Building innovation capacity through investments in education and skills development

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Determinants of national innovation capacity

- The capability of a country to generate and commercialize a flow of innovative ideas and technologies over the long term.
- What are its key determinants? Not many studies focusing on LDCs
- The experience of developed countries shows that education and skills development are fundamental determinants of 'innovative capacity'

An inclusive national education system

Building the capacity for technical and vocational training

Advanced human capital development at the **tertiary** level

The case of South Korea

- Education as share of **government expenditure** from 13.9% of GNP in 1975 to 27.3% in 1985
- Free compulsory elementary school in 1949: 90% enrolment rate by 1959.
- Sequential expansion of secondary education with equalization policy
- Vocational training emphasized to support the export of light industrial products like textiles
- The number higher education institutions rose quickly from 19 in 1945 to 55 in 1950

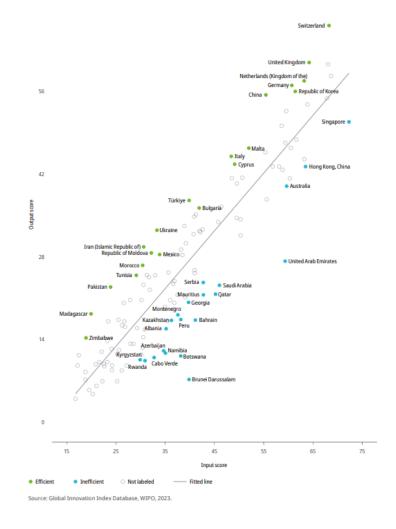
"Only those countries that have invested heavily in the formation of skills seem to be capable of catching up, and those that have not made such investment are falling further behind" Kuen Lee



LDCs: Incipient National Innovation Systems

- Firms only carry out dispersed innovation
 activities due to low absorptive capacity, low
 knowledge generation and collaboration and lack
 of enabling conditions in the ecosystem
 - Most LDCs are at the bottom of the ranks of the Global Innovation Index
 - Most LDCs are also below the efficiency frontier to transform innovation inputs in tangible outpu
 - LDCs have the lowest level of productive capacities (PCI 31 vs. 46.8 for dev. countries)

Return from R&D activities is low and, in some cases, even negative, because the lack of complementary factors outweighs the catch-up effect





Skills for innovation in LDCs: what and how

- LDCs premature de-industrialization: a larger share of labour is moving to low-value, lowproductivity and low-technology activities in the services sector
- Does the services sector in LDCs have the longer-term potential to enable workers and firms to raise their productivity over time?
- There is an expectation that digital transformation will boost productivity
- Developing skills will be critical for both digitalization and the services sector to support the process of structural transformation

How?

Enhancing public and private spending on education at all levels to build a skilled workforce

of skills: creativity, management, behavioral and social

Focus on STEM and vocational training + raise awareness on STI professions

More important role of human, design, and organizational factors for innovation in services

There is a need to prioritize educational spending to meet **present and future skills** needs in the LDC economies – 21st century skills



Technology Makers Lab



The Technology Makers Lab is designed as a space where students can explore, learn and make.

TML provides modern workshops and tech equipment for LDCs, to:











Technology Makers Lab



Students will gain skills on entrepreneurship, creative thinking, critical thinking, solving complex problems, effective communication, teamwork



Robotics and Coding



Design and Production



Materials Science and Nanotechnology



Advanced Robotics



Electronic Programming and IoT



Software Technologies



Cybersecurity

Based on BILIM
TURKIYE and
DENEYAP a
successful model
implemented by the
Turkish Ministry of
Industry and
Technology and
TUBITAK

High value for money (less than USD 100/child)

Designed to address the educational journey from its early stage











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