Tech Standards for Sustainable Development

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Abstract

his is an expansion of briefs submitted for the 2021 and 2022 STI Forums on standards for climate change and sustainable infrastructure. There are many ways that the science and technological community contributes and can contribute to policy and governance and one

important way is by producing and maintaining good technical standards and advocating for their use. Technical standards are used broadly to protect public health, safety and the environment.

Standards and codes are critical to providing the infrastructure that underpins achievement of SDGs 6, 7, 9, and 11. Technical standards are also key enablers of digital technologies and are getting increasing attention for their important role in enabling artificial intelligence (AI) and the Internet of Things (IoT). Tech and increasingly management systems standards are important tools for good governance (SDG 16).

The purpose of this brief is to suggest ways the UN in the context of STI4SD and the SDGs could leverage standards activities for achieving the SDGs and for engaging the broader tech community.

Background

The focus of the briefs in 2021 and 2022 was standards for civil infrastructure systems and this is certainly important for the SDGs being discussed in 2023 - SDG 6, 7, 9, and 11. The 2022 report of the STI Forum co facilitators acknowledged the importance of standards in their report to the HLPF.[1] However, standards enable and impact all technology systems. As an example, the International Technological Union (ITU) shows how ICT systems and products affect all of the SDGs and standards underpin all ICT systems.[2] ITU is a UN specialized agency and a leader in digital standardization. Tassey shows that because of the systems nature of many modern technologies, standards can affect all stages of product development from research and development to marketing.[3]

The term Tassey uses is "infratech" and theGlobal Infrastructure Hub is now using thisterm with respect to civil infrastructure systems.[4]

Much of the attention today is focused on standards for AI. The 2021 UN DESA report on AI included a chapter on standards supporting AI.[5] The Institute of Electrical and Electronics Enginers (IEEE) has its Ethically Aligned Design V2 part of its ethics initiative available for public discussion. The IEEE initiative is supported by a number of existing and proposed IEEE technical standards.[6]

Today standards are developed, used and applied well beyond their traditional usages in engineering.[7] An example is the proposal by Danish Standards for an ISO Standard on the SDGs.[8] Ethics standards are receiving increasing attention in scientific research although the focus so far has been on research with human subjects.[9]

Much of the attention that standards have received in trade is standards as technical barriers to trade.[10] But

[1] E/HLPF/2022/6 Co-Chairs' summary of the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals https://sdgs.un.org/sites/default/files/2022-07/E_HLPF_2022_6-EN.pdf

[2] ITU Digital technologies to achieve the UN SDGs https://www.itu.int/en/mediacentre/backgrounders/Pages/icts-to-achieve-the-united-nations-sustainable-development-goals.aspx

[3] Tassey, G. The Roles and Impacts of Technical Standards on Economic Growth and Implications for Innovation Policy https://www.nowpublishers.com/article/Details/ASTP-003

[4] GIHub InfraTech https://infratech.gihub.org/

[5] UNESCO Recommendations on the Ethics of Artificial Intelligence

[6] IEEE Ethically Aligned Design V2 https://standards.ieee.org/news/ead_v2/

[7] Yates, J., and Murphy C.N., Engineering Rules: Global Standard Setting since 1880, https://www.press.jhu.edu/books/title/11653/engineering-rules

[8] Danish Standard, New ISO Standards for UN SDGs https://www.ds.dk/en/about-standards/management-systems/new-mss-sdg-proposal

[9] RAND Ethics in Scientific Research https://www.rand.org/content/dam/rand/pubs/research_reports/RR2900/RR2912/RAND_RR2912.pdf

[10] WTO Technical Information on Technical barriers to trade https://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm

standards also facilitate trade.[11] The voluntary international standards system has long supported the world economy but with the increasingly rapid development and implementation of modern technologies, is the system still adequate?[12]

A great strength of the UN is its convening power and the resources that its subsidiary bodies bring and can bring to achieving the SDGs and to standardization. Relative to standards, mentioned in 2021 and 2022 is the work of the United Nations Economic Commission for Europe (UNECE) on standards. UNECE has a portal showing how standards map to the SDGs.[13] For example the portal shows 150 for SDG 6, 2663 for SDG 7, 12,366 for SDG 9, and 2084 for SDG 11. The work of ITU on AI standards was mentioned earlier but there is much more. The UN has processes in place to bring issues relevant to achieving the SDGs for action through the HLPF process. For technical issues, it has the Technical Facilitation Mechanism (TFM) that is an integral part of Agenda 2030 to develop the needed background and the STI Forum to facilitate broad discussion. The UN's convening power can also be used to bring civil society leaders together for action; for example the standards developing organizations listed on the UNECE portal.

The STI Forum is a global forum for discussing STI issues and could provide opportunities for discussion of standards as tools for sustainable development and how to leverage ongoing and planned standards activities.

Another strength of the UN is its educational resources now enabled with ICT. To mention a few, for civil infrastructure, there is the UNDESA program on Infrastructure Asset Management.[14] The ISO 55000 series of standards on asset management is recommended for infrastructure. Available as part of the DESA program is a free Massive Online Course on Infrastructure Asset Management for Sustainable Development.[15] Another example is the GLOBAL RESOURCE FOR ANTI-CORRUPTION EDUCATION AND YOUTH EMPOWERMENT (GRACE) initiative by the UN Office on Drugs and Crime.[16] The GRACE Knowledge Hub includes extensive free ready-to-use teaching resources with a focus on anti-corruption (SDG 16). It is worth noting that there is an ISO management system standard on Anti-Bribery ISO.[17]

The TFM online platform is potentially a powerful tool for knowledge sharing across diverse sectors. A priority should be to make all UN resources on standardization accessible through the online platform.

Some questions to consider

- How should and could standardization be included in STI for SDG roadmaps?
- How can standardization expertise within the UN system be shared?
- What is the role of the UN and member states in having a strong global system for standardization and ensuring that the right standards are being produced for STI4SD and the SDGs? Standards are imperfect public goods and can be underproduced.
- What are some opportunities and who are the potential partners for leveraging standards activities for sustainable development and the SDGs?

[11] ANSI Standardization in International Trade and Development https://www.ansi.org/trade-development/standardization/overview#:~:text=Standards%20form%20the%20foundation%20of,and%20providing%20common%20reference%20points.

[12] MIT Management Engineering standards have long supported the world economy. But future challenges abound. https://mitsloan.mit.edu/ideas-made-to-matter/engineering-standards-have-long-supported-world-economy-future-challenges-abound

[13] UNECE Portal on Standards for the SDGs https://standards4sdgs.unece.org/index.php/

[14] UNDESA Infrastructure Asset Mangement https://www.un.org/development/desa/financing/capacity-development/topics/infrastructure-asset-management

[15] UNDESA MOOC Infrastructure Asset Management for Sustainable Development https://www.un.org/development/desa/financing/capacity-development/topics/infrastructure-asset-management/massive-open-online-course

[16] UNODC GRACE https://grace.unodc.org/

[17] ISO 37001 Anti-Bribery Management Systems https://www.iso.org/iso-37001-anti-bribery-management.htm

Recommendation for action

The UN should use its convening power to bring together the technical standards community and interested Members States and other stakeholders to see how standards and standards activities can be leveraged for STI4SD and the SDGs.