture Region 8, and Philippine Fiber Industry Development Authority [PhilFIDA] Region 8). Given the unfortunate history of ADMART and competition between government agencies for funding, AAS staff realized that convening the group would be difficult. What worked was the convening power of the AAS country program leader through her previous position in the Department of Science and Technology, the reputation of Dr. Gaspasin, NARC director, who has taught most of the key people at some point, and the ability of AAS to present itself as a neutral convener. Workshop participants agreed that a coalition should be re-convened to allow the agencies to work together.

AAS staff then worked to capitalize on this agreement to organize an abaca stakeholder consultation workshop in September 2014 (Box 5). The agencies presented their work on abaca and engaged in an exercise to describe future scenarios for the abaca industry in the Philippines. During these conversations, the agencies decided to formalize the coalition discussed in July as a replacement for the defunct ADMART. However, instead of sourcing a common fund that the group would share, they decided to begin working together immediately in Sogod using their current programs and budgets. For instance, PCAARRD now plans to include Sogod in its target sites for the abaca research and development program, as well as setting up a community-based science and technology farm. PhilFIDA, in cooperation with Department of Science and Technology 8, will channel the distribution of tissue-culture-planting materials to Sogod to support the PAR group’s research, and the University of Philippines Institute of Plant Breeding will include Maac and Mahayahay as sites in the multilocation trials of abaca hybrids.

In keeping with local tradition and as a display of the new partnership, the Abaca Coalition was formally launched on 2 February 2015 in Sogod with a motorcade. Members agreed that a motorcade would be an inexpensive means of letting people know who they are and communicating their intent to mobilize resources and work together. Each of the seven

Box 5. Agencies attending the September 2014 consultation workshop

- Philippine Fiber Industries Development Authority (PhilFIDA)
- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD)
- Institute of Plant Breeding, University of the Philippines, Los Baños (IPB-UPLB)
- Visayas State University National Abaca Research Center (VSU-NARC)
- Southern Leyte State University
- Local government units
- Department of Science and Technology, Region 8
- Private sector (chamber of commerce and industry representatives)

local agencies brought one to two vehicles that carried a banner showing the logo of the member agency and the tagline: *Kauban ta sa Coalition Abaca* (We are part of/We support the Abaca Coalition). Community representatives from Mahayahay hired a van, while the Maac farmers brought their motorcycles. The representatives from Javier and Maria Plana rode in the agency vehicles. After the usual opening ceremony, the vice mayor described the progress of abaca rehabilitation so far, and a small media conference followed that stressed the coalition tagline “the future is bright with abaca!” The motorcade finished at the Maac *barangay* hall, where abaca seedlings were distributed to farmers.

Emerging outcomes and learning

As of April 2015, the main outcome of the work was that farmers, researchers, AAS staff and Abaca Coalition members were engaging and working in ways different from business as usual. The organizations working on abaca in the Philippines have their own mandates and own ways of doing things, and as a rule do not really talk to each other. Before the AAS intervention, PCAARRD was not working with PhilFIDA in Southern Leyte, which in turn looked at NARC as a competitor. Except for PhilFIDA, none of these organizations were working in Sogod. PhilFIDA had reported the completion of an eradication program in 2012. The Department of Science and Technology was working locally on its own priorities, largely small livelihood projects based around

food processing. Universities and research organizations focused on their respective research and development agendas. As a neutral third party, AAS had the convening power to bring these institutions together. As long as none of them were cast as “leader” or “follower,” they could collaborate.

The AAS visioning and action planning process was not enough in itself for farmers to become proactive in rehabilitating abaca, despite it emerging as their top priority. AAS team members needed to continually remind farmers that rehabilitating abaca was *their* program and that they had the capacity to seek solutions to their problems. Gradually, the farmers are learning to appreciate the Rind strength-based approach, in which the main input is convening and facilitating spaces for farmers to engage with each other and agencies who have a mandate to help them.

Champions played an essential role in the early successes of the abaca work. They provided leadership for activities, rallied their networks to the cause and provided initial resource support. Champions were enabled first by the realization that they were part of the community and that the community recognized them. Champions saw how the inclusive and participatory nature of the community visioning and action planning resonated well with the community and how the process could lead to more sustainable initiatives that the community could own.

The AAS team attributed part of the success in changing mindsets to working within existing governance and social structures. The team always acknowledged the authority of

Box 6. Abaca Coalition champions

- *Barangay* captains (*Kapitan Fely* and *Kapitan Raul*)
- Sogod mayor Imelda Tan
- Vice mayor Rufo Olo
- Department of Science and Technology local facilitator Evelyn Tablante
- Department of Science and Technology regional director Engr. Ed Esperancilla
- VSU-NARC researcher Dr. Ruben Gapasin
- Abaca committee chairs Celso Ortiz and Maximo Sotto

the *barangay* captains and local government unit officials, while stressing their mandate to provide a service to their constituents. They engaged partners according to their mandate and provided an opportunity through community engagement for them to deliver on their mission. While the AAS team did organize the Abaca Coalition, its members recognize that AAS is only facilitating and does not seek to replace their institutions nor their institutions' programs.

Improving postharvest handling of fish in the Barotse floodplain of Western Zambia
Longley C and Muyaule C

The AAS hub in Zambia is the Barotse floodplain (Figure 10). Hub rollout began in 2011 with a national consultation. AAS held a stakeholder consultation workshop in June 2012, where stakeholders agreed to work collectively to address the hub development challenge, which was "to make effective use of the seasonal flooding and natural resources in the Barotse floodplain system through more productive and

diversified aquatic agricultural management practices and technologies that improve the lives and livelihoods of the poor."

In the same workshop, stakeholders identified access to markets and postharvest handling of fish as priority areas. AAS then carried out community visioning and action planning in 10 communities in August and September 2012. Two of the seven priority areas identified were also improved access to markets and improved postharvest handling. The design workshop in October 2012 to identify where hub stakeholders might best support community priorities established a value chain initiative that would work on fish as part of the strategic plan.

Problems with postharvest fish handling
 Postharvest fish losses are a major concern and occur in most fish value chains throughout the world (Parfitt et al. 2010). Nearly one-third of the weight of fish harvested in Zambia is lost (Béné 2011). In the Barotse floodplain, postharvest fish losses occur for a number of reasons, including damage in nets, damage during transport,

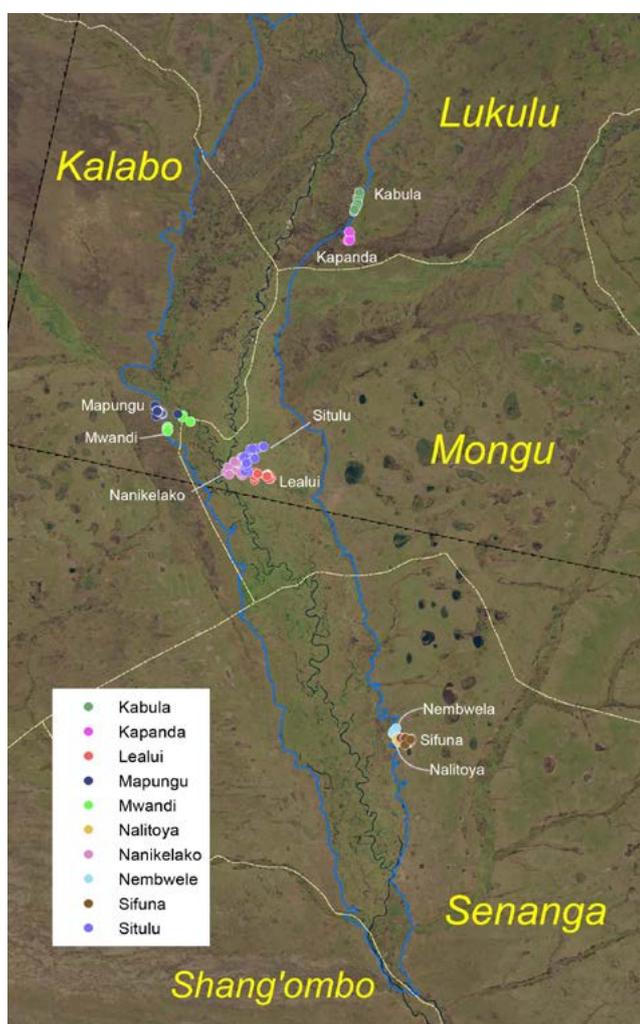


Figure 10. AAS focal communities in the Barotse hub.

damage in processing and spoilage. Spoilage reduces the price customers are prepared to pay for the fish and is a particular problem in the Barotse because of long travel times due to poor roads and lack of refrigeration. Traders buy fresh tilapia early in the morning and struggle to sell the bulk during the day. Due to lack of refrigeration, the quality and price drops over the course of the day. Most customers wait until evening when a fish seller is desperate for buyers and will sell at a low price.

Processing fish is one way to reduce spoilage. Current methods of processing fish in the Barotse include sun-drying, smoking and, to a lesser extent, salting. Salt fish is produced in small amounts for markets in the Democratic Republic of the Congo (DR Congo) and Angola. The Department of Fisheries holds training events for fishers and traders on improved methods of fish handling and processing methods.

Traditional sun-drying and smoking tend to produce brittle fish that are easily damaged during packaging and transportation. Damage is also caused by insects that lay their eggs in the fish while it is drying in the sun, leading to infestation by maggots. Insects and rodents also eat fish in storage. To prevent these problems, some processors resort to the use of toxic substances to prolong the shelf life of dried fish. It is highly likely that some of these substances are harmful to humans. Where firewood is in short supply, it tends to be expensive, and dried cow dung is used as a fuel for smoking. Salting of fish provides a good technical option.

Community and hub-level stakeholder engagement

Work on the value chain initiative began with rice and fish value chain assessments carried out from May to August 2013. AAS researchers collected survey data from eight fishing camps, local and distant markets, harbors, and loading points (WorldFish 2013). Most fishing camps selected were those where fishers from the AAS focal villages commonly go to fish. AAS set up a fish value chain working group over the same period to guide the analysis. The working group included approximately 30 people from the traditional authority (the Barotse Royal Establishment), the Government of Zambia, NGOs, market development organizations,

traders, and input and service providers. AAS convened a fish value chain participatory planning workshop in September 2013. The aim of the workshop was to build ownership of the initiative and agree to next steps based on findings from the assessment. This was done through the participatory construction of theories of change built on participants' ideas about how interventions might bring about desired changes. Participants included members of the fish value chain working group and people from the fishing camps surveyed, as well as from the 10 AAS focal villages. During the workshop, participants formed themselves into three interest groups around the top three priority areas that emerged during the workshop: (i) fisheries co-management; (ii) cooperatives, associations and access to finance; and (iii) postharvest processing. AAS then invited the three groups to submit a proposal as to how they wished to pursue their interest as part of a fish value chain innovation platform. After the workshop, the fish value chain working group met, and on the suggestion of AAS, agreed to establish themselves as an innovation platform. During this meeting, the then Zambia country program leader insisted that the platform had to engage with fishers from the focal communities. AAS then hired a value chain coordinator, who set up the platform and established regular joint reflection and planning meetings.

With AAS facilitation, the postharvest processing group increased to 20 members, including 12 fish processor-traders, three representatives from the Department of Fisheries, a nutritionist from the Ministry of Agriculture, one staff member from Caritas-Mongu (a local NGO and AAS partner), two representatives of the Barotse Royal Establishment, and one representative from Nono Enterprise, a private cold storage company. The group is convened and facilitated by the WorldFish AAS value chain coordinator. The 12 fish processor-traders came from Mongu-based trader associations and from two in particular, the Zambezi Fish Trader Cooperative Society and the Tambalala Fish Traders Marketers Cooperative Society. None of the initial membership came from AAS focal communities, although the traders were interacting with some AAS community fishers when trading.

AAS received the group's expression of interest in submitting a proposal in early October and held a proposal development workshop in mid-October 2013 to help them write it up. The group chose to submit a proposal to work on fish salting as a way of reducing postharvest loss given that some of the members had experience both as processor-traders and as trainers working for the Department of Fisheries. One of the processor-traders in particular, Mr. Muzike Muzumi, had extensive experience in processing and trading salted fish. During the workshop, Gethings Chisule, Principal Fisheries Officer in the Department of Fisheries, provided training on drying and handling aspects. The group renamed itself the salted fish PAR group.

The salted fish PAR group began by testing different salting and drying methods. From this process, one part salt to three parts fish was recommended. A drying rack with a slant of about 30 degrees was recommended to allow for quick runoff of water, ensuring the salted fish dried within 4 hours.

At the end of March 2014, AAS convened the first fish value chain innovation platform meeting. The postharvest processing group presented their work on testing salting and drying methods. During subsequent discussion and reflection, platform members agreed that salted fish PAR group members should introduce fish salting in the AAS focal communities and promote salted fish in the markets. They realized that doing so would require knowing more about the profitability of salting fish and safety for human consumption. Five AAS communities were selected, and the members of the original PAR group went to these communities to help establish new PAR groups. WorldFish and other AAS partners (Caritas-Mongu, the Ministry of Agriculture, and the University of Zambia's Department of Food Science and Nutrition) helped them to use PAR to answer their profitability and human safety questions and trained group members how to train other people to salt fish.

In July 2014, AAS held a PAR training workshop at which all but three members of the salted fish PAR group attended. This gave impetus to completing the design of the community PAR. The design document describing how the

postharvest processing group would engage in AAS focal communities was completed in September 2014. It stated that the salted fish PAR group would demonstrate fish salting in selected focal villages and that participants who showed interest would form pilot fish-salting groups at community level under the auspices of the Mongu-based PAR group (WorldFish 2013).

Also in July, some fish traders took the initiative to display their salted fish at the provincial agricultural show. To their surprise, all the fish was bought and some customers subsequently went to their association store to buy more. This was their first time demonstrating salted fish, which is largely associated with Congolese and Angolan traders. They were surprised by strong local demand for the product.

From 15 October to 8 November 2014, the fish salting group members conducted their planned PAR activities in four AAS focal communities based on likely interest and proximity to Mongu. This work was facilitated and led by the Department of Fisheries. The work centered on processor-traders, and the researchers interacted directly with community members to demonstrate how to salt and cook salted fish. This was the first time that the processor-traders had interacted in this way with community members. During the interaction with community fishers, the trainers discovered that a small number of participants, about 5%, already knew how to salt fish through their interactions with Congolese buyers. The PAR group invited them to help teach others. In undertaking the training, the fish salting group formulated a set of research questions to explore. These questions covered four areas: profitability of producing and selling salt fish; optimum storage and transport conditions; the demand and supply of salt fish; and how well the recommended fish salting and de-salting method works. The group expected that fishers in the communities would start selling their fish through their existing links to buyers from DR Congo and through other marketing channels targeting local consumers, which would themselves be explored through PAR.

The trainers identified a number of fisher-processors from each community to join the PAR group and subsequently take part in an after-action review training on 2 December

2014. While none of the community-based fishers had yet tried to salt their own fish because of the fishing ban, they voiced appreciation for the training, the interaction with the traders, and the assurances given that their product would sell. They discussed establishing marketing points in each community from which the traders could buy in bulk. The PAR group was expected to start salting fish in mid-July 2015.

Emerging outcomes and learning

The salted fish PAR group now has 42 members, including 22 members of community-based groups. As of April 2015, the community-based PAR groups were still learning to document activities and calculate profits and losses on their own.

Perhaps the greatest beneficiaries have been the Department of Fisheries staff, who found that their previously antagonistic relationship with trader-processors improved through working together. Normally the department is viewed as the “persecutor” due to its efforts to enforce the fishing ban. By interacting with department staff, the trader-processors in the group now understand the importance of sustainable fishing and are, apparently, persuading their peers that the department is not an enemy but a user-friendly service providing guidance and education on how to conserve fisheries. As described above, during the breeding season (the time of the fishing ban) the Barotse Royal Establishment, PAR group members and the Department of Fisheries, with help from WorldFish, went to the fishing communities to explain the importance of allowing time for the fish to breed. This is part of the mandate of the fish value chain platform to which the salted fish PAR group belongs. A main lesson is the way in which PAR and the fish value chain innovation platform have allowed different actors and stakeholders to work together in new ways. Although many of the original PAR group members knew each other before, it was only through the group that they started to work together to test a new processing method. Through the working group and the innovation platform meetings and activities, different stakeholders have had the opportunity to get to know one another and interact. Over time, their relationships have shifted from antagonism and suspicion

to greater understanding, collegiality and trust. The element of trust is crucial in enabling different actors to work together, not only for the original purpose behind the collaboration, but to expand their working relationships into more ambitious, jointly identified activities such as fisheries co-management.

Improving homestead ponds in the South Bangladesh Polder Zone

Kabir K and Karim M

The AAS hub in Bangladesh is the South Bangladesh Polder Zone, shown in Figure 11. Hub rollout began in 2012. AAS held a stakeholder consultation workshop in June 2012, where it was agreed to work collectively to address the hub development challenge: “to achieve sustainable and continual improvements in agricultural productivity, livelihoods and nutrition of poor communities in the face of increasing salinity, changing hydrology and climate change.” AAS carried out a scoping survey with a team of 16 researchers from 12 organizations in May 2012. The NGO Constellation supported a process led by AAS staff for community visioning and action planning in 16 villages in four polders representing three salinity gradients, from high (shrimp farms) to low (rice systems).

At the design workshop in December 2012, it proved harder to find commonalities between hub stakeholder interests and community priorities than in other hubs, perhaps because the hub is more intensively cultivated and contains many more people and organizations. The program design that emerged from the workshop consisted of village-level action research covering six priority areas, including improved integrated agroecological farming systems. While small homestead ponds did not emerge as a priority, aquaculture was an expressed interest in many communities. Improving homestead ponds is an example of agroecological farming systems improving three community priorities: homestead productivity, fish and crop diversification.

Issues facing homestead ponds and the people who own them

The interest in addressing issues in small homestead ponds originally came from WorldFish staff involved in a survey of 1280 households in the South Bangladesh Polder Zone as part of a project funded by the Challenge Program on Water and Food (CPWF). The survey found that more than 50% of households own less than 0.2 hectares and rely heavily for food and income on homestead agriculture where ponds are present and play a key role in influencing overall homestead farming systems. Pond area makes up on average one-third of the homestead land in productive use (Kabir et al. 2014).

Despite the importance of homestead ponds, their use has been largely ignored by conventional agricultural research and extension because they have not responded well to conventional aquaculture approaches: they are small, shaded and used for multiple purposes, including for drinking water, washing, aquaculture and homestead irrigation. Multiple use makes improving their productivity harder. Optimizing use of homestead ponds is best done on a household basis. This requires farmers to experiment, something that conventional extension methods do not teach.

Mainstream research and extension has focused instead on larger ponds that can be managed more simply for a single purpose, such as improving the productivity of aquaculture. This allows for simpler extension messages better suited to the dominant extension approach in Bangladesh. This approach emphasizes scaling up best practices to as many farmers as possible (Dorward et al. 2003; Jones et al. 2014) and is not set up for local adaptation and feedback from farmers.

Two of the best practice messages are to clear away any trees shading the pond and to use inputs not easily affordable to poor farmers. Where projects and Department of Fisheries extension efforts have promoted conventional aquaculture techniques to poor farmers, farmers have generally not carried on using these techniques after the project, nor has any best practice spread far. In addition, most aquaculture extension focuses on messages for men, communicated by men. Weak links from extension back to research and little learning across projects over time had not brought this to the attention of mainstream researchers, at least not in a way that led to any change in practice. Thousands of farmers are still being told to clear their ponds and convert them to single use.

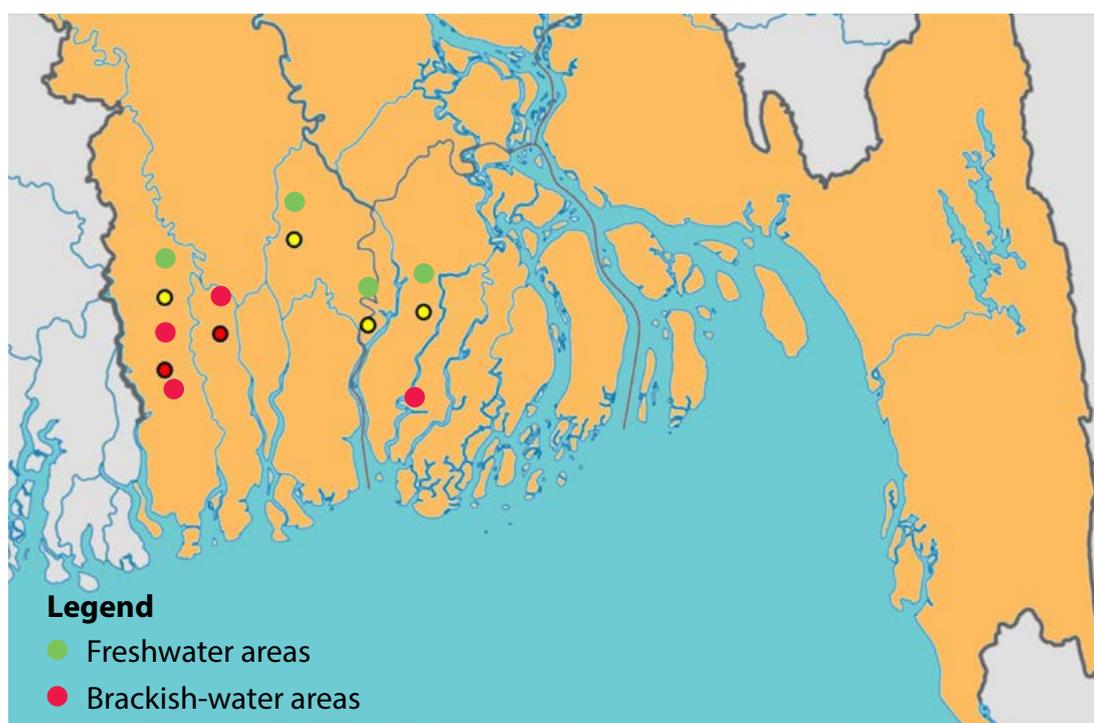


Figure 11. Location of AAS focal villages in the South Bangladesh Polder Zone.

In 2013, staff working for WorldFish in Bangladesh began to engage with the expectation that AAS work should focus on using research to empower communities and the systems they use. Most of the staff and budget in WorldFish were assigned to large bilaterally funded projects that, while functionally mapped onto AAS, were conceived as efforts to scale up best practices to as many farmers as possible. Staff came under pressure from AAS and WorldFish leadership to find ways to be more responsive to the needs of poor and marginalized farmers. This made WorldFish Bangladesh leadership particularly receptive to research driven by the needs of households owning small plots of land. A crucial meeting was held in March 2013 between Kevin Kamp, the AAS country program leader; Michael Phillips, the AAS productivity theme leader; and Majurul Karim and Kazi Ahmed Kabir, the two staff who were championing the homestead pond research agenda through their involvement in the CPWF survey. Staff realized in the meeting that research on homestead ponds provided an opportunity for researchers to meet the needs of poor and marginalized farmers in a way that was of interest to WorldFish staff working on bilateral projects. The research plan was presented at a WorldFish research alignment meeting, where it was agreed that the research agenda could be best pursued using the Rind approach.

A homestead pond science team of nine people was formed in April 2013, made up of researchers knowledgeable in aquaculture, fisheries, biology, economics and gender to provide overall technical guidelines, advisory support and research coordination. One AAS gender scientist, one AAS aquaculture scientist and two AAS field researchers were involved in the research program to ensure that AAS processes were embedded in the research. The science team chose to work in eight villages, two of which were AAS focal villages. The villages were chosen based on salinity levels and the presence of existing projects (Table 4). The team formed study groups of 12 farmers per village. The science team interacted directly with the farmer-researchers in designing the experiments and built farmer research capacity by teaching them how to use basic science tools for measurement (tape measure, scale and record book). Training was arranged at the beginning on research

methods and design, basic aquaculture, and record keeping. The monthly learning sessions provided an opportunity for the technical facilitators to coach the farmer-researchers on record keeping, data analysis, monitoring water quality (by color and smell) and fish biology (movement, feeding, growth, breeding, etc.).

The science team members visited each community several times before starting the research. They used different PAR tools to document groups' visions and prepare work plans. A guideline was developed for this initial process of interaction. Continuation of this interaction was achieved through further field visits by the team members during different stages of the PAR.

The facilitators in each village were technical staff from the respective projects (Table 4), including AAS, and were involved in the daily communication with the farmer-researchers. The farmer-researchers, all women, contributed to the process of research design, implementation, data collection, preliminary analysis, and sharing the learning within the groups and beyond.

Also in April, the research team carried out a baseline survey in the eight study villages to help inform research design. A survey was used to ask about the role of ponds in homestead systems and integration with other farming practices; the pros and cons of pond aquaculture; farmers' species preferences; women's preferences for fish feeding; annual water calendar and water use from homestead ponds; women's preferred activities in pond management; current role of women in household decision making, including homestead agriculture; women's perspectives about nutrition; women's level of participation in agriculture input purchase and product marketing; and the possible role of women in participatory technology development and knowledge sharing.

In the same month, the science team presented to a science audience in Khulna a guideline for how they would engage with farmers to design the PAR. This included a model of how the science team saw themselves in relationship to the study groups and facilitators (Figure 12).

In May and June, the science team presented the draft design to farmer-researchers in group

meetings for comment and suggestions in order to arrive at a final experimental design. The design focused on how to improve the productivity of aquaculture in homestead ponds while maintaining their multiple uses. Each study group agreed to evaluate three fish-stocking levels. Each treatment was made up of at least three different species chosen by the science team to fulfill one of four different criteria: allow for regular harvesting of fish for household consumption, high value of fish at market, fast growing, and cultural preference. For example, all treatments included genetically improved farmed tilapia (*Oreochromis niloticus*) as the species that best met the regular harvesting criteria, and five out of six treatments included different carp species as the culturally preferred fish.

There were three treatments and four replications of each treatment in all villages. These three treatments were the same in all four villages of each region. There were two regions, fresh water and brackish water. There were 12 women researchers in each village, making a total of 96.

A feeding strategy was developed based on data from the survey and was the same across all treatments and regions. Before stocking ponds, other fish were removed by using rotenone and ponds were limed, fertilized and fenced to avoid entry of predators and prevent escape of fish during floods.

Farmers and researchers agreed on the trial and monitoring protocols together, including daily feed application, observation of feed use, pond water color, water depth, fish breeding, fish disease, harvesting, consumption, sales and monthly body weight sampling. Farmer-researchers also agreed to list visitors and any challenges and inspirations they encountered while doing this research.

Trials began in July. Facilitators organized fortnightly meetings in each village for the women to discuss their progress. The facilitator monitored the record keeping and guided sessions on technical aspects of aquaculture research, gender and nutrition. This also allowed the farmer-researchers to compare treatments and developed their skill of sharing their observations.

Follow-up from August to October 2013 found that not all fish were growing equally in each treatment. Farmers started to look differently at their ponds and critically observe how others were managing theirs. Differences of opinion started to emerge through each trying to explain their own situation. None of the women wanted to accept that their fish were not growing well.

Village	District	CGIAR research programs or projects	Region
Nagorkanda	Faridpur	CSISA	Fresh water (0 parts per thousand salinity)
Babugonj	Barisal	CSISA	
Monirampur	Jessore	CSISA	
Rajapur	Jhalokhathi	CCAFS	
Amtoli	Barguna	AIN and CPWF	Brackish water
Batiaghata	Khulna	AAS and CPWF	
Kaligonj	Satkhira	AAS and CPWF	
Shyamnagar	Satkhira	CCAFS	

Legend

CSISA = Cereal Systems Initiative for South Asia

CCAFS = CGIAR Research Program on Climate Change, Agriculture and Food Security

AIN = Aquaculture for Income and Nutrition

CPWF = Challenge Program on Water and Food

Table 4. Working areas with geographic and agroecological distribution, participating projects and 12 partner farmer-researchers in each village.

Excitement grew from September to November when the fish started breeding. Some women invited researchers and facilitators to discuss their observations. Disappointment also started to grow when some women saw no breeding in their ponds. They started to identify the reasons, which included predation by fish, birds or snakes, and realized that they needed to improve pond management. Some still did not find satisfactory answers and kept asking questions about likely causes, questioning factors such as water quality.

The women started harvesting fish regularly from October to March for home consumption and to give to neighbors and relatives. A few fish were sold. At this point, the great majority of the farmers were happy and becoming eager to grow more fish. At the same time, interest in the work grew, with more exchange visits and guest visitors. Receiving visitors worked to build the women's self-confidence and visibility in their community, which led to them taking on different roles in the study group and their respective communities. For example, Nomita Golder, who was leading her group,

explained the research design, various research observations, and the benefits they were achieving by doing aquaculture research during a WorldFish country director's visit.

From July 2013 to March 2014, the women continued to experiment, share and learn. At the beginning of April 2014, a regional learning, sharing and planning workshop was held. This provided a platform for all 96 farmer-researchers to present their research findings and priorities to a larger audience, complemented by statistical analysis carried out by the science team.

The women were grouped according to their treatments. There were several presentations from each group. Almost all women participated in the presentation, although four or five in each group were generally the most vocal. They presented their group results, comparisons among the same treatment distributed in different villages, and overall different treatments across the region. They also presented their priority development outcomes after ranking.

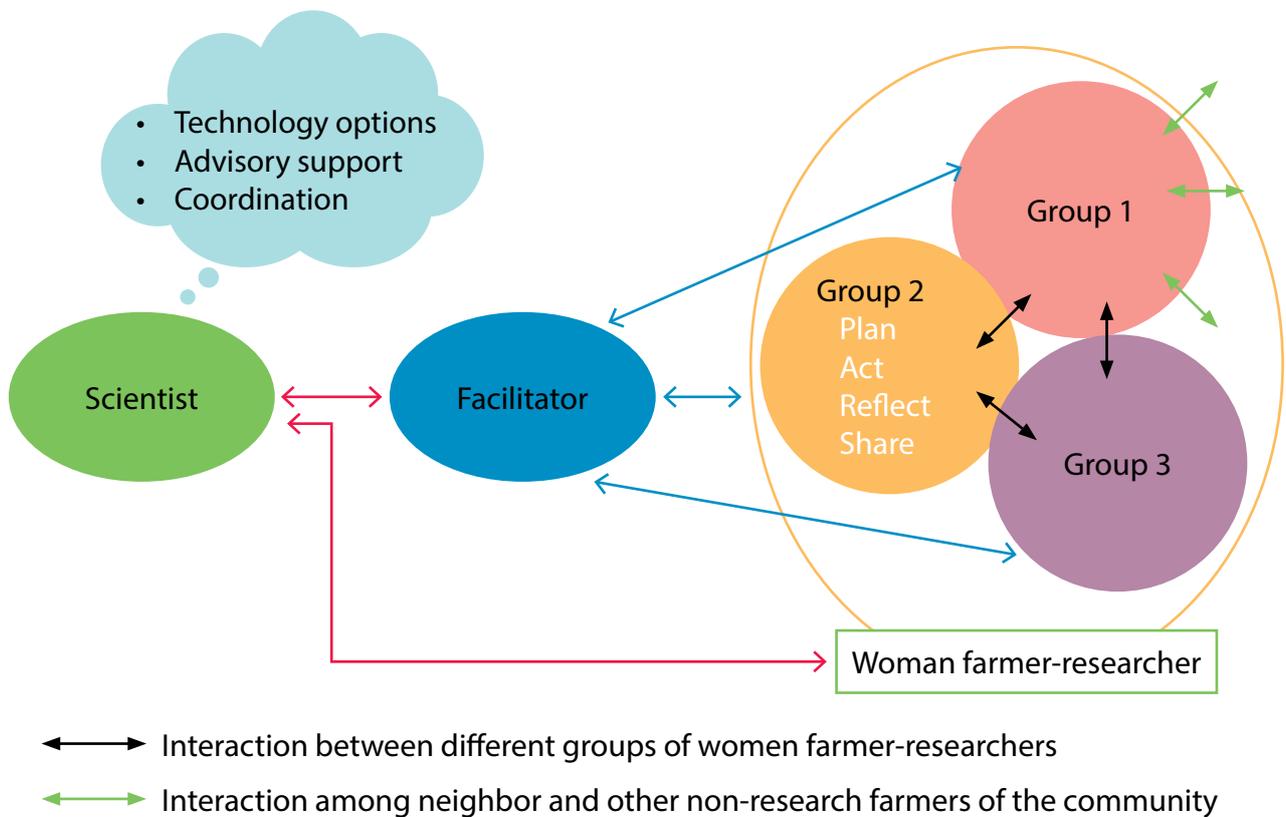


Figure 12. Three-layer participatory action research model, including scientist, facilitator and farmer-researcher, to allow more interaction and greater learning and sharing.

The analysis presented showed that both household fish production and consumption had increased four- to sixfold (Figure 13) as a result of the trials and, crucially, that the innovation of stocking ponds with a mixture of species was being adopted by neighbors.

The analysis also highlighted the unexpected outcomes of working together, including local adaptation and innovation to improve on the treatments, and increased confidence and leadership skills among the women farmer-researchers. Recognition of these outcomes helped motivate both the science team and the farmer-researcher groups. In the same month, donors and development partners working in the South Bangladesh Polder Zone showed more interest in the research model. An innovation grant was awarded by the Blue Gold

Program, a Dutch-funded program, to develop a small pond habitat management approach based on the research model in four villages, two of which were AAS focal villages. This research was ongoing as of May 2015.

The science team used the workshop as an opportunity to plan the next research cycle with the farmer-researchers and then continued to engage with them in May and June on the research design. At issue was that while others were starting to adopt the mixed stocking innovation developed in the first cycle, adoption was starting to raise new questions, particularly around availability of quality fish seed and feed. Some groups wanted to explore using local alternatives to relatively expensive inputs. Some farmers started to supply fish seed themselves. The facilitators saw that they

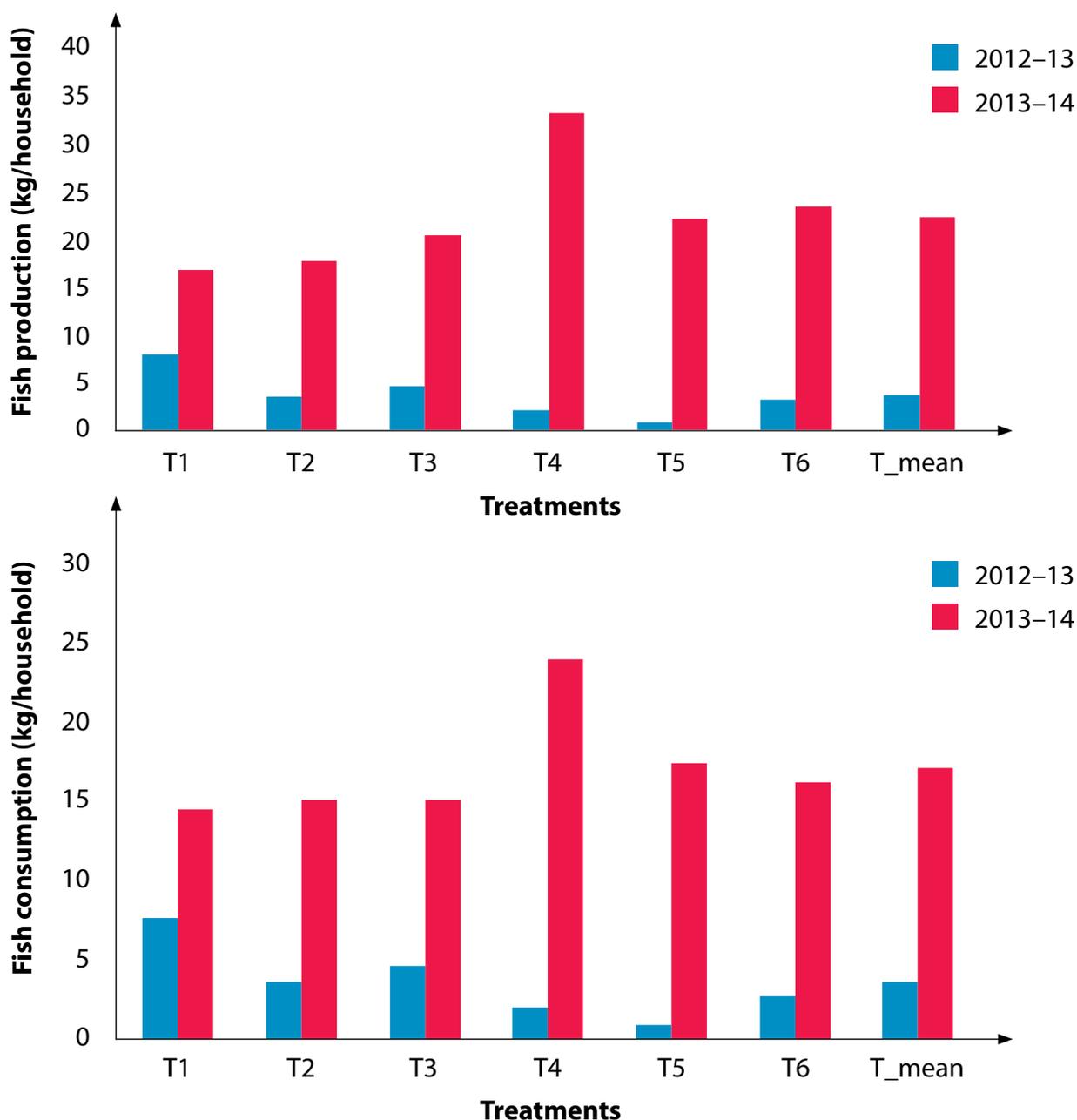


Figure 13. Production and consumption during baseline (2012–13) and after the trial (2013–14).

needed to spend more time supporting links between stakeholders. The second cycle of experimentation began in July 2014. The results of round two were to be jointly analyzed by the end of May 2015, after which round three was planned.

Farmers are now more focused on specific problems. In the first year, the focus was to identify suitable species that can increase the productivity of small shaded ponds. In the second year, the questions were different in different communities and included identifying suitable species, finding optimum stocking density, selecting the best feeds, and integrating aquaculture with horticulture.

Emerging outcomes and learning

As of January 2015, 96 women researchers, 8 technical facilitators and 9 scientists were working to improve homestead ponds. Some of the women farmers are now in a leadership position in their communities and are able to use trials to answer some of their own questions. They communicate what they learn with others and can buy the inputs they need from the market, mostly through their husbands. They interact with government and NGO representatives directly. They are also now encouraging local extension agents to set up demonstration farms showing different types of management practices. Farmer-researchers play a key role in explaining their research and outcomes to visitors. They are now also more engaged with the local community, as they are receiving more respect and attention. The farmers are linked to researchers and other stakeholders through individual interactions and planned activities, and this encourages more sharing and exchange of information. Prior to this work, researchers were focused on identifying problems based on the literature and direct observation. Researchers are now aware that farmers and other stakeholders have different perspectives, and they are responding more to farmer and stakeholder demand.

The twin success of increasing fish production and empowering women was achieved by getting farmers, facilitators and scientists to work together around an issue of common interest. Doing so led to the researchers sharing their understanding of issues faced by the women with staff from other projects.

Participants had a valuable firsthand experience of working in a team with different expertise and skills to solve problems.

Working this way was not easy. AAS had to invest in building staff capacity to implement PAR, which is not standard practice in large bilateral projects. The science team found that implementing and supporting the work was a challenge due to the large geographic area of the South Bangladesh Polder Zone and difficulties in traveling. The team had to learn appropriate ways to communicate with facilitators and farmers, including participatory monitoring and evaluation.

Engaging farmers successfully in PAR depends very much on the skill of the facilitator. Skillful facilitation was considered one of the major elements of success. When the women researchers started to understand the potential of PAR, they wanted to broaden the questions they were asking. Keeping them focused and helping them prioritize and solve problems step by step was important. Finally, community-level changes were more effective where both men and women participated.

Using the RinD approach to make community-based fisheries management more responsive to community needs in Solomon Islands

Siota F and Sukulu M

Issues facing marine resource management

Throughout the Pacific (Figure 14), there is concern that small-scale fisheries will be unable to meet the nutritional and livelihood demands of rapidly growing populations (Bell et al. 2009). Community-based resource management of marine resources has a long history here as an approach to addressing small-scale fisheries concerns and is considered an important strategy to fill the supply gap. Community-based resource management “describes the management that communities can carry out themselves without external assistance” (WorldFish 2013) and is underpinned by community participation and governance.

In Solomon Islands, more than 10 organizations, including WorldFish, provide support to communities to implement community-based resource management (Cohen et al. 2012).

Although widely recognized and promoted as an appropriate mechanism to improve and secure benefits from coastal fisheries, detailed accounts of implementation, evidence of outcomes, and the link between implementation strategies and broader development outcomes are limited (Cohen et al. 2012). First, many community-based resource management initiatives have focused on fisheries or marine issues and did not explore other community issues or concerns. While many efforts resulted in the establishment of community management of marine resources, it is not uncommon for community enthusiasm for resource management to wane and other community development priorities or governance issues to derail their efforts (Schwarz et al. in review).

After reflecting on years of experience working with communities, field researchers at WorldFish put forward three observations about development and research practice. First, to address broader community priorities, development projects have often delivered handouts and incentives to encourage community participation. In some cases this style of aid delivery has actually hindered communities from making efforts to address their own concerns. Second, development initiatives, including community-based resource management, tap into local and traditional leadership and governance structures, meaning that often only local leaders and elites, usually men, are involved in making decisions. Third,

it is normal practice for researchers to go into communities, conduct their research with low levels of community engagement, and report back poorly on research findings. As a result, communities do not feel part of the research and struggle to find meaning and use in the findings.

WorldFish has been working on community-based resource management in Solomon Islands since 2005; 11 out of 26 projects have been on community-based resource management in the last 10 years. In working on community-based resource management, WorldFish researchers became aware of the issues summarized above and were able to bring this understanding to the formulation of the AAS proposal to improve community-based resource management practice.

In this case study we describe how the appreciative principles of the community life competence process have facilitated a more inclusive approach to science for community members and researchers alike in community-based resource management and the associated processes and purpose of developing a community research agreement.

Community-based resource management was one plank of the WorldFish program in Solomon Islands at the time of rollout, and it was therefore a natural entry point for building capacity to improve community engagement processes in line with the rollout handbook.

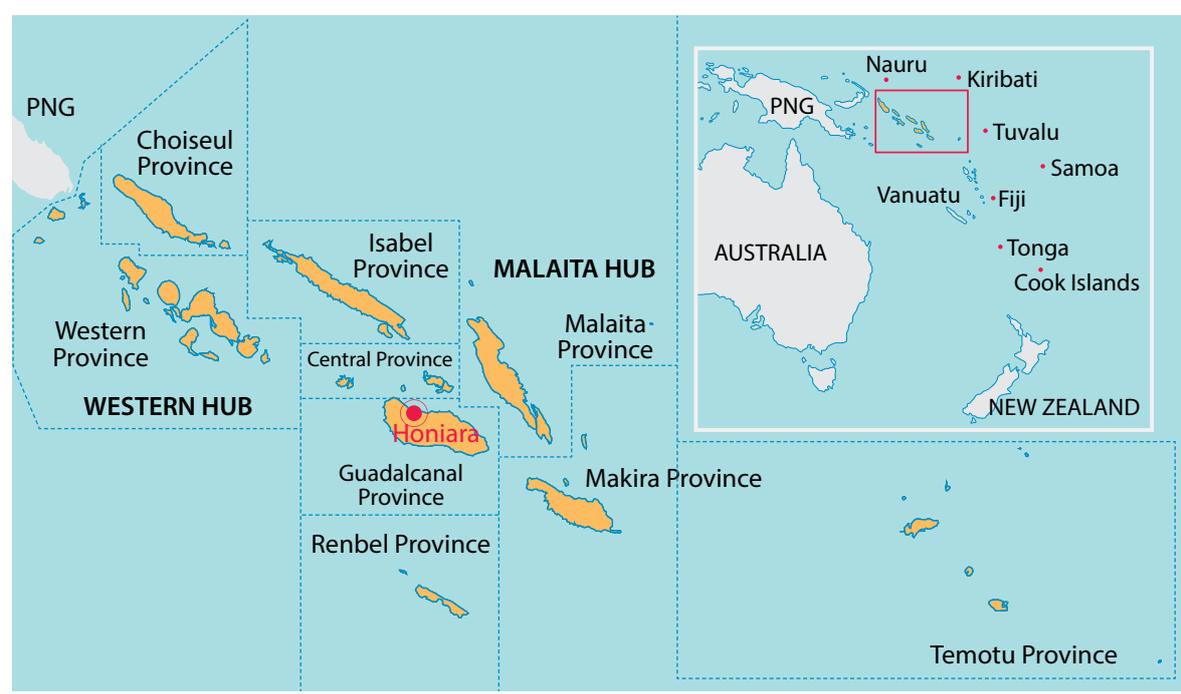


Figure 14. AAS hubs in Solomon Islands.

AAS adopted the Constellation community life competence process approach. The first step was for community-based resource management researchers and community life competence process coaches to come together in a workshop in Honiara in September 2012 to compare and contrast the WorldFish community-based resource management engagement approach with the community life competence process approach. Participants drew on their experience of working in 11 communities across four provinces.¹⁰

AAS rollout required engaging in the community life competence process with new communities to ensure that community perspectives were captured. In the Malaita hub stakeholder consultation workshop, a wide-ranging plenary discussion centered around the problem of getting a community perspective into the design process while avoiding the problem of raising inappropriate expectations. WorldFish and other stakeholders agreed that community perspectives would be sought at one central meeting with communities where WorldFish or AAS partners were already working or have strong relationships.

At the subsequent program design workshop in November 2012, there was considerable discussion about the extent to which engagement with new communities in Malaita was required. The Solomon Islands model for scaling of community-based resource management was at that time shifting from the mode of long-term community-by-community engagement to one that recognized the need to scale community-based resource management to a large number of coastal communities using an inshore fisheries strategy the team (MFMR 2008). Based on past experience, the Solomon Islands team was cautious about initiating more long-term engagements and the risk to the organization's reputation that not meeting community expectations might involve. A range of research modalities in the hub was proposed to the design workshop, including through partners and networks for scaling, but it was made clear by program management that engagement with new communities through the community life competence process was non-negotiable if the Solomon Islands program was to be supported by AAS funds (Apgar and Douthwaite 2012).



Nutrition focus group discussion with women in Alea AAS cluster in North Malaita, Solomon Islands.

Through a process of group discussions, it was agreed that community engagement and use of the Constellation competence approach was necessary in some communities. Further, it was agreed that this would take into consideration existing work and action planning in the communities to build competencies and broaden work through integrating across initiatives. Moreover, the discussion highlighted that a scaling-up strategy for the program needed to include work through partners on the ground and at the hub level and ensure that AAS was working in the scaling-up research frontier, which is seen as central to the Rind approach (Apgar and Douthwaite 2012). Accordingly, the area of focus was narrowed to North Malaita and three clusters of villages that were connected by tribal affiliation (AAS 2013).

In July 2013, AAS staff trained in the community life competence process and one of the Constellation coaches carried out community visioning and action planning in the three clusters: Kwai/Suava, Fumato'o and Alea. In common with other hubs, the community life competence process raised issues and actions that WorldFish did not have the technical skills or financial capacity to address. However, the facilitation team also saw that the process created space for the participants to talk about and share their visions and that this created an opportunity for collective action. As one participant observed, "individual and family dreams are also part of a larger community dream, and a person's dream that is not shared is unachievable." WorldFish staff said that in informal discussions with some of the youth and women who attended the workshop, "they mentioned that they liked the process, as it was not WorldFish telling them what to do, but helping them try to see their own strengths and resources and to build up from there" (G. Orirana, personal communication, July 2013). These sentiments helped WorldFish staff become more comfortable with the community life competence process and continued to clarify where it could add value to engagement processes being used in other communities undertaking community-based resource management.

The AAS focal communities were selected to represent a gradient of dependency on marine resources. The visioning identified

issues to which AAS could respond directly. A form of marine resource management was identified as a priority that all communities wanted to address, among other priority areas that included improved smallholder farming practices for root crops and vegetables, sanitation, and improvements in the community working together.

It is important to understand how changing relationships among and between stakeholders affect how we deal with communities. AAS in Malaita works through the Malaita Province Partnership for Development (MPPD), a steering committee composed of partner organizations and the provincial government. The steering committee on program design advised that an agreement between WorldFish and the communities where we work in Malaita would be prudent, and a process was devised to come to a mutual understanding of purpose, roles and responsibilities. From November 2013 to January 2014, the AAS team consulted with communities in Malaita on the draft of a community research agreement that would lay out both AAS and partner commitments on one side, and community commitments to their action plans on the other. In January 2014, the draft was presented to the MPPD for their approval, and in May 2014 the Malaita hub focal communities signed their respective agreements.

In September, the Constellation coach and AAS staff held facilitator training for the community life competence process in the Western hub. This was the first time that AAS staff used the community life competence process to set up a second hub. The participants included WorldFish, male and female community focal persons from three communities where WorldFish and partners had bilateral activities related to marine resource management, and representatives from two partner organizations based in Western Province. One of these communities had a long engagement around community-based resource management. Their plan on completing the training was to go back and work as a team. Participants said they would "use the approach to address community concerns."¹¹

The trained facilitators carried out community visioning and action planning in a community that was newly interested in engaging in

community-based resource management at the request of the community and a partner organization. This provided an opportunity for the community life competence process and learning from Malaita hub to be directed specifically at the community-based resource management process. In January 2015, the AAS team worked with the Western hub community to agree on the community research agreement as a way of strengthening their work on community-based resource management.

Emerging outcomes and learning

Using a strength-based approach to community engagement. Before working with the community life competence process, WorldFish researchers had limited their engagement in communities to areas where expectations could be met. Working with the community life competence process has allowed researchers to better understand an underlying premise on which AAS is based: that every community has the capacity to tackle challenges and take ownership of actions to meet their development aspirations. We understand better how the process of collective visioning and action planning “switches on” this capacity. As a result, there has been a shift in the way WorldFish works. Instead of representing themselves as fisheries experts, researchers now play the role of facilitators. Previously responding only to community concerns about marine resources, researchers would ask “What support can WorldFish provide to the community to improve fisheries management?” Now the team stimulates communities to think broadly about their vision and how “We, the community, can do a lot.”

Being more aware of differences in representation and power within the community. Part of what has been learned through implementing the RinD approach is to be sensitive to differences in levels of participation, representation and power within communities. This was learned the hard way, when people the team thought were community representatives were not actually representing broader community interests to the satisfaction of their communities. Community members explained that if the “representative” is not the person of their choice, they do not want to listen. However, even where community representatives are

chosen and approved by the community, they still may fail to represent community interests all the time and some dissatisfaction is to be expected. The RinD approach provides tools to facilitate processes that recognize that those who represent communities must be chosen through a fair and transparent procedure decided on by the community. Another lesson is to include broad representation in decision-making committees and to structure discussions so that men, women and youth are all able to contribute. There are now visible differences in who makes decisions and does the work when it comes to implementing agreed-upon action plans, something the research team was not so attuned to before AAS. A community research agreement is now one of the early steps in developing a meaningful partnership with communities.

Co-researchers in community-based fisheries management. Prior to AAS, the WorldFish approach to community-based resource management was to select work on research questions of interest to researchers and to fishers around the question, “Is local management improving fisheries?” For example, in Western Province before AAS, youth were employed as research assistants and an external researcher reported the results back to the community. WorldFish now engages both young men and women who are viewed as co-researchers rather than research assistants. For example, senior fishers and elders spoke with researchers to identify the local names for fish species. Using local names rather than scientific terms allowed for higher levels of local participation in data collection, interpretation and reporting. If researchers had insisted on using scientific naming systems, which would have been easier for publication purposes, local researchers would have been excluded. The role of local co-researchers will be further developed by including them in the analysis of the data, something that up to now has been done by the researchers. It is anticipated that this will improve the interpretation of the data and help ensure findings are used.

Changes in WorldFish researchers’ practice. The RinD approach has brought about changes to researchers, engagement in development and community-based resource management practices in three main areas. First, in adopting

the strength-based approach there has been a shift in role from fisheries expert to facilitator with new skills and tools to enable and empower communities. Second, there is increased sensitivity towards power relations within communities, drawing on facilitation skills to promote participation, and research has been further sensitized to explore elements of representation and power and what these mean for development outcomes. Third, there is an increased emphasis on fostering meaningful engagement of community members in research and on integrating research into the development process.

These three shifts in practice fit well with the personal journeys, reflections and realizations of local and international researchers with experience in supporting community development and conducting research in Solomon Islands. Prior to AAS, researchers observed that just concentrating on fisheries often neglected communities' priority concerns. Researchers were feeling discomfort with the inadequacy of the standard model of doing research in or on a community and simply reporting back. And finally, researchers were aware that local power relations and culture were highly influential on who benefited from development and the sustainability of outcomes.

There is some evidence emerging that gives confidence in these shifts in practice and emphasis, and it is hypothesized that these shifts will accelerate and deepen the impact of WorldFish's work with communities and ensure that community capacity to innovate and adapt in the face of change has been lastingly improved. Nonetheless, there are many questions remaining about whether these changes in process are sufficient to bring about lasting change given the range of challenges the Solomon Islands development context presents.

Discussion and conclusion

This chapter is an exploration into how RinD has led to farmers and researchers working together. In this section, we begin with what hub teams have learned. We then summarize outcomes and innovations produced by using RinD in each hub and identify what the RinD approach provided that worked.

What hub teams learned

The main area of learning in three of the four cases came through firsthand experience of a strength-based PAR process that began through the community life competence process facilitated by Constellation. WorldFish researchers in the Solomon Islands case learned that focusing on community strengths "switched on" their capacity to solve their own problems. This insight helped researchers become more comfortable in engaging more with communities. This led to greater involvement of community members as co-researchers in data gathering and analysis, which we expect to result in more relevant research that is used more widely.

In three of the four cases, facilitation emerged as a core skill. The Solomon Islands team learned that facilitating a process by which the community selects someone respected by the group is important. Often this role is secured by a powerful person driven by self-interest. Both the Philippines and Bangladesh teams reflected on how facilitation is difficult, both in terms of learning the skills and in dealing with expectations. The Bangladesh team struggled in particular with communicating between the different PAR groups and their respective facilitators.

Three of the four teams learned that the main outcomes, sometimes unexpected, come from researchers and farmers working together. This promotes more and better communication and creates mutual appreciation. In Zambia, the team acknowledged that the main outcome with the fish-salting initiative was that the individuals involved from the Ministry of Fisheries and those representing fish trading cooperatives went from an antagonistic to a more cooperative relationship through working together. The fish traders are now helping the ministry staff communicate the fishing ban, which is not directly related to salting fish. Also in Zambia, increased appreciation of women farmers' analytical abilities led researchers to put them forward to make presentations at a conference, which greatly increased their confidence and led to them taking on new roles.

Outcomes from implementing RinD

In all four cases the authors attest to different stakeholder groups working together differently than before. In all cases there is evidence that members of different stakeholder groups have gone through a behavioral change and have shifted to more inclusive ways of working. In all four cases the RinD approach

changed the way hub-level actors interacted with farmers and researchers. These changes are the direct outcomes of RinD and are summarized together with the mechanisms that we think generated them in Table 5. Each line in the table can be understood as a hypothesis for further testing.

Case	Change in behavior	Mechanism that generated the change
Philippines	<ul style="list-style-type: none"> Farmers working as co-researchers. VSU-NARC researchers exploring the use of tissue-cultured ABTV-resistant hybrid seedlings through PAR with eradicating host plants in four <i>barangays</i> in Sogod, Southern Leyte. Abaca Coalition comprised of organizations supporting this work by providing seedlings and technical backstopping facilitated by AAS. 	<ul style="list-style-type: none"> VSU-NARC researchers appreciate that engaging farmers adds relevance and reach to their research. Farmers appreciate that the trials will provide answers to their problems. Major abaca organizations appreciate that working together can help them achieve their respective mandates rather than threatening them.
Zambia	<ul style="list-style-type: none"> A postharvest processing group of 42 people, including fish trader-processors, fishers, representatives of the Barotse Royal Establishment, staff from the Ministry of Fisheries, an NGO and WorldFish exploring technological and marketing options for salting fish using PAR. Trader-processors assisting the Ministry of Fisheries in publicizing the reasons for a fishing ban. 	<ul style="list-style-type: none"> Appreciation of mutual benefits in working together through PAR. Improved relationships and understanding between trader-processors and Ministry of Fisheries helps identify a common interest and the means to pursue it.
Bangladesh	<ul style="list-style-type: none"> As of January 2015, 96 women researchers, 8 technical facilitators and 9 scientists working to improve homestead ponds through PAR. Women researchers lobbying for expansion of the RinD approach (i.e. support for farmer-led experimentation). 	<ul style="list-style-type: none"> Scientists appreciate that engaging farmers adds relevance to their work. Farmers appreciate that trials provide answers of use to them, including ways to increase fish production in their ponds. Women researchers learn firsthand that farmer-led experimentation helps them answer their own questions and helps raise their status in the community. They wish for others to benefit as well.
Solomon Islands	<ul style="list-style-type: none"> Community members are more proactive in finding solutions to their own problems through PAR, better able to ask for support rather than sitting back and waiting for the next project. Main WorldFish community-based resource management researchers adopting more elements of the RinD approach in their bilateral work. 	<ul style="list-style-type: none"> Community members appreciate that collectively they can solve some of their own problems. Community-based resource management researchers appreciate how a broader and deeper engagement with communities adds to the relevance and reach of their research and feel they have the tools to manage expectations.

Table 5. Changes in ways of working in the four cases.

Innovation through RinD

The RinD approach produced innovations in each case, as shown in Table 6.

What did RinD provide that worked?

A process to identify an issue of common interest. All four cases were motivated by a common interest shared by two or more stakeholder groups. Their motivation to work together was built through the facilitated process of identifying it in the first place, which in itself built trust and understanding.

Firsthand experience of strength-based approaches. In three of the four cases, there is strong evidence that the community-level PAR initiated through the community life competence process provided participants with firsthand experience of a strength-based approach that was transformative for those involved. Community members started to implement action plans they owned and to see the results. Researchers saw that engaging farmers as co-researchers provided farmers with a set of skills that helped them find solutions to their problems while at the same time offering researchers the opportunity to improve the relevance and reach of their work.

Mandating community engagement. A clear motivator in all four cases was the insistence on the part of AAS leadership that AAS hubs

engage in selected focal communities using PAR initiated through the community life competence process and that AAS research be in support of community visions and action plans that emerged from this process. Indeed, the Solomon Islands case is largely about how this insistence initially alarmed the WorldFish community-based resource management research team, who worried about generating unrealistic expectations. Firsthand experience helped them appreciate the benefits of collective, broad-based visioning and planning, while at the same time they created an innovation (the community research agreement) to clarify expectations.

In Bangladesh, the pressure from AAS leadership for AAS bilaterals to embrace the RinD approach led directly to participatory research on homestead ponds. This began with researchers consulting women farmers to develop a statistically analyzable design to test their best bet for stocking homestead ponds with several fish species. The second round of experimentation was much closer to the community-led research agenda of the type AAS program leadership was expecting to see. In the first round, the science team convinced the women farmers of the plausible promise of using action research to improve the productivity of their ponds while themselves starting to see the value of engaging with farmers as co-researchers.

Case	Innovation	Type	Applicable to
Philippines	<ul style="list-style-type: none"> Use of hybrid tissue-cultured abaca seedlings with eradication of host plants to ensure disease-free abaca plantations. Abaca Coalition, facilitated by an honest broker, where partners use their own money rather than a central pot to work together. 	<ul style="list-style-type: none"> Technical Institutional 	<ul style="list-style-type: none"> Farmers Organizations supporting abaca research and development
Zambia	<ul style="list-style-type: none"> Improvements to process of salting fish. Fish value chain innovation platform. 	<ul style="list-style-type: none"> Technical Institutional 	<ul style="list-style-type: none"> Fishers and fish traders Fishers and supporting organizations
Bangladesh	<ul style="list-style-type: none"> Polyculture stocking strategies for shaded ponds. 	<ul style="list-style-type: none"> Technical 	<ul style="list-style-type: none"> Farmers
Solomon Islands	<ul style="list-style-type: none"> Establishing a formal community research agreement to clarify expectations, roles and responsibilities of stakeholders carrying out PAR. 	<ul style="list-style-type: none"> Institutional 	<ul style="list-style-type: none"> Farmers and researchers

Table 6. Innovations developed while addressing case study issues.

In Zambia, the pressure of expectations led eventually to the postharvest processing group engaging fishers from the focal communities in PAR on fish salting. The original membership of the postharvest processing group did not include anyone from these communities, nor were these communities visited in the value chain assessment that led to the formation of the group.

Regular workshops, after-action reviews and training. The pressure of expectations to bring about more inclusive engagement with farmers came largely from the global AAS RinD team based in Penang. The team itself became clearer about its role in championing and supporting RinD through its interaction with hub teams and is currently made up of staff working for the AAS knowledge sharing and learning theme and the gender theme. In practice, the pressure came through a series of workshops, meetings, after-action reviews and training events in which the staff from Penang

played an important role in design, facilitation and acting as a resource. At the same time, the Program Director was prepared to intervene in support of key RinD principles, in particular the requirement that hubs carry out community-level PAR initiated through the community life competence process and link research to community visions identified in the process.

Providing space to explore working together in different ways. Part of the success of the four cases can be attributed to creating spaces for these conversations and then keeping them going. This happened by AAS not immediately funding projects after rollout but instead providing inputs that would catalyze groups starting to work together and then supporting collaboration when it happened. AAS helped stabilize, nudge and amplify emerging changes, the most important of which are shown in Table 6. Facilitation has been a core competency in this regard.



Savings and internal lending community meeting, Barotse floodplain, Zambia.

Chapter authors: Douthwaite B, Apgar JM, Schwarz A, McDougall C, Attwood S, Senaratna Sellamuttu S and Clayton T

Introduction

As we saw in the first chapter, this document began in a cross-hub workshop held in Penang in January 2015. In that meeting, staff involved in implementing RinD identified areas of learning that would be of interest and useful to others, including both others working in AAS and people wanting to apply similar approaches in other programs. In January, we understood RinD to be a research and engagement approach, built on PAR, that seeks to enable poor and vulnerable people to achieve more equitable and more sustainable livelihoods from the social-ecological systems of which they are part. We understood that RinD seeks to help the poor and vulnerable to become co-owners in finding solutions to their own problems while building their capacity to reflect and innovate across scales. We recognized that RinD pushes the boundaries of agricultural research beyond a linear model of addressing identifiable agricultural challenges through technology development.

During the following 8 months, four teams of people built on this understanding to explore four areas of interest identified in the workshop, through a collective process of identifying key learning and writing it up as the four learning chapters in this document. Each team has written about the experience of adapting and operationalizing various aspects of the RinD approach to agricultural research in five hubs over 3 ½ years of AAS implementation. Each chapter explored challenges faced and overcome and shared understanding and insights about the way RinD works and its added value.

This chapter is written by the document's editorial committee, which includes the coordinating author of each learning chapter and two AAS theme co-leaders. In this chapter, we address the main objective of the working paper: to synthesize the learning that has emerged. First we do so across the four learning chapters. Then we pull together insights from our own individual reflections on RinD,

stimulated by our involvement in the process of writing the chapters and our experience with RinD. Finally, building on the first two sections, we provide an articulation of RinD's added value.

Learning about RinD through implementation

How RinD works in practice

The four learning chapters portray the RinD approach emerging in each hub as a contextualized research and engagement process. In this process, a multidisciplinary and multipartner team engages with a range of stakeholders to tackle a commonly agreed-upon and geographically defined hub development challenge. The RinD team is guided by a set of principles rather than a strict blueprint. The chapters illustrate that the approach is flexible and adapts to context. A number of implementation arrangements have grown up within and across hubs as teams have sought to apply RinD principles. The chapter on community engagement describes the different ways community engagement teams organized themselves, and the partnerships chapter identifies how a range of stakeholders have worked together through different partnership arrangements to tackle their respective hub development challenges. All chapters provide evidence of engagement leading to strengthening links within and between participating farmers, fishers, researchers and hub-level stakeholders built through working together to tackle some aspect of the hub development challenge. The RinD team works to establish and maintain these links as both researchers and process designers or facilitators. The chapters on community engagement, partnerships and inclusive science describe the processes of engagement as building and strengthening over time. The gender chapter suggests that one reason engagement needs time is because social change cannot be controlled and can only be seeded.

The chapters identify other factors essential to the RinD engagement process. One is to start with identification of a common vision of success—be that at hub or community

level—and purposefully appreciate different people’s and organizations’ strengths that can assist to achieve the vision. The community engagement and partnership chapters share learning about how to enlist stakeholders and partners in the initial stages of addressing specific research agendas. They illustrate that starting with a broad vision that everyone can relate to is instrumental for building shared ownership and motivation to act, whether at hub or community level. The chapters also discuss the importance of building participation and trust slowly through a participatory research process. This allows those involved to collectively tackle more challenging aspects of their vision. Positive outcomes came through institutionalized processes for purposefully facilitating joint reflection and learning that were able to maintain and deepen relations. The gender chapter highlights the significance of approaching this joint reflection as a process of opening space for critical questioning as a means of creating opportunities for shifts towards gender-equitable norms, values and practices.

The inclusive science chapter identifies some common ways by which RinD appeared to have worked to change and sustain participants’ thinking, leading to action and change. Program leadership played a major role in creating the pressure of expectation that researchers should respond to community-identified needs and engage more deeply in local development processes. Motivation came from people’s firsthand experience of being part of an appreciative approach that highlighted people’s strengths rather than their problems. Also key was the facilitated and sometimes protracted process by which two or more stakeholder groups identified a concrete area of common interest on which to work together.

Developing capacity to implement RinD

A common theme emerges across all chapters on the challenges faced in building and maintaining capacity to implement the RinD approach with sufficient quality and rigor. The community engagement chapter highlights the importance of building capacity for both facilitation and documentation, ensuring that they work together to capture and share learning for multiple audiences. Similarly, the gender chapter provides a thorough

exploration into the capacity challenges faced and overcome to support the most innovative part of RinD (using a transformative approach), which rests in large part on the quality of facilitation and use of critical reflection. The partnerships chapter emphasizes the leadership capacity required to sustain partnerships and deepen relationships to achieve common goals.

Across all of the stories regarding capacity, a few lessons emerge that may be useful to others. First, the capacity required for RinD is not one that can simply be imparted through training, and as the gender chapter explicitly discusses, a blended learning approach was the most useful. Relationships and partnerships were central to the success of that approach. Starting early and working to directly support learning through implementation has proved to be useful. Regular workshops and other events in hubs that were attended by global and hub staff and partners helped maintain motivation to engage more deeply and developed capacity to do so. As has been emphasized in the inclusive science chapter and elaborated in the next section, capacity to innovate is an end goal of the RinD approach, so capacity development is best understood from a systems perspective of joining the capacity of implementation teams with the capacity of the innovation system as a whole (Apgar et al. 2015).

RinD outcomes

The chapters provide evidence that action taken as a result of RinD has led to innovation and change. The inclusive science chapter identifies a set of both technical and institutional innovations that support each other. Some technical innovations mentioned include improvements to the process of salting fish in Zambia; the use of hybrid tissue-cultured abaca seedlings with eradication of host plants to ensure disease-free abaca plantations in the Philippines; and identification of polyculture stocking strategies for small shaded ponds in Bangladesh. Institutional innovations include the establishment of a fish value chain innovation platform supporting fish drying and an Abaca Coalition of research and development supporting abaca rehabilitation.

There is evidence across the chapters that RinD builds capacity to innovate. Capacity to innovate includes the stock of novelty in the

system (e.g. new crop varieties), motivations, and a set of actor capabilities (Axelrod and Cohen 2000; Leeuwis et al. 2014) that include the ability to prioritize problems, take risks, experiment, mobilize resources and link together in pursuit of innovation. The chapters show the core RinD engagement processes as built on PAR, which works to build these capacities, as the main approach to implementing agricultural research.

Table 7 summarizes how RinD has worked to build capacity to innovate across the community engagement, partnerships and inclusive science chapters. The gender chapter shows how transforming the norms

of those involved may lead to more equitable innovation. Quality of facilitation, in particular ensuring participation of women and the poor and marginalized, is essential to the AAS goal of building equitable capacity to innovate.

The finding that RinD works to build capacity to innovate is important. Increased capacity to innovate augments people’s ability to respond to future challenges and improve their livelihoods (Mokyr 1990) and can be seen as an important outcome in its own right. Increasing capacity to innovate is a part of how AAS expects to achieve its impact goals by “turning on” the capacity of the poor and marginalized to help themselves by sustainably using the

Aspect of capacity to innovate	Changes in system capacity to innovate as a result of RinD (described in the four learning chapters)
Knowledge of and access to novelty (e.g. new technology)	Hub stakeholders, including farmers and fishers, with access to new technology and support to use it (e.g. 120 farmers in the Philippines with access to abaca ABTV-resistant planting materials)
Motivation to innovate	Farmers, researchers and key organizations motivated to work together through agreeing on shared visions and plans to achieve them (e.g. PAR process in villages) Motivation maintained through facilitation and follow-up by RinD team
Ability to identify and prioritize problems and opportunities in dynamic systems environments	RinD team able to use participatory methods to facilitate hub actors, including farmers, to identify and prioritize problems and opportunities; participants learn by doing
Ability to take risks, experiment and assess tradeoffs	Farmers’ experimenting supported by researchers, better able to assess the tradeoffs relating to their trials; researchers experimenting with different approaches to engagement and reflecting on how they work (e.g. this document)
Ability to mobilize resources and form effective support coalitions around promising options and visions for the future	RinD teams able to set up coalitions and innovation platforms (e.g. fish value chain innovation platform, Abaca Coalition); able to play honest broker role necessary to make it work Coalition and platform members using their own resources to further the work (e.g. Abaca Coalition)
Ability to link to each other in order to share and process relevant information and knowledge in support of above	A network of farmers and researchers working at community level in each hub Coalitions and platforms bringing member organizations together in support of network of farmers and researchers (e.g. Abaca Coalition)
Ability to understand how change comes about in complex systems and how to intervene effectively	RinD team members more aware of importance of facilitation, champions and network weaving to build capacity for community- and hub-level actors to help themselves

Table 7. How RinD builds different aspects of capacity to innovate.

aquatic agricultural systems in which they live.¹² Our working hypothesis is that people will use this increased capacity to improve their livelihoods in general, not just those aspects related to agriculture. Testing the hypothesis has profound implications for how RinD is evaluated. Future impact assessment will need to consider not just the impact from adoption of technology developed by RinD but also its contribution to a broader range of livelihood outcomes resulting from people's increasing ability to innovate equitably. Increasing capacity to innovate is a systemic change with systemic effects. How agricultural research influences capacity to innovate is a key area of further research if programs like AAS are to become more effective at helping the poor and vulnerable.

Insights and learning about RinD from diverse perspectives

Whether learning is of interest to others depends, of course, on how it resonates with their previous experience and what they might need to do with it. In this section, we leverage the diversity found within the editorial committee to pull together a broad set of insights of potential use. The editorial team includes natural and social scientists engaged in varying degrees of hands-on implementation, management and support to hub teams. To write this section, we first engaged in our own reflection as first-person action researchers on what we understand RinD to be, its key characteristics and opportunities, and the challenges of making it work. What follows is a synthesis of what we wrote.



Photo Credit: Wahabulur Rahman/WorlDriSh

Researchers exchanging views, Khulna, Bangladesh.

What is RinD?

How we perceive and make sense of RinD as an approach to agricultural research ranges from practical to conceptual, depending on our backgrounds and experience with RinD. From a hub perspective, RinD is about how we as researchers work with communities and partners—how we value and act on different perspectives in a way that has been collectively determined. It is about trying and finding a different path. It is about defining and implementing a research agenda together with communities and partners. From a research design perspective, RinD aims to bring the conceptual and practical knowledge of participatory and strength-based development to how agricultural research is conceived and driven. Through that, RinD aims to lead to greater understanding of innovation and change processes. From a more theoretical point of view, RinD presents a way of integrating natural and social sciences that is necessary if research efforts are to be effective in complex socio-ecological systems. RinD offers an innovative way of combining systems thinking with the embeddedness of science and technology. Clearly, RinD is multifaceted, means different things to different people, and has different uses in different contexts.

Two of us reflected on the long and rich history of methodological development upon which the RinD approach builds, going back at least to the 1940s in sociology with Lewin's (1946) work on improving group relationships. Action research methods were developed in psychology and agricultural development in the same decade (Chein et al. 1948; Curle 1949) and then in other fields, including public health, education, anthropology and ethnography. Within agricultural research, work on farmer participation began with farming systems research in the late 1970s (Collinson 2000) and was subsequently championed by the Farmer First movement (Chambers et al. 1989) and integrated natural resource management in the 1990s and early 2000s (Sayer and Campbell 2003). At the same time, work on farmer and women's participation and empowerment was led by the CGIAR Program on Participatory Research and Gender Analysis (Johnson et al. 2004). A plethora of participatory and action research methods appeared, including participatory learning and action (Pretty et al.

1995), work on learning alliances (Lundy et al. 2005), and participatory monitoring and evaluation for learning (Guijt et al. 1998). Given this rich and broad history, why, we wonder, do CGIAR researchers, unlike most other PAR practitioners, still feel the need to justify the basis for their approach to their colleagues?

Characteristics of RinD

Three characteristics of RinD emerge that, if understood together, distinguish it from other approaches to agricultural research.

Broad scope of inquiry

RinD has a broader starting point than is usual in agricultural research. When reflecting upon participatory approaches that some of us have worked with and written about, we note that all focused on a particular technical area driven by the research interest of the group initiating the work, be they farmers or fishers (in the case of local farmer research committees, known by their Spanish acronym CIALs) or researchers (in the case of much participatory technology development) or both (e.g. participatory plant breeding). RinD has provided a different starting point, with visioning framed by a broad development challenge that allows participants to envision a range of improvements not limited to agriculture.

We see evidence in the chapters of these visions going much beyond what researchers have been comfortable with; i.e. beyond their ability to respond. However, rather than create the feared "raising of false expectations" and subsequent disillusionment, the effect has been to create a broad agenda for action beyond what individual stakeholders owned or could easily subvert to their own ends. This created safe spaces that allowed different stakeholders to explore what they could do together, something they had not been able to do before. We see that RinD is distinctive in the way it gives communities in particular a mechanism to work towards overall improvements to their lives, as opposed to narrower technical fixes, albeit participatory ones.

Maintaining resonance

From an implementation-on-the-ground perspective, RinD works because it resonates with implementation teams—those that are on the front lines of RinD. As the chapters have

shown and we have experienced, it has the flexibility to be contextualizable and it elicits positive and more honest conversations with communities and stakeholders. Part of this is because people relate to the principles RinD is built on, in particular a commitment to helping the poor and marginalized help themselves in a particular location. However, this commitment means building and maintaining relationships over the long term with the farmers and other stakeholders within the hubs where RinD teams work. This implies a responsibility that may be unfamiliar to researchers used to working in a more hands-off manner. The responsibility can be uncomfortable for the individuals upon whom this responsibility falls if it is not acknowledged as important within their respective organizations and if it is not supported by an ethics policy and strategies for managing relationships if and when funding priorities change.

Several of us highlighted in our own reflections that maintaining relationships means continuing to engage over time, in particular continuing to facilitate PAR and broker links between organizations. This would not be a surprise for people who implement social programs and know that maintaining and building participation is key to behavior change and impact (e.g. Pawson 2013). However, it can be a challenge for researchers who, while attracted by the principle of helping people help themselves, have no experience of what long-term engagement means in terms of what they need to do differently.

We conclude that RinD requires a change in mindset. Changed mindsets also require effort to achieve and maintain in the face of staff turnover, funding cuts and changes in institutional priorities. Resonance can turn to dissonance if the commitment and trust is lost. Maintaining resonance long term requires, we think, long-term support from program leadership, a consistent programmatic approach, and the promulgation of generalizable lessons and principles to support the change in mindset required.

Safe spaces and reflection

The creation of safe spaces emerges as a key characteristic of RinD, as is indicated in the learning chapters. We note that the safe

spaces have worked by allowing people to work through differences in perspective and understanding that inevitably exist when different stakeholders work together. While participants' collective desire to achieve a joint goal drives the search for solutions, whether solutions are found depends on whether the facilitator can keep sometimes difficult conversations going for long enough to find innovations that are acceptable to all.

Further, the ability for those implementing RinD to engage in self-reflection is important because it allows RinD teams to support others in their own processes of critical reflection and change. This worked when RinD teams had the leadership and facilitation skills to engage in self-reflection. Where this was missing, researchers struggled to make the shift from being outside "knowers" to "enablers" working within ongoing development processes. This suggests a need to be more purposeful in building capacity to support this shift from the outset. Being able to support others to critically reflect and change is fundamental to tackling underlying issues that might block people from achieving their broader visions of change and to supporting change in the interest of the most marginalized. While this is not yet working everywhere in the hubs, as the chapter on learning from use of a gender-transformative approach shows, the program is starting to see how it can do so, through deepening engagement and trying to be more focused on equity as part of PAR and using gender-transformative approaches. It is not enough to simply get people in the room; it requires quality facilitation for a collaborative process to work at these deeper levels. Investing in quality facilitation and reflection is pivotal to getting RinD working and maintaining momentum.

RinD as part of a formal research system

Several of us reflected on what it takes to carry out RinD in CGIAR, a formal agricultural research system. While CGIAR recognizes the utility of approaches such as RinD where farmer needs drive the research agenda, the RinD experience is that researchers can find doing so a challenge. The difficulty is that commitment to engaging in a highly consultative visioning process means that researchers have less control over research prioritization. Researchers like to know up front what their research

objectives and priorities are and develop detailed work plans to address them. This hits up against linear institutional planning processes that allocate funds early on based on clearly articulated plans and expected outputs.

RinD requires researchers to give up some control, and this is uncomfortable both personally and institutionally. The openness of the RinD process can easily be undermined by institutionally driven processes to clarify research agendas and ensure rigor if they are not fully appreciative of the staging required. This leads to a conclusion that for RinD to prosper within formal research systems, institutions must critically reflect on the culture and power dynamics at work internally. This is difficult to do, and safe spaces don't necessarily exist for talking about institutional dynamics. We have learned that in the same way we build safe spaces and aim to engage with power with stakeholders to transform their innovation systems, we also need to do the same within our own formal research systems.

The value of RinD

The synthesis suggests that the value of the RinD approach lies in its ability to allow researchers to engage in complex development processes more deeply and with greater

potential to bring about transformative change. RinD allows research teams to work as part of a coalition of stakeholders jointly tackling a broad development challenge. RinD creates new and safe dialogue and action spaces for stakeholders to engage with one another long enough to build trust, motivation, capacity and insight to do things differently. Mindsets change in the process. Within formal research systems, RinD is able to bring together both social and biophysical scientists to identify leverage points for well-designed and rigorous science. The resulting research output is then more likely to be widely used because its development is anchored in a strength-based engagement process focused on helping the poor and marginalized help themselves. The engagement process builds the capacity of rural innovation systems to deliver better and more sustainable livelihoods for the poor and marginalized, based in part on the use of research outputs.

Each of the chapters in this working paper have shown that RinD has produced a range of outcomes that were often unexpected and broader in scope than might result from other approaches to agricultural research. RinD also produces innovations, and there is evidence that it builds capacity to innovate.



Participatory approach in Hetalbunia village, Khulna, Bangladesh.

- ¹ Based on the multidimensional poverty index.
- ² The term social-ecological system is used to emphasize the humans-in-the-environment understanding of linked social (human) and ecological (biophysical) systems (see for example definitions by the Resilience Alliance and the Stockholm Resilience Center).
- ³ See www.communitylifecompetence.org for more information.
- ⁴ SUPA rice is not actually a variety, as it has been neither registered nor evaluated for its characteristics. Rather, SUPA is a nickname describing a superior quality. SUPA rice seed has been generally in high demand both among small-scale farmers and on the market for many years (Source: Research Into Use. Retrieved 30 May 2015 from <http://www.researchintouse.com/news/100922SUPA-rice.html>).
- ⁵ *Barangay*: Smallest administrative unit, similar to a subdistrict.
- ⁶ A backbone organization helps to maintain overall strategic coherence and coordinates and manages day-to-day operations and implementation of work, including stakeholder engagement, communications, data collection and analysis (Source: Collective Impact Forum. Retrieved 6 June 2014 from <http://collectiveimpactforum.org/events/building-your-backbone-infrastructure>).
- ⁷ The difference between the two terms is that equality refers to issues of “sameness,” while equity refers to perceptions of “fairness.”
- ⁸ See for example, research on gendered responses to ecosystem service mapping: <http://www.a4nh.cgiar.org/2014/11/06/participatory-mapping-with-a-gender-lens/>; <https://www.biodiversityinternational.org/news/detail/a-gender-perspective-on-landscapes-in-the-zambian-flood-plain/>
- ⁹ *Abaca* (*Musa textilis*) is a species of banana grown as a commercial crop in the Philippines, Ecuador and Costa Rica. The plant, also known as Manila hemp, is harvested for its fiber, which is extracted from the leaf stems.
- ¹⁰ Constellation Community Life Competence Process and AAS Competence Learning Event, Honiara, Solomon Islands, September 2012.
- ¹¹ AAS Engagement Process Community Life Competence Process, Facilitator Training, Western Hub, Solomon Islands, 15–19 September 2014.
- ¹² Increasing capacity to innovate is a key part of the AAS second scaling pathway described in Douthwaite et al. (2013).

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About the CGIAR Research Program on Aquatic Agricultural Systems

Approximately 500 million people in Africa, Asia and the Pacific depend on aquatic agricultural systems for their livelihoods; 138 million of these people live in poverty. Occurring along the world's floodplains, deltas and coasts, these systems provide multiple opportunities for growing food and generating income. However, factors like population growth, environmental degradation and climate change are affecting these systems, threatening the livelihoods and well-being of millions of people.

The CGIAR Research Program on Aquatic Agricultural Systems (AAS) seeks to reduce poverty and improve food security for many small-scale fishers and farmers depending on aquatic agricultural systems by partnering with local, national and international partners to achieve large-scale development impact.

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