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Contribution by UNTBLDC

to the CSTD 2024-2025 priority theme on "Diversifying economies in a world of accelerated digitalization"

PRIORITY THEME 1: Diversifying economies in a world of accelerated digitalization

United Nations Commission on Science and Technology for Development (CSTD)

To whom it may concern

The 27th CSTD annual session selected "Diversifying economies in a world of accelerated digitalization" as one of the priority themes for its 28th session (2024-25 period). This theme directly addresses SDG 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" at the 2030 Agenda.

Although the contribution of science, technology and innovation (STI) to the achievement of other sustainable development goals (SDGs) is discussed in every session of the CSTD, its role in upgrading and diversifying industrial capabilities and the linkages with industrial policies have not been specifically addressed for several years in the Commission. Economic diversification, including through the upgrading of industrial capabilities, is an essential component of economic development and a key area of SDG 9, which aims at enhancing scientific research and accelerating technological upgrade of industries through innovation, particularly in developing countries.

Under this priority theme the Commission could discuss challenges and opportunities brought about the rise of new digital technologies, as Artificial Intelligence, for industrial and innovation policies aiming at increasing productive capacities and diversifying the industrial structure toward higher value productions to benefit all while preserving cultural identity, including indigenous knowledge. The accelerating pace at which frontier technologies emerge and develop makes policymakers struggle to navigate and design responsive policies. Under this theme, the Commission can examine the challenges and opportunities specific to countries at different level of development, and what can least developed countries do to face the disproportionate challenges they face; work to identify best practices and inform inclusive policies for innovation and economic diversification; discuss how to leverage international cooperation to guarantee that uneven technological capabilities will not worsen inequality.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting to be held in the second half of October 2024 in Geneva. In this context, we would like to solicit inputs from international organizations, UN entities and agencies, and regional commissions on this theme. We would be grateful if you could kindly answer the following questions based on your organization's work at the global, regional, and/or national levels:

1. What are the specific challenges developing countries face to develop or adapt frontier technologies and AI?

Artificial Intelligence (AI) and frontier technologies represent a rapidly evolving frontier in science and technology with profound implications for economies, societies, and daily life. These technologies are driving the fourth industrial revolution and have the potential to transform industries, enhance productivity, and address global challenges such as climate change, healthcare, and food security. They offer unprecedented opportunities for economic growth, social inclusion, and sustainable development. However, their adoption and integration into society also pose significant challenges, particularly for developing countries that may lack the necessary infrastructure, expertise, and regulatory frameworks. More specifically least developed countries have to face different challenges:

1. **Infrastructure Deficiencies**

- Digital Infrastructure: Reliable high-speed internet is crucial for most modern technologies, including AI, which often relies on cloud computing and real-time data processing. In many developing countries, internet penetration is low, and available connections are often slow and unreliable. This limits the ability to use and develop online services, cloud-based AI, and other digital technologies.

- Physical Infrastructure: Adequate physical infrastructure, such as electricity supply and computing facilities, is essential for technology adoption. Frequent power outages and lack of modern computing equipment hinder the ability to maintain technology-based operations.

- Telecommunication Networks: Many rural and remote areas in developing countries lack proper telecommunication networks, which further isolates these regions from technological advancements and digital services.

2. **Skill Gaps**

- Education and Training: The education systems in many developing countries may not offer specialized programs in AI, data science, and other frontier technologies. This leads to a shortage of qualified professionals who can develop, implement, and maintain these technologies.

- Research and Development: Universities and research institutions often lack the funding, equipment, and human resources necessary for cutting-edge research.

- Continuous Learning: Rapid advancements in technology require continuous learning and upskilling. However, there are often few opportunities for professionals to update their skills through workshops, online courses, or professional training programs.

3. **Financial Constraints**

- Investment: The development and adoption of new technologies require significant financial investment. This includes costs associated with R&D, acquiring new equipment, training personnel, and integrating technologies into existing systems. Many developing countries face budget constraints and have limited access to international funding and investment.

- Credit Access: Small and medium-sized enterprises (SMEs) and startups often find it difficult to secure loans and investment needed to innovate and adopt new technologies. Financial institutions in developing countries might be risk-averse and reluctant to fund tech ventures without proven track records.

- Cost of Technology: Advanced technologies and AI systems can be prohibitively expensive. Licensing fees, hardware costs, and the expenses associated with setting up and maintaining new technology infrastructures add to the financial burden.

4. **Regulatory and Policy Barriers**

- Inconsistent Regulations: The absence of clear and consistent regulatory frameworks can create an uncertain environment for technology adoption.

- Privacy and Security Concerns: Developing countries may lack comprehensive data protection and cybersecurity laws. This can result in hesitancy to collect and utilize data, which is critical for AI development, due to concerns about privacy and security.

5. **Data Accessibility**

- Data Availability: AI relies on large datasets for training models and making accurate predictions. In many developing countries, there is a lack of digitized data in various sectors such as health, agriculture, and education. This makes it challenging to build robust AI systems.

- Data Quality: The quality of available data is often poor. Data may be incomplete, outdated, or inaccurately recorded, which reduces its usefulness for AI applications. Inconsistent data collection methods and lack of standardization further complicate the issue.

- Data Privacy and Ethics: Concerns about data privacy and ethical use of data can restrict access to necessary datasets. Developing countries may not have the legal frameworks in place to address these concerns, leading to reluctance in sharing data.

- Data Infrastructure: Proper data management and storage infrastructure is essential for maintaining and accessing large datasets. Many developing countries lack advanced databases, data warehouses, and cloud storage solutions needed for effective data utilization.

2. Can you provide successful examples of adoption or development of AI and other frontier technologies you contributed to?

NA

3. Can you provide examples of inclusive policies for innovation and economic diversification specifically tailored to diffusion of digital technologies and AI?

NA

4. Do you have examples policy instruments to favour the diffusion of frontier technologies in the economy targeting specific sectors?

NA

5. Are you engaged in putting in place mechanisms to strengthen industrial capabilities through partnerships among different stakeholders (e.g., university-industry, or private-public)?

The United Nations Technology Bank for Least Developed Countries (UNTBLDC) is actively engaged in strengthening industrial capabilities through partnerships among various stakeholders, including university-industry and private-public collaborations.
A notable example of these efforts is the "**Frontier Tech Leaders" programme**, which aims to address the digital divide in the Least Developed Countries (LDCs) and inspire the next generation of tech specialists to develop digital solutions for community challenges. This programme, jointly launched by UNDP's International Centre for Private Sector in Development (IICPSD) and the UNTB, with support from the Government of Turkey, emphasizes encouraging youth and in particular young women to pursue education and careers in technology, thereby contributing to gender equality.

The "Frontier Tech Leaders" programme facilitates partnerships between universities, industries, and governments. It begins with training LDC students in Turkey, followed by support through a Virtual Digital Business Incubation (VDBI) process, enhancing the potential for entrepreneurship. This initiative aims to bridge the digital divide by leveraging technologies such as big data, artificial intelligence, and machine learning, which are pivotal for the fourth industrial revolution. By involving stakeholders like the Ministry of Economy and Finance of Djibouti, the Islamic Development Bank, and UNTB, the programme fosters a collaborative environment essential for sustainable development.

Additionally, the UN Technology Bank has launched the **International Design Education (IDE) Program** in partnership with the World Eco-Design Conference and the Ningbo Innovation Centre, Zhejiang University. This programme offers full scholarships to students from LDCs to pursue master's degrees in industrial design engineering. It aims to build capacities in eco-industrial design, problem-solving, innovation, and entrepreneurship, thus strengthening the industrial capabilities of LDCs. The IDE Program also focuses on the commercialization of research achievements, expanding the design talent pool, and enhancing competitiveness in science, technology, and innovation.

The IDE Program not only cultivates industrial design talents but also promotes global partnerships and cooperation in eco-design, thereby contributing significantly to sustainable development.

Through these programmes, the UNTB actively promotes the development of industrial capabilities in LDCs by fostering collaborations between academia, industry, and government bodies, thereby enhancing the overall capacity for innovation and sustainable growth.

6. How can international cooperation support the uptake of new technologies and the development of technological capabilities and ensure that industrial policies will benefit all and do not worsen inequality?

International cooperation is pivotal in supporting the uptake of new technologies and the development of technological capabilities in ways that ensure industrial policies benefit all and do not exacerbate inequality. This can be possible only with the application of directed strategies:

- Promoting Sustainable and Inclusive Industrial Policies:

Developing and harmonizing international standards and regulations that ensure fair access to technologies and prevent monopolistic practices.

Aligning industrial policies with the SDGs to ensure that technological advancements contribute to sustainable development, reduce environmental impact, and promote social inclusion.

Implementing policies that protect workers and communities from the potential negative impacts of technological disruptions, such as job displacement due to automation.

Involving diverse stakeholders, including marginalized communities, in the design and implementation of industrial policies to ensure that the benefits of technological advancements are broadly shared.

- Fostering International Collaboration and Partnerships

Utilizing UN platforms to facilitate dialogue, knowledge exchange, and partnerships between countries.

Encouraging partnerships between governments, private sector entities, and civil society to leverage resources and expertise for the deployment of new technologies.

Promoting regional cooperation initiatives that address specific technological and industrial challenges faced by neighboring countries.

- Promoting Inclusive Innovation and Technology Transfer

Providing technical assistance and capacity-building programs to developing countries can help them to adopt and adapt new technologies.

Facilitating technology transfer from developed to developing countries through frameworks such as the Technology Bank for the Least Developed Countries, ensuring that advanced technologies are accessible to all.

Enhancing mechanisms for data sharing and knowledge dissemination to ensure that best practices and successful technological solutions are accessible to all countries and communities.

7. What can do the UN CSTD to support an economic transformation that enhances the productive capabilities of countries and foster an inclusive digital transformation?

Collaborative policy frameworks: Including different stakeholders to the policy consultation process, giving access also to SMEs and smallholders to create more inclusive and protective policies.

Supporting National Initiatives: Offering support for national programs and initiatives aimed at building technological capabilities and promoting inclusive digital transformation. Taking into account also indigenous technologies.

Policy Advice and Research: The CSTD can leverage the UN Technology Bank's Technology Needs Assessments to provide policy recommendations and conduct research on the best practices for adopting new technologies and fostering innovation.

Facilitating Dialogue and Cooperation: The CSTD can serve as a platform for dialogue among member states, experts, and stakeholders to share knowledge, experiences, and strategies for economic transformation.

Please indicate contact person(s) responsible for projects/policies and international collaboration in this context in case we need clarification on the inputs.
Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by **24 July 2024**. We look forward to receiving your valuable inputs.

Sincere regards,

CSTD secretariat