Participatory Action Research in the CGIAR Research Program on Aquatic Agricultural Systems.

RESEARCH PROGRAM ON
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Program Context

The CGIAR Research Program on Aquatic Agricultural Systems (AAS) aims over the next six years, to improve the lives of 15 million poor and vulnerable people who depend upon diverse livelihood strategies in aquatic agricultural systems. AAS works in hubs (geographic locations providing a focus for innovation, learning and impact through action research [CRP AAS 2012, 2]) located in strategic geographic areas. These areas include Asian mega deltas, African fresh water, African coastal and the Coral Triangle, where high populations of poor people depend on aquatic agricultural systems. In selected communities within the hubs, research engages a diversity of actors to address both collective challenges and the distinct challenges of defined target groups (such as men, women, youth and elders). The program aims to build capacity to innovate and to foster more resilient communities and aquatic agricultural systems.

Taking a Research in Development (RinD) approach[1], this program represents a break from "business as usual" for the CGIAR. In AAS we seek to use research not only as a problem solving device, but more importantly as a device to *empower and support* people who depend upon aquatic agricultural systems (particularly the most marginalized) in a development process that they *themselves* define. Through an appreciation of and engagement with power relations and gender norms, we believe opportunities for transformative change will emerge that can potentially bring lasting benefit to the marginalized[2]. Embedding research in the development context in this way requires that we pay particular attention to how we support learning and social change, while being mindful of whose learning and development we support. The program aims to achieve this by using Participatory Action Research (PAR) to implement research that fosters empowerment and collective learning. Further, we ourselves aim to learn from our implementation of the program through PAR, to understand better how agricultural research can leverage development outcomes and impact.

This brief describes the PAR approach we are using to implement RinD in the AAS program. It is not a guide for implementation of PAR, but rather aims to provide a succinct view of how we believe PAR will enable CRP AAS research to be embedded in the development context such that it supports outcomes and we can learn from implementation. It starts with a section that places our use of PAR in the broader understanding of a methodology used for supporting change and learning. Next, we discuss the design of PAR in the program, identifying two levels at which PAR is implemented to achieve the desired outcomes in the hubs: within communities and with hub stakeholders. Finally, we conclude by linking our PAR approach and design to program monitoring and evaluation for learning.

Fostering Development Outcomes through PAR

The theoretical underpinnings of PAR and its applications in several disciplines and practitioner fields are diverse (e.g., Reason & Bradbury, 2008; Greenwood and Levin, 1998), leading to multiple and often contradictory understandings of the process and potential outcomes. The term "action research" was first used by Kurt Lewin (1952), who argued for the need to bring action and reflection together in the process of learning. Building on this tradition, Kolb's (1983) experiential learning theory further developed the idea of learning as a process of engagement in which people learn best through reflecting on the actions in their own lives. The use of iterative action and reflection cycles underpins all approaches to PAR. A generic PAR cycle which

would be used by a group of co-researchers (includes stakeholders and researchers) is shown in Figure 1. In the planning step, intention to do something in order to improve upon a real life concern is developed. Next, during the acting step, the group intervenes in some way in the social context. The observing step is concerned with identifying the consequences of actions, and finally, in the reflecting step, the group "makes sense" of what has happened through thinking about how it fits with the group's experience and theories.
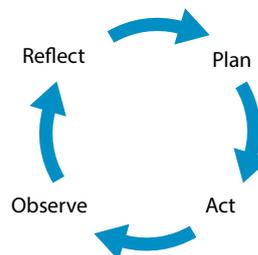

Figure 1. Generic PAR cycle of action and reflection.

Using iterations of acting and reflecting, PAR is a participatory process of inquiry which seeks to answer questions about real life concerns to improve the wellbeing of those engaged. "It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities." (Reason & Bradbury 2008, 4). Unlike most research endeavors that present *ex post* findings, this process is dynamic and continuous, enabling feedback in real time. The participatory and action oriented focus builds ownership of the process by the participants, who learn through their own experiences and are able to change their own lives and social worlds.

Challenges faced by the poor who depend on aquatic agricultural systems are the result of multiple underlying social, ecological, economic and associated dynamics. If the development process supported through PAR is to be lasting and sustainable, it must look beyond superficial "problems" to appreciate and engage with the underlying causes. The metaphorical "iceberg model" from systems thinking illustrates the levels and depth at which change may be fostered in a defined system (Figure 2).
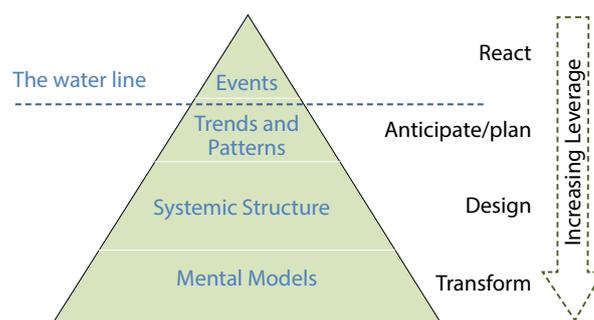

Figure 2. The Iceberg Model[3].

Superficial events that are obvious at first glance and defined as "problems" are only the tip of the iceberg. Solving these problems is a reactionary process. Beneath them lie trends and patterns that are appreciated through observation and deeper questioning over time. When engaging at this level, we are better able to anticipate and plan interventions. Through further questioning of

the perceived patterns, there is greater potential to understand the underlying structures of the system and thereby provide opportunity to engage in redesign of the system. The deepest level of the iceberg is the space that is most difficult to engage as it requires people to reflect upon their own mental models—their own beliefs and ways of viewing the world. When this level of reflection is accomplished, the resulting change is more lasting and has higher transformative potential. From the iceberg model we learn that the potential to influence transformative change increases as depth of engagement in the system increases.

The transformative change required to build resilience and overcome poverty and inequality in aquatic agricultural systems calls for the PAR process to engage at deep system levels[4]. This is often not an explicit part of PAR practice and discourse, particularly not in its application within the agricultural research sector. Further, as the program and the CGIAR engage in in-depth PAR with stakeholders in hubs and share the process of learning, there is also potential for transformative change of the organizations themselves. In the AAS program, we seek to foster such transformative change.

Our use of the PAR approach builds on the use of iterative action and reflection cycles (using the experiential learning cycle) and interrelated threads of thinking and practice in development, agricultural research and transformative learning. Based on Freire's (1970; 1973; 1985) conscientization theory[5] and Fals Borda's (1985; 1987; 2006) participatory epistemology, engagement of the poor and marginalized as co-researchers makes research a tool for empowerment that leads to social change and improved livelihoods. Transformative learning theories argue for the use of critical reflection and action to foster changes in mental models and beliefs about the world (Kreber 2012; Brookfield 2000; Johnson and Wilson 2009). Similarly, "double-loop learning" (Argyris and Schon 1996), used widely in action research, focuses on questioning underlying assumptions for learning that can potentially change the system rather than just solving superficial problems. Combining critical reflection and double-loop learning provides a practical approach to how a generic PAR cycle can potentially become transformative. We add this critical and in-depth approach to PAR to widely used farmer-first participatory research methodologies[6] (i.e., participatory rural appraisal and participatory learning and action) (Chambers 1994; 1997; 2008). Agricultural research, implemented through such an approach, can enable research to support change through innovation, critical reflection and empowerment through livelihood improvement for the poor and marginalized.

Designing PAR in AAS

PAR is best thought of as an approach to inquiry and action to improve real life situations rather than a pure research methodology. With a focus on practical solutions and real life concerns, PAR is necessarily context specific. This means that there is no blueprint for how to design or facilitate a PAR process. Many have already described its characteristics and principles[7] and through a synthesis

of these we define four principles that guide our use of PAR in AAS (shown in Box 1). Using these principles in implementation of RinD will require engaging with questions about the quality of our process, such as who "owns" the process, who defines the participants, and what are the roles of different stakeholders? Answers to these key questions will be sought through contextualized on-going conversations with stakeholders in each hub such that we remain mindful of our own practice and ethical conduct as we implement PAR.

Box 1. Principles that Guide PAR Design and Implementation in AAS.

1. The process is owned by participants themselves, who define their real-life problems to be addressed through PAR.
2. PAR recognizes multiple voices and power relations and, to ensure equity, requires facilitation to be mindful of who is participating and how they are participating.
3. PAR emphasizes jointly shared responsibilities for collection of data and its analysis to support improved understanding and improved action.
4. Results of the process are fed back to the participants for ongoing learning that is potentially transformative.

The design of PAR in AAS hubs is based on the two distinct yet related levels at which we aim to support transformative change: selected communities within hubs and hub level stakeholders[8]. At each level we use research to engage with and facilitate collective change.

Community Level PAR

The first level at which development is supported through PAR is the community[9]. A number of selected communities in each hub are engaged through a strength-based approach which recognizes and builds upon community strengths[10] and facilitates visioning and action planning around priority areas for improving livelihoods. This forms the beginning of facilitated action-reflection cycles that support collective movement towards improved communities and build upon community strengths and motivation. The implementation of action plans is supported by specific research agendas and leads into reflection on progress made towards the collectively defined goals. Engagement of community members in the process supports social learning[11] and fuels continuous change (see Figure 3). As indicated by the guiding principles, participation is defined in context and requires mindful facilitation to ensure equity. Furthermore, taking an in-depth approach to PAR opens up a space for critically reflecting on the challenges faced by different groups within communities—such as men, women, youth and elders—and engaging in discussions around structures and mental models that are barriers to improving livelihoods.

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[4] See Kantor & Apgar (2013) for explanation of program approach to transformation.
[5] Conscientization theory argues for the cultivation of critical consciousness and conscience for self and social empowerment.
[6] See Farmer First Revisited for a good review of their use (http://fac.dev.ids.ac.uk/farmerfirst/files/Farmer_First_Revisited_Post_Workshop_Summary_Final.pdf).
[7] See for example Reason & Bradbury 2006; McTaggart 1991; Stringer 2007.
[8] Stakeholder are communities and community groups , institutions and other agents that have ownership of and contribute to the management and development of the aquatic agricultural system in the hub.
[9] See AAS Evaluation and Learning Paper on community selection for further details on the process.
[10] In the AAS program we are using the Community Life Competence Process. See the CLCP website for further details.
[11] Social learning may be defined as "a change in understanding that goes beyond the individual and become situated within wider social units or communities of practice through social interactions between actors within social networks" (Reed et al. 2010).
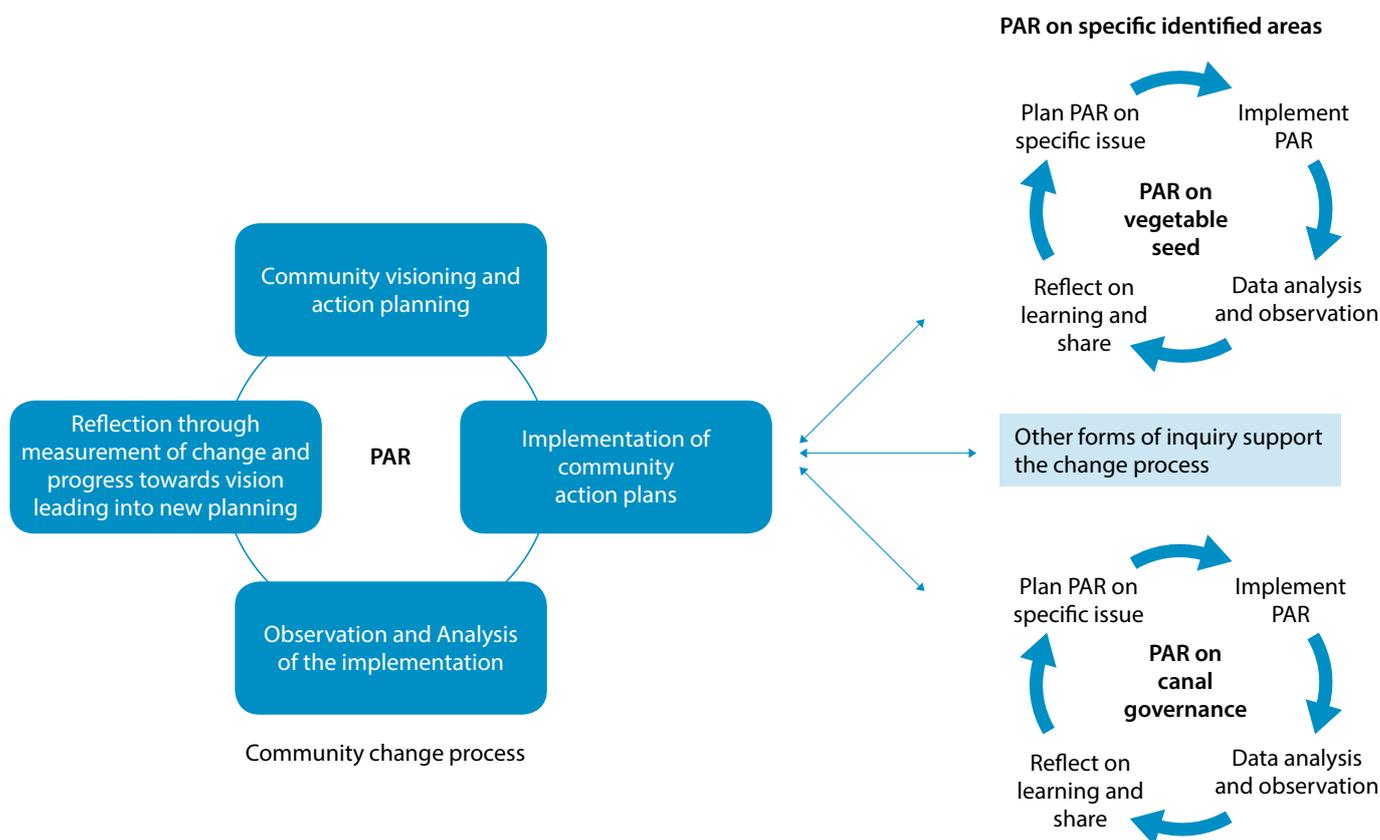
Figure 3. Linked ongoing PAR community change process with specific PAR (examples used here are vegetable seeds and canal governance) which may take various forms of stakeholder and farmer engagement. Other forms of inquiry may also support the change process by providing information in the form of data or evidence.

Within community level PAR, inquiry that requires intellectual analysis, experiential learning and diverse forms of data collection produces reflection and evidence that supports the community change process. Specific areas of intervention identified in community action plans (such as vegetable seed diversification for increased productivity in Bangladesh or canal maintenance for improved irrigation and transportation on the Barotse Floodplain) provide opportunities for researchers to work with communities to support systematic and guided inquiry and to provide inputs for improved analysis and reflection. Some of these research initiatives will be led by community members (such as farmers) and supported by researchers, while in other cases researchers will lead inquiry and provide evidence to feed back into the community process.

Through the PAR approach, all research that is undertaken to support community-identified needs and actions, be it a PAR process or not, feeds back into the community engagement process around a community development agenda. (Figure 3). Note that each of the cycles shown is iterative and ongoing, and multiple new PAR cycles will form as the community change process moves through time. This design enables agricultural research to *complement and support* by harnessing the inherent potential for change that lies within communities instead of *driving* the process of change.

Hub level PAR

Building on the community level change process, the program works across scales in a manner akin to Burns' (2008) systemic action research, which argues that in order for PAR to have impact at scale it must "build systemic pictures of what is going on, and systemic intervention strategies". From the participatory

planning phase of the program in each hub (known as "roll-out") hub stakeholders are engaged in defining a collective hub development challenge[12] and in designing actions in the form of initiatives (research and development activities) that they collectively commit to undertake to achieve their development goals. As groups of stakeholders implement their initiatives, they engage in their own cycles of action and reflection. For example in Zambia, the stakeholders of the fish value chain are now engaging in an initiative to improve the value chain in which initial participatory analysis has identified areas of work for improvement in the chain or requiring further exploration through new PAR processes (such as exploring opportunities for income generation, improving access to credit and input supplies or improving the management of fisheries). Much like the case of community action, analysis and reflection in this PAR process is supported through specialized research that provides conceptual framing and tools to guide inquiry or specialized data or data gathering techniques. Periodically, the learning from the various PAR agendas is fed into a reflection step in which all hub stakeholders evaluate how their work in implementing initiatives is addressing the hub development challenge, and plan their new cycle of action and reflection(Figure 4).

The process of change required to improve the lives of the poor and vulnerable is owned and driven by the stakeholders (and communities) themselves, with research playing a supporting role. A critical and in-depth approach to PAR uncovers opportunities for engaging in system transformation to build a more enabling environment for innovation and change that favors the most vulnerable. At times, strategic interventions may be required to support the necessary transformative change. For example, where gender norms create barriers to the participation of women in the value chain, it may be necessary to

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[12] The hub development challenge defines the opportunity for working towards a more resilient aquatic agricultural system.
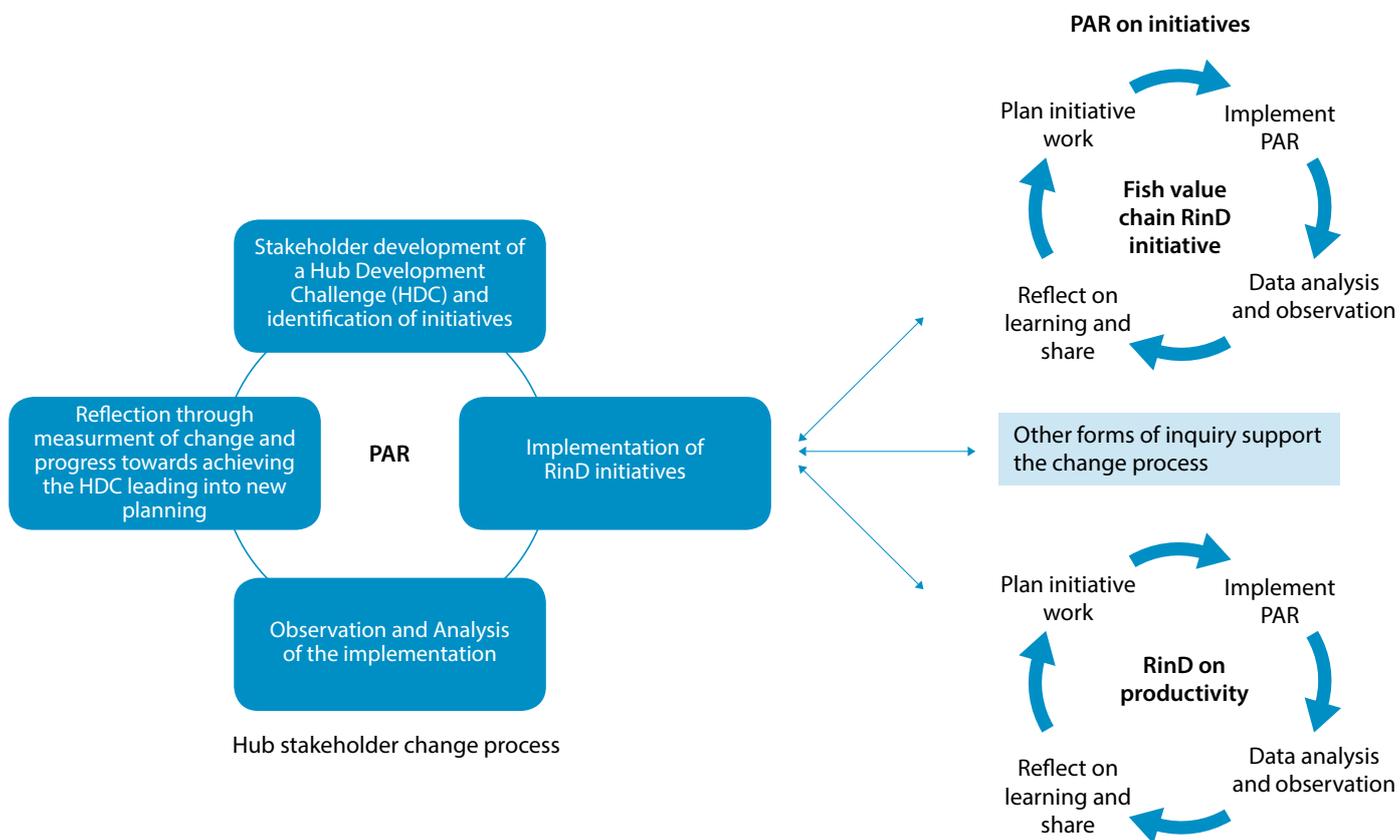
Figure 4. Linked PAR hub stakeholder change process to meet the hub development challenge and implementation of RinD initiatives through PAR and other supporting research.

engage more directly with stakeholders of the value chain around questions of gender equity. Multiple new PAR cycles will emerge as the process continues and new opportunities come from improved understanding of the challenges and what is needed to overcome them. The ongoing nature of the process can potentially, over time, build more resilient communities and aquatic agricultural systems in the hubs.

Learning from AAS PAR

In this brief we have described the design of PAR to support change and transformation in communities and with stakeholders in aquatic agricultural systems in the AAS hubs. Planning, acting, reflecting and learning with various stakeholder groups across scales are linked and mutually supporting. The community change process is part of and supportive of the stakeholder change process in the hub. The program implements RinD initiatives to support learning, change and transformation in hubs as well as using what is learned from the implementation process to influence how agricultural research is implemented globally.

Supporting learning from implementation through PAR is part of program monitoring and evaluation and will produce evidence of whether and how the AAS RinD approach works. Monitoring and evaluation in AAS tracks community and stakeholder progress along the pathways that they have identified for achieving their goals, thus testing assumptions about how research in development does and/or does not lead

to change.[13] The vehicle for assumption testing, learning and subsequent modification of actions (also known as theory of change) is the PAR process we have described in this brief. Synthesizing and learning lessons across hubs is a component of AAS research on scaling for impact that will contribute to the literature and body of evidence that endorses the use of agricultural research to support rural innovation, development and transformation.

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