Rice research and development:
Enhancing food security and resilience in Africa
(Joint presentation by AfricaRice, IRRI and JICA)
### Rice: critical to food security and economy in Africa

#### Strategic food security crop
- Fastest growing food staple (6% per year)
- Top dietary energy source in West Africa and Madagascar and 2\textsuperscript{nd} in Africa
- Source of income for over 35 million smallholders
- Important for women (main labor force) and youth (employment)

#### Major challenges
- Increasing rice imports (USD6 billion in 2018)
- Need to enhance value chain performance, resilience
- Need for increased investments, policy support
- Climate change (drought, floods, extreme temp.)

- Wide production-consumption gap (urbanization, changing consumer preferences)
But there is a silver lining...

- 93% of CARD Phase 1 target achieved
- Paddy production rose to 26.1 million t in 2018 against CARD target of 28 million t

![Graph showing paddy rice production in CARD countries](image)

Achievement thanks to participation of 23 CARD countries

Strong support of CARD founders:
- AfDB, AGRA, AfricaRice, FARA, FAO, IFAD, IRRI, JICA, JIRCAS, NEPAD, World Bank, WFP

CARD SC:
- AfDB, AGRA, AfricaRice, FARA, FAO, IFAD, IRRI, JICA, JIRCAS, NEPAD, World Bank, WFP

AfricaRice and IRRI, with national partners contributed:
- Improved technologies
- Policy advice
- Capacity development
Nerica: tailor-made innovation for Africa’s rainfed rice ecology

Total no. of Nericas: 82
- 18 upland
- 60 lowland
- 4 irrigated

Impact study in 16 countries:
Nerica adoption
Brought food security to 7.2 million people
Lifted 8 million people out of poverty

Major support from:
Government of Japan,
AfDB, UNOSSC, UNDP,
Rockefeller Foundation, Gatsby Foundation

Important partners:
AfDB, Belgium, Canada, CIAT,
Cornell, EU, France, FAO,
Gatsby Foundation, Germany,
IFAD, IRD, IRRI, Japan, JICA,
JIRCAS, Netherlands, Norway,
NRI, Rockefeller Foundation, SG 2000,
Sweden, Tokyo University,
UK, UNDP, UNOSSC, USA, WFP,
World Vision, YAAS

AfDB Multinational Nerica Project
African Rice Initiative
Interspecific Hybridization Project
Improved varieties (inbreds / hybrids)

Advanced rice varieties for Africa (Arica)
- New generation of elite rice varieties (after Nericas)
- 18 Aricas named

Climate-smart varieties
- IRRI/AfricaRice STRASA project:

High-yielding hybrids
- Over 50 promising AfricaRice hybrids adapted to Africa
- Yield (10–13 t/ha) with good grain quality traits

Arica-3: high-yielding for lowlands (released in Mali)
Two flood-tolerant varieties with SUB1 gene (released in Nigeria)
Aromatic hybrid released in Senegal (promoted by AfDB-TAAT project)
Smart crop management approaches and tools

**Smart-valleys approach**
- Smart-valleys: low-cost approach to develop inland valleys for rice-based systems in SSA
- Validated in Benin, Togo
- Under validation in Burkina Faso, Sierra Leone, Liberia

Advantages: Can increase yield from 1.5-2 t/ha to 3.5-4.5 t/ha

**RiceAdvice mobile app**
- RiceAdvice: Android-based decision-support tool
- Helps farmers identify best option for fertilizer
- Business models being tested (youth employment opportunities)

Advantages: Can increase yield by around 0.5 to 1 t/ha and profitability by US$100-200/ha/season
Putting energy into SSA’s rice sector: small mechanization (prototypes)

Strengthening local capacity in the use, development and maintenance of equipment
(promoted through AfDB SARD-SC and TAAT projects)

Power tiller with implements
Seeders
Motorized weeders

ASI rice thresher
GEM rice parboiler
Rice husk-based gasifier
Capacity development

Developing capacity of rice stakeholders in Africa: vital element to transform SSA’s rice sector

IRRI, AfricaRice, JICA: Strong focus on capacity development in SSA
Participants from over 20 SSA countries trained in seed systems and rice production

AfricaRice Regional Training Center in Saint Louis, Senegal
Season-long training for researchers, extension agents, and vocational training for youth

AfricaRice group training
15,790 participants (31% women) from 2008 to 2018
Topics: rice production, good agricultural practices processing, impact assessment
New initiatives: accelerating rice self-sufficiency in Africa

CIPRiSSA – AfDB initiative led by AfricaRice

- Continental investment plan for accelerating rice self-sufficiency in Africa
- Evidence-based policy and investment decision-making instrument for accelerating rice self-sufficiency
- Roadmap developed for 10 SSA countries to reach rice self-sufficiency by 2025
New initiatives: safe and healthy rice

- AfricaRice and IRRI will work together to deploy nutritious (micronutrient fortified, bio-fortified and low glycemic) rice to vulnerable populations in SSA.

- Versatile use of rice (rice and by-products) will create niche markets in Africa and contribute to the improvement of life and environment.
New initiatives: Africa Rice Village

A holistic approach: connects producers, through contracts, to banks, insurance companies, input suppliers, agro-industries, using digitalization and ecosystem targeting (phygitalization)

- Mitigates risks, improves productivity, and ensures sustainability of farmers’ livelihoods
- Model being piloted in M’bé, Côte d’Ivoire
- Preliminary outputs/outcomes:
  - Data generated to feed interest of finance institutions
  - Creation of business entities around women and youth
Possible collaboration scheme in rice seed sector
Partners: AfricaRice, IRRI, JIRCAS, JICA, Japanese Universities in CARD2

1. Breeding
   - AfricaRice, IRRI
   - JIRCAS & Japanese Universities
   - Candidates of new varieties & elite promising lines

2. Seed System in CARD 2 member countries
   - NARS(*) researchers
     - Local adaptability Selection and Registration
       - Breeder’s seed
       - Pre-basic (Foundation) seed
       - Supply of Basic (Registered) seed
       - Seed genetic purification
   - Seed technicians
     - Seed farmers
     - Private sector
     - Seed Multiplication
       - Basic seed to Certified seed
       - Supply to farmers

Rice Breeding Task Force, Rice Hubs

Capacity Development for Researchers
- JICA: Development Studies Program (MSc and/or PhD)
- AfricaRice/IRRI: Postgraduate Training (MSc and PhD)

Capacity Development for Seed Technicians etc.
- JICA: TCP and/or Training Program
- AfricaRice/IRRI Group Training Courses

Farmers

Rice Production
Possible capacity development scheme outline (MSc & PhD)

Member Country

- Trainees who are C/Ps from
  - JICA TCP
  - AfricaRice / IRRI
  - Government administration

Japanese Universities

- Entrance Examination
- MSc or PhD
- Research topic
  - Rice-related problem of his/her country or any problems in common
- Conducting research at AfricaRice / IRRI or African Universities (ex. KALRO-Mwea, Kenya)

On-going alliance process between AfricaRice and IRRI

Dr Harold Roy-Macauley  
AfricaRice Director General

Dr Matthew Morell  
IRRI Director General

- Important progress made on alliance process of AfricaRice and IRRI to adequately respond to the growing challenges of the rice sector in Africa, through:
  - A strong institutional alignment combining the comparative advantages of AfricaRice and IRRI, leading to:
    - A single coherent and comprehensive rice research-for-development program for Africa, aligned with national priorities and goals of CARD2
  - The support of stakeholders and funders is critical to the success of this process
• AfricaRice-IRRI Alliance strongly committed to working with all the partners to achieve the goals of CARD2 by aligning with the ‘RICE’ approach.

• Much greater attention to the development of rice seed system and its functional implementation in CARD2 member countries, and

• Multilateral collaboration among SC members of CARD2 for capacity development, esp. of rice researchers
Thank you