

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

**Geneva, Switzerland
7-8 November 2019**

Contribution by UNDRR

to the CSTD 2019-2020 priority theme on “Harnessing rapid technological change
for inclusive and sustainable development”

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MESSAGE TO CSTD MEMBERS TO INVITE INPUTS ON THE PRIORITY THEMES 2019-2020

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting. This paper will serve as the basis for the UN SG Report on the same topic that will be presented at the 23rd session of the CSTD in March 2020. In this context, we would like to solicit inputs from the UN System on this theme. We would be grateful if you could kindly answer the following questions based on your experience from your Agency.

Input from UN Office for Disaster Risk Reduction:

Building on the outcomes of the 2019 CSTD discussions, it is critical to incorporate a risk lens into the deliberations of countries and stakeholders during the upcoming 2020 session. The 2019 CSTD draft resolution specifically encourages countries:

(xxvi) To support policies that increase financial inclusion and deepen the sources of financing and direct investments towards innovations that address the Sustainable Development Goals.

The CSTD is encouraged to:

(x) To explore ways and means of conducting international technology assessments and foresight exercises on existing, new and emerging technologies and their implications for sustainable development and 9 General Assembly resolution 69/313, annex. building resilient communities, including discussions about models of governance for new areas of scientific and technological development;

The Global Assessment Report 2019 (GAR19) states that the world faces new, emerging, and much larger threats than ever before, linked to climate change, environmental degradation, and the growing potential for one disaster to produce or exacerbate another. If governments do not adopt appropriate strategies to manage risk, then these threats could slow or even reverse progress towards the Sustainable Development Goals (SDGs), notably eradicating poverty and hunger, and action on climate change. As SRSG Mizutori said during the Global Platform 2019:

“The human race has never before faced such large and complex threats. The doubling of extreme weather events over the last twenty years is further evidence that we need a new approach to managing disaster risk if we are to limit disaster losses. Economic losses are making it an uphill battle to hold on to development gains in low and middle income countries.”

GAR19 therefore outlines concrete recommendations to enhance our common understanding of risks and how to address them: <https://gar.unisdr.org/sites/default/files/gar19distilled.pdf>

GAR19 specifically highlight the opportunities related to new and innovative approaches to today's interconnected and cascading risk landscape. Specifically, it states (Chapter 4, Conclusions; see full excerpt below in Annex): It is clear from recent developments that open data and analysis, shared and interoperable software, computing power and other technology, are the technical enablers of improved data science, risk assessment and risk modelling. For their success, they also rely on the willingness of people to work with other disciplines, across cultural, language and political boundaries, and to create the right regulatory environment for new and urgent work to proceed.

In the below, we have compiled information which we hope will be of use for the CSTD secretariat to ensure appropriate reflection on the urgent need, and opportunities, to enhance risk-informed planning and decision-making by Governments and other stakeholders alike. As Dr David Green, Program Manager, Disaster Applications, NASA stated at the 2018 Regional Platform on DRR: “When the Sendai [Framework] transitioned from the old plan, the Hyogo, there was a fundamental shift that said we should try to understand the risk around us, whether produced by nature or humans. Sendai is an opportunity to unleash science on disaster risk reduction, to prepare, respond and recover. It has moved from being about hazard to being about risk.”

PRIORITY THEME 1: Harnessing rapid technological change for inclusive and sustainable development

We live in a time of growing prosperity alongside growing concerns about inequality. Recent developments in frontier technologies (e.g. AI, robotics, big data, blockchain, space technologies, biotechnology, and nanotechnology) have shown tremendous potential for making development truly sustainable, but they also have raised fears of increasing disparities by worsening and creating new divides between the technology-haves and have-nots. This priority theme will critically examine how to make frontier technologies work for all. The analysis will explore the potential of frontier technologies to improve inclusiveness not only in terms of income, gender, various age groups, people with special needs or other groups facing specific challenges, but also to improve the situation of small economies including Least Developing Countries, Landlocked Developing Countries, and Small Island Developing States. The analysis will focus on the strategies, policies and immediate actions at national and international levels for creating an environment for harnessing frontier technologies to ensure that no one is left behind.

1. **Can you prove examples of initiatives of your Agency for creating national ecosystems for innovation on frontier technologies for inclusive and sustainable development? What are the most effective ways to support the improvement of skill levels and better match the supply and demand of skills? What is the role of the government in facilitating a fair relation between workers and employers in the digital economy? What are the current options and lessons learned from policies to protect people affected by rapid changes in labour markets (e.g. greater benefits for those whose jobs are destroyed, retraining, federal job guarantee)? What is the role of redistributive policies to ensure that no one is left behind in a world of rapid technological change?**

The UN Office for Disaster Risk Reduction (UNDRR; <https://www.unisdr.org/>) is the custodian of the Sendai Framework for Disaster Risk Reduction 2015-2030 (<https://www.unisdr.org/we/coordinate/sendai-framework>). The Sendai Framework for Disaster Risk Reduction is the blueprint for global risk reduction and resilience. It recognizes the power of new technologies to prevent and reduce risks, but also includes technological risks as one of the key issues countries need to address more effectively until 2030. The science and technology community thereby plays a key role to develop a comprehensive evidence base, including identifying knowledge and capacity gaps to address the new and fast changing risk landscape, as well as collaborate with other partners to develop innovative solutions to these challenges.

<https://www.preventionweb.net/disaster-risk/graf>
https://gar.unisdr.org/sites/default/files/reports/2019-05/full_gar_report.pdf
Chapter 4 on technology and data

Policy Briefs:

<https://council.science/current/news/isc-launches-policy-briefs-ahead-of-the-un-global-platform-on-disaster-risk-reduction>

https://council.science/cms/2019/05/ISC_Disaster-Loss-Data-In-Monitoring-The-Implementation-Of-The-Sendai-Framework_May-2019.pdf

<https://council.science/publications/achieving-risk-reduction-across-sendai-paris-and-the-sdgs>

Report of the Science and Policy Forum 2019, including session on DRR and technology:
https://www.preventionweb.net/files/globalplatform/5cf8c13f858eeRapporteur_on_the_Science_and_Policy_Forum_for_the_Implementation_of_Sendai_Framework_for_Disaster_Risk_Reduction.pdf

Global Science and Technology Roadmap 2019-2030
https://www.unisdr.org/files/45270_unisdrscienceandtechnologymap.pdf

Official Statement of the UN Major Group on Science and Technology at the Global Platform for Disaster Risk Reduction, May 2019:

<https://council.science/current/news/official-statement-by-the-scientific-and-technological-community-stc-major-group-global-platform-for-disaster-risk-reduction-2019-geneva-switzerland>

Guidance for Policy Makers and the science community:

<https://www.preventionweb.net/publications/view/65182>

On the role of Science and Technology in helping Governments achieve risk-informed sustainable development:

- <https://www.unisdr.org/archive/58896>
- <https://www.preventionweb.net/organizations/27123>

2. Can you provide examples of STI policies/projects/initiatives intended to promote and give directionality to technological change to make it work for inclusive and sustainable development? Are there policies/projects/initiatives that mitigate the potential negative effects of rapid technological change on inequality? Are there any of these policies/projects/initiatives directed to women, youth, people with special needs or other groups facing specific challenges? How have the policies targeted inequalities? What are the challenges confronted in implementing these policies/projects/initiatives?

Covering man-made as well as natural hazards, the Sendai Framework for Disaster Risk Reduction expanded the scope of disaster risk reduction to biological, environmental, geological, hydrometeorological and technological hazards, calling on a multi-hazard approach to disaster risk reduction. The Sendai Hazards Definitions and Classification Review, co-facilitated by the United Nations Office for Disaster Risk Reduction (UNDRR) and the International Science Council (ISC), is tasked with developing new hazard definitions and classifications, and seeks input from stakeholders to ensure the list is robust, and reflects the full spectrum of local and regional terminology.

<https://council.science/sendai-hazard-review>

The international community, and particularly CSTD and STI Forum, should take a lead in promoting the integration of a broad risk lens through the implementation of the Sendai Framework for DRR into the deliberations of countries in implementing the 2030 Agenda. There is several ongoing initiatives which aim to provide the evidence and guidance to countries for a comprehensive approach to risk, such as the UNDRR facilitated Global Risk Assessment Framework (GRAF):

The Global Risk Assessment Framework (GRAF) aims to improve the understanding and management of current and future risks, at all scales, to better manage uncertainties and mobilise people, innovation and finance by:

Fostering interdisciplinary systems thinking, with shared metrics and shared understanding. Enabling the identification of anomalies and precursor signals, as well as the correlations and dependencies of risks and actors to enable decision makers to act. By providing actionable insights, tools and demonstrations at relevant scales to decision makers on a timely basis the GRAF can build collective intelligence to steer societies towards the shared metrics of the 2030 Agenda, the Sendai Framework, the Paris Agreement and the New Urban Agenda.

Objectives

- To improve understanding of complex risk and concatenating vulnerabilities in disaster environments.
- To provide decision makers with actionable insights and access to products, tools, demonstrations and scenarios at all scales (spatial and temporal) to better understand

positive, negative, direct, indirect, intended, unintended as well as short, long term systems impacts and consequences to prevent risk creation, manage and reduce existing risk, including systemic risk, transition risks and emerging risks accounting for values & risk perceptions, trade-offs of users

- To support decision-makers to maximise synergies across the implementation monitoring, follow up and review, as well as achievement of the targets and deliverables of the 2030 Agenda, the Paris Agreement, the New Urban Agenda and the Sendai Framework
- To build, and increase trust and confidence in, multi-sectoral risk assessments in an inclusive, evidence informed, open process, building on existing processes and data to the greatest extent possible
- To foster a culture of inclusive, collaborative, and proactive behaviour based on interdisciplinary systems thinking and decision science
- To mobilize finance and de-risk investments to enable risk-informed sustainable development

<https://www.preventionweb.net/disaster-risk/graf>
<https://www.unisdr.org/archive/58772>

Country examples:

South Korea highlighting the potential of technology for effectively reducing risks

“There are numerous DRR technologies. However, technology and development will fail if civic participation is not core,” said Dr. Young-Seok Kim, Director of Institute of Disaster Management and Public Safety, POSTECH

<https://www.unisdr.org/archive/51043>

Senegal and technology for DRR: <https://www.unisdr.org/archive/50234>

Uganda: Use of drones for refugee resilience: <https://www.unisdr.org/archive/49268>

Armenia: Successful use of technologies to reduce risks: <https://www.unisdr.org/archive/47852>

Report of the 2nd Multi Hazard Early Warning Conference in May 2019 closed with a strong focus on the role that governance must play in ensuring the effectiveness of early warnings and underlined the importance of collaboration when making the switch from single hazard to multi-hazard warnings. “Innovation must rely on traditional wisdom because disasters strike very fast and go beyond what technology can deal with” (Dwikorita Karnawati, head of Indonesia’s Meteorological, Climatological and Geophysical Agency (BMKG). Any multi-hazard early warning system has to be simple and adaptable, and it has to properly address indigenous knowledge. Authorities often do not take into account that local communities have their own early warning systems. Accordingly, it is important to forge partnership between the scientific community, governments, humanitarian community and the general public in order to create multi-hazard early warning systems that are usable, useful and used, and that motivate people to participate in them effectively.

<https://www.unisdr.org/archive/65421>

Importance of Earth Observation Data to safeguard the achievement of the SDGs:
<https://www.unisdr.org/archive/61578>

2. Can you provide examples of innovative initiatives in partnership with (or by) the private sector in/from your country that harnesses frontier technologies for inclusive and sustainable development? What are the innovations in terms of the use of technology? What are the innovations in terms of business models?

EXAMPLES:

Partnership between the UN Office for Disaster Risk Reduction (UNDRR), the European Centre of Excellence for Countering Hybrid Threats (Hybrid CoE) and the Ministry of the Interior for Finland to develop a new stress test tool that will help countries understand and improve their ability to reduce risk of hybrid threats and cascading disaster scenarios.

<https://www.unisdr.org/archive/66419>

The United Nations Office for Disaster Risk Reduction and KLP, Norway's largest pension company, partnership to geo-tag financial investments against vulnerability to disaster and climate risk.

<https://www.unisdr.org/archive/65226>

Use of Science and Technology for Resilient Infrastructure

<https://www.unisdr.org/archive/58997>

Risk informed private sector investment and the role of technology

<https://www.unisdr.org/archive/65506>

OnceConcern, a partner of UNDRR, focuses on predicting and quantifying the impact of natural disasters, using machine learning to build more resilient businesses, infrastructure, and global communities. In one platform, Oneconcern combines physical science with the power of AI, to quantify impact and map critical dependencies of natural disasters, driving resilience among companies and communities. Innovative examples like these can help countries and the international community to better, comprehensively and more effectively address risks and build resilience for sustainable development and prosperity for all.

www.Oneconcern.com

4. What are the actions that the international community, including the CSTD and STI Forum, can take to contribute to maximize the benefits associated to rapid technological change and mitigate the risk of these technologies widening or creating new inequalities within and across countries? Can you give any success stories in this regard?

The international community, and particularly CSTD and STI Forum, should take a lead in promoting the integration of a broad risk lens through the implementation of the Sendai Framework for DRR into the deliberations of countries in implementing the 2030 Agenda. For this, we need stronger cross-sectoral and multistakeholder approaches to risk. Risk reduction has to become a cornerstone of focus within the whole Government and all stakeholder groups. Ministries of science and technology have a key role to play as scientific evidence, communicated well and broadly available, is key for the development of policies and strategies at the national and local levels in support of a stronger evidence base for risk reduction action by all decision-makers. Target E) of the Sendai Framework, which calls on countries to develop and update national and local disaster risk reduction strategies, closely connected to development, climate and finance strategies, by 2020 is a key driver for such action.

5. Could you suggest some contact persons responsible for policies related to rapid technological change and its impact inequality as well as any experts from your Agency, academia, private sector, civil society or government dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

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6. Do you have any documentation, references, or reports on the specific examples on the priority theme in your country or region?

See above