



Governance for the **Sustainable Development Goals** Capacity Development Curriculum

Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

Course Introduction and Overview



Equipping Public Servants with the Capacities to Implement the SDGs

The **2030 Agenda for Sustainable Development** recognizes the need to build peaceful, just and inclusive societies that provide equal access to justice. It calls for societies based on respect for human rights (including the right to development), on effective rule of law and good governance at all levels and on effective, accountable and inclusive institutions, as elaborated in Sustainable Development Goal 16.

The **11 Principles of Effective Governance** for Sustainable Development, developed by the UN Committee of Experts on Public Administration and endorsed by the Economic and Social Council (ECOSOC) in 2018 highlight the need for pragmatic and ongoing improvements in national and local governance capabilities to reach the SDGs. One of the Principles of Effective Governance is competence. A competent and effective public service with well-motivated and professional public servants is at the center of success in implementing government policies and programs related to the 2030 Agenda and the SDGs, including in delivering services to those left furthest behind. Without a dedicated effort to help governments mobilize and develop the knowledge and capacities of public servants at all levels, progress on the SDGs may be undermined.



"The pandemic has provided us with an important moment to reflect on two key issues: How to better support public servants in their work and how to build institutional resilience in the public sector so that we can better meet such challenges in the future." Mr. Zhenmin Liu, Under-Secretary-General for Economic and Social Affairs on the occasion of UN Public Service Day 2020



VISION

The Curriculum on Governance is a comprehensive set of training of trainers capacity development toolkits, which contain ready-to-use training material on key governance dimensions needed to advance the implementation of the SDGs. By facilitating training of trainers, the Curriculum can help equip public servants with the knowledge and capacities to effectively implement the SDGs. The Curriculum's training material can be used to run face-to-face and online training workshops at national and local government levels.

GOAL

The Curriculum's goal is to promote critical understanding of sustainable development issues, enhance governance capacity, strengthen public servants' awareness of their active role in contributing to the achievement of the SDGs and develop the knowledge and capacities required to implement the 2030 Agenda for Sustainable Development. The capacity development training workshops intend to support concrete outcomes and lasting impact.

STRUCTURE

The Curriculum on Governance for the SDGs is composed of a number of training of trainers toolkits. They have been developed in a holistic way and are complementary. They are structured around modules that include readings, self-assessment situation analysis, application of theories learned to concrete issues and challenges, priority setting exercises, cooperative and experiential learning through case studies, action planning and other activities that can assist countries in advancing governance transformation for sustainable development.





METHODOLOGY

The Curriculum is designed and implemented through the engagement of governments and schools of public administration. Its methodology is based on key building blocks in line with the UN Secretary General’s vision:

- Promoting systems thinking;
- Leveraging the potential of ICT and digital government;
- Fostering collaboration and co-creation;
- Driving institutional transformational change;
- Focusing on impact;
- Enhancing flexibility.

The Curriculum provides methodologies and approaches that can advance knowledge and assist governments in developing capacities at the individual, organizational and institutional/societal level, to drive the transformational change needed to implement the 2030 Agenda. The toolkits are intended to be used in interactive, results-oriented and engaging training courses. Modules from various toolkits can be combined based on a country's needs. The training toolkits will be continuously updated and expanded based on the feedback received from schools of public administration and governments. They will become “living documents”.





GLOBAL INITIATIVE ON GOVERNANCE FOR THE SDGs

UN DESA's Division for Public Institutions and Digital Government (DPIDG), which is leading the UN Programme on Public Administration, coordinates the **Global Initiative on Developing Capacities of Public Servants for SDG implementation**. The Initiative is in line with the ECOSOC Principles of Effective Governance for Sustainable Development. It aims at developing the capacities of governments and public servants (in terms of knowledge, skills, attitudes, leadership competences and mindsets) to support the implementation of the SDGs.

The Global Initiative has led to the establishment of **Regional Task Forces of Schools of Public Administration, Management Development Institutes** and human resources managers in the public sector. The Regional Task Forces have contributed to the overall design of the **Curriculum on Governance for the SDGs**, which was developed by UN DESA/DPIDG. Every year new toolkits will be added depending on the demand and needs of governments and schools of public administration, and in close collaboration with the Resident Coordinators system and relevant partners.

UN DESA/DPIDG's CAPACITY DEVELOPMENT FOCUS

UN DESA leads the development arm of the United Nations Secretariat. With a mission to promote development for all, the Department provides thought leadership, capacity development, and encourages multilateral partnerships to empower countries and people to achieve their development goals. It also brings the UN together on sustainable development to facilitate greater complementarity and coherence.

The overall capacity development mission of the UN DESA/DPIDG is to support governments in strengthening their capacities to translate the SDGs and other internationally agreed goals into institutional arrangements, strategies and programmes for effective service delivery and participatory, accountable and inclusive decision-making processes.

The Division's capacity development efforts are geared towards supporting developing countries, with a focus on Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS).



BENEFICIARIES

The Curriculum and its training toolkits can be used in different ways by:

- **Governments and schools of public administration** or institutions with training mandates. Trainers have access to the material produced to mainstream the courses and modules into their own curricula, depending on their specific needs.
- **Resident Coordinators, UN agencies and Regional Commissions** to conduct national capacity development workshops.
- Members of the United Nations Public Administration Network (UNPAN).
- **UN DESA** to conduct regional and national workshops, upon governments' request, and in collaboration with the United Nations Regional Commissions and Resident Coordinators.





PUBLIC SERVANTS' MINDSETS TO IMPLEMENT THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

UN DESA | DPIDG
Training of Trainers | English



INNOVATION AND ICT FOR PUBLIC SERVICE DELIVERY

UN DESA | DPIDG
Training of Trainers | English



TRANSPARENCY, ACCOUNTABILITY AND ETHICS IN PUBLIC INSTITUTIONS

UN DESA | DPIDG
Training of Trainers | English



GOVERNMENT INNOVATION FOR SOCIAL INCLUSION OF VULNERABLE GROUPS

UN DESA | DPIDG | UNPOG
Training of Trainers | English



INSTITUTIONAL ARRANGEMENTS AND GOVERNANCE CAPACITIES FOR POLICY COHERENCE

UN DESA | DPIDG
Training of Trainers | English



RISK-INFORMED GOVERNANCE AND INNOVATIVE TECHNOLOGY FOR DISASTER RISK REDUCTION AND RESILIENCE

UN DESA | DPIDG | UNPOG
Training of Trainers | English



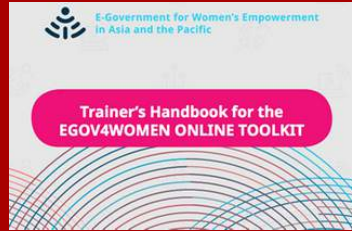
EFFECTIVE NATIONAL TO LOCAL PUBLIC GOVERNANCE FOR SDG IMPLEMENTATION

UN DESA | DPIDG | UNPOG
Training of Trainers | English



DIGIT4SD: DIGITAL GOVERNMENT IMPLEMENTATION

UN DESA | DPIDG
Training of Trainers | English



E-GOVERNMENT FOR WOMEN'S EMPOWERMENT

UN ESCAP & UN DESA | DPIDG | UNPOG
Training of Trainers | English



INTEGRATED POLICIES AND POLICY COHERENCE FOR THE SDGs

UNITAR, ECLAC & UN DESA | DPIDG | DSDG
Training of Trainers | English





Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

- This Training Toolkit is part of UN DESA's overall Curriculum on Governance for the SDGs, developed by its Division for Public Institutions and Digital Government (DPIDG).
- The Toolkit is interlinked with all the other Training Toolkits of UN DESA as part of the Curriculum on Governance for the SDGs
- The Training Toolkit mainly focuses on Risk-informed Governance and Leveraging Innovative Technology for Disaster Risk Reduction and Resilience building.





Changing Mindsets in Public Institutions to Implement the 2030 Agenda for Sustainable Development

UN DESA | DPIDG
Training of Trainers | English



Transparency, Accountability and Ethics in Public Institutions

UN DESA | DPIDG
Training of Trainers | English



Institutional Arrangements and Governance Capacities for Policy Coherence

UN DESA | DPIDG
Training of Trainers | English



Integrated Policies and Policy Coherence for the SDGs

UNITAR | UN DESA | DPIDG | DSDG
Training of Trainers | English



Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

UN DESA | DPIDG | UNPOG
Training of Trainers | English



[Access the Toolkit](#)



E-Government for Women's Empowerment

UNESCAP | UN DESA | DPIDG
Training of Trainers | English



Effective National to Local Public Governance for SDG Implementation

UN DESA | DPIDG | UNPOG
Training of Trainers | English



Government Innovation for Social Inclusion of Vulnerable Groups

UN DESA | DPIDG | UNPOG
Training of Trainers | English



Innovation and Digital Government for Public Service Delivery

UN DESA | DPIDG
Training of Trainers | English

[Access the Toolkit](#)



DiGIT4SD: Digital Government Implementation

UN DESA | DPIDG
Training of Trainers | English





Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

Related SDGs: SDG 9, 11, 13, 14, 15, 16

Keywords: Risk-informed Governance, Innovation, Frontier Technologies, Resilience, Competencies

Language: English

Learning Outcomes:

The training toolkit provides ready-to-use training material to support UN Member States' efforts to strengthen country-level capacities to promote government innovation for disaster risk reduction and resilience, with a specific focus on Least Developed Countries (LDCs), Land-Locked Developing Countries (LLDCs) and Small Island Developing States (SIDS).

Upon successful completion of the course, learners will:

- Apply concepts on how to establish public governance frameworks and close technology gaps for disaster risk reduction and sustainable development in vulnerable states;
- Be equipped with knowledge of how digital government solutions can be implemented to promote public service innovation for resilience;
- Define a strategy and roadmap on how to promote government innovation and expand the adoption of frontier technologies for disaster risk reduction and resilience;
- Mobilize the means of implementation to leverage innovations in technology through public programmes and finance and technology transfer; and
- Set up plans to measure progress on disaster risk reduction and resilience.





Methodology:

Using a cascade training methodology, this toolkit is a set of comprehensive and fully customizable training materials, which includes:

- an overall training manual, facilitators guide and PPT.
- group work, practical exercises, and case study scenario discussions to facilitate peer-to-peer learning and open exchanges.

The toolkit can be used as direct training or training of trainers.

Target audience:

The target audience for this toolkit are public institutions leading the implementation of the SDGs and the Sendai Framework for DRR, including schools of public administration and related institutions which can scale up the training materials as well as contextualize the training for national use.

Access the toolkit: The toolkit is free of charge.





Syllabus

The toolkit is comprised of the following modules and sessions that can be used to conduct a regional or national training:

Module 1.0: Science, Technology, and Innovation in Public Governance for DRR and Resilience

Module 1.1: Risk-Informed Governance for DRR and Resilience

Module 1.2: Science, Technology, and Innovation for Risk-informed Governance

Module 1.3: Global, Regional, and National Efforts to Advance Innovative Technologies Use in DRR

Module 1.4: Risk-informed Governance and Innovative Technology for Public Health Emergencies

Module 2.0: Practical and Planned Application of Emerging Technology and Innovation for DRR and Resilience

Module 2.1: Extending Our Reach and Expanding Our Capabilities

Module 2.2: Changing How We Make and Acquire Things

Module 2.3: Connecting People, Things, and Technology

Module 2.4: Improving Data Analysis and the Presentation of Information

Module 2.5: Humans as a Resource

Module 3.0: Implementation of Emerging Technologies and Innovation for DRR and Resilience

Module 3.1: Implementing and Financing Technology Solutions

Module 3.2: Technology Gaps and Challenges to Implementation of Innovative Technologies for DRR

Module 3.3: Measuring Progress: Monitoring and Evaluation of Implementation Efforts

Annex: Pre and Post Test Self Assessment, Pre-Event Evaluation Questionnaire, and Action Planning Exercise for follow up actions





Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

Time	Day 1	Day 2	Day 3	Day 4	Day 5
Modules	Science, Technology, and Government Innovation in Public Governance for DRR and Resilience	Practical and Planned Application of Emerging Technology and Government Innovation for DRR and Resilience	Practical and Planned Application of Emerging Technology and Innovation for DRR and Resilience	Practical and Planned Application of Emerging Technology and Innovation for DRR and Resilience	Implementation of Emerging Technologies and Government Innovation for DRR and Resilience
Morning Session	Welcome & Course Introduction <i>Introduction of Speakers and Participants; Programme Overview; Icebreaker Activity (9:00-10:00)</i>	Module 1.4: Risk-informed Governance and Innovative Technology for Public Health Emergencies <i>Presentation (9:00-9:45) Group Work (9:45-10:00)</i>	Module 2.2: Changing How We Make and Acquire Things <i>Presentation (9:00-10:00) Group Work (10:00-11:00)</i>	Module 2.4 (Continued) <i>Presentation (9:00-9:30) Group Work (9:30-10:00)</i>	Module 3.1: Implementing and Financing Technology Solutions <i>Presentation (9:00-11:00) Group Work (11:00-12:00)</i>
	Module 1.1: Risk-Informed Governance for DRR and Resilience <i>Presentation (10:00-11:00) Group Work (11:00-12:00)</i>	Module 2.1: Extending Our Reach and Expanding Our Capabilities <i>Presentation (10:00-11:00) Group Work (11:00-12:00)</i>	Module 2.3: Connecting People, Things, and Technology <i>Presentation (11:00-11:30) Group Work (11:30-12:00)</i>	Module 2.5: Humans as a Resource <i>Presentation (10:00-11:00) Group Work (11:00-12:00)</i>	
Lunch Break					
Afternoon Session	Module 1.2: Science, Technology, and Government Innovation for Risk-Informed Governance <i>Presentation (13:00-14:30) Group Work (14:30-15:30)</i>	Site Visit Innovative Technologies for DRR and Resilience in Practice (13:00-17:00)	Module 2.3 (Continued) <i>Presentation (13:00-14:00) Group Work (14:00-15:00)</i>	Big Data Analysis Training (13:00-17:00)	Module 3.2: Technology Gaps and Challenges to Implementation of Government Innovation for DRR and Resilience <i>Presentation (13:00-14:00) Group Work (14:00-15:00)</i>
	Module 1.3: Global, Regional, and National Efforts to Advance Innovative Technologies Use in DRR and Resilience <i>Presentation (15:30-16:30) Group Work (16:30-17:00)</i>		Module 2.4: Improving Data Analysis and the Presentation of Information <i>Presentation (15:00-16:00) Group Work (16:00-17:00)</i>		Module 3.3: Measuring Progress: Monitoring and Evaluation of Implementation Efforts (15:00-16:00)
	Wrap-up & Reflection (17:00-17:15)	Wrap-up & Reflection (17:00-17:15)	Wrap-up & Reflection (17:00-17:15)	Wrap-up & Reflection (17:00-17:15)	Course Evaluation by Participants & Closing Session (16:00 -17:00)



Learning Outcomes

At the conclusion of the introductory session, participants are expected to enhance their understanding on the:

- Administrative overview (policies and emergency procedures)
 - Course purpose, specific learning outcomes, and expectations
 - Course structure and instructional format
-
- **Format**
 - Presentations
 - Group work, practical exercises, and case study scenario discussions to facilitate peer-to-peer learning and open exchanges



■ Evaluation/Assessment Methods

- Facilitators observation of participants involvement in the discussions
- Facilitator-led discussion to ensure that participants understand both how performance will be evaluated and how that evaluation will impact Participants' outcomes
- Participant completion of a group hands-on activity
- Pre and Post Test Self Assessment, Pre-Event Evaluation Questionnaire, and Action Planning Exercise for follow up actions



Introduction of Participants and Facilitating Team

- **Each participant introduces themselves by:**
 1. Name and Title
 2. Organization and Country
 3. Expectations for the training workshop
 4. Objective for taking part in the training
 5. Understanding on the concept of risk-informed governance and innovative technology for DRR
 6. Specific capacity challenges faced by participants regarding DRR and resilience



■ Resources for the Training

1. Facilitator's guide
2. Session presentation slides
3. Laptop with presentation software installed
4. Projection unit and Projection Screen or Smart Board)
5. Chalkboard (and chalk), whiteboard (and dry erase markers), or easel and easel paper (and permanent markers)
6. One of each of the following items per Participant:
 - Toolkit
 - Black ink pen
 - Notebook or paper

Contact us for any requests for further capacity development support



The toolkit is intended to be used in face to face or virtual capacity development trainings. To consider follow-up support, we encourage national and local governments to request further capacity development assistance by sending an email to Juwang Zhu, Director, Division for Public Institutions and Digital Government (DPIDG) of United Nations Department of Economic and Social Affairs (UN DESA) at unpan@un.org. This is the Decade of Action, and at the UN we are committed to helping governments achieve the Sustainable Development Goals and leave no one behind.

Acknowledgements

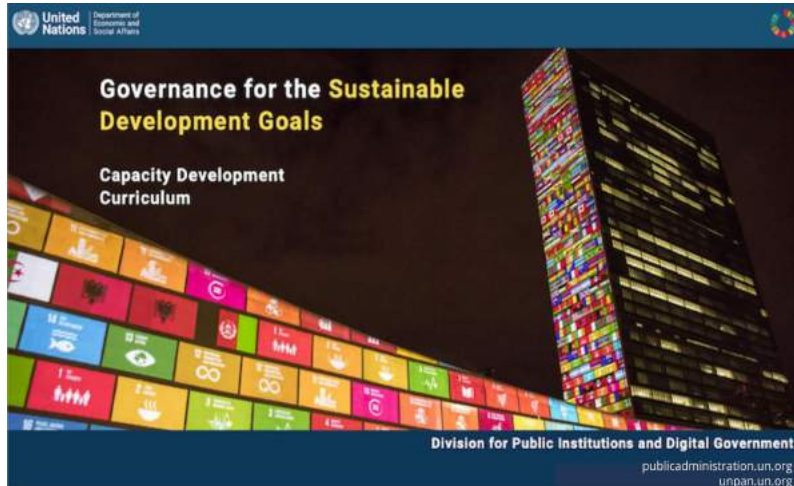
The Curriculum contents, including this toolkit, were developed under the responsibility of Juwang Zhu, Director, DPIDG, and led by Adriana Alberti, Chief, Programme Management and Capacity Development Unit, who coordinated a team of UN staff and experts.

The toolkit was developed under the responsibility of Bokyun Shim, Head of the United Nations Project Office on Governance (UNPOG). Keping Yao, Senior Governance and Public Administration Expert, provided advice on the development of the toolkit. Samuel Danaa, Associate Capacity Development Expert, was the lead coordinator of the Training of Trainers Toolkit on Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience, with substantive contributions from Damon P. Coppola, Principal, Shoreline Risk, USA.

The toolkit was peer reviewed by Sanjay Srivastava, Chief, Disaster Risk Reduction, ICT and Disaster Risk Reduction Division, UNESCAP, Thailand; Aslam Alam, PhD, Chairman and Executive Director, Bangladesh Institute for Information Literacy and Sustainable Development; Sylvan O. Odidi, Research Fellow, Kenya School of

Government, Kenya; Akaninyene Obot, Nnamdi Azikiwe University, Nigeria; Naomi Simanihuruk, Bengkulu Production Technique Assessment and Application Center, Ministry of Village DDRT, Indonesia; Rajkumar Prasad, CEO, Commonwealth Centre for e-Governance, India; Gary Martin Osorio Soto, UNDP, Peru; Sheuly Akter, DRR, CCA Practitioner, International Federation of Red Cross and Red Crescent Societies (IFRC), Bangladesh; Ugoji Eze, CEO, Renew Our Earth, United States; Adama Bamba, Vice Chairperson/ Priority 3 Representative, Africa Youth Advisory Board on DRR (Under AU Commission), Côte d'Ivoire.

The Curriculum communication and outreach activities were coordinated by Anni Haataja-Beerli and the communication material was designed by Gregory Mark McGann. Huiwen Tan provided support in finalizing the toolkits and organizing the material for the United Nations Public Administration Network (UNPAN) Website.





United Nations

Department of Economic and Social Affairs

Division for Public Institutions and Digital Government
United Nations Project Office on Governance

www.unpog.org

CONNECT WITH US

Follow us on Facebook, Twitter, and LinkedIn to keep up to date on events, schedules, news, and more.





Thank you!

SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	

Risk-informed Governance and Innovative Technology for Disaster Risk Reduction and Resilience

Day 1: Science, Technology, and Government Innovation in Public Governance for DRR and Resilience

Welcome and Course Introduction	
9:00-10:00	<p>In this opening session, participants and facilitating team introductions are undertaken. The facilitating team explains to participants how the course will be administered, which includes an overview of program policies and facility emergency procedures. The facilitator will also explain the course structure, format, and evaluation methods, and provide a summary of the topics and activities that will be included in the five days of facilitation that follow.</p> <ul style="list-style-type: none">· Introduction of Speakers and Participants; Programme Overview; Icebreaker Activity



10:00-12:00	Module 1.1: Risk-Informed Governance for DRR and Resilience
Content	<p>Session 1 introduces, defines, and explains at both the theoretical and technical levels emergency and disaster risk management and resilience building efforts. Participants are to reflect on what and where data informs risk planning and how risks are integrated into current planning and decision-making. Participants also reflect on the entities in government that are informed about resilience and risk, and how these government entities coordinate with central planning and decision-making, as well as SDGs institutional coordination for resilience. Participants consider how public sector entities identify hazards, assess, and manage risk, and respond to and recover from disasters. Public alert and warning are also covered in recognition of the significant contributions to these functions that have emerged on account of new technologies and innovations. The lessons contained in this session serve to establish a baseline understanding of the various foci of technology and innovation applications, whether that be identification and monitoring of risk, detection, notification, and assessment of emergency and disaster situations, and response and recovery support during and in the aftermath of actualized events. In this session, participants are also to share and learn about their specific country risk profiles according to PreventionWeb country data. Risk-informed governance and decision-making are addressed.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> · Natural, Technological, and Intentional Hazards · Measuring and Mapping Exposure · Event Scale and Size · Economic Vulnerability · Sources of Data · Hazard Monitoring Methods · Motivation for Adopting New Technologies
Learning Outcomes	<ul style="list-style-type: none"> · Ability to explain how an adverse event progresses from emergency to catastrophe. · Ability to list and define the major components of comprehensive disaster management · Understanding of the range and diversity of functions of government that support disaster risk management and how technologies can streamline risk information across government. · Ability to explain how innovative technologies improve the disaster management planning process, and how official and citizen disaster preparedness efforts might be improved as a result of new technology applications.
Key Readings	<ul style="list-style-type: none"> · Izumi, T., Shaw, R., Ishiwatari, M., Djalante, R., Komino, T. 2019. 30 Innovations for Disaster Risk Reduction. IRIDeS, Keio University, the University of Tokyo, UNU-IAS, and CWS Japan, Japan, http://bit.ly/2OkCMWg. · Center for Sustainable Community Design. n/d. Types of Mitigation Actions. Beyond the Basics. http://bit.ly/2H7LGSn. · International Telecommunications Union (ITU). 2019. Disruptive Technologies and Their Use in Disaster Risk Reduction and Management. ITUGET 2019 Background Document. http://bit.ly/2Lu3j2G · Inform. 2019. Inform Global Risk Index: Results 2019. http://bit.ly/38lztQn. · Eastern Kentucky University. n/d. When Disaster Strikes: Technology's Role in Disaster Aid Relief. Blog. http://bit.ly/2OSoGgy. Offline Document: http://bit.ly/32ACmjb
Schedule	10:00-11:00: Presentation 11:00-12:00: Work Group
12:00-13:00	Lunch Break



13:00-15:30	Module 1.2: Science, Technology, and Government Innovation for Risk-informed Governance
<p>Content</p>	<p>This session provides a foundational context for the application of technology in emergency and disaster management, and for the enhancement of resilience. Instructional materials allow participants to better conceptualize the purpose and nature of technological innovation as it applies in a theoretical sense and as it supports the achievement of societal and public sector goals including sustainable development. A conceptual basis of data and information, both of which play important roles in the furtherance of science and the adoption of new technologies and innovations, is provided. The importance of new technologies in collecting data and informing decision-making in public governance and planning in disaster prevention phases and risk mitigation is discussed. Participants are given a first look at the limitations of technology use and technological innovation, the challenges encountered, and risks faced or created.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • The availability and application of technologies used in participants’ own work, and how this has changed over their career. • The benefits that participants have gained and the costs that have been incurred as technologies are introduced and adopted in their professions. • Information and Communications Technologies (ICTs). • Links between e-Government, Smart Cities, and emerging technologies adoption. • e-Government implementation considerations. • The impact of new technologies, and the readiness of governments to implement them. • Macro-level changes that are occurring in the disaster risk management field as a result of technological innovation. • Different types of knowledge. • Different types of data and information used in participants’ work. • The limitations, challenges, and risks that are key to understanding and planning for new and emerging technologies. • Differences in access to technology. • Technology and innovation risks.
<p>Learning Outcomes</p>	<ul style="list-style-type: none"> • Ability to define science and technology, and innovation, and to understand what qualifies a system or solution as being “emerging” or “disruptive”. • Ability to explain what resilience is, and how it applies to individuals, communities, organizations, and societies. • Increased understanding of the ways science and technology may be used to support society and governance, including the pursuit of sustainable development goals. • Knowledge of the technological solutions available to support digital government and public service innovation for DRR • Ability to explain what resilience is, and how it applies to individuals, communities, organizations, and societies.
<p>Key Readings</p>	<ul style="list-style-type: none"> • United Nations. 2019. The Role of Science, Technology, and Innovation in Building Resilient communities, Including Through the Contribution of Citizen Science. Economic and Social Commission. Commission on Science and Technology for Development. May 13-17. Geneva. http://bit.ly/2MIB46z • United Nations. 2018. E-Government Survey 2018: Gearing E-Government to Support Transformation Towards Sustainable and Resilient Societies. Department of Economic and Social Affairs. New York. http://bit.ly/2SsKvl4 [Chapter 1]
<p>Schedule</p>	<p>13:00-14:30: Presentation 14:30-15:30: Work Group</p>



15:30-17:00	Module 1.3: Global, Regional, and National Efforts to Advance Innovative Technologies Use in DRR and Resilience
Content	<p>Improving technological innovation in support of disaster risk reduction and sustainable development, and expanding access to the products of innovation, are complementary efforts that play a central role in the Sendai Framework and the 2030 Agenda for Sustainable Development. In this session, participants learn how these and other efforts support the expanded use of technology in support of evidence-based policy making and risk-informed governance for resilience. Some of the leading challenges that exist (notably with regards to the Small Island Developing States (SIDS), the Landlocked Developing Countries (LLDCs), and the Least Developed Countries (LDCs)) are introduced. The practice of developing science and technology national strategies and how these are integrated into national development strategies is included.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • Scientific and Technical Advisory Group (STAG) Report Recommendations • Focus of S&T in the Sendai Framework • Linking Development and Disaster Resilience • Information Sharing Experience • Recommendations of the UN Commission on Science and Technology for Development (CSTD) • Universality of the Strategy for STI in Africa (STISA-2024) Pillars • Good Practices for Advancing STI National and Local Strategies
Learning Outcomes	<ul style="list-style-type: none"> • Ability to describe how the 2030 Agenda for Sustainable Development and the Sendai Framework address the need for scientific and technological innovation. • Enhanced capacity to promote or support creation and/or advancement of national science and technology strategies.
Key Readings	<ul style="list-style-type: none"> • UNDRR. 2019. The Science and Technology Roadmap to Support Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2013. http://bit.ly/2mkomcW. • Shaw, R., L. Lu and F. Lian. 2017. Science Technology Plan for Disaster Risk Reduction: Asian and Pacific Perspectives. ICSU and IRDR. Beijing, China. http://bit.ly/2YLqhlL • Asian Science and Technology Conference for DRR. 2018. Science-Policy Dialogue for Implementation of the Sendai Framework. UNISDR. April. http://bit.ly/2Zzp98f. • United Nations. 2015. Strengthening the Role of Science and Technology for Disaster Risk Reduction in the Arab Region. United Nations Office for Disaster Risk Reduction. Geneva. http://bit.ly/2YjFBni
Schedule	<p>15:30-16:30: Presentation</p> <p>16:30-17:00: Work Group</p>
17:00-17:15	Day 1 Wrap-up and Reflection



Day 2: 9:00-10:00	Module 1.4: Risk-informed Governance and Innovative Technology for Public Health Emergencies
Content	<p>Public health is constantly threatened by a wide range of hazards and disasters. Despite measures to prevent them, emergencies of varying types, scales and consequences still occur. Emergency preparedness is a continuous process in which action, funding, partnerships, and political commitment at all levels must be sustained. The overall responsibility for safeguarding, maintaining, and restoring the health and wellbeing of communities lies with national governments. Strengthening governance capacities and leveraging innovative technologies is critical for public health emergencies. This session presentation and discussions will focus on the role of risk-informed governance and innovative technology for public health emergencies including COVID-19 pandemic.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • Principles for Public Health Emergency Preparedness • Strengthening Governance Capacity for Public Health Emergencies • Data-driven Decision Making for Public Health Emergencies • Digital Government for Public Health Emergencies • Innovative Practices in Governance Innovation for COVID-19 Response and Managing Public Health Emergencies
Learning Outcomes	<ul style="list-style-type: none"> • Increased understanding on the role of Risk-Informed Governance and Innovative Technologies for Public Health Emergencies • Understand the contribution of Science, Technology and Innovation to DRR in the context of COVID-19. • Strengthened capacity on the entire process of preparedness, prevention, response and post-recovery to respond to public health emergencies including COVID-19 pandemic.
Key Readings	<ul style="list-style-type: none"> • Albris, K., Lauta, K. C., & Raju, E. (2020). Strengthening governance for disaster prevention: the enhancing risk management capabilities guidelines. International journal of disaster risk reduction, 101647. https://www.sciencedirect.com/science/article/abs/pii/S221242091930771X • The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda (https://www.post2020hlp.org/wp-content/uploads/docs/UN-Report.pdf) • United Nations. 2020. COVID-19 Response. 5 ways the UN is fighting ‘infodemic’ of misinformation. https://www.un.org/en/un-coronavirus-communications-team/five-ways-united-nations-fighting-%E2%80%98infodemic%E2%80%99-misinformation • United Nations Secretary-General’s (IEAG), A Word That Counts: Mobilizing The Data Revolution for Sustainable Development, November 6, 2014 (www.undatarevolution.org/report/) • United Nations Global Pulse (2013). Big Data for Development: A primer. https://beta.unglobalpulse.org/wp-content/uploads/2013/06/Primer-2013_FINAL-FOR-PRINT.pdf • UN/DESA Policy Brief #61: COVID-19: Embracing digital government during the pandemic and beyond. https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-61-covid-19-embracing-digital-government-during-the-pandemic-and-beyond/ • UN Women (2020). COVID-19: How to include marginalized and vulnerable people in risk communication and community engagement. https://reliefweb.int/sites/reliefweb.int/files/resources/COVID-19_CommunityEngagement_130320.pdf
Schedule	9:00-9:45: Presentation 9:45-10:00: Work Group
17:00-17:15	Day 1 Wrap-up and Reflection



Day 2: Practical and Planned Application of Emerging Technology and Government Innovation for DRR and Resilience

10:00-12:00	Module 2.1: Extending Our Reach and Expanding Our Capabilities
Content	<p>In this session, participants study a range of new technologies and innovations that are enabling public sector organizations to expand their sensing, planning, and operational capabilities. Unmanned vehicles, whether designed for aerial, terrestrial, or aquatic movement, are finding new application in almost every aspect of disaster risk management with examples including the remote study of land, water, and man-made features and facilities; the identification and monitoring of threatening hazards and conditions; the assessment of disaster damages and impacts; the expansion of information and communications technology (ICT) systems' reach; and the conduct of operational response and recovery tasks such as relief delivery. This relatively inexpensive and highly accessible technology has shown incredible potential across each of these areas, especially when coupled with advanced imaging (e.g., LiDAR) capabilities. Robotics, a grouping within which unmanned vehicles are often placed, includes a broad range of general and specialized operational capabilities that are helping to enhance disaster risk management capacities. Examples include search and rescue and access into environmentally hostile situations, environmental assessment, weather monitoring, and more. And through the use of increasingly sophisticated remote and in-situ imagery and sensing capabilities, planning and forecasting capabilities in support of DRR and resilience are moving at-risk and disaster-impacted communities towards more resilient futures.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • The benefits that may be gained through incorporation of unmanned vehicle technology in each emergency management phase (multiple discussions). • Features and attributes of robots that are particularly useful in the disaster setting. • Value of LiDAR Program Data • Benefits that may be gained through access to data collected using in-situ and remote sensing technologies, and the limits of such resources and systems.
Learning Outcomes	<ul style="list-style-type: none"> • Strengthened capacity to request and utilize imagery produced using in-situ and remote sensing systems in order to better reduce the risk of, plan for, respond to, and recover from disasters. • Ability to understand the current and planned capacity of robots and drones. • Capacity to recognize pre- and post-disaster scenarios where unmanned vehicle technologies, robotics, or in-situ and remotely-sensed imagery can provide informational or operational support.
Key Readings	<ul style="list-style-type: none"> • American Red Cross, et. Al. 2015. Drones for Disaster Response and Relief Operations. April. http://bit.ly/2VcAmdE. • Paganini, Marc, and Ivan Petiteville. 2018. Satellite Earth Observation in Support of the SDGs. European Space Agency. http://bit.ly/35Dim0X
Schedule	9:00-10:30: Presentation 10:30-12:00: Work Group
12:00-13:00	Lunch Break



13:00-17:00	Site Visit Innovative Technologies for DRR and Resilience in Practice
Content	Participants will visit a facility that utilizes one or more of the innovative technologies detailed in Module 3 (Innovative Technologies Overview).
Learning Outcomes	<ul style="list-style-type: none"> · Enhanced knowledge on innovative technologies for DRR and resilience in practice.
Schedule	13:00-17:00: Site visit
17:00-17:15	Day 2 Wrap-up and Reflection



Day 3: Practical and Planned Application of Emerging Technology and Innovation for DRR and Resilience

9:00-11:00

Module 2.2: Changing How We Make and Acquire Things

Content

In this session, participants explore how new technological advancements and innovations in manufacturing and construction are improving our abilities to prevent disasters from happening and recovering successfully from them when they do. Additive manufacturing, more commonly known as 3-D printing, offers an astounding range of support options for disaster risk management and resilience building efforts. The cost to 3-D printing technology has fallen to a point that enables access by almost any organization. With additive manufacturing capabilities, response organizations are finding there is less need to stockpile unique or as-needed items given these can be manufactured on site and can even be customized. An expanding range of raw materials that may be used for this form of manufacturing further expands the possible uses, including foods, medicines, and medical supplies. The scale of utility has likewise expanded as larger printers have been developed, with capabilities for the printing of vehicles and even homes now within the realm of possibility. Science, technology, and innovation have also improved the materials of construction themselves. Self-healing buildings, materials that alleviate natural forces, materials that produce energy, and others are improving mitigation options and increasing the prospects for community resilience. Utilization of new construction materials and techniques is helping to ensure that replacement and new buildings are better able to withstand future events, and robotics, 3-D printing, and other mechanisms are making the rebuilding process faster and more cost efficient.

Discussion Topics:

- Use of manufactured goods in the disaster context.
- Country-specific advantages and disadvantages related to additive manufacturing.
- The suitability of 3D printed homes.
- Innovative materials champions.
- Use of semi-permanent quick-setup shelters.
- Promoting research and development of new materials.

Learning Outcomes

- Ability to identify where access to 3-D printing technology will support planning and/or operations
- Enhanced knowledge about new construction materials and methods, including when and where they are appropriate, and the benefits gained through their application.

Key Readings

- OCHA. 2015. Shrinking the Supply Chain: Hyperlocal Manufacturing and 3D Printing in Humanitarian Response. <http://bit.ly/2Y9cJUI>.
- Kuckelhaus, Markus. 2016. 3D Printing and the Future of Supply Chains. DHL Trend Research. <http://bit.ly/2PgrGAb>.
- World Economic Forum. 2016. Shaping the Future of Construction: A Breakthrough in Mindset and Technology. Reference 220416. <http://bit.ly/32ZLHAs>.

Schedule

9:00-10:00: Presentation
10:00-11:00: Work Group



11:00-12:00	Module 2.3: Connecting People, Things, and Technology
Content	<p>The interconnectedness of people to people, people to things, and things to things, coupled with improved capacity to transfer information electronically, is changing how risks and disasters are managed. New communications technologies, namely fifth generation (5G) cellular network data transmission, are allowing devices to collect and transmit information on a previously-unimaginable scale. Expansion of existing technologies for new uses, as is occurring with SMS texting, is further improving crisis, emergency, and risk communication, including between citizen responders and their governments. Mesh networks are expanding the reach of existing infrastructure and helping to manage in situations where infrastructure doesn't exist or has been impacted by disasters. The nature of information collected is also expanding on account of the transmission capacity. New infrastructure systems and linkages are expanding access even in situations where traditional networks are nonexistent, damaged, or otherwise nonfunctional. Distributed ledger ('blockchain') technology, is also helping in this regard, namely through the improvement of availability and fidelity of disaster-related information, and in the process is solving many longstanding problems related to transparency and equitable relief and recovery as well as supporting more effective planning and disaster financing.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • The computer in your pocket. • Cloud computing versus e-Government. • How can cloud computing enhance disaster risk management? • What can and should be connected to the internet of things? • IoT-based training needs. • Disaster risk management uses of distributed ledger technology.
Learning Outcomes	<ul style="list-style-type: none"> • Ability to explain how 5G and IoT are improving hazard monitoring, alert, and warning. • Increased understanding of the information management and sharing capabilities afforded by new and emerging technologies. • Ability to incorporate distributed ledger technology into relief and recovery plans and policies.
Key Readings	<ul style="list-style-type: none"> • GSMA. 2017. Blockchain for Development: Emerging Opportunities for Mobile, Identity, and Aid. GSM Association. http://bit.ly/2LJJOIO. • World Economic Forum. 2019. Realizing the Internet of Things: A Framework for Collective Action. WEF White Paper. http://bit.ly/2oMrVto. • Eze, Kelechi G., Matthew N. O. Sadiku, and Sarhan M. Musa. 2018. 5G Wireless Technology: A Primer. Roy G. Perry College of Engineering, Texas A&M University. http://bit.ly/2ZboTNT • Ray, Partha Pratim, Mithun Mukherjee, and Lei Shu. 2017. Internet of Things for Disaster Management: State of the Art and Prospects. IEEE Access. October 12. http://bit.ly/2N3Oi74.
Schedule	11:00-11:30: Presentation 11:30-12:00: Work Group
12:00-13:00	Lunch Break
13:00-15:00	Module 2.3: Connecting People, Things, and Technology (Continued)
Schedule	13:00-14:00: Presentation 14:00-15:00: Work Group



15:00-17:00	Module 2.4: Improving Data Analysis and the Presentation of Information
Content	<p>Data and information are collected through myriad channels and means in advance of, during, and in the aftermath of a disaster, and new and innovative technologies are significantly expanding the pool of options. Once collected, data remains of little value without the capacity to assess, analyze, and report it in a manner that supports effective decision-making. In this session, participants look at how advanced computing capacity and software options are being used to analyze massive quantities of data collected on grand scales ('big data') to support decisionmakers, and how those same systems are enabling wider access to visualization of data and information usable even by practitioners with little to no training in geographic information systems use. Through artificial intelligence and machine learning, computers are expanding their utility in this regard. Advanced imaging in the form of virtual and augmented reality, is allowing information to be communicated and learning to occur in ways that improve cognition while reducing unnecessary risks to trainees and practitioners. These new technologies are increasing the conceptual capacity and forecasting abilities of planners and responders alike.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • Big Data in government. • Data sources and stakeholders. • Mobile phone data. • Local data partners. • New data for disaster risk management analysis. • The limits of artificial intelligence. • Risk acceptability for AI solutions. • Using predictive analysis to support resilience. • Why use virtual reality?
Learning Outcomes	<ul style="list-style-type: none"> • Ability to incorporate existing big data analysis systems into planning and response. • Understanding of the range of big data that is being collected by different stakeholders, and the importance of data standards and open data policies to support its use in disaster risk management. • Comprehension of artificial intelligence and machine learning, including what these related technologies are doing to improve the capabilities of disaster risk reduction practitioners. • Ability to understand how virtual and augmented reality are increasing cognition and improving resilience.
Key Readings	<ul style="list-style-type: none"> • Global Facility for Disaster Risk and Reduction. 2018. Machine Learning for Disaster Risk Management. World Bank. Guidance Note. http://bit.ly/2oLonaW. • West, Darrell M. 2018. What is Artificial Intelligence? Brookings Institution. October 4. http://bit.ly/2AGL9Dm. • Yu, Manzhu, Chaowei Yang, and Yun Li. 2018. Big Data in Natural Disaster Management: A Review. Geosciences. George Mason University. http://bit.ly/2pBfUav. • Botha, Marc. 2019. The Limits of Artificial Intelligence. Medium. Towards Data Science. February 11. http://bit.ly/3aqfYwN.
Schedule	15:00-16:00: Presentation 16:00-17:00: Work Group
17:00-17:15	Day 3 Wrap-up and Reflection



Day 4: Practical and Planned Application of Emerging Technology and Innovation for DRR and Resilience

9:00-10:00	Module 2.4: Improving Data Analysis and the Presentation of Information (Continued)
Schedule	9:00-9:30: Presentation 9:30-10:00: Work Group
10:00-12:00	Module 2.5: Humans as a Resource
Content	<p>Citizens are assuming an increasingly critical role in the informational aspects of society, and social activities themselves, through the many mechanisms for interconnectedness and communication that have been developed. Social media and the prevalence of communications technologies including mobile phones is enabling individuals to support pre- and post-disaster response and recovery operations, both of official responders and the actions of other citizens and organizations. Through participation in research and other studies, citizens are contributing to the generation and improvement of information and are helping to support different aspects of disaster risk management including monitoring, notification, assessment, crisis communication, and other functions. Citizens are also contributing indirectly through the prevalence of social media, which response organizations can utilize to improve situational awareness. Social media organizations are likewise tapping into their unique access to support emergency operations and situational awareness by communicating with their members and subscribers.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • Engagement for resilience. • What can you crowdsource? • When VGI makes sense. • Using VGI for exposure and vulnerability mapping. • Incentives for citizen science. • Promoting citizen science for community resilience.
Learning Outcomes	<ul style="list-style-type: none"> • Capacity to utilize social media for expanded situational awareness in disasters, and to conduct two-way information sharing with the public. • Ability to understand how crowdsourcing and citizen science supports risk-informed decision-making.
Key Readings	<ul style="list-style-type: none"> • Studies on Participatory Early Warning Systems (P-EWS): Pathways to Support Citizen Science Initiatives. <i>Frontiers in Earth Science</i>. November 6. http://bit.ly/2JOkfPn. • UN Asian and Pacific Training Centre for Information and Communication Technology for Development and the Asian Disaster Preparedness Center. 2018. Reference Document on Social Media for Disaster Risk Management. http://bit.ly/2v07nRn.
Schedule	10:00-11:00: Presentation 11:00-12:00: Work Group
12:00-13:00	Lunch Break



13:00-17:00	Big Data Analysis Training
Description	Participants will receive a 4-hour training in GIS Analytics and Big Data Analysis. Participants will receive a practitioner account that enables them to use the platform for disaster risk management purposes on completion of the course.
Schedule	13:00-17:00: Training
17:00-17:15	Day 4 Wrap-up and Reflection



Day 5: Implementation of Emerging Technologies and Government Innovation for DRR and Resilience

9:00-12:00

Module 3.1: Implementing and Financing Technology Solutions

Content

In this session, participants explore the mechanisms by which community and national government planners identify, access, and implement technology solutions and innovations. Instructional materials will cover the various stakeholders involved in the implementation process, and the requirements and mechanisms for expanding access to technologies as beneficiary or user. Materials will focus on many of the key requirements for adopting emerging technologies, such as data preparedness, public education and staff training, and systemization and standardization, among others. Participants will also explore the mechanisms through which countries and communities may finance emerging technologies adoption and maintenance. Explored options will include technology funds, partnership with the private sector, official development assistance, and others. Development partnerships, agreements, and knowledge transfer platforms that support innovative technologies uptake and adoption will also be covered in this session.

Discussion Topics:

- Capacity domains in the context of emerging technology (multiple discussions on this topic).
- Stakeholder roles and responsibilities.
- Why do countries need STI policy?

Learning Outcomes

- Enhanced ability to recognize and understand the roles that different stakeholders play in the adoption and use of emerging technologies.
- Increased knowledge of the requirements countries and communities face before a technology is adopted, during its use, and for long-term maintenance of the capacity.
- Strengthened capacity to recognize and assess risks associated with the adoption of emerging technologies.
- Increased capacity to assess, prioritize, and pursue financing options to address emerging technology needs.
- Increased awareness of regional and global partnerships and efforts aimed at expanding access to and uptake of emerging technologies, including South-South and triangular cooperation.

Key Readings

- [Raymond, Nathaniel and Ziad Al Chkar. 2016. Data Preparedness: connecting data, decision-making and humanitarian response. Harvard Humanitarian Initiative. <http://bit.ly/30CoWBf>](http://bit.ly/30CoWBf)
- [Woodward, Aylin. 2018. When It Comes to Natural Disasters, Technology Has an Unavoidable Dark Side. Futurism. February 1. <http://bit.ly/2YZX1Ln>](http://bit.ly/2YZX1Ln)
- [Sawahel, Wagdy. 2018. Technology Transfer Boost for LDCs. University World News. June 12. <http://bit.ly/2N32dLe>](http://bit.ly/2N32dLe)
- United Nations. 2016. Knowledge Sharing for DRR Science for the Implementation of the Sendai Framework: The Role of Knowledge Hubs. UN Office for Disaster Risk Reduction.
- [Gray, Vanessa. 2019. Key Recommendations for Using Disruptive Technologies to Manage Disasters. ITC4SDG. <http://bit.ly/2KxIMZe>.](http://bit.ly/2KxIMZe)

Schedule

9:00-11:00: Presentation
11:00-12:00: Work Group

12:00-13:00

Lunch Break



13:00-15:00	Module 3.2: Technology Gaps and Challenges to Implementation of Government Innovation for DRR and Resilience
Content	<p>In Session 2, participants will explore the problems associated with emerging technologies that are largely to blame for disparities in their use between different regions and countries. Materials will look deeper into the roots of the ‘digital divide’ consider how such gaps can work in a country’s favor in terms of ‘leapfrogging’ existing capacity. Institutional barriers to access, uptake, and utilization will be examined, from the public institutions that support them to the ability of the emergency management community to reach the ‘last-mile’ of delivery. In this session, participants also explore the impacts of technology use, understanding that implementation and/or access rarely comes without some cost.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> · Regulations and policies guiding drone use. · Implementation risks. · Cybersecurity.
Learning Outcomes	<ul style="list-style-type: none"> · Increased understanding of the primary barriers to access, adoption, and utilization of emerging technologies, including the strength of public institutions, institutional knowledge and brain-drain, political challenges and policy restrictions, public investment problems, donor rigidity, infrastructure dependencies, and more. · Increased appreciation for the requirements for maintaining adopted technologies, including financial costs, staff training, and cascading dependencies.
Key Readings	<ul style="list-style-type: none"> · Aid and International Development Forum. 2018. The Digital Divide is Closing: Worlds Least Developed Countries on Track for Universal Internet. http://bit.ly/2MfZVZP · Almarzooqi, Ahmed. 2017. Infusing Technology Into Third World Countries. International Center for Global Leadership. http://bit.ly/2XWwi0J. · Kellen, Vince. 2019. Difficulties and Challenges of Data Democratization. Cutter Business Technology Journal. January 2. http://bit.ly/2OVCOFW · Pew Research Center. 2015. Internet Seen as Positive Influence on Education but Negative Influence on Morality in Emerging and Developing Nations. http://bit.ly/303DoT1. · Saez, Catherine. 2018. 4 of 5 People in LDCs Can Access Mobile Networks, But Are Not Using Internet. Intellectual Property Watch. January 24. http://bit.ly/32xKcKk
Schedule	<p>13:00-14:00: Presentation</p> <p>14:00-15:00: Work Group</p>



15:00-16:00	Module 3.3: Measuring Progress: Monitoring and Evaluation of Implementation Efforts
Content	<p>In this final module, participants will consider what monitoring and evaluation requirements exist in terms of emerging technologies access, adoption, and use, and how those requirements may be addressed. Materials will apply the goals and priorities of the Sendai Framework and the Sustainable Development Goals as international standards against which evaluation may be measured, but also provide alternate measures and methods.</p> <p>Discussion Topics:</p> <ul style="list-style-type: none"> • Value of global goals and indicators. • Data collection methods. • Evaluation of emerging technologies.
Learning Outcomes	<ul style="list-style-type: none"> • Increased understanding of monitoring and evaluation methods that are relevant to the adoption and use of emerging technologies. • Developed capacity to more effectively identify and plan for monitoring and evaluation needs when planning for emerging technologies use.
Key Readings	<ul style="list-style-type: none"> • Kusek, Jody Zall and Ray C. Rist. 2004. Ten Steps to a Results-Based Monitoring and Evaluation System. A Handbook for Development Practitioners. The World Bank. http://bit.ly/37Je1Jb • UNDRR. 2016. The Science and Technology Roadmap to Support Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. 29 February. http://bit.ly/2V9bsxy. • UNDESA, 2019. SDG Indicators – UN STATS. http://bit.ly/20OqDbA • UNDP. 2009. Handbook on Planning, Monitoring, and Evaluation for Development Results. http://bit.ly/2PfDBiF. • Wagner, Lynn. 2018. Getting to 2030: Tracking SDG Indicators for Evidence of Implementation Progress. March 29. http://bit.ly/2N11ZUO.
Schedule	15:00-16:00: Presentation and Wrap-up
16:00-17:00	Course Evaluation by Participants & Closing Session