



The Program recognizes that the poor who live in aquatic agricultural systems do not manage commodities. Rather they manage enterprises that exploit the multiple opportunities provided by these aquatic ecosystems. For example in “farming villages” around Tonle Sap 80% of households are also involved in fishing and 28% are involved in livestock raising.

AQUATIC AGRICULTURAL SYSTEMS

Aquatic agricultural systems are diverse farming systems where families cultivate a range of crops, raise livestock, farm or catch fish, gather fruits and other tree crops, and harness natural resources such as timber, reeds and wildlife. They occur where the rural environment is dominated by aquatic ecosystems along freshwater floodplains, coastal deltas, and inshore marine waters, and are characterized by their dependence on seasonal changes in productivity, driven by seasonal variation in rainfall, river flow and/or coastal and marine processes.

More than 700 million people depend on aquatic agricultural systems for their livelihoods, but the constraints they face mean that a third or more live on less than US\$1.25 a day. Paradoxically one of the features of many aquatic agricultural systems is that they are naturally highly productive. Well targeted investments can further improve this productivity, but these need to be matched by investments to overcome the many other constraints preventing poor smallholders from benefitting fully from aquatic agricultural systems. Where these constraints can be overcome and their productivity harnessed, aquatic agricultural systems provide an important opportunity to improve the lives of poor and vulnerable people.

CGIAR RESEARCH PROGRAM ON AQUATIC AGRICULTURAL SYSTEMS

In recognition of the importance of aquatic agricultural systems and the potential they provide for reducing poverty, the Consultative Group on International Agricultural Research (CGIAR) has developed a new CGIAR Research Program on aquatic agricultural systems. With a budget of US\$59.4 million for the first 3 years, the Program aims to leverage impact through US\$300 million in partner funding over the same period and improve the lives of 15 million poor and vulnerable users of aquatic agricultural systems by 2016.

With the dissemination of new technology and knowledge to other aquatic agricultural systems, 50 million people will benefit by 2022.

How the program on aquatic agricultural systems will reduce poverty

Localized reduction - through direct engagement with partners in specific research sites in focal countries

Extensive reduction - via primary partners – by improving their programs and impacting their target groups in focal countries

Widespread reduction – via secondary partnerships at national, regional and global levels - that disseminate and foster use of technologies, methodologies and learning

RESEARCH IN DEVELOPMENT

International public goods such as improved crop varieties and management packages, often represent important scientific achievements. However there is concern within the development community that because many of these “goods” have not been tailored to meet the specific needs of poor smallholders, they often make only limited contributions to improving the lives of the poorest and most marginalized. To overcome this limitation in aquatic agricultural systems the CGIAR is moving away from the supply-driven approaches often described as research for development, to a much more demand-driven approach of research in development. This links three strands of thinking (i) farmer first/farmer participatory research, (ii) rural livelihoods approaches, and (iii) resilience-based management. By embedding our research in communities, enlisting beneficiary households as co-researchers, and working closely with development partners, the CGIAR is seeking not only to develop solutions to specific constraints currently felt by stakeholders, but also to initiate and support processes that can help transform these communities beyond the lifespan of individual projects.

A TRANSFORMATIVE APPROACH TO GENDER

Globalized market processes, population growth, migration and urbanization are changing aquatic agricultural systems rapidly, and these are all strongly gendered processes. Rural-urban migration, a predominantly male phenomenon in Bangladesh, Cambodia and Zambia, has feminized agriculture. Cambodian women are estimated to provide 80% of the labor in food production and 57% in small-scale fisheries, while Zambian women contribute 70% of labor inputs to agricultural production. In the Philippines, women predominate among rural-urban migrants, while men remain in agricultural livelihoods, and women equal men in pursuing overseas migration.

Because male and female household members pursue these different livelihood strategies, and often have different preferences, motivations and aspirations, our approach to engagement in aquatic agricultural systems has to be strongly gendered. To this end the Program will mainstream gender through our research themes, while also working to help transform norms and roles that prevent women from engaging fully in the benefits of aquatic agricultural systems.

FOCAL COUNTRIES AND HUBS

Research in development requires commitment to places and relationships. The CGIAR will do this by concentrating efforts on three major type of aquatic agricultural systems and focal countries within these: large Asian deltas (Bangladesh and Cambodia, extending subsequently to India and Vietnam), the Asia-Pacific islands of the Coral Triangle (Philippines and Solomon Islands, extending subsequently to Indonesia and the South Pacific) and African freshwater systems (Zambia, extending subsequently to Mali and Uganda).

In each focal country we will work in a limited number of development hubs that provide a focus for innovation, learning and impact through action research. In each hub we will work with partners to identify communities and sites to be the focus of our direct research investment. At each of these sites, we will conduct participatory diagnoses with selected communities and households, and our work will build upon this to provide a basis for long-term learning with the communities in the area. We will develop learning alliances with all key stakeholders in the hubs and use participatory impact mapping to guide our investments in partnerships, capacity building and knowledge management and learning.



The Program pursues a dual strategy of mainstreaming gender in all research themes and focusing on research toward fundamentally transforming underlying gender norms and roles.

Research considers the nutritional quality of the products and how value chains can best deliver positive nutritional outcomes, particularly for women, children and other vulnerable groups.



The Program's work in each hub will build on past and ongoing research and development activities. This will involve bringing together learning from current CGIAR research projects and those of partners, and using the participatory diagnoses to identify how we can build upon these to improve integration and increase impact in the future. By working closely with development actors, notably local organizations, development NGOs, and government, the Program will build close links with ongoing and planned development investment. In this way the Program seeks to scale out the results of our work to reach beyond the communities we will work with directly in our own research and also improve the lives of those targeted by these development partners.

RESEARCH THAT ADDRESSES THE MULTIPLE DIMENSIONS OF POVERTY

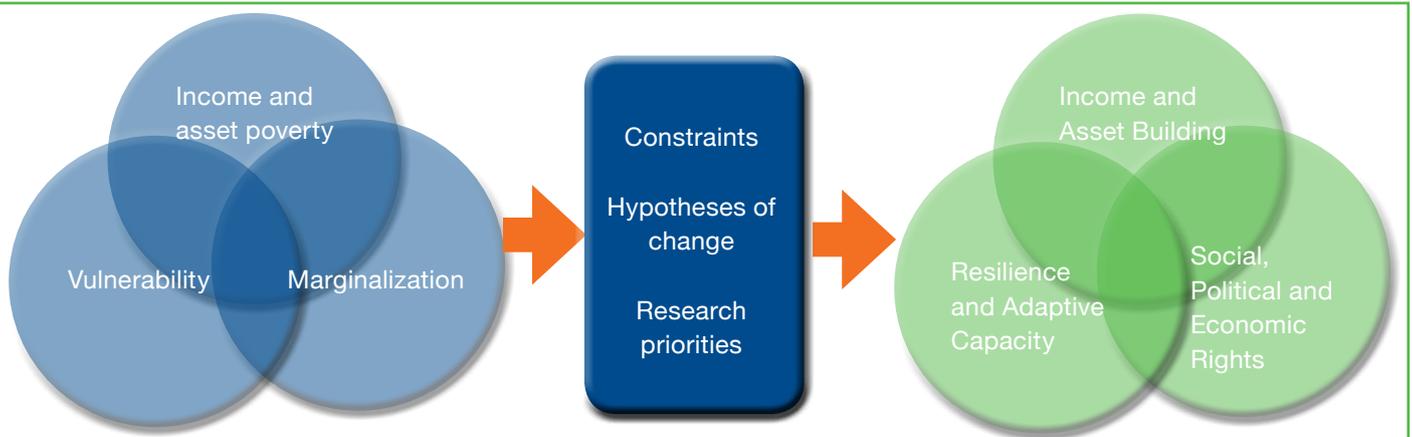
Poverty in aquatic agricultural systems is not simply about inadequate income or assets, but rather results from the often complex interaction between income poverty and other factors such as marginalization and vulnerability. Figure 1 illustrates these – often highly gendered - interactions and shows how the Program's approach to understanding them will help identify research priorities. In contrast to much previous CGIAR research which focused mainly on ways to improve income and assets directly, the Program's multi-dimensional approach to poverty will yield stakeholder analyses of the wider constraints faced by the poor and of the pathways to overcoming these.

This participatory approach means that the location-specific priorities for each aquatic agricultural systems will only

be identified through stakeholder engagement. However initial discussions in each country have identified six broad constraints that perpetuate poverty and vulnerability in aquatic agricultural systems.



Many households suffer productivity gaps that can be narrowed with better inputs and production practices.



Income and asset poverty - when individuals and households do not have sufficient means to sustain a decent standard of living, as defined by national poverty lines, human development indices or their own metrics.

Vulnerability - the result of people's exposure to natural disasters and economic shocks, the sensitivity of their livelihood systems to these risks, and their capacity to use their assets and capabilities to cope and adapt.

Marginalization, or social exclusion - when certain groups are systematically disadvantaged because they are discriminated against on the basis of their ethnicity, race, religion, sexual orientation, caste, gender, age, education, class disability, HIV status, migrant status or where they live.

Figure 1. Measuring and addressing poverty

The poor who live in aquatic agricultural systems confront multiple dimensions of poverty, including low levels of income and assets, marginalization and vulnerability. The program recognizes that efforts to reduce poverty in these communities need to understand this complexity and tailor our research and partnerships to address these different dimensions. We will use this multi-dimensional poverty lens to understand the constraints faced by the communities we work with, and identify how these constraints can be removed, income and assets built, resilience and adaptive capacity developed, and social, political and economic rights acquired. Our research will test these hypotheses of change and generate learning to pursue these outcomes.

- 1. Sustainable increases in system productivity.** While aquatic agricultural systems are highly productive, many aquatic agricultural systems households continue to suffer productivity gaps. These could be narrowed with better inputs and innovative production and postharvest practices. Existing and newly developed enhancements may be superior crops, livestock, trees or fish; integrated management to improve quality, yield or production efficiency; the timely provision of production inputs; or reduced postharvest losses. Work in this theme will lead to increased benefits for aquatic agricultural systems-dependent households from environmentally sustainable increases in productivity.
- 2. Equitable access to markets.** Many aquatic agricultural systems households do not pursue opportunities to increase crop, livestock and fish production because of barriers to markets. The Program will work to understand these barriers in the focal hubs and identify investments that can overcome them. In pursuing this work the Program will, wherever possible, focus on the nutritional quality of the products and how value chains can best deliver positive nutritional outcomes, particularly for

women, children and other vulnerable groups. The outcome of this research will be increased benefits from improved markets and services available to poor and vulnerable aquatic agricultural systems households.

- 3. Socio-ecological resilience and adaptive capacity.** Aquatic agricultural systems users are vulnerable to natural disasters exacerbated by climate change, and many suffer oppression and discrimination. Insecurity borne of vulnerability and marginalization dampens innovation and the responsible stewardship of resources for the long term. By helping strengthen rights that foster more equitable access to resources and services and enhancing capacity to adapt to irreducible risks, the Program will help build resilience.

Strengthening rights that foster more equitable access to resources and services is a step toward building resilience, as is enhancing capacity to adapt to irreducible risks.

4. **Gender equity.** Recognizing that gender disparities hamper communities' ability to harness the benefits of aquatic agricultural systems, the Program pursues a dual strategy of mainstreaming gender in all research themes and focusing on research toward fundamentally transforming underlying gender norms and roles. In this way the Program will support efforts to strengthen women's roles and status in the home and beyond, and improve women's equity of access to productive resources, such as land, water, technology, financing and services.
5. **Policies and institutions to empower aquatic agricultural systems users.** Improved technologies in the field rarely offer long-term benefits without supporting institutions and favorable policies. The Program will examine how institutions and policies affect aquatic agricultural systems and their users, encourage the emergence and implementation of policies and institutional innovations that facilitate resilience in aquatic agricultural systems and their communities, and support aquatic agricultural systems communities' adaptation to unfavorable policies that cannot be changed.
6. **Knowledge sharing, learning and innovation.** This theme supports others' delivery of outcomes by catalyzing knowledge sharing and learning in partners and stakeholders. It advances the Program strategy for scaling up through network development, knowledge dissemination, capacity building and advocacy. Program monitoring and evaluation and impact assessment strengthen the performance of program participants toward achieving greater outcomes and expanding the benefits to the poor in aquatic agricultural systems.

INTERNATIONAL PUBLIC GOODS

The Program has been designed to focus operationally on focal countries and hubs within them. This approach recognizes the importance of location specific constraints faced by the poor living in aquatic agricultural systems, and of the need to develop solutions that are tailored to meeting these. In taking this approach the Program eschews the notion of international public goods (IPGs) as ready-made solutions that can be transferred easily to diverse locations and contexts, and instead embraces the importance of IPGs as a body of learning about "how to do development better" in these agricultural systems. To this end the Program will build on our geographically focused research to harness global learning from this work and make this available as IPGs. In each country and hub we will identify commonalities and differences in the constraints faced and in the solutions to these, and distill a body of comparative learning and general principles from our research. We will then work with partners to facilitate the use of this learning in guiding development interventions elsewhere in focal hubs and countries, other aquatic agricultural systems, and indeed in other agricultural systems with similar challenges. In this way the Program seeks to improve the lives of 50 million people by 2022.

Catalyzing knowledge sharing and learning in partners and stakeholders advances the program strategy for delivering outcomes and scaling up.

Acronyms

CGIAR	Consultative Group on International Agricultural Research
NGO	Non-government Organization
IPGs	International Public Goods



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