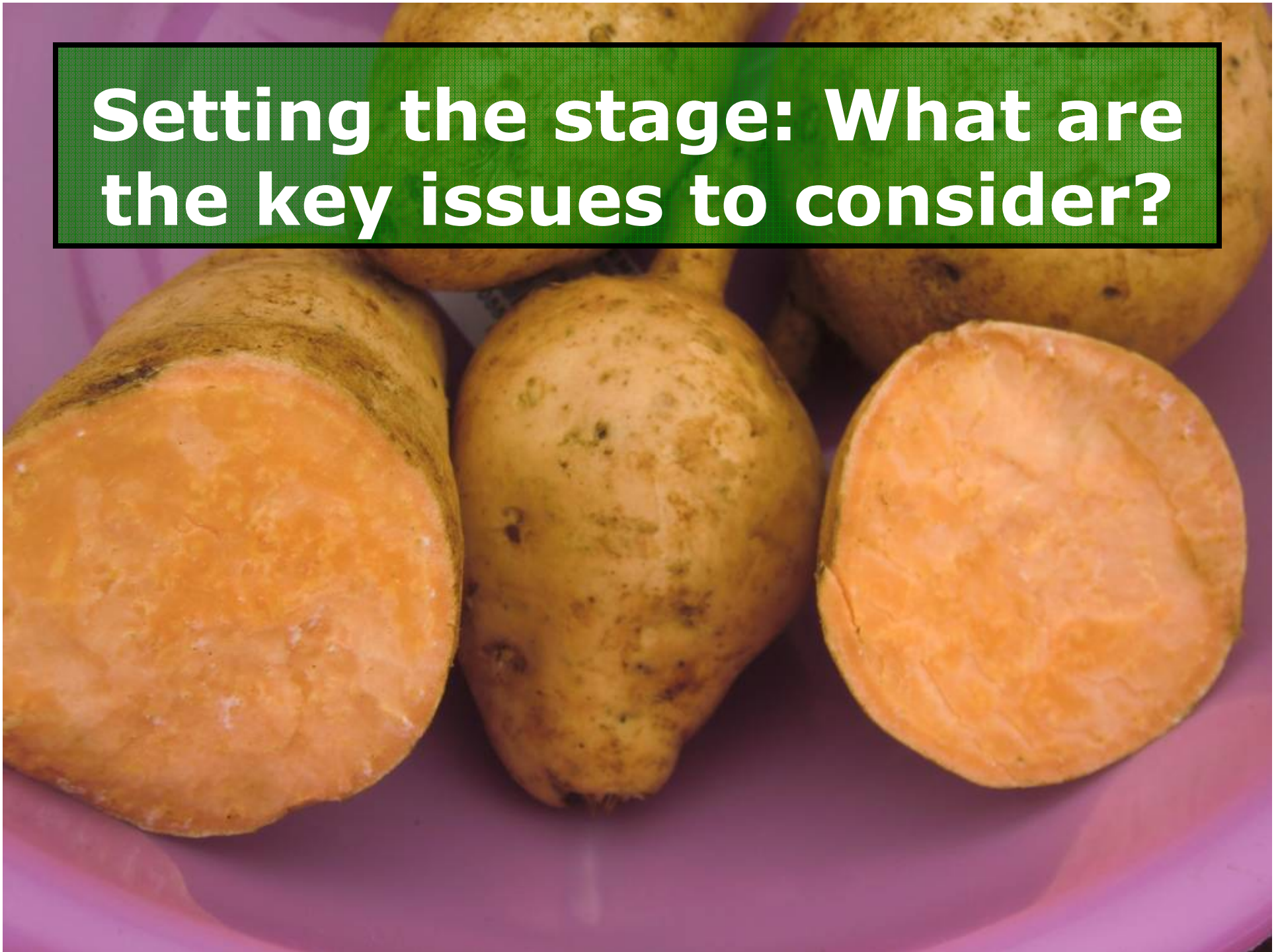




# **A paradigm shift in potato and sweetpotato research adopting the agricultural products value chain (APVC) approach in Kenya**

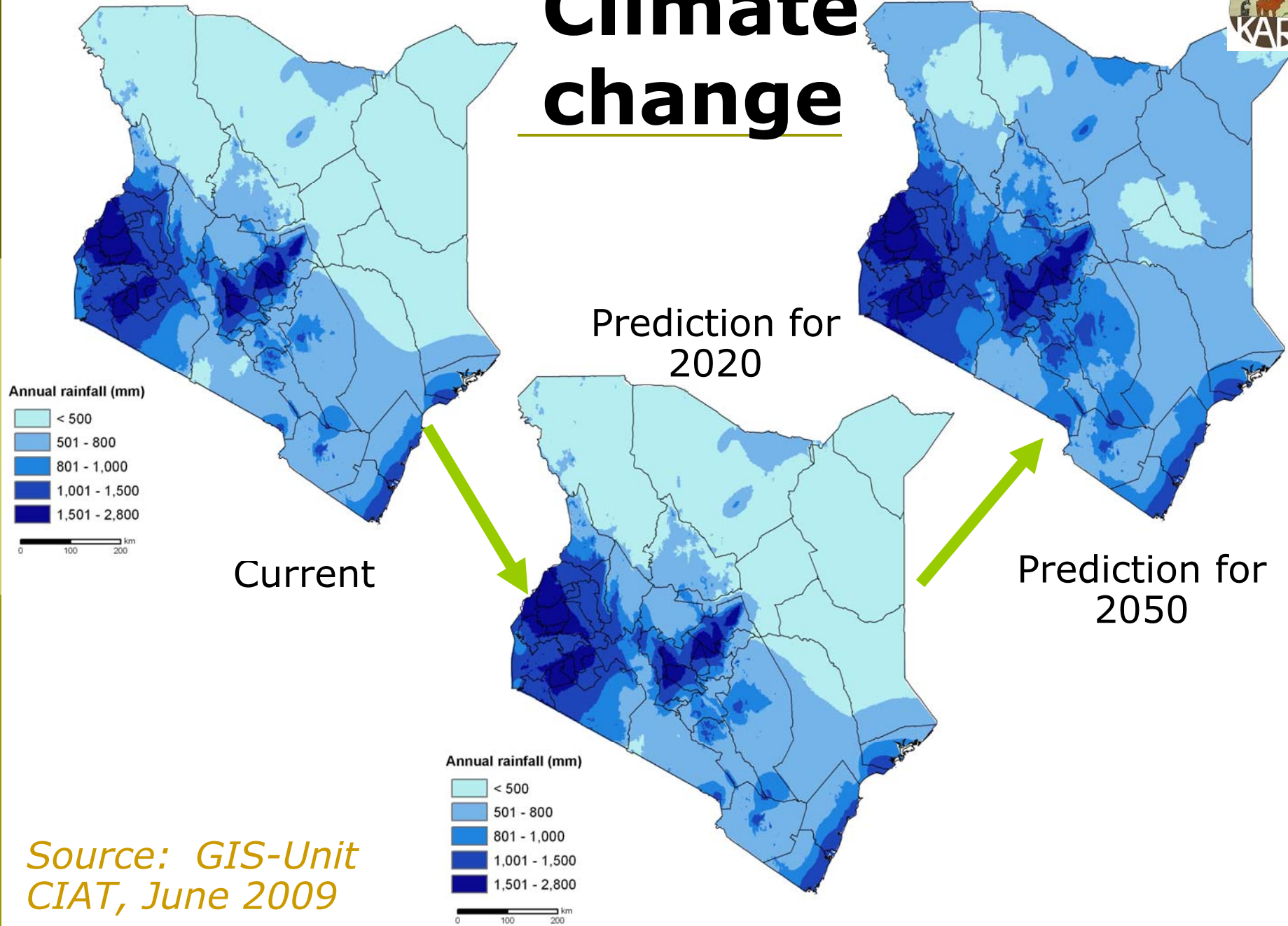
**L. Wasilwa, J. A. W. Ochieng, C. Lung'aho, M. Nyongesa,  
P. J. Ndolo, V. Kirigua and S. P. Omondi**

**Setting the stage: What are the key issues to consider?**



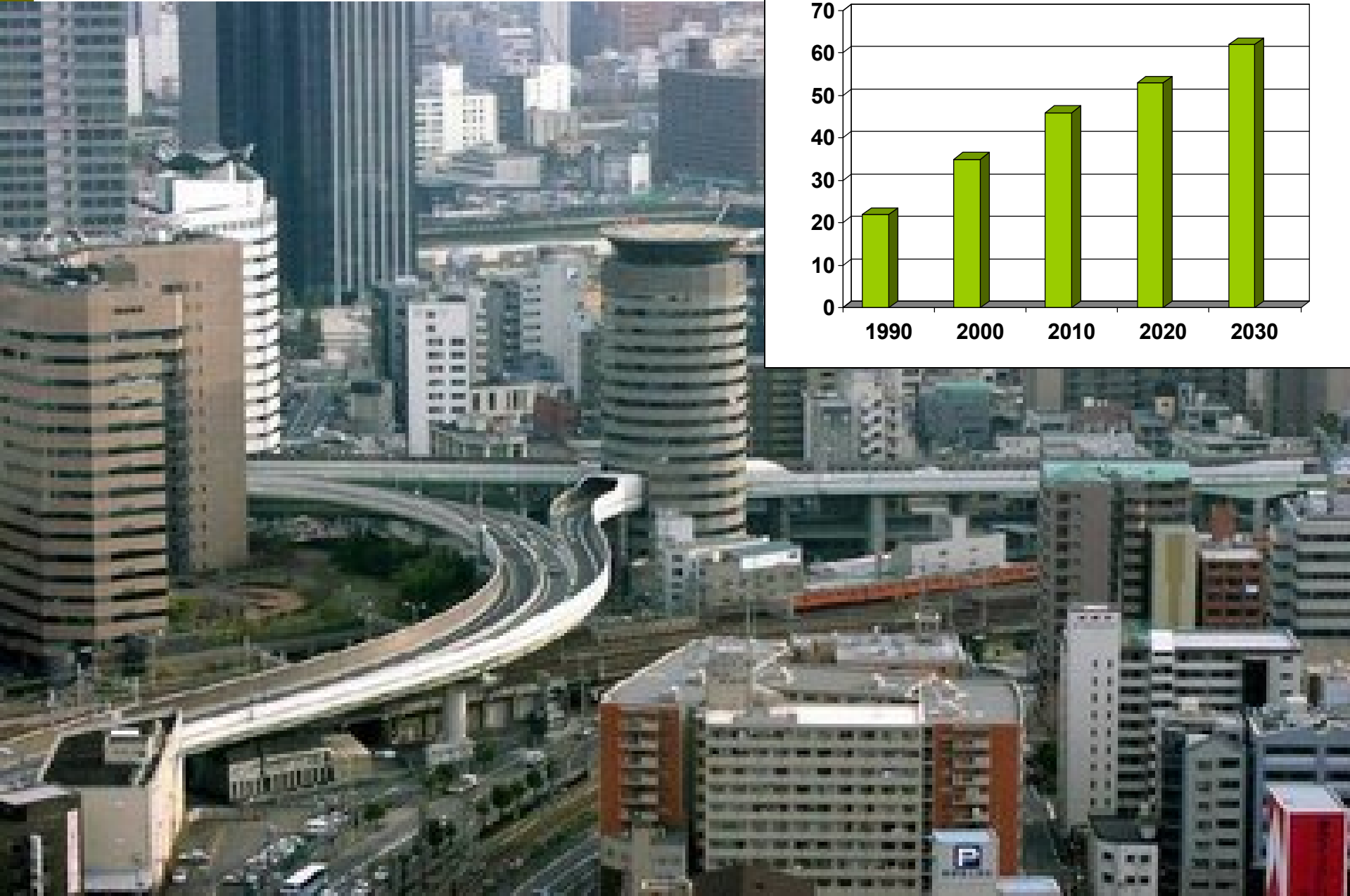


# Climate change



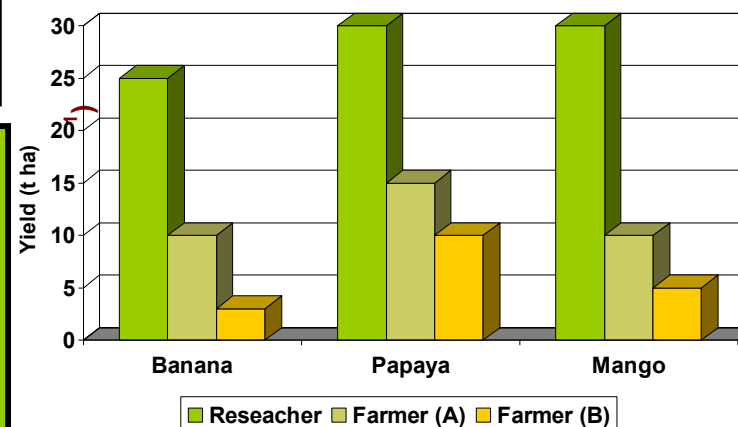
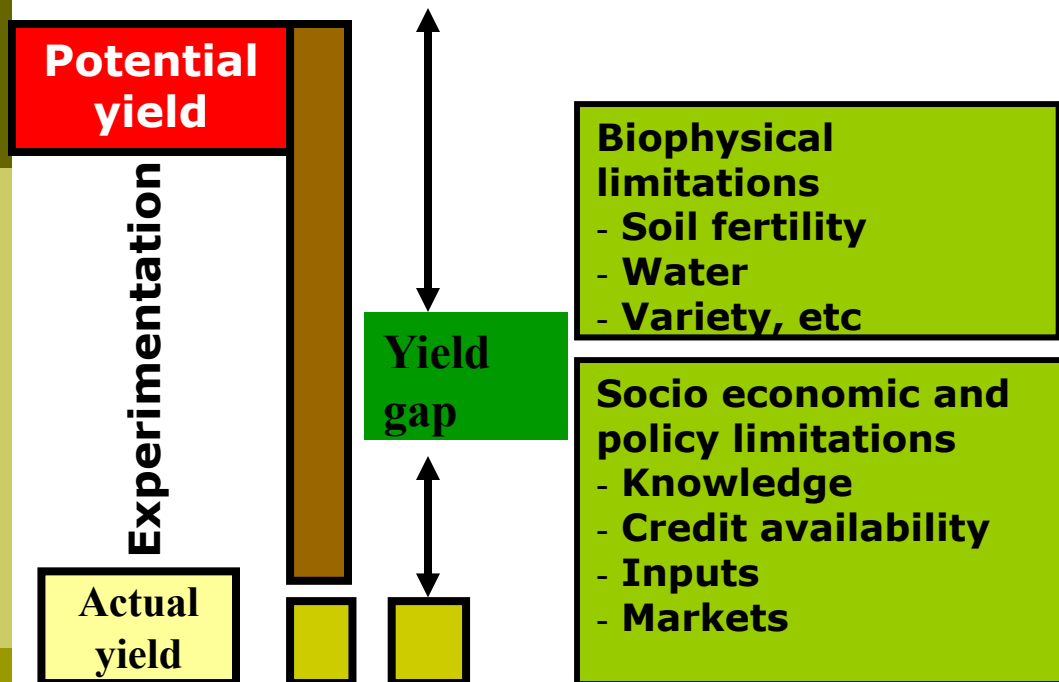
Source: GIS-Unit  
CIAT, June 2009

# Percentage of urban population in Kenya by 2030





# Production: The yield gap



**Which inputs are lacking?**

**Why inputs are not used?**

*Source – Africa Soils Net, 2009*



# Narrowing the GAP of postharvest losses

Field production

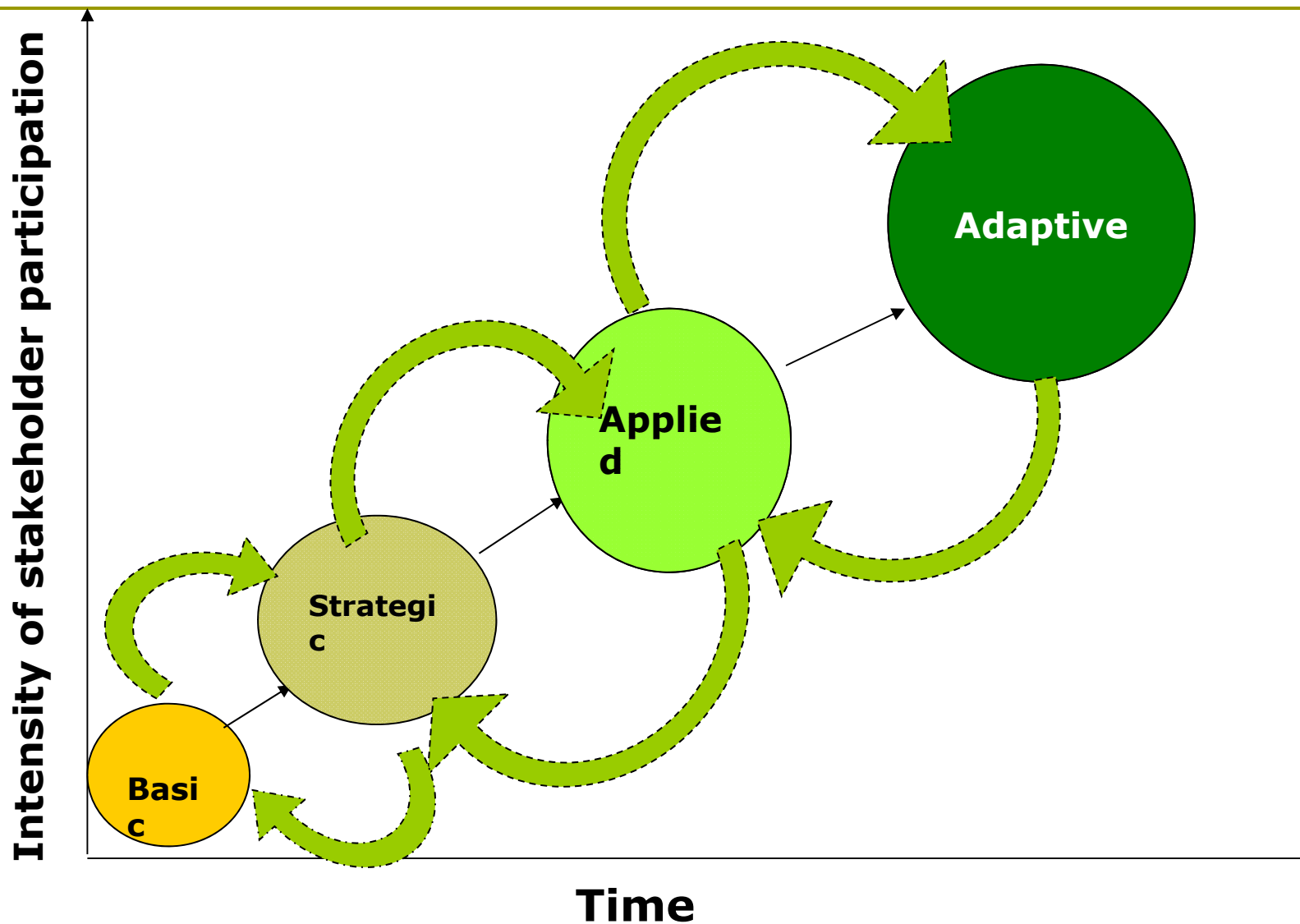
Pre-postharvest

Consumption

Harvesting and consistent delivery of quality, safe and nutritious products from **FIELD TO PLATE**



# Stakeholder involvement: Progression of research and feedback loops





## Change of KARI *modus operandi*

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- Change from “**pushing of commodity**” to “**market responsive products**”
- Production to satisfy the needs and **preferences** of the **consumer**
- Position KARI strategically to be a key driver for increasing **productivity**, **commercialization** and **competitiveness**
- Develop **technologies** and **innovations** for demand-driven **product value chains**

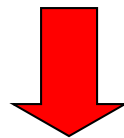




# Agriculture Product Value Chains: The re-orientation challenge

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- ❑ **The production orientation:** The exploitation of Bio-physical capabilities
- ❑ **Market (or Selling) orientation:** Processes of promoting the consumption of a product that the system is able to produce



- ❑ **Marketing orientation:** Identifying wants and needs of potential customers, (opportunities) and matching these to potential to do business

# Shift from production to marketing orientation approach

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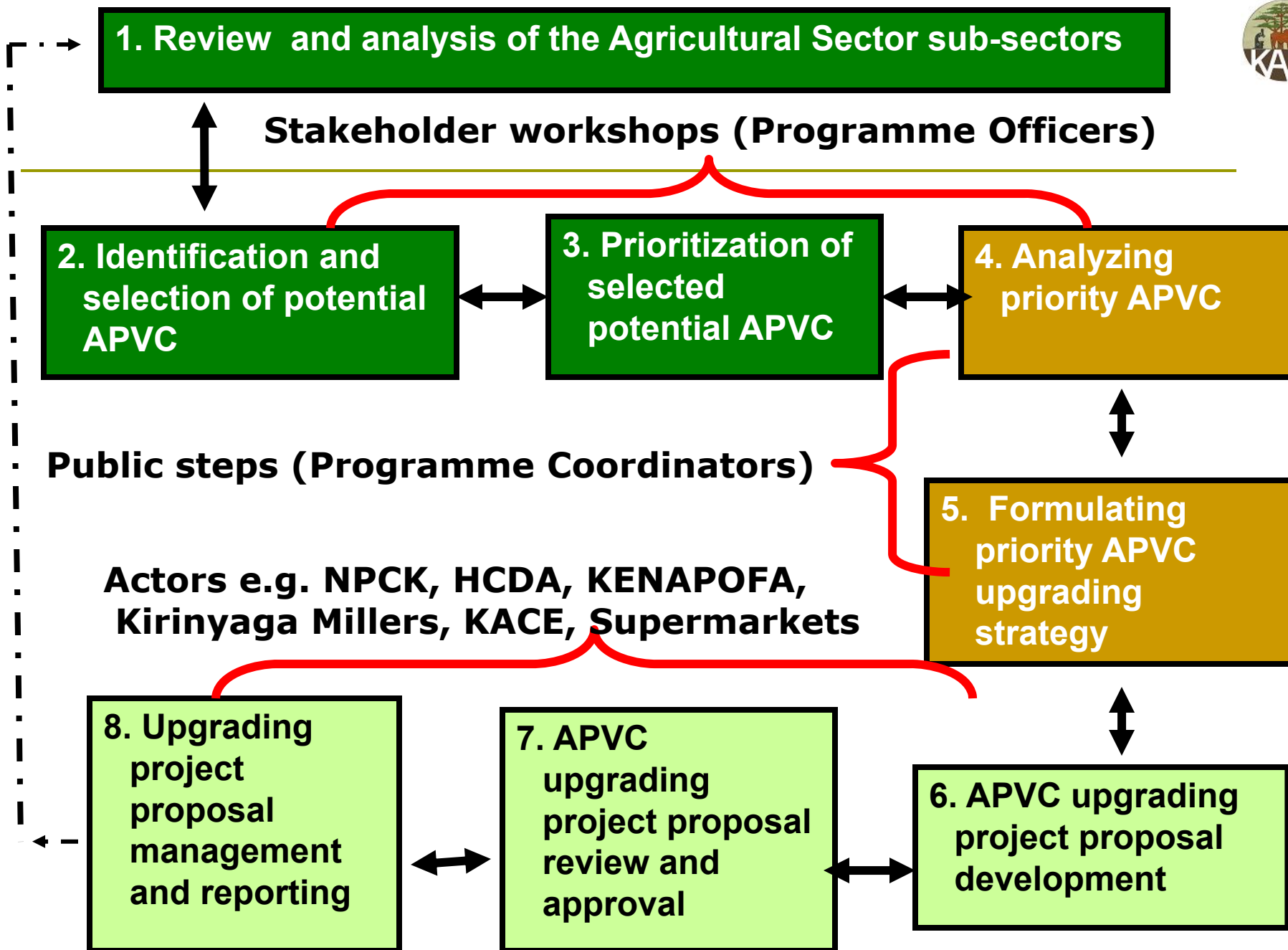
- **Vision 2030** – getting Kenya into a **middle income economy** where industrialization plays a key role
- Develop technologies that fit within the **industrialization portfolio** e.g. potato or sweetpotato products



**Eradicate extreme  
poverty and hunger**

**So how is  
this done?**







# 1. Review and analysis of potato and sweetpotato sub-sectors

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- **Role** of roots and tuber crops
- Conducted **situational analysis** and reviewed **development objectives**
- **Characterized production systems** in various ecozones
- **Prioritization** of **value chains** in sub-sectors
- Analysis of higher level broad sub-sectors **challenges, opportunities** and **interventions**

## 2. Identification and selection of potential APVC



## 3. Prioritization of selected potential APVCs

025/03/01

# Weighting criteria for **Agricultural Product Value Chains (APVC)**

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**Potential APVCs were selected based on an agreed criteria**

- ❑ Competitiveness potential (25)
- ❑ Impact potential (20)
- ❑ Contribution to agricultural GDP (15)
- ❑ Opportunities for intervention (15)
- ❑ Contribution to quality of environment (15)
- ❑ Social welfare (10)

Criteria	Weight	Sub criteria	Weight
<b>1.0</b> <b>Competitiveness potential</b>	25	1.1 Availability of high market demand, opportunities for growth and existence of industry leadership	<b>10</b>
		1.2 Potential for increased commercialization, value addition and product diversification	<b>8</b>
		1.3 Potential for competitive advantage in domestic, regional and global markets	<b>7</b>
<b>2.0</b> <b>Impact potential</b>	20	2.1 Increased employment creation and income generation	<b>9</b>
		2.2 Potential for effective and sustainable stakeholder and MSE participation and growth	<b>7</b>
		2.3 Potential for effective and sustainable public-private sectors participation and partnership	<b>4</b>
<b>3.0</b> <b>Contribution to Agricultural GDP</b>	<b>15</b>	3.1 Potential for increased production and productivity	<b>6</b>
		3.2 Potential for increasing availability and access to quality and affordable food	<b>5</b>
		<b>3.3</b> Potential for enhancing livelihoods and pro-poor economic growth	<b>4</b>



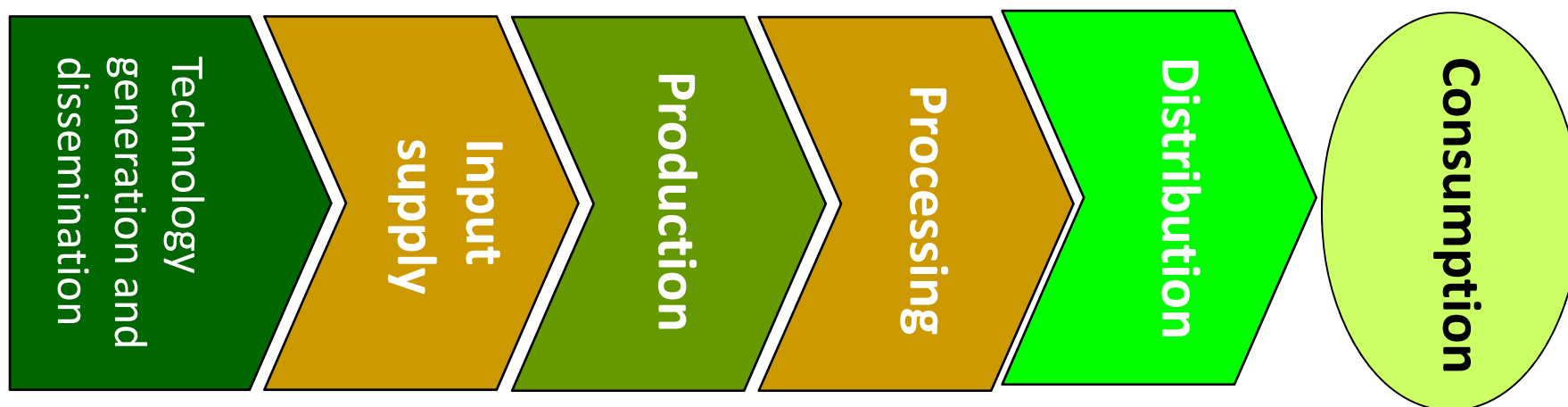
Criteria	Weight	Sub criteria	Weight
<b>4.0 Opportunities for intervention</b>	15	4.1 Expressed stakeholder's demand and their commitment and willingness to collaborate	7
		4.2 Existence of challenges and availability of capacity to address them	4
		4.3 Relevance and contribution to national and regional development objectives	4
<b>5.0 Contribution to quality of environment</b>	15	5.1 Potential for enhancing sustainable utilization of natural resources	6
		5.2 Potential for improving conservation and maintenance of biodiversity	5
		5.3 Promoting cleaner production and mitigation of climate change and variability	4
<b>6.0 Social Welfare</b>	10	6.1 Potential for improving nutrition and health particularly among the poor and marginalized	4
		6.2 Potential for encouraging gender equity and equitable distribution of benefits	3
		6.3 Capacity to mainstream major cross-cutting issues	3
<b>Total</b>	<b>100</b>		<b>100</b>



# Value Chain Priority Setting

Root and Tuber crops	Rank
<b>Sweetpotato (7.33)</b>	<b>1</b>
<b>Cassava (6.70)</b>	<b>2</b>
<b>Potato (6.68)</b>	<b>3</b>
<b>Arrow root (5.68)</b>	<b>4</b>

*Total score out of 10*





## **4. Analyzing priority APVCs**

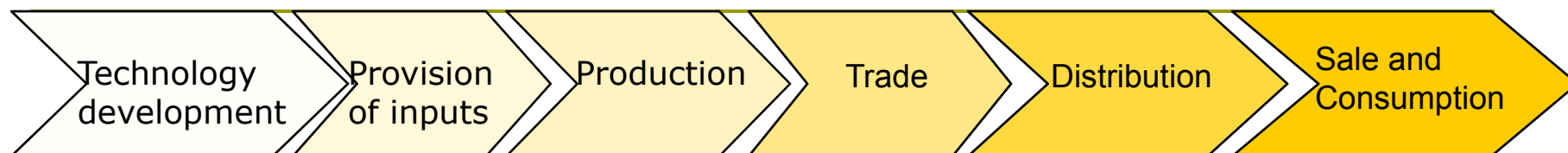


# Sweetpotato value chain





# Sweetpotato Value Chain Mapping

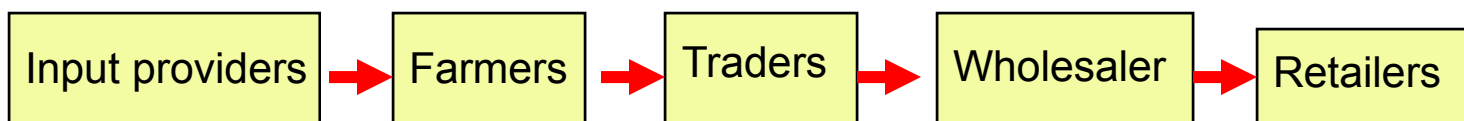


Seed, cuttings,  
ridging  
equipment

GAPs, harvesting,  
packaging

Transport,  
financing

Transportation



Specific consumer  
markets

Extension providers  
(public/private)

KSU, credit  
providers

Farmers, traders  
middlemen

Farmers  
Wholesales

Farmers  
Vendors

Transporters

Researchers

Storage providers



# Sweetpotato value chain: Constraints

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- ❑ Low productivity and poor marketing strategies
- ❑ Low genetic potential in some varieties
- ❑ Some varieties susceptible to insect (weevils) and diseases (viruses)
- ❑ Inadequate access to timely and sufficient quantities of quality planting materials (vines)
- ❑ Low volumes for 'industrial' processing although production outstrips consumption, generally
- ❑ Poorly developed product retail market
- ❑ Technologies have not reached many beneficiaries
- ❑ Inadequate articulation between demand and supply

# Sweetpotato value chain: Opportunities



- ❑ Virus resistant/tolerant and **high yielding varieties** developed by research
- ❑ Existing technologies on multiplication and conservation of **clean planting materials**
- ❑ **Local cottage industries** exist for value addition
- ❑ Initiatives for **CIGs (Community Interest Groups) formation** enhancing marketing
- ❑ **Demand growing**, with trends in healthy eating habit: (high local market demand for speciality trait varieties, e.g. orange fleshed sweetpotato)
- ❑ **Potential markets** such as feed industry exist
- ❑ **High economic value** (KES 6-9 billion) annually and high potential to transform economic well-being of many farmers



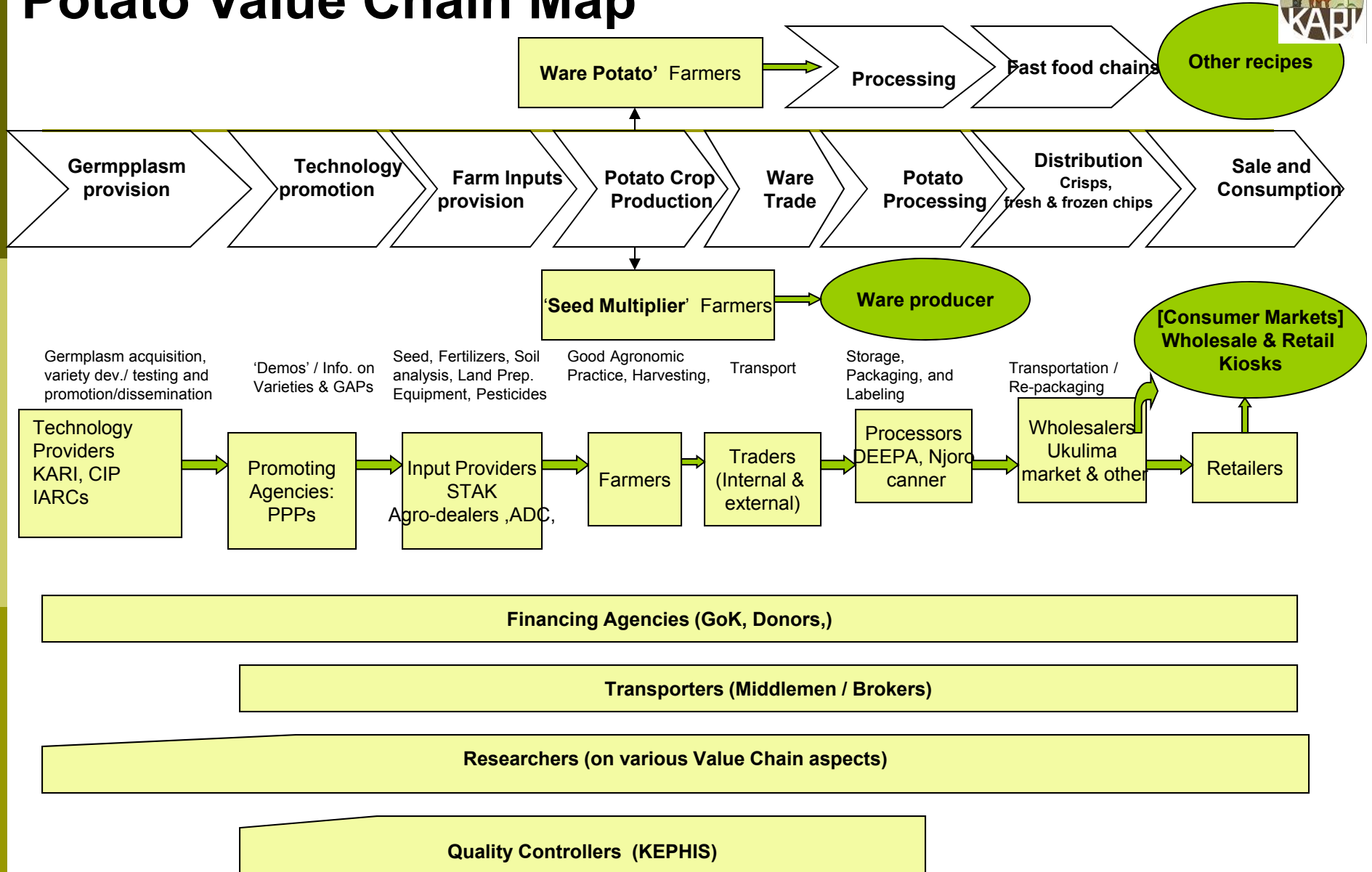
# Potato value chain

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# Potato Value Chain Map





# Potato Value Chain: Constraints

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- ❑ Limited **innovations**
- ❑ Narrow **breeding** horizon
- ❑ Narrow **germplasm** base
- ❑ Limited integrated **pest** and **disease** management packages
- ❑ Limited integrated NRM (**natural resource management**) packages
- ❑ Limited appropriate **postharvest** technologies
- ❑ Limited **crop management** packages



# Potato Value Chain:

## Low adoption of innovations and poor accessibility

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### Limited adoption of innovations

- ❑ Inappropriate/weak technology transfer mechanisms
- ❑ Poor packaging of extension messages

### Limited accessibility and costly inputs

- ❑ Lack of a robust (viable) seed system
- ❑ Poor land tenure system
- ❑ Limited access to credit
- ❑ High cost /poor quality of farm inputs (fertilizers, pesticides, etc)



# Potato Value Chain:

## Low production and processing

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### Low production

- ❑ Inappropriate policy instruments
- ❑ Limited access to credit
- ❑ High transaction costs (poor rural access roads)

### Limited processing

- ❑ Inappropriate policy instruments
- ❑ Bulkiness and perishable nature of potato



# Potato Value Chain:

## Undeveloped markets and limited utilization

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### Undeveloped markets (Distribution)

- ❑ Inappropriate policy instruments
- ❑ High transaction costs (poor road network)

### Limited utilization of potato and potato products (Trading)

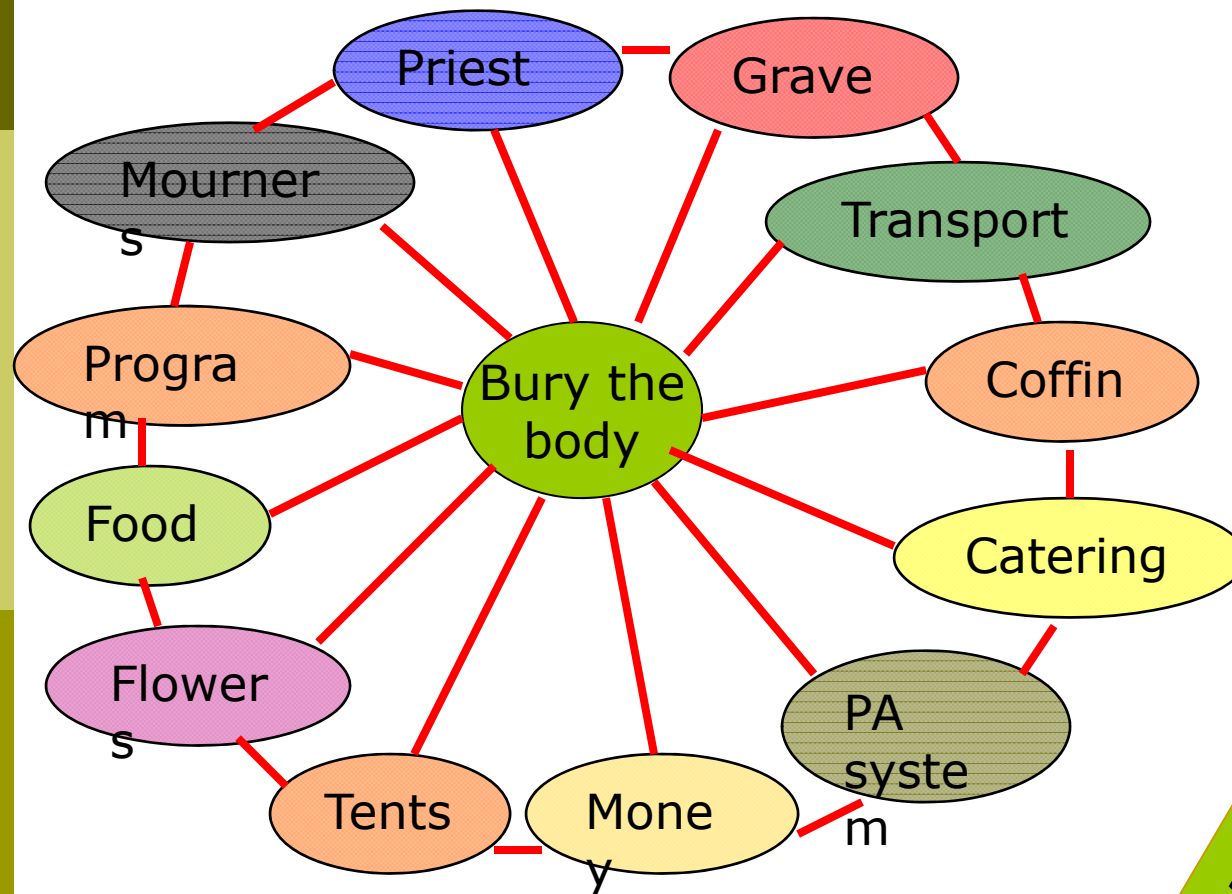
- ❑ Poor developed (small and segmented) markets
- ❑ Poor road network and scattered farms
- ❑ Limited use of standardized packaging/weighing
- ❑ High transaction costs (poor road network)



# **Development of Innovation Platforms**

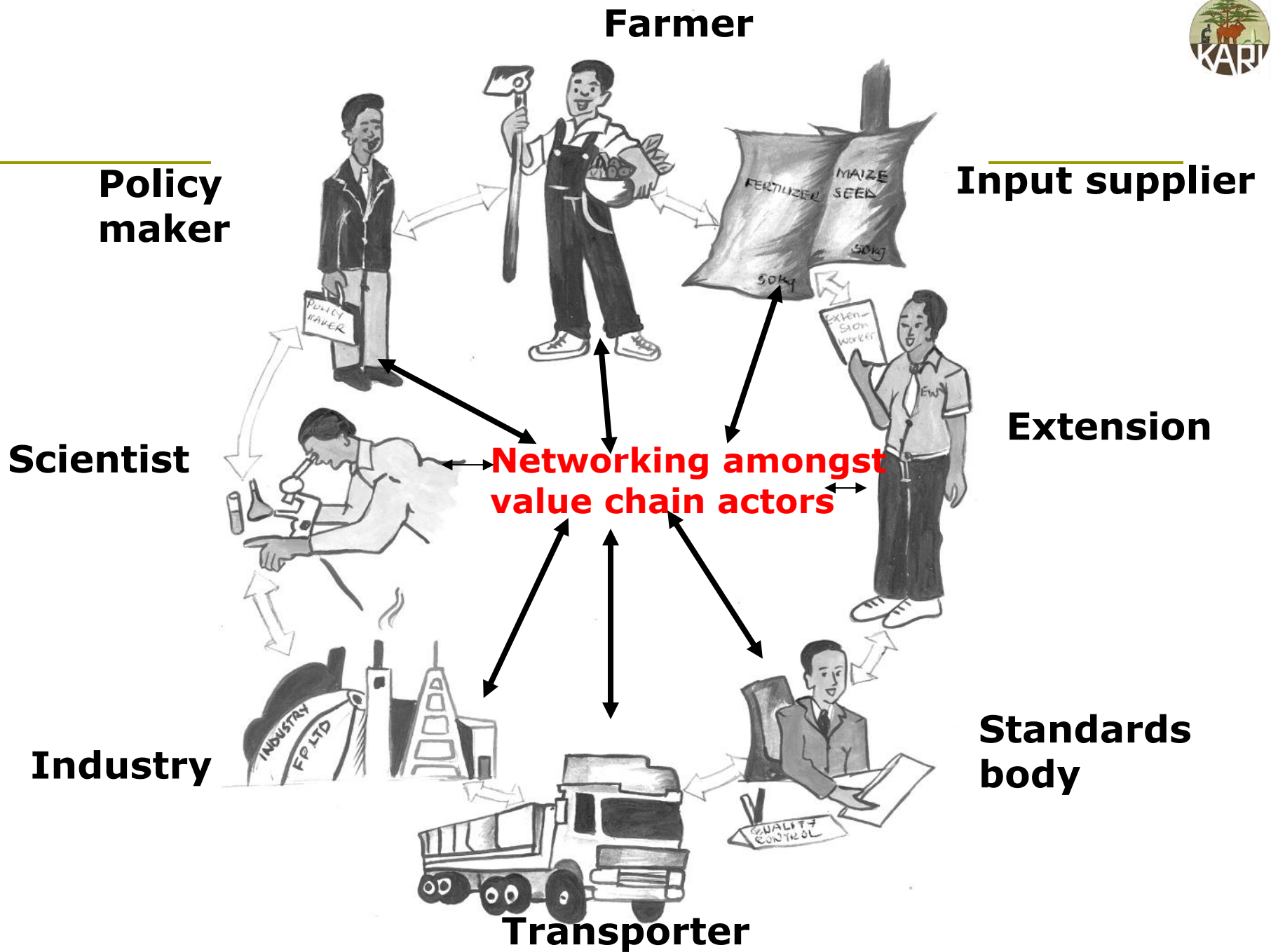


# African funeral



**Committee**

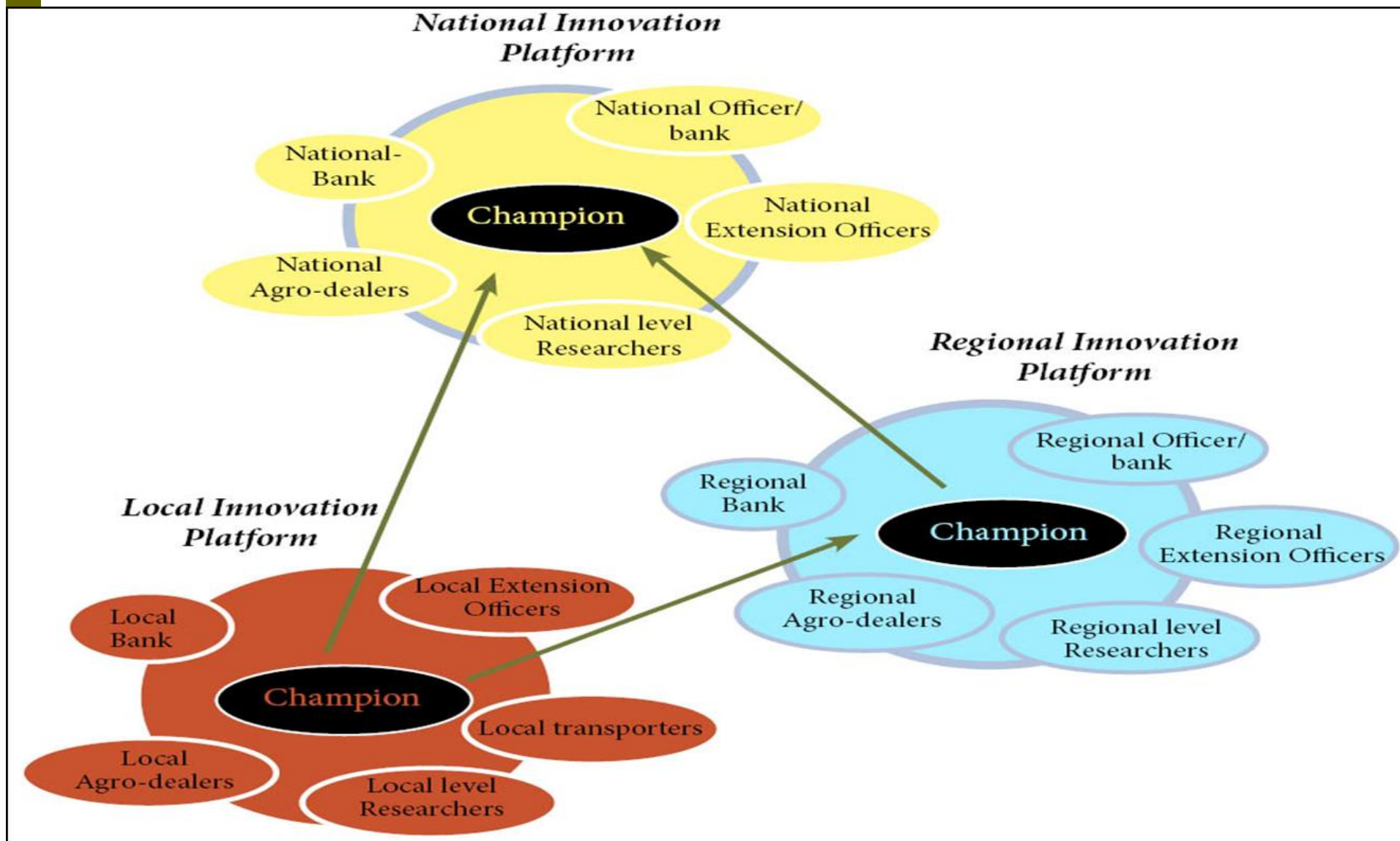
**Why it works???**







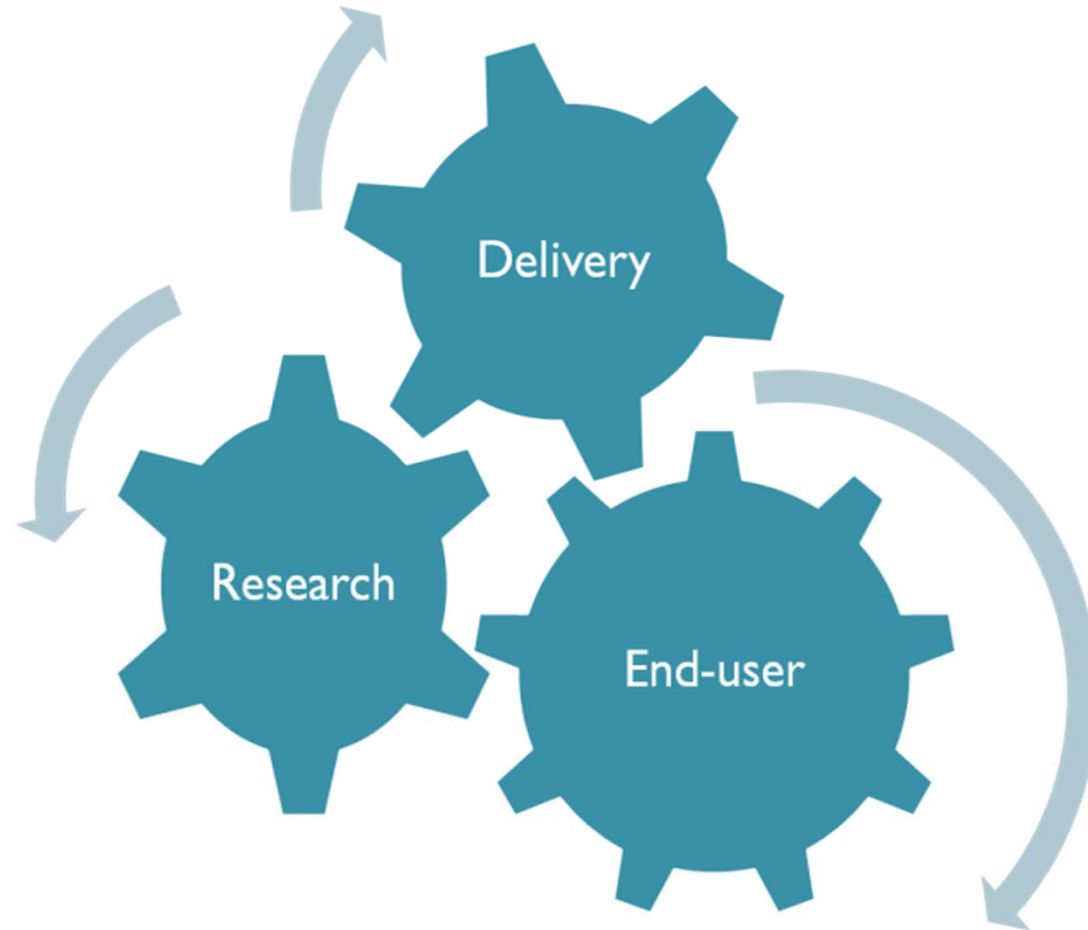
# Different levels of innovation platforms





# Expected Outcomes

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**Drive agriculture forward<sup>34</sup>**



**THANK YOU**

