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High-level Segment

Harnessing new technologies to achieve the Sustainable Development Goals

Report of the Secretary-General

Summary

New and rapidly developing technologies such as artificial intelligence, biotechnology, robotics and renewable energy technologies hold incredible promises for the advancement of human well-being. But they also hold the potential to generate more inequality and more violence, with significant implications as well for the protection of human rights.

This report aims to highlight both great hopes and great anxieties associated with new technologies, and to launch a reflection among Member States and with all actors on how to steer technology towards the 2030 Agenda for Sustainable Development, the UN Charter, the Universal Declaration of Human Rights, and the values, norms and standards agreed at the United Nations. Member States, civil society, international institutions, and the business sector need to work together, guided by the common vision we committed to in the 2030 Agenda, to harness technologies towards global good. The various United Nations intergovernmental bodies provide important forums to reflect on actions required by all stakeholders.

The United Nations system must adapt itself to enhance its support to efforts to harness technologies towards global good through the platforms it supports, its analysis, and its operational activities for development. Based on consultations across the United Nations system, the Secretary-General has launched an internal strategy to strengthen the United Nations’ capacity to engage with and use new technologies to better deliver on its mandates and improve its support to Member States.
This report responds to resolution 61/16, where the General Assembly decided that the Economic and Social Council should continue to promote global dialogue, including through a thematic discussion on a theme from the economic, social and related fields informed by a report of the Secretary-General. Since the adoption of the resolution, the Council has engaged in a series of thematic discussions at its High-Level Segment on emerging issues that are relevant to the work of the Council.
I. Introduction

1. Today’s rapid technological changes have brought us to a critical moment in time. They are already bringing major changes in health care and other areas in many countries. They hint at a future of individualized medicine and reduced pandemics, of globally disseminated knowledge and sustainable climate management, accelerated financial inclusion and entrepreneurship, and even asteroid mining. They inspire hope of immense benefits that can elevate the human condition everywhere. They offer us powerful new ways to achieve our shared commitments to the Sustainable Development Goals (SDGs).

2. While these technologies hold great promise, they are not risk-free. Some inspire anxiety and even fear. They can be used to malicious ends or have unintended negative consequences. They raise questions that are at the heart of the United Nations values, sustainable development, human rights and the future of humanity.

3. We are not powerless in the face of these complex changes. As a global community, we are the ones driving change. We are the ones constantly pushing the frontiers of knowledge. It is within our power to gear frontier technology towards global good and the kind of world we want to see by 2030. It is up to us to come together to rethink our approach to policy-making, to overhaul the way we incentivize change, to safeguard our values and to plan for the long term. This report aims to launch this process.

II. New technologies – promises and dilemmas

4. Technologies can truly be on our side. They give us powerful tools to realize the vision of the 2030 Agenda. But we must also be constantly alert to the risk they can present to our common values. Also, as frontier technologies, some innovations may not provide viable catalysts for progress on the SDGs, given high costs. They may, in fact, divert resources from solutions based on established and financially more viable technologies.

5. In the recent past, innovations have played a catalytic role in advancing development objectives. This includes tremendous achievements in reaching the Millennium Development Goals (MDGs) since the start of the century. In the SDG era, diffusion of these technologies will continue to be critical, not least to address the unfinished business of the MDGs in several critical areas.

6. Past innovations in healthcare, such as vaccines and medications, have significantly supported the achievement of MDGs, in reducing child mortality, improving maternal health, and combatting disease. This is but one example showing that access and reducing costs of “low-tech” innovations will continue to have an important impact on the betterment of human lives across the globe.

7. The example of health also shows us that new technologies are on our side. Innovations in medical technologies, particularly relating to the use of information and communication technologies for public health, commonly referred to as eHealth, improve health care access
and quality. They give us the ability to gather, analyse, manage and exchange information in all areas of health, from research on molecular genetics, disease monitoring, and personnel deployment, to humanitarian interventions and disaster relief. They allow us to deliver basic health services to rural and remote communities, improve access to healthcare education, and facilitate the creation of early warning systems.

8. Several emerging technologies also move us closer to sustainable food systems and producing food with adequate nutritional value. This is now possible while safeguarding ecosystems and biodiversity. We see more knowledge-intensive and high-tech agriculture. New technologies increase agricultural yields and resource efficiency, reduce pesticide use, limit food waste, and help farmers deliver better products to urban consumers.

9. New technologies, such as in e-learning, can also complement traditional education and learning. They can enhance learning, increase access to education, including for women and girls, and reach previously isolated and marginalized communities and vulnerable groups. Technologies are thus advancing our more social SDGs, while driving progress towards the other goals.

10. The same applies to the other SDGs. Solar and hydro-based energy can generate electricity for the majority of the global population by 2030. For the over one billion people currently living without electricity, increase in global access will continue to be through new grid and off-grid connections. Technologies should ultimately allow us to move away from fossil fuels and towards renewable sources of energy.

11. Related to this, there are proven technological benefits for climate action. Inclusive and sustainable economic growth can drive development and, generate new exciting employment opportunities for all segments of society. The green economy is the economy of the future.

12. Green business is good business – it can generate profits for entrepreneurs, and benefits to society at the same time. They will also allow industries and manufacturers to foster more sustainable and efficient production methods. Robots will allow companies to enhance their value chains, and better monitor processes to boost productivity and sustainability. They can reduce waste and support more sustainable consumption patterns.

13. Innovative technologies can also play a crucial role in advancing progress on SDG16 to foster peaceful and inclusive societies based on strong and transparent institutions. They allow people to access policy making processes, including through e-government applications. They facilitate access to public services. Artificial intelligence can help curb illicit finance, including corruption and tax avoidance by analysing and reporting suspicious monetary transactions.

14. Digital and mobile technologies, and the Internet, have enormous potential for women’s empowerment. They can provide women with opportunities to find and share information, access educational and health services, generate income, network, and have their voices heard.

15. But we must be cognizant that, while advancing towards one SDG, we can hinder progress towards another. More generally, along with huge opportunities for the SDGs, technologies also bring some difficult questions, dilemmas and even threats.
16. Genetic engineering, for example, generates deep ethical questions for all living creatures, human life included. With the exponential use of data in the area of healthcare comes issues related to the maintenance of patient privacy and ownership and control over medical data. Online social networking lets us find like-minded people around the world, enlarging free speech and human creativity. But it also amplifies hate speech, contributes to ethnic and political polarization, and facilitates terrorist recruitment. It also can bring considerable incursions into our individual privacy and human rights, sometimes at the risk of death.

17. Neural networks and deep learning offer the promise of instantaneous translation, bringing us all closer together. But they may also learn and amplify our biases, driving us further apart. The growth of the Internet and the Internet of Things offer significant economic opportunities – but also raises issues of security against intrusion and illegal surveillance. Across many countries, women who take advantage of the benefits of ICTs, often face emotional, psychological and physical threats in the form of cyberviolence.

18. And while cyberspace has come to underpin almost every aspect of our daily lives, the scale and pervasiveness of cyber “insecurity” is also now recognized as a major threat. The political and technical difficulty of attributing and assigning responsibility for cyber-attacks encourages actors to adopt an offensive posture, not only amongst states but also from non-state armed and criminal groups and individuals seeking to develop or access potentially destabilizing capabilities with a high degree of impunity. This situation could notably weaken the delicate balance and system of reciprocity that underpins much of the contemporary international security architecture.

19. While automation, artificial intelligence and robotics promise enhanced economic growth, they can also lead to under-employment or unemployment. This, in turn, could exacerbate inequality within and between nations. Several innovative technologies, such as robotics and automation, also threaten to be an important driver of wage inequalities.

20. To protect jobs and sustainable livelihoods, the answer to the challenges of technology is not to stop labour-saving technology. Instead, it needs to be adapted to the way we work and the way our societies function. We should also anticipate and plan for future trends, instead of responding to them when they appear, or when it is already too late.

21. Humankind sometimes appears to have entered a race with its machine, with ever fewer individuals able to understand, let alone programme, what the machine can do, or is doing. New technologies and their applications will require massive investment in education and training. Our thinking about teaching, educating and training needs to be reassessed. Educational and training systems will not focus anymore only on how to do things, but on how to learn things. There is the need for a structural shift towards preparing youth to acquire adaptive skills, including soft skills, problem solving and the entrepreneurship acumen necessary for new forms of work. Teachers will increasingly serve as facilitators to support students’ quest for new knowledge. At the same time, education will still require proven teaching and training methods, where “old and tested” will continue to be important.
22. There is a risk that new technologies, because of their ownership and control, may tip the balance further in favour of developed countries. Technological change can be a key contributor of growing inequality, perhaps more so than trade and financial globalization.

23. Artificial intelligence, robotics, and machine learning are expected to make big contributions to the global economy but most of its benefits could be accruing to industrialized and emerging economies. There is a risk that many economies of Africa, Latin America and Asia will benefit only slightly.

24. The lessons we can learn from progress in health or education have one common feature: that the introduction of new technologies should never blind us from our pledge to leave no-one behind—nor from the continuing role of “old” technologies—many of which are still beyond the reach of many developing countries.

25. All this is why the General Assembly, in its resolution 72/242 of 22 December 2017 on the impact of rapid technological change on the achievement of the SDGs, noted that inequalities between countries are likely to increase due to accelerating innovation.

III. Taking our future in our hands

26. We are not powerless in the context of accelerating technological change. Policies and institutions matter.

Taking a new look at governance:

27. To harness its opportunities, we need to work together, plan ahead and act with great urgency but also wisdom. We must accept that we cannot continue doing things the way we used to.

28. Many technologies are designed, developed and deployed on infrastructures or in spaces that remain beyond any single state’s jurisdiction. Increasingly, the decisions that shape the public’s every day experience can be influenced by software codes. They are made not by elected officials in parliaments, but by scientists and innovators in private settings. The choices of all these actors will resonate for generations to come – and not all of the impacts are clear.

29. At the same time, it is difficult for any one entity to keep up with the pace of technological change and its complexities.

30. This is why we need to change our approach to making policies and developing safeguards. The way forward is to work in a multi-stakeholder context, bringing together governments, innovators, investors, business companies, civil society, scientists and all other actors. We need to hear different perspectives, share knowledge, discuss ways forward and engage in alliances and partnerships to accelerate our response to keep up with the pace of change.

31. The private sector hosts much capacities for innovation, providing financial means and frontier technologies to advance the implementation of the SDGs. We need to engage
companies and enterprises in shaping our common future. Already, a number of major business companies have embraced the SDGs as part of their objectives.

32. Scientists, academia and researchers can also help us navigate today’s complexities. They can enable us look into the near and remote future and anticipate future frontier technologies and their impact. They can develop projections and scenarios to outline what we should do today to realize the promises of new technologies.

33. We also need to engage our best minds and ideas to overhaul and redesign our education systems, our health systems and our social systems so that they are equipped to respond to the major changes we will see in the employment situation and many facets of our lives.

34. Beyond this, communities, multiple institutions and individuals must have a chance to speak and contribute. The changes ahead will deeply influence the way we divide our time between our work and our social lives as individuals. A conversation must take place on the evolution of our societies. It must be conducted in the context of a broader discussion on demographic shifts that are shaping our collective future, such as ageing, changes in population movements or trends in people’s trust in their institutions. It is essential that we all discuss these issues that have so far been largely ignored in the public debate.

**Governments’ responsibilities:**

35. All this does not mean that Governments have a lesser role. On the contrary, they drive joint efforts to shape policies and safeguards. They are pivotal to keep the compass on our common commitments and values, to open the spaces for debates among all actors and to act based on people’s needs.

36. It is also within the realm of policy makers to create enabling environments to foster innovation while defining rules of the game for research and for the introduction of new technologies. The two can be combined if we embrace innovative policy incentives, frameworks and systems that can ensure respect for critical human rights and values, while, at the same time, incentivizing research, innovation and entrepreneurship in areas relevant to the SDGs.

37. New digital technologies and approaches along with regulation can also help us to address issues of data privacy, data security, data quality, data sharing and exchange, and, more generally, public trust in data for policy purposes.

38. The public sector also continues to have an important role in creating new technologies, and directly promoting innovation and technological change in support of sustainable development. Governments’ funding for research and development must be geared toward the kind of projects that will offer solutions for realizing the SDGs.

**We are embarking on new paths:**

39. Many countries and regions are already moving ahead with efforts to address the risks associated with ICTs. In 2014, the African Union adopted a convention on “Cyber Security
and Personal Data Protection”\(^1\) to set forth the security rules essential for establishing a credible digital space for electronic transactions, personal data protection and combating cybercrime.

40. The ASEAN Regional Forum (ARF), in 2015, developed a “Work Plan on Security of and in the Use of ICTs” to set out measures aimed at “promot[ing] a peaceful, secure, open and cooperative ICT environment and prevent[ing] conflict and crises by developing trust and confidence between States in the ARF region, and by capacity building”\(^2\).

41. In April 2017, the European Commission adopted an approach to not only increase public and private investments in Artificial Intelligence but also ensure that appropriate ethical and legal frameworks are in place. Additionally, extended jurisdiction of the General Data Protection Regulation (GDPR) applies to all companies processing the personal data of subjects residing in the European Union, regardless of the company’s location.

42. We need to learn from each other and accelerate our efforts. I cannot underscore enough the urgency of taking measures to plan for the best and get ready for the negative fallouts. Together, we can ensure that innovation is not about the latest gadgets but about building a better future for humanity and the planet.

Using United Nations platforms:

43. Our United Nations platforms must adapt to provide a space from Member States to come together with all actors to discuss frameworks, exchange good practices and reflect on where protocols, principles or other mechanisms or incentives are needed.

44. Already, a number of United Nations intergovernmental or multi-stakeholder mechanisms are at work.

45. The Technology Facilitation Mechanism features an annual multi-stakeholder forum on science technology and innovation for the SDGs (STI Forum), where the impact of rapid technological change is discussed. It is supplemented by an online platform as a gateway for STI-related information.

46. The Internet Governance Forum serves as a critical multi-stakeholder platform to discuss how to gear Internet to support an information society centred on human beings and their rights. The WSIS Forum also maintains the focus of the information technology community on those broad objectives. The Commission on Science, Technology and Development also gathers Governments and other stakeholders to share views and practices on critical policies, and new issues and frameworks. The AI for Good Summit has also helped to bring international attention to critical issues related to Artificial Intelligence.

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47. Several instruments, including the recently established Technology Bank for Least Developed Countries, have also been established to promote the use of technology to realize the SDGs.

48. We must build on those forums, tools and mechanisms to make sure that our actions and policies regarding new technologies are geared towards the global good. They must relentlessly aim at improving the living conditions in developing countries.

49. International cooperation must embrace new approaches, and expand and share knowledge and technology. It should remain firmly anchored in our priority to promote sustainable development in the poorest countries and leave no one behind. We must close the technological gap between richer and poorer countries. This also means overcoming the barriers faced by many countries, communities and firms; and boosting capacities for innovation and diffusion of new technologies.

IV. Adapting the United Nations system to leverage new technologies for sustainable development

50. These rapid technological advances confront the international community with important choices. Decisions made will have important political, security, socio-economic and ethical implications. As such, they need to involve a wide range of perspectives from across the globe, and lasting consensus must be based on a level playing field. The United Nations is committed to supporting multi-stakeholder dialogue and consensus building on such choices and decisions. But in order for the United Nations to play a meaningful role as an inclusive and effective platform for collaboration, the Organisation must strengthen its own capacity to engage with new technologies and new technology actors. This is why I have initiated broad consultations internally and with external experts to define a United Nations strategy on new technology, designed as an internal call to action for increasing our awareness, skills and knowledge of new technologies and their impact.

51. In particular, the United Nations needs to upgrade its own understanding of how new technologies affect respective mandates, if and how we can use new technologies to improve mandate delivery and/or internal management efforts, and what we can learn from this exposure to inform our support to Member States and other actors. The strategy will be implemented on the basis of key principles, including the need for the United Nations’ work on new technologies to protect and promote global values and for its support to be grounded in the Charter, to foster inclusion and transparency at all times, to promote partnership and to build on existing mandates and capacities. The strategy will highlight a series of very practical actions that United Nations leaders and their teams need to undertake to deepen our internal capacities and exposure to new technologies; to increase our understanding, advocacy and dialogue; to support exchanges on normative and cooperation frameworks, and to enhance our support to national or regional capacity development efforts.

52. This strategy will reflect my desire for the United Nations to be both humble and ambitious; humble because the issues are complex, and the United Nations must keep listening
to and learning from a wide range of people and institutions. And ambitious because the stakes are high, and the United Nations can play a critical role in promoting dialogue across different actors and ensuring that our collective values, enshrined in the Charter, remain at the core of the decisions that will shape our future.

V. Conclusion

53. The collective questions that frontier technologies beg to answer are centered on values, rights, dignity and cooperation. First, we must explore how we can ensure that new technologies are anchored in the values of the UN Charter and the Universal Declaration of Human Rights and how they can promote the SDGs and build a better future.

54. Second, we need to discuss ways to ensure that the benefits of these new technologies are promoted while the risks are mitigated. We must address how we will support those who lose their jobs to new technology, and at the larger social level, how we ensure that shifts in power based on these new technologies do not threaten international peace and security or the enjoyment of human rights.

55. Today and in the coming months I am calling global attention to the collective questions that technological innovation is compelling us to face. I encourage the United Nations, Member States, industry, academic, civil society leaders and international organizations to adequately prepare for harnessing and adapting to the transformational impact of new technologies.

56. Third, and finally, our focus must be on ensuring that inequality does not increase further, especially when we see that these technologies are developing mostly in a small set of countries and among a small set of organizations. The digital world, and its dazzling speed of new innovations, reminds us on a daily basis that our mission to “leaving no one behind” is increasingly necessary and urgent.