Africa Rice Center (AfricaRice)

Linkage between the Rice Sector Development Program and the Technology Generation Programs at AfricaRice

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1. Introduction

The Rice Sector Development (RSD) Program focuses on the facilitation of the dissemination and adoption of rice technologies and, which are delivered through research for development (R4D) activities of the technology generation programs of AfricaRice as follows: Genetic Diversity and Improvement (GDI); Sustainable Productivity Enhancement (SPE); and Policy, Innovation systems and Impact assessment (PII) Programs. AfricaRice R4D activities are organized and carried out within Africa-wide rice Task Forces (TFs) focusing on the following disciplines: (i) breeding, (ii) agronomy, (iii) mechanization, (iv) processing and value addition, (v) policy, and (vi) gender. These TFs consist of AfricaRice and National Agricultural Research Systems (NARS) scientists conducting research for development activities in partnership, at country level, and all over Africa, with funds mobilized through projects developed by AfricaRice. The RSD program, in co-action with the other programs, ensures context-specific applicability of research products when necessary, and provides feedback for finetuning of the technology(ies).

AfricaRice uses partnership frameworks and tools to catalyze rice technology and innovation dissemination and adoption. These include (i) multi-stakeholder innovation platforms (IPs) comprising rice value chain stakeholders within diverse social and economic categories in the rice sector development hubs (rice hubs) established in countries, and (ii) the multi-disciplinary Africa-wide rice Task Forces led by the national research institutes in the majority of the countries. IPs are established and facilitated in rice hubs by IP coordination and facilitation teams, and in some cases, IP committees, with the active involvement of and ownership by rice value chain stakeholders. The main purpose for establishing IPs within rice hubs is to enhance productivity and competitiveness of the rice value chain while considering the ethno-cultural values of stakeholders in the scaling of technologies and innovations. The goal is to contribute to the CGIAR system level outcomes (SLOs) of reducing poverty, improving food and nutrition security, and natural resources and ecosystems services.

2. Innovation platforms in Rice Sector Development Hubs

The RSD program, in establishing and facilitating IPs in the rice hubs, brings together key actors with different but complementary roles and interests to address the challenges and opportunities of the rice value chain for economic gains, prosperity, and livelihood improvements, using research products delivered through activities of the TFs and from other sources.

Key actors of the IPs include seed enterprises, millers, farmers, women rice processors, youths, traders, input suppliers, equipment fabricators, transporters, financial institutions (micro-finance and banks), extension / development projects, and NGOs, research organizations, and policy makers. Within IPs, technologies and innovations are combined with institutional enablers, all working to enhance system-wide performance. These enablers include ethno-cultural values and norms of the stakeholders, rules and procedures of the organizations involved in the innovation process (partnership arrangements), and market standards and regulations. In effect, IPs serve as vehicles of change and impact in the rice hubs. Partnerships are established with strategic players, including local government, policy makers, and scaling partners, facilitated by projects and other initiatives in the rice hubs, to stimulate wider dissemination and adoption of technologies and innovations by target beneficiaries. Embedding AfricaRice interventions and products in agricultural programs and projects at the national and regional levels, through the TFs and IPs, contributes to the sustainability and improved performance of the NARS.

3. Results Framework for the Rice Sector Development Hubs

A Results Framework for rice hubs, which contribute to the goal of increasing rice self-sufficiency in Africa, is presented in figure 1. This Framework highlights the following four key outcome areas as well as indicators to measure them:

i. Integration of rice systems in partnerships and businesses enhanced;
ii. Adoption of appropriate technologies and innovations on rice increased;
iii. Information knowledge sharing and learning facilitated;
iv. Governance structures and systems of rice hubs and IPs improved.

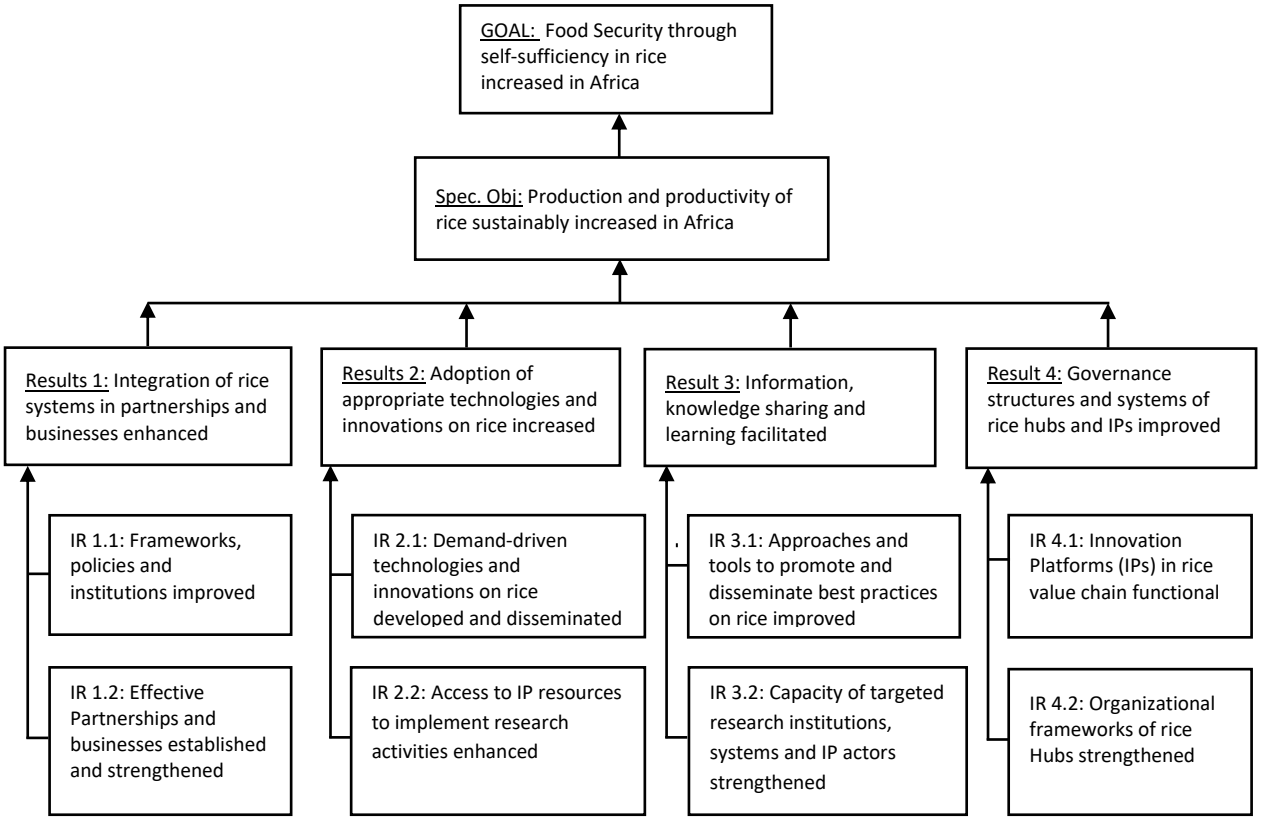

Figure 1: Results Framework for the rice sector development hubs

4. Linkages between the RSD program and the other three programs

IPs in rice hubs serve as a tool for testing and adapting technologies and innovations developed through demand-driven research activities conducted by the TFs, which are in fact related to the technology generation research programs at AfricaRice. This system, therefore, fuels dissemination and adoption processes. Main areas of collaboration and joint activities with the three programs are in (i) technical and institutional innovation and (ii) learning and reflection through the TFs and IPs in the rice hubs. These are integral parts of the framework for competence and skills building of IP actors in the rice value chain (Figure 2).

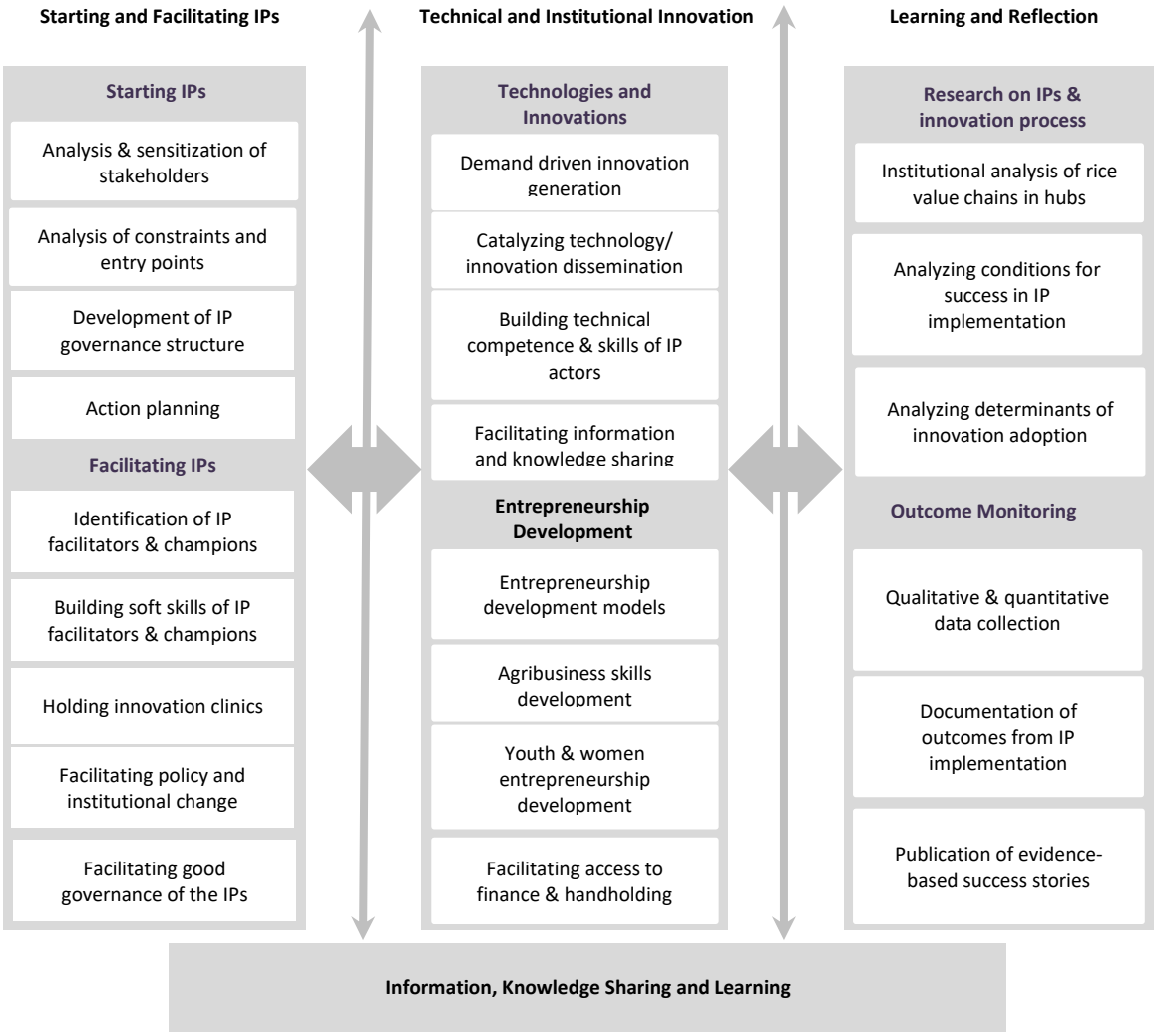

Figure 2: Framework for competence and skills building of IP actors in the rice value chain

The RSD program facilitates demand creation and promotion of technologies and innovations among smallholders and entrepreneurs, including the private sector. This is achieved through information and knowledge sharing as well as learning and networking, among smallholders and entrepreneurs, on one hand, and with development partners including policy makers, on the other hand. The Program also facilitates competence and skills enhancement of the rice value chain actors and capacity building of national programs to innovate in the rice value chain.

4.1. Dissemination of technologies and innovations from the technology generation programs

Widespread adoption of technologies and innovations is catalyzed through the development of systems and institutions for effective delivery. The multi-stakeholder innovation platforms

(IPs) develop and scale institutional innovations requiring collective action, such as processing and adding value to rice, contractual arrangements with lead firms or processors, facilitating access to micro-finance for example, implementing quality marketing standards among IP members, and linking farmers with youth and artisan service providers for specific agricultural interventions including equipment fabrication and service provision.

Within the context of the linkage between the RSD program and the research Programs, the following technologies and innovations have or are in the process of being adapted and disseminated, supported by continental projects such as SARD-SC and the upcoming TAAT:

i. **Genetic Diversity and Improvement Program**: Seeds of improved/climate-smart rice varieties (ARICAs, NERICAs, Hybrids, Submergence tolerant varieties)

ii. **Sustainable Productivity Enhancement Program**: Alternative wetting and drying and Laser land leveling; Mechanical and Motorized weeders; Good Agricultural Practices (GAPs); RiceAdvice; GEM Parboiling Technology; Biomass Gasification and Briquetting/Pelleting technologies

iii. **Policy, Innovation systems and Impact Assessment Program**: Participatory packaging, branding and labelling of high-quality domestic rice; marketing strategies; M&E and learning, and adoption / impact studies.

4.2. Competence and skills enhancement on technologies and innovations

The RSD program links with the technology generation programs, to enhance the competence and skills of the IP actors on deploying technologies and innovations in the rice hubs – to improve productivity and competitiveness of the rice sector in target countries. Capacity building focuses on key activities: (i) technical training of the rice value chain stakeholders, (ii) learning workshops, (iii) on-the-job coaching and mentoring of IP facilitators and champions of change, (iv) peer-to-peer learning visits and field days, (v) entrepreneurship and participation in trade fairs and exhibitions, and (vi) sharing of information and knowledge through digital tools, media, and repositories. The research programs also support the RSD program in identifying profitable enterprises and value chain services for women and youth, and develop their entrepreneurship skills.

4.3. Research to support evidence-based policy making and priority setting

Policy makers and other rice value chain stakeholders need accurate and evidence-based information to guide decision making, which will lead to development of the rice sector.

Countries often, however, lack enough data, tools and expertise to generate the required knowledge base. Institutional and scenario analysis conducted by the RSD program in collaboration with other programs, identify constraints and opportunities for innovation to guide investment decisions. Policy and institutional change is facilitated through involvement of local government officials in IP activities, engagement with policy makers at higher levels, identifying and engaging policy influencers in the IPs, and evidence based policy dialogues to bring about change at local / community and national levels.

There is a wide array of literature on the dynamics of adoption, but knowledge gaps still remain on "what works", in terms of the policy and institutional context that shapes agricultural technology dissemination and uptake. Thus, understanding the "process of scaling technologies and innovations" is a legitimate research activity for the RSD program. Along these lines, the RSD program conducts critical analysis of innovation processes to generate lessons on the pathways by which international agricultural research can be effective in achieving impact. This complements adoption and impact studies as well as value chain analysis conducted by the PII program. The information generated supports the other programs in designing subsequent projects that are more likely to achieve impact.

5. Opportunities and challenges

5.1. Opportunities

- The new breeding approach of the GDI program offers additional new opportunities on market oriented research using best-fit rice varieties suitable for urban and niche markets consumers, especially in the lucrative coastal and inner city markets where quality and properly packaged and branded domestic rice can earn higher income for smallholders and entrepreneurs.
- The creation of a line manager who will "bridge" activities between the GDI and the RSD programs in specific areas, for example using existing seed specialist(s) to maintain mega / elite rice varieties highly preferred by consumers, provides an opportunity to bring the GDI and RSD programs to work hand-in-glove in the dissemination of new products to smallholders and entrepreneurs.
- Development projects are increasingly becoming the largest source of funding for CGIAR centers and they offer additional opportunities for the RSD program to closely work with the GDI, SPE and PII programs.

- In recent years, IPs have been established in the rice hubs of several countries (Benin, Nigeria, Madagascar, Cote d'Ivoire, Niger, Uganda, Ghana, Senegal, and Sierra Leone,) with varying degrees of functionality to drive innovation and institutional change for the benefit of smallholders and entrepreneurs. These IPs offer platforms in the generation of technologies and innovations in the rice hubs, in real time, and contributes information and knowledge on the technology dissemination and adoption process.

5.2. Challenges

- The "reluctance" and/or lack of sufficient 'incentives' for biophysical scientists in the technology generation programs to work on development activities – including dissemination and adoption of technologies at scale – leading to impact. The reward system is generally based on publication in 'high impact journal', which takes a comparatively long time to achieve when working on development issues.
- Weak M&E and learning systems, do not enable timely data and information gathering, analysis and reporting. Where such data and information exist, they are not well organized, visible, and easily accessible. Timely and reliable data and information (M&E and learning (MEL), and impact data for example) is a necessary pre-condition for informed decision-making at all levels of the rice research and development continuum.
- Weak systematic interaction between the TFs and integration of activities across TFs in the rice hubs, especially at country level, hinders the large-scale dissemination of technologies and innovations among smallholders and entrepreneurs.