

All African GLOBELICS Seminar on Innovation and Economic Development



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Support to R&D as means to promote innovation: a critical view

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Agenda

- ❑ **Why is it important to support innovation?**
- ❑ **What type of innovation activities should be fostered in developing countries?**
 - **R+D**
 - **Other innovation activities**
- ❑ **What is the role of STI policies?**
- ❑ **Final reflections**



Why is it important to support innovation?

Links between system of innovation, competitiveness and development

- **There is a close relationship between STI and economic growth**
- **Accumulation of knowledge is a crucial factor for growth (List, 1841)**
- **Science and growth (Schumpeter, 1942; Solow, 1956; Abramovitz, 1956 y 1986; Romer, 1990)**
- **The evidence of Japan (Freeman, 1987), Korea (Kim, 1997), etc.**
- **However, most of the catching up processes of newly industrializing countries were driven by an extremely acute accumulation of innovation capabilities:**
 - **Driven by learning from experience, imitation and adaptation**
 - **Less by science or R&D activities****(Hobday, 1995; Kim, 1997; Lundvall et al, 2006)**

How to change to an 'innovation-driven growth'?

NSI
matters

National System of Innovation

- **A set of interrelated agents**
- **Central idea: there are systemic interactions/linkages between agents**
- **Firms are at the centre**

- Are only firms at the centre in developing countries?
- What is the nature of the productive sector in Africa and other developing regions?

In any country the productive sector is heterogeneous

- ❑ Type of firms:
 - Micro
 - SME
 - Large

- ❑ Other actors:
 - Farmers
 - Informal Sector

- ❑ Types of property:
 - Domestic
 - Foreign
 - Public
 - Mixed
 - Social Sector social:
cooperatives

- ❑ Technological sectors:
 - High Tech
 - Medium Tech
 - Low tech
 - Traditional knowledge

Who integrate the productive sector in African and other developing regions?

□ Which are the relevant sectors?

- Agriculture
- Manufacture
- Cultural or creative industries
- Traditional or indigenous sectors
- Natural resources

□ Which are the sources of knowledge for innovation in these conditions?

▪ R&D

★ **Combination of existing knowledge**

When
countries are
still far from the
frontier

STI Policy need
to move from
R&D to a broad
definition of
innovation
activities to
reach
competitiveness

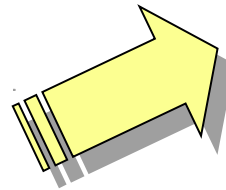
What type of innovation activities should be fostered in Africa and other developing regions?

What is innovation?

- ✓ An innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (Oslo Manual, 2005).
- ✓ Within firms
- ✓ It is based on existing or new codified knowledge, and also on learning and tacit knowledge

Innovation = Change

MINOR
incremental
Improvements based
on existing knowledge



RADICAL
New way of thinking
about the product
or its use based on
R+D

Innovation activities

	Innovation activities
Generating new knowledge	1. R&D <ul style="list-style-type: none">• Basic & applied research, prototypes, external R&D
using existing knowledge	2. Activities related to product and process innovations: <ul style="list-style-type: none">• Acquisition of other external knowledge• Acquisition of machinery, equipment and other capital goods• Other preparations for product and process innovations: Industrial design, later phases of development for preproduction, production and distribution; development activities with a lesser degree of novelty,• Support activities such as training and market preparation 3. Activities for marketing and organisational innovations: <ul style="list-style-type: none">• New marketing methods or new organisational methods

Why it is important to foster R&D activities?

- **Generation of knowledge to solve specific problems**
- **To have the capabilities to support a technology strategy of followers**
- **To support the adaptation and assimilation of foreign technologies**
- **To be able to differentiate products and processes and be the seconds to introduce the innovations in the market.**
- **Double function of the R&D activities:**
 - **Generate knowledge and new products**
 - **Learning and then feed the capabilities for competing in the future**

BUT....

- **R&D is only one of the input in the innovation process**
- **Many innovations come from existing knowledge**
- **Incremental changes to innovation account for much of the innovation**
- **Competitiveness is not only associated with new knowledge**

Degree of innovativeness

Upgrading of technological activities
Products

Product innovation
and development of
R&D related

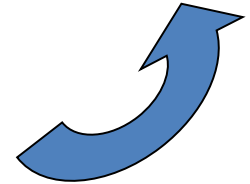
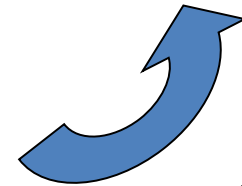
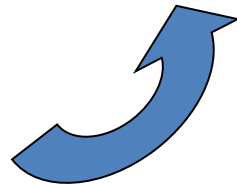
Major adjustments to
market and important
improvements in quality

Minor adjustments to
market and incremental
improvements in quality

Duplication fixed
specifications
and designs

Learning

Time





What is the role of STI policies?

STI policy vs innovation policy

- The policy mix should take into account that **the initial conditions** of the existent STI capabilities are weak and should be strengthened
- There are **different objectives of the policies**, and the emphasis matters
 - The innovation policy:
 - Increase the rate and success in the introduction of new products, processes and services
 - The STI policy:
 - Extend the **frontiers of scientific** and technological knowledge
 - Contribute to **satisfy social needs** (environment, health, food, etc.)
 - Train human resources**
 - Contribute to **economic growth**
- STI policy to foster:
 - Changes in agents' **behaviours**
 - Articulation** of demand and supply of knowledge
 - Strategic sectors
 - New areas of competitiveness

- **The policy mix:**

- **Combine policies to cover all the innovation activities**

- **R&D**

- **Adaptation, copy, reverse engineering, imitation**

- **Learning, etc.**

- **Promote both the use of existing knowledge and the generation of new knowledge**

- **Develop science capacities**

- **Concerning sectors:**

- **Generate a balance between investment in:**

- **High and medium tech**

- **Sectors based on local knowledge**



Final reflections

•Innovation activity is a continuous and cumulative process rather than specific developments related to radical innovations.

▪Many innovations come from existing knowledge

▪Incremental changes account for much of the innovation

▪Competitiveness is not only associated with new knowledge

▪Need to support to all the innovation activities, including R&D

▪Importance of the use of existing knowledge

▪Importance of adaptation, imitation, learning