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Committee of Experts on Global Geospatial Information Management
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Geospatial information and services for disasters

Geospatial information and services for disasters

Note by the Secretariat

Summary

The present paper contains the report of the Working Group on Geospatial Information and Services for Disasters, for consideration by the Committee of Experts on Global Geospatial Information Management.

At its fifth session, held in New York from 5 to 7 August 2015, the Committee of Experts adopted decision 5/110, in which it welcomed the initiative of the Secretariat to commission a study on improving geospatial information policy, processes and services to support emergency response and disaster risk reduction, and strongly supported the proposal to establish a working group to further develop and implement a strategic framework on geospatial information and services for disasters in support of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. In its report, the Working Group on Geospatial Information and Services for Disasters describes its formation, delineates its terms of reference and work plan and details the processes applied in developing its strategic framework, including the review of existing frameworks, laws, rules and regulations of Member States on the provision of geospatial information and services before, during and after disasters. The report contains feedback and guidance received on the strategic framework during consultations with members of the Working Group and key partners and presents the current version as provisionally adopted by the Working Group.

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* E/C.20/2016/1

I.   Introduction

1.   At the time of a crisis, all the geospatial information necessary to support decision-making should be accessible from authoritative sources, and of good quality so that all the stakeholders involved are able to use the same geospatial information to ensure a common operational picture of the situation; during the emergency response as well as the recovery and reconstruction phases.

2.   The mechanisms and resources that would allow for the above to take place are generally not in place before a crisis happens. As a result, the many actors simultaneously engaged in the response are not only generating an important volume of concurrent and frequently overlapping geospatial information initiatives, but their competing priorities, combined with a lack of coordination and collaboration, are also adding to the burden of the local institutions, which already have to deal with limited resources.

3.   Recent large scale events, such as typhoon Yolanda/Haiyan (2013), the Ebola outbreak (2014-2015) and the complex emergency situation in Iraq, have exacerbated several systemic issues pertaining to the collection, use and sharing of geospatial information. These events have emphasized the need to find solutions aimed at improving not only the availability and accessibility of quality geospatial information, but also the coordination and collaboration among all the stakeholders involved in the provision of geospatial information and services. This includes all levels of decision making and operations, and across the whole emergency cycle.

4.   The Secretariat, upon request and consultation with the Bureau of the Committee of Experts, launched a study[1] aimed at identifying best practices and benchmarks for improving effective geospatial information management during an emergency response, with the objective to develop and implement a strategic framework that would address the above-mentioned issues. The study looked at technical and management aspects of geospatial information and services provision and coordination mechanisms among emergency response stakeholders to improve geospatial information policy, processes and services for emergency response. The results of the study can be used as a baseline for the Committee of Experts to leverage its mandate and role, representing national geospatial information authorities, and how to better link to the decision-making process at times of emergencies by providing better evidence-based geospatial information, and in close cooperation with international geospatial actors.

5.   At its fifth session, held in August 2015, the Committee of Experts adopted decision 5/110[2] supporting the Secretariat's initiative to commission a study on improving geospatial information policy, processes and services to support emergency response and disaster risk reduction. This sets a concrete example of practical United Nations cooperation in a highly relevant field for Member States. Further, the Committee strongly supported the proposal to establish a working group to further develop and implement a strategic framework on geospatial information and services for disasters that would be:

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[1] 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%20UN-GGIM%20Report%20on%20Emergency%20Response.pdf

[2] E/2015/46-E/C.20/2015/17 Report on the fifth session: http://ggim.un.org/docs/meetings/GGIM5/E-2015-46-E-C.20-2015-17_GGIM5%20Report_en.pdf

    (i)   Focused in a practical manner;

    (ii)   Aligned with the outcome and follow-up to the Sendai Framework for Disaster Risk Reduction 2015-2030 and its implementation;

    (iii)   Able to take into consideration the special needs of developing countries, especially with respect to capacity building and sharing knowledge;

    (iv)   Broadly representative of different regions of the world and taking into account regional experiences; and

    (v)   Built on consensus from and open to the many expressions of interest by the Member States, concerned stakeholders and members of the working group.

6. The present report details the creation of the Working Group on Geospatial Information and Services for Disasters, its Terms of Reference and Work Plan, as well as activities and related tasks, and the formulation process for the strategic framework. Points for discussion and decision are provided in paragraph 29.

II.   Establishment of the Working Group on Geospatial Information and Services for Disasters

7. To institutionalize the integration of geospatial information and its services in emergency response and disaster risk reduction, the Committee of Experts established a Working Group on Geospatial Information and Services for Disasters during the fifth session of the Committee in August 2015. Recognizing geospatial information as an important aspect of emergency response and disaster risk reduction, the Working Group was tasked to develop a strategic framework to serve as a guide in finding 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 the emergency cycle. The Working Group was required to ensure that the framework could be implemented at a national, as well as regional and global level.

8. The Working Group, co-chaired by the Philippines and Jamaica, was established with representatives from 22 Member States: 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, the United Kingdom and the United States. Additional Working Group members include the State of Palestine, UN-OCHA, UN-OOSA, UNISDR, UN-ESCAP, UN-ECA, World Bank Group, IHO, ISCGM, GEO, GSDI, OGC, Open Source Geospatial Foundation (OSGeo), Pacific Disaster Center, Center for International Earth Science Information Network of Columbia University (CIESIN), Korea Research Institute for Human Settlements (KRIHS), Bill and Melinda Gates Foundation, MapAction, OpenStreetMap, Esri, Digital Globe and Airbus.

III.   Activities of the Working Group and related Task Teams

9. Following its establishment in August 2015, the Working Group prepared its Terms of Reference[3] which defined its modalities, vision, scope and goals. The formulation was guided by the primary responsibility of Member States to protect its citizens from

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[3] Terms of Reference: http://ggim.un.org/docs/20151120%20TOR%20UN-GGIM%20WG%20on%20Geospatial%20Information%20and%20Services%20for%20Disasters.pdf

human, economic and environmental impacts, as stated in the Sendai Framework for Disaster Risk Reduction 2015-2030.

10. In order to achieve the targeted results for 2016, a draft Work Plan was also prepared and subsequently adopted in November 2015 by the Working Group. The document outlines the milestones, including meetings in conjunction with the UN-GGIM sessions, High Level Forums and other relevant international events, and the prescribed timelines based on the inputs of Member States and other key partners.

11. The present revised Work Plan [4] focuses on the formulation of the strategic framework, including the integration of reports and comments from the two task teams, and its promotion at various international events, including the UN-GGIM Fourth High Level Forum in Addis Ababa, Ethiopia (April 2016) and the First World Humanitarian Summit in Istanbul, Turkey (May 2016) as well as forthcoming activities.

12. Member States and international organizations were invited to join and participate in the activities of the Working Group. This resulted in robust membership comprising senior officials and technical experts from around 50 Member States, as well as representatives from businesses, aid organizations and other related institutions. They contributed to the discussions and the preparation of reports to the Committee of Experts, taking advantage of their own available resources. These discussions were made primarily through online collaboration tools, including electronic mails, remote meetings and document sharing systems.

13. Based on the Work Plan, two task teams were established to oversee the activities of the Working Group. Task Team 1, led by the Philippines, is tasked to develop a strategic framework on geospatial information and services for disasters. Jamaica led Task Team 2 in conducting a review of existing global, regional and national frameworks, laws, rules, policies and regulations among Member States for the provision of geospatial information and services during times of disaster.

14. An in-person meeting (16 Working Group members participated), along with a simultaneous web-conference (18 Working Group members participated), was also convened on the margins of the UN-GGIM Fourth High Level Forum in Addis Ababa, Ethiopia on 19 April 2016. Task Team 2 reported its review of existing laws, rules, frameworks and best practices of several Member States, non-government organizations and other organized groups on the use of geospatial information for disasters. Analysis shows that, although laws on shared geospatial information are fragmented, spatial data infrastructure (SDI) laws in some Member States have sought to include and facilitate the provision of geospatial information during emergency responses. Task Team 1 reported the latest version of the draft Strategic Framework on Geospatial Information and Services for Disasters [5], and emphasized that the five priorities for action: 1) Governance and policies; 2) Awareness raising and capacity building; 3) Data management; 4) Common infrastructures and services; and 5) Resource mobilization; are of equal importance. During the Working Group meeting, the major discussions are summarized [6] as follows:

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[4] Work Plan: http://ggim.un.org/docs/UN-GGIM%20Revised%20Work%20Plan%20of%20WG-GISD.pdf
[5] Draft Strategic Framework: http://ggim.un.org/docs/draft_UN-GGIM_Strategic%20Framework%20on%20GISD%20-%20Version%203.pdf
[6] Summary of the WG-Disasters meeting on 19 April 2016: http://ggim.un.org/docs/meetings/4th%20HLF/Highlights%20of%20WG-Disasters%20Meeting%20in%20Addis%20Ababa.pdf

(i) Crowd sourcing or volunteered geospatial information (VGI) is recommended to be part of the Framework. However, attention should be given to accuracy issues between authoritative data and VGI, especially for disaster use;

(ii) There should be clear guidance on how data will be shared with international responders considering the downstream effects of how these groups are allowed to use products and services, a situation in which a number of governments are not comfortable with;

(iii) Administrative boundaries and their interoperability should be highlighted because of their importance to international responders. The significant gap in the global geospatial dataset on administrative boundaries should be recognized;

(iv) The Strategic Framework is being developed to address the disconnect and data gaps among the national government disaster organizations, non-governmental organizations and the international humanitarian community. The improved version of the Framework will help countries build the best operational scenarios during Disaster Risk Reduction Management (DRRM);

(v) It was reiterated that simulation activities involving key actors should be emphasized in the Strategic Framework;

(vi) National laws on Spatial Data Infrastructure (SDI) should include the role of geospatial information and services in disaster risk reduction and management (DRRM);

(vii) Collaboration between government and non-government actors, horizontal partnerships (among geospatial communities), vertical partnerships (geospatial and emergency communities), and strategic partnerships with international organizations were emphasized; and

(viii) It is important to include promotion and participation of the social media community in raising awareness.

15. The critical importance of the Strategic Framework was highlighted by the Philippines and Jamaica in their national statements during the first World Humanitarian Summit (WHS) convened on 23-24 May 2016 in Istanbul, Turkey. The Philippines committed to, inter alia, "accelerate the reduction of disaster and climate-related risks through open sharing of risk information and common and fundamental operational datasets among Disaster Risk Reduction and Management (DRRM) actors across the whole emergency cycle". Jamaica expressed its support to the Strategic Framework, and its potential to address the vulnerabilities of Small Island Developing States (SIDS). These statements reaffirmed the Working Group's commitments under the Sendai Framework for Disaster Risk Reduction 2015-2030.

16. The Philippines presented the Strategic Framework in more detail during Special Session 15: Risk and Vulnerability Analysis of the WHS, emphasizing the relevance of a strategic framework for managing geospatial data and information during disasters, as well as its contribution to the implementation of the Sendai Framework. The Philippines cited, as proof of concept, the integration of the essential elements of the Strategic Framework into the Philippine DRRM system even though the Framework is still in the process of development.

17. As part of the Working Group's activities, an International Forum on Geospatial Information and Services for Disasters (The Barbados Forum) will be convened in

September 2016 in Bridgetown, Barbados7 on the margins of the Urban and Regional Information Systems Association (URISA) 2016 Caribbean GIS Conference. This Forum will provide the means to garner support for the Framework amongst the national and international humanitarian and emergency response community. The Barbados Forum is organized in cooperation with the Government of Mexico through the Mexican Agency for International Development Cooperation (AMEXCID), with the technical collaboration of the National System for Territorial Information from the Chilean Ministry of National Assets, and the National Administration of Mapping, Surveying and Geoinformation (NASG) of China through the UN-GGIM China Trust Fund.

18. On the margins of the International Forum the Working Group will also meet to finalise the Strategic Framework and consider the drafting of a UN-GGIM resolution endorsing the Strategic Framework to the United Nations Economic and Social Council (ECOSOC) in 2017. Planning and discussions on the preparation for the forthcoming International Forum on Geospatial Information and Services for Disasters, to be held in Kunming, China, in spring 2017, will also be on the agenda.

19. The Terms of Reference adopted by the Working Group are attached in this report as Annex I.

IV.   Formulation of the Strategic Framework

20. The need for a Strategic Framework on Geospatial Information and Services for Disasters was established based on the results of a fact finding analysis commissioned by the Bureau of UN-GGIM in August 2015. The analysis revealed that geospatial data, information and services necessary to support decision-making processes were generally not in place, particularly during the response phase. This issue was magnified in recent large scale events, such as Typhoon Yolanda (Haiyan, 2013), the Ebola outbreak (2014-2015) and the complex emergency situations in Iraq.

21. Further, the results of the fact finding analysis 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 a crisis; and confirmed the existence of challenges and gaps related to the availability and accessibility of quality geospatial information in communities involved in recent events. Therefore, a framework that would not only address the challenges on geospatial data management, but also benchmark best practices implemented worldwide across all phases of the emergency cycle, was deemed an effective strategy.

22. Building on these results, the Working Group formulated the Strategic Framework on Geospatial Information and Services for Disasters (2016-2030). The prescribed timeline is cognizant of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. It is also guided by the 2030 Agenda for Sustainable Development, International Strategy for Disaster Reduction, United Nations General Assembly resolution on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development, UN General Assembly Resolution 69/243 of 23 December 2014, and other relevant instruments.

23. A participatory and consensus-based approach was employed by the Working Group in writing the Framework. A series of online discussions in late 2015 and early 2016 were conducted to solicit the comments and inputs from Member States and other key partners.

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7 Concept Note of the Barbados forum: http://ggim.un.org/docs/Disasters%20Concept%20Paper-English.pdf

24. The Framework defined as its goal that 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 the emergency cycle; as well as the following five priorities for action to ensure its effective implementation across various levels of decision-making:

(i) **Governance and Policies** – 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 the emergency cycle;

(ii) **Awareness Raising and Capacity Building** – 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 especially in the pre-disaster phase of disaster risk reduction and management (DRRM);

(iii) **Data Management** – 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 the emergency cycle;

(iv) **Common Infrastructure and Services** – Common facilities and services are established for all key stakeholders and partners to have a common operational picture of emergency scenarios especially during and in the post-disaster phases of DRRM; and

(v) **Resource Mobilization** – All necessary technical, human and financial resources are available to sustain all the activities of DRRM.

25. Distinct roles and responsibilities were also defined by the Framework for each stakeholder. While each Member State should be in the position to generate, maintain and provide quality geospatial information and services across all phases of DRRM, it is recognized that this will require the involvement of all relevant stakeholders. Their commitment, goodwill, knowledge, experience and resources are therefore key to the implementation of the Strategic Framework.

26. All stakeholders are bounded by a number of general considerations in implementing the Framework, including:

(i) The vital role of geospatial information and services during emergency events;

(ii) The importance of good governance practices and science-based policies in managing geospatial information and services during disasters; and

(iii) The crucial role of international agreements on emergency management, and disaster risk reduction and management (EM/DRRM) in adopting best practices and identifying champions among Member States.

To implement the framework, it is necessary to:

(i) Solicit the commitment of Member States and other key partners in implementing the priorities for action;

(ii) Encourage Member States and other key partners to improve their current capacities in providing geospatial information and services across all phases of the emergency cycle; and

(iii) Encourage Member States and other key partners to actively promote the goals of the five priorities for action, and translate the same into national implementation plans.

27. The latest version of the Strategic Framework is attached in this present report as an Annex.

V.   Summary

28. Following the requirements of decision 5/110 at the fifth session of the Committee of Experts in August 2015, the Working Group has been successful in:

(i) Engaging key government institutions and the humanitarian and emergency response communities involved in the provision of geospatial information and services to review, complement and improve the initial draft Framework presented during the fifth session in August 2015;

(ii) Conducting a review of frameworks, laws, rules and regulations on the provision of geospatial information and services existing among Member States; and

(iii) Developing a Strategic Framework to provide concrete steps and mechanisms in ensuring the availability and accessibility of geospatial information before, during and after disasters.

VI.   Points for discussion

29. The Committee is invited to:

(a) Take note of the work carried out by the Working Group inclusive of the development of a draft Strategic Framework on Geospatial Information and Services for Disasters 2016-2030;

(b) Express its views on the latest version of the Strategic Framework;

(c) Consider the Strategic Framework, as a guide in their respective national activities to ensure the availability and accessibility of quality geospatial information and services across all phases of the emergency cycle;

(d) Provide guidance in the future activities of the Working Group including the consideration of drafting a resolution and its referral to the Economic and Social Council for its adoption and implementation; and

(e) Actively participate in the future activities of the Working Group.

ANNEX I: Terms of Reference

Working Group on Geospatial Information and Services for Disasters

1. **Vision of the Working Group**

   Accurate, timely and reliable geospatial information and services are available, in a coordinated way, to decision makers and operational leads prior to, during and post disasters.

2. **Scope of the Working Group**

   Based on Decision 5/110: Coordination of United Nations activities related to geospatial information management adopted by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) on 7 August 2015, Working Group on Geospatial Information and Services for Disasters (hereafter "WG-Disasters") will develop a strategic framework that brings all stakeholders and partners involved in Disaster Risk Reduction and/or Emergency Management together to ensure for the necessary geospatial information and services to be available, of quality and accessible in a coordinated way to decision-making and operations prior to, during and post disasters.

3. **Goals of the Working Group**

   Foster emergency management and therefore Disaster Risk Reduction across UN-GGIM activities as a priority area of focus. The recommendations, actions, guidelines and standards from the Working Group will address and support the needs of the humanitarian and response communities.

   Following the requirements of Decision 5/110, by the sixth session of the UN-GGIM Committee of Experts (August 2016), the WG-Disasters will have successfully:

   (i)   Engaged with the main stakeholders and partners from the humanitarian and response communities as well as the key governmental institutions involved in the provision of geospatial information and services to review, complement and improve the draft framework and flowcharts presented during the UN-GGIM Committee of Experts in August 2015;

   (ii)   Conducted a review of frameworks, laws, rules and regulations already existing among the Member States when it comes to the provision of geospatial information and services prior to, during and post disasters; and

   (iii)   Developed the final strategic framework for consideration by the UN-GGIM Committee of Experts at its sixth session (August 2016) with recommendations for further referral to the United Nations Economic and Social Council (ECOSOC) and the United Nations General Assembly (GA).

4. **Working Group Members and their Roles**

   (i)   The WG-Disasters will comprise experts from the Member States, international organizations, non-governmental organizations (NGOs), academia and the private sector. Geographical balance and representation will be considered for the selection of members from the Member States. The WG-Disasters will elect two Co-chairs from the experts from the Member States; and

   (ii)   The Working Group members are to contribute to the discussions and the preparation of Working Group reports to the UN-GGIM Committee of Experts, taking advantage of their own available resources.

5. **Meetings**

(i)   The Working Group will convene a meeting in conjunction with UN-GGIM meetings, High Level Forums, and other relevant international events;

(ii)   The Working Group will operate primarily through online collaboration tools (e.g., email, remote meeting, document sharing systems, etc.);

(iii)   Decisions of the Working Group will be made by consensus.

6. Secretariat

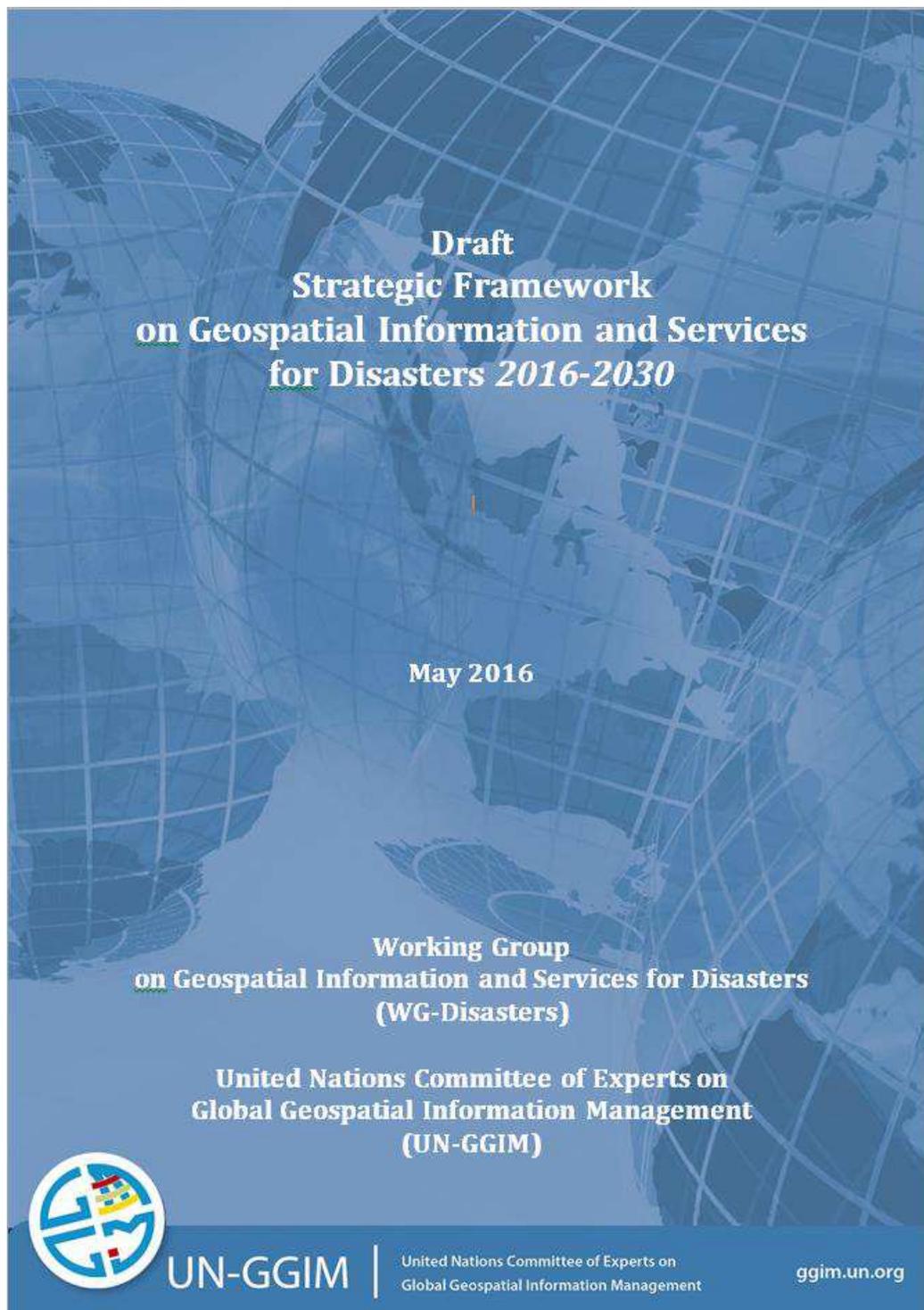The UN-GGIM Secretariat will provide secretarial support to the WG-Disasters.

7. Reporting Procedure

The Working Group will report to the UN-GGIM Committee of Experts meetings.

8. Modus Operandi

The Working Group will prepare a road map and take necessary actions accordingly to achieve its goals.

ANNEX II: **Draft Strategic Framework on Geospatial Information and Services for Disasters 2016-2030**

Draft
Strategic Framework
on Geospatial Information and Services
for Disasters *2016-2030*

May 2016

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

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

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

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List of Acronyms

CODs	Common Operational Datasets
DRRM	Disaster Risk Reduction and Management
ECOSOC	(United Nations) Economic and Social Council
EEI	Essential Elements of Information
FODs	Fundamental Operational Datasets
GA	(United Nations) General Assembly
IEC	Information, Education and Communication
NGOs	Non-Government Organizations
NMAs	National Mapping Agencies
NSDI	National Spatial Data Infrastructure
UN	United Nations
UNEP	United Nations Environment Programme
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management
UNISDR	United Nations International Strategy for Disaster Reduction
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
VIG	Volunteered Geospatial Information
WCDRR	World Conference on Disaster Risk Reduction
WG	Working Group

Preamble

1. Geospatial information has been widely recognized as an important aspect of disaster risk reduction and management (DRRM). 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.

2. During emergency crises, 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.

3. Recent large scale events, such as typhoon Yolanda (Haiyan, 2013), Ebola outbreak (2014-2015) and the complex emergency situations in Iraq, have demonstrated the gap between the state of geospatial information and informed decision-making. This situation has emphasized 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 the emergency cycle.

4. These events underscored the strong relevance of a strategic framework not only to address the challenges on geospatial data management, but also benchmark best practices implemented worldwide across all phases of DRRM.

5. Building on the results of a fact finding analysis[8] and a review of existing frameworks, rules, legislation and policies[9], the UN-GGIM worked closely with concerned key partners in order to come 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 DRRM.

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 United Nations World Conference on Disaster Risk Reduction (WCDRR) in March 2015 and subsequently endorsed by the United Nations General Assembly in June 2015[10]. It also builds on UN General Assembly Resolution 69/243[11] which calls upon Member States, the United Nations and other key stakeholders to assist in addressing knowledge gaps in DRRM by improving systems and networks for the collection and analysis of information on disasters, vulnerabilities and risks to facilitate informed decision-making.

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[8]**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%20UN-GGIM%20Report%20on%20Emergency%20Response.pdf [Accessed April 03, 2016]

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

[10]**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]

[11]**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].

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

II. Expected Outcome and Goal

8.   Member States and the international community have the responsibility to protect citizens from human, economic and environmental impacts, as well as provide support and assistance during disasters and/or humanitarian catastrophes. Building on the Sendai Framework for Disaster Risk Reduction (2015-2030), the strategic framework aims to achieve the following outcome over the next 14 years:

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

The realization of this outcome will require the strong commitment of all stakeholders and key partners involved in DRRM. 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, Academe and Volunteers, among others.

9.   The following goal must be pursued 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 the emergency cycle.

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 being proposed in order to support Member States in the assessment of their progress in achieving the outcomes and goal of the strategic framework:

  a.   Awareness is raised among concerned entities on the importance of geospatial information and services and communication mechanisms are established, used and sustained;
  b.   Regular assessment, monitoring and evaluation of emergency situations are conducted and a comprehensive plan is developed to address identified gaps;
  c.   Governance and policies on collaboration and coordination are established, issued and implemented;
  d.   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 the emergency cycle;
  e.   Common facilities and services are established for all key stakeholders to have a common operational picture of emergency scenarios;
  f.   Technical and human capacities are built and/or strengthened and all necessary resources are made available to sustain all the activities.

III. Guiding Principles

11.   The strategic framework draws from the principles included in the Sendai Framework for Disaster Risk Reduction 2015-2030[12]; the UN General Assembly resolution on international

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[12] **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]

cooperation on humanitarian assistance in the field of natural disasters, from relief to development[13]; the UN General Assembly Resolution 69/243; the 2030 Agenda for Sustainable Development; 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 be guided by the following principles, while taking into account national circumstances, and consistent 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 DRRM;

b. Geospatial data and information generated and maintained by Member States shall be openly accessible to the DRRM community, particularly with those collected by the international community during emergency response;

c. The implementation of the framework shall comply with the standards and requirements of the National Spatial Data Infrastructure (NSDI) or contribute to the establishment of such infrastructure if not yet in place; and

d. The international community 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[14] and the review of existing frameworks, laws, policies and regulations[15], 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.

13. Member States shall take into consideration their respective capacities, resources and priorities, as well as laws and regulations when initiating major activities for each priority.

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 the other equally important policies on awareness raising and capacity building, institutionalizing infrastructure and services, and resource mobilization.

National and Local Levels

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[13]**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]

[14]**UN-GGIM (2015):** Improving Geospatial Information Policy, Processes and Services to support Emergency Responses - Fact Finding Analysis and Proposed Strategic Framework (Final Report)

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

15. To achieve this, it is important:

    a. To identify the entity that will oversee the implementation of the five priorities for action and ensure an inclusive participation of all stakeholders and key partners with the objective of improving coordination, collaboration and communication.

    b. To regularly assess the situation when it comes to the availability and accessibility of quality geospatial information and services. In order to be comprehensive, such assessment shall cover the five priorities for action and based on agreed upon Key Performance Indicators (KPIs).

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

    d. To develop and implement the necessary policies to bind all efforts in a systematic and consensus-based roadmap.

    e. To establish a comprehensive monitoring and evaluation scheme to continuously support and further improve both the national and institutional plans and programs as well as 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.

    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 mobilize technical knowledge and necessary resources.

Priority 2: Awareness Raising and Capacity Building

17. Risks and impacts of disasters will be greatly reduced 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 DRRM.

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, reflecting area and issue-based scenarios and use of social media in collecting and disseminating information.

    b. To take on technical responsibilities by leading research endeavors in DRRM using up-to-date geospatial information and services. Inputs from other stakeholders should also be integrated into the DRRM system, particularly in the framing of laws and policies.

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

d. To promote the importance of integrating geospatial data and statistics in DRRM plans and programs through Information, Education and Communication (IEC) campaigns and emergency simulation exercises.

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

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

g. To identify and assess policy 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, improve and conduct common data and information management training among the humanitarian/responders' communities.

b. To harness the technical expertise within international partners and donor institutions through the conduct of studies, researches and models, and make available all resulting geographical datasets to recipient government and government agencies.

c. To promote the importance of integrating geospatial data and statistics in DRRM plans and programs through IEC campaigns and emergency simulation exercises.

d. To benchmark best practices from other Member States and institutions and cascade them to the local context. Such may come in the form of manpower and system improvements, as well as technology exchange programs. Benchmarking will also ensure that governments and government agencies are at par with the 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; data standards and protocols; and data use guidelines.

National and Local Levels

21. To achieve this, it is important:

a. To develop a common and official database of minimum/baseline geospatial information and services requirements, including an initial list of Essential Elements of Information (EEI) addressing all phases of DRRM. These include, but are not limited to comprehensive Common and Fundamental Operational Data sets (CODs, FODs) such as administrative boundaries; critical infrastructures and other exposure datasets; Earth observation data holdings; and other forms of crowd sourced or volunteered geospatial information (VGI). Attention should be given to accuracy issues between authoritative data and VGI, particularly for disaster use.

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

c. To institutionalize national and local emergency responders through the development of a 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 the emergency cycle.

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

g. To adhere to data management guidelines including, but not limited to data sharing; data classification; data custodianship; data stewardship; metadata; data security and control; and data backup and recovery across various levels of governance, starting from the international community to Member States down to the respective institutions.

h. To identify and assess policy and institutional gaps for all data management initiatives.

i. To encourage the Open Data Community to engage more actively with governments and government agencies to align the datasets produced by volunteers with the official registries and nomenclatures.

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

k. To use DRRM as a driver for the establishment of the National Spatial Data Infrastructure.

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.

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 to develop common operational pictures of disaster events within and across affected regions.

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

Priority 4: Common Infrastructure and Services

23. Institutionalizing geospatial information and services requires infrastructure support 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.

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 case uses, where operation centers will provide common support services in addressing high level processes needs in all phases of DRRM. 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 and processes 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 emergency simulation exercises.
    e. To identify and assess policy and institutional gaps for all common infrastructure and services initiatives.

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 cascade best practices and information exchange within and among Member States, to support the logistics provided by international partners and donor institutions.

Priority 5: Resource Mobilization

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 the emergency cycle.
    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.
    c. To encourage the private sectors to invest in the provision of geospatial information and related services for DRRM.
    d. To identify and assess policy 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 cascade best practices, particularly effective financing options within and among Member States.

V. Role of Stakeholders

29. While each Member State should be in the position to generate, maintain and provide quality geospatial information and services across all phases of DRRM, it is recognized that this will require the involvement of all relevant stakeholders. Their commitment, goodwill, knowledge, experience and resources are therefore key to the implementation of the strategic framework.

30. When determining specific roles and responsibilities[16] for stakeholders to this framework, and at the same time building on existing relevant international instruments, 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 partake in the initiatives of the government, including technical and administrative provisions relating to geospatial information and services

  b. Private sector financial 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 DRRM. 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. Academe, scientific and research entities and networks to focus their studies on the potential contributions of geospatial information and services across all phases of DRRM. 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 DRRM.

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;

  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 to DRRM.

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

General Considerations

34. Geospatial information and services contribute vastly to the overarching effort of minimizing and preventing the human, economic, and environmental impacts of disasters. Thus, Member

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[16] Gleaned from the **Sendai Framework for Disaster Risk Reduction (2015-2030)**

States and other stakeholders should prioritize a geospatially-oriented agenda in their respective development plans and programs.

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

36.   Managing geospatial information and services during 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 sets, among others.

37.   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 during 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 emergency cycle.

Means of Implementation

38.   To implement the framework, it is necessary:

   a. To solicit the commitment of Member States and other stakeholders in implementing the priorities for action.
   b. To encourage the Member States and other stakeholders to improve their current capacities in providing geospatial information and services across all phases of DRRM.
   c. To encourage the Member States and other stakeholders to actively promote the goals of the five priorities for action, and translate the same into national implementation plans.

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.

Capacity: It is the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability (UNISDR, 2009).

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, 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 involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR, 2009).

Disaster Risk Reduction (DRR): The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposures to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR, 2009).

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.

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 – which can often be gathered, manipulated and displayed in real time.

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2009).

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.

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) and/or National Mapping Authorities (NMAs) have the same functions as NMAs.

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

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

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to 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 (UNISDR, 2009).

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.

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Strategic Framework on Geospatial Information and Services for Disasters
2016 - 2030

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 Reduction and Management (DRRM)

Expected Outcome

The human, economic, and environmental risks and impacts of disasters are prevented and 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 DRRM

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 DRRM	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 especially in the pre-disaster phase of DRRM	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 DRRM	Common facilities and services are established for all key stakeholders and partners to have a common operational picture of emergency scenarios especially during and in the post-disaster phases of DRRM	All necessary technical, human and financial resources are available to sustain all the activities of DRRM

Guiding Principle

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, 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 own Statement of Shared Principles for the Management of Geospatial Information.