Innovation and Intellectual Property Policy in the Agri-Food Sector in Uganda: Finalizing the WIPO-Uganda Agri-Food Study

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Motivation

- Uganda relies heavily on agriculture…
- …and has vast untapped agricultural potential
- To realize this potential, Uganda's agri-food sector must become…

  more dynamic

  more innovative

  and more responsive to market opportunities
- This transformation will be multi-faceted, but innovation and intellectual property (IP) policy will have to contribute to the enabling environment
- Seeing agricultural value chains through an *Innovation Systems* lens can provide an insightful perspective on these policy possibilities

Broad Motivating Research Questions

1. What constraints prevent innovations emanating from national and international agricultural research and development from benefiting agricultural producers and consumers in Uganda?
2. What role does innovation and intellectual property policy play among these constraints or as a means of alleviating them?

Workshop Objective & Overview

Objective

Explore and discuss your perspectives on these questions as we refine and finalize the scope and structure of this study as part of the broader UNCST mandate to inform Ugandan policy

Overview

Three group sessions, each with an assigned session chair:

- 30 minutes of small group discussion on a given topic
- 10-15 minutes of reports in plenary by a representative from each group
- 10-15 minutes of open discussion

Panel discussion with session chairs moderated by Julius Ecuru

Presentation Outline

1. Conceptual framework and potential elements of the study
2. A sampling of recent insights into Ugandan agri-food value chains
3. The innovation and IP policy landscape in Uganda
4. Data sources and descriptive stats for the Ugandan agri-food sector
5. Introduction of topics and questions for group sessions

Agricultural Value Chains

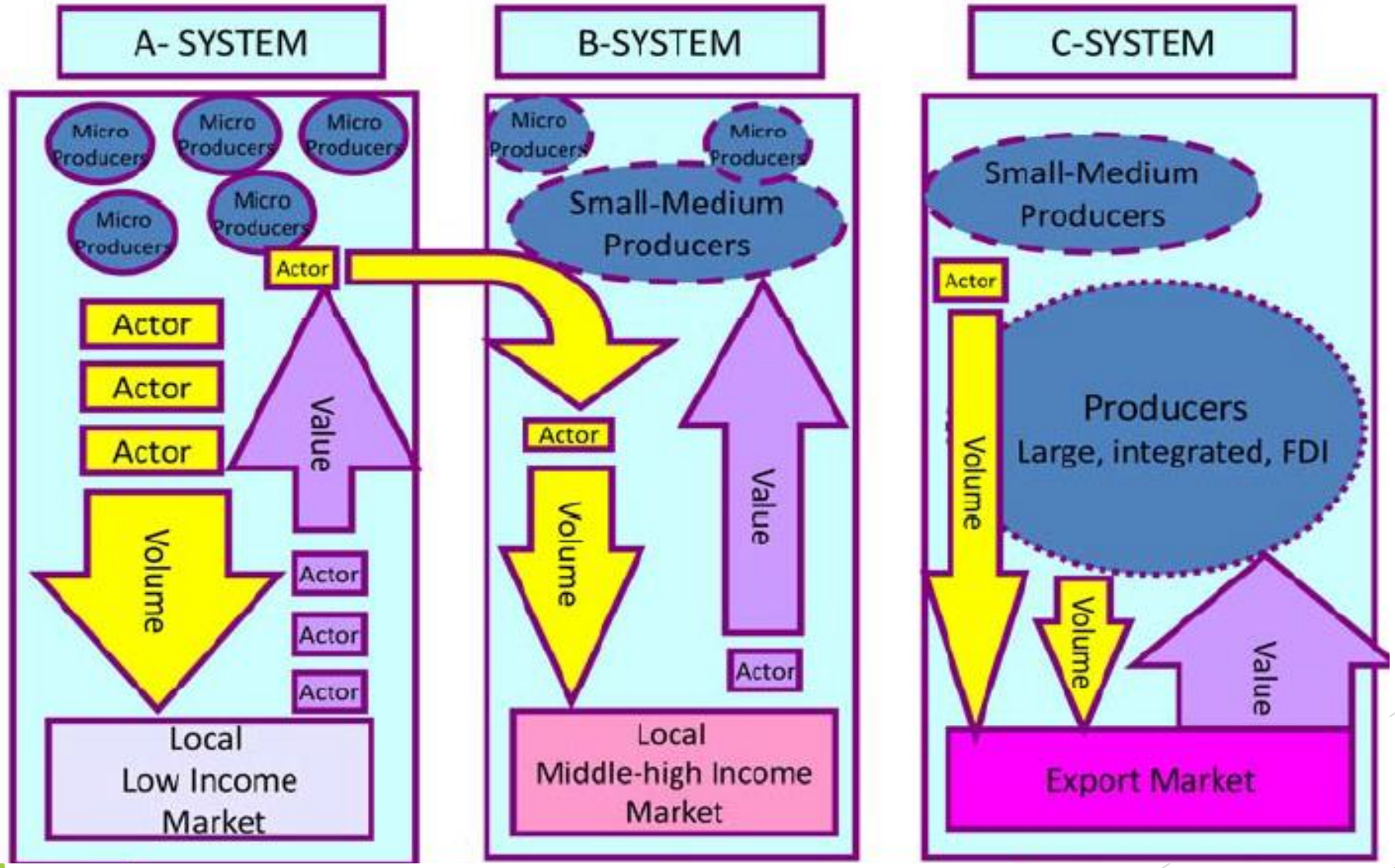




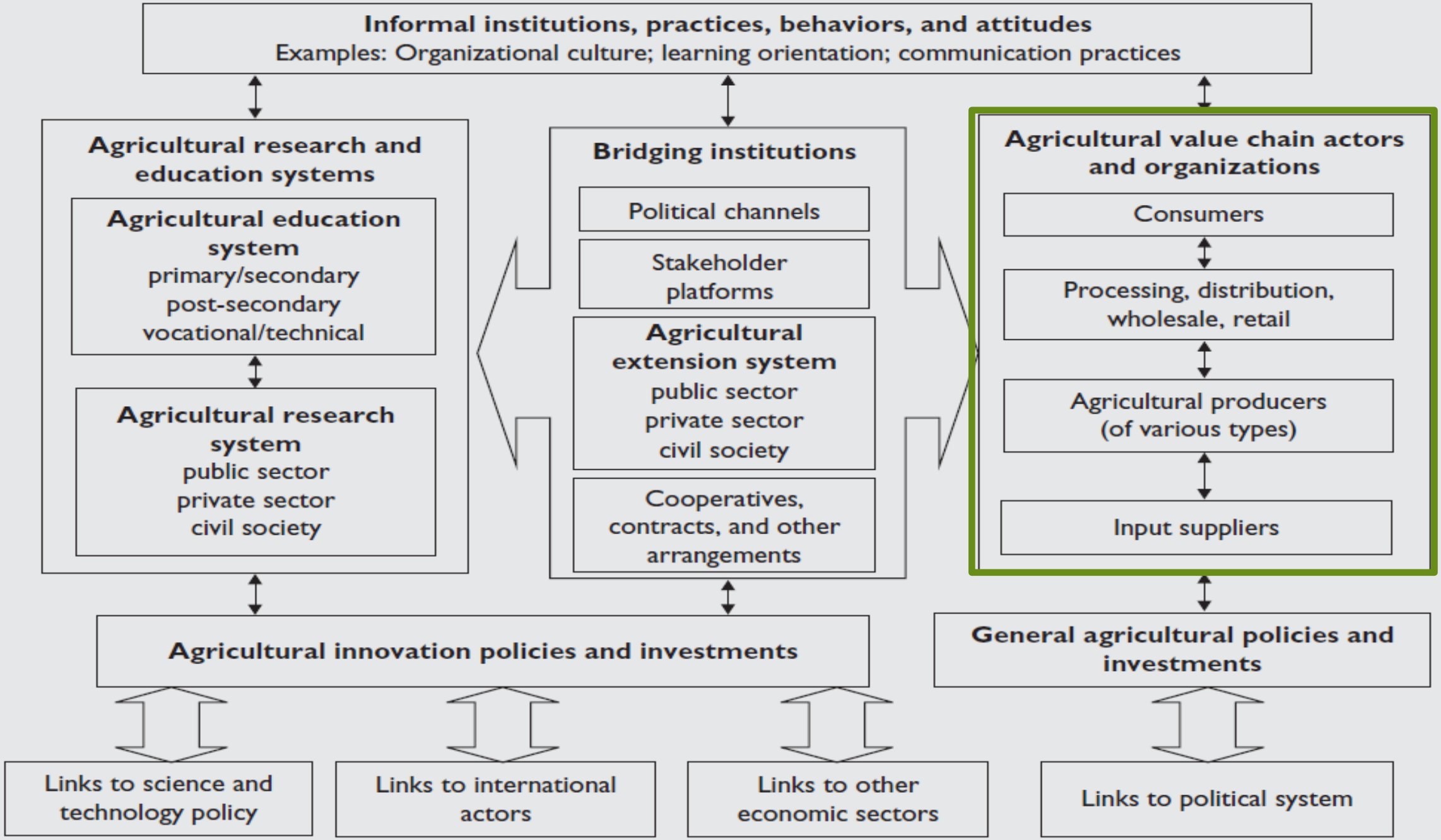

Production	Harvesting and transport	Primary processing and storage	Secondary processing	Distribution, packaging, and handling	Wholesale and retail markets
• Smallholder farmers • Farmer associations • Input providers	• Smallholder farmers • Farmer associations • Logistics companies	• Primary processors • Machinery suppliers	• Secondary processors • Machinery suppliers	• Packaging companies • Logistics companies	• Grocery stores and supermarkets • Food and beverage companies

Source: A.T. Kearney analysis

Parallel Systems in African Agri-food Sectors

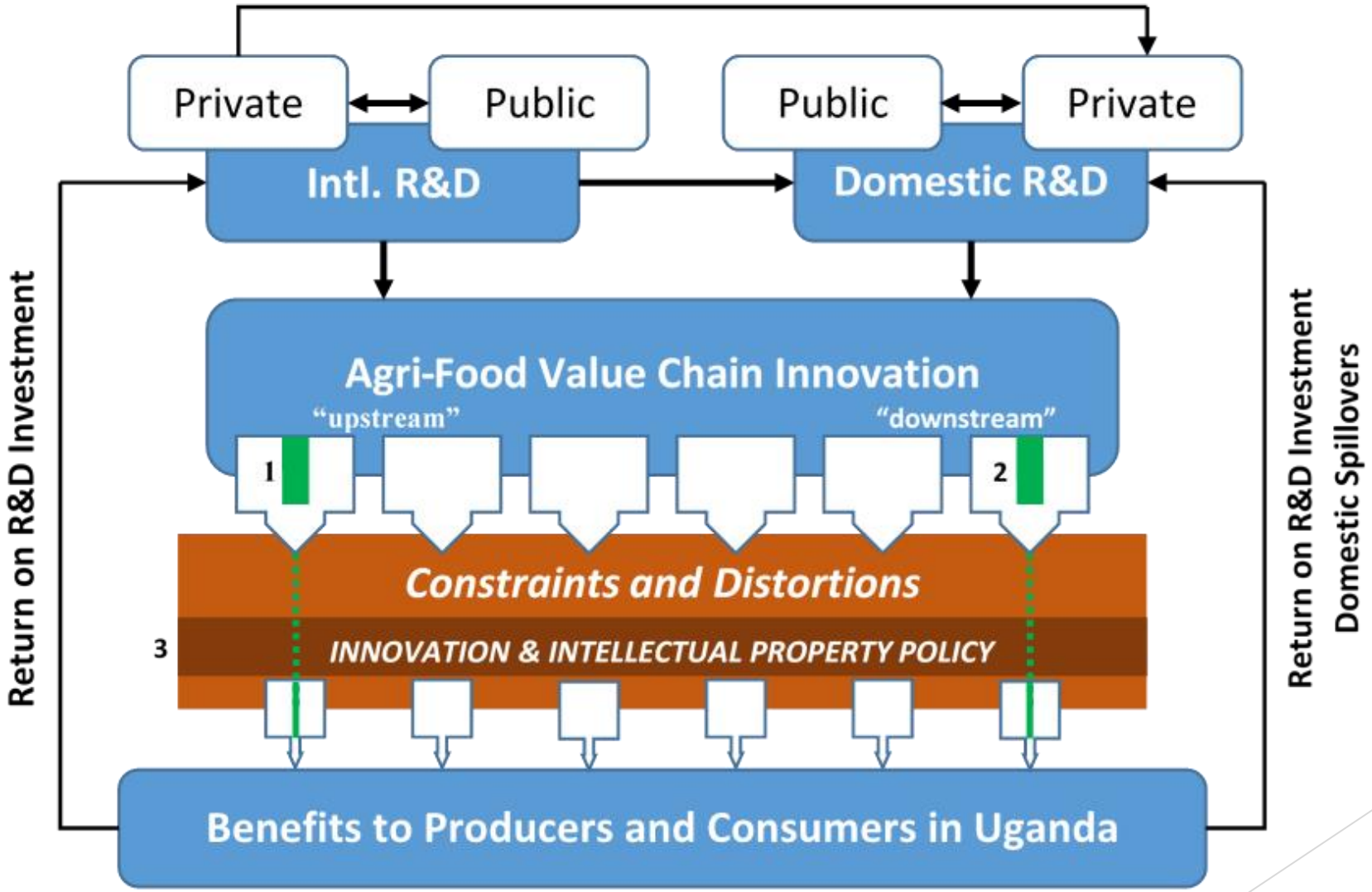


An Innovation Systems Perspective on Agricultural Value Chains



Source: Spielman and Birner 2008; adapted from Arnold and Bell 2001.

Conceptual Framework for Study



Potential Elements of Study

- Agri-food sub-sectors to be included
  - Maize – improved inputs (upstream)
  - Coffee – improved inputs (upstream) and value-added processing (downstream)
  - Fruit Processing (drying, juicing of pineapple, mango, banana, jack fruit, etc.) – value-added processing (downstream
- Methodological approaches
  - Tap existing agricultural household data (LSMS, IFPRI, etc.)
  - Analyze existing R&D and Innovation survey data (UNCST and IFPRI)
  - Collect structured survey data of upstream input supply chain actors
    - wholesalers and retailers of different sizes
    - Both formal and informal sector actors
    - Statistical sampling frame, including geographic stratification
  - Case studies of 1-2 downstream actors

Recent Insights into Ugandan Agri-food

- Ugandan agricultural R&D and public research capacity is relatively strong
- Supply chains for inputs such as seed, fertilizer, and chemicals often weaken before they deliver inputs to rural farmers
- Input quality concerns, including counterfeiting, are serious constraints
  - In maize growing regions, on average 30% of labeled nutrients were missing from fertilizer; less than 50% of hybrid maize seeds were authentic (Bold et al. 2015)
  - Most farmers do not know what maize seeds they are using

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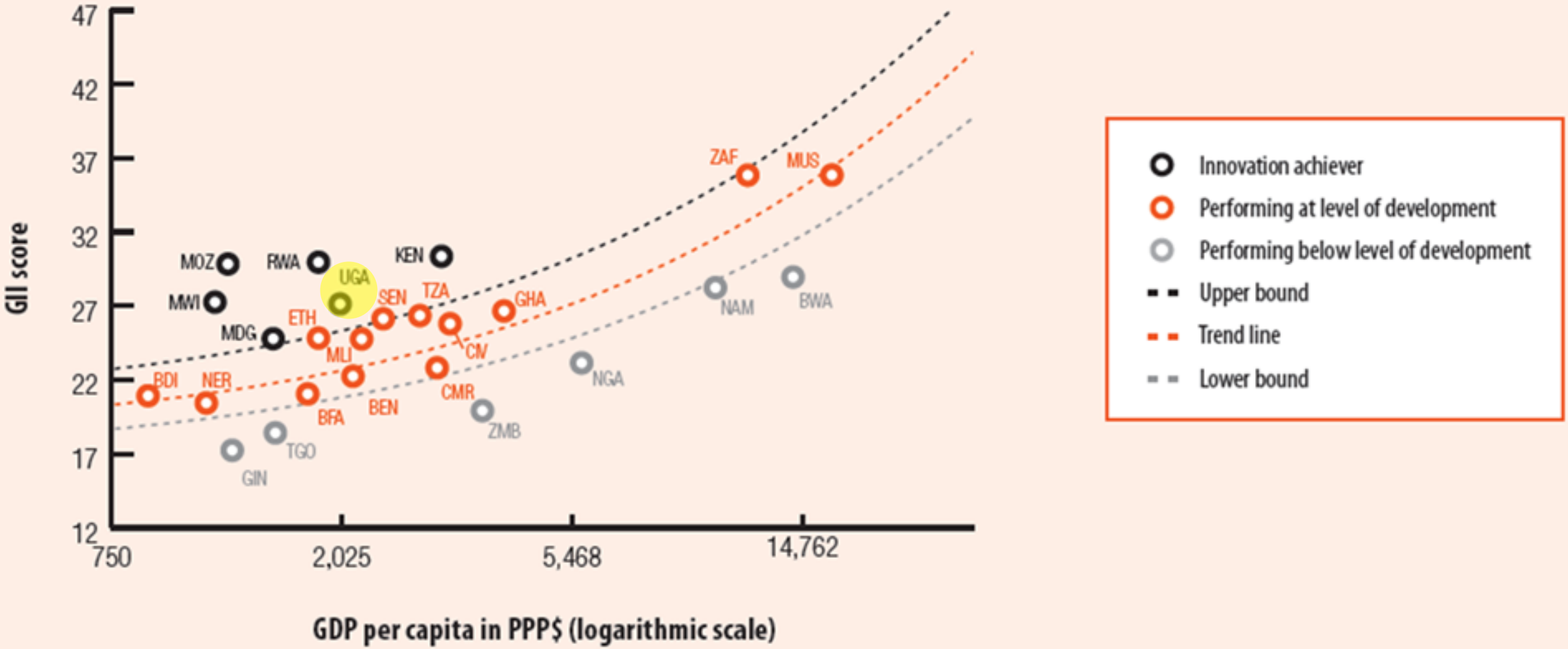
  - Most farmers do not know what maize seeds they are using
- ~10% of maize farmers use inorganic fertilizers or improved seeds
  - Some soils may be relatively unresponsive to inorganic fertilizer due to low organic matter or acidity
  - In Western Kenya, the return on fertilizer purchased on the open market may be negative
- Some promising experimentation with new ways of integrating smallholder producers into viable output markets

Innovation and IP in Uganda

- National Science, Technology and Innovation Policy (2009)
- National Science, Technology and Innovation Plan (2012)
- Ministry of Science and Technology (2016)
- Intellectual property rights (IPRs)
  - Very few patents
  - More trademarks, especially in recent years
  - Geographic Indications Act (vanilla, coffee, shea butter, cotton)
  - Plant variety protection law passed in 2014; not yet implemented
- Uganda ranks 99/126 countries in the 2016 Global Innovation Index

The GII 2016 on Uganda



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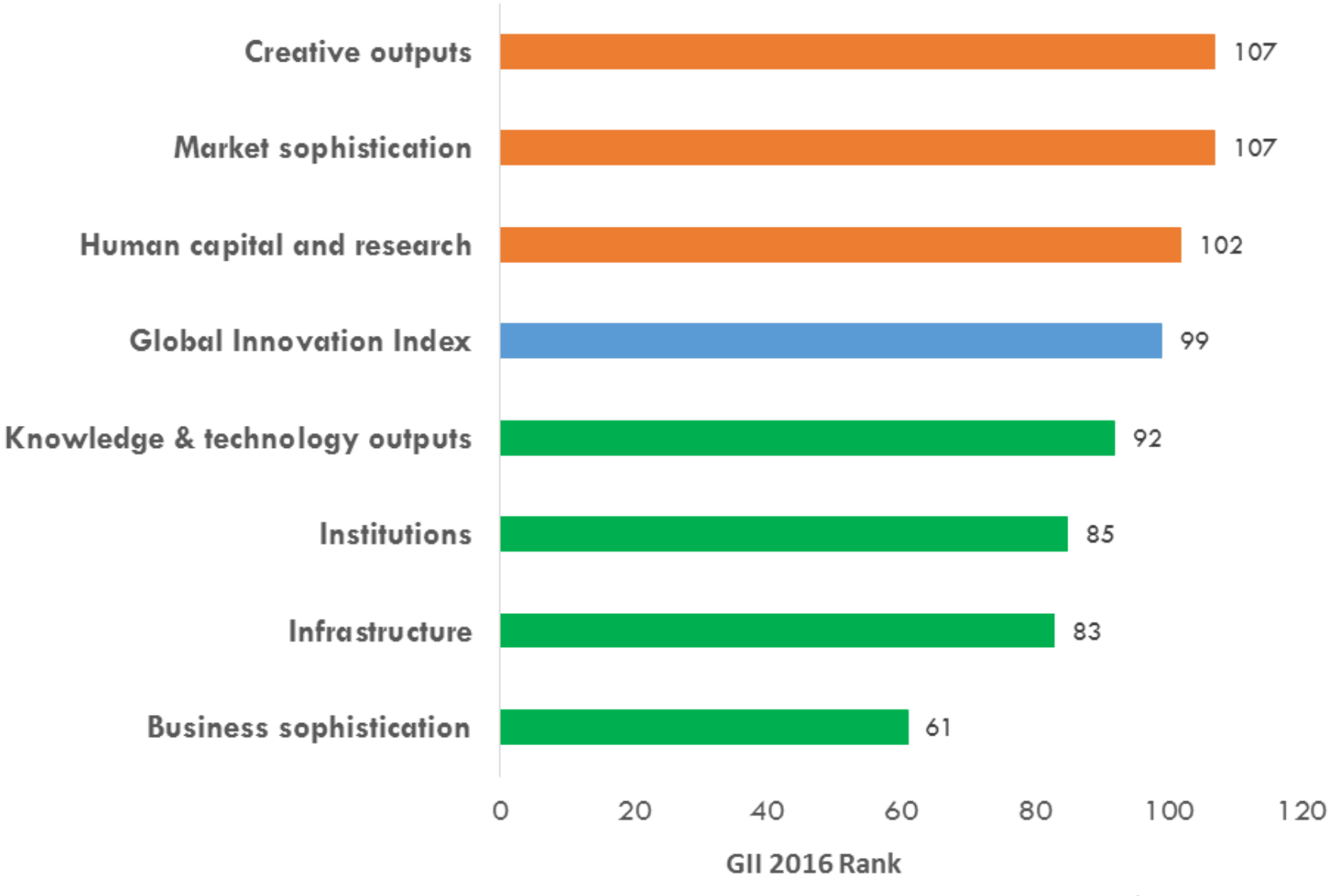


Data Sources and Descriptive Statistics on Ugandan Agri-food

- Data in Global Innovation Index
- Data from R&D and Innovation Surveys (UNCST /World Bank)
- Data gathered from national farm /household surveys
  - Ugandan Agricultural Census / Enterprise survey
  - World Bank Enterprise Surveys and Living Standards Measurement Survey – Integrated Survey on Agriculture
- IP Statistics (URSB and WIPO)

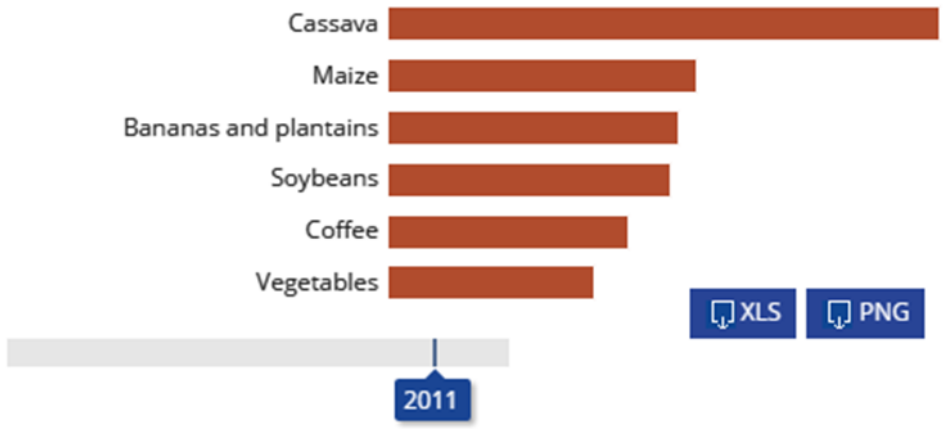
AGRICULTURE SCIENCE TECHNOLOGY AND INDICATORS (ASTI) BY IFPRI

KEY INDICATORS, 2000–2011

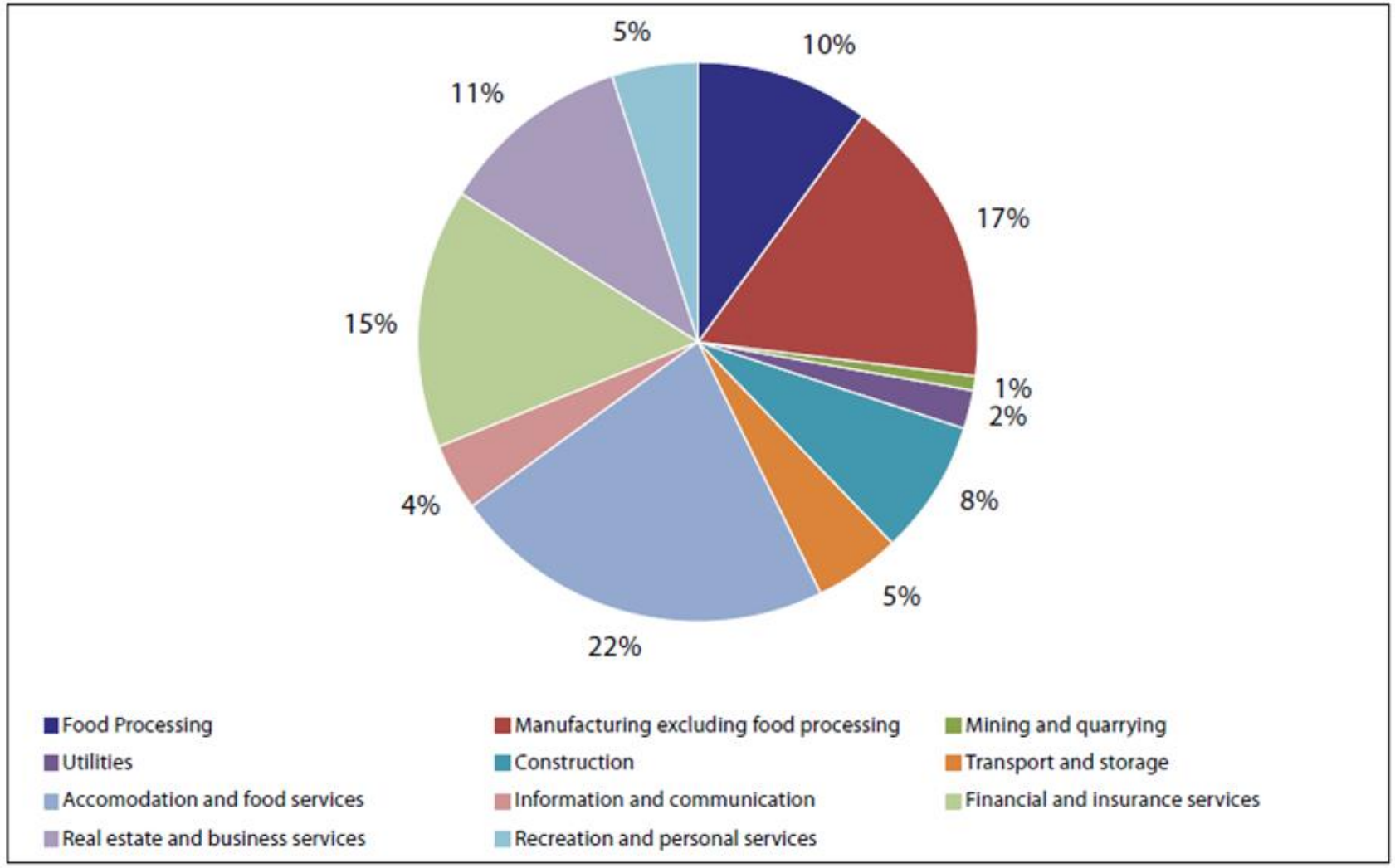
Total Public Agricultural Research Spending	2000		2008		2011
Ugandan shillings (million constant 2005 prices)	24,253.0		57,705.4		66,204.3
PPP dollars (million constant 2005 prices)	39.1		93.1		106.8
Overall Growth		**138%**		**15%**	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	254.1		312.5		353.9
Overall Growth		**23%**		**13%**	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.76%		1.29%		1.22%
FTE researchers per 100,000 farmers	3.02		3.00		3.13

Share of total crop researchers (%)

UGANDA



UGANDA INNOVATION FOLLOW-UP SURVEY

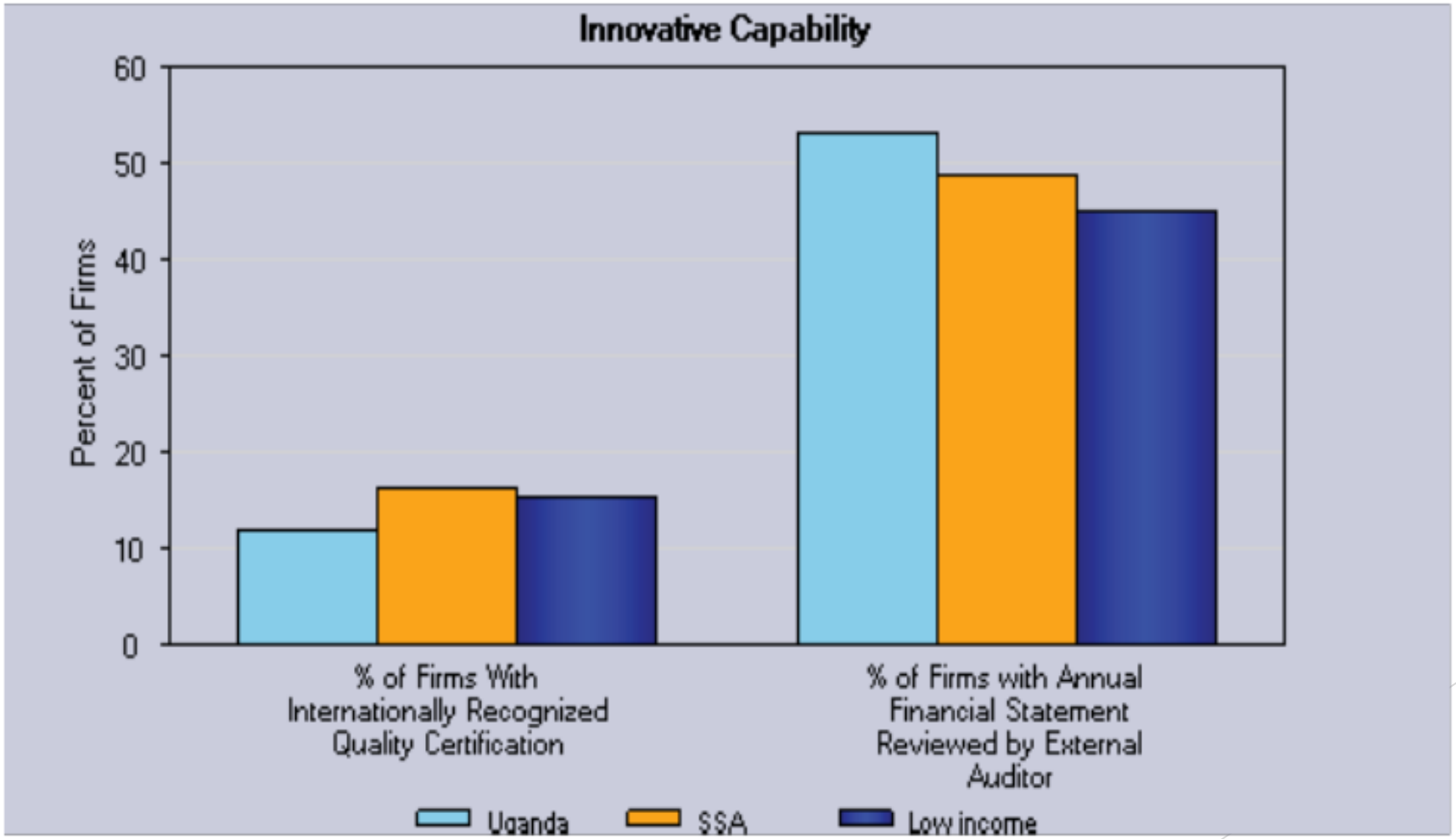


Source: Appendix B Tables 3.1 to 3.3

Figure 3.2: Innovative Enterprises by Industrial Sectors (%), 2008-2010

UGANDA - ENTERPRISE SURVEY

- Factors that shape business environment.



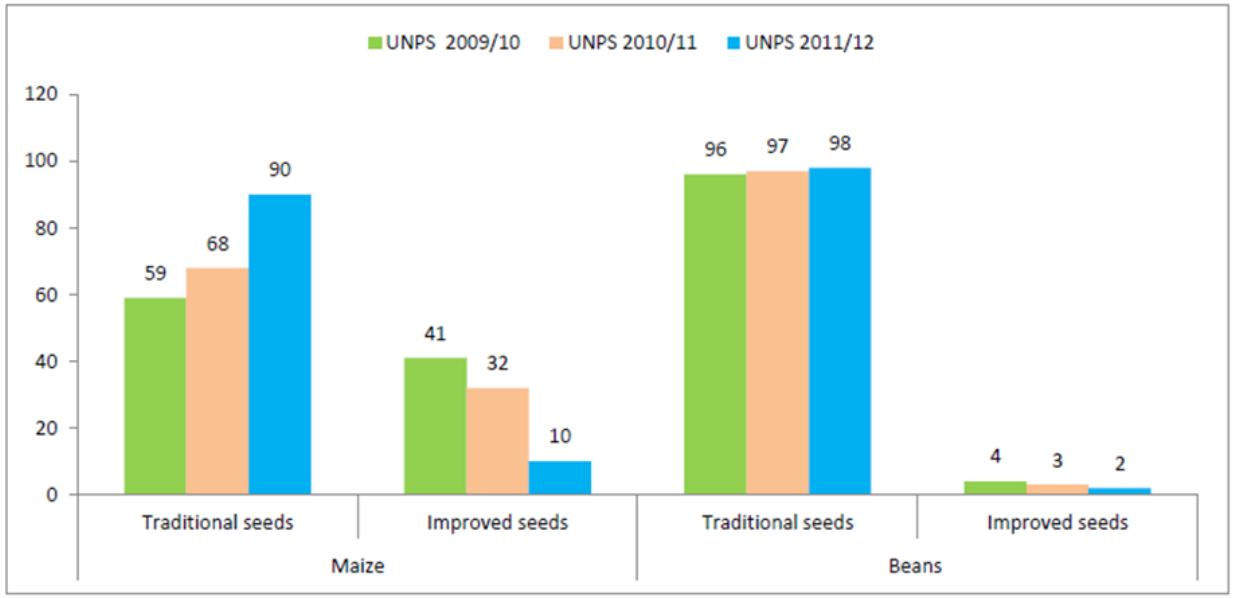
WORLD BANK LIVING STANDARDS MEASUREMENT STUDY

- multi-topic panel household survey

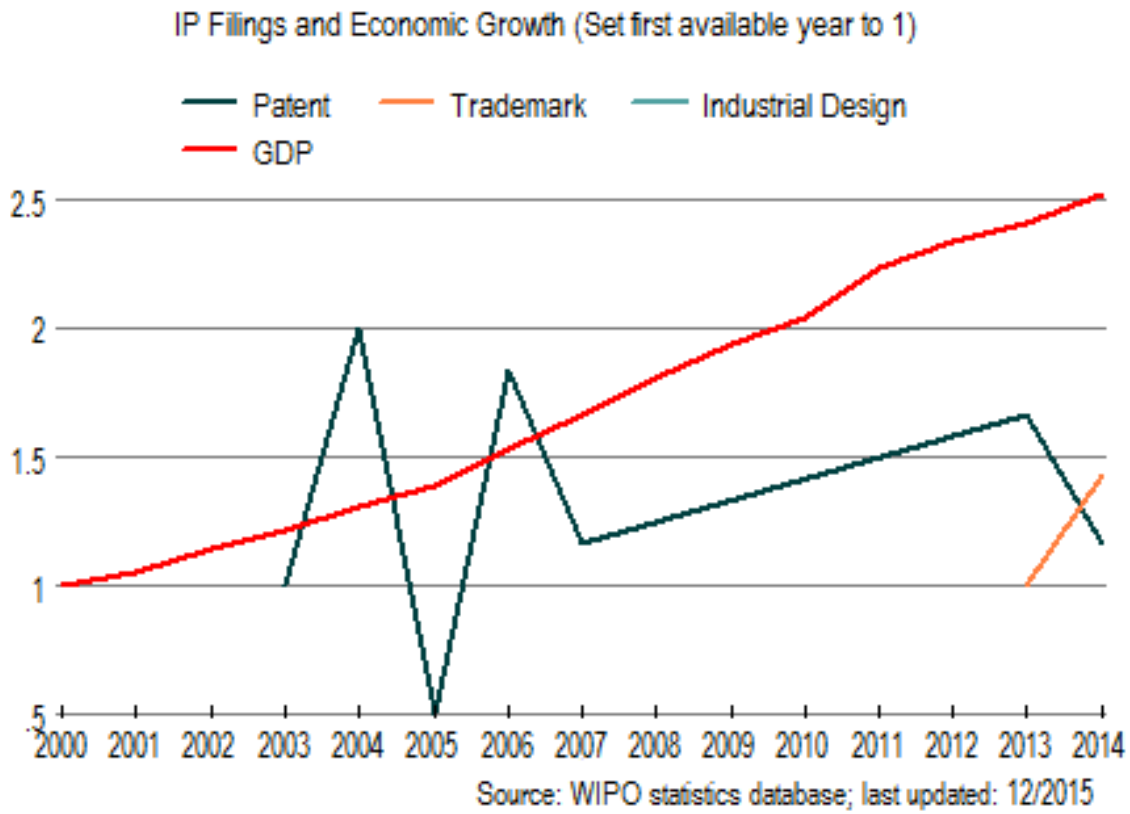
Table 7.1: Number of Agricultural Households

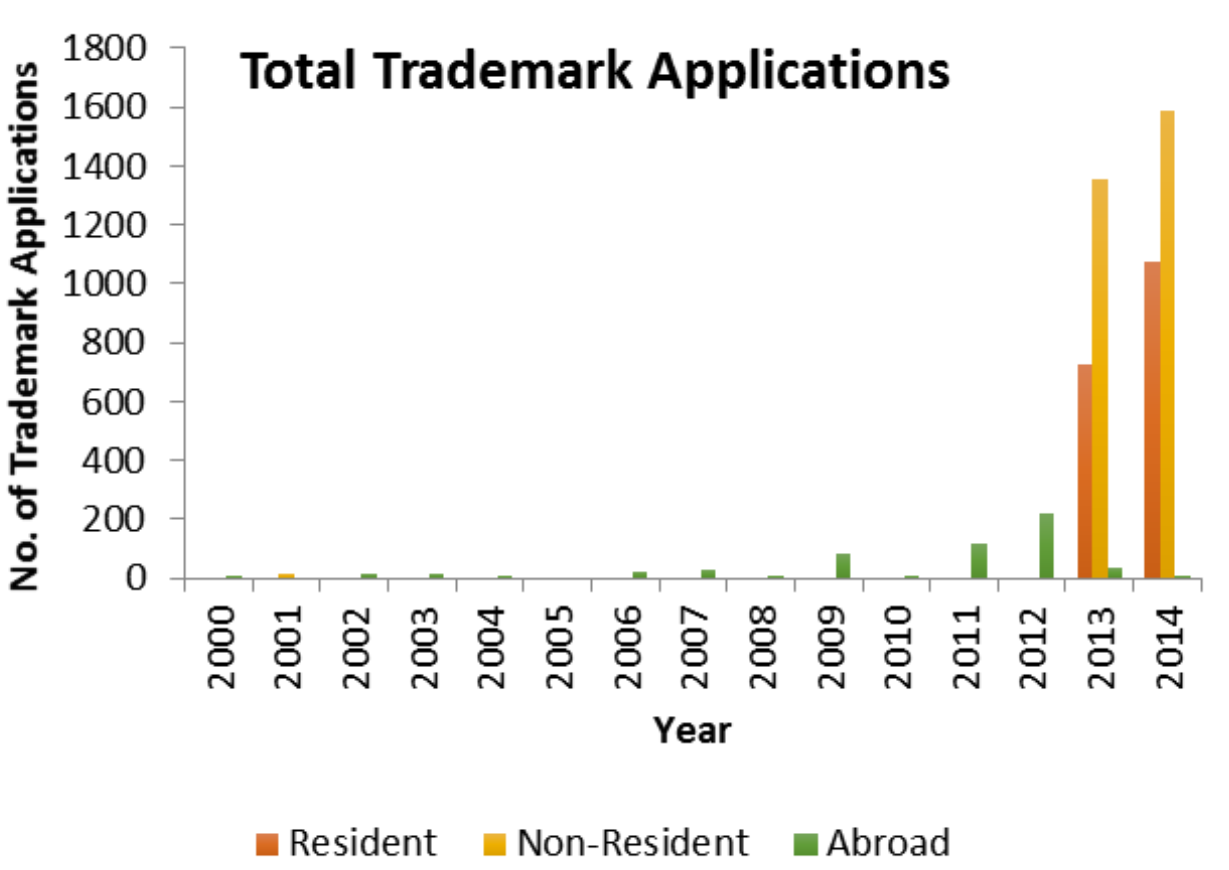
Households	UNPS 2009/10	UNPS 2010/11	UNPS 2011/12
Engaged in Agriculture	4,388,120	3,818,860	4,191,470
Cultivated crops	4,207,430	2,882,810	4,168,210
Reared/owned Cattle	3,613,120	2,255,450	1,285,740
Reared/owned small animals	2,665,340	1,625,170	2,327,360
Reared/owned poultry	2,824,730	1,750,680	2,279,200

Figure 7.5: Use of Improved Maize and Beans Seeds by Year (%)



URSB AND WIPO - INTELLECTUAL PROPERTY DATA





Constraints with current databases

- Problem of capturing agricultural sector, agricultural inputs and downstream processes comprehensively
- Problem of agricultural or household surveys not detailed on innovation or adoption of technology
- Problem of innovation surveys mostly outside AG sector
- Problem of informal sector
- Difficulty of matching household/firm data with exisiting innovation data

Lingering Data Questions

- How to deal with the delimiation of the agricultural sector properly (AG sector versus food sector)
- Are we missing data sources, in particular as the result of sectoral academic studies or surveys?
- What data to produce or garner for now?

Introduction to Group Session 1

- **Group session 1**: Map the innovation ecosystem of Uganda's agri-food sector or maize, coffee or fruit processing sub-sectors.
  - (i) who are the key private and public players?
  - (ii) how do they interact?
  - (iii) what dynamics and trends characterize this ecosystem?
  - (iv) how does the ecosystem interact with broader domestic and international markets?

Introduction to Group Session 2

- **Group session 2:** Identify, characterize and prioritize the key constraints that prevent innovations in the agri-food sector or target sub-sectors from benefiting producers and consumers in Uganda.
  - (i) how to improve spillovers from public R&D to private enterprise?
  - (ii) how to foster innovation relevant to domestic needs and domestic agricultural varieties, including in the wider East African region?



Introduction to Group Session 3

- **Group session 3**: Identify the gaps in our knowledge and understanding that could be specifically addressed by this study.
  - What more do we need to know in your target sub-sector to inform innovation and intellectual property policy?
  - How would you recommend we address these knowledge gaps?
  - Are there other experts, firms or organizations we should be contacting?