



# Impact of rapid technology change on the SDGs – IATT subgroup on new and emerging technologies

*Informal Policy Brief (May 2019)*

## **Rapid technology change**

The fast pace of technological change in recent years in robotics, artificial intelligence, biotechnology, nanotechnology and related areas such as “big data” are having broad impacts on economy, society and environment. At the heart of these trends are telecommunications and ICT. While such disruptive technologies can be vital for breakthroughs in achieving the SDGs, they can also have un-anticipated consequences, exacerbate inequalities, and constrain economic catch-up development. Calls for a more responsible and ethical technology deployment have to contend against those who fear constraining innovations may deprive people of many benefits. In this context, multi-stakeholder engagement is essential, because many technology advances are initiated in the private sector and academia.

## **UN Technology Facilitation Mechanism (TFM)**

The UN Technology Facilitation Mechanism (TFM) was created by the Addis Ababa Action Agenda and launched by the 2030 Agenda on Sustainable Development in September 2015. The creation of the TFM was of historic significance, as it brought back substantive STI discussions to the UN HQ, after decades of political gridlock over IPRs and technology transfer.

One of the components of the TFM is the Multi-Stakeholder Forum on Science, Technology and Innovation for the SDGs (“STI Forum”). The STI Forum formally reports to the High-level Political Forum on Sustainable Development (HLPF) in support of its review of SDG progress and its explicit function to “strengthen the science-policy interface”. The STI Forum is a participatory multi-stakeholder forum with around 1,000 participants (as of 2018).

The STI Forum has become the premier UN space for discussions on STI for the SDGs, including cross-SDG issues such as emerging technologies and their sustainable development impacts. The STI Forum proposed a list of initial recommendations, including on STI roadmaps, and on the impacts on societies caused by the disruptive effects of new technologies, such as nanotechnology, automation, robotics, artificial intelligence, gene editing, big data, and 3D printing. Emerging technologies and frontier issues have been the subject of STI Forum sessions since 2016.

## **Work of the Interagency Task Team (IATT)**

Another component of the TFM is the Inter-agency Task Team on Science, Technology and Innovation for the SDGs (“IATT”) which brings together 42 UN system entities and more than one hundred staff at the expert level. They work closely with the “10-Member Group” representing science, civil society, and private sector, inter alia, in order to assess the impacts of rapid technological change on the SDGs, including through UN expert group meetings in Mexico City (2016 and 2018), Paris (2017) and

Incheon (2017), and ITU’s AI for Good Summit (2017 and 2018). These meetings have mobilized many scientists and experts, and the subject has featured in successive STI forums.

In the Task Team, this work has been led by a subgroup on new and emerging technologies in which staff has cooperated for several years. This built on related work undertaken by DESA with various partners on new and advanced technologies since the Rio+20 Conference of 2012.

The topic became the primary focus of General Assembly resolutions 72/242 and 73/17 on the impacts of rapid technology change which requested presentations of TFM findings at the STI Forums. Initial TFM findings were presented by the UN Chief Economist at the STI Forum in 2018 and an update in 2019.

The Task Team’s findings represent a collaborative and multi-stakeholder effort with more than 100 expert contributors, building on evidence from eight meetings and sessions under the TFM umbrella; ten recent UN system reports; written inputs from IATT and the 10-Member Group, and 50 science-policy briefs volunteered by expert contributors. In this context, I would like to thank colleagues of DESA, UNCTAD, UNU, ECLAC, ESCAP, ESCWA, ITU, ILO, WIPO, World Bank, as well as the International Council on Science and the Major Group on Children and Youth, for their substantial contributions.

Views in the highly diverse TFM community continue to differ, but consensus is also growing on many points. The IATT approach has been to simply document the debate, the evidence and the recommendations put forward.

## **TFM findings on the impacts of rapid technology change**

The scope and scale of the impacts of rapid technological change, both positive and negative, and across the full range of economic, social, and environmental dimensions require us to engage actively with the issues (see table). The TFM findings have stood the test of time and have not changed substantially from 2018 to 2019.

## **Latest activities by IATT partners**

Over the past year, IATT partners have undertaken many new activities on new and emerging technologies: The Centre for Artificial Intelligence and Robotics became operational in the Netherlands under the umbrella of the UNICRI. OICT launched a series of UN Technology and Innovation Labs, starting with project offices in Finland and Egypt. ITU’s AI for Good Global Summit featured practical AI solutions for the SDGs. The UN Secretary General created a High-level Panel on Digital Cooperation and launched a Strategy on New Technologies. UNDP joined the Partnership on Artificial Intelligence - a consortium of companies, academics and NGOs. Current IATT efforts on the development of the TFM online platform focus on an AI design.

<b>TFM findings on the impact of rapid technology change on the SDGs (Status: May 2019) – DRAFT</b>	
<b>Great potential</b>	The potential benefits of new and rapidly changing technology clusters are so great for the SDGs and beyond that we cannot afford not to make wise use of them.
<b>Technology risks and gaps</b>	Technology risks and gaps: Technology change has never been neutral, creating winners and losers, involving risks, and potentially exacerbating gaps and inequalities. The UN has an important role in promoting action on these issues.
<b>Development impacts of cheap automation and AI</b>	Rapidly declining costs of new technologies can broaden access to the benefits of technology and enable much more rapid development, but they also present extraordinary policy challenges that call for an extraordinary level of international cooperation. Many countries may need to find new development pathways that incorporate these technologies and to rethink employment and income distribution issues.
<b>Employment impacts</b>	The overall employment effects will depend on the specific circumstances within sectors and various local contexts. Computers and robots could replace as many as half of all human jobs in the coming decades - essentially precluding traditional routes to achieve economic development in some countries, but they could also create many new jobs. It is unclear how jobs losses and job creation will compare and how they will be distributed, however, we need to be prepared for different scenarios to unfold.
<b>Preparing for the impacts</b>	Governments will need to re-think and re-organize how they match the supply of skills to the rapidly evolving job market needs in formal and informal education systems. Some TFM experts call for testing proposals for technological unemployment insurance, guaranteed income policies, and a range of other compensatory social policies.
<b>Natural environment</b>	New materials, digital, bio-, and nanotechnologies, and AI all hold great promise for a range of high-efficiency water and renewable energy systems that could be deployed in all countries and catalyse the global move towards sustainability. However, despite efficiency increases, AI and all the other emerging technologies clusters will require ever-increasing electricity with its associated pollution and wastes (e.g., e-waste, nano-waste, and chemical wastes), which calls for incorporating environmental considerations into the design of these technology systems from the start.
<b>Strengthening the science-policy interface</b>	Our knowledge and understanding of new technology trends – especially in developing countries - need to be expanded as the basis for well-founded actions and policies. TFM experts proposed building partnerships and interfaces with universities, labs, innovation incubators, and private sector entities that are at the forefront of this technological change, potentially in the form of a discovery lab or a network of interfaces between the policy makers and technologists at the frontier, facilitating the exchange of real-time information, engagement, and policy insights.
<b>Norms and ethics</b>	Calls for a more responsible and ethical deployment of new technologies have to be balanced against concerns that excessive restraints on innovations may deprive humanity of many benefits. Ethical and normative considerations that should guide our thinking on these issues have to spring from our shared vision - the values contained in the UN Charter, the Universal Declaration of Human Rights, the Rio+20 outcome “The Future We Want”, and most recently the 2030 Agenda on Sustainable Development.
<b>Multi-sectoral and multi-stakeholder engagement</b>	Fostering policy coherence and multi-stakeholder dialogue is more important than ever - coherence across policies for macro-economy, science and technology, industrial development, human development and sustainability; and multi-stakeholder dialogue to present different perspectives, arrive at shared understanding and establish trust.

Sources: IATT sub-working group on new and emerging technologies.

The UNU Centre for Policy Research created an AI and Global Governance Platform as a space for public policy dialogue. DESA published the World Economic and Social Survey 2018 on the theme of Frontier technologies for sustainable development. The 36<sup>th</sup> session of the CEB HLCP focused primarily on frontier technologies, with discussions on capacity development for AI and the future of work. The technology chapter of the Financing for Development Report 2019 was again dedicated to new and emerging technologies. UNCTAD launched its Technology and Innovation report 2018 on Harnessing Frontier Technologies for Sustainable Development. CSTD 2018 and 2019 addressed the issue – this year supported by a Secretary General’s report on The Impact of rapid technological change on sustainable development. Recently, a compilation of 50 science-policy briefs on frontier technology issues has been made available on the TFM website.

This is just a glimpse of the many recent initiatives in the UN system on new and emerging technologies. They are testament to the high expectations attached to these technologies.

The IATT subgroup remains committed to document, exchange information, and promote cooperation and synergies among them. If you have expertise in this area, I encourage you to get involved with the subgroup.

#### Looking ahead

Rapid technological change is among us, and it is not going away. The scope and scale of its impacts, both positive and negative; and across the full range of economic, social, and environmental dimensions require us to engage actively with the issues.

The preliminary findings of the TFM stand to be refined further through discussions at this Forum and beyond. They also serve to indicate a set of central areas of work, where the collaborative, multi-sectoral and multi-stakeholder context of the TFM stands to add value and advance understanding at global, regional and national levels.

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