STI FORUM

Science, Technology & Innovation for the Sustainable Development Goals

9th Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals

Session 1: More and more effective funding and capacity for SDG related research and innovation in all regions (SDG17)

(12:00-13:00 EDT, 9 May 2024; in-person, Trusteeship Council Chamber)

Background

Global Research Cooperation and Funding

Achieving the Sustainable Development Goals (SDGs) requires extensive research and development (R&D) efforts to address complex global challenges, such as poverty, inequality, climate change, and pandemics. Although global R&D spending has been increasing, reaching approximately US$2.6 trillion from all sources in 2023, investment remains concentrated in developed countries, with limited resources allocated to the Global South. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), high-income countries account for 77% of global R&D expenditure, while low-income countries represent only 0.3%.

The growing complexity of new technologies, their fast pace of change, and the significant transformation brought about by the recent waves of innovation highlight the need for a collaborative approach to science, technology and innovation (STI). Research collaboration and knowledge sharing are crucial for fostering innovation, leveraging expertise and maximizing the impact of R&D investments. International scientific co-authorship has grown steadily, with more than 20% of research articles published in 2019 involving authors from different countries.

However, collaboration is challenging when partners are separated by huge capability gaps. Researchers from countries at the technology frontier are more likely to engage in international collaborations than their counterparts in other countries. More efforts are needed to close STI gaps between and within countries and foster national and international STI networks.

The share of ODA dedicated to STI-related projects is small at about 1.2% in 2022. After a positive trend from 2015 with a peak of 1.7% in 2019, the share of ODA dedicated to STI has declined since to about the levels of 2012. Since STI budgets are comparatively small, relatively minor shifts in ODA allocations (by just a few percentage points) towards building STI capacities could potentially make a decisive difference and significantly improve the inclusion of all countries in international research and innovation networks.

Funding and cooperation mechanisms for international research cooperation can build on existing experiences and consider the specificities of and the synergies between different research areas and stakeholders. For example, the European Union's Horizon Europe – the largest public fund for research and innovation with a budget allocation of about €95 billion for the period 2021–2027 - has a collaborative design that aims to create an integrated research area through multi-country projects. The programme's principles of co-financing between public and private sectors, openness to non-EU countries, and sensiti-

vity to the global commons and other global challenges, including the SDGs, could be considered by research funders worldwide together with other good practice approaches, in order to ensure shared financial responsibilities, commitment, and inclusion.

Research funding for the SDGs

There is no fully reliable, comprehensive global dataset tracking R&D commitments specifically for the SDGs, but sources like UNESCO and WIPO offer important insights into overall R&D investments and priorities for both developed and developing countries. In general, SDGs related to health, climate change, and energy tend to receive more R&D investments.

For example, investments in health research (SDG 3) are substantial, driven by both public and private sectors. The Global Health R&D Observatory reported that global health R&D funding reached US$40.8 billion in 2019, with the United States being the largest donor, contributing 42% of total funding. But as of 2022, there were 59 times more health researchers in high-income countries than in low-income countries, and a mere 0.2% of research grants were awarded to low-income countries by major international funders of health research. In fact, only less than 0.5% of health products were targeting neglected tropical diseases (as per WHO designations). Climate change (SDG 13) and clean energy (SDG 7) have also attracted significant R&D investments. The International Energy Agency (IEA) reported that government investments in energy R&D investments have increased every year since 2016 reaching about US$44 billion in 2022, with low-carbon energy technologies accounting for most of the total.

It is essential to note that these numbers are not exclusive to the SDGs and provide a broader perspective on R&D investments. Tracking R&D commitments and investments specifically for the SDGs remains a complex task, as research and innovation often span across multiple goals and targets which can also tap into synergies among the goals and targets.

There are differences in the priorities of research funders across countries at different development stages which speaks to the different context specific challenges countries face. This also requires a differentiated and coordinated global roadmap on research funding. Developed countries, which account for the majority of global R&D investments, tend to prioritize areas such as health, information and communication technologies, and clean energy. Developing countries typically prioritize areas more closely related to their specific development needs, such as agriculture, water, and sanitation. The biggest R&D donors vary depending on the sector and the SDGs being considered. However, some of the largest R&D investors globally include the United States, China, Japan, and the European Union. These countries contribute a significant portion of global R&D funding across various sectors, including those related to the SDGs.

Public and Private R&D Funding

Both public and private sectors play a vital role in financing R&D for the SDGs. Public R&D funding, typically provided by governments and international organizations, is essential for supporting basic research, capacity building, and projects with high social and environmental impact but lower financial returns. The Organisation for Economic Co-operation and Development (OECD) estimates that public R&D expenditure in its member countries reached 0.65% of GDP in 2019. Current governmental R&D funding amounts to about US$200-300 billion per year.

Private R&D funding, predominantly driven by the business sector, is crucial for translating research findings into marketable products and services. The private sector accounts for approximately two-thirds of global R&D spending, with significant investments in fields such as information and communication technologies, biotechnology, and clean energy. However, private R&D funding is often concentrated in areas with higher commercial potential, potentially overlooking research areas with broader societal benefits.

The governance challenge is to incentivize participation by for-profit partners and foundations and align their commercial aspirations to the extent possible with broader societal benefits. One example is the Bill and Melinda Gates Foundation which facilitates public-private co-funding and cooperation schemes through flexible design in terms of research contracts and intellectual property rights.

Objectives

This session will explore the status of global research cooperation and funding – especially in the Global South – for the achievement of the SDGs. It will bring together key public and private funders of R&D and related actors. Following a global perspective, specific cases of R&D cooperation and funding will be discussed, including cases of global and regional cooperation across borders and academic disciplines. These cases will illustrate how important international arrangements have become for global R&D and how indispensable they are for achieving the SDGs. A conversation among key R&D funders and related R&D actors will explore best practices and new ideas on how to better share knowledge and improve the current funding systems to strengthen international collaboration, build new partnerships, and explore ways to incentivize SDG-oriented research. The session is expected to identify high-impact actions to foster global solutions for the SDGs and beyond.

Format

The session will be structured as a moderated panel discussion, featuring representatives from key R&D funders, researchers, policymakers, and other R&D stakeholders. The panel will provide a global overview of the current state of global research cooperation and funding, focusing on the Global South and the SDGs, as well as draw on case studies and best practices of R&D cooperation and funding, illustrating the importance of international and interdisciplinary collaborations and discussing best practices for R&D partnerships and funding systems.

High-level respondents and lead discussants will add their own experience and comment on the panel discussion. This will be followed by an open Q&A session in which the audience will have the opportunity to ask questions and contribute to the discussion.

Guiding questions

The discussion will be guided by a series of questions:

- *How can incentives be designed to increase funding levels and increase the effectiveness of SDG-related research and innovation in all regions?*
- *What steps can be taken to build capacity for generating and using STI for sustainable transformations?*
- *How can the Technology Facilitation Mechanism be strengthened to contribute to advances in STI for the SDGs?*

Supporting documents/publications

UN (2023). Chapter 5 ("Transformations through science—and in science") in: Global Sustainable Development Report 2023: times of crisis, ties of change, science for accelerating transformations to sustainable development, https://sdgs.un.org/gsdr/gsdr2023

UNESCO (2021). UNESCO Science Report: The race against time for smarter development, https://www.unesco.org/reports/science/2021/en/report-series

IEA (2023). World Energy Investment 2023.

SDG Research Mapping Initiative (University of Southern Denmark, Aurora / Vrije Universiteit Amsterdam, University of Auckland, and Elsevier

UNCTAD (2024). Report of the United Nations Secretary-General, Global cooperation in science, technology and innovation for development, https://unctad.org/system/files/official-document/ecn162024d3_en.pdf

Case studies

Accone, T., "Illuminating 'unknown' domains of impact and uncovering new practices and pathways for transformative innovation for children".

Camba, M., "Sacol Island: A Smart Village in Zamboanga City".

Espaldon, M., *et al*., "Institutionalizing Integrated Crop Monitoring and Forecasting (ICMF) towards a Smarter Philippine Agriculture".

Gupta, J., *et al*., "Carbon Countdown: Market Disruption for a True Zero-Emission Future".

Querijero, N., *et al*., "Procurement Practices and Policies in the Philippines and the Implications to Public Research and Development".

Pendere, A., "Projet de Stratégie de Transformation Numérique pour l'Afrique (2020-2030) : une aubaine pour la Société centrafricaine de télécommunication (Socatel)".

Tagawa, K., "It's not rocket science - Science, Technology, and Innovation (STI) can unleash sustainable industrialization in Africa".

Van der Weken, D., and Geleyn, I., "Flemish climate action in developing countries".

Science-policy briefs

Buyel, J., et al., "Using plant molecular farming to increase regional biomanufacturing capacity across the globe for fast, resilient and cost-efficient medicine supply".

Carmona-Mora, P., et al., "Capacity building of young science leaders to empower regional agents of change".

De Brito Cruz, C. H., "Research Funding Organizations and the UN Sustainable Development Goals".

Gloinson, E., et al., "Vaccines for all? Opportunities and challenges for vaccine-related technology transfers to LMICs".

Mikova, N., "How technological and new societal trends may influence the European sustainable energy transition: analysis of policies, methodologies and impacts".

Nagar, S., "Artificial Intelligence in Scientific Research: Lessons for SPIs".