

# Demand-led innovative R&D

**SFSA–AIFSC collaboration on plant breeding**

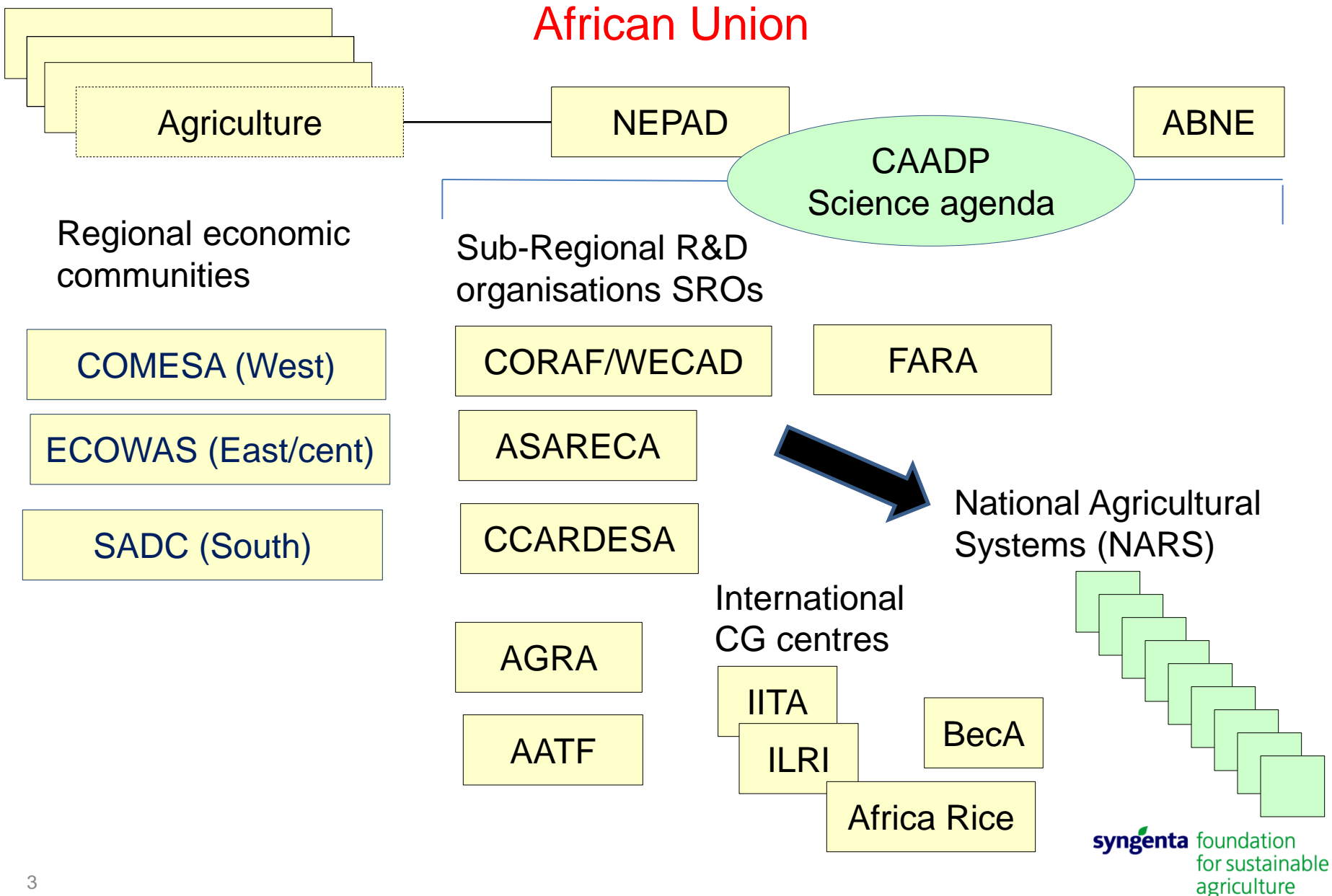
**Customer-focused variety design**

Viv Anthony  
4 August 2013

# Background

- External context
- Technology push vs. demand-led
- Collaboration work programme
- NARS co-development and piloting implementation

# Africa R&D landscape



# Shifting the balance

## Genomics revolution

High-throughput sequencing

Molecular markers

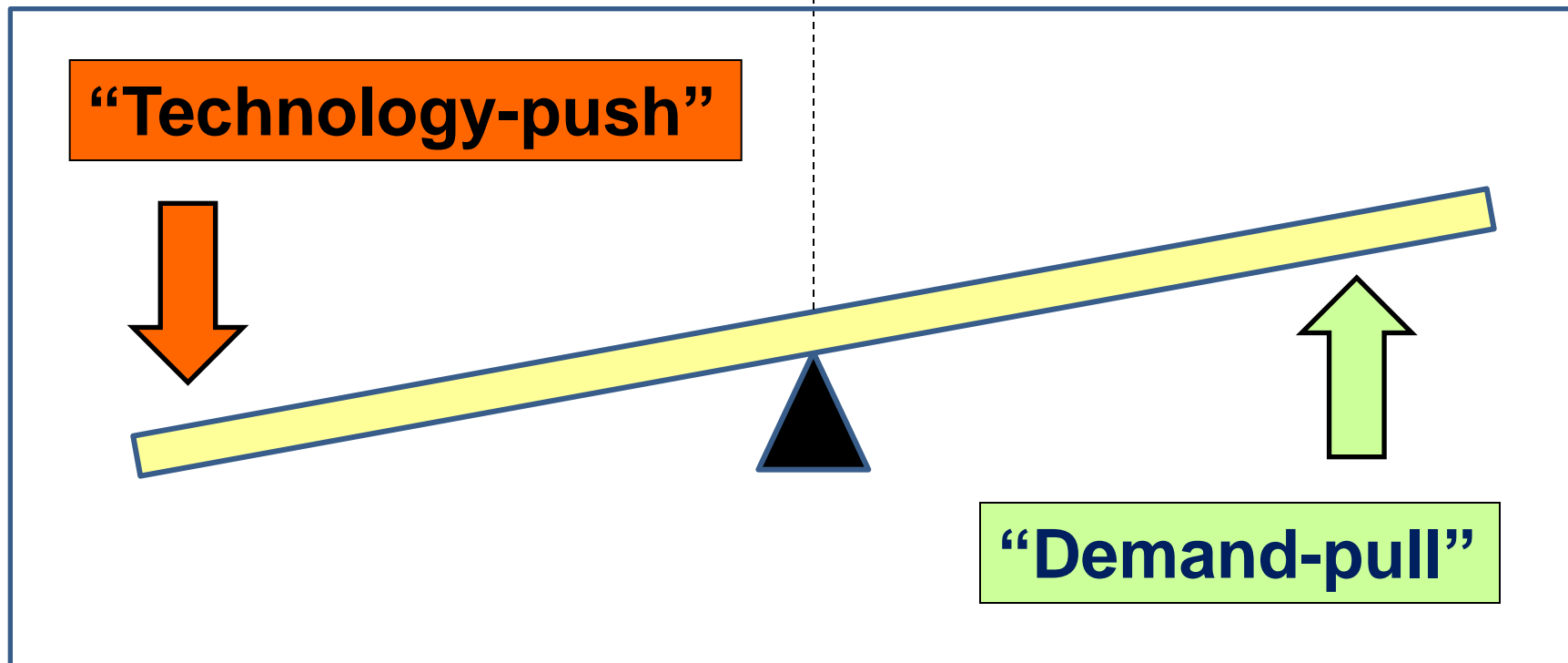
Use of genetic diversity

**Climate change imperative**

Economic growth

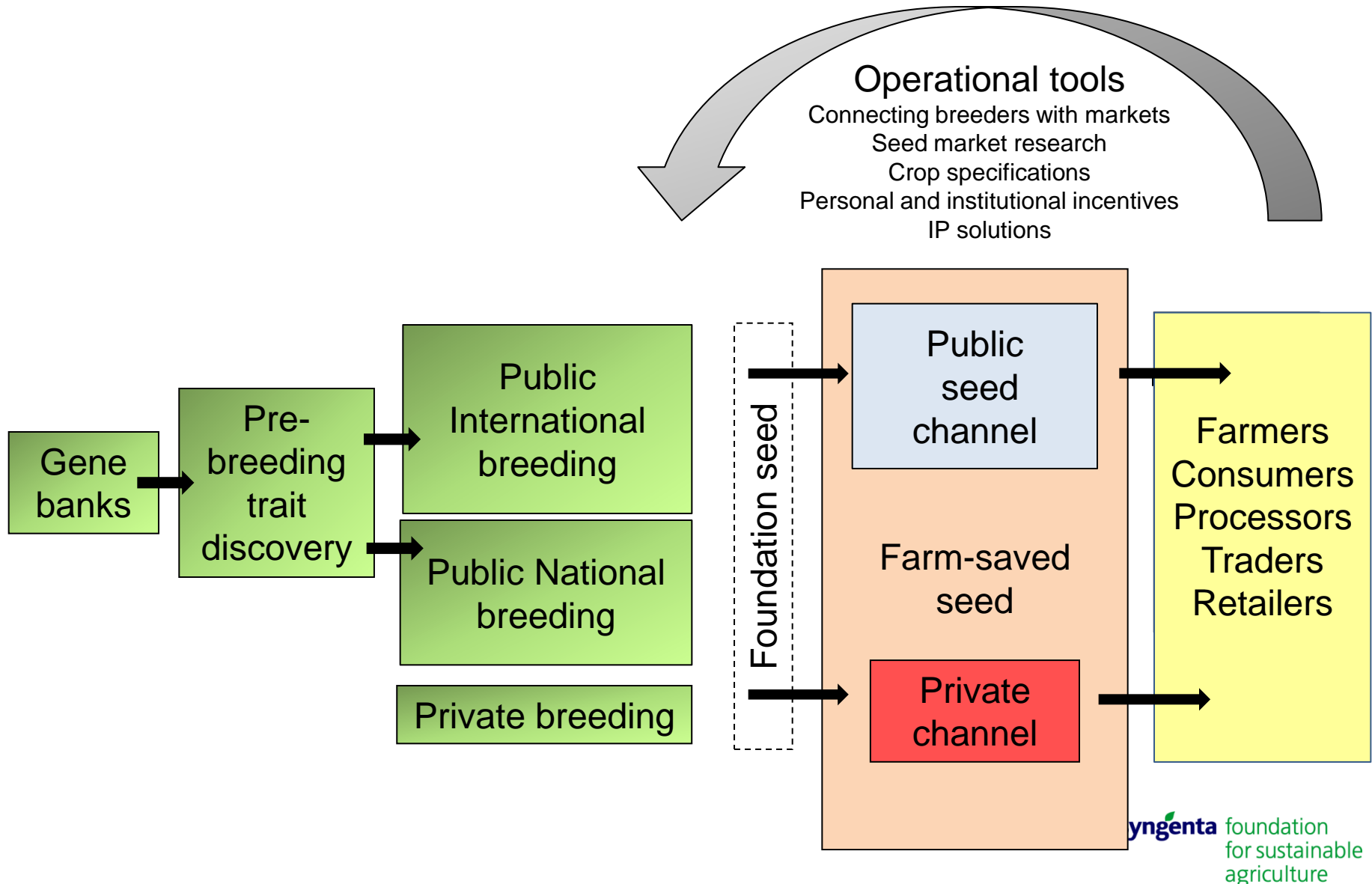
**Market emergence**

**African investment**

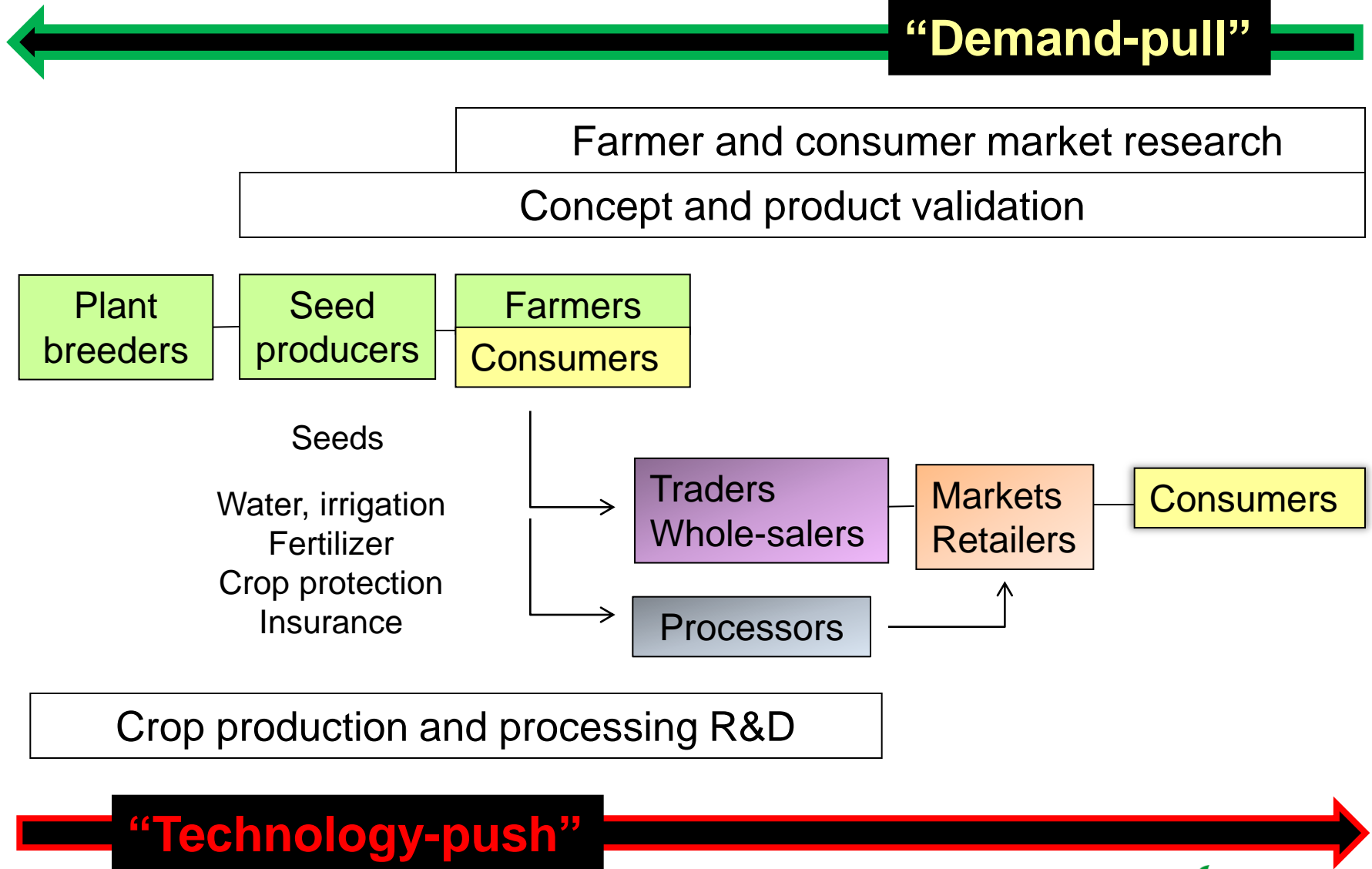


# Breeding impact pathway

Strengthening demand-driven breeding



# Demand-driven crop improvement



# Work programme

## YEAR 1-2

### Investigative research



Public and private approaches  
International, African SROs and NARS  
Australian experiences  
Market research in Africa  
Public information sources  
Foresight integration  
African policy analysis

## YEAR 1-3

### Implementation

Decision tool box

NARS pilot

Market research studies

Curriculum development

Post-graduate training

## YEAR 2-3

### Policy

Policy communication briefs

Advocacy campaign

# NARS piloting and implementation

- Partnering with small number of selected NARS, BecA and WACCI
- Smallholder farmers and target customers are clearly defined - who, where, how many ....
- Farmers and consumers needs and factors affecting their buying decisions are defined by market research studies
- Target product profiles of new varieties created
- Plant breeding/science options reviewed and trade-off's made
- New variety profile adoption validation
- Multi-functional team for delivery
- Best project management approaches integrated into delivering the science programme - critical path planning, risk ,management and accelerated operational approaches, reviews/decision milestones



**syngenta** foundation  
for sustainable  
agriculture

# Core principles

## 1. **Smallholder farmers and consumers**

- Understand the needs and preferences
- Put first to drive the priority-setting for R&D programmes

## 2. **Value chain**

- Understand market value chain buying and selling decisions for each stakeholder from provision of inputs to the farmer along the whole supply chain to the consumer

## 3. **Market research**

- Rigorous use of proven tools and approaches with farmers, consumers and stakeholders
- Test and validate key assumptions about needs, problems and preferences for solutions

## 4. **Market trends and drivers**

- Longer-term visioning of key drivers that can change needs of farmers and markets

e.g. governmental production and trade policies, the enabling environment, climate change etc.

## 5. **Public-private knowledge and expertise**

- Use of best practices from both public and private sectors for market research, R&D targeting, setting science specifications to create products, technology solutions, product development, reach of inputs/outputs to and from farmers, crop processing, insurance and credit, seed systems and market development
- PPPs where benefits cannot be achieved by the individual partners alone

## 6. **Solution development and validation**

- Multi-functional team approach
- Considering the full range of creative possibilities technical and commercial including feasibility, cost and trade-offs of needs vs. likelihood of success
- Concept and prototype testing with users before and during product development

# Core Challenges

- Farmer and consumer consultation
- Multi-functional team approach
- Solution-focused outputs:  
technology vs. demand orientation
- Public-private partnerships
- Product development
- Project management

# Diverse product drivers -1

## Biological parameters

### Crop performance and resilience

- Yield in range of agro-ecological climates and abiotic stresses
- Resistance to pests and diseases
- Agronomic, morphological and harvesting considerations
- Performance with low inputs and responsiveness to fertilizer
- Nutritional profile
- Post-harvest and storage
- Genetic diversity and durability to climate change: drought, heat
- Transport robustness

### Seed/parental production

- Fertility and scalability
- Propagation and production considerations
- Cost of production

### Processing

- Performance/suitability for processing
- Storage

# Diverse product drivers -2

## Market, price and adoption

- Clear benefits and improvement differentiation

## Agro-economic and regulatory drivers

- National policy and trade drivers
- Seed systems operational or capacity building needed
- Freedom to operate, accessing germplasm and use of techniques with IP
- Registration considerations (GM/Non-gm)

## R&D costs and feasibility

- Time, cost and likelihood of success
- Sources of germplasm, molecular markers etc
- Availability of bioassays, trialling resources vs innovation required

## Customer preferences

- Form, taste, colour, texture
- Cooking qualities
- Storage