



Africa Rice Center (AfricaRice)

Rice Sector Development (RSD) Program

Operational Guide

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1. Introduction

The Rice Sector Development (RSD) program promotes the dissemination and adoption of AfricaRice research products and approaches and their improvement through hands-on capacity building of rice value chain actors, information and knowledge sharing and learning, and linkage and networking with stakeholders and development partners. Rice technologies and products are delivered through research for development (R4D) activities of the other Programs: (i) Genetic Diversity and Improvement (GDI); (ii) Sustainable Productivity Enhancement (SPE); and (iii) Policy, Innovation systems and Impact assessment (PII) Programs.

The RSD program supports the packaging of information and knowledge in the form of technologies, innovations and products from the research focus programs into formats and approaches that can be diffused at scale. Multi-stakeholder innovation platforms (IPs) in the rice sector development hubs (rice hubs), video or radio scripts, mobile phone technology etc., are used to disseminate and enhance the uptake of technologies and innovations by smallholders and entrepreneurs, with the active involvement of national research and non-governmental organizations, extension systems, and private sector operators.

2. Program Goal and Objective

The overall goal of the RSD program is to increase the competitiveness of the Africa rice sector in a sustainable manner. To achieve this, the Program facilitates and or catalyse the introduction, adaptation, dissemination and adoption of sustainable gender sensitive rice technologies and innovations for impact. This is achieved through the facilitation of information and knowledge sharing and learning, among the diverse rice value chain stakeholders which includes women and youth.

Projects remain the vehicle for enhancing the productivity and profitability of the rice value chain and this is achieved through: (i) capacity building for stakeholders in the rice value chain; (ii) facilitating the establishment and functioning of multi-stakeholder innovation platforms (IPs) in the rice sector development hubs (rice hubs) of the countries to widely disseminate and where necessary, carry out context-specific adaptation of the technologies and innovations

along the rice value chain; (iii) facilitating access to the input and output markets and where appropriate, engage financial institutions on stakeholder's access to credit; and (iv) intermediation / linkages and networking to leverage partnerships.

3. Linkages between the RSD Program and the research focus Programs at AfricaRice

IPs in rice hubs facilitate the process of testing and adapting technologies and innovations, which have been developed through demand-driven research activities conducted by the research focus programs and the Africa-wide rice Task Forces (TFs). This system fuels the dissemination and adoption processes. Two main areas of collaboration and joint activities between the RSD Program and the research focus Programs are as follows: (i) technical and institutional innovation, and (ii) learning and reflection through the TFs and IPs in the rice hubs.

4. Technologies and innovations

The following technologies and innovations have or are in the process of being adapted and disseminated within the context of the linkage between the RSD Program and the research focus Programs, supported by funding through continental projects such as Support to Agricultural Research for Development of Strategic Crops in Africa (SARD-SC) and Technologies for African Agricultural Transformation (TAAT):

- i. **Genetic Diversity and Improvement Program:** Seeds of improved 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; RiceAdvice; Good Agricultural Practices (GAPs); GEM Parboiling Technology; Biomass Gasification and Briquetting/Pelleting technologies
- iii. **Policy, Innovation systems and Impact Assessment Program:** Contract farming; participatory packaging, branding and labelling; marketing strategies; M&E and adoption studies.

The development of systems and institutions for effective delivery catalyzes widespread adoption of technologies and innovations. IP develops and out-scale technological and institutional innovations that require collective action. Examples of such technological and institutional innovations along the rice value chain include processing and adding value to rice; contractual arrangements with lead firms or processors; facilitating access to credit from micro-finance and banks for example; implementing quality marketing standards among IPs; and linking farmers with youth and artisan service providers for specific agricultural interventions including equipment fabrication.

4.1. Rice Sector Development Hubs

The RSD program plays an active role in the Rice Sector Development Hubs (rice hubs), where rice research products are tested and put into use through partnerships with extension including

the use of indigenous knowledge, development projects, and private sector operators. The rice hubs represent the major rice growing areas in a country – selected by national rice value chain stakeholders and has the biophysical and institutional (e.g. market access) characteristics that can be exploited to transform the rice value chain into a viable enterprise. The rice hubs are linked to major national or regional rice development efforts to facilitate a broader uptake of rice knowledge including technologies and innovations for accelerated achievement of development outcomes and impact. So far, more than 70 rice hubs have been set up across Africa (Figure 1), greatly surpassing the target of establishing at least 30 rice hubs by 2020. It clearly shows that national partners have embraced the new approach with great enthusiasm.

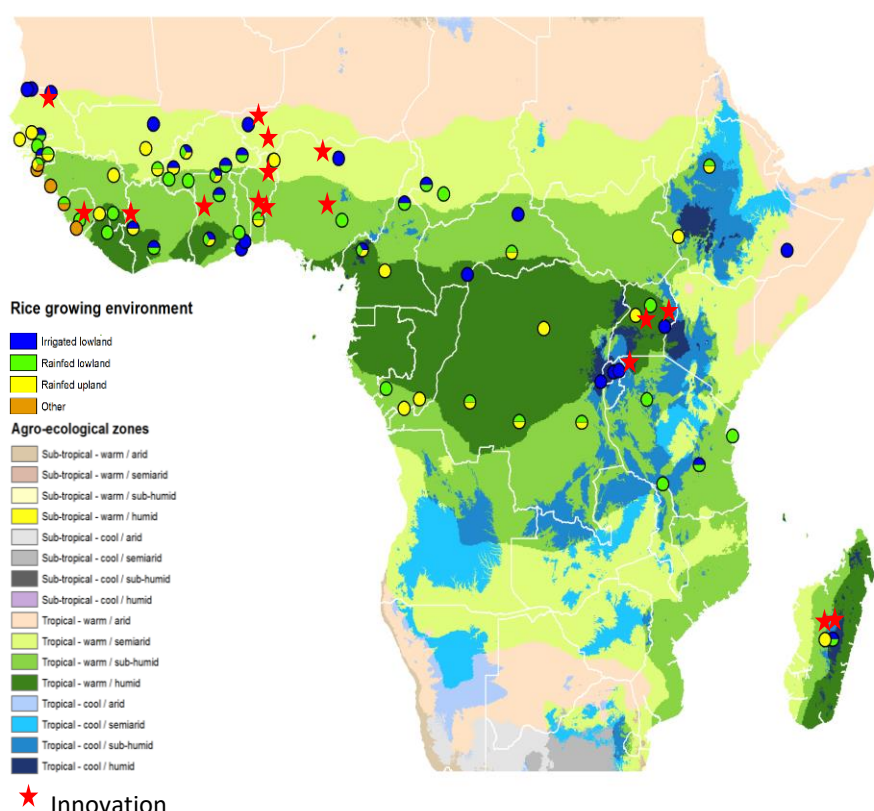


Figure 1. *Rice Sector Development Hubs: Agro-ecology and Scaling-out*

4.2. Africa-wide rice Task Forces (TFs)

The national programs are directly involved in interdisciplinary research for development activities through the Africa-wide rice Task Forces (TFs), which currently address the following disciplines: (i) rice breeding, (ii) agronomy, (iii) mechanization, (iv) processing and value addition, (v) policy, and (vi) gender. These TFs consist of scientists from AfricaRice and National Agricultural Research Systems (NARS) conducting research for development activities at country level. These are supported with funds mobilized through projects developed by AfricaRice. The RSD program, in co-action with the research focus Programs, ensures when necessary, context-specific utilization of ensuing research products.

The TFs provide a strong framework for on the ground generation and adaptation of technologies and innovations with member countries. TFs are embedded in the national rice or cereal programs of the national agricultural research institutes (NARIs) or ministries of agriculture of the countries and are considered as a critical Africa-wide network by the AfricaRice Council of Ministers (CoM) and the National Experts Committee (NEC). The National Experts Committee is composed of the Directors General of the national agricultural research institutes of AfricaRice member states.

4.2.1. Results Framework for the Rice Sector Development Hubs

The Results Framework for the rice hubs contributes to the goal of increasing rice self-sufficiency in Africa (Figure 2). 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.

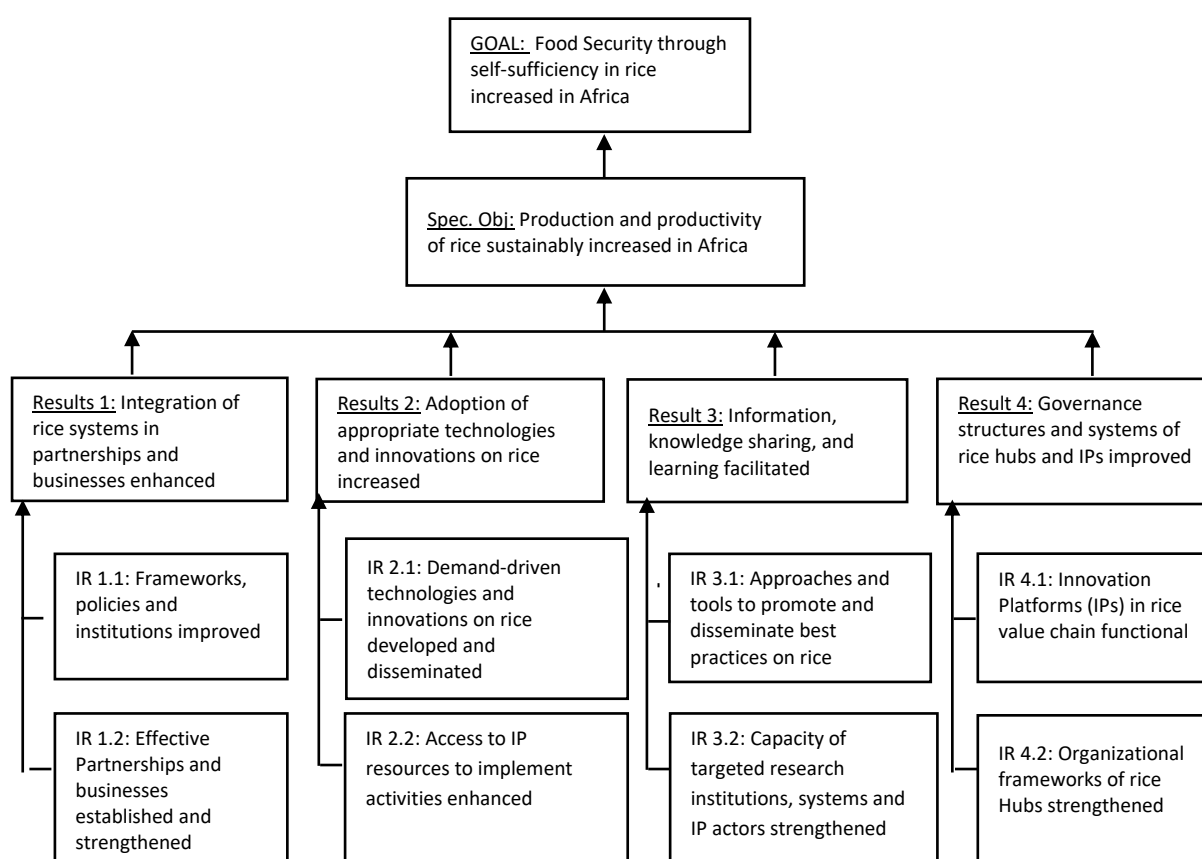


Figure 2: Results Framework for the rice sector development hubs

5. Innovation Systems - Rice Technology Delivery Infrastructure

The *rice technology delivery infrastructure (riceTDI)* is used to disseminate technologies, innovations and products in core rice hubs with spill-over to satellite hubs at country level (Figure 3). The *riceTDI* comprise: (i) rice sector development hubs of the countries – commonly called rice hubs; (ii) the multi-disciplinary Africa-wide rice task forces (TFs) on; rice breeding (including breeder seed production), agronomy, mechanization, processing and value addition, policy, and gender in rice sector development and these are embedded in the national programs; and (iii) multi-stakeholder innovation platforms (IPs) consisting of diverse social and economic operators in the rice hubs. Together, these aim to generate and disseminate technologies, facilitate access to markets, and influence policy change for the benefit of value chain actors in the rice hubs.

The *rice technology delivery infrastructure (riceTDI)* is a technology scaling model, framed around the TAAT Regional Technology Delivery Infrastructure (RTDI). It builds on the existing AfricaRice and NARS partnership frameworks and tools – that simultaneously generate and deploy rice base technologies, innovations and products, and ensure their wide availability and use, across agro-ecologies and regions in sub-Saharan Africa. In addition to its comparative advantage of technology generation and adaptation, the TFs provides technical skills development of the rice value chain stakeholders including technology demonstrations and or piloting in the rice hubs. The *riceTDI* comprise: (i) rice sector development hubs of the countries – commonly called rice hubs; (ii) the multi-disciplinary Africa-wide rice task forces (TFs) on rice breeding (including breeder seed production), agronomy, mechanization, processing and value addition, policy and gender respectively in rice sector development; and (iii) multi-stakeholder innovation platforms (IPs) consisting of diverse social and economic operators in the rice value chain. All these are embedded in the national programs of the countries in West, Central, East and Southern Africa respectively. The *riceTDI* comprise farmers, women rice parboilers, youths, SME rice millers, seed enterprises, equipment fabricators, equipment service providers, micro-finance, extension, NARIs, policy makers, etc. The IPs in the rice hubs are used to facilitate the self-organization of diverse social and economic operators – rice value chain stakeholders in the rice hubs of the countries – through learning and knowledge and experience sharing on the use of technologies and innovations. The IPs also tackle good governance of the rice value chain and business skills development of the actors, to improve livelihoods at individual and household level.

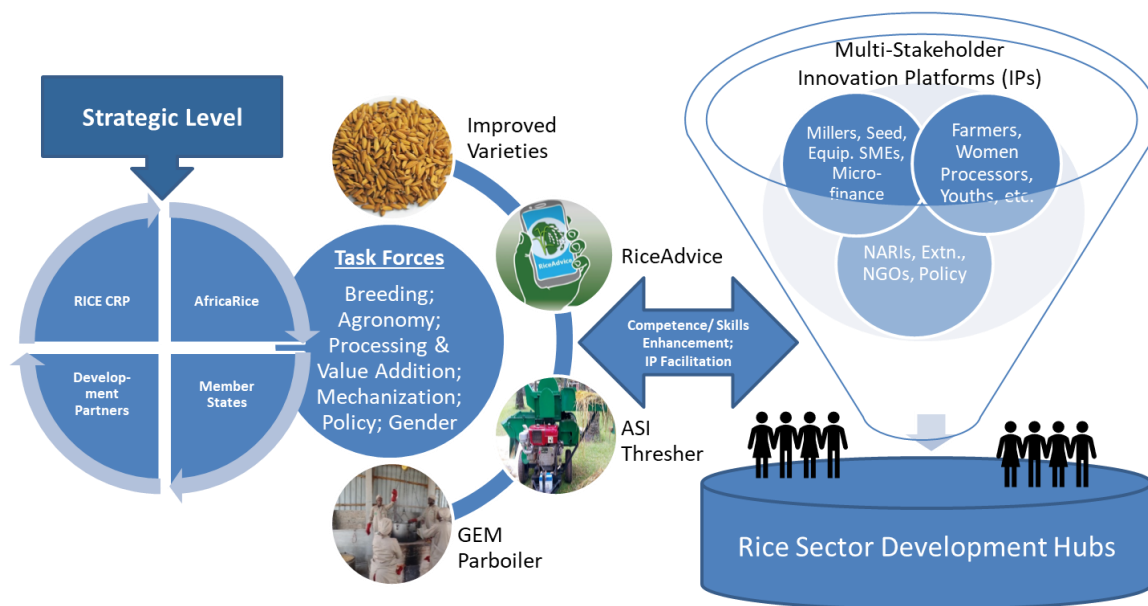


Figure 3. Rice Technology Delivery Infrastructure (riceTDI)

5.1. Innovation platforms (IPs) 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. Research products, delivered through activities of the TFs and from other sources, are utilized in the process. This results in economic gains, prosperity, and livelihood improvements.

IPs are established and facilitated in rice hubs by IP coordination and facilitation teams, and in some cases IP committees, through the active involvement of, and ownership by, the rice value chain stakeholders. The value addition of establishing IPs within rice hubs is the consideration of the ethno-cultural values of stakeholders in scaling-out technologies and innovations, to enhance the productivity and competitiveness of the rice value chain. From a strategic point of view this approach contributes to the CGIAR system level outcomes (SLOs) of reducing poverty, improving food and nutrition security, and natural resources and enhanced ecosystem services.

Key actors of the IPs include farmers, small-to-medium scale rice millers, women rice processors and youths, paddy aggregators, traders, seed enterprises and input dealers, equipment fabricators, transporters, financial institutions (micro-finance and banks), extension and NGOs, research organizations, policy makers, etc. (Figure 4). In general, farmers and women processors tend to have the largest representation in an IP compared to the other stakeholder groups.

Within IPs, the use of technologies and innovations supported by institutional enablers, leads to enhanced system-wide performance. These enablers include values and norms of the stakeholders, and 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.

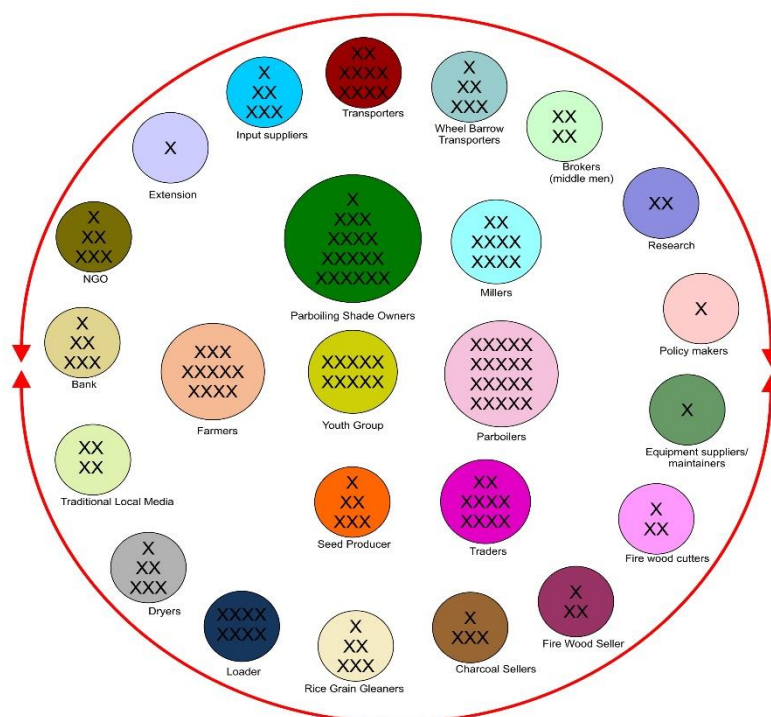


Figure 4. Facilitated interaction and learning: Key actors in the Lafia Rice Innovation Platform (IP) in Nasarawa state, Nigeria

Partnerships are established in the IPs with strategic players, including local government, policy makers, and scaling partners. These are facilitated by projects and other initiatives in the rice hubs thus stimulating wider dissemination and adoption of innovations by target beneficiaries. TFs and IP activities embed AfricaRice interventions and products in agricultural programs and projects at the national and regional levels, and thus contributes to the sustainability and improved performance of NARS. The key role of the national research institutes is to support on-the-ground technology and product deployment and enhancing the skills of the IP actors in rice production, value addition and market access among other interventions.

5.2. Competence and skills enhancement on technologies and innovations

The RSD Program facilitates demand creation and promotion of technologies and innovations among smallholders and entrepreneurs, including the private sector. This is realized through information and knowledge sharing, and networking and learning 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 rice value chain actors and capacity building to innovate in the rice value chain, with the active involvement of the national programs (Figure 5).

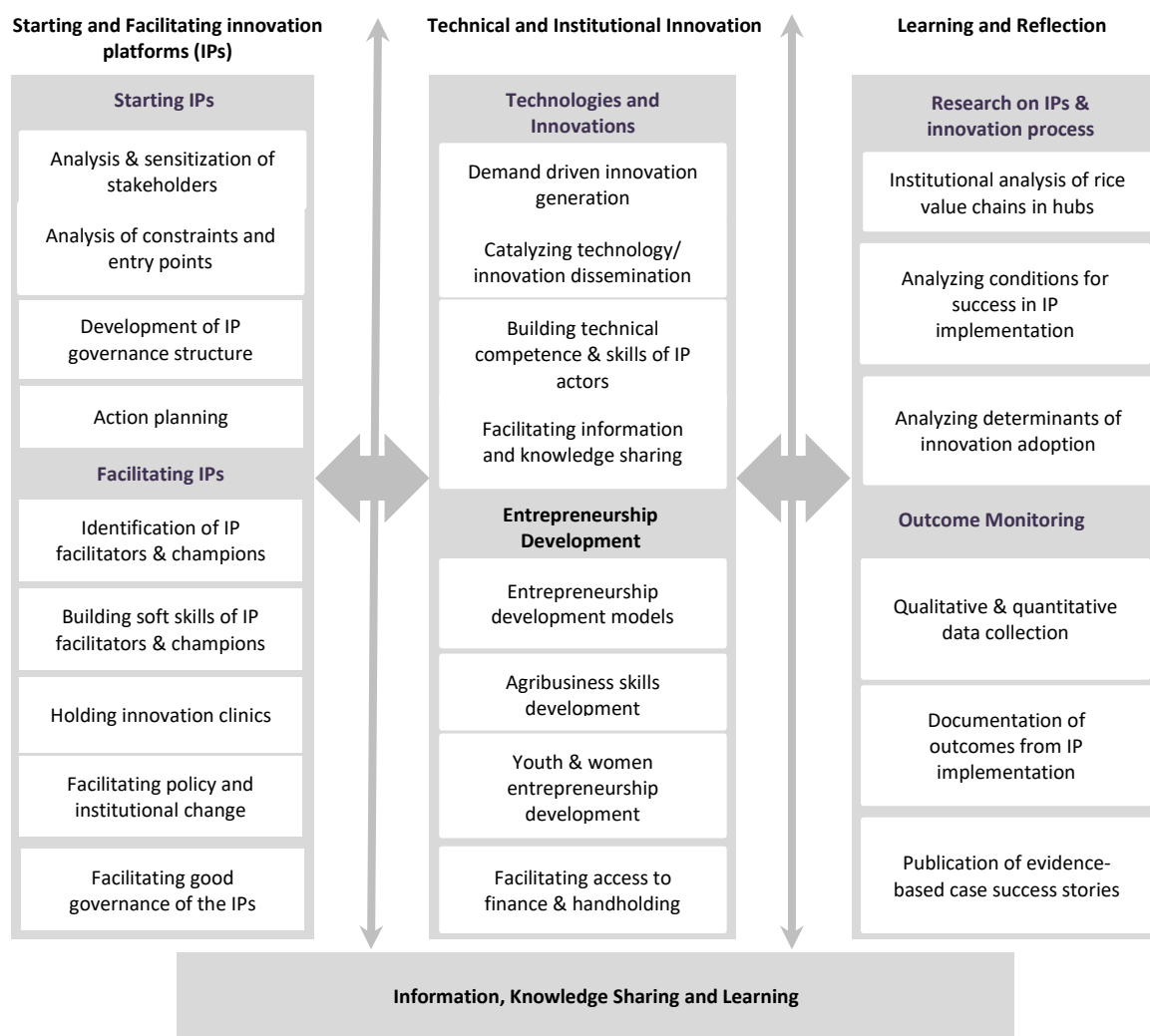


Figure 5: Framework for capacity building of the IP actors in the rice value chain

Competence and skills enhancement of IP actors on technologies and innovations is a major area of linkage between the RSD Program and the research focus Programs at AfricaRice. It contributes significantly to the improvement of productivity and competitiveness of the rice sector in target countries. Focus is on the following key activities: (i) technical and entrepreneurial skills enhancement of rice value chain actors, (ii) learning workshops, (ii) sharing of information and knowledge through demos., and online tools / repositories eg. videos, blogs, radio, wiki, and print media, (iv) on-the-job coaching and mentoring of IP facilitators and champions of change, (v) organization of peer-to-peer learning visits and field days, (vi) facilitation of IP actors to participate in innovation / trade fairs and exhibitions,

Scientists from the research Programs offer technical expertise through group training. Some examples include the following: (i) Seed producers and regulatory agencies on quality seed production practices; (ii) IP actors on Good Agricultural Practices (GAPs), weeders, RiceAdvice, ASI thresher, GEM rice parboiling technology; and (iii) IP actors on business plan development, book keeping, branding packaging and marketing strategies. These Programs also support the RSD program in identifying profitable enterprises and value chain services for women and youth, and help develop their entrepreneurship skills and where required, consultants are used.

5.3. 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 that will lead to the development of the rice sector. Countries often, however, lack sufficient data, tools and expertise to generate the required knowledge base. Institutional and scenario analysis conducted by the RSD program in collaboration with the research Programs, identify constraints and opportunities for innovation, which will guide investment decisions. Policy and institutional change at local / community and national levels, is facilitated through involvement of local government officials in IP activities, engagement with strategic policy-makers, identifying and engaging policy influencers in the IPs, and facilitating evidence based policy dialogues.

A wide array of literature on the dynamics of adoption exists but knowledge gaps still remain on “what works” as regards the policy and institutional context that shapes agricultural technology dissemination and uptake. Thus, understanding the “process of scaling technologies and innovations” is a legitimate R4D 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 designing of projects that are more likely to achieve impact.

6. The Rice Seed Service Unit (RSSU)

6.1. Context

Improved rice varieties with higher yield, biotic and abiotic stress tolerance/resistance, and market preferred traits, have significantly contributed to the well-being of smallholder farmers and rice consumers in general. The benefits from using improved varieties including hybrids, depends among others – on the availability and access to quality seed, and at an affordable price.

In response to demand for improved rice varieties and recently, hybrids, AfricaRice has bred over 200 rice varieties and hybrids with tolerance to several biotic and abiotic stresses over the last 30 years. Many of these varieties and one hybrid, have been released in countries across sub-Saharan Africa through the Africa-wide Rice Breeding Task Force. Despite this, most farmers – especially smallholder farmers – are still unable to access most of these varieties.

The weak systematic approach to rice seed systems development as defined in the new breeding strategy and operational plan of the Genetic Diversity and Improvement (GDI) Program, has in part, contributed to the slow delivery of these improved varieties to rice farmers in Africa. In addition, there is limited involvement of the private seed sector to sustain and advance rice seed production. Private sector seed enterprises and millers have proven to be a sustainable and effective means for variety dissemination and farmer access to quality seed.

AfricaRice has embarked on partnership with private seed enterprises and millers which, in general, is geared towards strengthening the rice seed value chain. The initiation of this partnership is based on the need to respond to the repeated request – by rice value chain stakeholders in AfricaRice member countries – for quality rice seeds of improved varieties. This suggested the need to produce larger quantities of breeder and foundation seed each year. Although there is a potential market for quality rice seed at country level, clear projections on requirements over time and space are lacking. Also, present efforts at promoting the advantages of using quality seed of improved varieties are inadequate, due to the weak extension service delivery at country level.

In general, lack of regular planning and budget allocation for seed production and related issues, affect the supply of quality seeds. Inadequacy in infrastructure such as storage, seed cleaning and processing facilities affect quality of seed produced. The situational context of variety maintenance and breeder seed production still need to be improved at AfricaRice. Many improved varieties have been bred, but variety maintenance and regular supply of required quantities of quality breeder seed has been ineffective. This has eventually resulted in inadequate supply of quality rice seed – especially the widely cultivated varieties, and ‘new’ ones.

In view of the critical importance of quality seed in disseminating improved and adapted rice varieties, there is need to rectify the existing situation. It has therefore become imperative to establish a ‘rice seed service unit’ within the Rice Sector Development (RSD) Program that will handle the routine production of adequate quantities of breeder seed and where necessary, foundation seed; variety maintenance; facilitation of partnerships in the seed sector – especially with seed enterprises and millers; supporting advocacy for appropriate policies in partnership with sub-regional organizations; capacity building for stakeholders; and information and knowledge sharing, and overall coordination of the seed delivery system.

6.2. Implementation and structure

The rice seed strategy envisages the creation of a Seed Service Unit (RSSU) within the RSD Program that will strongly collaborate with the GDI program and its facilitated Africa-wide Breeding Task Force. The AfricaRice operational plan for rice varietal development and delivery outlines the connection between breeding activities carried out by the GDI program and seed delivery efforts by the RSD program (Figure 6). At the end of the breeding task force evaluation, the best lines are selected and nominated for release. Breeders deliver nucleus seed, showing 100% genetic purity along with descriptions of major morphological characters for purity check in the field, to a Line Maintenance and Multiplication (LMM) manager. Seed experts in the RSD program receive pure breeder seed from the LMM manager and coordinate production of foundation and certified seeds by scaling partners (public and private) based on market demand.

The breeding strategy anticipated that financial resources for seed production will be pooled together from all the relevant projects and coordinated action plans for seed production will be developed annually. However, this is yet to be happen due to the weak planning and

coordination of activities between projects with elements of seed production – partly because no clear seed unit exists – and to which – such matters can be explicitly referred to.

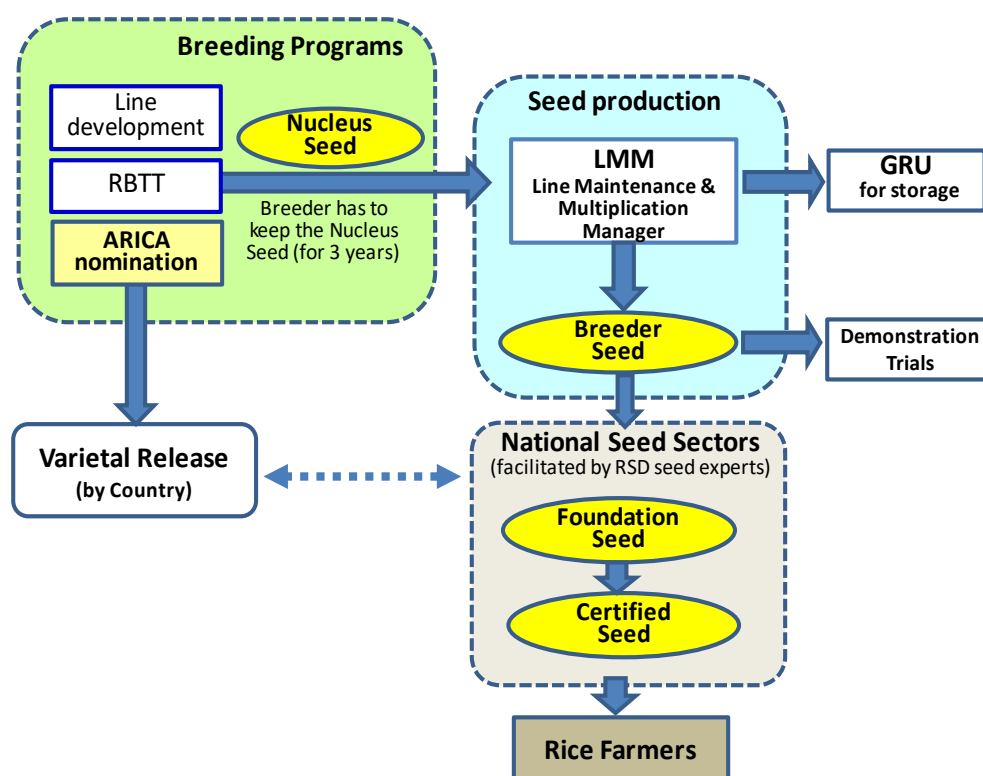


Figure 6: Linking GDI and RSD programs to stimulate diffusion of improved varieties.

Source: Rice varietal development and delivery at AfricaRice – A new operational plan

In the medium to the long term, the Seed Service Unit will be nurtured – handholding – to a full-fledged independent seed service – capable of mobilizing funds and resources to sustain itself without the need to consistently draw on the center’s ‘restricted and or unrestricted funds’. A multidisciplinary and sector implementation approach through partnerships with public and private sector entities will be pursued. The unit will be responsible for the production and provision of breeder and foundation seeds and where necessary and in partnership with seed enterprise and companies, and the national seed services, support the production of certify seeds by seed businesses.

6.3. Functions of the RSSU

The core functions of RSSU will be: (i) Rice seed production; (ii) Capacity building and information and knowledge sharing; and (iii) Consultancy service.

6.3.1. Rice seed production

Through this activity, farmer access to quality rice seed will be facilitated. Advice on adequate investments by the public and private sectors in seed production and processing equipment will be provided.

These will be achieved through the following activities:

- Maintain breeder seeds of lines / improved rice varieties developed by the breeders in the Genetic Diversity Program (GDI) and the Africa-wide rice breeding Task Force
- Produce and maintain foundation seed of elite rice varieties and or widely cultivated improved varieties that have high commercial value
- In collaboration with national seed programs and seed enterprises, facilitate seed distribution/commercialization of improved rice varieties
- Enhance capacity of seed enterprises and farmer seed entrepreneurs to produce and deliver certified rice seed and or quality declared seed
- Innovatively stimulate demand and demonstration of new product lines with seed enterprises in farmers' fields
- Promote / disseminate fewer (2-3 elite rice varieties) and zoning of producer groups to produce commercially viable variety(ies) over large areas to access lucrative national and regional markets
- Ensure compliance with seed exchange regulations and international standards on germplasm exchange for traceability of the seed
- Proactively and innovatively, carry out 'seed replacement campaigns' following the introduction of quality seed of new or existing mega varieties in farmer fields to maintain varietal purity and enhance the quality of paddy for the mills
- Monitoring of quantities of seed distributed by AfricaRice to scaling partners and collate data on amount of foundation and certified seeds produced by partners at the national and regional level on an annual basis
- Enhance coordination among AfricaRice seed specialists for the efficient dissemination and tracking (ha covered, beneficiaries) of the seeds of the varieties made available, and collaborate with sub-regional and regional organizations on seed policy and regulatory frameworks and strategies

6.3.2. Capacity building and information and knowledge sharing

Through this activity, seed sector players will increase their knowledge, competence and skills on improved seed production practices to maintain quality of seed. Thematic courses and vocational training on quality rice seed production and marketing will be organized based on curricula developed by the AfricaRice regional training center in St. Louis, Senegal. The capacity building and information and knowledge sharing activities will include:

- Demonstration of new / elite rice varieties in partnerships with seed enterprises for widespread dissemination and adoption by smallholders and commercial farms
- Use appropriate media to sensitize farmers, input dealers and other seed sector players on the benefits of seed renewal, using certified seed
- Train and support farmers, seed entrepreneurs and national seed programs to produce and maintain quality rice seeds of improved varieties to reach national and regional markets
- Train national seed programs, regulatory agencies and seed enterprises in seed quality assurance / control

6.3.3. Consultancy service

Through this activity, a sustainable seed system will be established in target countries through institutional skills strengthening in the rice seed sector. This will be achieved through the following activities:

- Proactively and innovatively support seed entrepreneurs in market intelligence on quality rice seed acquisition by governments, NGOs, commercial farms, and other rice value chain stakeholders
- In partnership with seed entrepreneurs and where appropriate – larger scale commercial seed companies, innovatively promote the commercialization of new / elite and or popular rice varieties
- Develop sustainable business model(s) for the promotion of seed of improved rice varieties as well as popular traditional varieties
- Facilitate appropriate strategy on intellectual property rights (IPR) for hybrid rice deployment and other elite varieties bred by AfricaRice
- Contribute to the development and or enhancement of regional seed legislation frameworks and strategies through sub-regional organizations and platforms
- Facilitate the development of a Market Information System to trace, and widely promote quality rice seed within and across countries in collaboration with seed enterprises and farmer seed producers – and where appropriate – large scale commercial companies
- Provide technical support to national seed programs in developing seed roadmaps for each of the target countries showing how foundation and certified seed production and dissemination will be organized and financed by partners

7. Opportunities and challenges of the RSD Program

7.1. 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 market consumers. This is especially true 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.
- Country development projects are increasingly becoming the largest source of funding for CGIAR centers and offer additional opportunities for the RSD Program to closely work with the GDI, SPE and PII programs.
- Innovation platforms (IPs) have been established in the rice hubs of several countries including Benin, Côte d’Ivoire, Nigeria, Madagascar, Uganda, Ghana, Sierra Leone, Senegal, and Niger, with varying degrees of functionality to drive innovation and institutional change for the benefit of smallholders and entrepreneurs. These IPs offer platforms to the other Programs in the generation of technologies and innovations in the rice hubs, in real time, and with real rice value chain stakeholders. This will contribute to information and knowledge on technology dissemination and adoption process.

7.2. Challenges

- The “reluctance” and/or lack of sufficient ‘incentives’ for biophysical scientists in the technology generation programs to work on scaling – dissemination and adoption of technologies and innovations 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 (MEL), do not enable real time 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 quality data and information is a necessary pre-condition for informed decision-making at all levels of rice research and development.
- 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.

8. Scaling domains, resource mobilization, staffing and reporting

The RSD program comprises three main themes; (i) Rice Seed Service Unit, (ii) Innovation Systems approach to understand pathways for change and impact, and (iii) Scaling of technologies and innovations using multi-stakeholder innovation platforms (IPs) in the rice value chain – through linkages, networking and learning, entrepreneurship and governance – in collaboration with the research programs and the Africa-wide rice Task Forces as shown in Figure 7.

Scaling of technologies and innovations, and quality data and information generation, analysis and reporting are guided by scaling domains:

- Access to quality rice seed of improved / climate-smart rice varieties and hybrids in partnership with seed enterprises
- Mechanization to improve productivity and reduce post-harvest loss in partnership with equipment manufacturers and suppliers
- Dissemination of technology tool kits to increase yields of improved / climate-smart rice varieties and hybrids
- Adding value to rice to improve quality and increase the market share of domestic rice in urban markets
- Innovation and governance of the rice value chain to enhance equity among stakeholders
- Skills enhancement of the rice value chain stakeholders
- Outcome case success stories to demonstrate livelihood improvements

While data and information are reported based on the guideline of the funding agency, presentations on the other hand, is guided by scaling domains that the Program is involved and not by projects. Program level presentations focuses on technologies across countries/regions.

Resource mobilization to scale technologies in the rice hubs of the countries has been a team effort through project proposals. This is achieved in collaboration with the AfricaRice research focus and country development programs and projects. The bulk of such funding is provided by the multi-lateral development banks. Country programs and projects generally tend to support specific activities – such as quality rice seed production – especially breeder seed, and to a limited extent, foundation seed of improved and climate-smart rice varieties. RSD Program does not engage in certified seed production but provides technical support to partners eg. seed enterprise where required.

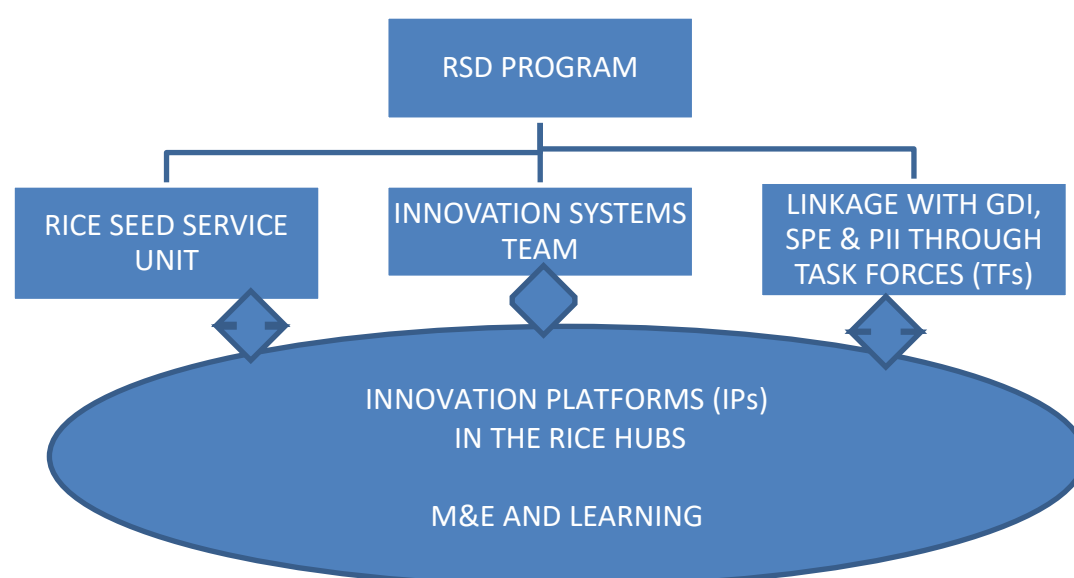


Figure 7. *Organogram: Rice Sector Development (RSD) Program*

Specialists in development-oriented disciplines are based at AfricaRice stations, together with research assistants/technicians. These include experts in seed production, innovation systems, business development, etc. At country level however, technology scaling officers (extension / technology transfer officers/specialists) work hand-in-glove with the private sector, national partners, and other development agencies to create demand for the technologies and promote these in the rice hubs. At the local level, the RSD program work with community-based facilitators and champions of change in the IPs, and the rice value chain stakeholders including youth and policy (Figure 8) to disseminate technologies and products in the rice hubs.

RSD Program: Competence and skills to scale technologies and products in the countries

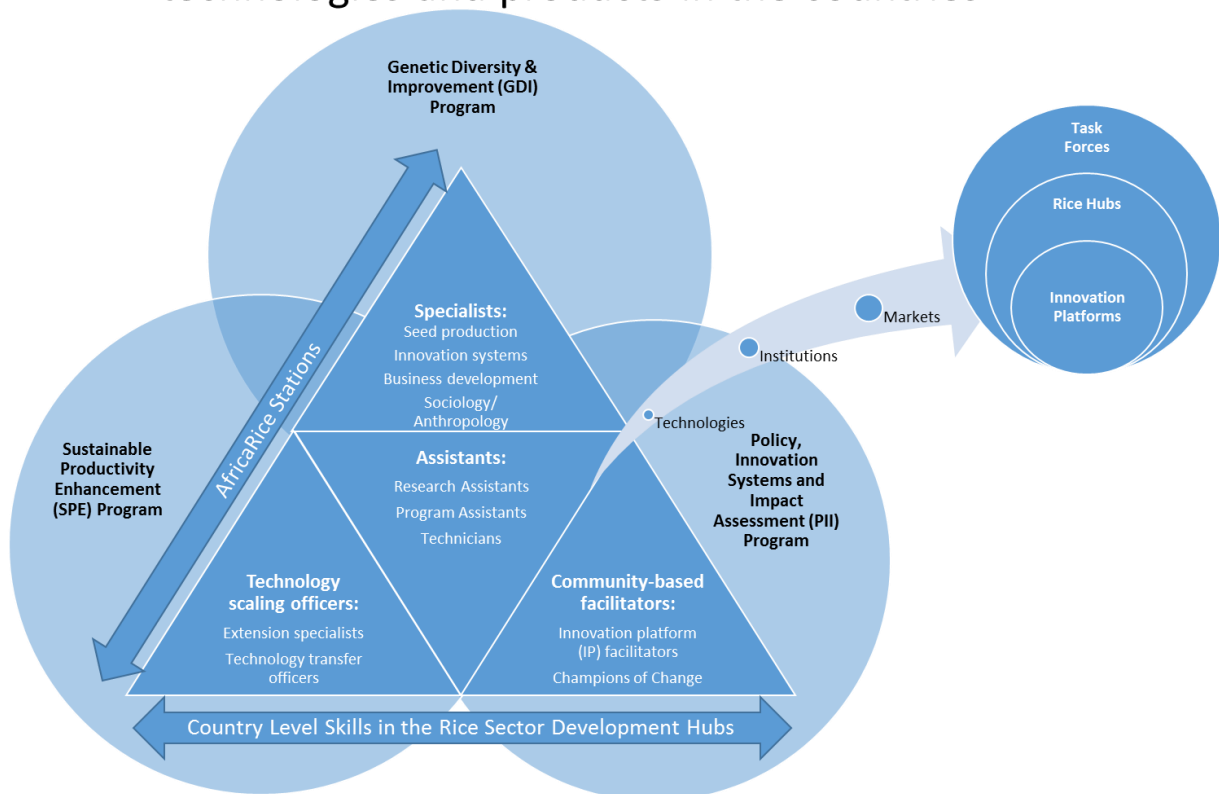


Figure 8. *Competence and skills requirements to scale technologies and products in the countries*