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Strategic Framework on Geospatial Information and Services for Disasters

Working Group on Geospatial Information and Services for Disasters (WG-GISD)
The United Nations Committee of Experts on
Global Geospatial Information Management
(UN-GGIM)

INFOMAPPER

NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY
Lawton Avenue, Fort Andres Bonifacio, 1634Taguig City
Metro Manila, Philippines

It is "UN-GGIM's* guiding policy document that brings together all stakeholders and partners involved in DRM and ensures that the quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations before, during and after disasters"

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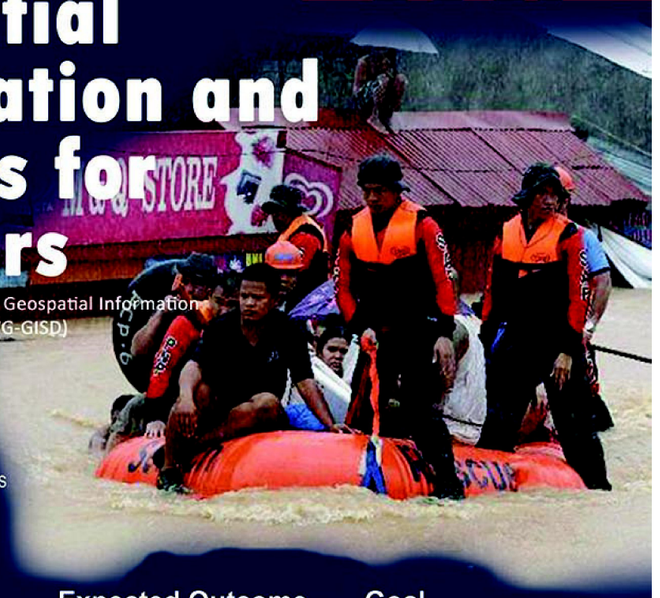
Strategic Framework on Geospatial Information and Services for Disasters

GET INVOLVED!

- UN-GGIM Working Group on Geospatial Information and Services for Disasters (WG-GISD)



Brings together all stakeholders and partners involved in DRM and ensures that the quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations before, during and after disasters"

Expected Outcome

The social, economic, and environmental risks and impacts of disasters are prevented or reduced through the use of geospatial information and services

Goal

Quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations within and among all stakeholders and partners and in all phases of disaster

Photo credit: NDRRMC, Philippines
Prepared by the National Mapping and Resource Information Authority, Philippines

Priorities for Action

Governance and Policies
Policies, collaborative agreements and legal frameworks are established and implemented.

Awareness Raising and Capacity Building
Awareness is raised and capacities are built and/or strengthened especially in the pre-disaster phase of DRRM.

Data Management
Geospatial databases and information products are developed based on common standards, protocols and processes.

Common Infrastructure and Services
Common facilities and services are established to have a common operational picture of emergency scenarios.

Resource Mobilization
All necessary technical, human and financial resources are made available.

UN-GGIM | United Nations Committee of Experts on Global Geospatial Information Management

For more details, visit http://ggim.un.org/UN_GGIM_wg5.html

May 2016

- UN-GGIM International Forum on Policy and Legal Frameworks for Geospatial Information and the Fifth Plenary of UN-GGIM Asia-Pacific (UN-GGIM-AP) in Malaysia (October 2016)
- Fourth Plenary of UN-GGIM: Americas in Chile (April 2017)
- Kunming Forum on United Nations Global Geospatial Information Management in China (May 2017)
- Global Platform for Disaster Risk Reduction in Mexico (May 2017)
- Sixth UN-GGIM: Asia and the Pacific Regional Committee Meeting in Japan (October 2017)
- Fifth High Level Forum on United Nations Global Geospatial Information Management in Mexico (November 2017)

In February-April 2017, the UN-GGIM Bureau conducted a global consultation as a means to effectively engage and inform Member States of the enhancements of the strategic framework. In May 2017, WG-Disasters received a total of 37 submissions from Member States and other stakeholders.

At the Seventh Session in August 2017, the Committee of Experts in its Decision 7/110 adopted the strategic framework and endorsed a resolution for its adoption by the UN Economic and Social Council (ECOSOC). During the session, 25 Member States, one non-UN Member State, and eight UN-GGIM bodies and international organizations provided their statements of support to the accomplishments reported by WG-Disasters.

Given the resounding support from Member States, thematic groups, and international organizations, the Permanent Mission of the Philippines to the United Nations committed to sponsoring the endorsement of the strategic framework. The Permanent Mission of the Philippines, with Jamaica, took the lead in the conduct of consultations with ECOSOC Member States with the assistance of the UN-GGIM Secretariat. Four consultations were convened from May to June 2018.

Finally on 02 July 2018, ECOSOC adopted the resolution endorsing the strategic framework. The resolution invites Member States, relevant government bodies, the United Nations system, international organizations, donors, the private sector, academia and non-governmental organizations with responsibility for DRM, in accordance with their mandates, to adopt the strategic framework recognizing that DRM requires the commitment and cooperation of all stakeholders.

Readers can email oss@namria.gov.ph or fax letters to +63-2 884-2855 for their comments and suggestions.

FOREWORD

On behalf of the National Mapping and Resource Information Authority (NAMRIA), and as co-chair of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Working Group on Geospatial Information and Services for Disasters, I am very pleased to present the Strategic Framework on Geospatial Information and Services for Disasters, published in this special issue of *Infomapper*.

The strategic framework is a landmark guiding policy document of the UN-GGIM. The goal of the framework is to ensure the availability and accessibility of quality geospatial information and services across all phases of disaster risk management (DRM). The document was authored by NAMRIA and adopted by the UN-GGIM Committee of Experts in 2017 and by the UN Economic and Social Council in 2018.

The strategic framework draws from the principles included in the Sendai Framework for Disaster Risk Reduction (2015-2030), General Assembly resolutions on international cooperation on humanitarian assistance, the 2030 Agenda for Sustainable Development, the Global Statistical Geospatial Framework, and other relevant instruments pertaining, but not limited to, the concepts of open data, communities and sources, as well as the concept of spatial data infrastructure. The implementation of the framework will emphasize the fundamentals of sustainability, accessibility, complementarity and interoperability, while taking into account national circumstances and consistency with domestic laws as well as international obligations and commitments. The framework contains five priorities for action, namely, governance and policies, awareness raising and capacity building, data management, common infrastructure and services, and resource mobilization.

To implement the strategic framework, Member States and other stakeholders should prioritize geospatially-oriented agenda in their respective development plans and programs; commit themselves to the full implementation of the priorities for action; and institutionalize good governance practices and science-based policies, supported by improved capacities, including those in relation to human resources, infrastructure, and geospatial data management.

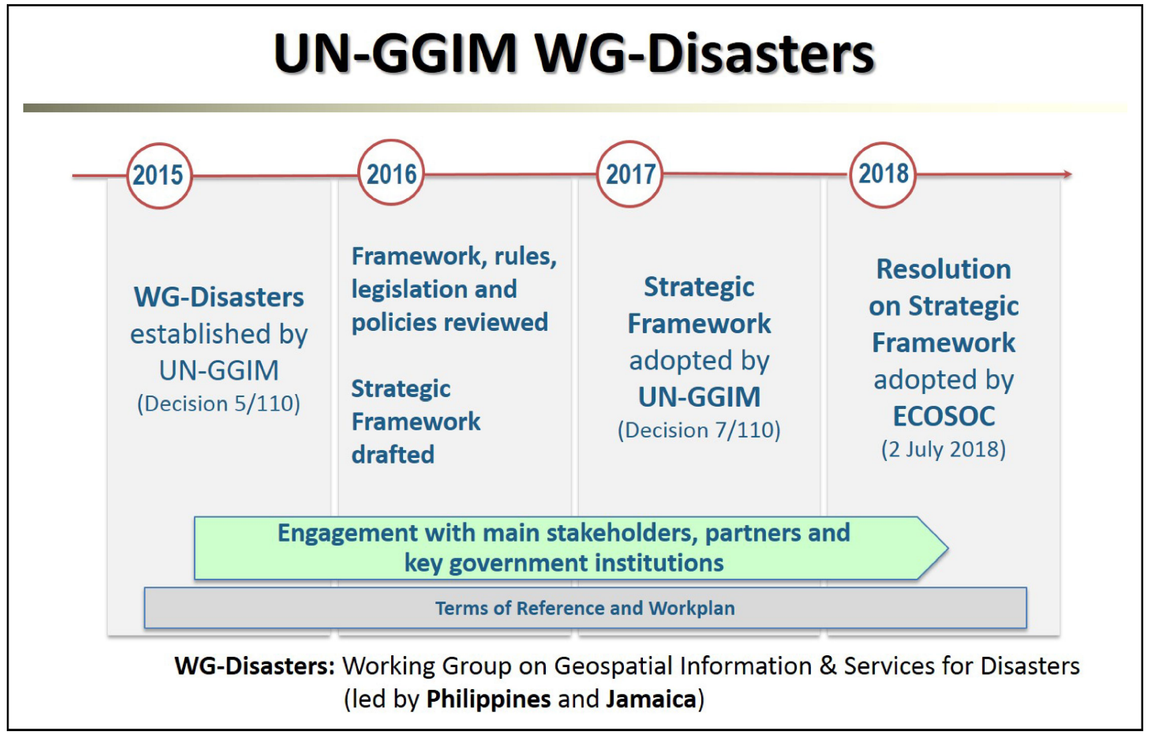
I reiterate the call made under the Sendai Framework for Disaster Risk Reduction (2015-2030) for international cooperation to be recognized as a critical element in managing geospatial information and services before, during, and after disasters, and thus implementing the provisions of the strategic framework. The adoption of best practices and identification of champions among Member States will augment their existing capacities in using geospatial information and services across all phases of DRM.

There is no other recourse but to act now to save lives especially in the face of disasters. Again, on behalf of NAMRIA, I extend our agency's strong assurance of continuing support in this regard.

Usec. PETER N. TIANGCO, PhD
Administrator

List of Acronyms

CODs	-	Common Operational Datasets
DRM	-	Disaster Risk Management
ECOSOC	-	(United Nations) Economic and Social Council
EEI	-	Essential Elements of Information
FODs	-	Fundamental Operational Datasets
GA	-	(United Nations) General Assembly
GGIM	-	(United Nations) Global Geospatial Information Management
IEC	-	Information, Education and Communication
NGOs	-	Non-Government Organizations
NHAs	-	National Hydrographic Agencies
NDMAs	-	National Disaster Management Agencies
NMAs	-	National Mapping Agencies
NSIs	-	National Statistical Institutions
NSDI	-	National Spatial Data Infrastructure
TNA	-	Training Needs Assessment
UN	-	United Nations
UNISDR	-	United Nations International Strategy for Disaster Reduction
UNOCHA	-	United Nations Office for the Coordination of Humanitarian Affairs
VGI	-	Volunteered Geospatial Information
WCDRR	-	World Conference on Disaster Risk Reduction
WG	-	Working Group



System Management Branch (GISMB) Director John Santiago F. Fabic, and GISMB Information Systems Analysts Rosal H. Dolanas and Annrou R. Ramos.

Following its establishment, the working group prepared its terms of reference and workplan which were eventually adopted in November 2015. Its main task was to develop a strategic framework to serve as guide in finding solutions aimed at improving the availability and accessibility of quality geospatial information and services as well as the coordination and communication among stakeholders on all levels of decision making across all phases of disasters. Two task teams comprised the working group. Task Team 1 led by the Philippines was tasked to develop the strategic framework and Task Team 2 led by Jamaica conducted the review of existing global, regional, and national frameworks along with laws, rules, policies, and regulations among Member States. Task Team 2's report served as input to the formulation of the strategic framework.

Adopting a participatory approach, WG-Disasters commenced with its assigned tasks in the latter part of 2015. Consultations were made with Member States and key partners in the formulation of the strategic framework through online collaboration tools, including electronic emails, teleconferences, and document sharing systems. The working group also participated in meetings in conjunction with the UN-GGIM sessions, High Level Forums, regional committee meetings, and other relevant international events to promote awareness and encourage support for the adoption of the strategic framework. These events also afforded opportunities to engage with and learn from the experiences and best practices of leading international experts and other key stakeholders on the provision and use of geospatial information and services for DRM, as well as addressing future challenges in the implementation of the strategic framework. These activities continued until 2017 even after the adoption of the strategic framework by the Committee of Experts. Among these are the following:

- UN-GGIM Fourth High Level Forum in Addis Ababa, Ethiopia (April 2016)
- First World Humanitarian Summit in Istanbul, Turkey (May 2016)
- UN-GGIM International Forum on Geospatial Information and Services for Disasters in Bridgetown, Barbados (September 2016)
- Third Plenary of UN-GGIM: Americas in Mexico (October 2016)

In the know

Strategic Framework on Geospatial Information and Services for Disasters

*by Rosal H. Dolanas**

The Strategic Framework on Geospatial Information and Services for Disasters is the guiding policy document of the United Nations Global Geospatial Information Management (UN-GGIM) that ensures quality geospatial information and services are available and accessible in a timely and coordinated way to support decision making and operations within and across all sectors and phases of disaster risk management (DRM). The document is the result of a three-year undertaking of the UN-GGIM's Working Group on Geospatial Information and Services for Disasters (WG-Disasters).

The need for a strategic framework was first established based on the results of a fact-finding analysis commissioned by the UN-GGIM Bureau in August 2015. The analysis revealed that geospatial information and services were generally not in place to support decision making, particularly during the response phase of DRM. This issue was magnified in recent large-scale events, such as Typhoon Yolanda (Haiyan, 2015), the Ebola outbreak (2014-2015), and the complex emergency situations in Iraq. The results of the analysis further revealed that only a limited number of Member States have the necessary laws, rules, and regulations in place to facilitate the provision of geospatial information and services during disasters; and confirmed the existence of challenges and gaps related to the availability and accessibility of quality geospatial information in communities involved in the above events. Therefore, a framework that would not only address the challenges in geospatial data management, but also benchmark best practices implemented worldwide across all phases of disasters, was deemed an effective strategy.

At the same juncture in August 2015 at the Fifth Session of the Committee of Experts on Global Geospatial Information Management, the Committee established WG-Disasters in support of the need to further develop and implement a strategic framework on geospatial information and services for disasters that would be: focused in a practical manner; aligned with the outcome of the Sendai Framework on Disaster Risk Reduction 2015-2030 and its implementation; able to take into consideration the special needs of developing countries, especially with respect to capacity building and sharing knowledge; broadly representative of different regions of the world and taking into account regional experiences; and built on consensus from and open to the many expressions of interest by the Member States, concerned stakeholders, and members of the working group.

The WG-Disasters, co-chaired by the Philippines, through the National Mapping and Resource Information Authority (NAMRIA), and Jamaica, was created with representatives from 22 Member States and international organizations, namely: Bangladesh, Brazil, Burkina Faso, Canada, Chile, China, Fiji, Italy, Jamaica, Japan, Liberia, Mexico, New Zealand, Niger, the Philippines, Poland, Republic of Korea, Slovenia, Sri Lanka, Sweden, United Kingdom and the United States. Additional Working Group members include the State of Palestine, UN-Office for the Coordination of Humanitarian Affairs, UN-Office for Outer Space Affairs, UN-International Strategy for Disaster Reduction, UN-Economic and Social Commission for Asia and the Pacific, UN-Economic Commission for Africa, World Bank Group, International Hydrographic Organization, International Steering Committee for Global Mapping, Group on Earth Observations, *Global Spatial Data Infrastructure* Association, Open Geospatial Consortium, Open Source Geospatial Foundation, Pacific Disaster Center, Center for International Earth Science Information Network of Columbia University, Korea Research Institute for Human Settlements, Bill and Melinda Gates Foundation, MapAction, OpenStreetMap, Environmental Systems Research Institute, Digital Globe, and Airbus.

NAMRIA Administrator, Usec. Peter N. Tiangco leads the working group. The other members are NAMRIA Deputy Administrator Efren P. Carandang, Geospatial Information

**Information Systems Analyst III, Geospatial Database Management Division-NAMRIA Geospatial Information System Management Branch and holds a Master of Science degree in Geo-Information Science and Earth Observation from the International Institute for Geo-Information Science and Earth Observation (ITC), Enschede, The Netherlands*

I. Preamble

1. Member States have the primary responsibility to protect their citizens from social, economic and environmental impacts of disasters. During the Third UN WCDRR, Member States reiterated their commitment to address disaster risk reduction and the building of resilience to disasters with a renewed sense of urgency within the context of sustainable development and poverty eradication, and to integrate, as appropriate, both disaster risk reduction and the building of resilience into policies, plans, programmes and budgets at all levels and to consider both within relevant frameworks.[1]

2. Geospatial information has been widely recognized as an important aspect of DRM. The availability and accessibility of quality geospatial data and information from authoritative sources ensure decision makers and other concerned stakeholders of an accurate common operational picture of critical scenarios before, during and after disasters.

3. During disaster situations, the data sharing mechanism to support decision-making is generally not in place. As a result, the many actors and stakeholders simultaneously engaged in response are not only gathering volumes of concurrent and inconsistent geospatial datasets but they are also concerned with issues of coordination and communication. This is aggravated further by a situation wherein local institutions that see a need to pursue geospatial data development have to compete for government resources and priorities.

4. Recent large scale disasters caused by natural and manmade hazards have demonstrated the gap between the state of geospatial information and informed decision-making. This situation highlighted the need to find solutions aimed at improving not only the availability and accessibility of quality geospatial information and services, but also the coordination and communication among stakeholders at all levels of decision-making across all phases of DRM. It underscores the strong relevance of a strategic framework not only to address the challenges on geospatial information management, but also benchmark best practices implemented worldwide across all phases of DRM.

5. Building on the results of a fact-finding analysis[2] and a review of existing frameworks, rules, legislation and policies[3], the UN-GGIM came up with a strategic framework that will optimize the benefits of using geospatial information and services by Member States and other concerned entities across all phases of DRM.

6. This framework is not only timely in view of the increasing number and impact of disasters but also contributes to the Member States' implementation of the 'Sendai Framework for Disaster Risk Reduction 2015-2030' adopted during the Third UN WCDRR in March 2015 and subsequently endorsed by the UN GA in June 2015[4]. It also builds on UN GA Resolution 59/12[5] which calls upon Member States, the United Nations and other key stakeholders to assist in addressing knowledge gaps in DRM by improving systems and networks for the collection and analysis of information on disasters, vulnerabilities and disaster risks to facilitate informed decision-making.

7. Furthermore, DRM is central to sustainable development. As such, the framework contributes to the achievement of the 2030 Agenda for Sustainable Development.

[1] **United Nations (2015)**: Sendai Framework for Disaster Risk Reduction 2015-2030: http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf [Accessed July 15, 2015]

[2] **UN-GGIM (2015):** Improving Geospatial Information Policy, Processes and Services to support Emergency Responses - Fact Finding Analysis and Proposed Strategic Framework (Final Report): http://ggim.un.org/docs/20151215%20Final%20UNGGIM%20Report%20on%20Emergency%20Response.pdf [Accessed April 03, 2016]

[3] **UN-GGIM (2016):** Review of Frameworks, Rules, Legislation, and Policies on geospatial information and services for disasters (under publication)

[4] **United Nations (2015)**: Sendai Framework for Disaster Risk Reduction 2015-2030: http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf [Accessed July 15, 2015]

[5] **United Nations (2004)**: International Cooperation on Humanitarian Assistance in the field of Natural Disasters, from Relief to Development: General Assembly Resolution A/RES/69/243: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/69/243 [Accessed April 3, 2016].

II. Expected Outcome and Goal

8. Building on the Sendai Framework for Disaster Risk Reduction (2015-2030), the strategic framework aims to achieve the following outcome:

The human, socioeconomic and environmental risks and impacts of disasters are prevented or reduced through the use of geospatial information and services

The use of geospatial and relevant statistical information will help Member States to better understand, formulate policies on, and manage the risks and impacts of disasters. The realization of this outcome will require the strong commitment and cooperation of all stakeholders and key partners involved in DRM. These include, but are not limited to governments and government agencies, UN-GGIM and UN Agencies, as well as NGOs, international partners/donors, private sector, academia and volunteers, among others.

9. The following goal must be pursued by Member States in order to attain the expected outcome:

Quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations within and across all sectors and phases of disaster risk management.

Reaching this goal requires Member States to be in the position to develop, maintain and provide the necessary geospatial information and services.

10. The following targets are proposed in order to guide Member States in the assessment of their progress in achieving the outcome and goal of the strategic framework:

a. Awareness is raised among policy makers and concerned entities on the importance of geospatial information and services to the DRM process; regular assessment, monitoring and evaluation of risks and disaster situations are conducted; and a comprehensive plan is developed to implement the five priorities for action identified in this framework;

b. Policies on collaboration, coordination and sharing are established, issued and implemented;

c. Geospatial databases and information products are developed, maintained and updated based on common standards[6], protocols and processes as important tools in every decision-making process across all phases of the DRM;

d. Common geospatial information facilities and services are established for all key stakeholders to have a common operational picture of disaster events;

e. Information, education and communications capacities and mechanisms are built and strengthened; and

f. Resources are made available to sustain all the activities for the enhancement of the use of geospatial information in DRM.

[6] **UN-GGIM (2015):** A Guide to the Role of Standards in Geospatial Information Management: http://ggim.un.org/docs/Standards%20Guide%20for%20UNGGIM%20-%20Final.pdf

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David Stage (2009): Authority and Authoritative Data: A Clarification of Terms and Concepts: www.iaao.org/uploads/Stage.pdf [Accessed February 02, 2016]

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United Nations (2004): International cooperation on humanitarian assistance in the field of natural disasters, from relief to development: General Assembly Resolution A/RES/69/243: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/69/243 [Accessed April 3, 2016]

United Nations (2015): Sendai Framework for Disaster Risk Reduction 2015-2030: http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf [Accessed July 15, 2015]

United Nations (2016): Report of the open-ended intergovernmental expert of the working group on indicators and terminology relating to disaster risk reduction: General Assembly Resolution A/71/644: http://undocs.org/A/71/644 [Accessed July 10, 2017]

UN-GGIM (2015): A Guide to the Role of Standards in Geospatial Information Management: http://ggim.un.org/docs/Standards%20Guide%20for%20UNGGIM%20-%20Final.pdf

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UN-GGIM (2016): Review of Frameworks, Rules, Legislation, and Policies on geospatial information and services for disasters (under publication)

UN ISDR (2015): Global Assessment Report on Disaster Risk Reduction 2015; Making Development Sustainable: The Future of Disaster Risk Management: http://www.preventionweb.net/english/hyogo/gar/2015/en/gar-pdf/GAR2015_EN.pdf [Accessed July 15, 2015]

UN OCHA (2011): Humanitarian Profile for Uganda 2011: http://www.unocha.org/cap/appeals/humanitarian-profile-uganda-2011 [Accessed July 15, 2015]

National Disaster Management Agencies (NDMAs). Pertains to an organization that is primarily responsible for managing natural and manmade disasters, and other emergency situations.

In most cases, National Disaster Management Offices (NDMOs) and National Emergency Management Agencies (NEMAs) have the same functions as NDMAs.

National Hydrographic Agencies (NHAs). Refers to the organizations that deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers for navigation, charting, and support to a number of marine activities.

National Mapping Agencies (NMAs). Institutional platforms within nations that is primarily responsible for generation, management and standardization of geospatial information and other related products. These may include maps, nautical charts, and images, among others.

National Geospatial Institutes (NGIs) have the same functions as NMAs.

National Spatial Data Infrastructure (NSDI). Refers to the technology, policies, standards and human resources necessary to acquire, process, store, distribute and improve utilization of geospatial data (Federal Register, 1994)

National Statistical Institutions (NSIs). Refers to the organizations/units that provide official statistics for national and local planning and development, and governs a Member State's national statistical system.

Open Data. Data that can be freely used, reused and redistributed by anyone – subject only, at most, to the attribute and sharealike

Outcome. Results of actions based on the implementation of projects, programs and activities

Phases of DRM. Refers to the main components comprising the disaster management cycle, and is cited in this document as follows:

- Before disasters (Disaster Prevention and Mitigation, Disaster Preparedness)
- During disasters (Disaster Response)
- After disasters (Disaster Rehabilitation and Recovery)

Quality Geospatial Information. Spatial data that are fit for their intended uses or purposes in operations, decision-making and planning. Further, such data should adhere with the following ten principles: accurate; valid; reliable; timely; relevant; complete; interoperable; machine processable; documented; and secured.

Resilience. The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. (UN GA Resolution A/71/644)

Risk. The combination of the probability of an event and its negative consequences (UNISDR, 2009)

Sustainable Development. Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

III. Guiding Principles

11. The strategic framework draws from the principles included in the Sendai Framework for Disaster Risk Reduction (2015-2030); the UN General Assembly resolution on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development[8]; the UN General Assembly Resolution 59/12; the 2030 Agenda for Sustainable Development; the UN-GGIM Global Statistical Geospatial Framework; and other relevant instruments pertaining, but not limited to the concepts of Open Data, Communities and Sources, as well as Spatial Data Infrastructure. The implementation of the framework will emphasize the fundamentals of sustainability, accessibility, complementarity and interoperability, while taking into account national circumstances, and consistency with domestic laws as well as international obligations and commitments:

a. Each Member State shall be in the position to generate, maintain and provide quality geospatial information and services across all phases of DRM;

b. Geospatial data and information generated and maintained by Member States and the international community shall be openly accessible to the DRM community, as appropriate;

c. The implementation of the framework shall encourage data sharing, interoperability and harmonization among neighbor countries in order to respond efficiently to cross-border disasters;

d. The implementation of the framework shall comply with the standards and requirements of the NSDI or contribute to the establishment of such infrastructure if not yet in place; and

e. The international organizations and developed countries shall extend and coordinate their support to developing countries, particularly the least developed countries, Small Island Developing States, landlocked developing countries and African countries, as well as middle-income and other countries facing specific disaster risk challenges.

IV. Priorities for Action

12. Taking into account the result of the fact-finding analysis[9] and the review of existing frameworks, laws, policies and regulations[10], and pursuant to the expected outcome and goal, there is a need for a collaborative and coordinated approach within and across sectors in Member States in implementing the following five priorities for action:

- **Priority 1:** Governance and Policies;
- **Priority 2:** Awareness Raising and Capacity Building;
- **Priority 3:** Data Management;
- **Priority 4:** Common Infrastructure and Services; and
- **Priority 5:** Resource Mobilization.

[7] **United Nations (2015)**: Sendai Framework for Disaster Risk Reduction 2015-2030: http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf [Accessed July 15, 2015]

13. Member States shall take into consideration their respective capacities, resources and priorities, as well as laws and regulations when implementing the major activities identified for each priority. These activities serve as a guide, and can be further enhanced by Member States and other key stakeholders based on their political and socio-economic situations.

Priority 1: Governance and Policies

14. The management of geospatial information and services for disasters shall be based on good governance and science-based policies. Such policies should collectively form part of other equally important policies on awareness raising and capacity building, data management, infrastructure and services, and resource mobilization. Specific activities shall include assessment and planning; institutional arrangements, collaboration and coordination and monitoring and evaluation.

National and Local Levels
15. To achieve this, it is important:

a. For Member States to ensure political and financial support at the highest level for the successful implementation of the five priorities for action.

b. To identify the champion and/or national entity that will oversee the implementation of the five priorities for action and ensure an inclusive participation of all stakeholders and key partners.

c. To establish and maintain open channels of communication with the objective of improving coordination, collaboration and exchange of information and relevant resources.

d. To regularly conduct situational assessment and analysis of the availability, accessibility and usage of quality geospatial information and services. In order to be comprehensive, such assessment shall cover the five priorities for action and based on established key performance indicators.

e. Based on the results of the assessment, to develop and implement plans and programs aimed at establishing or strengthening the availability, accessibility and usage of quality geospatial information and services across all phases of DRM.

f. To develop and implement laws and policies to bind all efforts in a systematic and consensus-based roadmap.

g. To establish a comprehensive monitoring and evaluation scheme supported by a set of metrics to continuously support and further improve both the national and institutional plans and programs as well as to ensure that geospatial information and services are aligned with changing needs and priorities.

Global and Regional Levels
16. To achieve this, it is important:

a. To encourage collaboration, coordination and partnership between government and non-government actors, between and among geospatial information and emergency response communities, and between governments and international organizations.

Capacity. It is the combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience. (UN GA Resolution A/71/644)

Common Operational Datasets (CODs). Key geographic objects needed to support the operation and decision-making during the emergency response. This would include but not be limited to: administrative boundaries, populated places, transportation network, health facilities, utilities schools, evacuation centers, among others.

Data. Facts and statistics collected for reference or analysis.

Disaster. A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. (UN GA Resolution A/71/644)

Disaster Risk Management (DRM). Refers to the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses. (UN GA Resolution A/71/644)

Disaster Risk Reduction (DRR). Aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. (UN GA Resolution A/71/644)

Essential Elements of Information (EEI). The critical information requirements prepared for and by Member States and other key stakeholders at a particular time to assist in high-level decisions and agreements.

Emergency. Unforeseen or sudden occurrence, especially danger, demanding immediate action.

Exposure. The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas. (UN GA Resolution A/71/644)

Fundamental Operational Datasets (FODs). Attributes or statistics attached to the key geographic objects defined as part of the CODs. This would include but not be limited to: population, livelihood, response capacity, among others.

Geospatial Information. Data referenced to a place – a set of geographic coordinates – on the Earth surface, whether on land or at sea.

Geospatial Services. Refers to the administrative, technical and programmatic support for geospatial-related issues and concerns. In most cases, such services require the use of spatial technologies and infrastructure support.

Hazard. A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. (UN GA Resolution A/71/644)

Humanitarian Profile. A dynamic paper that takes into account possible events in the country, as well as in the region that could have humanitarian implications and which would require proper planning and preparedness (UN OCHA, 2011)

Key Performance Indicator (KPI). A performance measure tool used to assess and evaluate the implementation of a particular activity and/or initiative. Aside from gauging one's effectiveness, KPIs can also identify issues and gaps from implementation.

c. Encouraging the Member States to develop and implement policies aimed at improving the availability and accessibility of quality geospatial information and services in support of DRM.

32. The concerned UN Agencies shall contribute to the overarching principles reflected in the strategic framework. They should provide a monitoring and evaluation scheme to ensure relevance of implemented projects, programs and activities within governments and government agencies with international agreements.

33. The international funding institutions shall consider prioritizing funding programs leading to the optimal utilization of geospatial information and services, particularly during disaster events. Similarly, expertise from these organizations can also be harnessed by Member States in implementing the technical and administrative provisions of the framework.

VI. Implementation

34. Geospatial information and services contribute vastly to the overarching effort of preventing or reducing the social, economic, and environmental impacts of disasters. Thus, Member States and other stakeholders should prioritize a geospatially-oriented agenda in their respective development plans and programs.

35. Member States and other stakeholders should commit themselves to the full implementation of the priorities for action by improving their current capacities in providing geospatial information and services across all phases of DRM and actively promoting the goals of the five priorities for action, and translate the same into national implementation plans.

36. A participatory and inclusive approach in generating, improving and managing geospatial information should be employed by all entities involved in DRM efforts.

37. Managing geospatial information and services before, during and after disasters will require all Member States and other stakeholders to institutionalize good governance practices and science-based policies supported by improved capacities on human resource, infrastructure and geospatial data management, among others.

38. In support to the Sendai Framework for Disaster Risk Reduction (2015-2030), international cooperation should be recognized as a critical element in managing geospatial information and services before, during and after disasters, and thus implementing the provisions of the strategic framework. Adopting best practices and identifying champions among Member States will augment their existing capacities in using geospatial information and services across all phases of the DRM.

Definition of Terms

Authoritative Data. These are officially recognized data that can be certified and provided by an authoritative source.

Authoritative Source. This is an entity authorized by a legal authority to develop or manage data for a specific business purpose. The data this entity creates are authoritative data.

b. To promote mutual learning and exchange of good governance practices and policies among Member States.

c. To provide effective channels where Member States and other stakeholders can share technical knowledge, lessons learned, best practices and case studies.

d. To regularly conduct assessment of the availability, accessibility and usage of quality geospatial information and services for disaster risk management and related purposes.

Priority 2: Awareness Raising and Capacity Building

17. Risks and impacts of disasters will be properly managed if Member States and other stakeholders are fully aware of their respective geospatial data and information holdings. This requires all entities to bring the necessary changes towards making available and accessible quality geospatial information and services across all phases of DRM.

National and Local Levels
18. To achieve this, it is important:

a. To translate geospatial information and services into components that can easily be understood by a wider audience. Specific strategies may include using local languages, area and issue-based scenarios, social media and other platforms in collecting and disseminating information.
b. To promote the inclusion of geospatial information management as applied to DRM in academic programs.

c. To take on technical responsibilities by leading research endeavors in DRM using up-to-date geospatial information.

d. To examine the capacities of entities to provide training and match them with inventories of existing skills among stakeholders and other key partners, and urge Member States to respond to identified gaps and areas for further improvement.

e. To design and implement IEC campaigns and disaster simulation exercises based on the results of TNA initiatives.

f. To design and implement multilevel geospatial information management training programs as applied to DRM among the data custodians and users within Member States.

g. To strengthen Member States and other stakeholders' competencies in establishing spatial data infrastructures and open data platforms for geospatial information and services.

h. To identify and assess laws, policies and institutional gaps for all awareness raising and capacity building initiatives.

Global and Regional Levels
19. To achieve this, it is important:

a. To develop and publish a long-term plan on multisectoral and multilevel capacity building, including scenario-based modeling and experiments.

b. To conduct data and information management training especially among humanitarian/responders' communities.

c. To harness the technical expertise within international partners and donor institutions through the conduct of studies, researches and models, publish and make available the results of such initiatives to recipient government, government agencies and other stakeholders.

d. To benchmark best practices from other Member States and institutions and cascade the same to the local context. Such may come in the form of human resource and system improvements, as well as technology exchange programs. Benchmarking will also ensure that governments and government agencies are at par with current global undertakings.

Priority 3: Data Management

20. A comprehensive method of managing geospatial data and information for their optimal utility by the Member States and other stakeholders is crucial in implementing the strategic framework. These include specific activities on data development, including collection; data standards and protocols; and data use guidelines. Modern, cost-effective and open source technologies may be used to improve data and information management.

National and Local Levels
21. To achieve this, it is important:

a. To develop a common and accessible database system of minimum/baseline geospatial information and services requirements, including an initial list of EEIs addressing all phases of DRM. These include, but are not limited to comprehensive CODs and FODs such as administrative boundaries; population; critical infrastructures and other exposure datasets; and earth observation data holdings. Crowdsourced or VGI may be included, but attention should be given to issues on accuracy, resolution, authoritativeness, integrity, openness, and interoperability of such datasets.

b. To develop hazard, vulnerability and disaster risk assessment maps and other information products as crucial inputs to national and local DRM plans and in framing relevant projects, programs and activities.

c. To maintain national and local emergency responders common contact database.

d. To develop a registry of all international humanitarian response/assistance organizations to ensure coordination of deployment of humanitarian aid.

e. To conduct humanitarian profiling and event or incident scenario building across all phases of DRM.

c. To encourage the private sectors to invest in the provision of geospatial information and related services for DRM.

d. To identify and assess laws, policies and institutional gaps for all resource mobilization initiatives.

Global and Regional Levels
28. To achieve this, it is important:

a. To improve access to funding support for the activities in the implementation of the strategic framework. These include provisions for grants, loans and other forms of financial support.
b. To promote resource-sharing mechanisms among Member States and regions with common interests and in similar situations.

V. Role of Stakeholders

29. Member States should be in the position to generate, maintain and provide quality geospatial information and services. This will require the involvement of NMAs, NDMAs, NSIs, NHAs and other relevant government organizations.

30. It is also recognized that the commitment, goodwill, knowledge, experience and resources of other stakeholders are key to the implementation of the strategic framework. Member States should encourage the following actions on the part of all public and private stakeholders and other key partners:

a. Civil society groups, volunteers' organizations and other community-based organizations to fully participate in the initiatives of the government, including technical and administrative provisions relating to geospatial information and services.

b. Private sector institutions, including financial regulators and accounting bodies, as well as philanthropic foundations, to integrate geospatial information and services as a key component to support informed decision making across all phases of DRM. They should also encourage projects at the national and local levels to adhere to established standards, protocols, guidelines and policies as well as contribute to their strengthening, if necessary.

c. Academia, scientific and research entities and networks to focus their studies on the potential contributions of geospatial information and services across all phases of DRM. Results of these researches shall be made available and accessible to the public.

d. Media to take an active and inclusive role at the local, national, regional and global levels in raising public awareness on the importance of geospatial information and services in DRM.

31. The UN-GGIM shall play a leading role in setting the agenda for the development of global geospatial information and services, and to promote their use to address key global challenges. As such, it will be well placed to contribute to several of the priorities mentioned in the framework, starting with:

a. Raising the awareness of Member States and other stakeholders on the importance of geospatial information and services before, during and after disasters;

b. Encouraging the Member States to develop and promote geospatial databases, standards, protocols and processes aimed at improving data quality and interoperability at the national and global levels;

National and Local Levels
24. To achieve this, it is important:

a. To build on existing systems to develop a common infrastructure and facility, particularly an operations center supported by a maintenance program.

b. To implement business use cases, where operation centers will provide common support services in addressing high level process needs in all phases of DRM. A mirror system for online and offline processing of data can also be established to sustain operations during disasters.

c. To ensure the interoperability of all systems, processes and skills among and within Member States by adhering to data management guidelines and other geospatial information management standards.

d. To maintain the integrity of established common infrastructures and services by regularly conducting disaster simulation exercises.

e. To identify and assess laws, policies and institutional gaps for all common infrastructure and services initiatives.

f. To pursue the application of new geospatial information management technologies.

Global and Regional Levels
25. To achieve this, it is important:

a. To assist Member States and other stakeholders in establishing their respective common infrastructure and services.
b. To promote interoperability of systems and processes and share best practices to Member States.
c. To encourage the establishment of regional geoportals for DRM.

Priority 4: Common Infrastructure and Services

26. In order to support the activities identified in this framework, an array of human resources, as well as technical, financial and other forms of logistical and administrative support is required among Member States and other stakeholders.

National and Local Levels
27. To achieve this, it is important:

a. To sensitize the authorities on the necessity of funding the acquisition, maintenance and updating of geospatial information. In particular, the NMAs should be supported to play a key role in the implementation of a NSDI that supports the availability and accessibility of quality geospatial information and services across all phases of DRM.

b. To encourage the academe to prioritize funding for the conduct of related research, development and extension activities, particularly in the implementation of the strategic framework.

f. To develop business use cases and data/information product templates to answer high level process needs for geospatial information in DRM.

g. To optimize the use of geospatial information products for the development of common operational pictures of disaster events. In turn, this information will be translated by Member States and other stakeholders to reflect existing conditions at the local level.

h. To develop data management policies including, but not limited to data collection; data sharing; data classification; data custodianship; data stewardship; metadata; data security and control; and data backup and recovery on local and national levels.

i. To promote the importance of integrating geospatial data and statistics in DRM plans and programs.

j. To identify and assess laws, policies and institutional gaps for all data management initiatives.

k. To encourage the Open Data community and government institutions to engage more actively with each other for complementation and alignment of their respective datasets.

l. To use geospatial information as a major driver for the establishment of the NSDI.

Global and Regional Levels
22. To achieve this, it is important:

a. To encourage governments and the international community to openly share their data and establish mechanisms thereof that include identification of mission-specific EEIs.

b. To encourage existing projects aimed at developing global datasets to converge and collaborate with relevant government agencies in countries, starting with NMAs, to get these datasets completed, updated and validated.

c. To optimize the use of geospatial information products for the development of common operational pictures of disaster events within and across affected regions.

d. To adhere to data management guidelines including, but not limited to data collection; data sharing; data classification; data custodianship; data stewardship; metadata; data security and control; and data backup and recovery in the global and regional levels.

e. To cascade best practices, particularly established standards, protocols and processes within and among Member States.

Priority 5: Resource Mobilization

23. Institutionalizing geospatial information and services requires infrastructure support, such as a common operations center, facilitated by a dedicated team of experts and support staff. This should be complemented by hardware and software acquisitions, as well as application systems which will serve as data distribution platforms. Interoperability of information will likewise require facilities and systems duly recognized and supported by Member States and other key stakeholders.

Strategic Framework on Geospatial Information and Services for Disasters

Scope and Purpose

The strategic framework aims to guide all stakeholders and partners in the management of geospatial information and services in all phases of disaster risk management

Expected Outcome

The social, economic, and environmental risks and impacts of disasters are prevented or reduced through the use of geospatial information and services

Goal

Quality geospatial information and services are available and accessible in a timely and coordinated way to support decision-making and operations within and among all stakeholders and partners and in all phases of disaster risk management

Priorities for Action

Member States with the support of regional and international organizations as well as other relevant organizations should focus their action on the following five priorities for action:

Priority 1 Governance and Policies	Priority 2 Awareness Raising and Capacity Building	Priority 3 Data Management	Priority 4 Common Infrastructure and Services	Priority 5 Resource Mobilization
Policies, collaborative agreements and legal frameworks aiming at improving the availability and accessibility of quality geospatial information and services among all stakeholders and partners established and implemented in all phases of DRM	Awareness is raised among concerned entities on the importance of geospatial information and services and all necessary technical and human capacities are built and/or strengthened	Geospatial databases and information products are developed based on common standards, protocols and processes as important tools in every decision-making process across all phases of DRM	Common facilities and services are established for all key stakeholders and partners to have a common operational picture of emergency scenarios	All necessary technical, human and financial resources are available to sustain all the activities of DRM

Guiding Principles

The strategic framework is guided by the 2030 Agenda for Sustainable Development, International Strategy for Disaster Reduction, Sendai Framework for Disaster Risk Reduction (2015-2030), the UN-GGIM Global Statistical Geospatial Framework, UN General Assembly resolution on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development and other relevant instruments. It is also guided by the principles of open data and requirements of national data infrastructure, and by the UN-GGIM's Statement of Shared Guiding Principles for the Management of Geospatial Information.