



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

# UN-Wide Capacity Building Workshop on Technology for Development: Innovation Policies for SDGS in the Arab Region



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INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT



# Outline

- Focus of session
- Review of core concepts
- Practical session
- System and firm level relationship
- Market and system failure
- Orientations for policy
- Conclusions



# Focus of session

Gain a visual understanding of a system of innovation



# Concepts of invention and innovation

## Invention:

A new or novel practical applications of knowledge, technology and ideas that come from experience, scientific enquiry and research and development.

## Innovation:

...“the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations”...

# Types of innovation



## Product innovation

- Introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.



## Process innovation

- Implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

# Types of innovation



## Marketing innovation

- Implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.



## Organisational innovation

- Implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.



# Concepts of the system of innovation

## System of Innovation (SI):

...“set of distinct but interconnected institutions which jointly & individually contribute\* to the development and diffusion of new technologies and provides the framework that governments form and implement policies to influence the innovation process” ...

\* Creation, storage and transfer of knowledge.

## Narrow definition:

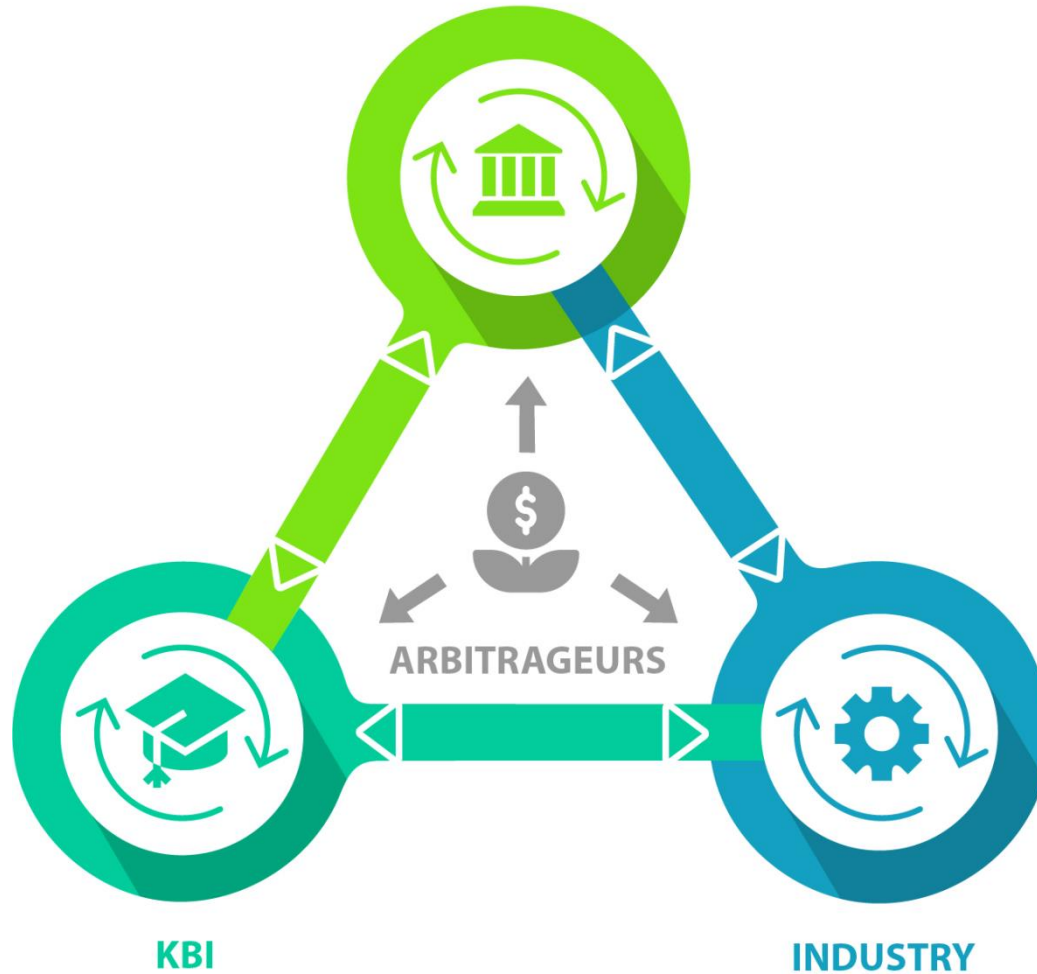
- Looks to indicators related to R&D, high technology, and science based innovations.

## Broad definition:

- Institutional and infrastructure conditions including learning, entrepreneurial and risk culture, regulation and ICT access.

# Core system actors

GOVERNMENT







# Practical session

Step 1. Organize cards as per the process of invention to innovation.

Step 2. From the system and market failure cards provided:

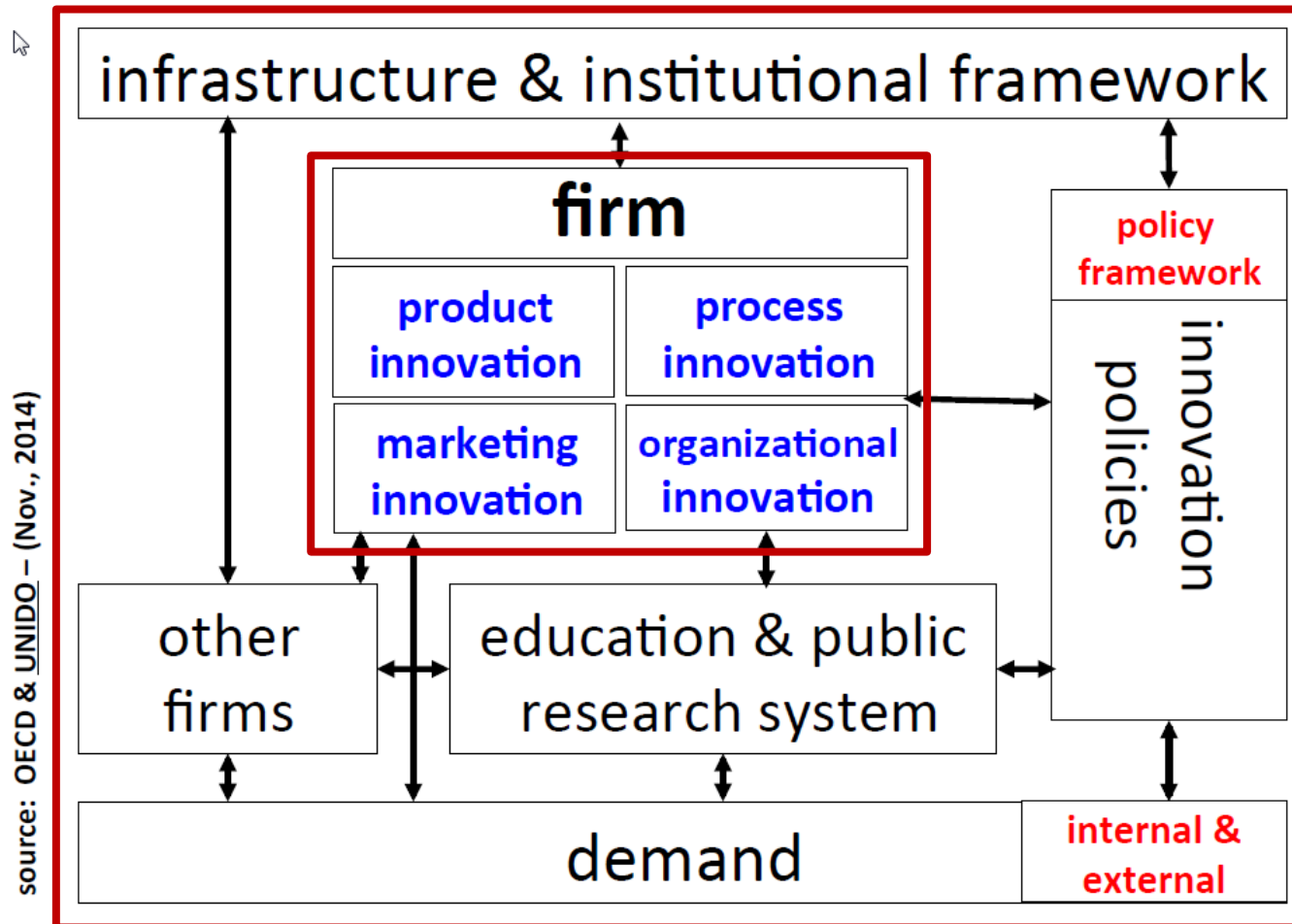
- Indicate at which stage in the innovation process they would impact.
- Identify which system actors could provide support.

Step 3. Mark out the linkages between the actors and identified staged in innovation process.

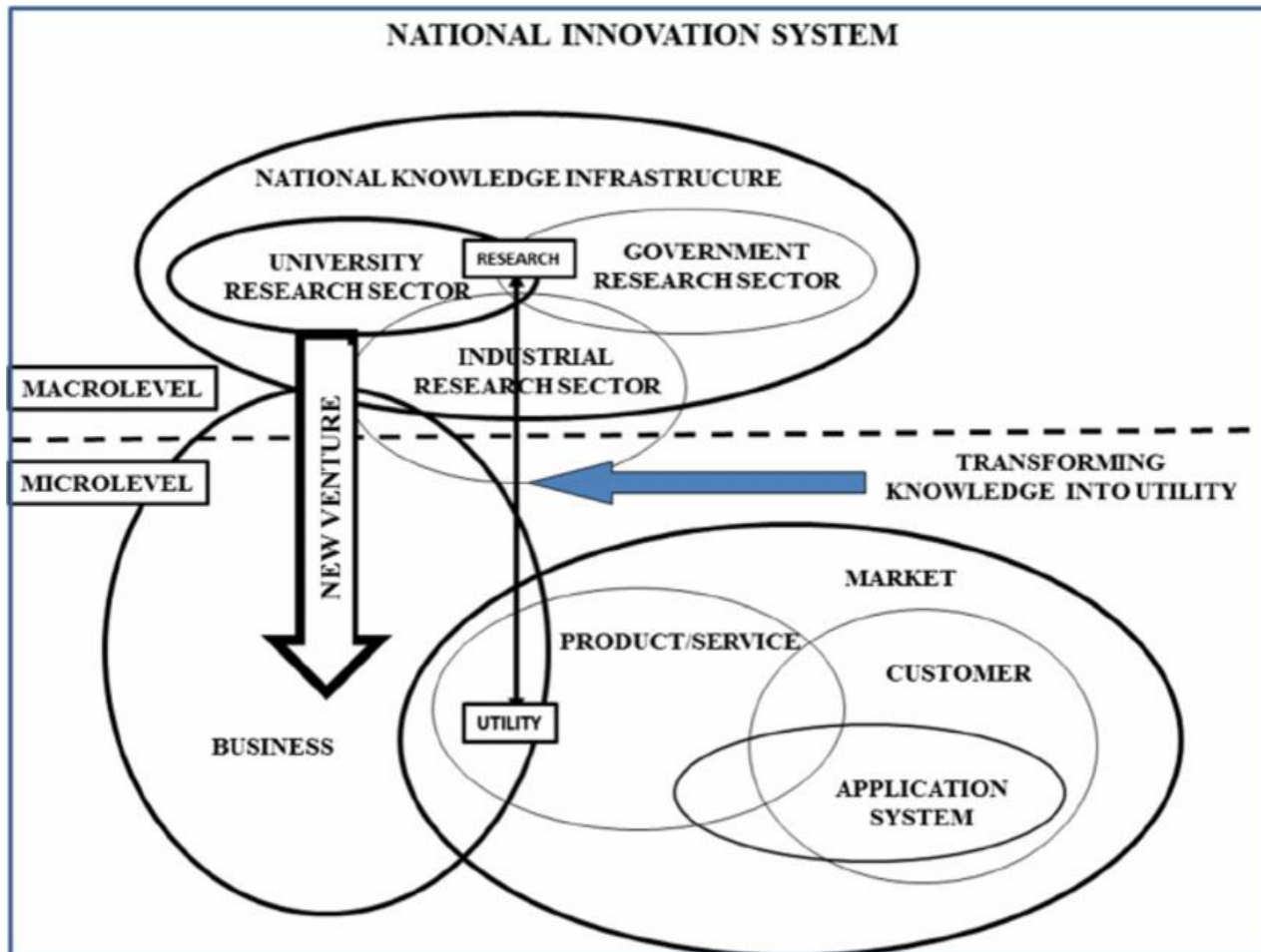
Step 4. Note:

- what type of policy intervention could be initiated,
- why you would choose this, and
- how you would implement it.

# System and firm level innovation relationship



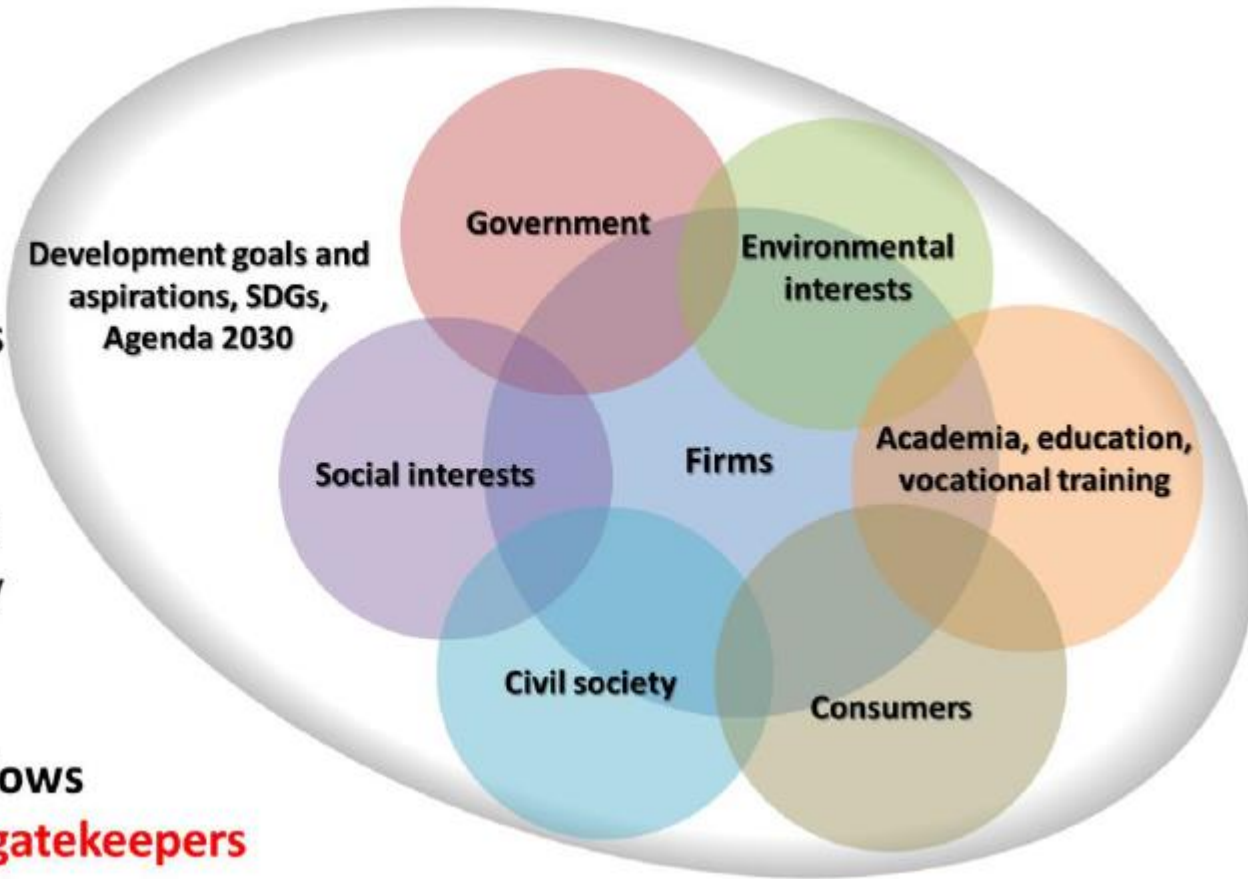
# System and firm level innovation relationship



Source: Betz et al 2015

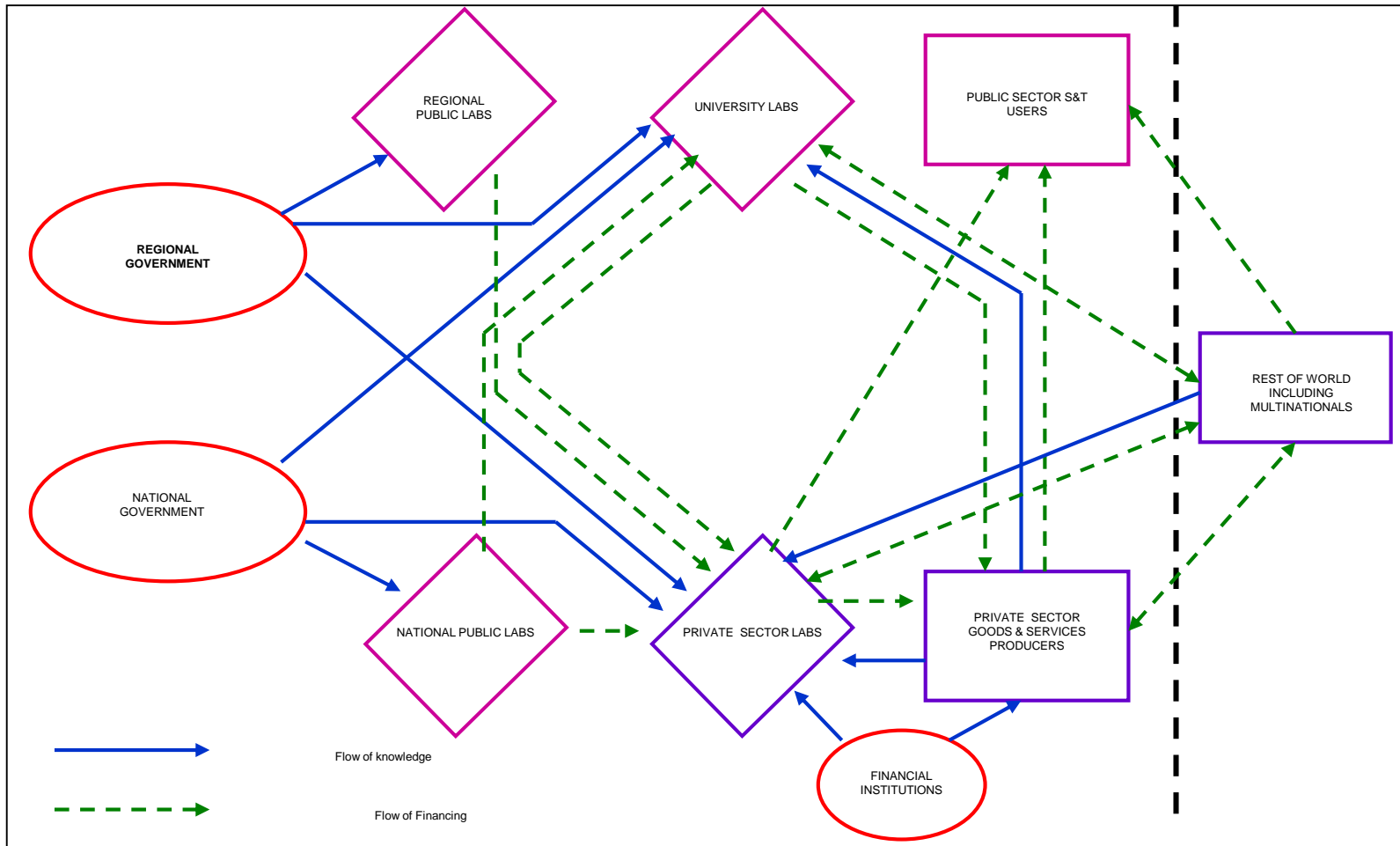
# System and firm level innovation relationship

**Linkages**  
**Interactions**  
**Relationships**  
 Quantity  
 Quality  
**Stakeholders**  
 Capability  
 Capacity  
**Learning**  
**Knowledge flows**  
**Information gatekeepers**



Source: UNCTAD 2018

# System and firm level innovation relationship





# Market and system failure

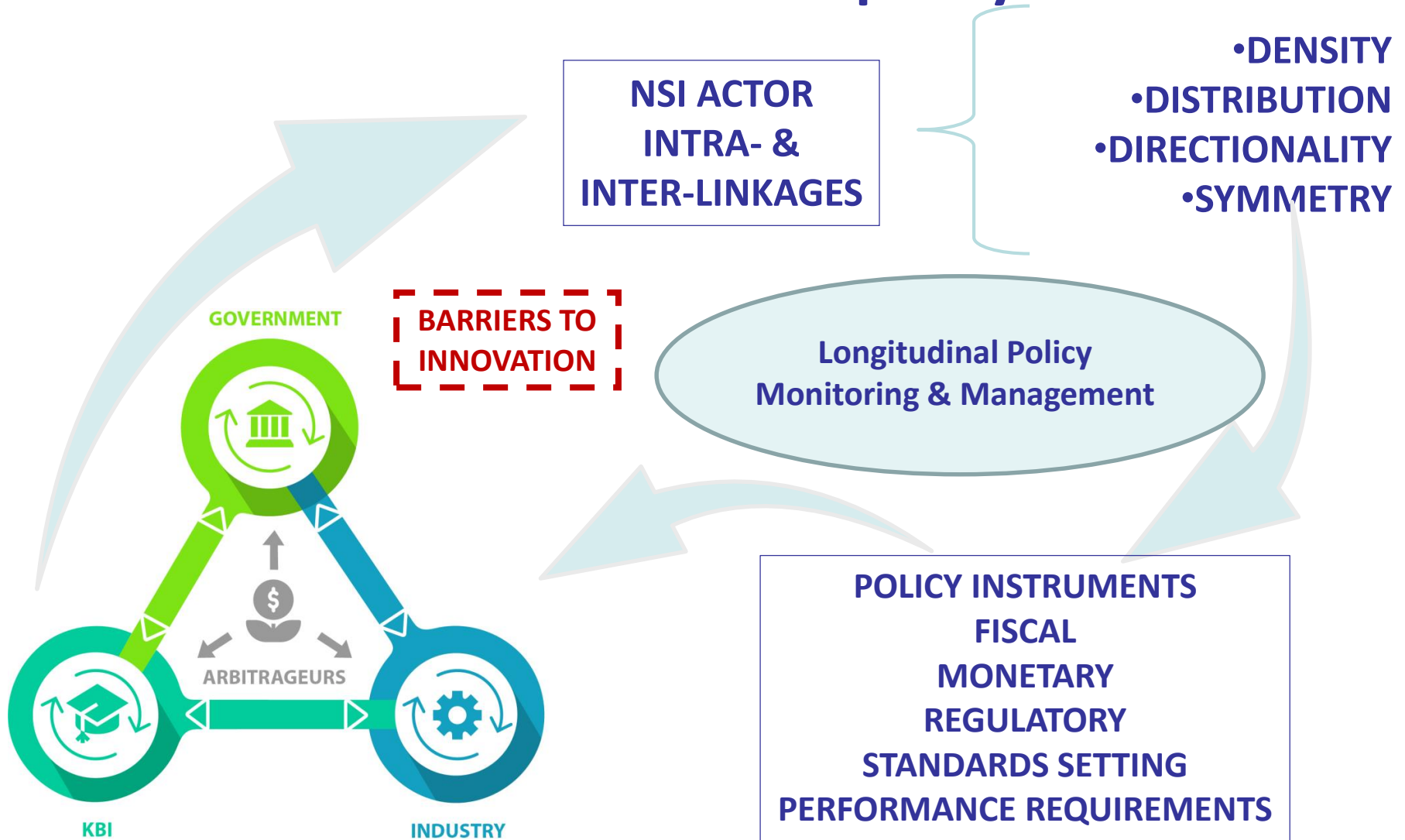
## Market failures:

- Externalities
- Uncertainty
- Indivisibility

## System failures:

- Underdeveloped infrastructure,
- Institutions,
- Networks,
- Regulations and coordination mechanisms, as well as,
- Path-dependencies and lock-in effects

# Orientations for policy





# Conclusions

Why to use the NSI approach to framing STI policy:

- Highlights the importance of creation and knowledge flows both tacit and codified
- It contrasts a linear approach to conceptualizing innovation.
- An NSI framework is a multi-stakeholder approach - creates opportunities for developing consensus amongst diverse national actors.
- An NSI perspective offers is a more realistic visualization of development processes.
- It links innovation to economic and social development.
- Understanding of gaps and failures within the system provides clearer insights for policy craft.





Thank you