Mobilizing science, technology, and innovation and strengthening the science-policy-society interface

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Secretariat Background Note

Executive summary

One of the key functions entrusted to the high-level political forum on sustainable development by Rio+20 and the 2030 Agenda for Sustainable Development is to strengthen the science-policy interface, including through the Global Sustainable Development Report and the Technology Facilitation Mechanism.

Progress in science, technology, and innovation (STI) promises to help realize the 2030 Agenda and its 17 Sustainable Development Goals (SDGs). STI's potential to promote education, health, food security, decent jobs, renewable energy, and other areas of development is immense. Governments are investing in the innovative use of new technologies to make public services more accessible, accountable, and efficient. Digital innovation and advances in mobile technologies are opening new avenues for financial inclusion through mobile banking.

Yet, challenges also abound. Alignment between STI and SDGs remains weak. STI may lead to adverse economic and social consequences. Issues of STI design and access may create winners and losers, accentuate existing inequalities, raise new ethical and moral dilemmas, and amplify systemic bias and discrimination. Half of the world's population, an estimated 3.7 billion people, does not use the Internet, effectively excluding them from many of the benefits of being online.

Governments, in cooperation with relevant stakeholders, need to accelerate efforts to close the digital divide and support the digital inclusion of disadvantaged and marginalized groups and communities, by addressing the various factors behind the divide including, access to ICT infrastructure, affordability of the Internet and ICT devices, digital and literacy skills, and awareness/relevance of online content.

Governments and the international community have a central role to play in providing directionality to innovation activities to ensure that STI is driven by considerations of inclusiveness and sustainability. The Science, Technology and Innovation for SDGs Roadmaps provide strategic tools for ensuring policy coherence, linking public and private actions, and optimizing investments. Promising avenues to strengthen the alignment between STI and SDGs include state-funded programmes, initiatives led by philanthropic organizations, programmes that are funded by State investment banks and that create demand for new technologies, and public-private initiatives (such as the Global Alliance for Vaccines and Immunization). At the policy level, governments should consider further strengthening capacity in strategic planning, and investing in technological foresight, establishing ethical frameworks, and bringing more technological expertise into government.

The purpose of the session is to further advance progress on the implementation of the Technology Facilitation Mechanism under the 2030 Agenda for Sustainable Development, and other related UN processes. It will build on the outcome of the 6th Multi-stakeholder Forum on Science, Technology, and Innovation for the Sustainable Development Goals (4-5 May 2021) and consider the recommendations contained in the co-chairs' Summary of the Forum.

The session will discuss the main challenges and opportunities for mobilizing STI and strengthening the science-policy-society interface. Specific attention will be given to exploring the existing mechanisms and potential innovations in developing and deploying STI to address emerging challenges, such as the COVID-19 pandemic and bridging the digital divide. Views, suggestions, and current achievements are expected to be shared by practitioners, policymakers, and experts based on their most recent experiences and research.

Successes and challenges

The COVID-19 pandemic has sparked innovations and new forms of collaboration. STI is playing an important role in understanding, responding to, and recovering from the COVID-19 pandemic. For instance, AI and big data have been used for screening patients, monitoring outbreaks, contact tracing, predicting the spread of the virus, and estimating infection risks. As schools closed, digital technologies became the heart of countries' efforts to improve and scale up their distance learning and to build more inclusive and flexible education systems. The crisis has been a wake-up call for a

better science-policy-society interface, for more effective international technology cooperation, and for building public trust in science related to all areas of sustainable development. Collaboration across science and technology communities has grown in response to the pandemic, holding promise for enhanced cooperation in the future. Yet the extent to which policymaking is shaped by scientific evidence and by technological possibilities varies across governments and societies and is often limited.

Interlinkages, synergies, and trade-offs

Beyond sectoral STI contributions (such as for food, health or energy), inter-sectoral approaches and science-policy-society interface have deepened the understanding of inter-linkages across multiple SDGs for policymakers to pursue synergies or manage trade-offs (such as between economic and social as well as environmental goals). Advances in STI play an important role in harnessing and enhancing equal opportunities and access to basic services so that no one is left behind. Timely research, analysis and information are essential to allow identification, dissemination and adaptation of critical technology solutions. At the same time, a greater engagement with stakeholders across society is needed to ensure that these make a real and lasting difference, and potential trade-offs across goals and targets can be resolved. International cooperation, including South-South, North-South and triangular collaboration, can support research networks across borders, institutions, and disciplines. Similarly, international collaboration can support countries in building their national capacity for STI.

Recommendations for action: Mechanisms and partnerships to accelerate progress

Below are general recommendations from E/HLPF/2021/16[1]:
The COVID-19 pandemic has allowed us to rethink and reimagine solutions to the major problems we face. This is not only a challenge but also an opportunity for creative destruction leading to breakthrough innovations and new integrated approaches and strategies.

[1] See advance unedited version of E/HLPF/2021/16: https://sdgs.un.org/sites/default/files/2021-06/2021-STI-Forum-summary-advance_1.pdf

Investments in STI for education and youth are crucial to build STI competencies for the future, including in platforms for open innovation, since it enables young people to become the technology entrepreneurs of the future. It is also crucial to engage women and girls in science and technology to unlock their innovative potential. Extraordinary levels of international cooperation on research, infrastructure, access, and capacities are needed to overcome the technology gaps within and between countries and social groups and avoid long-term, low-technology traps[2]. Governments can advance much needed technology transfer by collaborating across borders, including through South-South collaborations.

Inclusive planning is essential for building stronger innovation systems. It involves co-design by innovators and users from all kinds of backgrounds. In general, participation of, and partnerships between, science communities, funders, academia and the private sector need to be further expanded and deepened.

There is a need for greater governance and regulation of technologies, in order to monitor their impacts on the SDGs, incentivize sustainable action in technology, and ensure transparency across the sector. Governments can increase transparency by advancing both hard and soft regulations to help steer the direction of new technological developments and promote company disclosure. A forward-looking perspective is needed to assess the opportunities and challenges related to the impacts of emerging science and frontier technologies on the SDGs. The United Nations can help demonstrate how technology impacts the SDGs and promote related assessments.

With digitalization having become a pervasive trend, it is of paramount importance to connect the entire world with high quality, reliable and affordable Internet connectivity, enabled by universal access to electricity. Major efforts are needed to build modern digitalization infrastructures that include high-capacity computing, Internet of Things, access to AI services and a range of general-purpose technology platforms. Digital literacy and skills need to be developed and human rights protected online.

[2] Low-technology trap refers to a risk where people with low-skills and low-level technology settle into a low-level, chronically poor standard of living.

For more details on recommendations on lessons from COVID-19, and recommendations for the Technology Facilitation Mechanism, please see the advanced unedited version of the STI Forum Co-Chairs' Summary: https://sdgs.un.org/sites/default/files/2021-06/2021-STI-Forum-summary-advance_1.pdf

Proposed guiding questions

- What are the most promising technology solutions, innovations, and transformative technology pathways towards achieving the SDGs?
- What are the challenges and opportunities faced in developing and deploying STI for emerging challenges such as the COVID-19 pandemic?
- How can governments and other stakeholders work together to address the various causes of the digital divide (access, affordability, skills, relevance)?
- How can we mobilize science, technology, and innovation to improve the lives of those furthest behind and reduce inequalities, without perpetuating the digital divide, especially during rapid technological change?
- How can we strengthen international cooperation on science, technology, and innovation to better deal with sustainability challenges?