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Contribution by ESCWA

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

ESCWA Contribution to the CSTD report on

"Harnessing rapid technological change for inclusive and sustainable development"

Technology for Development Division

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First Question

a. From the perspective of your region, what is the role of the government in creating the ecosystem for innovation on frontier technologies for inclusive and sustainable development?

- The role of the government is to formulate policy/strategy for promoting FT for sustainable development. Such policy/strategy should strengthen research, development and innovation in FT, and should ensure that the legal and regulatory system encourage the ethical and appropriate use of frontier technology in public and private sectors. The policy/strategy should incorporate upgrading skills and knowledge of researchers and innovators for the development of FT.
- Government should also reinforce technology transfer at national and regional level, and thus strengthening the collaboration between academia & research center and private sector for the development of FT.
- In the Arab region, many Arab countries have established national technology transfer offices and related networks connecting stakeholders of innovation institutionally and reaching out to all especially not in capitals or major urban centers.

b. What are the most effective ways to support the improvement of skill levels and better match the supply and demand of skills?

- Engaging the local industry in the curricula continuous improvement advisory boards, practical courses, applied senior projects and research theses.
- Establishing periodic dialogue among various stakeholders (Government, Academia & Research Center, Private sector, professional association) on the national and regional priorities in FT and the potential national projects.

c. What is the role of the government in facilitating a fair relation between workers and employers in the digital economy?

- Engaging policymakers from Ministries of labor and Labor Unions in national planning of Digital Development Agendas (and vice versa engaging Digital Sector in the National Labor Planning) in order to have the appropriate level of understanding of the digital disruptions and transformations in their own national labor market, and to plan proactively to mitigate associated risks.

- Developing scenarios and modalities for preparing the workforce and the business sector for the expected changes in labor dynamics.
- Instigating rights for labors in digital domains though appropriate legislations that ensures fair compensations and balanced work-life relations for digital employees and freelancers; including potential establishments of syndicates for digital workers.

d. 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)?
   - Undertaking various programs for capacity building for enhancing the capabilities of those whose jobs are destroyed. Such programs might include courses on the development and use of technology, ICT, FT and others.
   - Re-skilling and periodically organizing innovation hackathon and boot camps.

e. What is the role of redistributive policies to ensure that no one is left behind in a world of rapid technological change?

   - Engaging policymakers from Ministries of Social Development an in national planning of Digital Development Agendas (and vice versa engaging Digital Sector in the National Labor Planning) to have the appropriate level of understanding of the digital disruptions and transformations in their own national labor marker, and to plan proactively to mitigate associated risks.
   - Developing National Digital Agendas in a Multi-stakeholder approach to include mechanisms for redistribution of affected labor from one job to the other. These agendas should predominantly aim at closing digital divide in access, skills, and in opportunities; through leveraged ICT infrastructure and improved Internet access experience with fixed broadband delivering content-rich multimedia applications, enhanced use for professional and educational purposes, and remote support services.
   - Instigating rights for labors in digital domains though appropriate legislations that ensures fair compensations and balanced work-life relations for digital employees and freelancers; including potential establishments of syndicates for digital workers.
   - Also, for technology-oriented labor, developing dedicated capacity building program on FT and sustainable development.
   - Establishing digital platforms, such as LMIS (labor market information system) for enhancing the link between job seekers and employers and for providing updated information to users about the needed skills and available training centers. ESCWA is advising EMCs to develop/update such platforms to reflect the rapid changes in labor market.

Second Question:

a. 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?

ESCWA has several activities related to STI policies for inclusive sustainable development. Among these activities:

- A study titled "Impact of the 4th Industrial Revolution (4IR) on the Development in the Arab region". This study will be published in 2019[1].
- A study titled "Arab Horizon 2030: Innovation and Technology perspectives for the Arab Region". This study will be also published in 2019[2]. This study identifies and explores various approaches of innovation and selected emerging technologies that could be adopted in the Arab countries for addressing social and economic challenges. The report suggests policy measures for integrating the various innovation approaches in national policies and strategies for achieving the 2030 Development Agenda and its goals.
- Organization of an Expert Group Meeting on Artificial Intelligence and local Industrial Development, 1-2 July 2019[3].
- ESCWA project for the Establishment of National Technology Transfer Offices (NTTO) in 8 Arab countries[4].

In the Arab region, many governments launched initiatives for promoting new technologies. Following some examples:

- The Bahrain government is also encouraging local companies to adopt the technology and the Bahrain Institute of Banking and Finance has even launched "Blockchain Academy"[5] [6].
- In Egypt, Codeaku is a startup establishing the first blockchain school in the nation[7].
- An interesting initiative is the world's first utility-scale blockchain infrastructure in Morocco[8].
- The computing firm Soluna, is establishing a wind powered 9000MW power plant to use in powering blockchain computation in an eco-friendly way[9].
- Tunisia on the other hand was the first nation to allow for its currency to be exchanged via cryptocurrency technology[10].
- "All Girls Code" initiative in Lebanon, providing mentorship and networking opportunities[11].
- Another relevant initiative at a larger scale is the Women in Technology for the Middle East and North Africa[12].

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[1] All ESCWA publications once published could be accessed through: https://www.unescwa.org/publications/publications-list

[2] This study will be published in Arabic language. An executive summary of this publication will be made available. All ESCWA publications once published could be accessed through:

[3] https://www.unescwa.org/events/egm-artificial-intelligence-and-local-industrial-development

[4] https://www.unescwa.org/sub-site/44121/resources

5 Aki, Jimmy (2018). A Huge Step Forward': Bahrain Minister Hails Blockchain Tech, Urges Adoption. CCN, 6 Sept. Available at www.ccn.com/a-huge-step-forward-bahrain-minister-hails-blockchain-technology-urges-adoption/.

6 Yahoo! Finance (2018). Bahrain Finance Training Institute Launches 'Blockchain Academy'. Available at http://finance.yahoo.com/news/bahrain-finance-training-institute-launches-002000917.html

7 El-Sayyed, Jehad (2018). "Codeaku Startup: First Egyptian Blockchain School." Egypt Today, 10 Oct. Available at www.egypttoday.com/Article/1/58753/Codeaku-Startup-First-Egyptian-Blockchain-school.

8 ESI Africa (2018). Morocco to See World's First Utility-Scale Blockchain Infrastructure. Available at www.esi-africa.com/morocco-to-see-worlds-first-utility-scale-blockchain-infrastructure/.

9 Ibid

10 DCEBrief (2015). Tunisia Becomes First Nation to Put Nation's Currency on a Blockchain. Available at http://dcebrief.com/tunisia-becomes-first-nation-to-put-nations-currency-on-a-blockchain/. https://www.allgirlscode.info/

[11] http://www.witmena.org/index.html

12 http://www.arabcoders.ae/en/

- The UAE government launched the One Million Arab Coders Initiative.
- The regional fund for Digital Startups established by the Arab economic summit of Beirut during 2019 and managed by the Arab socio-economic fund in Kuwait.

b. Are there policies/projects/initiatives that mitigate the potential negative effects of rapid technological change on inequality?

c. Are there any of these policies/projects/initiatives directed to women, youth, people with special needs or other groups facing specific challenges?

- ESCWA is currently working on the development of a portal for SMEs. This portal aims at supporting entrepreneurs and SMEs in the Arab region. An EGM is organized on the 4th of September 2019 to discuss with relevant stakeholders this portal[13].
- ESCWA has recently published a technical paper titled "Innovation and Entrepreneurship: Challenges and Opportunities for Arab Youth and Women"[14].
- The Arab ITU Regional Office, ESCWA, and several technology incubators and science parks have launched a network "ARTECNET" for strengthening the collaboration among incubators and science parks in the Arab region and developing incubation programs and the capabilities of youth and women in the region[15].
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d. How have the policies targeted inequalities? What are the challenges confronted in implementing these policies/projects/initiatives?\

Policies and Agendas should include components for building capacities on technology and innovation, especially among researchers, students and society at large. These policies should also promote users' capabilities and 'Internet access culture' through the education system among youth and ad-hoc initiatives for the population at large, particularly among women and girls as well as disadvantaged groups.

Third Question:

a. Can you provide examples of innovative initiatives in partnership with (or by) the private sector in/from your region that harnesses frontier technologies for inclusive and sustainable development?

- In Egypt, Nanotechnology Center (EGNC) was established by the Egyptian government in collaboration with IBM. http://www.egnc.gov.eg/egnc/

[13] https://www.unescwa.org/events/consultative-meeting-small-medium-enterprise-depar-arab-region
[14] https://www.unescwa.org/sites/www.unescwa.org/files/page_attachments/innovation-entrepreneurship-women-youth-arab_region-en_0.pdf
[15] http://www.artecnet.org/

- American University of Cairo established the Yousef Jameel Science and Technology Research Center focusing on nanotech. http://schools.aucegypt.edu/research/jameel/Pages/default.aspx
- University of Jordan established the Hamdi Mango Center for Scientific Research and nanotech. http://centers.ju.edu.jo/en/hmcsr/Home.aspx
- Azm Center for Research In Biotechnology And Its Applications (Lebanon) http://www.biotech.ul.edu.lb/

b. What are the innovations in terms of the use of technology?

c. What are the innovations in terms of business models?

Fourth Question

a. What are the actions that the international community, including the CSTD, 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?

- Establishing dialogue among various stakeholders in developed and developing countries on challenges, issues and impact of FT
- Discussing and formulating ethical principles for the development of FT for private sector and multi-national companies.
- Facilitating localization to the context and culture (including language) of FT with local knowledge producers and innovation stakeholders.
- Assuring FT governance voice for developing countries
- Harnessing existing global platforms such as global Internet Governance Forum (IGF), and WSIS Forum, to conduct a dialogue at global, regional and national levels, between digital companies and digital workers and other stakeholders, to devise mechanisms to maximize benefits and minimize risks from rapid technological changes for all.

Can you give any success stories in this regard from your region?

- The 30th ESCWA Ministerial session on Technology for Development that was held in Beirut, June 2018[16]. Beirut consensus resulted from this session that show the commitment of the Arab region to new technology[17].
- Various recent ESCWA meetings related to technologies and innovation[18].
- ESCWA's Arab WSIS (Arab High-Level Forum on WSIS and 2030 Agendas)[19].

[16] https://www.unescwa.org/events/ministerial-session-30th
[17] https://www.unescwa.org/sites/www.unescwa.org/files/resolutions_and_outcome_document_english_6_july.pdf
[18] https://www.unescwa.org/events/sdg-innovation-technology-arab-region & https://www.unescwa.org/events/committee-technology-development-2nd-session.
[19] https://www.unescwa.org/events/arab-forum-wsis-sdgs-2019

- ESCWA LAS Arab IGF[20].

Fifth Question

Could you suggest some contact persons of the nodal agency responsible for policies related to rapid technological change and its impact inequality as well as any experts (from 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.

In the field of technology and innovation:

- Mouin Hamze, Secretary general of Lebanon CNRS (national tech transfer system and Champion of National Code of Ethics in scientific research)
- Mahmoud Sakr, Director general of Egypt scientific Research and Technology Academy (National Tech transfer system, and champion of National AI and BD incubators)
- Ali al-Shidani, Oman Research Council (National Tech transfer system, and champion of Impact AI in Oman)
- Imad ElHajj, American University of Beirut professor (ICT and AI expert, ESCWA report on 4IR local consultant)
- Ammar Jokhadar, Damascus University (Expert in AI and digital technologies).

In digital technologies

- Bahrain: Information and e-Gov authority (iGA)
- Egypt: Ministry of Planning, Monitoring and Admin Reform
- Iraq: Ministry of Communication
- Jordan: Ministry of Digital Economy and Entrepreneurship (MODEE)
- KSA: Yesser program for e-Gov services
- Kuwait: Central Agency for Information Technology (CAIT)
- Lebanon: Ministry of State for Technology and Investment
- Mauritania: Ministry of Higher Education, Scientific Research and ICTs
- Morocco: Agency for Digital Development (ADD)
- Oman: Information Technology Authority(iTA)
- Palestine: Ministry of Telecom and Information Technology (MTIT)
- Qatar: Ministry of Transportation and Communication (MoTC)
- Sudan: National Information Center (NIC)
- Syria: Ministry of Communication and Technology (MoCT)
- Tunisia: e-Gov Unit – Prime Ministry Office (PMO)
- UAE: Telecom Regulation Authority (TRA)

[20] http://igfarab.org/En/index.jsp

Sixth Question

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

- Impact of the 4th Industrial Revolution (4IR) on the Development in the Arab region, UN ESCWA 2019. The study is under editing, and it will be published in 2019[21].
- Arab Horizon 2030: Innovation and Technology perspectives for the Arab Region, UN ESCWA 2019. The study is under editing, and it will be published in 2019[22].
- ESCWA's Study on "Arab Digital Technology Horizon 2030" studies seven priority policy areas related to ICTs and 2030 Agenda[23].
- ESCWA's Study on "Digital Economy Perspectives in the Arab Region" pays a special attention to the Supply and Demand sides of Digital Economy[24].

[21] https://www.unescwa.org/publications/publications-list

[22] Ibid

[23] https://www.unescwa.org/publications/arab-horizon-2030-digital-technologies-development

[24] https://www.unescwa.org/publications/perspectives-digital-economy-arab-region