

# 2030 Rice Research and Innovation Strategy for Africa

---

## Transformation of Rice-Based Agri-Food Systems for Food and Nutrition Security in Africa



*AfricaRice-led Strategy*

*In compliance with One CGIAR 2030 Research and Innovation Strategy*



# Why a new rice strategy for Africa

Growing importance of rice and urgency to develop competitive rice value chains

Orientations from the 2011–2020 strategy for boosting Africa's rice sector

Addressing pervasive and emerging challenges in rice-based agri-food systems

One CGIAR creates an opportunity and confers a new role on AfricaRice

# Deliverables of the New Strategy

---

Guide action towards transforming rice-based agri-food systems to improve nutrition, health and food security, and economic growth

Build capacities to adapt to and mitigate climate change and maintain environmental health

Capitalize on AfricaRice's expertise and partnerships to promote innovative rice breeding programs, crop management practices and seed systems

Facilitate strong public-private partnerships (PPPs) towards effective business models and thriving markets

- AfricaRice has the credibility and capability to strengthen and broker relationships among a broad range of stakeholders to deliver desired impacts.
- As part of One CGIAR, AfricaRice will be able to attract additional financial and technical resources, which will assist member countries to achieve their goals.
- Key stakeholders will include regional economic commissions and their technical arms, government ministries, private sector entrepreneurs, civil society, extension services and farmer cooperatives.

# Vision and Mission

---

Vision

Sustainably improve food and nutrition security for a healthy and prosperous Africa.

Mission

Deliver rice-based innovations and transformed rice-based agri-food systems that contribute to the transformation of food, land and water systems in the face of climate change, through leveraging science, partnerships and investments for a healthy and prosperous Africa.

# Value Proposition

A single, fully integrated and coordinated Rice Research and Innovation Strategy for Africa

Leverage science, partnerships and investments to deliver rice-based innovations and transformed rice-based agri-food systems in Africa

Specific value offered - Transformed rice-based agri-food systems in Africa, which will ensure:

Sustainable increase in local production of high-quality rice

Generation of incomes especially for women and youth

Increased resilience of rice-based agri-food systems

Improved nutritional status of malnourished people

# Specific Objectives

---

- Significantly enhance average rice yields in Africa, sustain 3% growth in rice production
- Double rice-producing farmers' incomes by 2030 by increasing rice yields and strengthening inclusive rice-based agri-food markets
- Narrow supply-demand gap and reduce reliance on rice imports
- Safeguard rice biodiversity in partnership with NARS
- Improve nutrition by promoting biofortified rice varieties, and diversified rice-based diets
- Modernize breeding practices as part of a global rice-breeding alliance, which integrates NARES
- Improve access to climate-smart rice varieties to diversify food production systems

- Build required operational and institutional mechanisms for strong seed systems
- Scale up inclusive climate-smart agricultural practices and technologies to improve farmers' resilience
- Facilitate resource mobilization to increase investment in irrigated systems and postharvest mechanization
- Mitigate greenhouse gas emissions from irrigated rice by expanding climate-smart crop management practices to 75% of rice area by 2030 leading to increased water and resource use efficiency by at least 10%
- Strengthen capacity of youth and women to participate in rice-based economies (50% increase in training volume by 2030).

# Theory of Change and Intervention Domains

**7 intervention domains to address urgent challenges :**

- climate change
- reliance on imported rice
- poor diets
- low productivity
- large post-harvest losses
- inadequate capacity of stakeholders
- low technology adoption

1. Develop an integrated rice breeding platform

2. Facilitate Public-private partnerships to build resilient seed systems

3. Diversify and modernize rice-based agri-food systems

4. Pursue inclusive landscape management (incl. management of plant health threats)

5. Professionalize rice-based agri-food systems by building on digital tools

6. Build capacity in entrepreneurship for youth and women

7. Develop best-fit investment plans, policy measures, and technical and institutional innovations

# Expected Major Outputs

---

Leadership in conservation, advocacy and use of indigenous rice in Africa

Increased genetic gain due to rapid turnover of new rice varieties in farmer's fields

Increased rice supply, based on improved seed delivery channels enabled by private sector

Adoption of climate-smart practices and digital tools & advisory services incl. pest & disease management

Establishment of rice-based systems and nutrition-sensitive food value chains

Policy options and institutional innovations to encourage private sector investment and scale up rice-based investments and evaluation to landscape level

Empowerment and improved knowledge among youth and women, promoting their engagement in rice-based agri-food farming and entrepreneurship

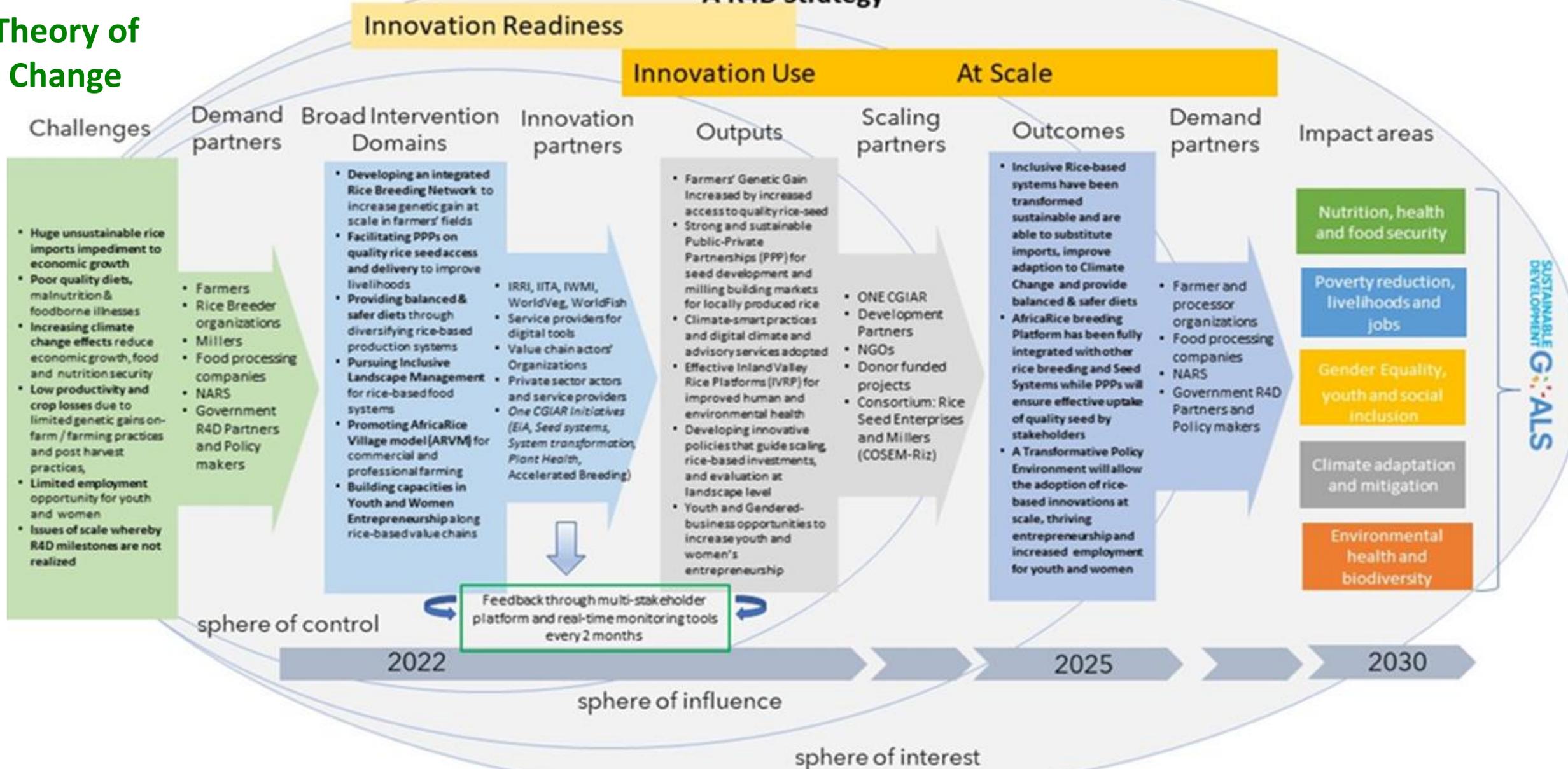
**Contributions to SDGs  
and 5 One CGIAR**

**Impact Areas:**

- 1. Nutrition, health & food security**
- 2. Poverty reduction, livelihoods & jobs**
- 3. Gender, equality, youth & inclusion**
- 4. Climate adaptation & mitigation**
- 5. Environmental health & biodiversity**

# Overview of the Theory of Change

## Transformation Rice Based Agri-Food Systems for Food Security and Health in Africa A R4D Strategy



# Outcomes

---

**Integrated rice breeding and seed systems platform** for more productive, nutritious and resilient varieties. Capitalizing on Rice Biodiversity Center for Africa (RBCA) and strengthening Consortium of Rice Seed Producers and Millers (COSEM-Riz) to ensure uptake of quality seed

**Resilient and inclusive rice-based systems and nutrition-sensitive food value chains** for sustainable diets, livelihoods and environment. Focusing on lowland rice ecosystems, effective soil & water management and integrated rice-based systems.

**Transformative policy environment** to promote supporting policies, based on foresight, ex-ante analysis for scaling up rice innovations and impacts. Focusing on capacity development of youth, women, market analysis, investment plans to finance rice sector across Africa

# Cross-cutting issues and synergistic effects

---

**Gender equality and social inclusion:** The new AfricaRice strategy is based on a gender equality approach and aims to increase the engagement of youth in agriculture.

- **Building capacities:** Respond to partners' needs. Focus on technical training for NARES. Increase engagement of stakeholders in rice value chain (RVC) by providing knowledge and tools to women and youth. Further capitalize on AfricaRice Training Center to professionalize of actors along the RVC.
- **Public–private partnerships (PPP):** Strengthen Center's successful partnership research and delivery models (Task Forces, Innovation Platforms and Rice Hubs). PPPs will be used to catalyze production and delivery of quality rice seed and improve access to high-value markets for parboiled and non-parboiled milled rice.
- **Information communication and knowledge management:** Improve access of stakeholders to and use of data, information, and digital innovations, and increase decision-making capacities of smallholder farmers. Improve communication to all stakeholders, incl. policy-makers. Build on AfricaRice digital tools and e-learning modules

# Multiple benefits across One CGIAR impact areas

---

There will be several key pathways from science and innovation, resulting in multiple benefits across the 5 One CGIAR Impact Areas.

Impact Area	System transformation	Resilient agri-food systems	Genetic innovation
<b>Nutrition, health and food security</b>	<p>Policy reforms to ensure rice-based agri-food systems and products are competitive with imported products.</p> <p>Information technology measures and advocacy to inform population on food safety and nutrition.</p>	<p>Diversification of rice-based systems with nutritious products such as fish, beans and vegetables will improve the nutritional status of local people.</p> <p>Sustainable intensification and promotion of rice-based food in valleys (smart valleys).</p>	<p>High-yielding varieties with key nutrients (iron, zinc and proteins).</p> <p>Aromatic, low-to-medium amylose content and soft-cooking rice with market competitiveness.</p> <p>Taking to scale the technology of parboiled rice providing increased opportunities to improve health.</p>

Impact Area	System transformation	Resilient agri-food systems	Genetic innovation
<p><b>Poverty reduction, livelihoods and jobs</b></p>	<ul style="list-style-type: none"> <li>Promoting integrated business models and hubs to improve business-to-business practices among the rice-based value chain actors and to increase employment along the value chain.</li> <li>Demand value chain and market development (market actors) to inform AfricaRice and its partners on the relevance of its breeding and seed systems work.</li> </ul>	<ul style="list-style-type: none"> <li>Increased profitability through agronomic interventions and farm diversification.</li> <li>Dissemination of small-scale harvesting and threshing technologies, and mechanization.</li> <li>Climate-proof rice-based management practices for increasing labor productivity.</li> <li>The utilization of information technology tools such as RiceAdvice that will enhance job opportunities in the agriculture sector.</li> </ul>	<ul style="list-style-type: none"> <li>Promotion of breeding for high yielding, climate-smart varieties and hybrids.</li> <li>Protocols for decentralized seed system to enhance access to genetic innovation.</li> <li>Improved access to improved varieties and production activities to support breeder and foundation seed supply to seed enterprises for production and delivery of certified seed to farmers.</li> <li>Rice varieties with at least 5% yield advantage over present varieties leading to increased productivity and income generation.</li> </ul>

Impact Area	System transformation	Resilient agri-food systems	Genetic innovation
<b>Gender, equality, youth and inclusion</b>	<ul style="list-style-type: none"> <li>Design and promotion of evidence-based policies that are gender responsive and youth targeted, developing youth entrepreneurship and facilitating access to land, finance and markets</li> <li>Digital innovations to promote access to business hubs along the value chain and commodity markets by women and youth, and innovations in finance to improve competitiveness.</li> </ul>	<ul style="list-style-type: none"> <li>Dissemination of women-friendly post-harvest processes (e.g. parboiling systems, cleaning and grading, bakery recipes, etc.).</li> <li>New agronomic interventions (including mechanization options and digital solutions) designed to enhance job opportunities, particularly for women and youth.</li> </ul>	<ul style="list-style-type: none"> <li>Promotion of gender-sensitive participatory variety selection processes that will allow women, men and youth to determine their preferred rice variety traits.</li> <li>Certified seed production training in different parts of Africa for groups of youth and women; delivery of certified seeds for women's associations.</li> <li>Gender-sensitive rice product profiles.</li> </ul>

Impact Area	System transformation	Resilient agri-food systems	Genetic innovation
<b>Climate adaptation and mitigation</b>	<ul style="list-style-type: none"> <li>Evidence-based ex-ante and ex-post assessments of technological innovations that show progress in adaptation and mitigation to climate change.</li> <li>Institutional strengths of national and regional stakeholders enhanced in adaption to climate change through capacity-building practices.</li> <li>Renewable energy sources adopted at scale and institutions increase their adaptation and resilience to climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Climate-proof crop management options to enhance adaptability of system and reduce risks of production failure.</li> <li>Development of early-maturing varieties with tolerance to drought, cold, pests and diseases.</li> <li>Rice management practices that reduce GHG emissions and increase crop diversification</li> <li>Rice production extensification through Smart Valleys and ‘alternative wet and dry’.</li> <li>Climate information services introduced.</li> </ul>	<ul style="list-style-type: none"> <li>Genetic innovation by developing and disseminating varieties tolerant to drought, salinity, extreme temperatures (heat and cold), and submergence with the right package of traits against multiple abiotic constraints.</li> <li>Rice varieties responding positively to microbial associations leading to reduced fertilizer use and GHG emissions.</li> <li>High yielding, stress-tolerant rice varieties adapted to dry direct-seeded aerobic conditions to save water and labor.</li> </ul>

Impact Area	System transformation	Resilient agri-food systems	Genetic innovation
<b>Environmental health and biodiversity</b>	<ul style="list-style-type: none"> <li>• Making climate-proof rice-based agri-food systems the nexus for improving public and environmental health</li> <li>• Enabling a conducive policy environment that will sensitize rural and urban populations and the private sector to environmental health and biodiversity conservation.</li> <li>• Developing impact pathways of rice-based food systems in agro-ecosystems, ensuring these are better understood.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved crop management practices to increase resource use efficiency (water, nutrients).</li> <li>• Sustained soil fertility improvements through farm diversification.</li> <li>• Smart Valley agri-food systems as a mechanism for the good governance of land, water and forests offering a participatory and sustainable approach to reduce land degradation.</li> </ul>	<ul style="list-style-type: none"> <li>• Early-maturing varieties with high nutrient and water-use efficiencies; rice varieties tolerant to nutrient toxicities such as iron toxicity; where appropriate, perennial rice varieties requiring minimal soil preparation and fertilizer application.</li> <li>• Optimal rice–legume (e.g. with Mucuna, Stylosanthes, Crotalaria) fallow systems to restore the productivity of the land.</li> </ul>

# Impact Pathway

**The Strategy will adopt a result-focused holistic approach to research for development and robust impact pathways and monitoring, evaluation and learning capabilities**

**1. Impact of R4D projects that contribute directly to One CGIAR Impact Areas**

**2. Direct contributions to One CGIAR Action Areas) by each investment initiative**

**3. Use of R4D innovations, dissemination effectiveness & adoptability of insights from countries**

**4. Creating impact at scale by each investment initiative**

**A four-tiered monitoring, evaluation, learning and impact assessment (MELIA) framework will be established**

# Impact Assessment Framework

Inform decision-making at critical junctures and highlight key success factors

Institutionalize country goals in line with national agricultural development plans

Help develop and roll out a portfolio of rice-based R4D solutions to transform rice-based agri-food systems

Help design proof of concept for transforming rice-based agri-food systems for adaptation to other countries, based on progress made in initial countries

Empower wider group of stakeholders to drive progress towards a healthier and more prosperous Africa by 2030 in line with One CGIAR Impact Areas and SDGs

**The monitoring, evaluation, learning and impact assessment (MELIA) framework will: →**

# Implementing the new strategy

---

- AfricaRice and its partners have built a set of core competencies in R4D to assist member countries in addressing some of Africa's most pressing needs.
- These competencies are reflected in the diverse and integrated projects and services the Center is executing.
- A prospectus consisting of six R4D initiatives, which are fully aligned with the One CGIAR vision and mission, will drive the implementation of the new strategy.
- These initiatives are currently budgeted modestly at about US\$ 10 million each

- These research initiatives will contribute to the desired outcomes and thus to the five CGIAR Impact Areas and the SDGs.
- They will link directly to the three One CGIAR Action Areas (Systems transformation, Resilient agri-food systems and Genetic innovation) and will be implemented through national and regional partners and stakeholders.
- They will also offer huge opportunities to create strong and lasting synergies with other One CGIAR global and thematic initiatives by acting as clients taking on propositions for research and innovation, while also informing the adaptation of global initiatives through feedback.

Thank you

