

Innovation in Africa: A reflection on status, policies and research



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Outline of the Presentation

- Background: areas of focus and rationale
- Innovation Status
 - Agriculture
 - Industry
- Building Innovation capabilities
 - The role and status of policy
 - The role and status of research
- Concluding remarks, current status of interventions and way forward

Background: areas of focus and rationale

- Talking about status of innovation requires putting it in proper context first.
- It is a concept of very general understanding, cutting across sectors: both economic and social
- Will talk about innovation in economics context defined as:
 - successful creation, development, and marketing of new/improved goods or successful application of new/improved techniques or ways of working that improve the effectiveness of an individual and organization (Archibugi et al., 1994).
 - Degrees of novelty: adoption, small increments, major increments and completely new



Background: areas of focus and rationale cont..



- Rationale for the choice of economic focus
 - Ensures sustainable and inclusive growth and income of individuals through employment generation, which is a pre-requisite for addressing issues of poverty.
 - Other forms of poverty, including disease, hunger illiteracy can largely be tackled if income poverty is alleviated.
 - According to (World Bank, 2001), other indicators of well-being, such as average levels of education and health, also tend to improve along with income poverty.

Background: areas of focus and rationale cont..

- Sectors of focus: agriculture and industry
- But of all economic sectors, it is the industry (**manufacturing**) that is important for poverty eradication.
 - First, it ensures sustainable growth of the country (a necessary condition for poverty alleviation):
 - Bulk of world export (about 70% in 2010) is on manufactured goods.
 - The price of manufactured goods tends to be higher and more stable than that of commodities, and therefore stable and sustainable growth.



Background: areas of focus and rationale cont..

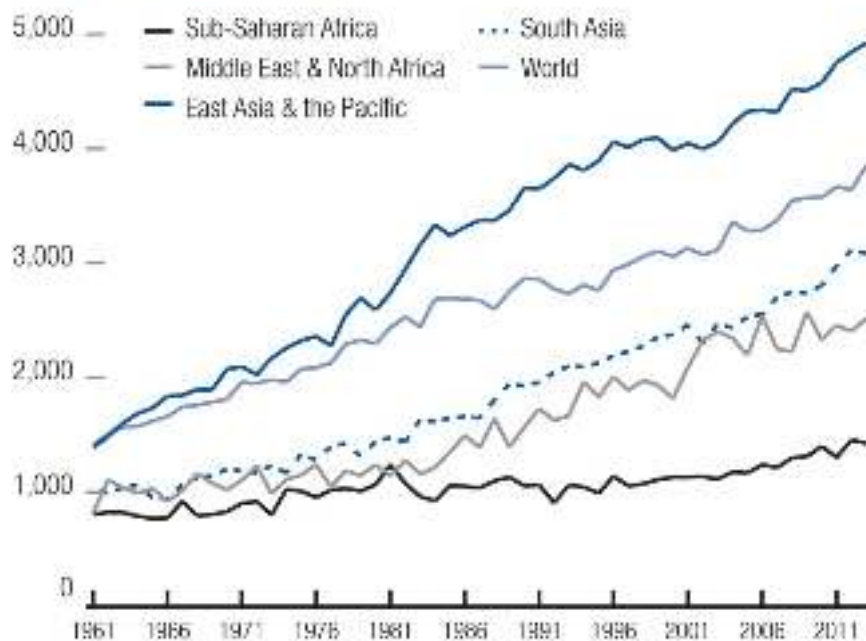
- Secondly, employment generation:
 - Apart from being rich in employment in itself, manufacturing triggers development of other sectors such as banking, logistics, insurance, communication, etc., further generating employment.
- But for industrialization to successfully take off, rapid productivity increase in **agriculture** is a pre-requisite
 - Informed by the process of **structural transformation**
 - Importance of Africa's structural transformation is richly argued in Agenda 2063 and STISA 2024, which is an STI strategy to enable Agenda 2063.
 - Structural transformation is also a top priority issue in the African Common Position on Post-2015 development agenda.



Status of Innovation in Africa: Agriculture

Figure 1: Cereal yields by region, 1961–2013

Kilograms per hectare



Source: World Bank, 2015.

Status of Innovation: Industry

- Tanzania situation (STIPRO research)
 - Very limited innovation of higher degrees of novelty and low technological capabilities in the manufacturing sector.
 - A study focusing on metal and engineering sector (Diyamett, 2010) revealed that of the 50 surveyed firms, 60% were innovative, but only adoption and minor modifications.
 - Another study on the role of FDI in local technological capability building (Diyamett, Ngowi and Mutambala, 2011) revealed that over 80% in sample of 200 firms have largely basic and some intermediate technological capabilities.



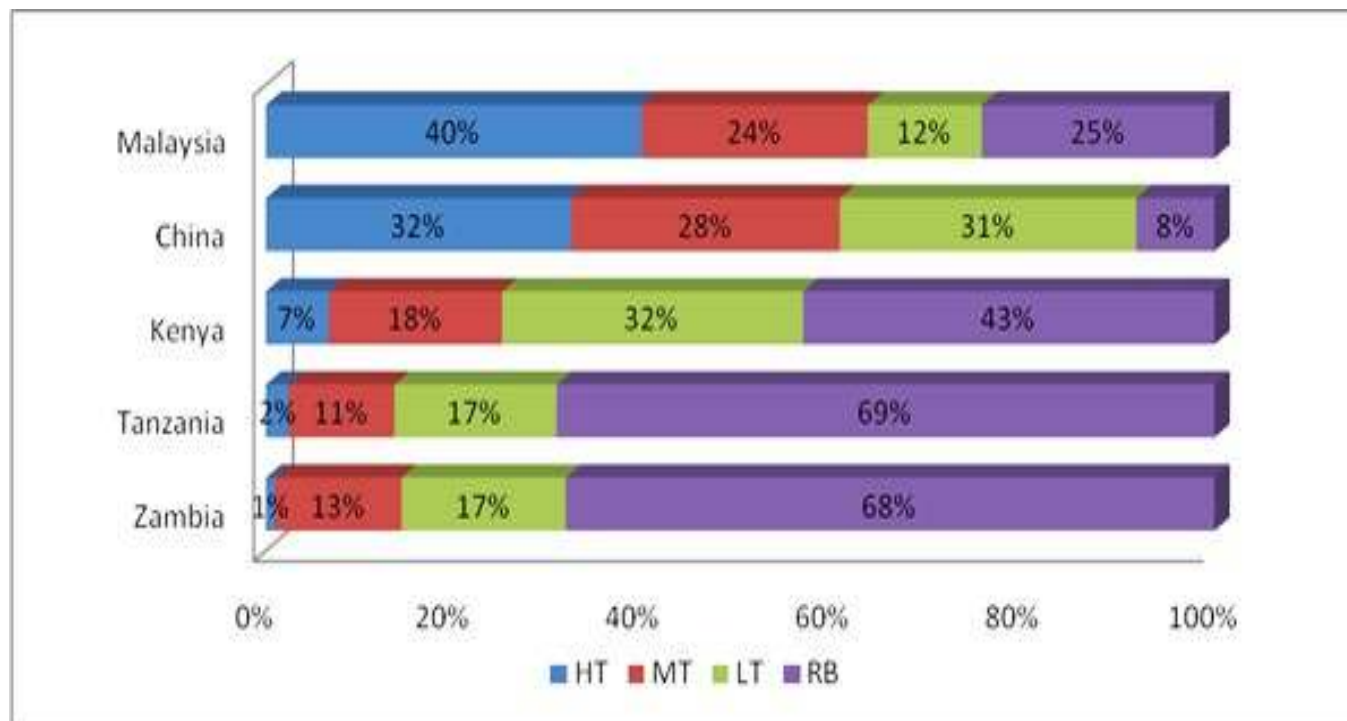
Status of Innovation: Industry cont..



- Tanzania picture largely resembles picture for the Sub-Saharan Africa:
 - According to NEPAD 2014 (Second AIO), about 60% of firms in the continent on average are innovative.
 - But predominating innovation expenditure is imports of machinery; meaning that it is largely adoption, and perhaps minor adaptations.
 - The NEPAD survey does not indicate the degrees of novelty of innovation

Status of Innovation: Industry cont..

Figure : Structure of Manufactured Exports by Technology Classification (High, Medium, Low Tech and Resource Based: Selected SSA countries compared with other regions.



Source:URT and UNIDO: TICR 2012

Building Innovation capabilities:

- Basically ensuring spread: more units in both the agricultural and industrial sectors to be innovative;
- And deepening capabilities – moving up the innovation capability ladder.
 - i) Need for policy: policy extremely important for Africa – because of the market and system failures.
 - Major challenge is however not presence of policies in the region, but effectiveness.
 - Most African countries have now S&T/STI policies; Tanzania had one since 1986.



Building Innovation capabilities: Rationale for policy and status cont..

- A quick *ex-ante* STI policy assessments in SSA indicate the following:
 - i) lack clear implementation strategies with programs and budgets.
 - ii) followed the linear model of innovation, where emphasis is placed on science and engineering education and training.
 - iii) Have not been informed by credible context based evidence.



Building Innovation capabilities: Rationale for policy and status cont..

- iv) Not coordinated with other relevant policies-stand alone.
- v) These policy weaknesses are also reflected in STISA 2024.
 - Reasons for the mentioned weaknesses are several, but most point to expertise. An observation also made in STISA 2024.
 - A quotation from the doc:
“Many of the officials involved in or responsible for drafting policy documents do not have the necessary skills or training and have no experience in evidence based policy making”.



Building Innovation capabilities: Rationale and status of research



ii) Need for research to provide evidence

- One of the major policy weaknesses is lack of the context based evidence.
- Evidence for STI policies are produced through a special area of social science research – **innovation and development** given different names at different universities:
 - innovation studies; science, technology and innovation policy studies; science and technology policy studies, etc.

Building Innovation capabilities: Rationale and status of research cont..

- Although the emphasis in these areas is slightly different, overall the studies are focused on:
 - i) Theoretical and practical understanding of how innovation is shaping today's world.
 - ii) Testing and refining concepts, identifying best practices and challenges that are useful in planning and policy making in improving national capabilities in science, technology and innovation.

Building Innovation capabilities: Rationale and status of research cont..

- Slightly different research area is innovation and technology management – knowledge focused largely on promotion of business, and useful in decision making at firm levels.
- Research in innovation and development is also useful in the development of STI indicators for monitoring policy implementations.
 - Existing Manuals for innovation indicators (e.g. Oslo and Bogota) have not been developed over night, but a result of learning from innovation studies; and as a result are continuously being updated.



Building Innovation capabilities: Rationale and status of research cont..

- Capabilities in innovation and development research is also important in designing policies.
- Major challenges are:
 - Expertise in this research area is largely lacking in Africa (extremely few universities provide courses on innovation and development).
 - As a result knowledge and evidence to inform policies and decision making is largely lacking
 - As indicate in publications:



Building Innovation capabilities: Rationale and status of research cont..



- For instance between 1997 and 2008, major journals in the field of innovation published 849 articles on innovation, of which only 37 or 4% were on Least Developed Countries (Lorentzen & Mohamed 2009)
- Africalics carried out a survey for Africa and determined the following to be involved in some form of innovation and **development research**.
- 94 researchers in total
- 51PhDs, 35 Masters, 1 Mphil and 7 Bachelors

Building Innovation capabilities: Rationale and status of research cont..



- However, given the fact that African universities are not offering courses on innovation and development, quality of these publications is questionable:
 - According to Lorentzen and Mohamed, one third of the articles written by African scholars limits itself to a narrow understanding of innovation systems, consisting only of S&T institutions proper.
 - AfricaLICS, in the second round of survey is getting deeper into this quality issues.

Summary and conclusions

- To alleviate poverty, Africa requires a steady and inclusive growth that also provide incomes for most of its people.
- This can be achieved only through structural transformation that require innovation and rapid productivity increase in both agriculture and manufacturing sectors.
- This require good policies informed by credible research.
- Africa however, currently lack capabilities in these two vital areas.
- Hence urgent need for capacity building in policy and research.



Enhancing Evidence Based Policies



AFRICALICS

Status of interventions and further recommendations

- Africalics, through Sida support is already doing the following in regard to research;
 - PhD academies, support to PhD fellowships, Masters Degrees, and development of innovation and development course at African universities, research conferences and research projects (learning by doing and informing decisions)
 - African governments and regional bodies such as AU and NEPAD needs to come in: they have already identified this as one major weakness in STISA 2024



Hybridising Evidence Based Policies



Status of interventions and further recommendations

- Equally important is capacity building in policy – no major donor has shown interest, neither governments;
- Despite the fact that it has been identified as major area of weakness in STISA 2024
- Important to note that the UN, through the SDGs, e.g. goal 17 has also expressed a need for capacity building for STI in developing countries.
 - An organ by the name of Technology Bank (TB) for LDCs has been put in place for this purpose
- However, at the end of the day, the responsibility to make all these happen lies in the hands of the African Governments and researchers.



Asante Sana Kwa Kusikiliza



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