



# Transforming Africa Rice Sector

## Accelerating CARD-2 Impact

**Prem Bindraban**

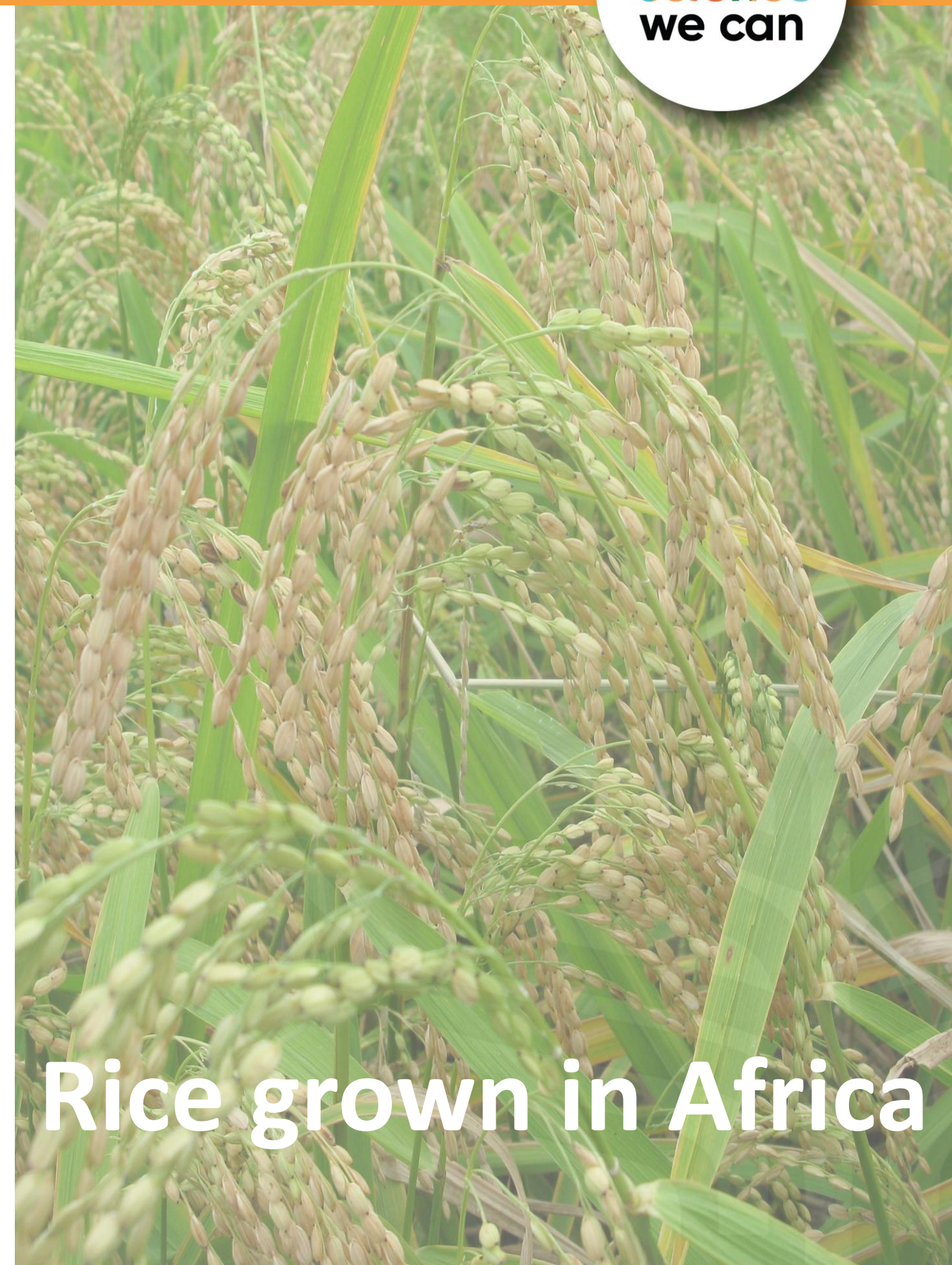
Deputy Director General &  
Director of Research and Innovation



**AfricaRice**

March 2026

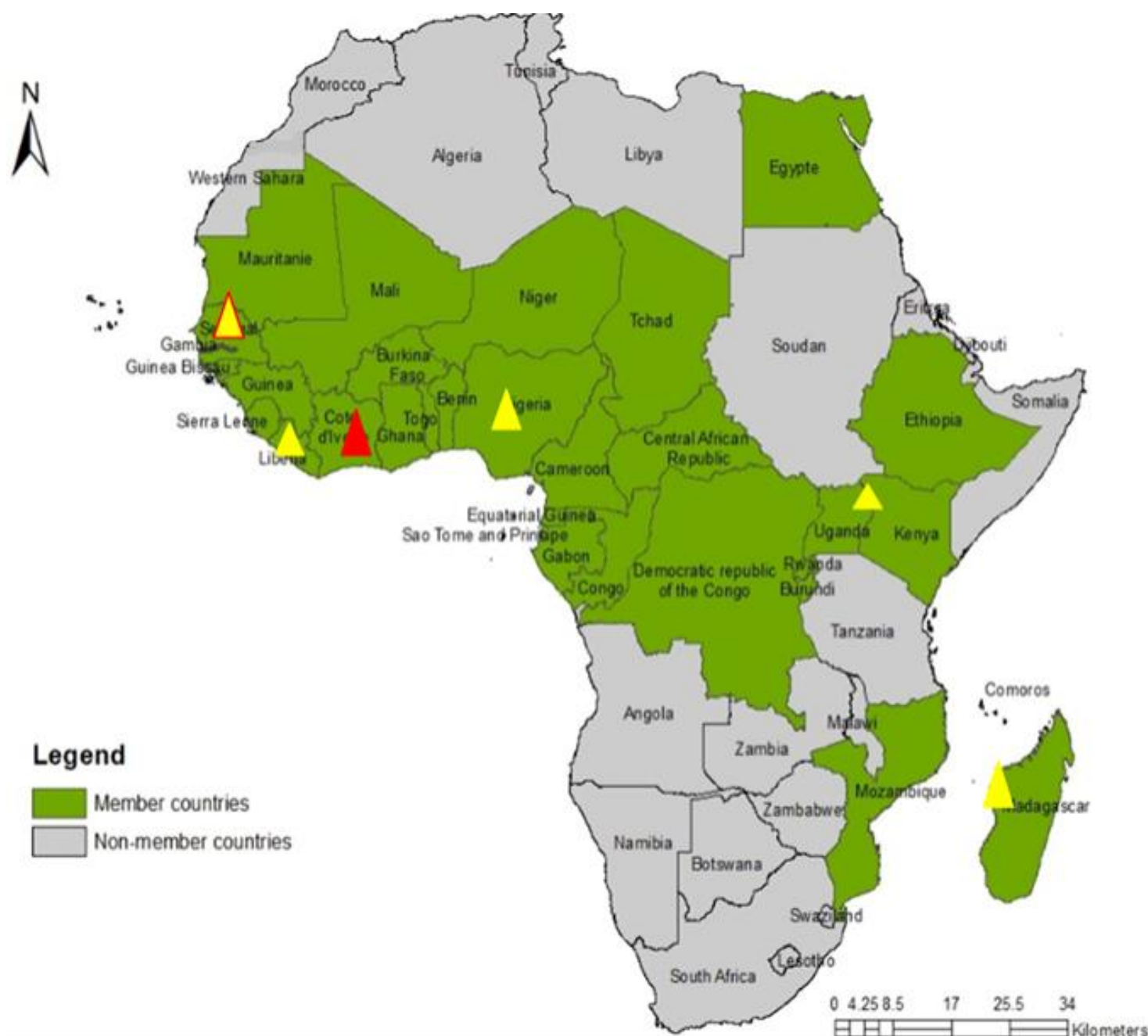
**Rice grown in Africa**



# Africa Rice Center (AfricaRice)

AfricaRice mandated by African Countries to increasing rice productivity through research innovations and by enabling their adoption in Africa.

- One of 12 CGIAR centres
- Association of 28 African member states (Counsel of Ministers & National Expert Committee)
- Africa-wide NARS with Task Forces
- 6 Research Stations in Africa



AfricaRice reaches all the way into the veins of the rice-based production systems in countries, including multi-stakeholder platforms for impact.

# Africa Rice Center (AfricaRice)



- 106 Ha of facilities
- 340 Ha of Upland
- 50 Ha of LowLand
- 208 Ha of Valley

**Total Area of 700 Ha**

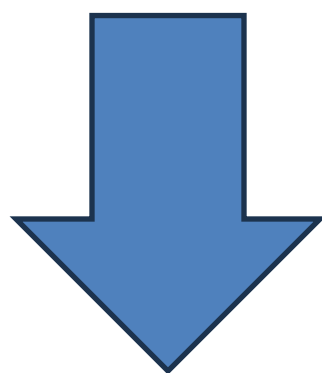
## Others research stations

- Senegal
- Nigeria
- Madagascar
- Uganda
- Liberia



# Past rice production increase

- 90% from area expansion
- Low productivity
- Ecologically unsustainable
- Low economically viability
- Limited creation of business opportunities



- Input push less effective than Market Pull
- Market conditions must be made more favorable to mobilize value chain actors



# Lack of Impact from R&D

## nature portfolio

nature > collection

COLLECTION | 12 OCTOBER 2020

### Sustainable solutions to end hunger

“Most of the included studies only involved researchers without any participation from farmers”

“Most research on hunger is of little practical use in the goal to make hunger a thing of the past”

- Program: Sustainable Solutions to End Hunger project
  - > 75 global experts from 23 countries.
  - evaluation of > 100,000 articles in agricultural research
  - Only ± 2% of published agricultural and agronomic research has original and high-quality data about solutions for small-scale producers

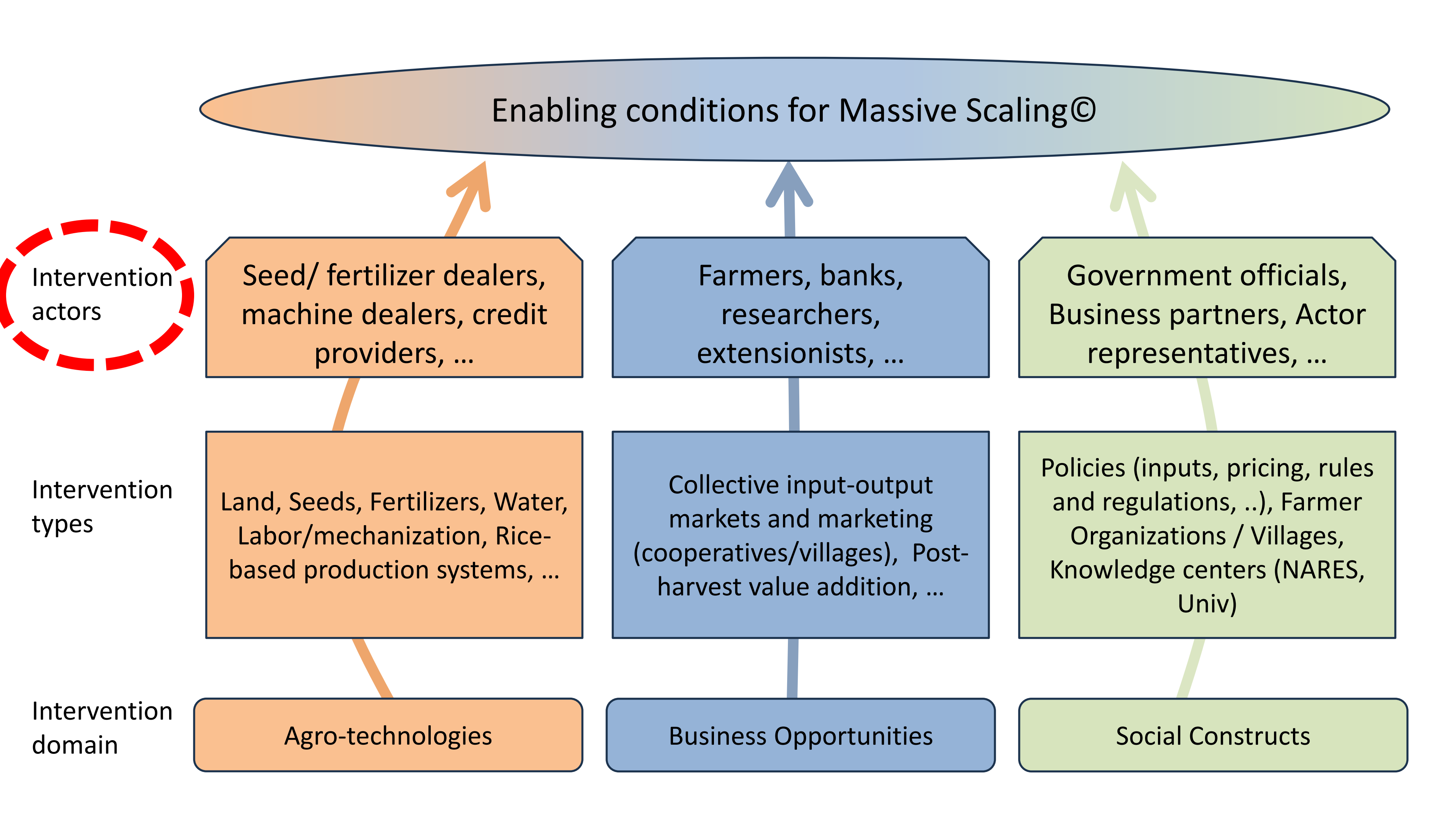
### Ending hunger: science must stop neglecting smallholder farmers

Policymakers urgently need ideas on ways to end hunger. But a global review of the literature finds that most researchers have had the wrong priorities.



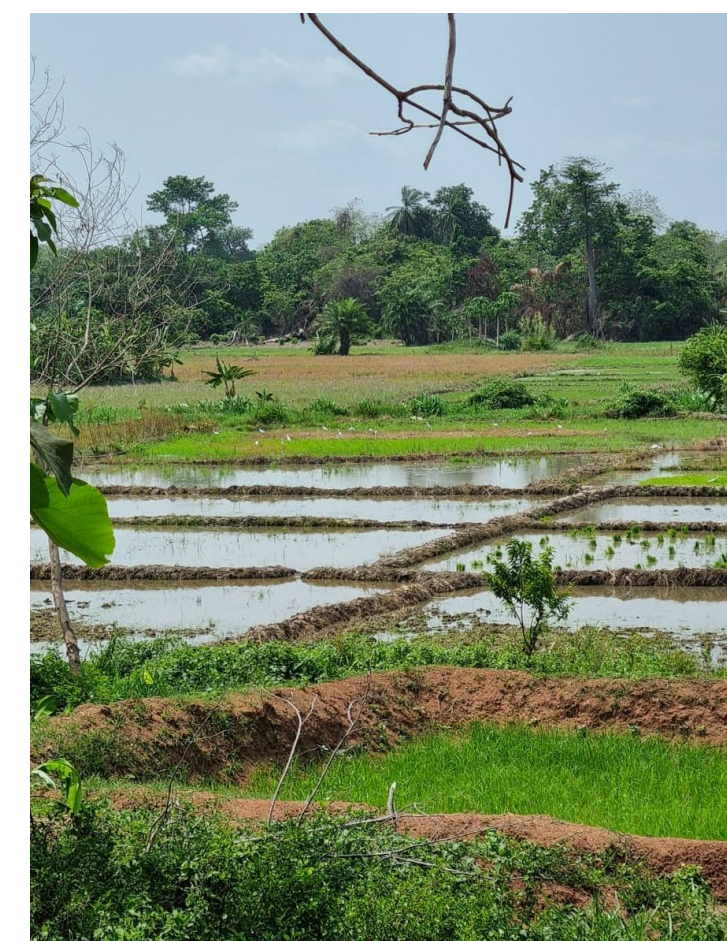
# Main drivers for change of rice sector

1. Improve **agro-technical production** conditions to
  - a. Increase productivity, sustainability and competitiveness
2. Create **business opportunities** to accelerate adoption
  - a. Adding value rice-based products
  - b. Creating youth employment
  - c. Integrate activities attractive to women
3. Catalyze development of **social constructs** to enable adoption
  - a. Assist in setting the right policies
  - b. Building national/local social arrangement
  - c. Strengthening knowledge institutions



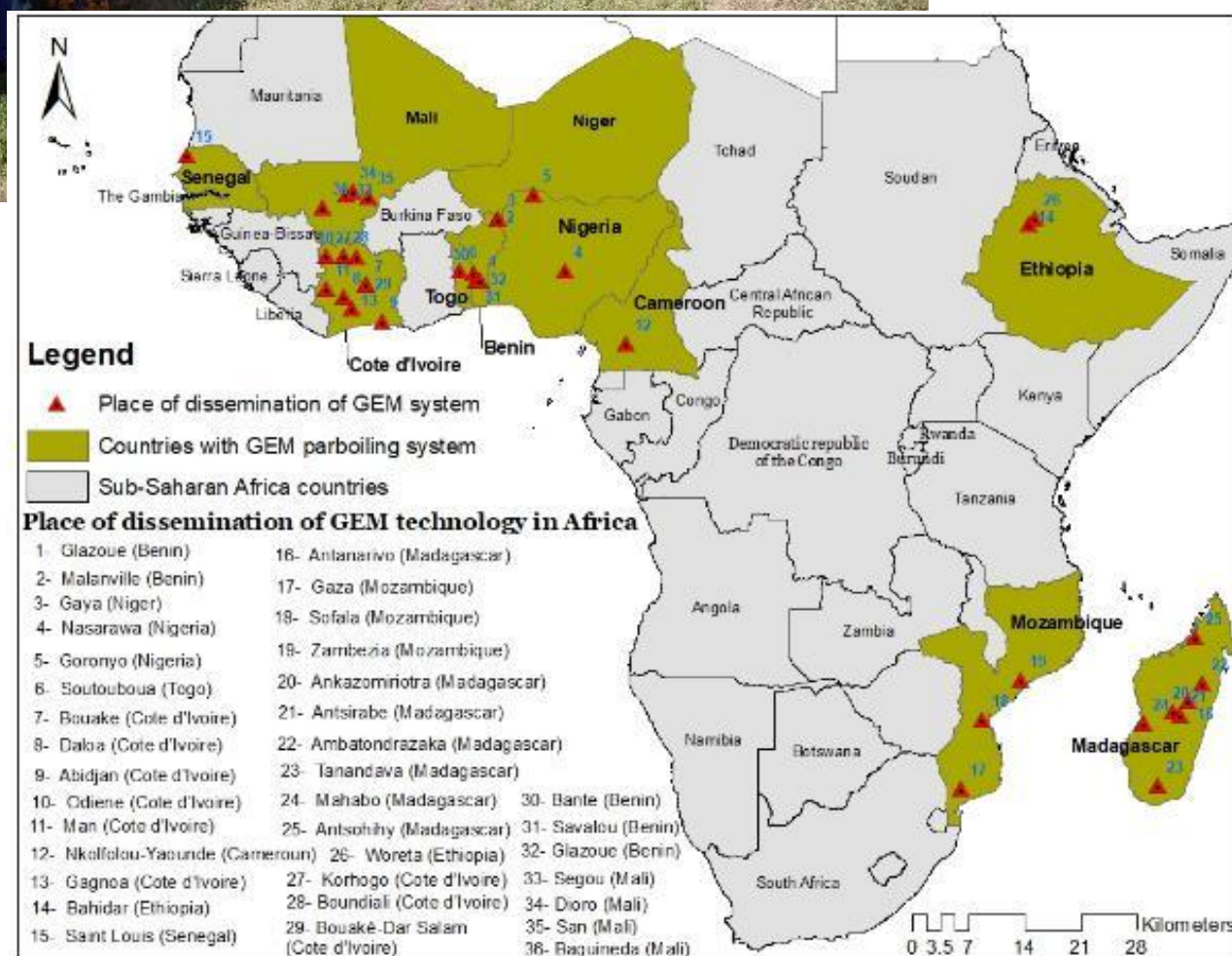
# Agro-technology: Smart-Valleys

- 190Mha inland valleys; about 10Mha used
- 1990 onwards; Pilots >200 Valleys; Adopted > 50,000 farmers
- Developed & adapted through collaborations (AfricaRice +)
- Farmers and scientific knowledge
- Participatory design and implementation (water mngt)
- Expenses  $\pm 700$  USD/ha (vs  $\pm 5,000$  USD/ha irrigated)
- Climate Smart Rice Yield increase from 2.0 to 4–5 t/ha
- Farmers' income up \$700/ha
- Diversification with vegetables, legumes, fish, livestock
- Ecosystem services: forest, forage, hunting, C-services, resources.





- 154 women parboiling groups supported >2 million consumers monthly.
- Key benefits
  - Increased production efficiency,
  - Improved nutritional quality of rice,
  - Reduced energy costs.
- Lowers CO<sub>2</sub>-equivalent emissions linked to rice parboiling by 60%.



GEM = Grain quality enhancer, Energy efficient, and durable Material

# Varietal Development and Release



•CRAM 3



•CRAM 6

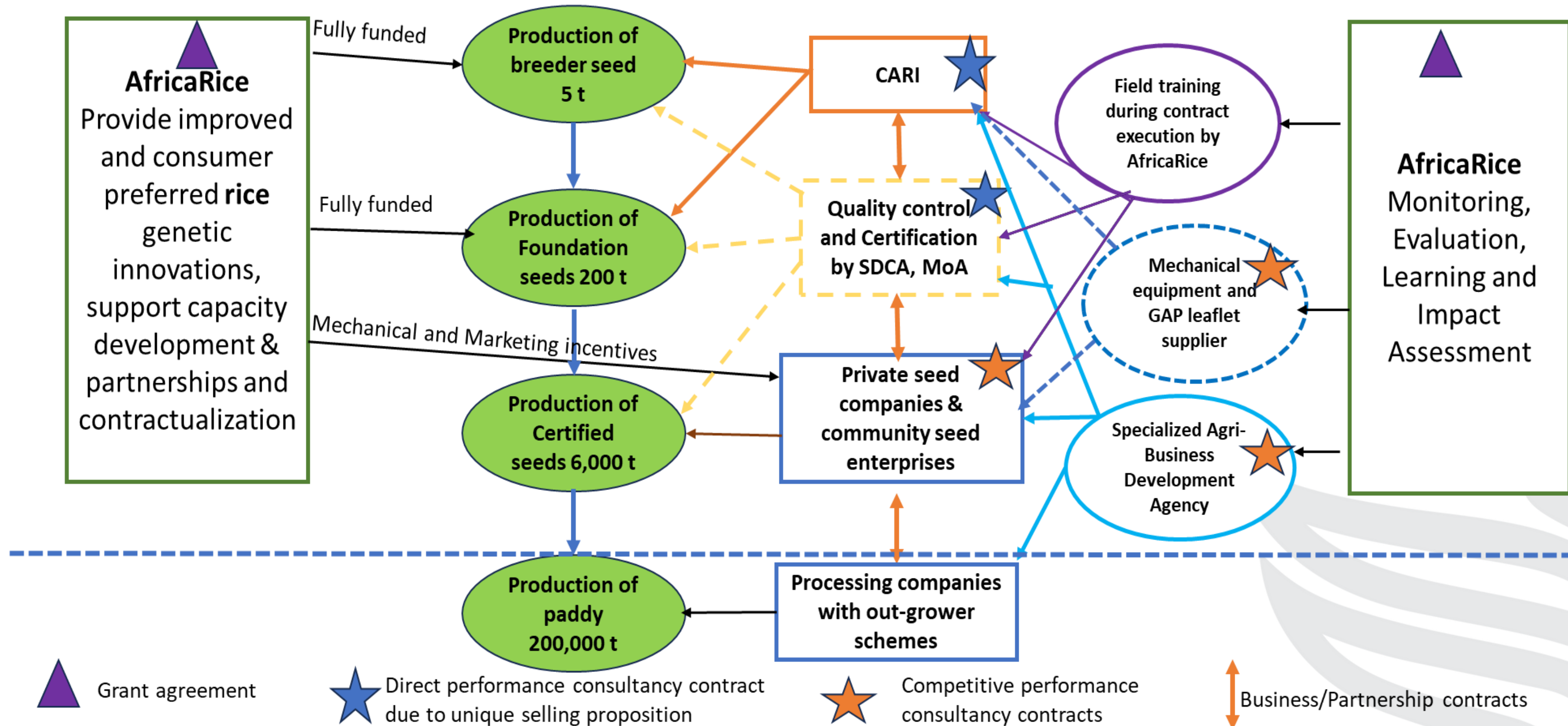


•FOFIFA 197

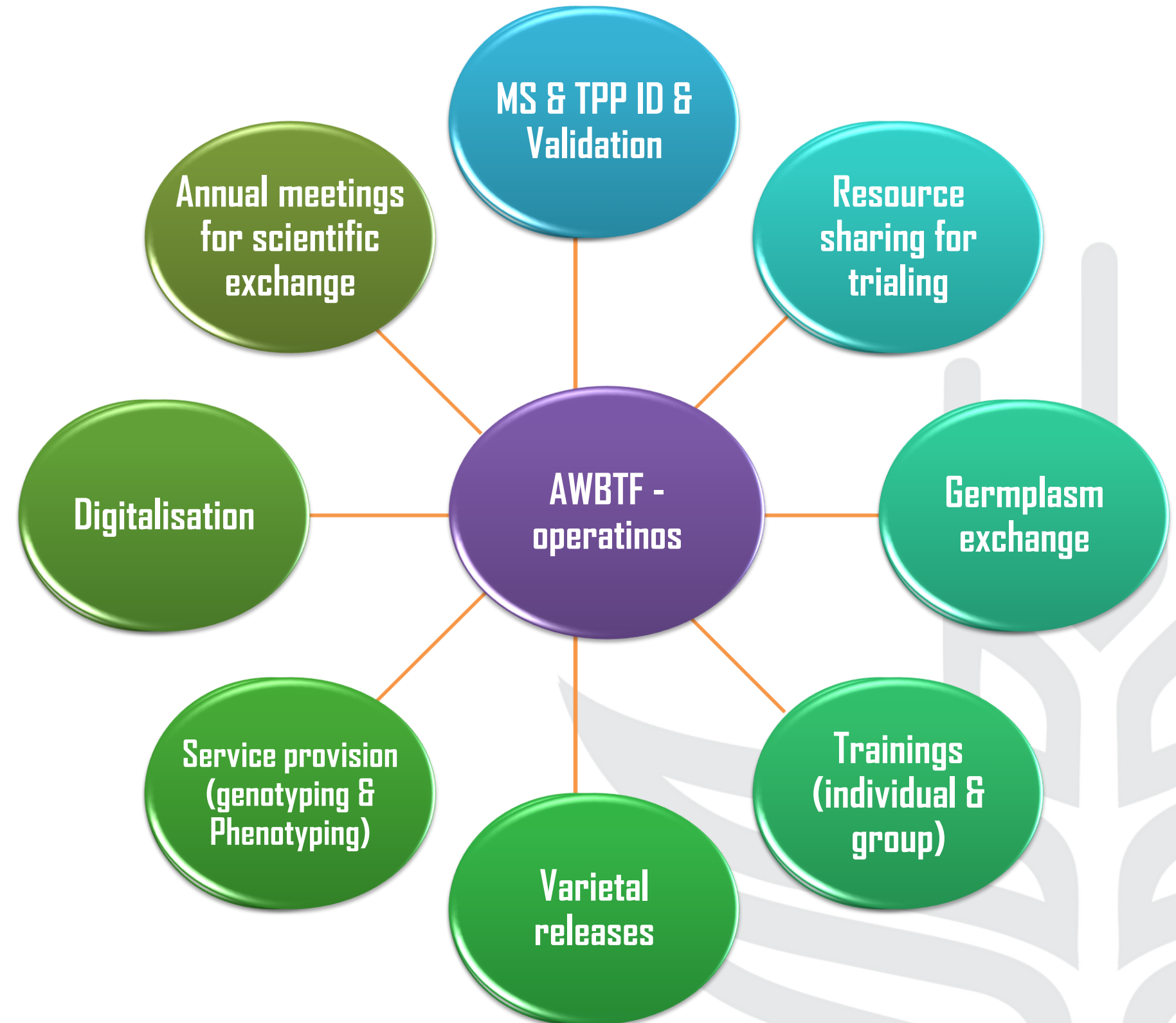
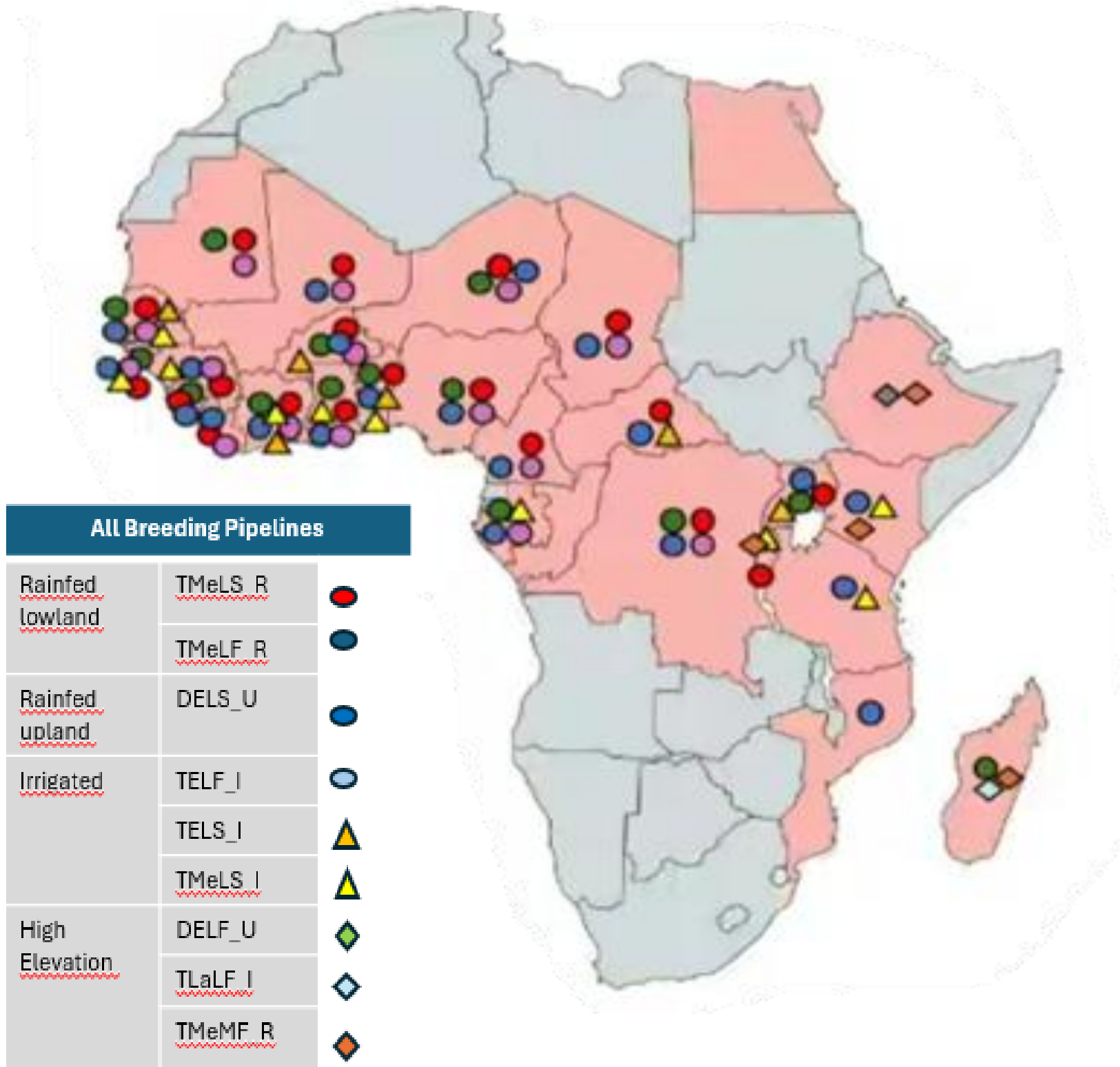


•CRAM 9

# Business Opportunities: Seed Sector Development



# AfricaWide Breeding Task Force



- Manual rice threshing labor intensive; incurs up to 20% loss and broken grains
- The ASI thresher:
  - manufactured locally;
  - Used in 19 African countries
  - Only 1% loss
  - Attain average gain of US\$ 53/ha
  - Reduces labor
- Support farmers' groups and service providers in implementing sustainable businesses from mechanization.





# Value adding: Tripple Nutritional Burden

## Undernutrition

Stunting  
wasting

## Hidden hunger

Micronutrient  
deficiency

## Overnutrition

Overweight  
Obesity

Low protein  
Low energy

Low vitamins  
Low minerals

Low nutrients but  
high energy

Africa faces **coexisting undernutrition, micronutrient deficiency, and obesity**—requiring integrated food, health, and policy solutions.

## ● Undernutrition

**30.7%** of children under 5 are stunted  
**6.0%** are wasted  
**282 million** people undernourished

## ● Hidden Hunger

**40.4%** of women of reproductive age are anemic  
Over **50%** of children in Eastern & Southern Africa face micronutrient deficiencies

## ● Overnutrition

**34.8%** of women are overweight or obese  
**5.3%** of children under 5 are overweight

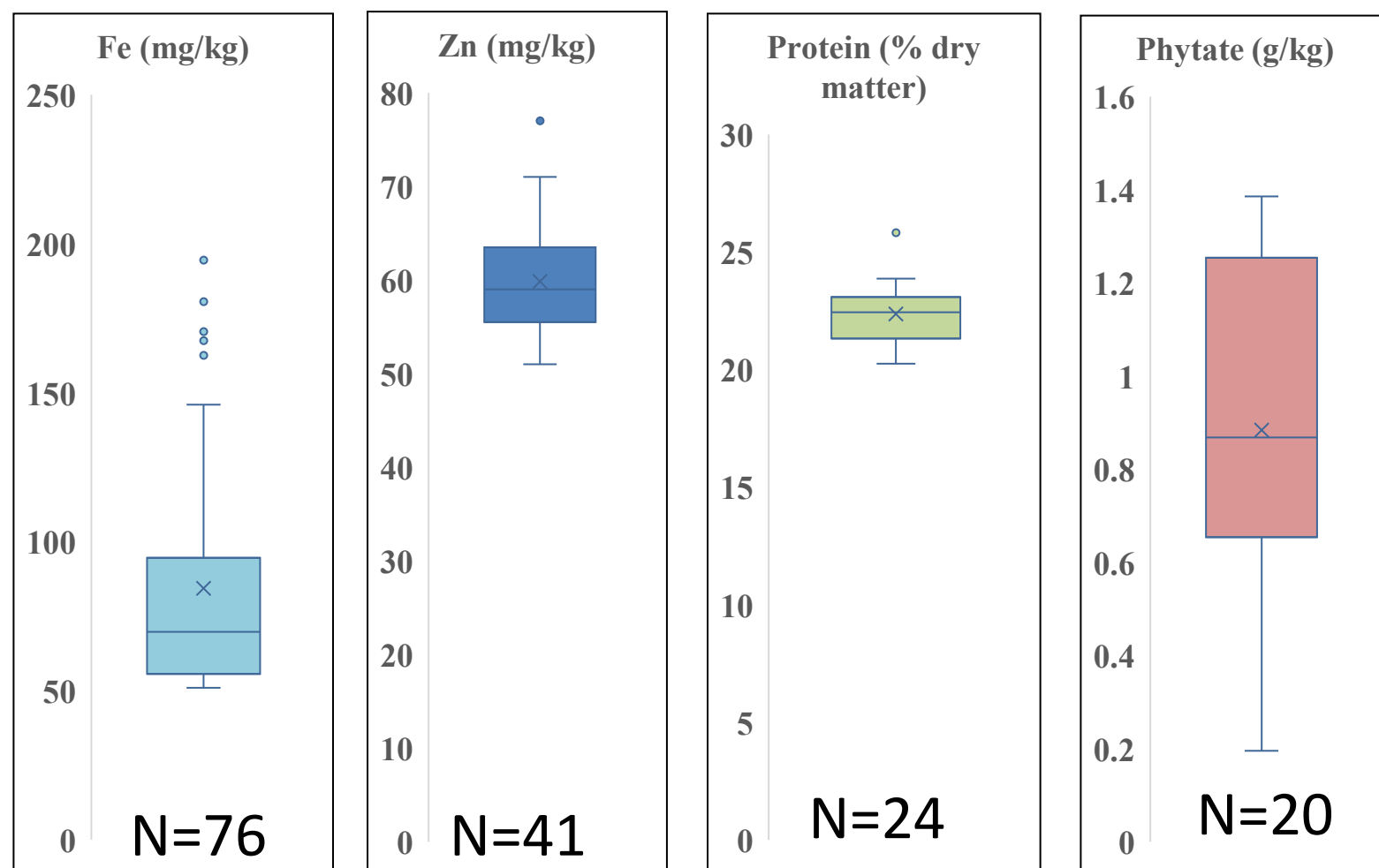
AfricaRice leads development and scaling of **Nutri-Rice**:

a next-generation, climate-smart and health-sensitive staple addressing the triple burden of malnutrition:

- ✓ **Boost calorie availability** through high-yielding varieties and agronomic productivity.
- ✓ **Deliver key micronutrients**—iron, zinc, folate, calcium, vitamins A and B12—through biofortification, agronomic practices, and postharvest fortification.
- ✓ **Reduce glycemic index**, lowering post-meal blood glucose spikes, making rice safer and healthier for diabetics, obese individuals, and health-conscious consumers.



# Africa Rice Germplasm



## Selection Criteria

Average Fe content > 50 mg/kg

Average Zn content > 50 mg/kg

Average protein content > 20%

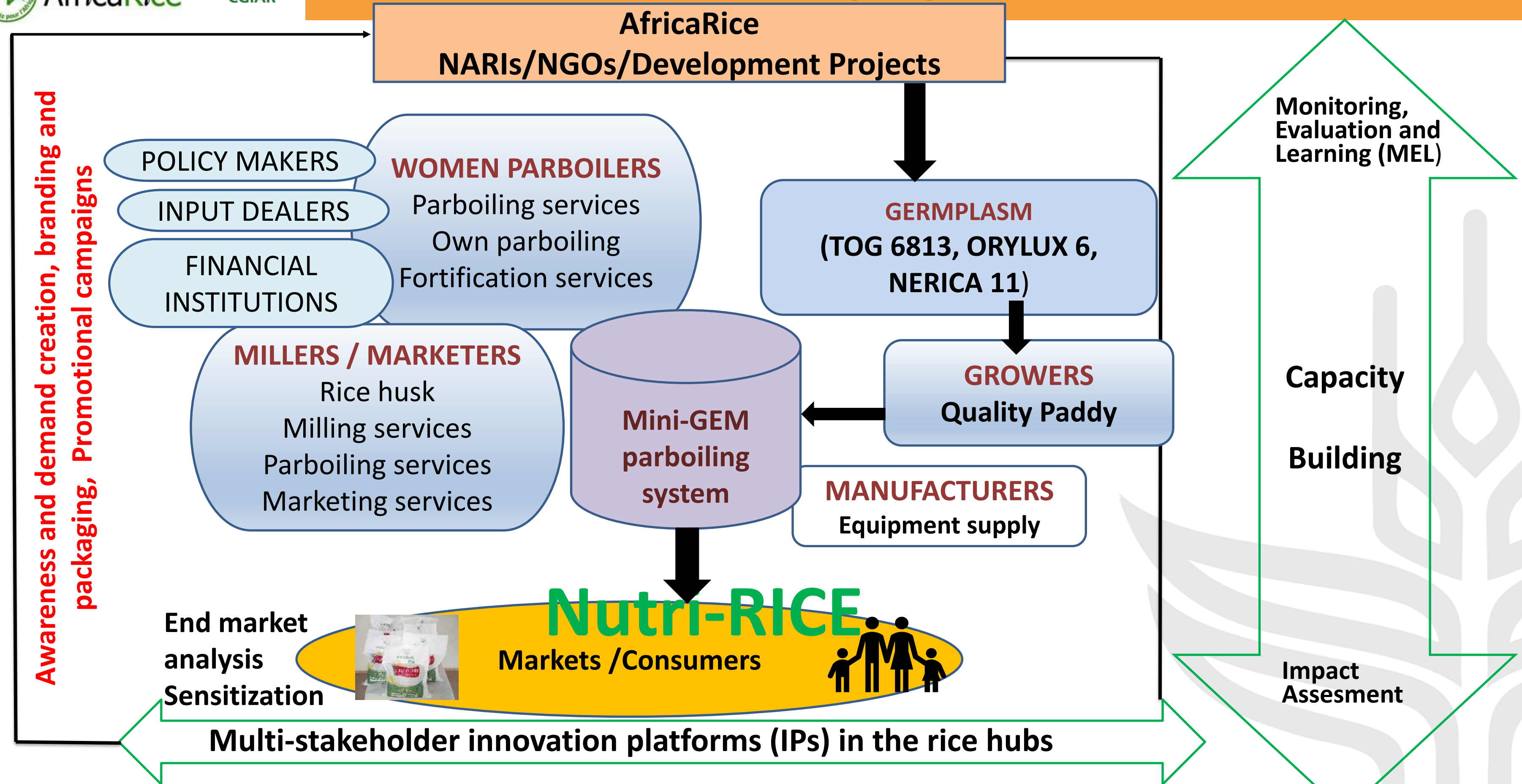
20 lines with lowest phytate concentration

## Next steps:

Complete analysis of 2024 data and perform selection of lines that simultaneously show high Fe, Zn, protein and low phytate.

4381 *O. glaberrima*, 557 *O. sativa ssp. indica*, 255 *O. sativa ssp. japonica*, 18 interspecific inbred and 8 *O. sativa ssp. indica* hybrid samples were analyzed for physicochemical and mineral properties.

# Stakeholder engagement



# AfricaRice' Contributions

- Transformative Breeding for Accelerated Adoption
- Nutri-Rice for Better Diets and Nutrition
- Massive Scaling of Smart-Valleys in Africa
- Private sector engagement and Business Development
- Rice Policy and Capacitation
- Capacity Development (Individual, Institutional)
- Multi-stakeholder Platforms



# Rice grown in Africa

Thank you