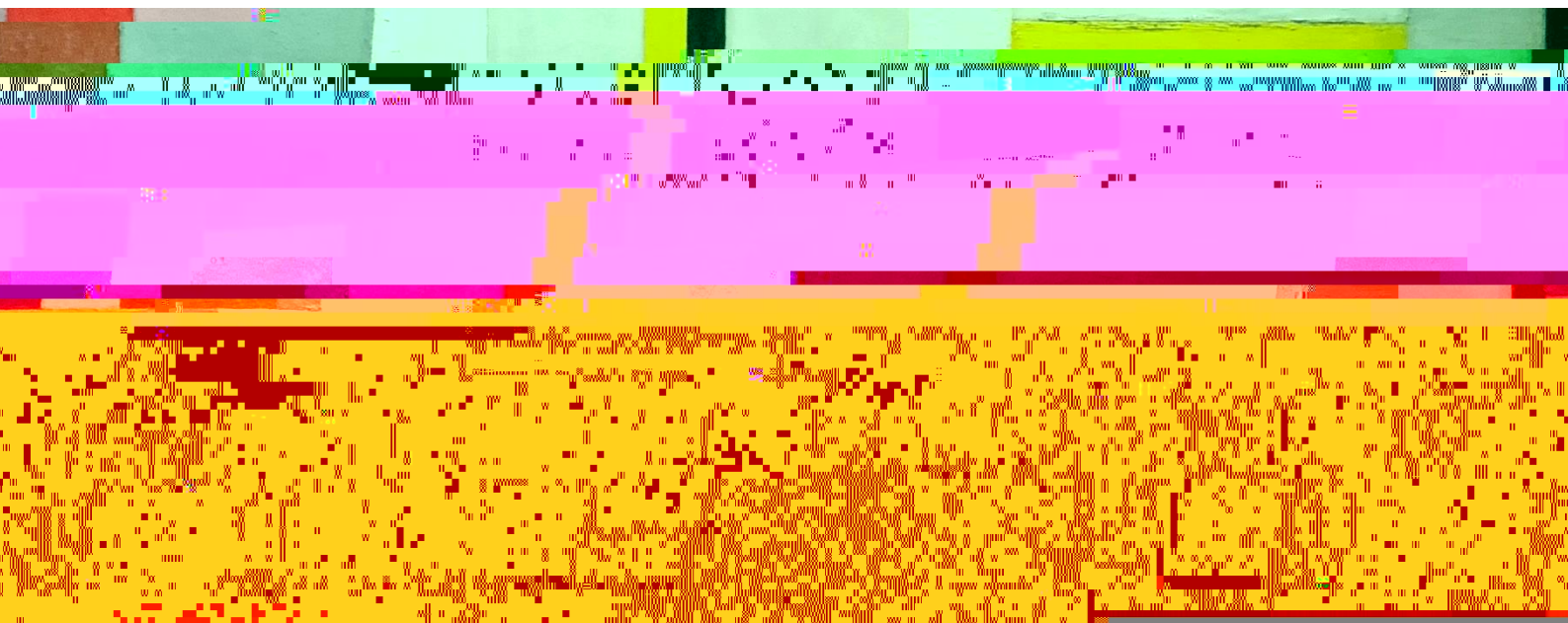


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NOTE

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ENHANCING STI IN AFRICA THROUGH THE TECHNOLOGY BANK FOR THE LDCs

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1. Introduction

development. This is true for the 47 LDCs, and particularly true for the 33, which are in sub-Saharan Africa.³

The importance of STI is recognised both in the Istanbul Programme of Action for the Least Developed Countries for the Decade 2011-2020 (IPoA)⁴ and the 2030 Agenda for Sustainable Development,⁵ which set out respectively the international community's support agenda for the LDCs and the universal blueprint to achieve a sustainable future. A key institutional tool called for in these two documents to promote STI advancement in the LDCs is the creation of a "Technology Bank for the LDCs". The United Nations (UN) General Assembly established this new entity in late 2016.

This paper focuses on how this newly formed UN institution can specifically benefit the African LDCs by cooperating with African STI initiatives. By way of introduction, we briefly highlight the STI challenges of the LDCs. The paper then reflects on the mandate of the Technology Bank and how this fits within the efforts to advance the use of knowledge for the sustainable development of the LDCs. The paper then looks at the role that the Technology Bank can play to catalyse action within the African continent. It briefly reviews some key African STI initiatives and assesses how the Technology Bank can contribute to and promote already existing structures and programs within Africa. In this regard the paper conducts a mapping of the coherence and expected synergies between the Technology Bank objectives and ongoing African initiatives. The paper concludes that the Technology Bank fits well within the efforts to enhance the utilization of knowledge as global public good for the development of the LDCs and that it holds the promise to spur and support the African initiatives directed at advancing STI in the continent.

2. Science Technology and Innovation challenges in African LDCs

STI play a critical role in the LDCs' efforts to expediting poverty eradication, transitioning to sustainable development and becoming globally competitive. The rising importance of knowledge across the board, from economic competitiveness in the context of increasingly complex global value chains, to progress in virtually all social development areas, such as health and education, from communication to governance, from environmental protection to disaster resilience, has been recognised in the literature on economic development and in international discussions and negotiations for decades.⁶ However, the

³ Equatorial Guinea graduated from the LDCs category on 4 June 2017 and as a result is no longer included in the list of LDCs. Note however that in the rest of the analysis, Equatorial Guinea is included because all LDCs that graduate from the LDC category can remain a beneficiary of the activities of the Technology Bank for a period of at least five years, see Article 3.b of the Charter of the Technology Bank (UN, 2016).

⁴ United Nations (UN), "Programme of Action for the Least Developed Countries for the Decade 2011-2020", UN doc. A/CONF.219/3/Rev.1 (23 May 2011).

spending to least 1 per cent of GDP (ACBF, 2017). The 2006 Khartoum Decision of the Executive Council of the African Union called on Member States to promote Africa's R&D and develop innovation strategies for wealth creation and economic development by allocating at least 1% of Gross Domestic Product (GDP) of national economies by 2010.⁹ A report by the African Union, the Economic Commission for Africa and the African Development Bank show that various African LDCs, for example Ethiopia, Uganda, Tanzania and Zambia, have reflected in their national policies the goal of ensuring 1 per cent

government (UN-OHRLLS, 2017b). However, in 2015, fixed, higher quality broadband penetration in LDCs represented less than 1 per cent of subscriptions and mobile phone broadband less than 20 per cent of subscriptions. By comparison, in developed countries, the penetration rate is about 30 per cent for fixed broadband and 90 per cent for mobile broadband (ITU, 2016). Hjort and Poulsen (2016) empirically established that broadband connectivity has a positive causal net effect on job creation. They found that in Senegal, Tanzania and Uganda, broadband connectivity enables firms to export more, partly due to use of websites. In Ethiopian manufacturing firms, the authors found an increase in number of workers (in particular skilled positions per firm), firm level productivity, and the productivity of workers in skilled positions. Increasing access to the Internet, including broadband, among African LDCs is crucial. This will require responding to issues of significantly increasing access to the internet and ensuring that it is affordable (see for example, OHRLLS and ITU, 2018). In addition, investing in human capital and enabling local content is important for Internet uptake in LDCs.

c) *Patents* - In order to create adequate incentives for private sector technological innovations that drive economic growth, governments need to create an effective and targeted

Table I: Total Number of Patents Filed by African LDCs and Select Countries, 2001-2016

	2,528	1,606	4,134
	3,662	6,952	10,616

In relation to the impact of advanced technologies on manufacturing in Africa, it has been argued (The Economist, 2017) that the concern that advanced robotics and 3D printers are a threat to manufacturing jobs may not apply to most of the African countries where manufacturing has not taken off. Hence, robots will not kill many jobs but offer an opportunity to create new ones by helping African firms overcome bottlenecks in production and, by lowering barriers to making and selling things globally. Given that the impact of the emerging technologies is likely to vary among countries, it will be important to conduct detailed analysis in various LDCs on the impact of the new technologies on both productivity and jobs.

The very low STI base as evidenced by the various indicators reviewed above makes it necessary to work on many fronts. On the one hand substantial investments of time, effort and resources are required to build the capacity of indigenous STI and eventually harness that capacity into productive activities, higher paying jobs, increased resilience to shocks and disasters and better management of natural resources and the environment. On the other hand absorption and adaptation of existing technologies remains necessary, as it was for the “newly industrialized countries”, which used technologies from abroad to grow their industrial base before being able to generate their own scientific and technical knowledge (Duller, 1992).

In all areas, African LDCs need support. Building the STI base requires long-term investments to foster quality human resources, build facilities, procure equipment, develop relationships with research, firms and markets abroad, and secure online connectivity so that researchers can interact with their peers, and access existing research (including through online publications). It is against this background that the Technology Bank for the LDCs initiative was conceived.

3. The Technology Bank and its role in the global governance of knowledge

In order to help respond to some of the challenges highlighted above, the LDCs advocated for the establishment of a multilateral institution specifically geared to address their needs in the area of STI.²¹ In the 2011 IPoA, the international community underscored the critical role played by STI as a vehicle for structural transformation and called for the establishment of a technology bank dedicated to LDCs. This LDCs priority was confirmed in

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Knowledge exhibits some crucial elements of a public good in as far as it is not depleted by multiple use and it is

However, both in these instances and even in sectors where intellectual property rights are not prevalent or for technologies no longer covered by IP, the absorptive capacity limitations remain a binding obstacle to the LDCs' access and use of knowledge for their development.

Beyond absorptive capacity the Technology Bank is also expected to concentrate on promoting LDCs' access to knowledge and the ensuing benefits by facilitating transfer of appropriate technologies, helping them manage IPRs, and promoting research collaborations and partnerships. These are all means to reduce the exclusion from knowledge that continue to constrain the potential of the LDCs and their people.²⁶ It is of note that among the first activities that the Bank decided to undertake at the outset of its operation in 2018 there is the promotion of "digital access to research." The Technology Bank is teaming up with Research4Life, a public private partnership that has been active in more than 100 lower income countries, including all the LDCs, since 2002. The partnership brings together UN agencies, 180 international publishers, universities and other organisations to provide researchers and others in the developing world with online access to high-quality international academic and professional journals, books, databases and other information resources.

Indeed, t

At the pan-African level, leaders have long been committing to enhancing STI in Africa (AU, ECA and AfDB, 2016 and ACBF, 2017; NEPAD, 2014). In 1979, African Leaders adopted the Monrovia Declaration, which committed to enhancing science and technology. This commitment was reiterated in the Lagos Plan of Action in 1980. The Lagos Plan of Action further called for Member States to formul

Technology Bank. The table is not intended to be exhaustive, but rather underscore coherence and synergies, using examples.

The table summarizes the main African initiatives, mandates and select activities. These are then matched with the priority areas and activities of the Technology Bank. The review is conducted under four broad categories: supporting home-grown innovation and research; building human capital and technical competence; developing R&D networks and promoting cooperation; and intellectual property capacity building. The first three are clearly geared towards improving the STI base and absorptive and adaptive capacity of the LDCs.

Under category 1 (supporting home-grown innovation and research), the Technology Bank can contribute to various African initiatives, including, STISA-2024 and various research initiatives. For example, some key objectives of STISA-2024 include: (a) enhancing the effectiveness of STI in addressing/implementing priority areas, (b) improving technical competencies and institutional capacity for STI development, and (c) promoting economic competitiveness through fostering innovation, value addition, industrial development and entrepreneurship in synergy with instruments, such as the Action Plan for Accelerated Industrial Development of Africa (AIDA) and Pharmaceutical Manufacturing Plan for Africa

this regard, the Technology Bank can help spearhead and enhance the continental and regional efforts by linking the local R&D institutes into an expanding network of North-South, South-South, intra-regional and inter-regional knowledge creation networks. It may also promote collaborative innovation networks to enable LDC scientists, technologists and relevant public institutions to connect and collaborate with their global STI peers.

Finally, on matters related to Intellectual Property (category 4 in Table II), several African initiatives are in place. These include, the efforts to establish the Pan African Intellectual Property Organization (PAIPO) and STISA-2024's aim of protecting knowledge production (including inventions and indigenous knowledge) by strengthening the Intellectual Property Risk and indigenous

Table II: Coherence and Synergies between the Technology Bank and Select African Initiatives

	<p>The mission of STISA-2024 is to accelerate Africa's transition to an innovation-led, knowledge-based Economy. This will be achieved by implementing specific policies and programs in STI that address societal needs in a holistic and sustainable way. Among its strategic objectives is to improve technical competencies and institutional capacity for STI development and promote economic competitiveness through fostering innovation, value addition, industrial development and entrepreneurship in synergy with instruments such as the Action Plan for Accelerated Industrial Development of Africa (AIDA) and Pharmaceutical Manufacturing Plan for Africa (PMPA).</p> <p>The AU Commission</p>

The Biosciences eastern and central Africa - International Livestock Research Institute (BeCA - ILRI) Hub, a shared agricultural research and biosciences platform aims to increase access to affordable, world

STISA-2024 will promote mutually beneficial South - South and North - South cooperation to achieve its ambitious goals.
The private sector will work closely with public, education and research, societal, funding

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