

Towards relevant and useful STI indicators for middle income economies: from policies to indicators

Panel contribution

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The case: Kyrgyzstan

- GNI per capita of \$3.2K places Kyrgyzstan into a group of **lower middle-income economies (\$1-4K pc)**.
- Growth is driven overwhelmingly by the **services sector** and, increasingly, construction while agriculture and industry grew well below average overall growth (cf. personal remittances = 25% of GDP)
- Export consists of **gold (43%)**, minerals (ie. petroleum) (8%), vegetable products (ie. dried fruits)(6%), clothing (6%), metal (ie. copper)(6%) etc.
- **Deindustrialization** of economy (35% in 1990>27% in 2015)

Innovation activity of KG firms is largely about purchase of machinery and software support

- Based on a sample of 752 enterprises only 7.4% or **56 enterprises** are engaged in innovative activities
- 55% of innovators purchase machinery and equipment and 24% purchase software **while only 2 of 56 companies do any R&D**

Recommendations on further improvements to measuring innovation performance

- With only 0.1% expenditures for R&D and with a very limited number of innovative firms **innovation policy cannot be framed in conventional terms by focusing on R&D and organised innovation activities as they are very marginal**
- Given huge resource and institutional differences and constraints, **it would be a mistake to adopt an approach which would be an imitation of the best practice of high-income economies**
- Instead.....

..... the technological effort in low MIC like Kyrgyzstan is focused on **non-R&D activities** which are on the right-hand side of Table - **process and product engineering and production capability**

Innovation activities of the greatest relevance for Kyrgyzstan

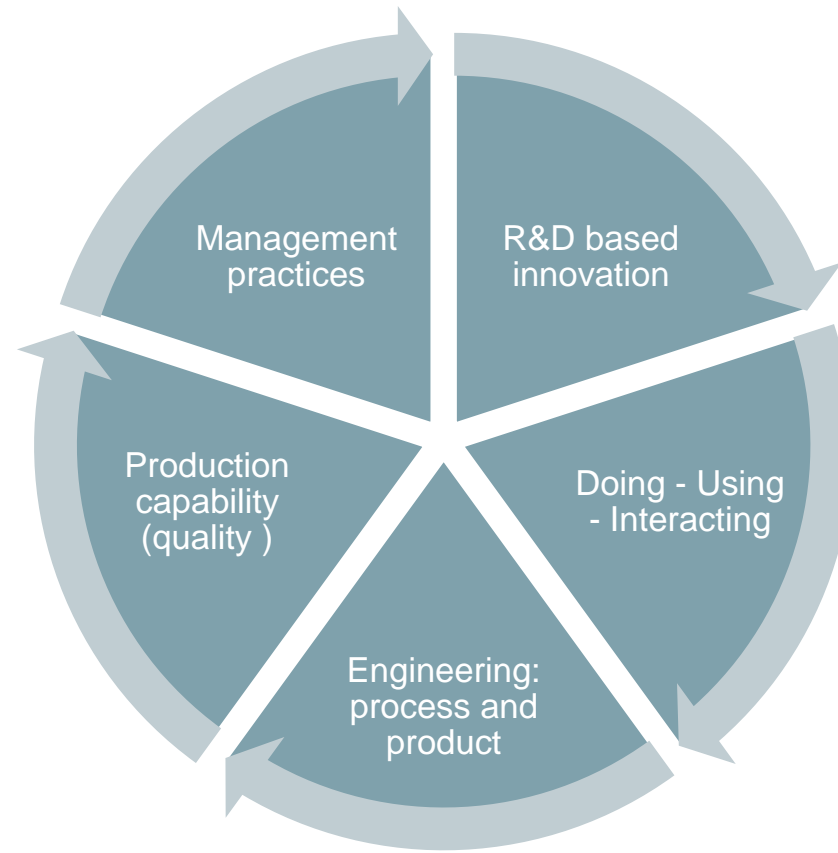


Pure science	Basic research	Applied research	Exploratory development	Advanced development	Process and product engineering	Production capability
Intrinsic knowledge	New knowledge for radically new marketable product	Differentiated product 'on paper.'	Prototype in a system	Prototype in manufacture	Improvements of existing products and processes	Improved quality of products and processes
Ph D	PhD required with experience in R&D	with	PhD not required/MSc and BSc required		Skilled engineers	Skilled technicians

Potential sources of technology upgrading and growth

	Opportunities
MNCs (FDI)	Local market driven FDI
GVCs (subcontracting)	Supply chain organisers (assembler, buyers) can support supply network of SMEs
Individual local firms ('islands of excellence')	Island of accumulated past technical know-how and new technology-based firms growing based on skills of entrepreneurs engineers
Clothing	Comparative advantages in labour costs
Food	Comparative advantages in specific niches
Free economic zones	Potentially useful tools of regional development
IT outsourcing	Skilled programmers Facilitating role of High Tech Park including training support Government support
Local innovation ecosystems of new ICT-based firms	Bottom-up initiatives Potential for discovery of new business models
Tourism	Comparative advantages
International aid organisations	Good service delivery

....or in generic termsfocus on the NIS as a **locus of multiple modes of innovation** and build **indicators for each innovation mode**



But.... STI indicators are not enough.....

- Unless they are linked to specific **policy areas and issues**
- Unless we develop **'actionable'** sets of indicators and related policies
- **From policies to indicators** rather than from indicators to policies

Link indicators to specific policy areas (sub-areas)



Analytical steps (proposal):

1. For each innovation mode define

Policy area(s) + Policy variables (instruments) +
Input/Impact/Output indicators

2. Develop policy benchmarks and I/O/I indicators > Index
of innovation (productive development) policy

For partly similar reasoning see OECD/Asian SME Policy
index

In nutshell, two tasks

- Establish a new set of STI indicators that reflect the nature of innovation and other learning (production) activities in MICs
- Link these indicators to ‘actionable’ policy areas and issues
- Outcome: **Innovation policy profile and development index**