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 5: Harnessing the power of digital innovation for sustainable peace and resilience in the context of climate change (SDG 16)

(11:30 – 13:00 EDT, 10 May 2024; in-person, Trusteeship Council Chamber)

Background

SDG 16 holds the promise of achieving more inclusive, just and peaceful societies, and serves as a great enabler for all the other SDGs. However, efforts towards preventing and reducing violence, access to justice for all, inclusive governance and peaceful societies, show signs of stagnation or regression (UNODC, OHCHR, and UNDP, 2023). For instance, conflict and violence are on the rise; human rights infringements continue to be recorded in many countries; and access to justice continues to be elusive for large portions of national populations, especially the most marginalized.

In these challenging times, digital innovations can help build resilience and foster sustainable peace, particularly in the context of climate change. Although climate change and related extreme weather events do not directly cause conflict, climate change can multiply and amplify existing risks to peace and development. Disruptions linked to climate change, such as reduced agricultural production, changes to water availability, food insecurity, health impacts and loss of housing, can lead to increased competition over resources and instability. For example, in 2022, 84 per cent of refugees and asylum seekers fled from highly climate-vulnerable countries, an increase from 61 per cent in 2010 (UNHCR, 2023). Furthermore, evidence is building to suggest close linkages between climate change, food insecurity and conflict (WFP and FAO, 2023). According to some estimates, by 2030, climate change could push up to 130 million more people into poverty, not only exacerbating existing vulnerabilities, such as food and water insecurity, but also socio-economic fragility, and political grievances (WB and Delft, 2020).

Digital innovations can support both climate mitigation and adaptation, bolstering sustainable peace and resilience around the world. On the mitigation side, digital technologies including sensors, the internet of things, robotics, and artificial intelligence can improve energy management in all sectors; they can increase energy efficiency and promote the adoption of many low-emission technologies, including decentralized renewable energy, while creating economic opportunities (IPCC, 2023). For adaptation, opportunities offered by the growing availability and reach of communication channels, in particular mobile (cellular) networks and services, make it possible to reach communities at risk, warn about an imminent disaster and provide people with actionable advice (ITU, 2023). Solutions such as use of remote sensing for improved early warning systems and use of artificial intelligence can make both short-term and long-term interventions and planning more effective. For example, integrated geospatial information, including from remote sensing, can be used to produce integrated risk maps and help monitoring of environmental and climate stresses potentially driving threats to peace and security.[1]

[1] See for example Strata, an online tool developed by FAO and UNEP, Strata a FAO/UNEP Tool (earthmap.org)

Artificial intelligence (AI) can play a critical role in addressing the security challenges posed by climate change. AI can, for example, deepen our understanding of climate hazards and risks, develop more effective climate change adaptation strategies, and enhance the social and community resilience that we need in the face of insecurity induced by climate change (Kim and Boulanin, 2023). In concrete ways, AI can contribute to cost-efficient sensing and data collection for early-warning systems in countries that lack sufficient infrastructure and capacity for traditional climate information systems. In these cases, AI allows governments and organizations that work on humanitarian, development and climate change adaptation efforts to make efficient use of remote sensing data, notably satellite imagery. Another concrete example is the use of AI to address a major challenge faced by humanitarian responders – lack of accurate maps of disaster-stricken areas, including buildings and infrastructure. To address this, experts recommend using AI to convert satellite imagery into maps, enabling humanitarian organizations to promptly initiate rescue and relief operations.

However, while new technologies offer innovative solutions for mitigating the instabilities caused by climate change, rapid digitalization also requires more energy, resulting in increased greenhouse gas (GHG) emissions. Estimates of the ICT sector's share of global carbon emissions vary across the literature ranging from 1.5 to 4 percent. Meanwhile, one-third of the world's population, or 2.6 billion people, still remain unconnected to the internet, with a large majority living in low and middle-income countries (LMICs) (ITU, 2023b). Many of these countries lack the modern data infrastructure, such as co-location data centers and access to cloud computing. Connecting people in these countries will require more infrastructure and devices, which will further increase demand for scarce energy resources and drive emissions even higher if targeted interventions are not implemented (WB and ITU, 2024).

In addition, as with all digital technologies, rewards are not automatically evenly shared, and solutions may also spark additional challenges. Questions of trust, equality and discrimination are at the heart of deployment of digital innovations and artificial intelligence systems. Unlocking the promise of digital innovation for more peaceful and resilient societies amidst the current climate crisis will require careful policy choices at all levels of government.

Objectives

The session aims to showcase how digital innovations can foster sustainable peace and resilience amidst the ongoing climate crisis. It will provide an opportunity for Member States and other stakeholders to have a dialogue on both challenges and opportunities of digitalization and artificial intelligence for enhancing peace and resilience in a balanced manner.

Format

The session will be structured as a moderated panel discussion. The panel discussion will be followed by an interactive discussion. After panelist remarks, the moderator will take comments and questions from the audience. The session will close with a brief presentation of main outcomes of the discussion by the moderator.

Questions for discussion

The discussion will be guided by the following questions:

- *How to harness science and technology to make progress on SDG16 to "promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels"?*
- *What institutional changes are needed to increase the use of science and evidence for more inclusive and responsive policymaking in support of sustainable development?*
- *How can trust in science be strengthened while countering misinformation in ways that contribute to justice, peace and inclusion?*
- *How can digital transformation be leveraged for integrated climate and conflict-sensitive policy-making?*
- *What are some promising cases of leveraging science and technology for environmental conservation and climate adaption in support of peace, justice and inclusion?*

Supporting documents/publications

UNODC, OHCHR, and UNDP (2023). Global Progress Report on Sustainable Development Goal 16 Indicators: A wake-up call for action on peace, justice and inclusion

UNHCR (2023). Focus Area Strategic Plan for Climate Action 2024-2030 Advance copy, UN High Commissioner for Refugees, December 2023, https://reporting.unhcr.org/climate-action-focus-area-strategic-plan-20242030

WFP and FAO (2023). Hunger Hotspots. FAO–WFP early warnings on acute food insecurity: November 2023 to April 2024 Outlook. Rome. https://doi.org/10.4060/cc8419en

WB and Delft (2020). Revised Estimates of the Impact of Climate Change on Extreme Poverty by 2030, The World Bank and the Delft University https://documents1.worldbank.org/curated/en/706751601388457990/pdf/Revised-Estimates-of-the-Impact-of-Climate-Change-on-Extreme-Poverty-by-2030.pdf

IPCC (2023): Sections. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

ITU (2023). Digital transformation and early warning systems for saving lives. Background paper.

Kim, K., and Boulanin, V. (2023). Artificial intelligence for climate security: Possibilities and Challenges, Stockholm International Peace Research Institute (SIPRI), 2023.

ITU (2023b). Facts and Figures 2023

WB and ITU (2024). Measuring the Emissions & Energy Footprint of the ICT Sector: Implications for Climate Action. Washington, D.C. and Geneva

Case studies

Barbosa, S., *et al.*, "Application of Multi-Criteria Analysis Model to Evaluate Integrated Transport Systems (ITS): A case study in Florianópolis, Brazil".

Chadidjah, A., "Enhancing Innovative Solution to Address Findings Arising from the Implementation of Sustainable Development Goals (SDG) 16 Achievements".

Crawley, F., *et al.*, "UNESCO Open Science framework for sharing data in times of crisis".

Saks, S., "Adapting to Sea Level Rise in Small Island Developing States: Employing IoT Technology, Leveraging Coastal Infrastructure and Ecosystem-based Adaptation, and Continually Engaging the Public".

Tanderup, N., Mollerup, A., and Rosenberg, A., "Strengthening government institutions to deliver on the SDGs: How digital transformation can enhance democratic institutions and public governance".

Williams, R., and Tolentino, P., "Making space for Philippine rivers".

Science-policy briefs

Al-Thobaiti, F., "The financial impact of regulations aiming to unify government digital platforms: Insights from Saudi Arabia".

Carlsen, H., "AI assisted scenario building for sustainable development".

Fidler, K., "Flooding and Vulnerable Communities: Working Toward Proper Preparation and Protection via RS and GIS Developments".

Francis, S., "Navigating the Intersection of AI, Surveillance, and Privacy: A Global Perspective".

Gupta, J., Bosch, H., and van Vliet, L., "AI's excessive water consumption threatens to drown out its environmental contributions".

Gupta, J., *et al*., "Reinforcing the SDGs to live within safe and just thresholds".

Gupta, J., *et al*., "SDG 16 and water (re)allocation: Promoting the rule of law for water justice".

Karinge, J., Njende, I., and Nyamekye, S., "Machine Learning for Climate Intelligence and Weather Forecasting in the Tropics".

Luthra, R., "Artificial Intelligence and Ethical Considerations in Neurotechnology".

Piesik, S., *et al*., "Nature-Based Industrial Revolution for Inclusive Sustainable Development".

Roehrl, P., "Human rights-based principles for AI governance and business".

Sharma, R., "Protecting Worker Earnings in the Technology-Driven Gig Economy: Policy Approaches for Sustainable Stability and Fairness".