Expert Group Meeting on Exponential Technological Change, Automation, and Their Policy Implications for Sustainable Development

Mexico City, Mexico, 6 to 8 December 2016
Co-organized by ECLAC, DESA and the Government of Mexico

CONCEPT NOTE

CONTEXT

The first annual Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals (STI Forum) was convened under the auspices of the Economic and Social Council (ECOSOC) on 6 and 7 June 2016 pursuant to General Assembly resolution 70/1.[1]

The Forum noted the fast pace of technological change in recent years and that current technological revolution has a broad impact on the economy, society and environment. Some of the areas of rapid advances, which are expected to have great effect in the society at large, are the information and communications technologies (ICT), energy technology, biotechnology, nanotechnology, and neuro-technology, among others.[2]

Recognizing that some technologies are disruptive in nature, the Forum noted that technological change is not neutral and that in the short term it may create winners and losers. The Forum highlighted that such disruptive technologies are essential for achieving the SDGs, but that there is the risk that their benefits may be disproportionally distributed across countries and segments of the population, which could perpetuate and exacerbate inequalities.

An important consideration highlighted by the STI Forum is the impact of technological change on employment and on the capacity of developing countries to catch up with the countries at the frontier of technological development.[3,4] Similarly, exponential technology change has important implications for future technology perspectives in areas of greatest concern to developing countries, such as agriculture, infrastructure and ICTs. Against this background, the Forum noted the usefulness of participatory technology assessments and prospective analysis, for example in assessing the impact of technologies on employment.

Exponential technology change has important cross-border implications for the development perspectives of countries. There is evidence that automation has started reversing offshore outsourcing and relocated economic activities back to high-income countries that are technology leaders. As technology change is fundamentally cumulative in nature, technology change in one country leads to lock-in of specific technology clusters in not only in the countries where the technology change takes place, but ultimately has lock-in effects also in other countries and can potentially constrain certain development options and paths.

[1] https://sustainabledevelopment.un.org/TFM/STIForum2016
[2] Table 3-3 in "Perspectives of scientists on technology and the SDGs" in GSDR 2016, https://sustainabledevelopment.un.org/content/documents/10789Chapter3_GSDR2016.pdf
[3] Technology at work v2.0. The future is not what it used to be. Citi GPS and Oxford Martin School, Jan. 2016
[4] Economist (2016). March of the machines – What history tells us about the future of artificial intelligence – and how society should respond. Economist magazine, 25 June 2016.

Independently, Mr. Jose Ramon Lopez-Portillo Romano and colleagues in Mexico put together background information and a proposal for a regular UN forum to discuss the challenges of exponential technologies and particularly automation.[5] The expert group meeting described herewith maybe a first step towards exploring his vision and contributing to next year's STI Forum to be held from 15 to 16 May 2017. In addition, it is envisaged that the assessment will also be featured in the next meeting of the Forum of the Countries of Latin America and the Caribbean on Sustainable Development to be convened by ECLAC in 2017.

OBJECTIVE

The objective of the EGM is to take stock of what we know about the prospects and challenges of harnessing exponential technological change for sustainable development, with a focus on disruptive automation technologies[6] and key technology areas of development concern, such those related to agriculture and infrastructure including ICTs*.* The Meeting will identify priority areas of collaborative work and potential mechanisms for international cooperation to help to facilitate the development, transfer and dissemination of these technologies for the achievement of the SDGs, including within the framework of the Technology Facilitation Mechanism.

The EGM will also provide guidance and inputs for the preparation of a technological assessment on automation technologies and their policy implications for sustainable development, particularly in developing and middle-income countries. The technology assessment will inform the STI Forum on the potential effects of those technologies and their impact in achieving the SDGs.

PARTICIPANTS

The EGM will bring together policymakers, natural and social scientists, technical experts and representatives of civil society. 10 to 15 international participants from various world regions and a commensurate number of local participants are expected.

ORGANIZERS

The EGM will be organized by the Division for Sustainable Development in the United Nations Department for Economic and Social Affairs (DESA), the Economic Commission for Latin America and the Caribbean (ECLAC), and the Ministry of Foreign Affairs of Mexico. The EGM will also benefit from inputs from the 10 Member Group for the TFM and the members of the IATT.

THEMATIC FOCUS

The focus of the EGM will be on the effects of exponential technological change and disruptive automation technologies on achieving SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), SDG 9 in terms of promoting inclusive and sustainable industrialization and fostering innovation, and SDG 10 (Reduce inequality within and among countries).

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[5] Jose Ramon Lopez-Portillo Romano (2016). Bases para un Documento Conceptual sobre el establecimiento de un foro en Naciones Unidas relativo al cambio tecnológico exponencial. Informal proposal paper.
[6] Automation technologies are any kind of technologies that substitute labour by capital and can be any economic sector (e.g., agriculture, industry, services).

PROVISIONAL AGENDA

1. Opening session
2. Exponential technological change
3. Emerging automation technologies and their applications
4. Exponential technology change and automation key areas of development concern (e.g., agriculture, infrastructure, ICTs)
5. Possible scenarios of development, dissemination and adoption of automation technologies
6. Innovation and technological unemployment
7. Potential effect on employment in developed and developing countries
8. Implications for structural transformation, sustainable industrialization and catch up
9. Implications for reducing inequality
10. Exploring other key policy questions relevant to the STI Forum
11. Closing session

WORKING METHODS

Major efforts will be made to substantively prepare for the EGM. In particular, a background note will bring together salient knowledge and provide in-depth information for each of the meeting's agenda items. Expert participants will also be involved in these preparations well before the meeting, inter alia, through a questionnaire for participants, online discussions, and collection of relevant articles and written inputs from participants.

Following a formal opening, the remainder of the meeting will be held in a highly interactive roundtable style, moderated by DESA. Chatham house rules will be followed (i.e., no attributions will be made in the proceedings), in order to allow a frank and visionary debate.

A meeting report will be prepared by the Secretariat. It will include a summary of the debate, a synthesis of key knowledge/findings and initial ideas for how to conduct a technological assessment. The report is expected to become an input for the STI Forum on SDGs in 2017. Thus, the meeting contributes to fulfilment of the activity entitled "Expert group Meeting on the Technology Facilitation Mechanism" as document A/70/5, §101 (d).

DIVISION OF LABOUR

The Division for Sustainable Development of the UN Department for Economic and Social Affairs (DESA) serves as Secretariat for the meeting. It will be responsible for moderating the meeting (or key portions thereof), for mobilizing expert inputs from various constituencies (including TFM and GSDR collaborators), for synthesizing inputs into a substantive background note, as well as for preparation of the meeting report. DESA will provide funding for the participation of selected international participants. Jointly with the Mexican hosts, DESA will identify and invite participants, finalize the meeting programme, follow-up invitations, and potentially issue a news release.

The Government of Mexico will serve as hosts and co-organizer for the meeting. It will organize a meeting venue, identify and invite local expert and high-level participants, organize local logistics (e.g., hotel information, social event/reception), and facilitate entry visa for international participants if needed. It will work closely with DESA in finalizing the meeting programme, identification and invitation of participants, and a potential news release.

ECLAC will also serve as co-organizer of the meeting. ECLAC will participate actively in the substantive preparations for the meeting, the meeting itself and in mobilizing expert inputs from the ECLAC region. It should also be noted that ECLAC operates a subregional office in Mexico City which will provide additional local support.

The UN Interagency Task Team on Science, Technology and Innovation for the SDGs (IATT) which currently comprises 70 staff from 31 UN entities will be asked to provide substantive inputs to the background note. Selected members may want to join the meeting and/or provide further support.

The 10-Member Group in support of the TFM which comprises eminent representatives of academia and civil society appointed by the UN Secretary General will be encouraged to also provide substantive inputs. In particular, they might mobilise written inputs from their communities and contribute to the background note. Some of its members might also participate in the meeting.

The meeting will avail itself of the host country agreement of the UN and ECLAC with the Government of Mexico.

ANNOTATED PROVISIONAL AGENDA

The meeting will be supported by a background note that will provide further information and key questions for each of the agenda items.

1. **Opening session**

   Representatives of the Government of Mexico, DESA, ECLAC and the 10 Member Group will deliver opening remarks providing information regarding the context, objectives and expected outcomes of the EGM.

2. **Exponential technological change**

   The session will discuss empirical evidence of current exponential technological change. It will discuss how such technological change differs from previous technological revolutions in terms of pace, scope and potential impact.

3. **Emerging automation technologies and their applications**

   The Session will discuss key emerging automation technologies with a focus on current and potential applications that could impact the achievement of the SDGs.

4. **Exponential technology change and automation key areas of development concern (e.g., agriculture, infrastructure, ICTs)**

   The session will review the knowledge on key trends and impacts of exponential technology change and automation in key areas of development concern, such as agriculture, infrastructure and ICTs.

5. **Possible scenarios of development, dissemination and adoption of automation technologies**

   Based on historical evidence of patterns of innovation, industrialization and catch up, the session will discuss possible scenarios related to the development, dissemination and adoption of emerging automation technologies in the production base of developed and developing countries. The discussion

will identify likely scenarios as well as explore scenarios that assume different paths for achieving the SDGs.

6. Innovation and technological unemployment

The session will discuss the mechanisms in which technological change impacts employment, the empirical evidence on innovation and technological unemployment, and how emerging automation technologies may affect the dynamics of that process.

7. Potential effects on employment in developing and developed countries

Based on the different assumptions and scenarios discussed in the previous sessions, this session will focus on the effects of emerging automation technologies on employment in selected developed and developing economies. Some of the elements to be considered are the polarization of jobs, types of jobs affected, changes in the required skills and education, among others. Prospects and challenges for selected emerging developing economies will be discussed. The session will address direct and indirect effects through trade.

8. Implications for structural transformation, sustainable industrialization and catch up

This session will discuss past and current patterns of industrialization and structural change in developing countries and the implication of emerging automation technologies for future industrialization based on the scenarios discussed. The session will focus on examples of selected developing and least developed countries.

9. Implications for reducing inequality

The discussion will focus on how emerging automation technologies affect differently different economic sectors and segments of the population. The session will address the implications for reducing inequality within and across countries.

10. Exploring other key policy questions relevant to the STI Forum

The session will identify and discuss other key policy questions of relevance for the STI Forum. The objective is to inform the preparation of a Technology Assessment on emerging automated technologies for the achievement of the SDGs, which will serve as input for the deliberations of the Forum.

11. Closing session

Representatives of the Government of Mexico, DESA, ECLAC and other co-organizers will deliver closing remarks providing information regarding the next steps.

TENTATIVE PROGRAMME

TIME	6 DEC (Tues)	7 DEC (Wed)	8 DEC (Thus)
9:00 – 12:00	**9:00 – 9:30** *Opening* Remarks by Government of Mexico, DESA, ECLAC **9:30 – 10:00** *Coffee break* **10:00 – 10:30** *Setting the stage: Objectives of the meeting and context - UN Technology Facilitation Mechanism, STI Forum, and UN Regional Fora on Sustainable Development* Presentation **10:30 – 12:00** **Session 1:** *Exponential technological change* Panel discussion	**9:00 – 10:15** **Session 4:** *Possible scenarios of development, dissemination and adoption of automation technologies* Panel discussion **10:15 – 10:30** *Coffee break* **10:30 – 12:00** **Session 5:** *Innovation and technological unemployment* Panel discussion	**9:00 – 10:15** **Session 7:** *Implications for structural transformation, sustainable industrialization and catch up* Panel discussion **10:15 – 10:30** *Coffee break* **10:30 – 12:00** **Session 8:** *Implications for reducing inequality* Panel discussion
14:00 – 17:15	**14:00 – 15:30** **Session 2:** *Emerging automation technologies and their applications* Panel discussion **15:30 – 15:45** *Coffee break* **15:45 – 17:15** **Session 3:** *Exponential technology change and automation - key areas of development concern (e.g., agriculture, infrastructure, ICTs)* Panel discussion	**14:00 – 15:30** **Session 6:** *Potential effect on employment in developed and developing countries* Panel discussion **15:30 – 15:45** *Coffee break* **15:45 – 17:15** *Potential effect on employment in developed and developing countries (cont.)* Panel discussion	**14:00 – 15:30** **Session 9:** *Key policy recommendations relevant to the STI Forum* Panel discussion **15:30 – 15:40** *Group photo* **15:45 – 16:15** *Closing session*