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Contribution by UNIDO

to the CSTD 2019-2020 priority theme on "Harnessing rapid technological change for inclusive and sustainable development"

PRIORITY THEME 1: Harnessing rapid technological change for inclusive and sustainable development

We live in a time of growing prosperity alongside growing concerns about inequality. Recent developments in frontier technologies (e.g. AI, robotics, big data, blockchain, space technologies, biotechnology, and nanotechnology) have shown tremendous potential for making development truly sustainable, but they also have raised fears of increasing disparities by worsening and creating new divides between the technology-haves and have-nots. This priority theme will critically examine how to make frontier technologies work for all. The analysis will explore the potential of frontier technologies to improve inclusiveness not only in terms of income, gender, various age groups, people with special needs or other groups facing specific challenges, but also to improve the situation of small economies including Least Developing Countries, Landlocked Developing Countries, and Small Island Developing States. The analysis will focus on the strategies, policies and immediate actions at national and international levels for creating an environment for harnessing frontier technologies to ensure that no one is left behind.

1. Can you prove examples of initiatives of your Agency for creating national ecosystems for innovation on frontier technologies for inclusive and sustainable development? What are the most effective ways to support the improvement of skill levels and better match the supply and demand of skills? What is the role of the government in facilitating a fair relation between workers and employers in the digital economy? What are the current options and lessons learned from policies to protect people affected by rapid changes in labour markets (e.g. greater benefits for those whose jobs are destroyed, retraining, federal job guarantee)? What is the role of redistributive policies to ensure that no one is left behind in a world of rapid technological change?

UNIDO Environment Department is working on Eco-Industrial Parks (EIPs) projects for several years. Frontier and disruptive technologies are a key component of EIPs (e.g. Smart grid, real time solutions for wastewater monitoring, nanotechnologies), at park and industry levels. A global programme, funded by the Swiss Government through its Secretariat for economic affair (SECO) is currently being implemented by UNIDO in five different countries (Colombia, Egypt, Peru, Ukraine and Viet Nam). One key features of the country level interventions consists in ensuring sustainability of the project by collaborating with local universities, in order to increase capacities of national experts and create national platform for the promotion and upscaling of EIP approaches.

Governments have a key role to play in order to ensure that digitalization and industry 4.0 technologies embrace social aspects of development. For instance, the GEIPP programme will focus at two different levels (industrial parks and national Government institutions), to ensure that potentially negative social, economic and environmental impacts of EIP and digital technologies are going to be addressed.

UNIDO environment department also assesses how industry 4.0 solutions can foster the development of the Circular Economy concept. Indeed, Industry 4.0 bears enormous opportunities to enable circular economy in which end of life products are reused, remanufactured and recycled. For instance, a recent workshop (10 June 2019) held in the Headquarter of the Peruvian Ministry of the Environment has engaged representatives from the public and private sector, academia, financial institutions and civil society on circular economy; More specifically, the workshop focused on the different aspects of impact financing as a tool to promote Circular Economy.

2. Can you provide examples of STI policies/projects/initiatives intended to promote and give directionality to technological change to make it work for inclusive and sustainable development? Are there policies/projects/initiatives that mitigate the potential negative effects of rapid technological change on inequality? Are there any of these policies/projects/initiatives directed to women, youth, people with special needs or other groups facing specific challenges? How have the policies targeted inequalities? What are the challenges confronted in implementing these policies/projects/initiatives?

UNIDO Environment is currently developing a project in order to collaborate with so-called Fab Labs (Fabrication laboratories). Fab Lab refers to workshops and other types of workspace where digital prototyping is applied for innovation and invention, providing stimulus for both local entrepreneurship and international networking through a global community of learners, educators, technologists, researchers, makers and innovators. It is a knowledge sharing network created by the Center for Bits

and Atoms of the Massachusetts Institute of Technology that spans more than 1,200 Fab Labs in 30 countries all over the World. Among other activities, Fab Labs are promoting self/group skill training for young people, and are a formidable vehicle for ensuring than everyone in developing countries (including youth people and women) can be trained on innovative technologies.

3. Can you provide examples of innovative initiatives in partnership with (or by) the private sector in/from your country that harnesses frontier technologies for inclusive and sustainable development? What are the innovations in terms of the use of technology? What are the innovations in terms of business models?

In partnership with the textile company H&M, UNIDO has conducted Resource Efficient and Cleaner Production (RECP) assessment in the textile sector. UNIDO, has worked with 103 factories in six regions to reduce environmental impacts, particularly groundwater extraction and surface water pollution along the textile supply chain.

The UNIDO Green Chemistry programme is another example of partnership with public entities and the private sector. Among others, partners include the Centre for Green Chemistry and Green Engineering at Yale University, the German Federal Environmental Foundation, and Braskem, a thermoplastic resins producer in the Americas. Green Chemistry is based on twelve principles to reduce pollution at its source by minimizing or eliminating the hazards of chemical feedstock, reagents, solvents and products; or encouraging the invention and innovation of new and non-hazardous solvents, surfactants, materials, processes and products.

4. What are the actions that the international community, including the CSTD and STI Forum, can take to contribute to maximize the benefits associated to rapid technological change and mitigate the risk of these technologies widening or creating new inequalities within and across countries? Can you give any success stories in this regard?

Usually, rapid technological changes are perceived as having a negative impact on employment, because disruptive technologies might replace jobs. This is particularly true for low skilled workers. Actually, innovative technological changes can create better jobs, as long as workers could benefit from appropriate training. The international community should consequently ensure that workers from least developing countries can benefit from appropriate capacity building activities. Hence, some innovative business models based on frontier technologies could be implemented in these countries, mitigating the risk of increased inequalities caused by rapid technological change.

5. Could you suggest some contact persons responsible for policies related to rapid technological change and its impact inequality as well as any experts from your Agency, academia, private sector, civil society or government dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

Of course, I am conviced that UNIDO experts can be found in the Research & Industrial Policy Advice Division.

An expert of the academic sector could be Ms. Primavera De Filippi who is researcher at the National Center of Scientific Research (CNRS) in Paris. She is a member of the Global Future Council on Blockchain Technologies at the World Economic Forum, and co-founder of the Internet Governance Forum's dynamic coalitions on Blockchain Technology (COALA). Her fields of interest focus on legal challenges raised by decentralized technologies, their potential to design new governance models and participatory decision-making, and the concept of governance-by-design. She recently published a book called, "Blockchain and the Law," (2018, edited by Harvard University Press, co-authored with Aaron Wright).

6. Do you have any documentation, references, or reports on the specific examples on the priority theme in your country or region?

Regarding a potential collaboration between the Fab Lab Foundation and UNIDO in order to mainstream Fab Labs as a vehicle for inclusive and sustainable industrialization, the following reference can be mentioned:

Sicars, S. (2018) "*Building bridges for circular networks of fabrication*", in Diez, T. (Ed.) The Mass Distribution of Almost Everything. Institute for Advanced Architecture of Catalonia, Spain

https://issuu.com/iaac/docs/fabcitymassdistribution

This chapter specifically focuses on the potential role of UNIDO. Other chapters in the book are relevant to the other topics raised by the question above.