Agriculture Innovation Indicators

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Overview

- The issue
  - Why and what?
- Breaking down the terminology
  - Giving words the meaning
- Challenges
  - What we should keep in mind
- Options
  - The compromise

Knowing each other

- UNECA
  - ICT Science and Technology Division
    - Science and Technology Section

      Composed of four main pillars

      1. Policy advice
      2. Technical assistance
      3. Entrepreneurship and innovation support
      4. Partnerships

- Experience

Issues

- **Why develop indicators?**
  - **Aid policy making and policy learning**
  - **Improve innovation performance**
  - **Understand the role of different actors**
  - **Target support**

  Etc

- **Perception is reality**

To inform and achieve our targets

	East African countries					middle income countries	
Indicator Name	Burundi	Kenya	Rwanda	**Tanzania**	Uganda	**Mauritius**	**Malaysia**
School enrollment, tertiary (% gross)	3.2	4.0	5.5	**2.1**	4.2	**16.0**	**40.2**
Percent of population living on $2 a day (PPP)	93.4	39.9	90.3	**96.6**	64.7		**2.3**
Life expectancy at birth, total (years)*	50.3	57.1	55.1	**58.2**	54.1	**73.4**	**74.2**
GDP per capita (current US$)	192.1	794.8	529.7	**523.8**	508.9	**7590.8**	**8372.8**
Percentage of manufactures in exports	11	35	13	**17**	30	**60**	**70**
Mobile cellular subscriptions (per 100 people)	13.7	61.6	33.4	**46.8**	38.4	**93.0**	**119.2**
Internet users (per 100 people)	2.1	25.9	13.0	**11.0**	12.5	**28.7**	**56.3**
Patent applications, residents		77.0					**1233.0**
Roads, paved (% of total roads)		14.3		**6.7**		**98.0**	

The three main terms: What do we mean by "innovation"

- Innovation as application of knowledge to development
  - New products of processes
  - New markets
  - New organizational arrangements or practices
  - New designs or arts of work
- Innovation by type
  - Incremental (on the farm)
  - Radical (e.g. 2G to 4G leaps in performance)
  - Changes in technology systems (e.g. type write to PC)
  - Changes in techno-economic paradigms (e.g. the Information economy)

How do we see “innovation” happen ?

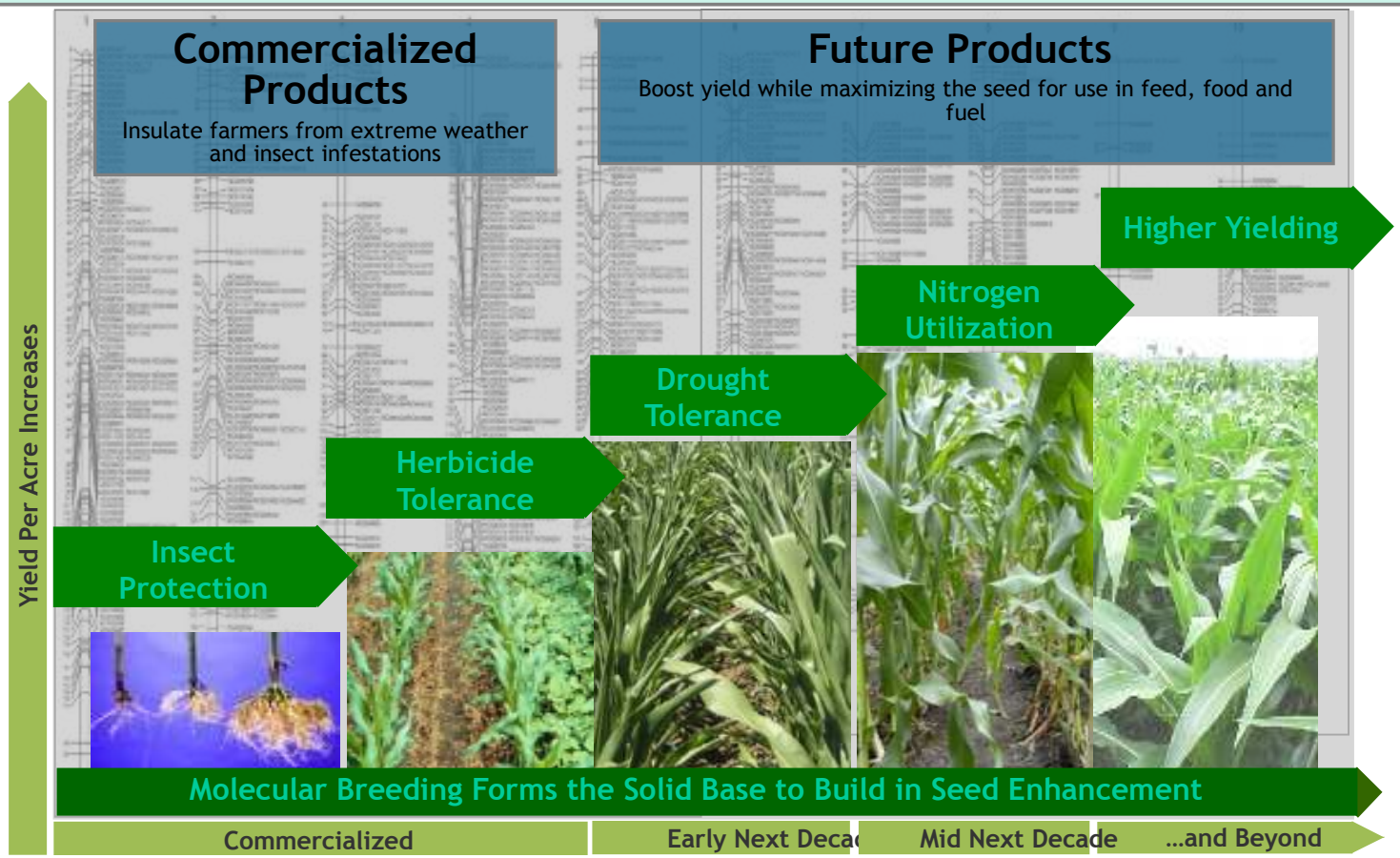
- Linear model
  - Discouraged in theory but still used in practice
- Innovation system
  - Most popular but has its own challenges
- Ecosystem approach
  - Gaining popularity but …..

Terms: What is agriculture?

- Farming
- Farming and agro-industries
- All activities that support the farming
- All activities around all actors in the sector

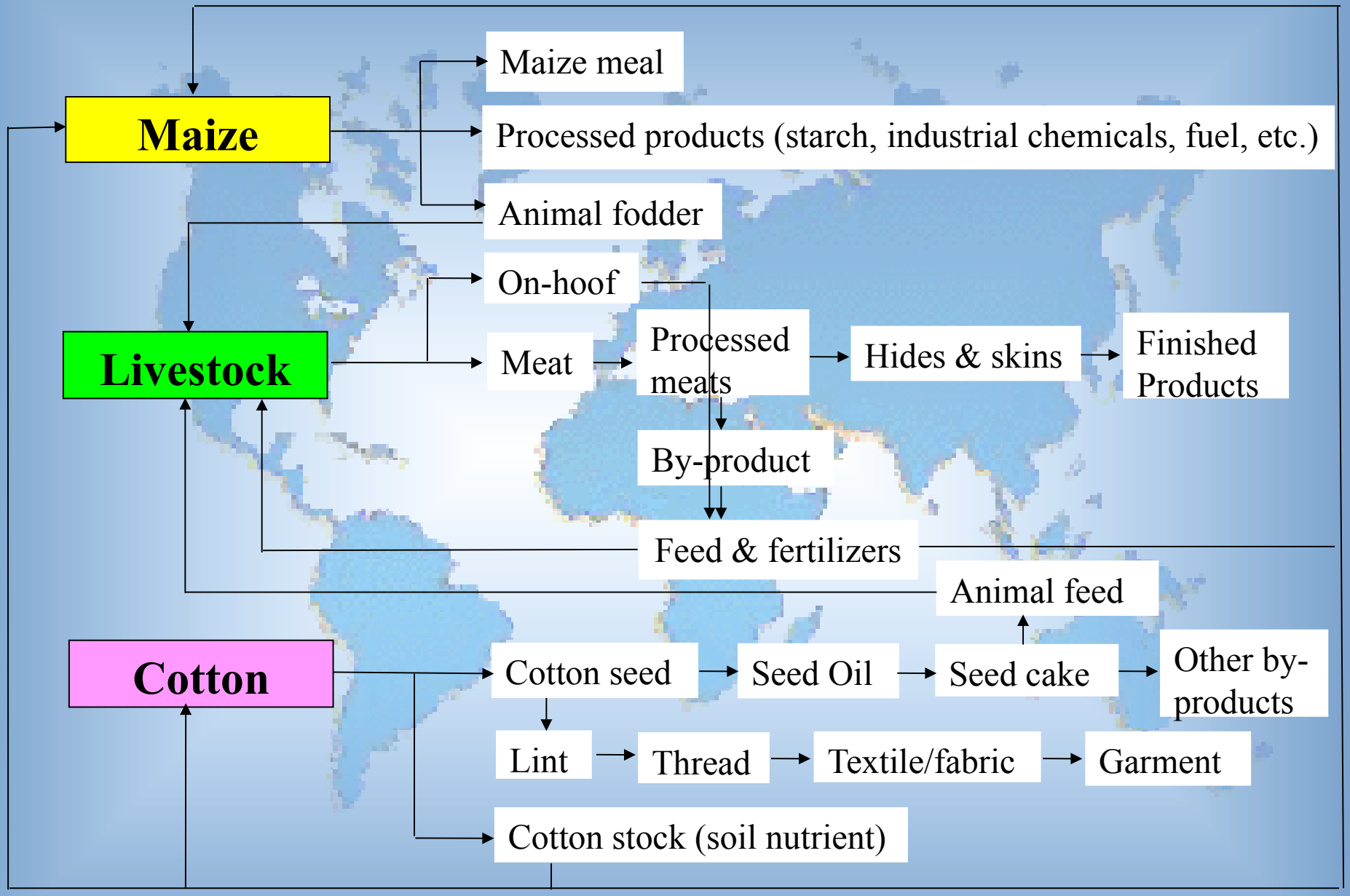
Scientific Advancement Resulting in Current and Future Yield Enhancement

Innovation in protecting and boosting yields



Source: Herman van Schalkwyk, 2007

Integration of livestock and crop value chains



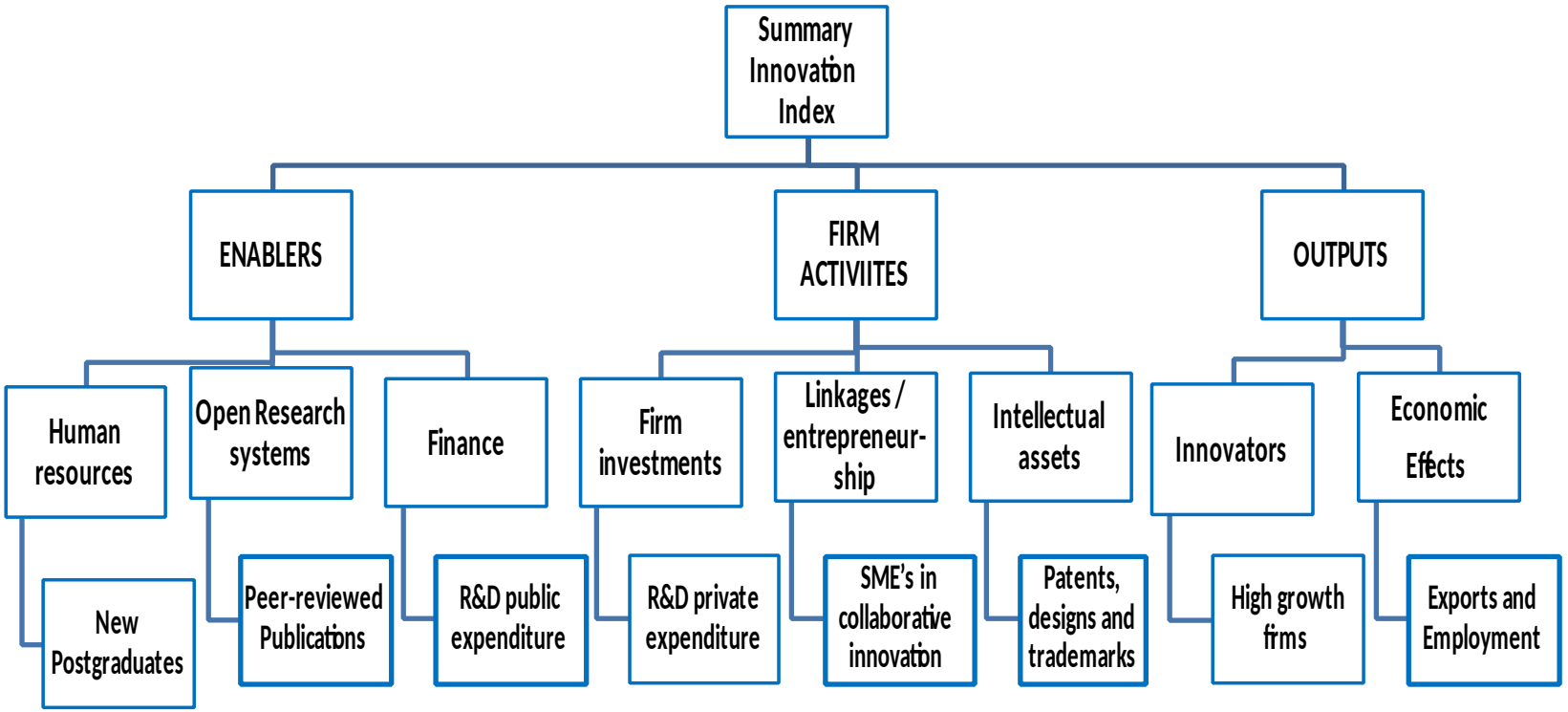
Indicators

- A proxy measure
  - The level of accuracy
  - Relevance to the subject
  - Data availability (e.g. is it measurable or available)

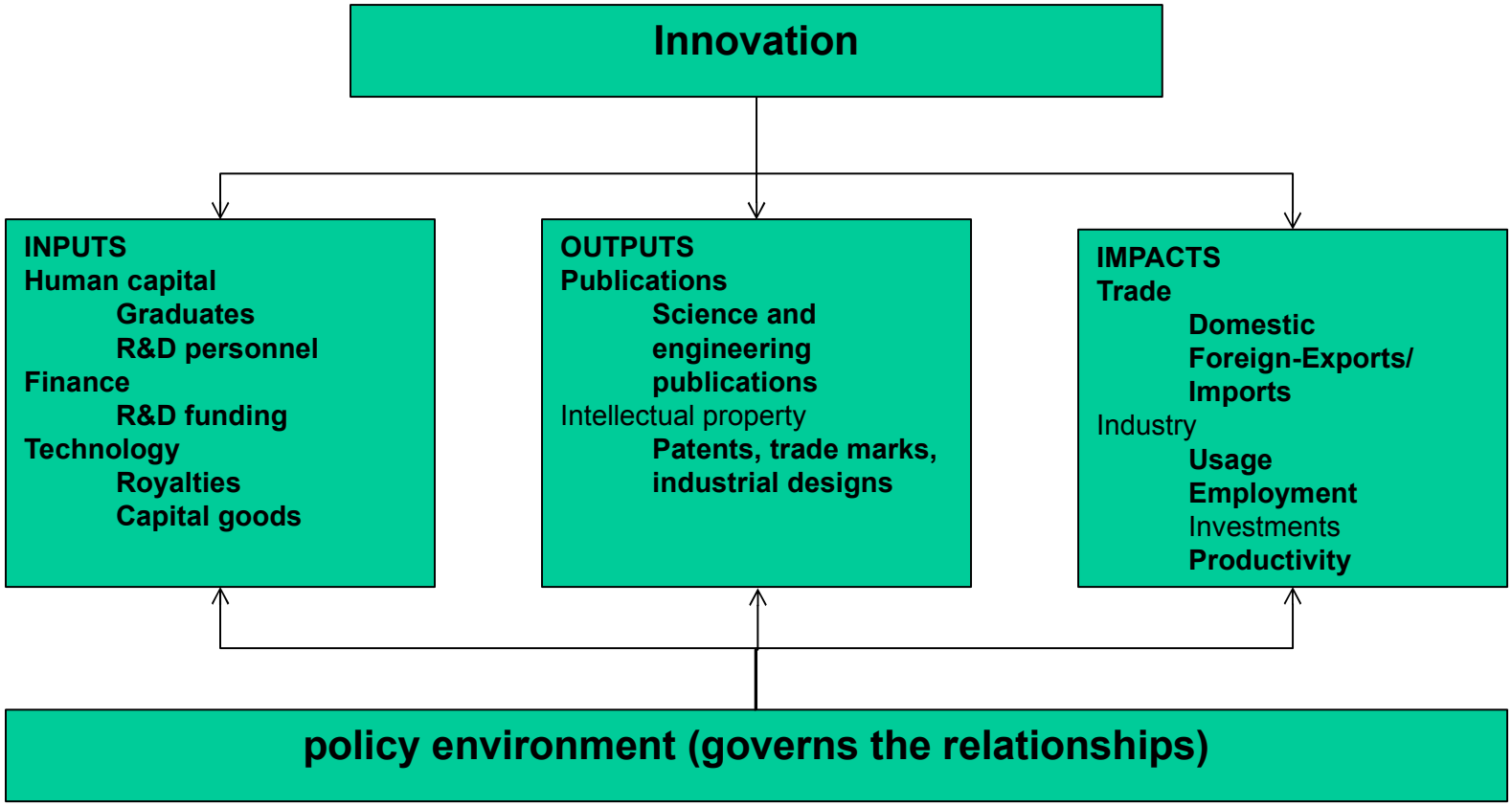
- Context:
  - Farm, farms, Area, District, Country, Continent, World?

Typical innovation indicators:

Innovation Union Scoreboard



Broaden innovation assessments



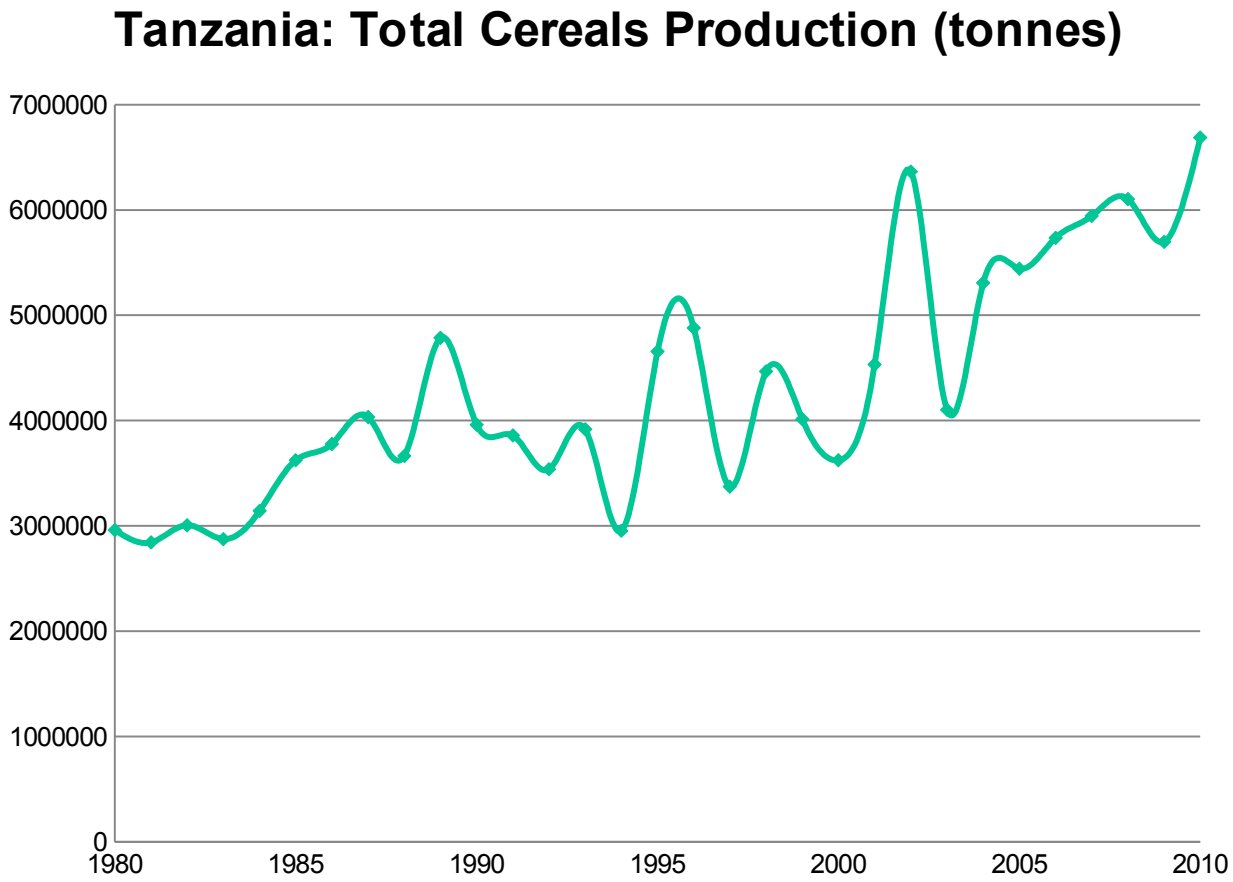
Issues: Shifts in agricultural innovations perceptions

- National Agricultural Research Systems (NARS)
  - R&D with a greater focus of technology development, transfer and diffusion
  - The CGIAR approach
- Agricultural knowledge information systems (KIS)
  - A focus on knowledge and learning- promoted by the World Bank but largely on case studies
  - Conservation farming, low till and organic – are more knowledge (practices) than technology
- Agricultural innovation systems
  - Application of innovation system approach to agriculture
  - Focus on relationships and interactions that facilitate innovation in agriculture
- *Coming soon---Agricultural innovation ecosystem approach*
  - Application of the innovation ecosystem approach to agriculture
  - A focus on relationships and interactions beyond agriculture and borders

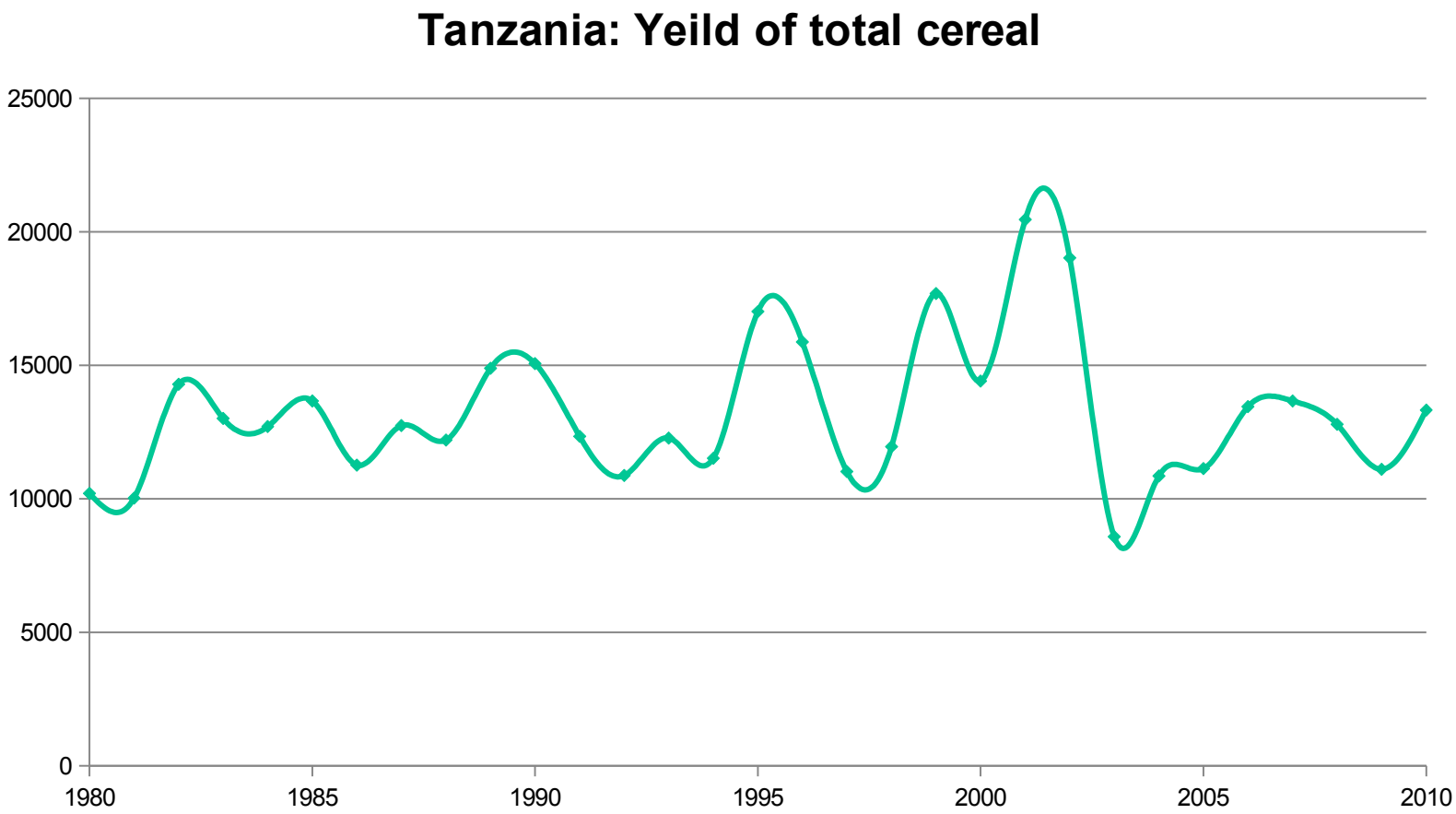
Challenges:

- Innovation indicators
  - Plenty of tools for innovation performance by various sources
  - Few tools for innovation potential
  - Very few for innovation environment/climate
- Agricultural innovation indicators
  - Not many standard indicators (CGIAR efforts)
  - Typical innovation indicators are found to underestimate Ag innovation
  - A number of efforts based on case studies (grass root innovations at community level
  - They tend to focus on the farm or farmer

Good trend???


Tanzania: Total Cereals Production (tonnes)
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
1980
1985
1990
1995
2000
2005
2010

May be not that good???



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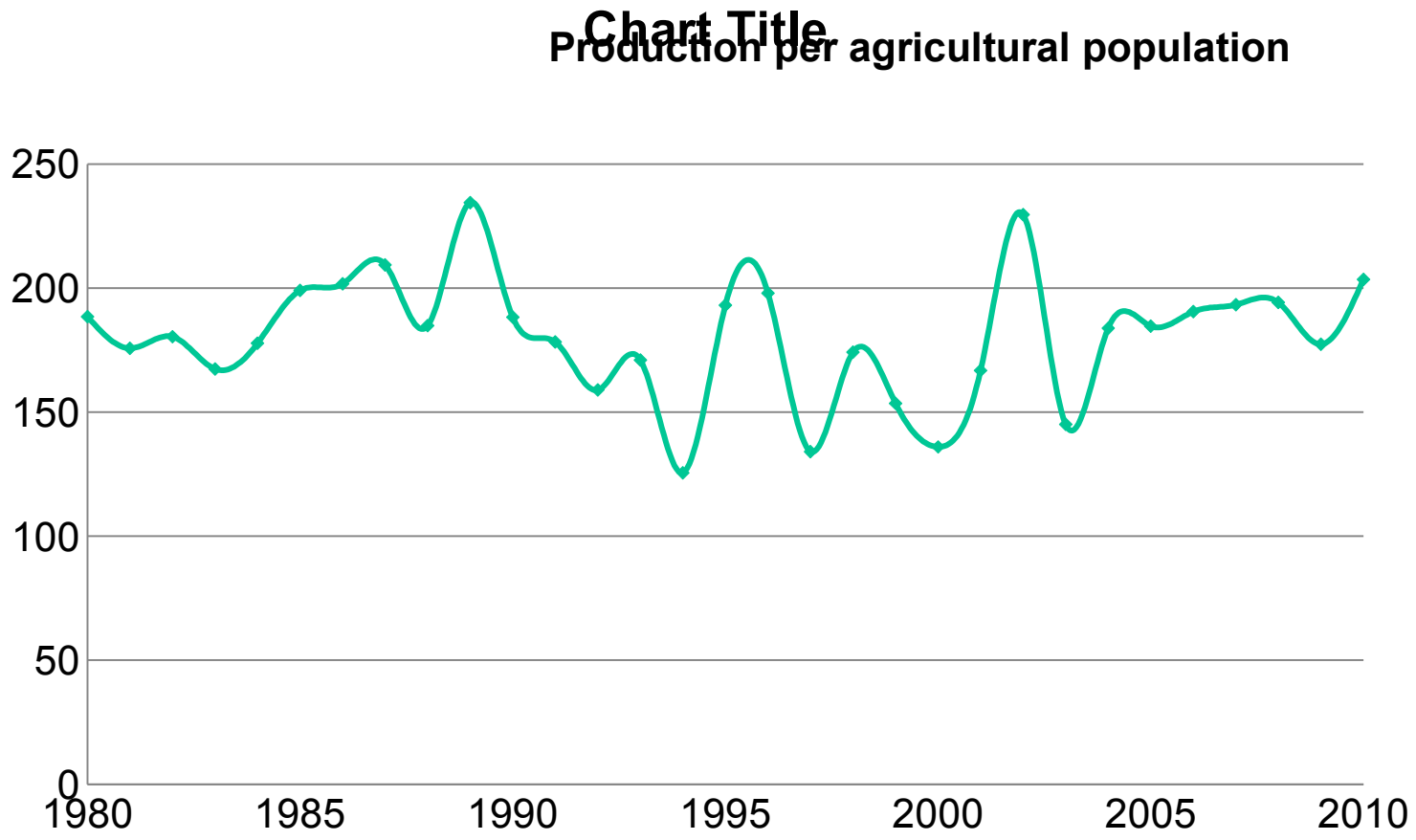
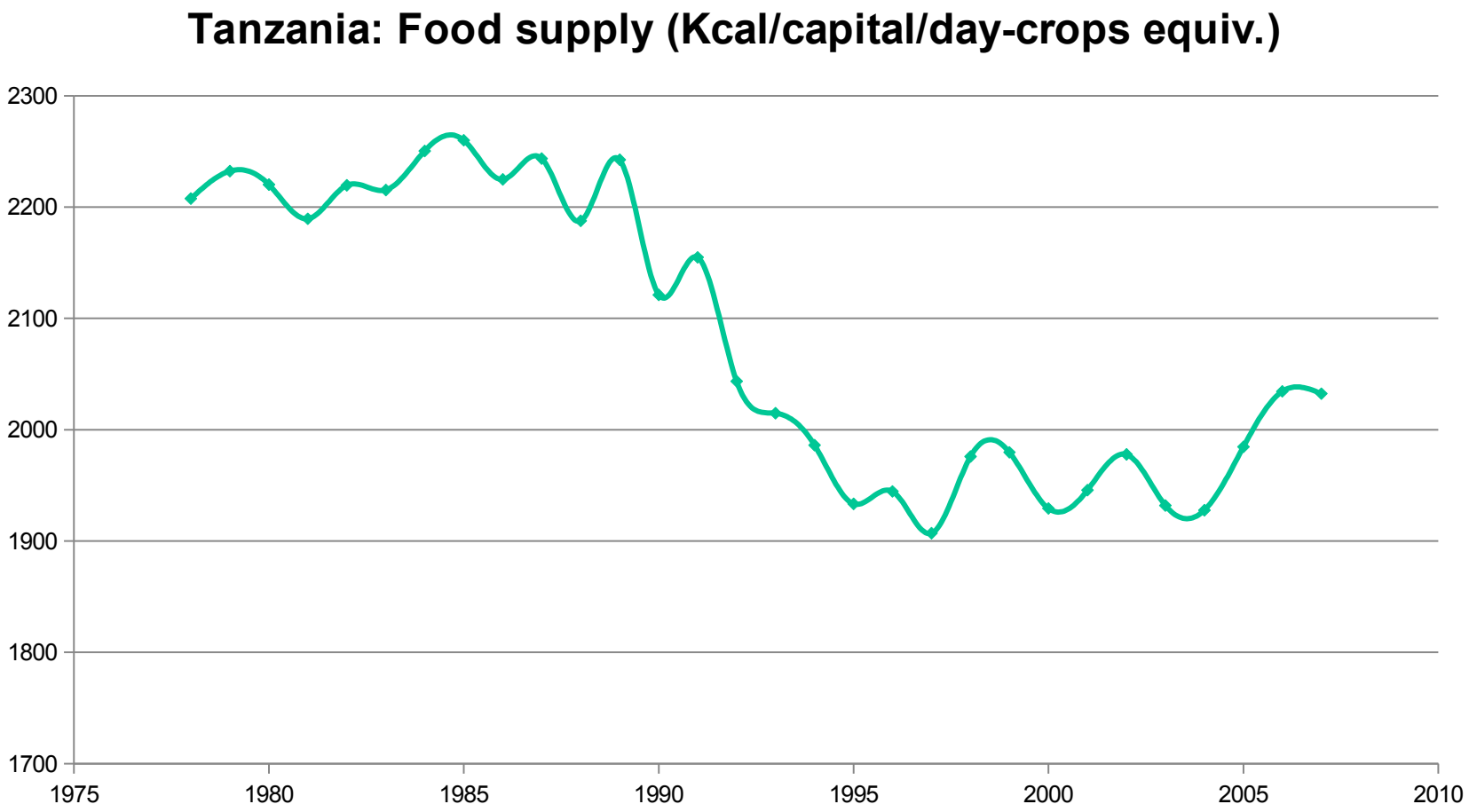
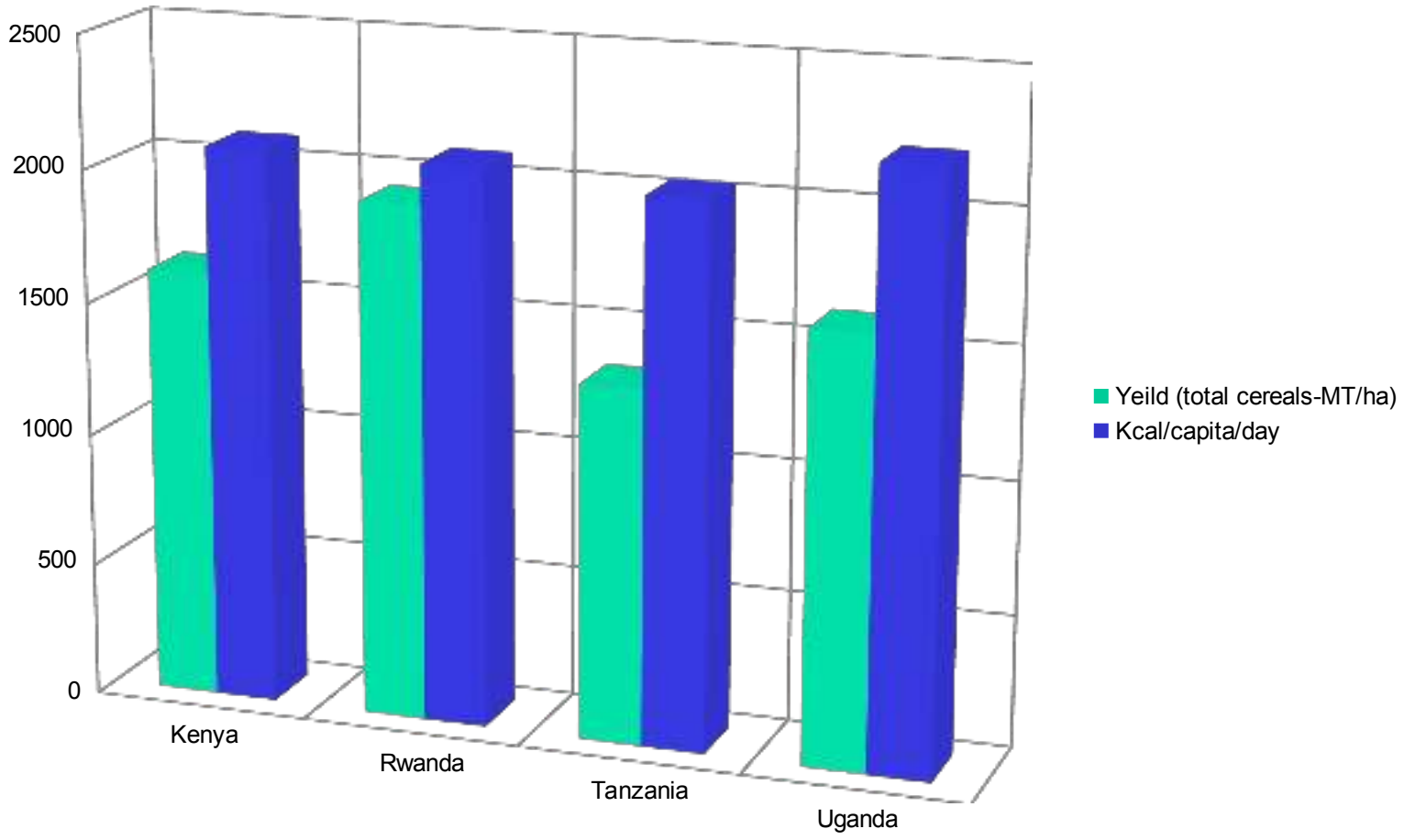


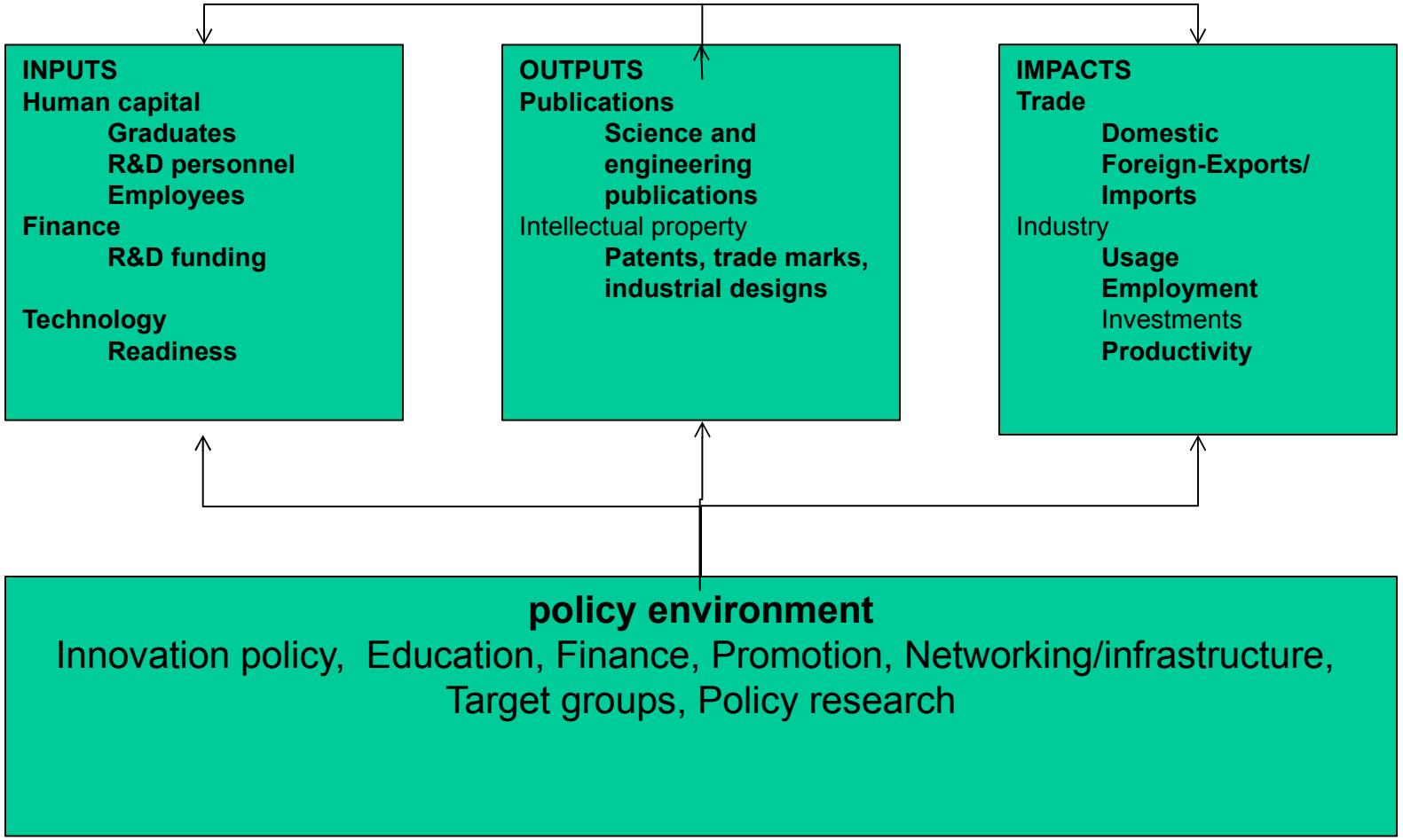
May be need urgent attention



Comparisons: Ok??



Assessing innovation in agriculture



Choice between measuring change and fixed periods

Choice between small and large picture

Choice between technological innovations and non-tech

Perhaps consider innovation policy measurements