FINANCING FOR SCIENCE, TECHNOLOGY AND INNOVATION (STI) IN SUPPORT OF THE SDGS[1]

Key messages

- Science, technology, and innovation (STI) are fundamental drivers of sustainable development. However, a substantial funding gap remains, particularly in developing countries, where the mismatch between STI infrastructure and development needs significantly limits the capacity to address pressing socio-economic and environmental challenges. According to the UNESCO Science Report 2021[1], the level of funding for R&D in developing countries remains low, with 80% of countries worldwide investing less than 1% of their GDP in R&D[2]. This trend is particularly pronounced in African countries, where average investment in R&D stands at just 0.51% of GDP%.

- Global recognition of the shared priority to harness STI as a catalyst for sustainable development and SDG acceleration has been reaffirmed through the P*act for the Future and within the International Decade for Science for Sustainable Development* (2024–2033). In alignment with the African Union's *Agenda 2063* vision of fostering prosperity through an education and skills revolution emphasizing science and technology, the positioning of STI as a key driver of socio-economic transformation is further advanced through the *African STI Strategy (STISA-2034)* and the continental AI Strategy.

- Current funding structures often fail to align with the long-term objectives of sustainable development, focusing instead on short-term projects with limited impact on systemic change. Addressing these gaps requires both increased investment and strategic allocation. For STI to be a powerful driver of the SDGs, new financing models must integrate

1. This brief is based on the input submitted for the FfD4 Elements Paper - Call for Inputs, building on the consultations and inputs from DESA/ECA Workshop on Building Capacity and Exploring Resources for implementing STI4SDGs Roadmaps, held in Addis Ababa on October 8-9, 2024. It was drafted by Africa-Europe Science and Innovation Collaboration Platform (AERAP) and UNESCO, with substantive inputs from WIPO, ITU, OECD, EC/JRC, ECA, Global Alliance of Universities on Climate, Research & Information System for Developing Countries (RIS) India. Prof. Motoko Kotani and Dr. Xavier Estico, UN SG's10-Member Group, provided helpful comments. The UN IATT Working Group on STI4SDGs Roadmaps is facilitated by DESA/DSDG, UN IATT's Secretariat. It should be noted that the brief has been slightly adjusted to the original input, including for formatting purposes.

2. UNESCO Science Report: The race against time for smarter development: https://www.unesco.org/reports/science/2021/en/download-report

RELEVANT ACTION AREAS

ABOUT THIS SERIES

The Financing Policy Brief Series has been prepared by the Inter-agency Task Force on Financing for Development to inform the substantive preparations for the Fourth International Conference on Financing for Development (FfD4), to be held in Sevilla, Spain, from 30 June to 3 July 2025.

The Inter-agency Task Force on Financing for Development is comprised of more than 60 United Nations Agencies and international organizations. The policy briefs in this series were not subject to review by Task Force Members, and represent the views of the authoring organizations.

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flexible and adaptive mechanisms that empower countries to direct resources toward development priorities in alignment with international frameworks. At the national level, integrated STI investment plans as part of STI4SDGs roadmaps can further enable frameworks for implementing multi-stakeholder, cross-sectoral investments in critical development priorities.

- A global 'STI for SDG Fund' could provide a dedicated platform for financing the STI data portal (e.g. online platform), support global advocacy (e.g. STI Forum), and advance STI roadmaps and mission-driven initiatives to enable financing projects that tackle cross-sectoral challenges such as health, food and agriculture, energy, and education while leveraging innovative financing mechanisms to expand capital access for low-income countries and further incentivize private sector participation.

Problem statement

Financing Science, Technology, and Innovation (STI) is critical to achieving the Sustainable Development Goals (SDGs). However, a substantial funding gap remains, particularly in developing countries, where the mismatch between R&D infrastructure and development needs significantly limits the capacity to address pressing socio-economic and environmental challenges. According to the *UNESCO Science Report 2021*, funding for R&D in developing countries remains low, with 80% of countries worldwide investing less than 1% of their GDP in R&D. This trend is particularly pronounced in African countries, where average investment in R&D stands at just 0.51% of GDP.[3]

Current STI funding structures and policies fail to align with the long-term objectives of sustainable development, focusing instead on short-term projects with limited impact on systemic change. In many countries, this chronic underinvestment has far-reaching consequences, exacerbating critical challenges such as health and education disparities, youth workforce integration, and the misalignment of STI policies and R&D agendas with urgent skills demand and key sectors like food security, climate adaptation, and digital transitions. For example, while the global number of researchers has grown steadily over the past decade, the severe shortage of researchers, engineers, and innovators in many African countries follows a distinct disparity pattern along the North-South divide in STI ecosystems and capacity: with 4,062 researchers per million inhabitants in Europe and North America, sub-Saharan Africa accounts for only 98 researchers per million.[4]

As evidenced in Pact of the Future,[5] focus on STI as a prerequisite for leaving no one behind and the African Union's Agenda 2063 vision of fostering prosperity through an *education and skills revolution emphasizing science and technology*, requires not only increased investment but also a strategic allocation of resources. This requires both effective policy design and coordinated governance structures to maximize the catalytic role of public funding and attract private investment in STI. Key mechanisms include research and innovation funds, tax incentives, grants, and capacity-building initiatives, supported by balanced approaches to embed science in policymaking and increase funding for SDG-related research and innovation to address complex challenges.

3. UNESCO Science Report: the race against time for smarter development; executive summary - UNESCO Digital Library
4. https://uis.unesco.org/en/news/uis-releases-new-data-sdg-9-5-research-and-development
5. The *Pact for the Future*, adopted on 22 September 2024 (Actions 28 to 33 under *Science, Technology and Innovation and Digital Cooperation)*, places strong emphasis on reducing global disparities in STI, including through scaling up resources and implementation. It reflects the commitment of world leaders to the increased use of science in policymaking to address complex challenges and to securing more funding for SDG-related research and innovation. This has been further reinforced by the *International Decade for Science for Sustainable Development (2024–2033)*, the *African Union's Agenda 2063*—notably under Aspiration 1 (A Prosperous Africa Based on Inclusive Growth and Sustainable Development)—as well as newly adopted instruments, particularly the *African STI Strategy (STISA-2034)* and the *Continental Artificial Intelligence Strategy (2024)*.

Policy solutions

STI Investment Plans and public financing

The integration of STI investment plans as part of STI4SDGs roadmaps[6] opens new pathways to support governments at different levels (national, subnational) to shape national development strategies that help maximize the potential of STI for sustainable development. From the perspective of public spending and allocation, alignment with the SDGs can help better embed STI across sectors like health, agriculture, education, and infrastructure to improve public services and promote inclusive growth. Investments in digital health and education, for instance, can improve access to basic services in remote areas, while innovations in sustainable agriculture can strengthen food security and climate resilience. Targeted funding programs prioritizing STI investments that focus on vulnerable groups, such as women, youth, and rural communities, can ensure a more equitable distribution of the benefits of science and technology.

The success of national STI investment plans fundamentally relies on the development and effective execution of well-designed policy instruments, such as research and innovation funds, tax incentives, and grants, supported by multi-year national plans and frameworks. Additionally, capacity-building for effective and well-coordinated governance structures is essential to leverage the catalytic role of public funding and attract private sector investment in STI. Co-investment mechanisms and fiscal incentives to support local entrepreneurship and STI-focused business can accelerate synergies with the private sector in areas with high social impact and potential for job creation, including by facilitating technology adoption.

International financing of STI and innovative financing approaches

Financing for STI is critical to achieving the SDGs, though current funding models reveal significant gaps and chronic underinvestment in developing countries. Total funding for research and technology through ODA remains low in absolute terms (around 5% according to the OECD, and around 10% among the top five donors according to World Bank).[7] Yet, ODA remains a key funding source for STI in developing countries, the share of ODA to STI only represented around 1.4% of total ODA from 2019 to 2021 according to OECD estimates.[8,9] Linking ODA agenda-setting to STI ministries and national development agendas can generate synergies and greater impacts on the SDGs.

International financing mechanisms must adopt more diversified strategies to address the funding needs for STI. Flexible financing can ensure that investments are relevant and adaptive to evolving challenges Risk-sharing mechanisms and encourage more investment in development-oriented STI. Drawing inspiration from climate finance, models such as carbon markets, adaptation funds, and impact bonds can be adapted to support STI projects. These mechanisms have successfully mobilized resources for sustainable initiatives and could be applied to drive investments in technology transfer, capacity building, and sustainable innovations in developing countries.

Establishing a global 'STI for SDG Fund' would provide a platform for financing key STI initiatives, including STI data portals, global advocacy (e.g. STI Forum),[10] capacity building, STI roadmaps, and cross-sectoral projects in areas like education and STEM, health, food security, and energy. Such a vehicle would facilitate the adoption

6. https://sdgs.un.org/sites/default/files/2024-09/Briefing%20Note%20on%20STI4SDGs%20Roadmaps%20-June%202024_final.pdf

7. Miedzinski, M., Kanehira, N., Cervantes, M., Mealy, S., Kotani, R., Bollati E. (2020). Science, Technology and Innovation (STI) for SDGs Roadmaps—Background Paper: International STI collaboration and investment for Sustainable Development Goals: https://sdgs.un.org/sites/default/files/documents/269391_BP_Roadmaps_IntlCollaberation_final_7_09_20.pdf

8. In: https://financing.desa.un.org/sites/default/files/2024-10/OECD_7.%20Factsheet_STI_clean.pdf

9. Moreover, the lack of a consolidated structured methodology to measure ODA to STI hampers the capacity to evaluate actual support of development finance supporting STI.

10. https://sdgs.un.org/tfm/sti-forum

of blended finance approaches for STI and expand capital access to developing countries, including through innovative financing initiatives to further incentivize private sector participation.[11]

Private sector plays a key role in financing R&D and innovation for sustainable development and is a key stakeholder in the policy-making processes. Demand-driven policy instruments and measures creating the enabling conditions for innovation, commercialisation of the research results, and technology transfer are thus essential for ensuring impactful implementation of international, national and regional STI agendas.

STI and capacity building

Building capacity for effective STI policy implementation is essential for leveraging STI as a tool for sustainable development. Beyond increased investment and resource scaling, the successful implementation of STI policies heavily depends on strong institutional frameworks, technical expertise, and robust data infrastructure to support evidence-based policymaking and track STI progress.

Reliable data collection systems are crucial for monitoring resource allocation and impact, ensuring that investments effectively address gaps. This includes consolidated metrics to track international support and development assistance for STI. Strengthening data infrastructure also facilitates the integration of STI strategies into national development planning, promoting policy coherence with broader goals like the SDGs. For example, platforms such as UNESCO's Global Observatory of Science, Technology, and Innovation Policy Instruments (GO-SPIN)[12] platform provides policymakers with comprehensive data on national STI policies, instruments, and indicators from around the world, enabling countries to benchmark against global best practices and tailor strategies to their specific needs.

Specific recommendations for FFD4

To effectively address challenges and close gaps in financing for sustainable development through STI, the following recommendations are proposed for the Conference's Outcome Document:

1. Call on Member States, in close collaboration with the UN system and the private sector, to expand international and regional funding mechanisms by introducing innovative financing models and policy instruments, to attract diverse funding sources for STI projects, including through the creation of a STI for SDG Fund.
2. Call on Member States to align their national STI policies with development priorities and frameworks to align investments with SDGs, ensuring STI investments support inclusive growth across sectors and reach underserved communities.
3. Call on Member States, with the support of the UN System and the private sector, to strengthen capacity for STI policy implementation, invest in data infrastructure, institutional capacity and skills development to support evidence-based STI policymaking.
4. Call on Member States and the private sector to encourage public-private partnerships, leverage partnerships to scale technology adoption, support local entrepreneurship, and drive the commercialization of innovations for sustainable development.
5. Call on Member States to increase public funding and maximize its impact to establish and leverage funding mechanisms for promoting and strengthening STI.

These specific recommendations can provide a strategic roadmap for leveraging STI to achieve sustainable development, addressing the urgent need for more effective financing mechanisms, inclusive policies, and stronger local capacities.

11. Innovative financing approaches, such as market-linked instruments (social impact bonds, emission credits) can be critical for enabling private sector support. For example, Digital Infrastructure Investment Initiative brings together the development finance community with the private sector, civil society, and governments to enhance digital infrastructure financing. Giga, a joint initiative by ITU and UNICEF, aims to connect every school to the internet and is exploring innovative mechanisms, such as connectivity credits, to incentivize school connectivity. These initiatives can generate funding by linking investments to performance outcomes, ensuring projects deliver measurable social and environmental benefits.

12. https://gospin.unesco.org/frontend/home/index.php