

REGIONAL SITUATION ANALYSIS

The State of Production, Dissemination, and Use of Disaster-Related Statistics in Selected Countries in Asia and the Pacific



Technical Working Group on Disaster Related Statistics in Asia and the Pacific

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Introduction

Disaster risk management requires sound evidence as the basis for shifting from reactive to a more proactive and predictive perspective. Statistics, therefore, play a crucial role providing the basis for risk prevention, risk reduction and management as well as in the conventional disaster management namely preparedness, disaster response and recovery. The need for timely and accurate data becomes even more pressing given the increasing frequency and severity of climate change-induced extreme weather events.

Disaster-related hazards, vulnerability, exposure and coping capacities are woven through communities, societies and economies in complex ways leading to systemic and cascading risks. In an increasingly interdependent world, these factors are closely related to development. In this regard, landmark UN agreements such as the Sendai Framework, the Paris Agreement and the Sustainable Development Goals have, in their central core, the idea of a strongly interlinked sustainable and equitable economic, social, and environmental development to help identify and reduce systemic risks, and promote sustainable development. One of the cornerstones for this interlinked framework is disaster-related data that is more readily available, and in a format that is more compatible, consistent, and comparable to the development-related data ecosystem. This could happen only when disaster-related data becomes official statistics in the broader context of the development of a national statistical system.

More recently, the United Nations Statistical Commission (UNSD) established an Inter-Agency and Expert Group (IAEG)¹ on Disaster Related Statistics to help concerned agencies to work together in consultation with members of regional expert groups and task forces. The Group is also to serve as a formal mechanism to progress a common statistical framework on disaster-related statistics and to sustain cooperation, coordination and fundraising for enhancing statistics related to hazardous events and disasters.

Three years earlier, ESCAP Committee on Statistics in 2018 established a Technical Working Group on Disaster-related Statistics in Asia and the Pacific (TWG) to accelerate and support member States in producing disaster-related statistics for national and international planning, analysis, and reporting. The TWG would build on the results of the Expert Group on Disaster-related Statistics in Asia and the Pacific, which concluded its work in 2018 with the release of the Disaster-related Statistics Framework and recommendations on future work in the region.

The decision also marked the accomplishment of the mandate given by ESCAP in mid-2014² that stressed “the importance of disaggregated data related to disasters in enabling a comprehensive assessment of the socioeconomic effects of disasters and strengthening evidence-based policy-making at all levels for disaster risk reduction and climate change adaptation.”

The Situational Analysis Report

This situational analysis aims to provide part of the basis for the work of the Technical Working Group on Disaster-related Statistics in Asia and the Pacific (TWG) in facilitating the collaboration among national statistical offices and disaster management agencies in Asia and the Pacific in order to advance the production, dissemination, and use of internationally comparable disaster-related statistics.

¹ Note by UN Secretary General (E/CN.3/2021/21) Report of the Core Group of the Inter-Agency and Expert Group on Disaster-related statistics

² ESCAP resolution 70/2 (E/ESCAP/RES/70/2) on Disaster-related statistics in Asia and the Pacific

This report seeks to help the Asia-Pacific region make the transition from building a statistical framework into the next phase, which is developing guidance for implementing such a framework. Using this report as one of its references, the TWG will be in a better position to help its members form guidance for implementation, collaborative efforts in capacity development, developing pilot studies and good practices as well as further investigations for the Disaster-related Statistics studies to be conducted in close collaboration with complementary in the region and beyond.


Objectives

The situational analysis would substantiate the Terms of Reference of the TWG. Predecessor of the TWG, i.e. the Expert Group on Disaster-related Statistics in Asia and the Pacific, in its sixth and final meeting, put together the TOR that, later, was endorsed by the Bureau of the ESCAP Committee on Statistics. It includes the conduct of a study, to be completed in the formative stage of the TWG, as part of the basis in developing a five-year strategy including the TWG's objectives, strategic direction, activities and modalities of work

Scope

The situational report focuses on the rationale, goals and objectives and ways of working of the TWG. It encompasses the background of the TWG particularly the policies and progress of thoughts that highlights the importance and imperatives of DRSF. These are contextualised in countries' disaster risk reduction and national development, and the need for the countries to be accountable to their commitments to regional and global frameworks. To that end, the situational analysis outlines the goals and objectives of the TWG, as well as the structural and mechanisms and the way of working to attain such objectives.

The report covers the followings

- Background of the establishment of the TWG
 - Description of the gaps in disaster-related statistics
 - Disaster - Related Statistical Framework
- 

- Challenges
- Illustration of current practices
- The Technical Working Group

This situational report will not contain the substantive and technical content of disaster management nor statistics, which are elaborated in the DRSF handbook and other more tailored to the specific technical and practical purposes

Methods

The situational analysis report is compiled based on data collected through deskwork, structured interviews, and as necessary, surveys. Data is triangulated, to the extent possible, with results of deliberations in the TWG. For instance, in its first meeting, the TWG has provided the Secretariat some feedback regarding some areas of work that participants considered to be priority areas of the TWG. The secretariat, on the other hand, advised the TWG that a Situational Analysis Report will be compiled soon. For this purpose Secretariat will undertake a study that will involve data collection techniques including desk review, survey, key interviews, and as necessary focused group discussions.

The Imperatives for Disaster Statistics

The Committee on Statistics, in October 2018, had endorsed the Disaster-related Statistics Framework, the main output of the Expert Group on Disaster-related Statistics in Asia and the Pacific. This product has been included in the report on disaster-related statistics to the 50th session of the United Nations Statistical Commission in March 2019.

As early as 2013, ESCAP already identified the challenges associated with compiling, maintaining, and updating disaster data in developing countries. It was obvious even then that post-disaster losses data plays a crucial role to help determine the impacts. Pre-disaster data, on the other hand, provides the basis for determining areas of high risks and, therefore, allowing

the stakeholders to focus on risk reduction interventions on the vulnerable elements (population, infrastructure, and economic activities). Together, these data would help governments determine their most optimal investment to offset risks, mitigate and adapt to hazards, respond to critical events, and to recover from their impacts. An Expert Group on Disaster-related Statistics in Asia and the Pacific was constituted for this purpose.

Six years later in April 2019, the Expert Group on Disaster-related Statistics in Asia and the Pacific submitted its works to the Bureau of the Committee on Statistics. The Committee approved the report and went on reconfiguring the Expert Group into a regional Technical Working Group on disaster-related statistics and approved the draft Terms of Reference. The Technical Working Group is envisioned to operate as a Community of Practice, an international network of professionals and experts. Such a group is to support the capacity of member states to implement the basic range of disaster-related statistics that are aligned with national priorities, internationally comparable across countries, and coherent with the Sendai Framework for Disaster Risk Reduction and the 2030 Agenda for Sustainable Development. The TWG found new importance as it provides one of the basis for, and is an active partner of, the global Inter-Agency and Expert Group on Disaster-related statistics IAEG.

Gaps in Disaster-Related Statistics

ESCAP study³ revealed some gaps including the use of differing terminologies that hamper the aggregation of data at the regional level. Many countries in the region such as Iran, Nepal, Sri Lanka, and Indonesia, and some states in India have established the Desinventar methodology and software as disaster loss databases with historical disaster data going back up to 30 years or more. Many more countries are at various stages of institutionalizing these disaster loss databases and are still in the process of developing systems and clarity. As customary, a few developed countries in the region have already developed their disaster-related databases.

³ --- Expert Group Meeting (2013), Improving Disaster Data Towards Building Resilience in Asia and the Pacific, ESCAP Technical Paper Sendai, Japan

Korea, for instance, has already have Disaster Statistical yearbooks, for natural, human-made, and fire, used as the bases for determining damage and subsidy since 2014⁴

ESCAP Expert Group noted that countries in the region face various challenges including the differing typologies for classifying disaster occurrences; issues in recording cascading and overlapping disastrous events; difficulties to distinguish small to large events; and lacking standard terminologies on disaster impacts. Countries' disaster data are often disconnected from data of other sectors in the broader context of development planning, monitoring, and reporting. Practitioners in the field often produce disaster-related data with relief mobilisation in mind and thus putting the premium on speed rather than accuracy. Disaster-related data, therefore, is short-lived and rarely comparable across time and region, and has little value to help the disaster-related projection.

National Disaster Management Agencies (NDMAs) that hold the mandate and expertise on disaster management and risk assessment rarely make use of the data and expertise of National Statistical Offices (NSOs). Due to this gap, opportunities have been lost in establishing the socio-economic baseline data from population census that are crucial for risk assessment, in determining potential impacts, and in estimating damage and losses in the case of disaster occurrence.

An ESCAP study⁵ revealed that countries are not consistently aligned with any single international reference to classify their data on hazardous events and to measure the immediate impacts of disaster. There is the need for further work in terms of categorization and definitions; alignment with international statistical standards; and a clear list with the definition of assets for recording of damage or losses as direct impacts.

The need for better organised disaster-related statistics was reaffirmed, in March 2015, when member states of the United Nations (UN) adopted the Sendai Framework for Disaster Risk

⁴ -- Kim Hae Ryun (2014), Statistics Korea, Disaster Statistics in Korea, 1st Expert Meeting of Expert Group on Disaster-related Statistics in Asia and Pacific, 27-29 Oct. 2014, Sendai, Japan

⁵ --- Survey of Current Practices on Disaster-Related Statistics in Asia and Pacific (2015). Bangkok, October 2015, Clarke, D & Hizbaron, D. Expert Meeting of Expert Group on Disaster-related Statistics in Asia and Pacific, Bangkok

Reduction 2015–2030⁶. The Sendai Framework suggests, among others, the need to track losses over a sufficient time period to gauge if disaster risk reduction interventions have paid off. This entails comparing disaster losses sustained between 2005 and 2015 with 2015 and 2030. The Sendai Framework also suggests establishing consistent access to and collection of disaggregated data and strengthening capacity for contextually analyzing risk assessment and forecasting data to ensure that all development programming and future investments are risk-informed.

Data, statistics, and information management including big data from emerging technological platforms and sources has also been included in regional partnership and innovation in the Asia-Pacific Disaster Resilience Network (APDRN)⁷, which was established by the ESAP inter-governmental committee on disaster risk reduction⁸.

There is a hope that Big Data could, eventually, aid decision-making processes to improve the design of disaster risk reduction, response, and recovery in terms of both space and time⁹. Although noises and misinformation from big data are almost inevitable, data privacy and accuracy issues are still one of the main challenges, machine learning can contribute to automating such data integration and the filtering process, and ultimately increase the data quality. The synthesis of multi-platform, multi-scale, and multi-discipline data, the capability of predictive modeling of natural disasters should become more efficient. Further research efforts need to be made to look into the challenges emerging from Big Sensing Data, particularly in the context of the emerging data volume of streaming videos, including efficient data management, fast data transfer, and intuitive data visualization.

⁶ United Nations General Assembly. 2019. Implementation of the Sendai framework for disaster risk reduction 2015–2030. Report of the Secretary General. A/74/248. <https://digitallibrary.un.org/record/3825553>. Accessed 30 August 2020.

⁷ ESCAP (2019) The Disaster Riskscape Across Asia-Pacific : Pathways for resilience, inclusion and empowerment, Bangkok

⁸ ESCAP/CDR/2019/2, Operationalizing the Asia-Pacific Disaster Resilience Network: Note by the secretariat, Economic and Social Commission for Asia and the Pacific Committee on Disaster Risk Reduction Sixth session

⁹ Yu, M., Yang C., & Li, Y., (2018), Big Data in Natural Disaster Management: A Review, *Geosciences* 2018, 8, 165.

Disaster-Related Statistical Framework (DRSF)

The Expert Group on Disaster-related Statistics in Asia and the Pacific¹⁰ developed the Disaster-Related Statistical Framework (DRSF) to describe a basic range of disaster-related statistics and a methodological guidance and tools for implementation. It is a tool to develop the domains of disasters and risk management information, and help bridge it with the socio-economic statistics in the country; while also improving the quality and harmonization of statistics in support of monitoring and achievement of the Sendai Framework and the SDGs.

Predating the Sendai Framework on Disaster Risk Reduction and the adoption of global SDG indicators, the DRSF has been seamlessly adapted to the global policy and indicators landscapes. The Expert Group ensured the alignment of its works with the Sendai Framework Targets and relevant SDG indicators. In doing so, the DRSF not only helped with the improvement of statistics from official sources at the national level but also built capacities for ultimately meeting the broader demands for monitoring the new global indicators.

The DRSF leverages the Geospatial Information and Services for Disasters which promotes open data, communities, and sources, as well as spatial data infrastructure of the UN Global Geospatial Information Management (UN-GGIM), for which ESCAP has been the secretariat of the Global Committee's for Asia and the Pacific (UN-GGIM-AP). ESCAP promotes new data acquisition and integration approaches, including Earth observations and geospatial information.

The United Nations Statistical Commission in its 50th session in March 2019 recognized the DRSF as the starting point for developing a common statistical framework on disaster-related statistics, involving a network across the expert communities to sustain cooperation and coordination for enhancing statistics related to hazardous events and disasters.

¹⁰ United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP) (2018a). Disaster-related statistics framework. 16–19 October. Bangkok. ESCAP/CST/2018/CRP.2. Available from: https://www.unescap.org/sites/default/files/ESCAP.CST_2018.CRP_2_Disaster-related_Statistics_Framework.pdf. Accessed 29 August 2020

In brief, the DRSF contains the basic range of Disaster-related statistics and links it with the socio-economic statistics in the country; establishes the relationships with internationally-agreed Sendai Framework & SDG indicators; and serves as Technical guidance on measurement methodologies to help improve quality and international comparability.

Regional Response

Addressing the issue pertaining to the disaster-related data and statistics, in Mid-2014, ESCAP established the Expert Group on Disaster-related Statistics in Asia and the Pacific comprising statisticians and disaster risk reduction experts to work towards developing a basic range of disaster-related statistics in support of policy development.

The Expert Group

The Expert Group, rather than creating new concepts regarding disaster observation and risk management, built upon commonly accepted definitions towards improving the quality of the underlying statistics. It took stock of methodologies for available data in countries to develop a statistical framework that is compatible with the existing statistical systems in countries and that will contribute to the improvement of the quality of statistics in all Member States, while ensuring that the statistics are internationally comparable.

Through its partnership and alignment with the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction¹¹ and other initiatives¹² The Expert Group seamlessly adapted the scope of its statistical framework to the global policy and indicators landscapes.

¹¹ The Open-ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction was established by the UN General Assembly in 2015 (A/RES/69/284)

¹² These other initiatives included the Inter-Agency and Expert Group on Sustainable Development Goals (IAEG- SDGs), Working Group on Geospatial Information for the SDG indicators, and United Nations Committee of Experts on Global Geospatial Information Management

The Expert Group, thus, helped with the improvement of statistics from official sources at the national level while also building capacities for ultimately meeting the broader demands for monitoring the new global indicators.

The Expert Group conducted the following meetings:

- First Meeting, October 2014, Sendai, Japan
- Second Meeting, March 2015, Sendai, Japan
- Third Meeting, October 2015, Bangkok, Thailand
- Fourth Meeting, October 2016, Mandaluyong, Philippines
- Fifth Meeting, September 2017, Incheon, Republic of Korea
- Sixth Meeting, April 2019, Bangkok, Thailand

As well as the following other events:

- DRSF Pilot Study Inception Workshop, December 2015, Bangkok, Thailand
- Workshop on a Regional Guide on the Production and Dissemination of Disaster-Related Statistics, December 2016, Bangkok, Thailand
- Monitoring and Achieving Disaster-related SDG Targets: Pilot Training on Disaster-related Statistics, December 2019, Jakarta, Indonesia

The Expert Group, in its 6th and final meeting, recommended the establishment of a Technical Working Group on Disaster-related Statistics in Asia and the Pacific (TWG), and to shift the work from the development of the DRSF to its actual application for the production of disaster-related statistics. Envisioned as an international network of professionals and experts, the TWG will provide a platform for discussion and sharing of experiences and good practices among countries in the production of official statistics related to disasters; maintain and expand a pool of experts to provide technical support and guidance in the implementation of the DRSF; and to coordinate and exchange advancements from Asia and the Pacific with related global and regional initiatives.

The Technical Working Group



The Bureau of the Committee on Statistics, in April 2019, approved the recommendation and established a Technical Working Group on Disaster-Related Statistics and approved its Terms of Reference. The Committee mandated the TWG to facilitate the collaboration of NSOs and NDMAs in Asia and the Pacific to advance the production, dissemination, and use of internationally comparable disaster-related statistics. Such a TWG is envisioned to be an international network of professionals and experts to support the capacity of member states to implement the basic range of disaster-related statistics that are aligned with national priorities, internationally comparable across countries, and coherent with the Sendai Framework and the SDGs.

In terms of membership, the TWG is a community of practice¹³ that is open to experts from NSOs, NDMAs (or equivalent and relevant other national authorities), and relevant international organizations from countries in Asia and the Pacific and regional and international organizations. The membership is based on the individual's technical capacity rather than as formal representatives of national governments or organizations. The TWG elects a Chair and one or more Vice-Chairs from among its members. The Chair is to serve for a period of 2 years after which he/she will be eligible for re-appointment.

The composition of the TWG represents knowledge and experts from statistics and disaster risk management backgrounds; and perspectives from all five ESCAP Subregions (i.e. Central Asia, East and North-East Asia, the Pacific, South, and South-West Asia, and South-East Asia).

a. Functions

The ESCAP Committee on Statistics in 2018 established the Technical Working Group and endorsed the Terms of Reference¹⁴ that stipulates the following functions of the TWG:

¹³ ESCAP Committee on Statistics decision 6/1/ESCAP/CST/2018/6, decision 1: “The Committee decides to establish communities of practice covering the dimensions of process, data, conceptual and disciplinary integration and requests the Bureau of the Committee, with support from the secretariat, to develop terms of reference for the communities of practice, with the modality of the communities being electronic only.”

¹⁴ Technical Working Group on Disaster-Related Statistics in Asia and the Pacific, Terms of Reference, https://www.unescap.org/sites/default/files/TOR-1st_meeting_TWG_on_disaster_28Oct2020.pdf

- To provide a platform for discussion and sharing of experiences and research on the development of new tools and data sources for producing official statistics related to disasters;
- To maintain and expand a pool of expertise for technical support: to guide the national implementation of norms and standards for disaster-related statistics; and to develop materials for technical training;
- To review and improve (as appropriate) the technical guidelines on the production and dissemination of the basic range of disaster-related statistics;
- To develop standards and recommendations to help ensure coordination among producers of data and other stakeholders of the basic range of the DRSF at the national level;
- To conduct analyses and develop tools, as appropriate, to support coherence and harmonization of reporting for the Sendai Framework for Disaster Risk Reduction and the 2030 Agenda for Sustainable Development;
- To develop recommendations and technical guidance, where appropriate, in support of improvements to national reporting for the global Sendai Framework Monitoring System and the global monitoring framework for the 2030 Agenda.
- To coordinate and exchange advancements from Asia and the Pacific with related global and regional initiatives from other regions and to global initiatives.

b. The organisation of work

The TWG reviews the identified issues through electronic discussion, virtual meetings, sharing of resources on the group's website, and exchange of emails, complemented by a meeting of experts when possible. Such meetings and related events involve a broader network of experts, including professionals, academicians, regional and international organizations, and NGOs.

The TWG is to report on the progress of its work and achievements on a regular basis to the ESCAP Committee on Statistics and the ESCAP Committee on Disaster Risk Reduction at their biennial meetings. The Secretariat prepares the reports in close collaboration with the Chair and Vice-Chairs of the Group and to be reviewed by other members of the TWG prior to submission.

Supporting the TWG in carrying out its functions, the Statistics Division of ESCAP serves as the secretariat of the TWG, supported by the Information and Communications Technology and Disaster Risk Reduction Division of ESCAP, whenever necessary.

Coordinating its work with the Global Partnership on Disaster-related Statistics, the TWG structures its work in a 5-year (2020-2024) strategy with work streams, objectives, and expected outputs taking on board the following considerations.

The Expert Group in its last meeting¹⁵ identified a range of subject matter pertaining to disaster-related statistics, and recommended the following follow through to the Technical Working Group:

c. Priority actions and requirements

The Experts Group recommended the following priority actions and requirements, with due attention to the national context and roles of institutions, to be the focus of the TWG:

- Strengthen legislation or agreements between agencies to specify roles of institutions regarding data collection and sharing in countries;
- Encourage the creation of specialized/thematic units within statistics offices for disaster-related statistics;
- Strengthen national inter-agency coordination and quality assurance, for example through the creation of national technical working groups on disaster-related statistics;
- Develop national platforms or coordination mechanisms for data sharing and for reporting international indicators;
- National mapping of who (which agencies) is producing what (kinds of relevant data sets), following a meeting of contributing agencies to prioritize actions for improving the quality of evidence for disaster risk reduction policies.

¹⁵--- Report of the 6 th meeting of the Expert Group on Disaster-related Statistics in Asia and the Pacific Bangkok, Thailand, 23 – 25 April 2019

d. Capacity development priority topics

In terms of capacity development, the Expert Group recommended the following areas to be considered as priority topics:

- Develop guidance for making disaster-related statistics not only accessible but understandable to the public (simplify messages for non- statisticians);
- International training strategy, e.g. the group encourages the use of e-learning platforms (e.g. as developed by the United Nations Office for Disaster Risk Reduction and Asian Disaster Preparedness Center);
- Strengthen technical capacity for mapping, use of GIS and geospatial data, other forms of big data, and for greater use of new statistical techniques like machine learning;
- Develop training and build national training capacities, involving the national statistical organizations and national disaster management authorities;
- Develop step-by-step guidance on how to collect data and better manage data – especially for post-disaster statistics;
- Develop further guidance on using disaster-related statistics for cost-benefit analyses of disaster risk reduction;
- Prioritize components of Disaster-related Statistics Framework for capacity-building/training initiatives;
- Improve leveraging of different strengths and areas of expertise of different institutions (national statistical organizations, national disaster management authorities, international groups...).

e. Principles for increasing the quality and use of existing data sources

The Expert Group recognised the need for making better use of existing data and emerging technologies for improved availability and use of disaster-related statistics for informing disaster risk reduction. The Group, in this regard, recommended the following principles for increasing the quality and use of existing data sources:

- Encourage adoption of new technologies, which requires investment in human resources, equipment - especially for use of geographic information system (GIS), satellite imagery, and new statistical techniques such as machine learning;

- Establish and compile national databases of key baseline (e.g. economic, social, environmental) data before the disaster;
- Develop and disseminate tools for integration of environmental and hazard assessment methodologies, with an ecosystem perspective;
- Use of statistics for evidence-based demonstration of benefits from investment in disaster risk reduction;
- Support improvement of metadata in national databases;
- Countries should strengthen the validation of damage and loss data from disasters (e.g. using satellite imagery).

f. New areas of research and methodological development

Recognising the continuously growing and accumulating knowledge in the area of disaster-related statistics, the Expert Group considered the following new areas of research and methodological development for the Technical Working Group:

- Disaster risk reduction expenditure and transfers, including international aid and response (resource inflow) during and after disasters;
- Trans-boundary effects of disaster;
- Develop common indicators for a gender perspective for disaster-related statistics;
- Impact of disasters to mental health (post-disaster trauma);
- Displacement of people;
- Integrating data on vulnerable groups into collection or compilation of disaster statistics;
- Links with national accounts/environmental accounts, including integration with the ecosystem accounting perspective;
- Disaggregation of data and by type of data, e.g. before and after the disaster;
- Use of impact statistics for risk assessment;
- Measurement of indirect impacts;
- Accessing data from the private sector;
- Integration of operational/administrative data with official statistics.

The Technical Working Group will need to deliberate the recommendations of the Experts and calibrate them against the changing content of the work. The ESCAP Committee on Statistics

shall conduct a review and evaluation of the functions, work program and achievements of the TWG at its eighth session in 2022. Contingent to the needs and requirements, as well as the accomplishment of the TWG, the Committee develops a Five-Year Strategic Plan.

Five-Year Strategic Plan

Based on consultation with and exchange among TWG members in meetings a draft strategic plan was presented and was further deliberated in a workshop through the Confluence facility. The Plan, which was adopted by the Group is divided into three major themes, each of which is described into a brief description of the present status and the targets to be attained at the end of the five year period. Each theme is elaborated into a timeline of achievements within five year, which are broken down into yearly phases, which are characterised as identification of issues, demonstration of work, replication of initiatives and practices, endorsement, and finally expansion.

Theme 1: Technical capacity

Consistent with its mandate and purpose, the first area of concern in the Five-Year Plan is enhancing the technical capacity of members. Whereas, at present, the TWG has no or limited capacity to facilitate its members to exchange of technical capacities, it is expected that at the end of five year, members' technical capacities are augmented through various modalities including E-learning and thematic training, experience sharing / exchange, technical assistance, tools / instruments sharing.

1) Identification:

- Technical capacity needs assessment conducted
- E-learning in English is conducted and versions in different languages are available
- Members are familiar with the use of basic functions of the Confluence
- Brochures/ videos on what DRSF is and how it support country's DRR international reporting

2) Demonstration:

- Priorities for technical capacity enhancement are agreed
- Individual experts and officials participated in E-learning
- Advanced E-learning courses with thematic topics
- TWG to help promote the standardised quantification of disaster damage and losses on routine-basis in sectors responsible for reporting disaster impacts.

3) Replication:

- Simplified, localised language E-learning country-level courses
- Members request/offer thematic technical training workshops in between TWG meetings
- Capacities for conducting special surveys and strengthen quality administrative data collection
- Technical capacity champions and good practices are documented, including working in low-tech and low connectivity contexts

4) Endorsement:

- TWG endorses list of training modules, expert rosters and the confluence request/offer mechanisms
- Localised E-learning courses for engaging local officials and communities
- Showcases of national and local level good practices
- Country-level technical capacity strengthening good practices compiled
- TWG facilitates peer to peer learning exchanges between countries

5) Expansion:

- Member countries conduct sub-national and/or sectoral training
- Members through the confluence request/ offer/ respond to technical capacity needs

Theme 2: Internationally agreed standards

At this juncture, DRSF requires internationally-agreed standards as it is being undertaken at the



global level by the Inter-Agency Expert Group on Disaster Statistics. The TWG considers it important that such standards, when they are completed, take onboard priorities of the Asia-Pacific region, not the least because the region has invested substantially in the process and indeed envision itself as one of the principal users of such standards.

1) Identification

- Needs for standards assessed and preliminary works completed including the needs for accounting of small-scale disasters.
- TWG conveys to the global forums country's needs for more realistic standards

2) Demonstration

- TWG facilitates discussions on hazards classifications, disaster threshold, metadata, practical calculation formula and translation to monetary terms
- TWG convey regional needs, innovations and good practices to the global processes

3) Replication

- TWG actively deliberate and, through its representatives and champions, give feedback to the draft global standards
- TWG compiles good practices of real situation for better understanding and application of the standard

4) Endorsement

- TWG validates and endorses the internationally-agreed draft standards
- Assists countries in applying the standards including local governments' roles for compiling and reporting

5) Expansion

- TWG disseminate and promote the internationally-agreed standards to member countries

Theme 3: Governance

Among the perennial issues that pose a challenge to countries in the establishment of disaster-related statistics, governance has been one of the top priorities to be addressed. Invariably in TWG meetings, members highlight the typical disconnect between NSOs and

NDMOs and the gaps in coordination with sectoral ministries and local governments. This results in data fragmentation, inconsistencies, and incomparability. There are Recommendations on the Role of Official Statistics in Measuring Hazardous Events and Disasters issued by the Task Force on Measuring Hazardous Events and Disasters that could be used as reference to address the challenge to clarify the role of official statistics in measuring disasters and, to that end, to have stakeholders playing their parts in a coordinated manner.

1) Identification

- TWG uses existing frameworks to identify and assess the governance aspects of disaster statistics
- Contextualise UNECE guidelines to the region to address the disconnected disaster data to the national statistical system through clarification the role of NDMOS and of NSO
- A model of inter-ministerial coordination

2) Demonstration

- TWG incorporates the governance factors as an added component of disaster statistics framework
- Compilation of practical examples and potentially research about collaboration and coordination and addressing barriers
- Training needs assessment on joint capacity building of NSOs and NDMOs
- Documentation of the governance framework for disaster statistics in at least one country

3) Replication

- TWG document and share different governance framework for disaster statistics
- Good practices of governance framework in three countries, to include issues such as data collection, data security, and information dissemination
- Modules and models for decentralised engagement sub-national and communities
- Discussion on capitalising and broadening the interagency momentum emerging from Sendai and SDG monitoring and reporting

4) Endorsement

- ESCAP Statistical Committee endorses the DRSF model

- Case studies and demonstrable good practices on making data to underpin decisions and investments that contribute to a public good/national development
 - Good practices of governance framework in five countries
 - Periodical update from member States on the state of disaster - statistics governance
- 5) Expansion
- TWG make available and facilitates exchange of good practices of governance frameworks to support countries continuous improvements

Capacity Development

The endorsement of the Disaster-Related Statistics Framework, in 2018, necessitated several components including a training scheme. The Committee, therefore, expressed its support for the development of training materials to support the implementation of the framework in countries. The Technical Working Group has been actively collaborating with SIAP and partner agencies, to develop training materials. In order to reach a broader audience in a cost-effective manner, the materials are already compiled into an e-learning course.

The training targets those working in national statistical offices, national disaster management agencies, and others who are involved in disaster-related statistics. The training is expected to build the capacity for the compilation of disaster related statistics for enhancing disaster management and promote the risk-informed sustainable development in the countries and, at the same time, facilitate better national monitoring and reporting on the Sendai Framework for Disaster Risk Reduction and the 2030 Agenda for Sustainable Development. Learning

Target participants are officials in national statistical offices, line ministries and other institutions (especially National Disaster Management Agencies) who are working on disaster mitigation and adaptation issues. The course can also be useful to a wider audience who is interested to learn more about disaster related statistics. Upon completion of the training, Participants are expected to be able to relate the concepts of disaster related statistics to their functions and responsibilities in the contexts of their respective countries and employ such

skills to contribute to the monitoring and reporting on global frameworks including Sendai Framework and SDGs.

The training covers areas, among others, measuring disaster risk, measuring economic losses and disaster-risk reduction expenditures. Webinars will also be held as part of the course to provide an overview of the topics and allow participants to ask questions.

Global Level Engagement

The UN Statistical Commission, at its 49th session in March 2018, welcomed a greater focus on disaster-related statistics and decided to include a separate item on this topic in the agenda for its 50th session, building on existing work in this emerging area. Subsequently, the Commission requested the relevant organizations to work together in consultation with members of the existing regional expert groups and task forces to consider options and modalities for the establishment and coordination of an Inter-Agency and Expert Group (IAEG) on Disaster-related Statistics. This is a formal mechanism under the purview of the Commission to progress a common statistical framework on disaster-related statistics and a network across the expert communities to sustain cooperation, coordination and fundraising for enhancing statistics related to hazardous events and disasters.

The Group's primary objective is to advance a common statistical framework on disaster-related statistics involving a network across the expert communities to sustain cooperation, coordination and fundraising for enhancing statistics related to hazardous events and disasters. To that end, the Group's key function is to take into consideration regionally agreed-upon statistical frameworks, schemas, systems and practices for disaster-related statistics, where available, to inform the above-mentioned process.

The TWG has been actively involved in the IAEG sessions in conjunction with the latter's task to regularly organize an expert forum to sustain cooperation, coordination and fundraising for enhancing statistics related to hazardous events and disasters. The Group organised the First Expert Forum for Producers and Users of Disaster-related Statistics in early June 2021. The

Forum was designed to initiate a series of annual events supporting the establishment of a global community of practice of producers and users of disaster-related statistics. In the first meeting, international expert groups were provided a platform for exchange of experience and knowledge and information about normative work, as well as to identify important areas of work for the research agenda. It was an opportunity to connect different expert communities including policy makers, analysts, disaster-risk managers, researchers, and statisticians using or producing disaster-related information.

At the conclusion of the first global forum, the experts formulated comments related to the next steps of the work of the IAEG, i.e. finalisation of research agenda topics taking into account inputs from IAEG, including the pre-meeting survey and discussion during the meeting, and the subsequent Expert Forum; preparation of the research agenda by the secretariat/Core Group – for consultation and finalization by the IAEG; the need to consider more time allocated to accomplish the mandate, and to progress the work in preparation for UNSC session in 2023.

As a follow through, the Forum suggested the formation of Technical Drafting Teams, to recruit a chief technical adviser to provide guidance to the Technical Drafting Teams in order to produce issue Papers on the identified thematic topics that, eventually, be consolidated into a draft common statistical framework which could be expanded and considered by the UNSC at future sessions.

Current Practices in Selected Countries

The assessment of the state of production, dissemination, and use of disaster-related statistics is informed by the data compiled from literature review, survey and benign triangulated by in-depth interviews to officials in a few selected countries.

As a departure point, the assessment drew an idealised state of disaster-related statistics, to which each of the countries being studied are examined, analysed, and recommendation generated.

Challenges

Following the adoption of the Sendai Framework for Disaster Risk Reduction, the United Nations General Assembly set up an Open-ended Intergovernmental Expert Working Group (OIEWG) to agree on indicators and terminology relating to disaster risk reduction. The Working Group identified 38 indicators to monitor progress in achieving the Sendai Framework's seven targets¹⁶

In the broader context, the United Nations Office for Disaster Risk Reduction provides technical guidance to develop minimum standards and metadata, methodologies for the measurement of indicators and the processing of statistical data, and to develop technical guidance and the web-based monitoring system. It also retrofitted the existing DesInventar¹⁷ to align its input interface with the data requirements for these targets and launched the online Sendai Framework Monitor (SFM).

¹⁶ United Nations General Assembly. 2016. Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction. 1 Dec, A/71/644 https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf. Accessed 30 August 2020.

¹⁷ DesInventar is a free and open sourced disaster loss and damage data collection tool available at <https://desinventar.org>, while the Sendai-aligned version is available here <https://desinventar.net>.

In the first snapshot report published 18 months after the launching of the SFM, UNDRR reported that many countries are yet to start reporting on any target, and the majority of reporting countries are far from completing their coverage of the 38 indicators. Countries have started reporting on certain targets but not the others¹⁸. Most of the data that are yet to be validated and whatever countries have entered may not be completely comparable with future data.

UNDRR draws some lessons so far learnt to include the need to improve the quality of the data; well-managed and maintained disaster loss databases and systematised methods of data collection; and lack of disaggregation by hazards, geography, and by socio-economic characteristics of people suffering losses. As it stands now, it will be difficult to reach definitive conclusions about whether implementing disaster risk reduction interventions has resulted in a reduction in disaster-related loss and damage relative to the absence of these efforts¹⁹.

The challenges with disaster-related statistics are deep-seated. On the one hand, there is a lack of standardized methodologies and definitions, and on the other hand, the original information is not specifically gathered for statistical purposes²⁰. Additionally, there are yet consistent methodologies among countries in terms of geographic scale identifier and temporal scale identifier²¹. Methods vary to determine scale scenarios such as one disaster event affecting two or more administrative areas; two or more disasters affecting one administrative area; two or more linked disaster occurrences affecting one administrative area; two or more disasters affecting more than one administrative area and disasters where the impacts span across international borders.

Aside from issues of technicalities, institutional arrangements and coordination also pose serious challenges. A coherent, coordinated approach across sectors is needed to replace the silo approaches into more synergies and mutually beneficial opportunities across policies and

¹⁸ Mizutori, M. (2020) Reflections on the Sendai Framework for Disaster Risk Reduction: Five Years Since Its Adoption. *Int J Disaster Risk Sci* 11, 147–151. <https://doi.org/10.1007/s13753-020-00261-2> Accessed 3 September 2020

¹⁹ Mizutori (2020), *ibid*

²⁰ Guha-Sapir, Debarati & Below, Regina. (2000). *The Quality and Accuracy of Disaster Data: A Comparative Analyses of Three Global Data Sets*, WHO Centre for research on the Epidemiology of Disasters, The ProVention Consortium.

²¹ --- Survey of Current Practices on Disaster-Related Statistics in Asia and Pacific (2015). Bangkok, October 2015, Clarke, D & Hizbaron, D. Expert Meeting of Expert Group on Disaster-related Statistics in Asia and Pacific, Bangkok

practices. There is a wide range of national institutions producing disaster-related statistics and, in most countries, NSOs are not responsible for these²².

In spite of the efforts of data gathering organizations, historical data on disasters have many inherent problems²³ including the lack of a single organisation performing data collection and compilation, which can lead to lack of standardization in data collection methodologies and definitions; and biased data can occur because of differences in the rationale behind data gathering.

Governance

Ideally what constitutes an enabling environment that is conducive to the growth of disaster - related statistics. Countries typically have policies that establish the national statistical system, and there are separate sets of policy and regulatory framework for disaster management. The ideal situation would be there is convergence of policies that allow the establishment of disaster - related statistics. Alternatively, of less ideal, is the presence of mechanisms where the two sets of policies are not integrated but they are interacting with one another at the operational implementation level. There are also situations where the two policies simply referencing one another. The worst situation is where the policies are not making reference whatsoever.

Data Compilation

The highest aspiration in data collection and compilation is the situation where there are structures and mechanisms for the agencies and authorities to collect and compile disaster-related data using agreed standards, definition and classification. Disaster - related data is collected using standardised multi-sectoral data collection and compilation forms and

²² Ferruzza A., & Nagy, M., (2017) Statistical Offices Role in measuring extreme Events and, Disasters, CES Task Force on Measuring extreme Events and Disasters, Presented at 5th DRSF Expert GRoup MEeting, Incheon, September 2017. 39 Countries Replied To The Survey For National Statistical Offices Related To Extreme Events And Disasters (Eds)

²³ Guha-Sapir, D., Hargitt, P. H. (2004). Thirty Years of Natural Disasters, 1974-2003: The Numbers, Centre for Research on the Epidemiology of Disasters, Brussels.

thus data is integrated from the early stage of collection. The less ideal is that data is collected using regularised data. Data collection refers to collection and compilation of disaster-related data in a consistent fashion although they may not be uniformed and thus cannot be integrated in the first instance. The more common practice of data collection and compilation is using the ad-hoc approach. The least favoured practice is the fragmented data collection in which each agency is using their own methods and tools. As a result, there is little chance to produce consistent statistics.

Data Sharing

DRSF entails disaster-data to be shared among various agencies of different sectors at different levels. To make this happen, the data must be interoperable based on agreed standards and accessible in a common or shared platform. The lower ambition, in this regard, is that the disaster-data might be different due to the absence of an agreed standard. Notwithstanding, the data is in interchangeable forms while remaining in the possession of each agency. The lesser, still, is where the data is in different forms, but they can still be shared in certain circumstances, albeit based on request, for instance. The least preferred situation is where disaster-data is strictly stored in the databases of disaster agencies.

Data Utilisation

The ultimate ideal of the DRSF is where government agencies and other parties use disaster data as the basis for policies, plans and programmes both in terms of disaster risk management as well as more broadly for development planning, implementation, monitoring and reporting. In certain circumstances, the disaster-data may not be in the form that is equal to the mainstream social and economic data, nevertheless, government agencies and the public utilise disaster data as one of inputs for development planning process for disaster risk management and emergency response only.

Current Practices

NSOs and NDMAs in the Asia-Pacific region acknowledge the importance of DRSF as a useful tool to produce statistics required for national and international reporting. The Disaster-related Statistics Framework, when applied in collaboration with officials in national disaster management offices and statistical offices, will generate more relevant, more frequent, coherent, and comparable disaster-related statistics to make informed decisions.

The next section presents illustrations of how some countries have progressed in enhancing their disaster-related data and statistics.

Bangladesh

Bangladesh is among the most disaster resilient countries. Living in deltaic and seismic, geophysics, and hydrometeorological hotspots, the country experiences earthquakes, flooding, erosion and extreme cold and drought as well as cyclones, storm surge, saline intrusion and tsunamis. When juxtaposed with a large poor population with subsistence living, such occurrences turn catastrophic, including more than half a million recorded deaths over the past 40 years.

Bangladesh has taken great strides to, among others, create an early-warning system and built more than 2,500 concrete storm shelters²⁴. This significantly reduces the disaster - induced deaths and losses; and is poised to graduate from the Least Developed Country (LDC) status by 2024. However, if not enough is being done, looming disasters always threaten to roll back the hard earned progress.

This will require better understanding of the dynamic correlation between disaster risks and development. In 2015, Bangladesh Bureau of statistics (BBS) conducted a household survey of 150,000 samples to measure the characteristics, disaster-induced losses in key sectors, health conditions, status of vulnerable populations, disaster / climate knowledge. It was found that disasters took away 0.30% of GDP; up to 94.20% households have been affected by water-borne

²⁴ Rahman, Atiq and Rafiq Islam. Shelters and Schools – Adapting to Cyclonic Storm Surges: Bangladesh. <http://www.coastalcooperation.net/part-III/III-3-3-4.pdf>

diseases, and that river and coastal erosion caused 70% of land damage.

The BBS is updating the data in a forthcoming Bangladesh Disaster-Related Survey (BDRS) 2020 to capture various data and information of the sample households pertaining to livelihood in relation to the direct and indirect impacts of climate change and natural disaster using indicators aligned with SDGs, SFDRR, National Five-Year Plan.

In terms of regulations, the Disaster Management Act 2012 sets the goal to substantially reduce disaster risks to an acceptable level. The Act endorses the Standing Orders on Disaster (SOD) and gives rise to Disaster Management policy in 2015, with a strong emphasis on Disaster Risk Reduction (DRR). The National Plan for Disaster Management (NPDM 2016-2020), which is linked to Sendai Framework, aims to achieve key disaster management priorities.

Priority 1 in the NPDM is to strengthen data on earthquakes particularly in the rapidly urbanizing contexts²⁵ and to introduce an innovation package for prediction and forecast on hydro-meteorological disaster. At the same time, strengthen national database with sex, age, and disability disaggregation, and the establishment of regional data hub for sharing data information on flood forecasting, and involving community in risk assessment and risk informed planning in all sectors, to the extent possible, real time with data sharing and dissemination protocol.

In governance, the National Disaster Management Council (NDMC) and Inter-Ministerial Disaster Management Coordination Committee (IMDMCC) coordinate activities at the National level with counterparts down to local levels. The Ministry of Disaster Management and Relief through its executing body, the Department of Disaster Management, typically collected disaster data at organizational level. These are focusing on disaster occurrence-specific, so far, with no particular standards and focusing more on damages less on losses.

The Government Formed an Inter-Ministerial Technical Working Committee for producing Environment, Climate Change and Disaster Statistics (ECDS) cell in the BBS. In addition to the BDRS 2020, the Committee is set to compile the Bangladesh Environmental Statistics 2020, Bangladesh Environmental Protection, Expenditure, Resource and Waste Management Survey

²⁵ NPDM 2015 -2020

2021, and the Multi-sectoral GIS integration of the affected population with area, deaths and missing population due to climate change and natural disasters

Technical Working Committee on Environment, Climate Change and Disasters and the Environmental Statistics Committee, both consist of the Ministry of Disaster Management and the Department of Disaster Management, and has all government agencies and institutions, and recently also co-opting the academics.

BBS is in the process of renewing its MOU with the Centre-GIS to revamp the existing Disaster Atlas into a Shape Map as a platform for BBS and Department of Disaster Management to interface with stakeholders in disaster statistics.

Disaster Incidents Database (DIDB) tracks disaster events and stores relevant information on disasters in Bangladesh GIS-based open source database. To certain extent, the database integrate technical data produced by sectoral agencies such as Cyclone Event database of Bangladesh Meteorological Department (BMD) ; Flood Event Database by Flood Forecasting and Warning Centre (FFWC), and Cyclone Event Database from Bangladesh Bureau of Statistics (BBS).

BBS remains to be the government authority that serves as an official platform of data compiled from ministries, agencies, academics and research houses as well as local governments. The Planning Commission regularly accesses data on disaster and environment to frame and enhance the country's development and economic planning. Meanwhile, ministries and agencies usually request data that otherwise are not available in their own departments.

Bangladesh has a robust experience in compiling and analysing disaster-related data, together with results of other surveys, and publishing them in numerous data publications. The Technical Working Committee on Environment, Climate Change and Disasters as a national data platform among the Ministry of Disaster Management and the Department of Disaster Management, and other government agencies and institutions, has the potential to expand its scope to an improved disaster-related data that is more closely aligned to the DRSF.

Bhutan

The national statistical system is governed by the Statistics Bill of Bhutan 2006, which although it has been updated in 2006 and 2015, it is yet to be officially endorsed. The bill provides the overall legal framework for the official statistics collection, processing, compilation, analysis, publication and dissemination. Designated as the central authority of a decentralised system, in this regard, is a National Statistics Bureau (NSB). It is responsible for collection and release of official data, and their custodian, and to give prior approval on statistical matters to all ministries, departments, and agencies; which collect data for their respective needs through surveys and censuses at national, district (dzongkhags) and sub-districts (gewogs). It suffices to say that, as such, while data availability is not really an issue, the problem lays in the lack of centralization, gaps in presentation and communication that lead to inconsistencies²⁶

The NSB does not establish or maintain disaster specific data, except a database of Geo referenced settlement data from 2005 Population and housing census, and 2007 geo-referenced key infrastructure, which include religious , schools, admin buildings, and health facilities. Reportedly there is georeference of up to 80 % of urbanised housing, which has been updated in the latest cadastral survey by the NLCS.

The RGoB approved the Geo-Information (GI) Policy in July 2018, putting geospatial information as an indispensable tool for proper planning and decision-making processes. The fundamental principles are availability, reliability, accessibility and affordability by reducing duplication of efforts and cost in gathering GI data and by enhancing capacity to keep abreast with rapidly changing technology. The Policy aims to institute inclusive institutional and legal framework; to enhance data discovery, accessibility and sharing mechanism; and to promote sustainable and optimal use of geo-information and technologies. The Center for Geographic Information System Coordination (CGISC), operating under the Department of Survey and Mapping (DoSAM), National Land Commission Secretariat (NLCS), serves as the coordination center to develop, promulgate and enforce bylaws, regulations and standards covering all aspects of

²⁶ NSB (2017) Bhutan's Data Ecosystem Mapping Final Report, National Statistical Bureau and Gross National Happiness Commission <http://www.nsb.gov.bt/publication/files/des.pdf> accessed 20 January 2021

geo-information. The Department of Disaster Management (DDM) and National Statistical Bureau (NSB) are both members of the committee.

National Land Commission Secretariat (NLCS) shares maps and information on need basis and Provision of base map and aerial photo for geoscientific studies When necessary Demarcation of land is carried out jointly by both surveyors after the Department of Human Settlement (DHS) formulated plan Flood Engineering Management (FEMD) of the Department of Geology and Mines (DGM), Ministry of Economic Affairs, is mandated to carry out flood risk analysis in all 20 Dzongkhags. However, it is not clear which agency is charged to prepare hazard maps.

In terms of data sharing, the Center for Geographic Information System Coordination (CGISC), a collaboration of multidisciplinary expertise and resources from various GI member agencies and end users, establishes and coordinates the High Level Committee (GHLC) comprising members from the key agencies.

With regard to data utilisation, the data users include policy makers in ministries and government bodies at national and local levels, researchers from academia and research centres, civil society organizations, private sector actors, media and development partners.

- GNHC is the coordinating agency responsible for implementing the five-year development plan and plays a central role in policy formulation. It requires data on all areas of economic and social activities related to indicators for monitoring the implementation of the five-year plan.
- The Royal Monetary Authority of Bhutan is also a user of statistical data from other producers when compiling the country's balance of payment or monetary statistics.
- NSB prepares the Statistical Yearbook of Bhutan through a compilation of National Accounts. Data are also used by research centres such as the
- Centre for Bhutan Studies and GNH Research (CBS) is a quasi government think tank that works closely with GNHC and other central agencies to conduct all GNH-related empirical research and disseminate findings through publications and conferences

- Donors and development partners use statistical data to assess the impacts of their support, and plan for future assistance strategy, to ensure that their support, towards policies, plans and programmes, achieves its intended purpose.
- The Department of Human Settlement (DHS), Ministry of Works and Human Settlements uses information and maps on risk assessment into development plans


Bhutan is yet to have a single data dissemination policy. The NSB has its own dissemination system while the other producers operate with their own, risking data duplication or conflicting data. The current disaster data is, by -and-large, pertains to disaster occurrences, without differentiating hazardous events (which are small, many, and frequent) and disaster (large scale and rare). There is yet database on risks, capacities, and financing

Data availability is not really an issue. The problem lies in the data not being centralized, differing presentation and communication of data that lead to inconsistencies. However, there is no specific agency to coordinate the compilation of disaster risk maps, with a clear-cut mechanism among technical agencies. Moreover, users are usually unaware of the existence of the data, if they do, data sharing is limited to point-to-point contacts with limited formal mechanisms; need policies to reduce redundancy of data and to reduce duplication of efforts and resources. Finally, dispersed data points increase the risks of fragmentation, inconsistencies, and reliability gaps or even data conflicts.

The future direction for Bhutan's journey towards an improved disaster-related data would entail strengthening DDM to be the focal point for hazard zone mapping, vulnerability maps and risk assessment as designated by the 2013 DM Act, while establishing a clear-cut coordination mechanism among technical agencies. Efforts need to be made to address gaps identified in an audit conducted on Disaster Management, in 2016, including in areas such as the interagency coordination, mapping of hazard zoning, capacity constraints and lack of data, lacking vulnerability assessments; and gaps in a central disaster-related database. Some other key challenges in data compilation and processing include the unavailability of data for risk analysis such as hydro-met data, digital elevation models, and other geotechnical data. Meanwhile, there are no private firms capable of outsourcing flood risk assessment.

Disaster-related statistical framework will also address the issue of data sharing, which presently is limited to point-to-point contacts, commonly attributed to the lack of effective sharing mechanism, inadequate copyright protection and absence of clear policy direction. Convergence of data in a centralised platform will help users to be aware of the existence of the data. Further, investment in geo-information will help minimize redundancy of data and to avoid duplication of efforts and resources²⁷.

²⁷ National Land Commission Secretariat (2018) Geo – Information Policy 2018, https://www.nlcs.gov.bt/guidelines/GI_Policy.pdf accessed 24 January 2021



Cambodia

The national statistical system in Cambodia is highly decentralised. The Statistical Law describes the system to be an integrated statistics data and national statistical programmes; statistical organisations and units within line ministries and institutions of the Royal Government of Cambodia; and their statistical staff and infrastructure. The system is a two-tiered structure consists of National Institute of Statistics (NIS) , which is the official statistical policy-making body and coordinating , and empowered to collect statistics under the Law, and 27 line ministries or institutions and National bank Of Cambodia that collect statistics as by-products of administrative system or / and jointly conduct sectoral surveys with NIS. In actuality, NIS has only limited basic data for NCDM, although lately, this has somewhat improved with the obligation to report on progress made on Sendai Framework.

The country has most recently updated the Cambodia Disaster Loss and Damage Information System (known as 'CAMDI')²⁸, a database that was first developed in 2015 under the National Committee for Disaster Management with support of the United Nations Development Programme (UNDP).

The update with the support of the Global Center for Disaster Statistics (GCSD), in cooperation with Fujitsu and Tohoku University in Japan and UNDP helped the CAMDI within a global framework to allow the Database to be in line with the Sendai Framework. Historical data is disaggregated by hazard, sex, age, disability, income, and geography to ensure that vulnerable groups can be easily identified and targeted. The update also helped disaster management authorities at the country-level are equipped with readiness to record local level disasters and use the data for Sendai reporting and monitoring.

Some of the challenges, however, remain. Despite the updated damage and loss database, the National Committee on Disaster Management experienced a shortage of competent human resources to actually manage the system. Without sufficient resources to hire appropriately skilled officers, the Committee depends most of its work on development partners. In terms of

²⁸ ---Lack of historical disaster data a thing of the past for Cambodia, <https://www.adaptation-undp.org/node/6274>, accessed 30 August 2020

policy, the Disaster Management Law of 2015 does not have sufficient provision to allow NCDM to manage the complete disaster data. There is the need for sub laws, decrees or implementing regulations to provide the legal basis to collect and manage data particularly those coming from line ministries and local governments.

Disaster is yet to be included in the list of Official statistics. Additionally, NCDM is not part of any statistics-related consultative bodies such as the Statistics Advisory Council or Statistics Coordination Committee.

Internally in the NCDM as an independent agency, there is the need to develop NCDM procedure and protocol for disaster-related data across sectors; jointly develop definition, classification, standard, as well as metadata for disaster-related data, and establish structure, mechanisms, and tools for data collection and compilation.

The updated databases, as it was designed, should be able to contribute to the monitoring and reporting relevant SDGs targets. This is rather challenging given that there is no established joint working group between NCDM, NIS, and the General Secretariat of (National) Committee on Sustainable Development (NCSD). Furthermore, a closer NIS and NCDM working relationship has the potential to include disaster statistics as one of official statistics, and, in turn, to make available disaster data for development, sectoral, and local planning.

Fiji

Fiji in the next 50 years has a 20% chance of potentially-damaging earthquakes and either one of two active volcanoes in the region to erupt²⁹. Meanwhile the volcanic soil is unstable and thus adding to the landslide risks; the volatile and earthquake-prone tectonic fault systems associated with the South Pacific Convergence Zone also pose a threat of Tsunamis. At the same time, climate change drives climatic variations including cyclones, heavy rain as well as flooding, which, together, have been the common destructive hazards.

Fiji's Disaster Management Act and National Disaster Management Plan outline the disaster management system and the roles of the National Disaster Management Committee (NDMC), the Ministry of Rural and Maritime Development and National Disaster Management the National Disaster Management Office (NDMO), as well as disaster service liaison officers³⁰ and the commissioner and the district officers. NDMO has the free access to all necessary disasters -related particularly to respond to disasters. Meanwhile, local authorities are obliged to establish an effective database on natural disaster damage and protective control mechanisms³¹

In terms of data sharing, UNESCAP -supported "GeoNode" programme provides a centralized geospatial platform to help NDMO acquire and share disaster and development - related data including Fiji Bureau of Statistics (FIBoS)' population and household data. NDMO provided FIBoS with disaster historical data up to 2019, with some gaps notwithstanding; while the Bureau complemented NDMO's map of cyclone paths with the demographic overlays to allow the zooming of the disaster risks and response to district, villages and even settlements level.

FIBoS has been involved early on from the consultation of indicators to the subsequent processes of the Sendai Monitoring, including the training on the online monitoring. The Bureau was an authorised contributor of demographic and other basic data to the Sendai Framework Monitor Online. More recently, NDMO leads the analysis and FIBoS becomes less directly involved.

²⁹ The World Bank (2015) Country Note Fiji: Disaster Risk Financing and Insurance, <https://reliefweb.int/sites/reliefweb.int/files/resources/Country-Note-Fiji.pdf> accessed 25 March 2021

³⁰ Vulawalu, R (2019) Fiji's Disaster Management Plan Under Review, Building Safety & Resilience In The Pacific, <https://bsrp.gsd.spc.int/index.php/2019/10/29/fijis-disaster-management-plan-under-review/> accessed 25 March 2021

³¹ UNDRR (2019) Disaster Risk Reduction in the Republic of Fiji Status Report, https://www.unisdr.org/files/68251_682302fijirevised16oct2019.pdf accessed 20 March 2021

During an emergency, Emergency Operation Centres at National, Divisional and District levels collect information using time-sensitive relief needs assessment tools, and make them available on a daily basis. This is complemented by air reconnaissance and air-ground surveys, data from departments and others. For the last several years, the FIBos has been actively involved in the Post-disaster Needs Assessment (PDNAs) both in the provision of the official datas, training of enumerators, and field data collection and the analysis and report compilation³².

A Climate Vulnerability Assessment of 2018 presented some issues on the impacts of climate change and disasters. Data coverage of disaster events and their effects have been identified to be an area of concern particularly in relation to poverty, household welfare, sectoral activities and national economy. Time series information is needed to support the forecasting of disasters and the associated vulnerability and in this regard a better geographic information system³³.

Data availability and reliability needs to be enhanced, to be localized to sub-national levels, and to mainstreamed to SDGs monitoring mechanism (Parliament of the Republic of Fiji, 2018)³⁴ while lack of local technical capacity to manage complex data in a systematic manner also needs to be addressed. Sectoral data coverage needs to be broadened to cover a broader range including vulnerable industries – including tourism and agriculture – and specific vulnerable demographics, and to widen the focus from the government to donors and other stakeholders.

Addressing some part of the issue, and leveraging Fiji's membership in ESCAP Expert Group on Disaster-Related statistics since 2014, FIBoS will launch a newly added section on disaster data in the Social Trend report of the Bureau; which will include disaster hazard by types, and disaster occurrences and impacts / losses as part of the environment statistics.

³² CERF (2016) Resident / Humanitarian Coordinator Report On The Use Of Cerf Funds Fiji Rapid Response Tropical Cyclone Winston 2016 https://cerf.un.org/sites/default/files/resources/16-RR-FJI-18935-NR01_Fiji_RCHC.Report.pdf accessed 20 March 2021

³³ Lal P.N; Singh R; Holland P (2009) Relationship Between Natural Disasters And Poverty: A Fiji Case Study, A report prepared for the United Nations International Strategy for Disaster Reduction Secretariat's 2009 Global Assessment Report on Disaster Reduction

³⁴ Op.Cit UNDRR (2019), pp.21

Concerning disaster-related expenditure has been studies including analysis of the humanitarian response following Tropical Cyclone (TC) Winston³⁵ that recommended the consolidation and centralization of the Poverty Benefit Scheme (PBS) database. Also, consider developing a comprehensive register of all government owned infrastructure and other assets to improve the accounting of disaster-related expenditure and to ascertain that both poor and near-poor households can be targeted for risk reduction and disaster response. It is further recommended that such databases are linked with the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) database and that the data is suitable for valuation³⁶.

Fiji has considerable experience in disaster-related data collection, sharing, and utilisation. The Disaster authorities also have the scope to use Disaster Management as the foundation to build further the data ecosystem for disaster-related statistics. The initial steps taken by FIBoS, lessons learnt from the last several major disasters, and collaboration built up since the Sendai Monitoring make up strong pillars for the incorporation of disaster-data as an official statistics under the national statistical system.

³⁵ Mansur.A., Doyle.J., Ivaschenko.O., (2017) Social Protection and Humanitarian Assistance Nexus for Disaster Response: Lessons Learnt from Fiji's Tropical Cyclone Winston, Worldbank Discussion Paper

³⁶ ADB (2019) The Enabling Environment for Disaster Risk Financing in Fiji Country Diagnostics Assessment <https://www.adb.org/sites/default/files/publication/485561/fiji-environment-disaster-risk-financing.pdf> Accessed 24 January 2021

Georgia

Georgia is one of the most seismically active countries in the Alpine-Himalayan collision belt in the South Caucasus region. Having 80% of its territory being mountainous, Georgia has regular occurrences of earthquakes, floods, debris flows, landslides and avalanches. With per capita GDP at \$3,500³⁷ Georgia is ranked as a lower middle-income country.

The State Security and Crisis Management Council, under the prime minister's office, coordinates and manages national-level crisis response. The Natural Disaster Prevention and Rapid Response Unit (established in 2014 under MRDI) integrates disaster prevention, early warning, response, and post-disaster recovery in infrastructure planning and development.

With the increased appreciation on hazard and risk concepts³⁸ However, Georgia has been shifting from reactive to a more proactive approach. The government established a national spatial data infrastructure that is compatible with the European standards, and thus making non-sensitive spatial data infrastructure more widely available for disaster management.

There is yet a regulatory framework to unify data collection. Various technical agencies in different sectors collect and compile disaster-related data using their respective sector-specific methodologies, usually in a sectorial or project-based manner. Data is not collected, systematised, customised and regularly updated in one central repository.

The National Statistics Office of Georgia (Geostat), the legal institution that produces and disseminates the statistical information, does not maintain specific disaster-related data. Spatial data, an important pillar of the disaster database and platform that combines the historical and projected disaster data, is available with some gaps that need addressing.

The National Environmental Agency (NEA) assesses and documents geo-ecological conditions, performs forecasts and warning, risk zoning and mapping. The Hydrometeorology Department

³⁷ GPDRR (2013) Disaster Risk Profile: Georgia, Worldbank https://www.gfdr.org/sites/default/files/publication/drp_georgia.pdf accessed 20 January 2021

³⁸ CADRI (2014) Disaster Risk Reduction Capacity Assessment, UNDP Georgia <https://www.cadri.net/sites/default/files/GEORGIA-DRR-Capacity-Assessment-Report.pdf> accessed 20 January 2021

collects and provides hydro meteorological disaster hazards-related data. Noteworthy, that the end of the USSR system reduced the data collection capacity. Only one out of ten of the 400 hydro-meteorological observation stations remain operational. The forecast capabilities have been reduced into very short term and without specific indication of locations.

The Geology Department, meanwhile, is responsible for the production, updating and correction of topographic maps; assessment of resistibility of territories, buildings and structures; and preparation of visual engineering-geological conclusions on lands.

The Geoportal of Natural Hazards and Risks has an Atlas containing maps and explanatory text related to natural hazards, and vulnerability including physical, social, ecological, economic, and the risks. The Atlas needs periodical updating and further dissemination for broader utilisation particularly by sectoral and local authorities. Not all of datasets for seismology, geology, hydrometeorology that are hosted in various institutions have been digitised³⁹.

Meanwhile, there are also datasets of other institutions that are not formally connected. The Mikheil Nodia Institute of Geophysics, Tbilisi State University develops a seismic zoning map while the Institute of Earth Sciences and Seismic Monitoring Center at the Ilia State University collects data on earthquakes and seismic activity.

Efforts have been made to establish inter-sectoral coordination, developing agreed terminologies, hazard and risk maps, and addressing gaps in risk assessment methodology. In compliance to the directives of the European Parliament and European Council on the Infrastructure of Spatial Information in Europe - INSPIRE, the government gradually uplift the geo-information sector, its legal framework, and administrative considerations, including the development of Geospatial Data Infrastructure for disaster risk management.

The Caucasus Environmental NGO Network (CENN) with the support of the the Netherlands Ministry of Foreign Affairs⁴⁰ implemented a project entitled "Institutional Building for Natural

³⁹ CADRI (2014) Disaster Risk Reduction Capacity Assessment Report, the United Nations Development Programme in Georgia

⁴⁰ CENN Caucasus Environmental NGO Network (2012) Atlas of Natural Hazards and Risk in Georgia
https://www.researchgate.net/publication/233865318_Atlas_of_Natural_Hazards_and_Risk_in_Georgia

Disaster Risk Reduction (DRR) in Georgia” that includes introducing modern spatial approaches and technologies in territorial planning, installing a new system for data management and analysis to build atlas of natural hazards and disasters.

A new momentum has triggered some scope for improvement. The EU-Georgia Association Agreement brought about the commitment to gradually improving the utilisation of disaster - related data including in the assessment and management of flood risks. This includes the adoption of national legislation and the designation of competent authorities; data collection for preliminary flood assessments and preparation of flood risk maps; and for the development and updating of flood risk management plans.

The country has most of the elements that make up disaster-related data. What is needed is sufficient policy momentum to build a coherent framework that treat data producers as nodes of disaster data that are connected into one or several interlinked networks

Indonesia

Due to the diverse and frequent devastating disasters, Indonesian people jocularly characterised their country to be a supermarket of disasters. As the disaster management paradigm is shifting from reactive to a more proactive and predictive comprehensive and multi hazard risk management. This shift requires a wide ranging reform, including in the area of disaster-related data. Indonesia seems to shift from being a Supermarket to becoming a Laboratory of disasters.

Cultivating the Desinventar⁴¹ Indonesia has well-established databases. The Indonesian Disaster Data and Information (DIBI), for instance, provides the disaster trends and patterns to inform for risk identification, policy formulation, and budget appropriation⁴². The Database also support the mapping of history disaster risk index (HDRI) and the Disaster Deficit Index (DDI)⁴³ as inputs to the National Disaster Management Plan and National Action Plan for Disaster Risk Reduction.

InaRISK is another database that geospatially describes the scope of disaster risks, populations, and potential physical as well as economic losses. It is a portal for sharing spatial data and a monitoring tool for risk reduction and preparedness. The Inarisk has branched out into InaRISK personal, an application containing the level of hazard in an area, including the most recent context of Covid-19, and prompts suggested precautionary actions⁴⁴. InaSAFE, on the other hand, is free software that aggregates data from scientists, local governments and communities to produce realistic impact scenarios to help better planning, preparedness and response activities.

Demand for improved disaster data increases due to the need to better comprehend the frequent and severe disasters, and from the demand for more evidence-based development

⁴¹ --- Wibowo A., Surbakti, I., Yunus, R. (2013) Indonesia Disaster Database Data Informasi Bencana Indonesia (DIBI), presented at the Expert Group Meeting (EGM) on Improving Disaster Data to Build Resilience in Asia and the Pacific 30 Sept – 1 Oct 2013, Sendai, Japan

⁴² BNPB (ca. 2011) Strengthening the Quality, Reliability and Sustainability of National and Regional Disaster Databases. <https://bnpb.go.id/uploads/migration/pubs/450.pdf> accessed 29 August 2020

⁴³ --Indonesia Experience on Development Disaster-Related Statistics Data, Wibowo.A, (2014) DRSF meeting

⁴⁴ inaRISK - BNPBinarisk.bnpb.go.id › about accessed 30 August 2020

planning. Pressure also mounted from progress monitoring and reporting of Sendai Framework and SDGs.

In response, Indonesia leveraged its membership in ESCAP Expert Group on Disaster -Related Statistical Framework, and used the Group's output i.e. Disaster-Related Statistical Framework (DRSF) as a template to develop such a scheme in the country. This decision met fertile ground to grow. The National Disaster Management Agency (BNPB) is becoming more complex and needs to establish a single national portal for disaster data. Meanwhile, following the Framework for the Development of Environmental Statistics (FDES) that was launched in 2014, BPS Statistics Indonesia has disaster statistics as one of its quick win targets.

The National Disaster Management Agency (BNPB) and BPS-Statistics Indonesia, with the support of UNFPA Indonesia, developed the Indonesia One Disaster Data as an integral part of Indonesia One-Data Policy, a new presidential policy which seeks to make public data more accessible to the public with consistency, interoperability, and international comparability⁴⁵. A series of national multisectoral workshops were organised to converge the top-down DRSF template of the ESCAP regional Expert Group on one hand, and the bottom up inventory of the disaster management-related sectoral portfolios and datasets from line ministries, agencies and local governments on the other. In a national workshop in December 2019, BPS and BNPB published the Indonesia One Disaster Data, a disaster-related statistical framework. They were ready to embark on developing the technical aspects of the scheme.

The framework seeks to integrate a variety of data sources from various government agencies, and standardize the concepts and methods of measuring cross disaster events. It also applies a measurement framework that is consistent and mutually agreed upon in policies, agreements, and coordination at the national and sub-national levels. Subsequently, a technical guide was drafted based on various considerations including the Sendai Framework and SDGs indicators and the ongoing UNDRR-led hazard classification review.

⁴⁵ ---Indonesia One Disaster Data ensures better coordination during humanitarian crises, UNFPA News, 10 August 2020
<https://indonesia.unfpa.org/en/news/indonesia-one-disaster-data-ensures-better-coordination-during-humanitarian-crises> Accessed 30 August 2020

A combination of a series of policy turns of events helped propel the Indonesia One Disaster Data to become among national priorities that are articulated in the various national plans including the Long term Disaster Management Plan, the National Action Plan in Disaster Management, the national Medium-term Development Plan and government Annual Work Plan 2021. Alongside, the National Statistics Society Forum, a quasi-government agency formed by the Statistical Act, established a National Working Group on Disaster and Environment Statistics that include the membership of BPS Statistics, the national secretariat of the Indonesia One Data Policy, and the SDGs Secretariat. Meanwhile the BPS Statistics formed an internal Task Force to consolidate the basic data and other disaster-related data that are already in existence, and develop data standard, metadata and data references.

At present, under the joint stewardship of BNPB and BPS, a draft national policy on disaster-related statistics is in advanced draft form and is ready for the first reading. The draft technical guidelines are scheduled for further deliberation and validation by sectoral ministries, agencies and local governments. At the same time, the Ministry/Agency of National Development Planning already launched the first round of a pilot implementation in one province and five others in each of the consecutive subsequent years. At the same time, Indonesia has been an active member of ESCAP Technical Working Group as well as the Global Inter Agency and Expert Group on Disaster-Related Statistics. The country is also poised to present the Indonesia One Disaster Data as a country showcase in the forthcoming Global Platform on Disaster Risk Reduction, which is scheduled to be hosted in Bali in 2022.

Sri Lanka

Located in the Indian Ocean, Sri Lanka is an island country which consists of lower plains and a variety of ecological zones from tropical forests, highlands and lowland plains to diverse coastal belts. Variations in the monsoons trigger various weather related events such as cyclones, monsoonal rain, and subsequent localized and seasonal flooding and landslides alternating with droughts, that make Sri Lanka one of the most climate change affected country

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In the aftermath of the 2004 Indian Ocean tsunami, the government promulgated the Disaster Management Act and developed A Road Map for Disaster Management. The Ministry of Disaster Management, on behalf of the The National Disaster Management Council, led a consultative process to formulate the Disaster Management Policy. It conceptualised disaster management that involves participatory, transparent, and accountable decision making at all levels. Public institutions should provide information to and engage communities and stakeholders in decision-making processes that affect them and stakeholders and communities are to have access to multi-hazard maps, risk profiles, modern tools and methods. On a more technical side, the Policy further directs the identification of areas prone to hazards; compilation of the number, identity and needs of individuals affected by disaster; regular update of hazard profiles, vulnerability and risk assessments for multiple hazards; and incorporation in the risk analyses the inter-linkages among disasters, poverty and development⁴⁷. To this end, the Disaster Management Centre (DMC) of the Ministry of Disaster Management established the Sri Lanka Disaster Information System based on the DesInventar, and Sri Lanka Disaster Resource Network (SLDRN) as data hubs for risk assessments and impact analyses to determine risk trends.

Over the years, a wealth of data has been accumulated. The DesInventar⁴⁸ platform has accumulated 30 year chronological, spatial and seasonal patterns of distribution of various hazards and their related impacts. This is continuously enriched by, among others, the DRR Project Monitoring Web Portal, Satellite data (Processed by JAXA imageries), SADKIN – South

⁴⁶ Global Risk Index 2016, German Watch, <https://germanwatch.org/en/download/20432.pdf>

⁴⁷ Ibid. pp.6.

⁴⁸ http://www.desinventar.lk/des_html/what_disas_info/what_des.html Accessed 24 January 2021

Asia Disaster Knowledge Network, Mobile User database for SMS warning (5000 key contact) Emergency response contact database (approx. 10,000 contacts) LIDAR survey data – 2 km from the coast⁴⁹, the Tsunami Exposure modules that include census of population and housing in Tsunami affected areas to be updated every 10 years, as well as Statistical Handbook and Atlas on Tsunami.

Other more thematic data are compiled by the different technical agencies. These include Inundation maps for dams failures by the Dam Safety and Water Management project; coastal hazards at LIDAR data by DMC; Environment Impact Assessments for larger projects by the Central Environment Authority; and Integrated Environment Assessments jointly by CEA and DMC⁵⁰. When combined with the data from the national census, could delineate the spatial patterns of risks. Taken along with Census and Statistics, Meteorological, Survey Dept, these valuable resources constitute a wealth of disaster-related data.

Another milestone is the Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) 2014 – 2018, that further promoted the multi hazard, participatory and partnership disaster management. In this programme, a risk profile prioritizing 5 hazards - floods, drought, landslides, cyclones and coastal hazards has been developed in cooperation with various technical agencies. Landslide by National Building Research Organization (NBRO), coastal hazard by Coast Conservation and Coastal Resources Management Department, flood by the Irrigation Department, drought and cyclone hazard by Agriculture Department, University of Peradeniya and Department of Meteorology. Additionally, in 2017, Development partner supported the establishment of the Open Data for Resilience Initiative (OpenDRI), which contains Sri Lanka Disaster Risk Information Platform - an open portal for geospatial data and multiple hazards interactive maps. Also, a comprehensive flood and drought risk modelling in ten river basins is currently being developed under the World Bank-funded Climate Resilience Improvement Project (CRIP).

⁴⁹ Hettiarachchi, G. & Rajapaksha, R (2013) Improving Disaster Data to build resilience, Sharing experiences from Sri Lanka, ESCAP Expert Group Meeting, https://www.unescap.org/sites/default/d8files/S2-5_SriLanka.pdf accessed 15 March 2021

⁵⁰ Ministry of Disaster Management (2014) Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) 2014 - 2018 <http://www.disastermin.gov.lk/web/images/pdf/slcdmp%20english.pdf> accessed 18 March 2021

Concerning data sharing, the Department of Census and Statistics complemented the databases with access to the Online National Data Archive, Lanka Stat Interactive Online Database, Quickstats online Interactive GIS based Database with Population & Housing Data, and Population Atlas series at National Level and District Level. In 2010, the government established the National Spatial Data Infrastructure (NSDI) based on data generated by Desinventar and the convergence of spatial data and GIS systems of the various ministries and agencies.

At the data utilisation front, momentum has been built around the Sendai Framework and SDGs. The Ministry of Disaster Management invited 72 stakeholders to form 15 thematic clusters, each to develop a data cell using agreed format. The Ministry of Disaster Management provided approximately 100 tsunami, flood and landslides-prone communities with local hazard maps. Comprehensive river-basin risk information is envisaged to inform the development of basin level flood and drought risk mitigation investment plans. The ambition is to promote the Environment and Disaster Data platform to be a facility for information sharing of quality research and to provide considerations for the National Budget resource allocations, informing the monitoring and reporting of the Human Development, Poverty and cross cutting areas such as gender and climate change, Sendai Framework, and SDGs. In more practical terms, data has been used to issue various publications including daily reports giving publicity for disasters and requests made for relief aid, weekend reports pertaining to disasters, and abridged reports in respect of special incidents.

The future disaster-related would benefit from policy consolidation; improvement of access and sharing among agencies that collect, store, and publish data in different formats; to coordinate the data collection to the lowest administrative levels; and investment in data processing expertise and skills.