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Update on the TFM findings on the impact of rapid technology change on the achievement of the SDGs

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Co-Chairs, Excellencies, Distinguished Delegates, Ladies and Gentlemen,

Let me thank the TFM 10-Member Group, the Interagency Task Team, and all engaged partners for keeping this vital topic on the UN agenda.

It is an honour to present the updated TFM findings regarding the impact of rapid technology change on the achievement of the SDGs.

These findings represent a collaborative, multi-stakeholder achievement. Experts from within the UN and outside have contributed, including through virtual meetings and over 40 dedicated science-policy briefs.

I would like to especially thank colleagues from DESA, UNCTAD, ITU, ILO, ESCWA, UNEP, UNIDO, UNESCO, ESCAP, UNU, WFP, OOSA, UNDP, WIPO, and World Bank for their very substantial contributions.

In view of the limited time, I will provide just a snapshot of the findings. I encourage you to refer to the in-depth report, entitled “Emerging science, frontier technologies, and the SDGs - Perspectives from the UN system and science and technology communities”.

Ladies and Gentlemen,

We must ask: how are things different in the face of our experience with COVID-19? What does it mean for the way forward?

Let me briefly recap some of the TFM findings in this regard.

First, the 2019 TFM findings remain valid, but new elements are necessary.

Second, COVID-19 has greatly amplified the importance of STI for our well-being and survival. But it has also exposed weak interfaces with policy and society, and ineffective institutions, often victims of underfunding.

A third finding: COVID-19 has accelerated digitalisation, along with its now well-recognized impacts, both positive and negative. Vitally, 3 billion unconnected are still excluded. This has worsened existing technology divides.

Fourthly, the crisis has accelerated innovation in medicines, vaccines, biotechnology, digital technologies and artificial intelligence. Scientific discovery and collaborations have sped up, new ways of delivering services have proliferated.

Our pre-pandemic innovation system had operated well below its real potential, but we can supercharge it in times of crisis. However, we should not forget that mission-oriented innovation of this type has benefitted from international R&D cooperation and billions in public funding for “vaccine platforms”, mRNA technology and massive online learning. Therefore, the returns from these must also be broadly available to the public.

A fifth point: the pandemic financial stimulus has been enormous, but not yet focused on longer term measures for a human-centred, green, sustainable, R&D- and technology-focused recovery. The R&D underinvestment is puzzling: surely the crisis has demonstrated its importance.

Sixth, public funding for basic research needs to be greatly expanded and sustained even beyond these times as a vital part of our resilience strategy. Consider this: the fundamental biotechnology knowledge that made rapid COVID-19 vaccine development possible was due to years of public funding for basic research.

A seventh point: frontier technologies have made a real difference in COVID-19 responses. Examples include contact tracing apps; space science; viral spread simulations on supercomputers; PCR testing; mRNA-based vaccines; synthetic nano-scale antibodies; 3D printing of personal protective equipment; and big data to support policy effectiveness.

An eighth finding: massive drive for COVID vaccines must be replicated for the 20 neglected tropical diseases which continue to affect one billion people. At the same time, questions of access can no longer be put on the back burner. The task team brought together proponents of open science on the one hand and of strict intellectual property rights on the other. Interestingly, they agreed that there is no fundamental contradiction between the two and that there are constructive ways forward for addressing the great global challenges.

The ninth finding: a worldwide, profound techno-economic paradigm transition is under way towards a greener global economy. It creates new windows of opportunity, including for employment. This transition must be managed well. It must be just, fair and inclusive.

Tenth, science systems must be transformed. The pandemic revealed deficiencies in the capacity of science systems to respond to new priorities in a timely manner, while limiting the disruption to ongoing research.

The eleventh finding: the new governance around data makes it complex to re-balance human dignity with economic benefits, thereby putting fundamental human rights at risk in the new economy. Fair data, transparent algorithms, and trustworthy architecture are essential.

A twelfth point: digitalisation leads to entirely new products and services with new characteristics that require specific regulatory and policy solutions. For example, human digital twins entail a range of ethical dilemmas. Central bank digital currencies must be regulated to be inclusive, secure, private, accessible and interoperable. And digital labour platforms need to be covered by labour regulations.

Thirteenth, “deep neural networks” now surpass human cognitive capabilities in narrow, specific tasks, such as facial recognition, some kinds of medical diagnosis, and others. Narrow AI has become ubiquitous in many countries – unbeknownst to many. However, billions remain excluded from its benefits. Performance and applications grow at exponential rates, with important implications for the SDGs. For example, AI energy use is expected to increasingly compete with other uses.

A fourteenth finding: there are many environmentally compatible frontier technologies which could be deployed across the world. Examples include distributed recycling combined with additive manufacturing, highly energy-efficient AI hardware designs, low data AI, engineering solutions imitating nature, marine robotics, and saltwater greenhouses. There is also a large untapped potential for highly efficient digital consumer innovations in mobility, food, buildings, and energy services.

And finally, the fifteenth finding: syntheses of science-policy assessments are important to enable informed and integrated decision-making in relevant time. However, major knowledge and assessment gaps remain with regard to digitalisation and other related frontier technology clusters. Independent and in-depth assessments are needed.

Ladies and gentlemen,

Rapid scientific and technological change is among us, and it is not going away. The COVID-19 shock has forced a re-examination of virtually everything we do.

The current TFM findings stand to be refined further through discussions at this Forum and beyond.

They also serve to indicate central areas of work, where the TFM stands ready to add value and advance understanding.

When we work together – across national borders, across groups, disciplines and stakeholder groups - we as humanity can harness science and technology to the benefits for all of us, now and into the future. I am confident that the findings of the TFM presented here will support this endeavour.

Thank you.