

Multi-stakeholder Forum on Science, Technology and Innovation for the SDGs

New York, 6-7 June 2016

Summary of the online discussion held in preparation of the forum

I. Introduction

In preparation for the first Multi-stakeholder Forum on Science, Technology and Innovation for the SDGs, a Global Online Discussion on Science, Technology and Innovation for the Sustainable Development Goals was organized to provide a gateway for inputs to the Forum. All stakeholders were invited to provide information, ideas and comments. The discussion was organized around five guiding questions and was open from 4 April through 30 May 2016. It was moderated by internationally recognized experts. Overall, 106 posts were contributed by participants from civil society, academia, the private sector and experts on science, technology and innovation

This note summarizes salient insights and recommendations emerging from the online discussion. The full threads of discussion on the five guiding questions can be accessed online via the URL: <https://sustainabledevelopment.un.org/TFM/STIForum/OnlineDiscussion>.

II. Summary of the discussions

Question 1 – Why are science, technology and innovation essential for the achievement of the Sustainable Development of Goals? Please provide one or more concrete examples that, in your experience, best exemplify this.

The discussion focused on the importance of science, technology and innovation in achieving Sustainable Development Goals (SDGs), as well as successful experiences that have provided relevant technology solutions. Participants also provided suggestions of how STI should approach the SDGs. Although responses were all unique, they can be classified into four categories:

- The impact of technological knowledge and innovation on developing countries and especially lower-income countries, e.g. in Africa, in enhancing productivity and competitiveness of their firms, contributing to income growth, job creation and poverty reduction.
- The importance of research and development (R&D) for new technologies, such as health technologies related to SDG 3: Ensure healthy lives and promote well-being for all at all ages.
- The power of well-equipped research facilities with information and communications technology (ICT) infrastructure in facilitating knowledge acquisition, knowledge creation and knowledge transfer.
- Policy-making guided by the use of ICT resources and ICT data through monitoring and review at various levels.
- The importance of developing local and regional innovation systems in low and middle income countries.
- Building entrepreneurial capacities in developing countries to identify and adapt and scale solutions that already exist in rich countries.

For instance, the review of the outcomes of the World Summit on the Information Society (WSIS+10), adopted by the General Assembly in December 2015, stated that ICT can accelerate progress across all 17 goals and further utilization of ICT can enhance monitoring and review through creation of data banks with the contribution of specialists.

Several inputs demonstrated the wide range of ICT applications that could provide solutions in different SDG areas. Specific issues brought up in the discussion include:

- Securing ICT connectivity to indigenous peoples who experience disparity in access to educational opportunities and global knowledge as well as economic and social exclusion, while considering the necessity of local adaptation of related technologies.
- Building a culture of innovation: Universities equipped with modern laboratories and latest ICT infrastructure should encourage young individuals to innovate.
- Applied research and science literacy will maximize the potential for innovation needed in the future and allow the next generations to adapt to future challenges.
- Achieving gender equality by including women in policy-making through e-voting, e-learning, and therefore allowing them to make comments and participate in discussion forums.
- Policy-making supported by earth observation data collected by satellites, e.g. for deforestation.
- Importance of ICT in agriculture through technologies such as tele-irrigation.

Respondents also stated that the development of health technologies is indispensable in developing solutions to challenges related to health and diseases related in low- and middle-income countries. They include:

- Development of health technologies is essential to cure, treat or combat diseases which address maternal and child deaths in low-resource settings. New and improved technologies may include: new treatment regimen to combat drug resistance; vaccines or microbicides for HIV/AIDS; and packaging and delivery systems that help essential treatments remain effective.
- While technologies necessary to ensure certain health-care services already exist, they are not readily available for or accessible to those most in need.
- Many participants agreed that the success of the Sustainable Development Goals (SDGs) will critically depend on ensuring all people have access to essential technologies.
- Some participants pointed to lack of government support to technology firms in developing countries is a significant impediment.

Question 2 – What are the main opportunities and challenges – at policy, organisational and individual levels – for maximizing the contribution of science, technology and innovation to the achievement of the Sustainable Development Goals?

In addition to the comments posted by the two moderators, 21 “stakeholders”, a few contributing on behalf of their community (e.g. Children and Youth; engineering community) participated in the discussion on Question 2. The topics covered range from issues such as the need to improve the quality of basic education, particularly in developing countries, as a prerequisite for increasing enrolment in science and technology at the university level to the proposal to establish tighter rules around patents filed by corporations but kept “unused”.

Some participants highlighted the great opportunity provided by the establishment of the technology facilitation mechanism (TFM) and called for TFM to help reshape and redefine a new paradigm for research and development worldwide. The TFM should also be used to help steer more R&D funding towards critical SDG needs, in particular existing public funding for R&D.

On the opportunities side for maximizing the contributions of STI, key points made include the following:

- STI can be “the game changer” of the socio-economic situation of developing countries.
- Interest from the financial sector in sustainability related business opportunities based on clean technologies is increasing.

- Exploring the full potential of big data for SDG implementation. A data revolution for sustainable development is possible and necessary.
- Tap into locked capacity present in most universities of developing countries by adapting the academic rules to link staff evaluation and promotion to activities targeted on innovations and STI applications in the local and national context.
- Great interest in a strengthened science – policy – society interface. In this triad science needs to interact more with civil society to ensure an inclusive user-driven approach to knowledge, research and technology.
- Participatory methods can ensure that needs, preferences and constraints by poor and vulnerable communities, but also women at large, are not neglected. These methods are key to bringing knowledge inputs and feedback from technology and knowledge users back into the STI production loop.
- Earth Observations from space is making tremendous progress for monitoring, modelling and advancing the understanding of the complexity of the Earth system of systems.
- Time has come to integrate such data and research with socio- economic data and research in the social and human sciences in order to generate the integrated knowledge necessary for implementing the SDGs. The global scientific communities have already established an international platform for promoting and coordinating inter- and trans-disciplinary research to this end.

Participants in the discussion identified a many challenges to efforts aimed at strengthening the STI capacity for implementing the SDGs and in better harnessing STI to this end. Key points made include the following:

- Ensuring that technology development is not only geared towards economic benefits but also addresses necessary environmental and social improvements.
- More generally, ensuring that that the STI system in every country becomes redirected to achieving the SDGs, including making STI more inclusive.
- Building coherent and effective STI enabling legal, policy, financial and institutional frameworks at national, regional and global level.
- Helping developing countries that request it to enhance their STI capacity, including a critical mass of qualified of scientists and technology and innovation experts.
- Enhancing public services, as well as extension services, especially for the most vulnerable populations, and the promotion of good governance, depend on targeted STI and particularly on ICTs.
- Removing constraints and increasing support for enhanced interdisciplinary, integrated, and culture-sensitive approaches, bringing together natural and social and human sciences, as well as local and indigenous knowledge for solutions to sustainable development challenges.
- Ensuring gender equity in the scientific enterprise and in national STI systems.
- Commitment to the protection of intellectual property (IP) through cooperation among States should be coupled with a commitment to ensuring that all countries are able to benefit from the use of IP for sustainable development.
- For countries that request it, appropriate technical assistance and capacity building should be provided to make most effective use of the IP system.
- Expanding open access to knowledge and data and the free flow of information to maximize the potential of scientists to bridge the knowledge gap within and between societies, and to make the necessary information available to policy makers and end users.
- Sector-specific STI challenges for the energy and health sectors were also extensively commented upon.

Key messages and Recommendations

Taking into account the views expressed and suggestions made, some key messages and recommendations can be presented as follows:

- With the advent of big data and knowledge societies and the rapid pace of new technological advances, STI must be seen as a primary mechanism for achieving all the SDGs.
- STI capacity building, with particular attention to human capacity building, will be essential, notably in developing countries, for enabling STI to fulfil its crucial function. Governments are required to make the necessary investments in national STI systems. Donor countries should prioritize support to STI efforts in developing countries.
- A major part of STI efforts should be targeted on the needs of poor and vulnerable communities.
- Despite the availability of a vast body of knowledge, there is a great need to address major knowledge gaps and to initiate solutions-oriented research. Researchers will need to engage in inter- and trans-disciplinary research which is co-designed with decision makers, practitioners, business and other stakeholders.
- There is a great need for and there are very good opportunities in developing multi-stakeholder partnerships around STI at national, regional and global levels. One example at the global level includes the proposal to establish a “global partnership on sustainable development data”.

Question 3 – What are the key elements that countries and international organizations may need to take into account in formulating action plans and/or roadmaps for science, technology and innovation for the Sustainable Development Goals?

The discussion focused on the following elements:

Process of STI Roadmap Formulation:

- Ensure transparency and accountability to people, scientific literacy and public understanding of science and its role in society, and inclusive and consultative stakeholder processes when formulating action plans/road maps. The financial sector, business and civil society groups that influence the economic life of the society must be involved to ensure their support.
- The roadmap requires coordination and mapping of STI efforts and maximizing existing resources and advantages.
- Roadmaps should support national innovation systems and enhance knowledge systems.

Elements of STI Roadmaps

- Technology is not only about machines and equipment, but also skills and abilities, as well as processes necessary to make innovation happen. There is a need for local adaptation of technologies and also a need to work on cultural acceptance of beneficial technologies in communities.
- Inclusion and recognition of indigenous and informal knowledge systems and harness these knowledge and innovations, develop them, and further enhance the capacity of peoples to be innovators in their own communities.
- Building the capacity of people to innovate and to use and adapt technologies that have broad applications or significant impacts on the economy.
- Technology transfer should be seen broader context - not only North-South transfer, but also South-South, South-North. Technological diversity is an asset that enables societies to respond to emerging challenges.
- Evaluation of the potential impacts of new technologies on indigenous communities and the possible adverse social, economic, and environmental impacts of STI must be monitored and measured.
- Gender concerns in STI must be incorporated in the development of national, regional and global STI roadmaps.
- Formulating STI roadmaps to support the SDGs require strategic approach that starts with improving the policy environment, redesigning infrastructure investment, fostering enterprise

development, reforming higher education, supporting inventive activity, and managing technological innovation. This approach could create linkages between knowledge generation and the technology/science community and enterprise development.

- STI roadmaps should address domestic investment in R&D sectors, incentives for academia and the private sector, the efficiency and effectiveness of the regulatory authorities, and the importance of cross-sectoral partnerships and the establishment of formal collaboration initiatives aimed at increasing and facilitating transfer of technologies, including between public and private entities, and at the national, regional and global levels.
- National STI roadmaps and innovation policies should be oriented towards creating innovative and nationally relevant solutions to basic problems of the people.

Coherence with Global Development Agenda

- Promote coherence between science and technology roadmaps / processes for different global agendas which must be adequately synthesized and considered when developing an STI at the regional, national, and local level in order to avoid redundancies.

Among the comments provided by the participants, several pertained specifically to developing countries:

- Domestic funding commitment and implementation plans for health R&D.
- Creating linkages between knowledge generation and the technology/science community and enterprise development.
- Research and development through international technology alliances and investment in underfunded research areas, particularly in fields such as agricultural production, environmental management, and public health.

Question 4 – How can we deploy existing knowledge and new, innovative solutions and technologies and make them more readily available to those who need them?

The discussion focused on three categories of issues.

A first group of posts highlighted the need for information sharing:

- Open international network of collaboration in research and development, providing for the participation of the poorest and most marginalized
- Innovation hubs are a cross cutting model that policymakers, innovators, and entrepreneurs can use as they work across the SDGs. The Global Health Innovation Hub is an example of how health inequities can be addressed through new and innovative business models.
- Find appropriate platforms to disseminate educational information where it is needed.

The discussion also included entries on how technology should be deployed to meet the sustainable development challenges, as follows:

- Attention to existing technologies that have broad applications for or impacts on the economy.
- Need for a cross-sectoral, multi-stakeholder, and integrated systems approach
- Create synergies between science, technology, and innovation policies for the generation of new knowledge and research and development and industrial policies to build manufacturing capabilities.
- Simplifying sophisticated products and utilizing inclusive innovation to reduce gaps in livelihoods. This can be achieved through producing cheaper versions of technologies for purchase by lower income groups.
- Improve communication to promote acceptability of STIs
- Increased transparency and guidance through policy processes.
- Pragmatically address intellectual property rights constraints for technology transfer.
- Improve technology transfer, including between developing countries

- Incubation and transfer of STI requires appropriate spaces for effective coordination, channels for inclusive communication, and access to appropriate financing.
- It is important to merge, or at least coordinate, the mechanisms of knowledge development with mechanisms for production and delivery.
- Consider existing initiatives, e.g. OECD agenda for “Creating our common future through science and technology”, African Union “Africa 2063 agenda to guide Africa’s socioeconomic transformation in the following 50 years”, European Union’s new Framework Programme for Research and Innovation “Horizon 2020”, to advance solutions for major social challenges such as health, climate change, environmental issues, energy, and transport.
- Global policies and commitments can help put countries on the right track to women’s inclusion, promoting participation of women in leadership and decision making positions in research, innovation, and development
- Gender-sensitive public sector spending, such as promoting affirmative action and quota policies for participation of women in national and state level in science and technology endeavours, increased public expenditure in areas of need that impact women in particular, such as health-care, science education and training, child-care, and essential infrastructures such as safe water and transport.
- Promoting data collection that allow sex disaggregated analysis.

A last category of ideas relates to the concept of community:

- In order to better deploy technology where it is needed, it must be designed in consultation with the beneficiaries, and should take into consideration wide social objectives such as equity, traditional knowledge preservation and the design of public policies.
- Traditional wisdom and local knowledge in technology and innovation is crucial to create change.
- Consortium formed by many communities to purchase various supplies in cooperative purchase.
- Community-driven development: Engaging communities in conversations during the technological development process, which enables ownership and uptake when solutions have already benefitted from diverse community inputs. For instance, the way technology is packed and deployed should be appropriate for the user.
- Empower local champions with the knowledge and fluency in technology or innovative solutions.
- Protect collective knowledge of indigenous people by intellectual property in order to produce holistic but locally adapted approaches. Diversity should be reflected in approaches to STI.
- The Nagoya Protocol as an instrument to promote mutually beneficial transfers of indigenous knowledge.
- Access to Internet could be provided in remote communities remotely through technology such as fiber optics, solar cells and satellite signal.

Question 5 – What would be success criteria for the STI Forum in the coming years? What questions should the STI Forum focus on?

The fifth guiding question called forth ideas of success criteria for the STI Forum in the coming years and how it can become a substantive platform of exchange between different stakeholders and the science, technology and innovation communities. It was emphasised that the proposals from this discussion would help inform the preparation for next year’s Forum. Key messages included:

- The Online Platform of the technology facilitation mechanism should map out initiatives and programs, and should be used to organise inputs into recurring themes for the Forum.
- Development of a more accessible, user-friendly platform for data storage, organization and analysis.
- Creating opportunities for developing new markets and for new and improved technologies.

- Linking the Forum to other UN programs on STI, while safeguarding its complementary function, thus contributing to coherence and focusing on information.
- The forum should keep a focus on its Multi-stakeholder approach, which should be reflected in a balanced selection of speakers, attendees, and showcased initiatives.
- Particular attention should be paid to participation of women and related STI activities in the Forum.
- Need for well-structured and transparent inputs.
- Discussion must translate policy into action and should be rooted in empirical evidence as well as developments on the ground.

Key questions that the Forum should address in the future include the following:

- How should practical actions be organised around the many STI-focused initiatives that already exist within and beyond the UN?
- What are some opportunities and challenges for developing countries resulting from upgrading innovation systems in emerging economies?
- Discussion on the impact of global value chains and increasingly service-based economies for STI development.
- Identifying systemic issues and emerging priorities in a coherent way through system-level analysis.
- Comprehensive mapping of opportunities, risks and potential long-term impact of technologies (related to social, economic and environmental impact assessments of technologies).