Position Paper by the Scientific and Technological Community (STC) Major Group

The STC Major Group's Organizing Partners:
The International Council for Science (ICSU),
The International Social Science Council (ISSC), and
The World Federation of Engineering Organizations (WFEO)

A. Introduction

The Scientific and Technological Community[1] (STC) greatly welcomes the adoption of "The 2030 Agenda for Sustainable Development", including at its core a framework of 17 Sustainable Development Goals (SDGs). Our Community strongly supports the vision expressed in the Agenda that puts people and the planet at the center, recognizing that human development, wellbeing, equity and environmental stewardship are inextricably linked. In adopting the SDGs, nations have acknowledged the new scientific knowledge that calls for a precautionary approach to ongoing Earth-system and societal changes.

Science and technology will play a critical role in achieving the successful implementation of the SDGs. Scientific knowledge provides the basis for evidence-based decision-making on sustainable development at all levels. Science informs the definition of indicators at global, regional and local levels. It is also fundamental for assessing progress, testing solutions, and identifying emerging risks and opportunities. Similarly, development and application of clean technologies is an indispensable part of the solutions to many sustainable development challenges. Agenda 2030 needs science, technology and innovation at every step; support for individual and institutional capacity-building in these areas will need to be much enhanced.

The High-level Political Forum (HLPF) on sustainable development has the essential role of providing the political leadership and guidance for action at the global level, impacting on actions at all other geographical scales. For assuming this role, the HLPF needs to focus on two key functions: reviewing progress in implementing the SDGs, and addressing new and emerging sustainable development challenges. To fulfil this broad mandate, the HLPF requires crucial input from science and technology. The STC is committed to support the HLPF in all its work, including specific efforts aimed at strengthening the science-policy interface.

B. Ensuring an effective functioning of the new science and technology mechanisms endorsed in the 2030 Agenda

The STC strongly supports the two new science and technology mechanisms: (i) the multi-stakeholder Technology Facilitation Mechanism (TFM), and (ii) the Global Sustainable Development Report (GSDR).

The TFM, based on a multi-stakeholder collaboration between Member States, the scientific community, UN entities and other stakeholders, comprises: a UN Inter-Agency Task Team on Science, Technology and Innovation for the SDGs, a collaborative Multi-Stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum), and an online platform.

[1] The Organizing Partners of the STC Major Group are: the International Council for Science (ICSU), the International Social Science Council (ISSC) and the World Federation of Engineering Organizations (WFEO) https://sustainabledevelopment.un.org/majorgroups/scitechcommunity.

In order to strengthen the multi-stakeholder collaboration, the UN Secretary General has established a 10-Member Group[2] supporting the TFM which is comprised of representatives of the scientific community and other non-governmental stakeholders, including experts from the International Council for Science (ICSU), the American Association for the Advancement of Science (AAAS), and the International Institute for Applied System Analysis (IIASA). The Group, working with the UN Interagency Task Team, is requested to contribute to the preparations of the STI Forum, support the development and operationalization of the online platform and provide briefings and other inputs to the HLPF.

Our Community fully supports the objectives of the TFM whose overall objective is to support building fit-for-purpose STI systems in support of implementing the SDGs at national, regional and global levels. The STI Forum should provide the opportunity for a regular high-level dialogue on major STI issues for SDGs between policymakers, scientists, technology and innovation experts, and representatives from other stakeholder groups, including the private sector. A central issue should be bridging the widening gap in scientific and technological capacity between developing countries, and developed and emerging countries. The TFM should be used to enhance North-South and South-South international cooperation on, and access to, science, technology and innovation, including knowledge and technology sharing.

Members of the STC worldwide have been mobilized to contribute to and to participate in the first Multi-Stakeholder STI Forum (6-7 June 2016) which will focus on "realizing the potential of science, technology and innovation for all to achieve the sustainable development goals." Ensuring that no one is left behind, the Forum should include a discussion – including natural and social scientists, engineers, and other stakeholders – on best practices in co-designing priority STI agendas with those most in need of STI solutions, the most vulnerable and marginalized. The outcomes and recommendations of the Forum will be recorded in a Co-chairs' Summary to be communicated to the 2016 session of the HLPF. We urge governments and other stakeholders attending this session to give due consideration to these important science, technology and innovation issues.

Another important science and technology related instrument endorsed in Agenda 2030 is the Global Sustainable Development Report (GSDR) – an effective science/policy bridge. This Report was first called for in the outcome document of Rio+20 as a UN publication aiming at strengthening the science-policy interface at the HLPF. One prototype of the Report was prepared in 2014 by the United Nations Department on Economic and Social Affairs (UN-DESA), and the first Report was developed in 2015 by UN-DESA in collaboration and consultations with the STC. The International Council for Science (ICSU) and the International Social Science Council (ISSC) have organized substantive input into this process.

The STC strongly supports UN- DESA's multi-stakeholder and multi-level approach to preparing GSDR editions. The 2016 edition of the GSDR will be available for the 2016 session of the HLPF: in the process of preparing this edition, UN-DESA co-organized with the International Council for Science (ICSU) an Expert Group Meeting on "emerging issues and peer-review" (13-14 October 2015)[3]. The Meeting attended by some 30 invited natural and social scientists and representatives from key-networks and organizations such UNESCO, Future Earth and the Sustainable Development Solutions Network (SDSN), and addressed two important issues for preparing future GSDR editions: what are appropriate approaches for identifying "emerging issues" and how to organize the peer review of the scientific knowledge presented.

The STC looks forward to the outcome of the consultation process conducted by the President of ECOSOC on the scope, methodology and frequency of the Report as well as its relation to the SDG

[2] Members: Peter Bakker (WBCSD); Elmer William Jr Colglazier (AAAS); Myrna Cunningham (CADPI); Elenita Daño (ETC Group); Xiaolan Fu (Oxford University); Paulo Gadelha (Fiocruz); Heide Hackmann (ICSU); Romain Murenzi (TWAS); Nebojsa Nakicenovic (IIASA); Hayat Sindi (i2institute).

[3] Report at https://sustainabledevelopment.un.org/index.php?page=view&type=13&nr=1859&menu=1634.

Progress Report, the outcome of which will inform the 2016 session of the HLPF. The STC, co-organized by the International Council for Science (ICSU), the International Social Science Council (ISSC) and the World Federation of Engineering Organizations (WFEO), is fully committed to work with UN-DESA and other partners to enable an inclusive process in the contributions towards the GSDR and to make each edition of the GSDR a strong evidence-based instrument for policy-makers.

C. Enhancing integrated approaches in policymaking, implementation, monitoring and review

The STC has been specifically outspoken in referring to the 2030 Agenda as an "integrated agenda". Following an integrated approach to implementing the SDGs is first of all necessary as the economic, social and environmental dimensions addressed under each individual SDG must be addressed in an integrated, policy coherent manner. Second, there are significant interactions between most of the goals: interactions can be positive in terms of synergies or negative as possible trade-offs. Some of these interactions (e.g., "food-water-energy nexus") have been widely studied; others are less known. The greatest concern is that implementation of the SDGs at local, national and regional levels does not address possible trade-offs, for example on climate change, economic growth and energy. Indeed, one of the key findings of a "Review of Targets for the Sustainable Development Goals"[4] by the International Council for Science (ICSU) and the International Social Science Council (ISSC) found that there remain major challenges in ensuring an integrated approach and avoiding a siloed implementation of the goals.

Building on this review, ICSU and ISSC are working on the report "Understanding SDG Interlinkages and Coherence Relationships – A Science-Policy Perspective" which will provide an analytical framework to characterize the range of potential negative to positive interactions between goals and targets presented on a seven-point scale; and will present a set of examples of synergies and trade-offs to illustrate how the analytical framework and typology presented can provide a tool for policy coherence and prioritization. This tool which should in particular be useful for countries to develop an integrated framework for implementing SDGs at the national level. A preliminary version of this report will be at www.icsu.org.

D. Maximizing benefit from the data revolution in both developed and developing countries

With the start of the implementation of the SDGs, there is an urgent need to mobilize the data revolution for the benefit of all countries and all stakeholders. Many governments, private companies, researchers and civil society groups already benefit of the new world of data, a world in which data are bigger, faster and more detailed than ever before. But too many governments, scientific communities, and other stakeholder groups are excluded because of lack of resources, knowledge, capacity or opportunity.

The final report of the Secretary General's Independent Expert Advisory Group on the Data Revolution for Sustainable Development (November 2014) came very timely. The report delineates a comprehensive set of recommendations in four areas, namely: (a) develop a global consensus on principles and standards; (ii) share technology and innovations for the common good; (iii) provide new resources for capacity development; and (iv) address global coordination and other governance issues.

The STC has noted this report with great interest and urges the HLPF to follow-up together with the UN Statistical Commission on the comprehensive set of recommendations submitted by the Independent Expert Advisory Group. For its part, the international scientific community has been working on data management, access and policy, mainly via two ICSU Interdisciplinary Bodies: the Committee on Data for Science and Technology (CODATA) and the ICSU World Data System (ICSU-WDS).

[4] ICSU/ISSC Report at http://www.icsu.org/publications/reports-and-reviews/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015.

Established in 1966, CODATA, works to improve the quality, reliability, management and accessibility of data of importance to all natural and human sciences. The CODATA strategy recognises the historic transformations due to the 'data revolution' and identifies three priority areas of activity:

1. Data Policy: supporting the implementation of data principles, policies and practices
2. Data Science: advancing the frontiers of data science and its adaptation to scientific research
3. Data Capacity Building: improving skills and the functioning of science systems (particularly in low and middle income countries - LMICs)

ICSU-WDS aims to promote universal and equitable access to quality-assured scientific data, data services, products and information, with a view towards long term data stewardship across a range of disciplines. Furthermore, ICSU-WDS supports the establishment of trustworthy scientific data services and is committed to fostering compliance with agreed-upon data standards and conventions. Many datasets available through ICSU-WDS data repositories and data services are relevant to the monitoring of SDGs' implementation. Accordingly, and as a first step to support the GSDR effort, ICSU-WDS established a list of data providers which map to keywords relevant to the implementation of the SDGs and contributed to the 2015 GSDR's Chapter 8 *New Data Approaches for Monitoring Sustainable Development Progress: The Case of Africa*.

The two bodies work together also by convening the "SciDataCon" – a scientific research conference series – which will be held in September 2016 under the theme "Advancing the Frontiers of Data in Research"[5] in order to address a range of fundamental and urgent issues around the 'Data Revolution' and the recent data-driven transformation of research and the responses to these issues in the conduct of research.

Building on these activities, in December 2015, the International Council for Science (ICSU) and other three major international science organizations – the International Social Science Council (ISSC), The World Academy of Sciences (TWAS) and the InterAcademy Partnership (IAP) – have issued an International Accord on Open Data in a Big Data World[6] which has been referenced in the ECOSOC/CSTD Secretary-General's Report on "Foresight for digital development" (E/CN.16/2016/3[7]), and which is now open for endorsement by other scientific institutions/organizations.

E. Enhancing science and technology - means of implementation for the SDGs

As part of the means of implementation and enabling conditions for achieving the Agenda 2030, an enhanced partnership between policy-makers, practitioners, scientists and other sectors of civil society is key to jointly identify critical questions that need to be addressed; co-produce knowledge that effectively supports decision-making at different scales; and co-deliver solutions supported by scientific evidence.

There is a critical need for much enhanced harnessing of both science and technology for sustainable development. We urge developing and developed countries alike to scale up national science and technology activities and capacity targeted on sustainable development, and encourage stronger collaboration across scientific and policy communities. Governments should also enhance support for international cooperation in relevant scientific research, scientific and technological capacity building, knowledge sharing and innovation.

The UN Secretary General's Synthesis Report on the Post-2015 Development Agenda highlights some

[5] www.scidatacon.org/2016

[6] Accord at www.icsu.org/science- international/accord; endorsement-form at https://docs.google.com/forms/d/1LGAoUnS3vJ1-3yc5d-PZNlMyGoeKRNm4fbwXnL1qw78/viewform

[7] http://unctad.org/meetings/en/SessionalDocuments/ecn162016d3_en.pdf

key areas through which the role of science can be enhanced in relation to the delivery of sustainable development in general and for the implementation of the SDGs specifically. These include:

- Increasing public expenditure on research and development, while avoiding subsidies for innovations that promote unsustainable products, production and consumption.
- Improving the level of participation of women and girls in science, technology (including ICTs), engineering, and mathematics.
- Enhancing support for developing countries, and LDCs in particular, to allow them to benefit from enhanced access to technologies for sustainable development.
- Developing technology partnerships based on multi-stakeholder, solution-driven initiatives. Ensuring access to the benefits of knowledge and technology for all, including the poorest, and creating the right incentives for sustainable practices, and for technological innovation needed for sustainable development.

Box 1.

Science and Engineering in support of the HLPF

The Rio+20 Future We Want document articulated the role of science in support of the SDGs, to be made part of the Post-2015 Development Agenda, and the High-level Political Forum. Since then, the scientific and engineering communities are fully engaged and actively building the infrastructure to support the Agenda, building on decades of international research coordination. In 2012, two major new international initiatives – Future Earth and the Sustainable Development Solutions Network (SDSN) – were specifically designed to mobilise the scientific community in support of the SDGs. Combined with engineering organizations and other existing organisations, this provides a new international framework for policy support and engagement. In this framework:

- The International Council for Science (ICSU) and International Social Science Council (ISSC) provide international coordination and representation of science as part of the Scientific and Technological Community Major Group – also co-organized with the World Federation of Engineering Organizations (WFEO).
- Future Earth provides international co-ordination for transdisciplinary research that supports the SDGs agenda.
- The SDSN synthesises and tests practical solutions from science and technology relevant to the SDG agenda.
- The Scientific Advisory Board (SAB) advises the UN Secretary General.
- The WFEO Standing Technical Committees are concentrating on the 17 SDGs.

The above international scientific and engineering organisations/networks are ideally placed to work together in supporting the new science-policy-practice interface needed for the Agenda 2030. Specifically, this existing alliance of ICSU, ISSC and Future Earth, WFEO, and other potential partners such as SDSN and the SAB:

- should be recognised as the agencies to engage with the **High-level Political Forum** and coordinate input from the scientific and engineering communities in order to ensure an informed and objective perspective on progress against the achievement of the SDGs.
- can provide an effective interface between the Global Sustainable Development Report (GSDR) and scientific/research communities from across the world, coordinate input from those communities, and drive the research needs for sustainable development.

Furthermore, the international research programme Future Earth, in collaboration with its extensive networks of partners, should be recognised as a platform for the coordination of transdisciplinary international research through co-design and co-production with all relevant stakeholders in support of delivery of the SDGs.