Objectives of the project

The project ended in July 2023. The goal was to improve food and nutrition security by transforming low-yielding, climate-risky traditional rice-fish production systems into more climate-resilient, high-yielding, resource-use- efficient systems in Liberia.

Background

Liberia's basic infrastructure was devastated by the civil war and access to most productive inputs, services and markets was significantly reduced. The current agenda in Liberia for agriculture focuses on value chains through private sector participation and markets, innovative financing, export-oriented industrial policy and enabling business environment. Rice is the main staple food in Liberia and forms a significant (33%) part of the Liberian food chain, accounting for about 50% of the adult calorie intake. Rice and aquaculture are both included in the national government's priority value chains. Agricultural research is critical to national development as it ensures the availability of demand-driven and transformed technologies such as, viable seeds, good quality planting materials, animal breeds and quality fingerlings, which are essential to agricultural production and productivity. Extension services delivery and coverage is another major bottleneck in agriculture sector development.

IRFFS plots in Suakoko © Akintayo

The theory of change to achieve the objectives

To develop integrated, climate-smart rice-fish production systems sustainably, the project was expected to balance interventions on participatory research on rice-fish farming, development of successful extension service delivery systems, value chain development with special attention to farmer strategies for value chain access, capacity building of actors involved and stakeholder platforms to create and sustain an enabling environment for adopting such integrated systems. Throughout the project women were to receive dedicated support to increase their chances of benefiting from these new systems.

Participative, research-oriented activities was planned to be conducted at the Central Agricultural Research Institute (CARI) and introduced to the field by AfricaRice, WorldFish, the Ministry of Agriculture (MoA)'s Extension Services Division in cooperation with CARI and the National Fisheries and Aquaculture Authority (NaFAA), along with private extension service agents and active participation of farmers. Thus, rice and fish systems technologies were expected to be introduced and adopted in five counties. The objective by 2023 was to conduct experiments and introduce 15 climate-smart technologies on rice and fish, with 164 households adopting the climate-smart rice-fish technology out of 365 participating producers in the target area (45% adoption rate) and with appropriate habitat for integrated rice and fish production. A specific effort was to be made to strengthen national research capacity. Expected results were as follows: CARI fish department is equipped and six experimental fish ponds are implemented, ten scientists and technicians are trained, and two technicians from CARI and NaFAA are trained to obtain an MSc degree in integrated rice/fish systems.

To support this extension and adoption process, the project was planning to develop the capacities of public and private sector extension officers and seek to bring about behaviour and social change (e.g. using educational tools such as roadshows, radio, mural paintings) regarding innovation in rice-fish farming systems. The project intended to test and implement by 2023 two pilot extension service delivery systems (e.g. engaging model famers as lead agents) and to train 500 persons in integrated rice-fish systems of whom at least 20 are government officers. Participatory research and more efficient extension were expected to lead to a greater adoption of climate-smart management practices by smallholder rice and fish farmers for increased productivity through improved resource-use efficiency.

However, the development of new rice-fish farming systems depends on the functioning of the rice and fish value chains. Therefore, market output and input strategies (e.g. organising smallholder farmers into clusters for greater access to inputs or facilitate their sales) were to be designed and tested with private and public sectors to enhance the productivity of smallholder farming systems. Improved production and more efficient value chains were expected to contribute to an increased access to and consumption of farmed rice and fish in the selected counties for enhanced food and nutrition security, especially of women and children.

To orient this participatory research, the project was planning to support functional multi-stakeholder innovation platforms capable of better informing aquaculture-integrated rice-based farming research and development efforts with gender-equitable aquaculture strategies and policies in Liberia. These platforms were also to be used for enhanced knowledge sharing and learning, as well as for facilitating advocacy sessions with authorities and value chain actors to create a conducive environment to develop and sustain integrated rice-fish farming systems.

The intervention intended to look for gender equality outcomes (e.g. increase in the number of women owning ponds, cultivating fish and rice, controlling the incomes generated from rice and fish sales) through research on gender norms and development of communication materials to address harmful norms, attitudes, practices and power relations.

Main activities

The main activities of the project were the following:

- ✓ Assessments of rice-fish value chains;
- ✓ Experiments at CARI on integrated rice-fish farming systems;
- ✓ Research on gender norms that may influence adoption of integrated rice-fish farming systems;
- ✓ Training of technicians on new technologies and extension service delivery;
- ✓ Capacity building of public and private actors in extension service delivery;
- ✓ Participatory replication of rice-fish farming systems experiments with selected producers;
- ✓ Support to farmers to design ponds and properly manage their new farming systems;
- ✓ Design and testing of input and output market strategies for farmers;
- ✓ Train households on social and behaviour change communication and nutrition;
- ✓ Design of communication tools to influence successful adoption of newly introduced systems and their benefits, with particular attention to women;
- ✓ Establishment of stakeholder platforms to engage all value chain actors in further developing and maintaining integrated rice-fish farming systems.

Results achieved to date (July 2023)

Rice and fish system technologies were introduced and adopted in five counties. By July 2023, the achievement was the adoption of the introduced climate-smart technologies on rice and fish by 355 households out of the 377 participating producers in the target areas (94.2% adoption level).

These 355 households were equally food secured, from the impact study conducted at the end of the project, utilizing 53 ha of functional habitats against the 30 ha initially targeted for integrated rice and fish production.

To strengthen the national research capacity, CARI fisheries department was equipped with six experimental fish ponds, a fish hatchery complex. Two scientists (a rice specialist and an aquaculture specialist) were seconded to the project. Two technicians from CARI and NaFAA were trained for MSc degree in Ghana.

To support this extension and adoption process, the project developed the capacities of public and private sector extension officers and imparted knowledge on social and behaviour change communication on both extension staff and farmers. Capacities of project farmers and extension staff were also built on farmers' cooperative formation, operation of innovation platforms, climate smart agriculture, maintenance and operation of farm equipment, post-harvest technologies and farm business planning.

The project tested and implemented two pilot extension service delivery systems (engaging model farmers as lead agents and farmers' field school) and trained 1,350 persons on integrated rice-fish systems consisting of 500 (37%) males and 850 (63%) females. 30 of the trainees were government officials.

Participatory research and more efficient extension promoted by the project led to a greater adoption of climate-smart management practices by smallholder rice and fish farmers for increased productivity through improved resource-use efficiency.

Market output and input strategies (e.g. organising smallholder farmers into clusters for greater access to inputs or facilitate their sales) were designed and tested with private and public sectors to enhance the productivity of smallholder farming systems.

Improved production and more efficient value chains contributed to an increased access to and consumption of farmed rice, from a baseline value of 104 kg/person/year to 197.7 kg/person/year in July 2023, and of fish, from a baseline value of 7 kg/person/year to 13.3 kg/person/year in July 2023, in the project counties, thus contributing to enhanced food and nutrition security, especially of women and children.

The project supported functional multi-stakeholder innovation platforms to better inform aquaculture-integrated rice-based farming research and development efforts with gender-equitable aquaculture strategies and policies in Liberia. These platforms were used for enhanced knowledge sharing and learning, as well as for facilitating advocacy sessions with authorities and value chain actors to create a conducive environment to develop and sustain integrated rice-fish farming systems.

Throughout the project, women received dedicated support and increased their benefit from the integrated rice-fish farming systems: increase in the number of women owning ponds, cultivating fish and rice, controlling the incomes generated from rice and fish sales.

Organization

The lead implementing partner (AfricaRice) worked with a designated team of WorldFish and staff of institutional beneficiaries (MoA, CARI, NaFAA) who were appointed/seconded to the project. The project employed a project coordinator, an administrative assistant, an M&E expert, an accountant, an agro-mechanisation and agro-processing specialist, an innovation specialist, two CARI scientists (on

aquaculture and rice) and five field technicians based in the five counties. Part-time consultants were part of the team: one aquaculture value chain specialist, one rice-fish farming technology adoption specialist, and one hatchery and feed development specialist.

A steering committee to monitor the progress of the project activities was put in place and representatives of the following institutions were members: AfricaRice, WorldFish, the European Union, MoA, CARI, NaFAA, the Inland Fisheries and Aquaculture Federation of in Liberia, and the National Rice Federation of Liberia (NRFL).

Evaluation and validation involved all targeted communities and interchanges between value chain actors and research units.

Implementing organizations
AfricaRice and WorldFish.

Partners of the project
The government counterparts responsible for national agricultural research (CARI) and extension systems (MOA, NaFAA), the private sector and other donor-funded projects were partners in the project. All the sector players, including farmers (Gbarpolu, Grand Gedeh, Maryland, Margibi, and River Gee Counties) and their representative organisations, civil society, academic and research institutions, environmental regulators, and value chain actors (producers, input providers, marketers and consumer organisations), were stakeholders in the project.

Location
Gbarpolu, Grand Gedeh, Maryland, Margibi, and River Gee Counties in Liberia

Funding and co-funding

EU	€ 3,500,000
AfricaRice, CARI, Ministry of Agriculture	€ 138,047
Total budget	€ 3,638,047

Duration
44 months (December 2019 – July 2023)

Links
https://www.facebook.com/africarice.worldfish/

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