

**Draft**  
**Review of Frameworks, Rules, Legislation,  
and Policies on Geospatial Information and  
Services for Disasters**

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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**

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## SUMMARY

1. The present paper contains the report on the review conducted by Task Team 2 (TT2) on frameworks, laws, rules and regulations already existing among Member States when it comes to the provision of geospatial information and services prior to, during and post disasters. The laws were reviewed and evaluated to determine which of the six (6) core strategies from the proposed UN-GGIM Strategic framework report are being covered by these instruments. Some 17 countries were selected for review with consideration for representation from each of the five (5) UN-GGIM regions. The results from the initial fact finding analysis were used as a starting point for the review, and consultations had with national SDI focal points and national disaster organizations to gather relevant documents made available in a document repository. The UN-GGIM Knowledge portal was extensively utilized to review existing SDI laws/frameworks.
2. Only a limited number of countries examined have specific laws, rules or regulations in place to facilitate the provision of geospatial data and services to other stakeholders and partners during a crisis; or incorporate this into their overall spatial data infrastructures. Some countries speak in general terms to the sharing of information but do not specifically refer to geospatial information, while others have frameworks existing that are highly fragmented owing to the fact that there may be diverse owners of geospatial data relevant to disaster operations. Those that do exist for the most part have some of the essential elements of the five (5) strategic priorities in the draft strategic framework fully integrated into these laws. In fact, some jurisdictions, with established SDI laws or policies, have sought to include specific provisions to ensure that geospatial data is effectively shared during times of disasters.
3. Effective disaster risk management legislation should encompass all phases of the disaster cycle, risks and capacities, and with the participation of all key stakeholders. This requires the adequacy and reliability of appropriate geospatial information, which provides additional value for more effective decision making. It is recommended that national legislation should at minimum make provision for data to be provided free of charge for the disaster response effort (during and post events). Legislation should also explicitly outline the institutional framework for coordination as well as outline a monitoring and evaluation regime. In consideration of the core strategies that have been identified, the study proposes that legislative provisions should be made to strengthen and align data management and system interoperability, and speak to regional and international partnerships for DRM to also include data, human resources and technical capacity.

## 1.0 BACKGROUND

4. Task Team 2 (TT2) of the UN-GGIM Working Group on Geospatial Information and Services was established to review the frameworks, laws, rules and regulations already existing among Member States when it comes to the provision of geospatial information and services prior to, during and post disasters. Consideration was given to select countries represented in each of the five (5) UN-GGIM regions (See Figure 1). TT2 also examined global frameworks and guidelines for inclusion in the strategic framework for consideration by the UN-GGIM Committee of Experts at its sixth session. The laws/frameworks reviewed are summarized at **Annex I** but are by no means exhaustive.
5. The laws were reviewed and evaluated to determine which of the six (6) core strategies from the proposed UN-GGIM Strategic framework report presented during the 5th session of the UN-GGIM Committee of Experts<sup>1</sup> are being covered by these instruments; what gaps exist in the pieces of legislation identified; what institutional framework exists for GI during disasters and what would be considered ideal; and what kinds of measures are being suggested/enforced to ensure the implementation of the core strategies. The six (6) core strategies identified were: Awareness raising, capacity building and training; Common standards, protocols and processes; Collaboration, coordination and communication; Policies; Common infrastructures and services; and Resources mobilizations.
6. Using the results of the survey from the original scoping exercise, national SDI focal points were contacted for copies of relevant frameworks. The UN-GGIM Knowledge portal was also scoured to review existing SDI laws while national disaster organizations in several member states were also contacted for contributions in order to review legislation specific to disaster management.

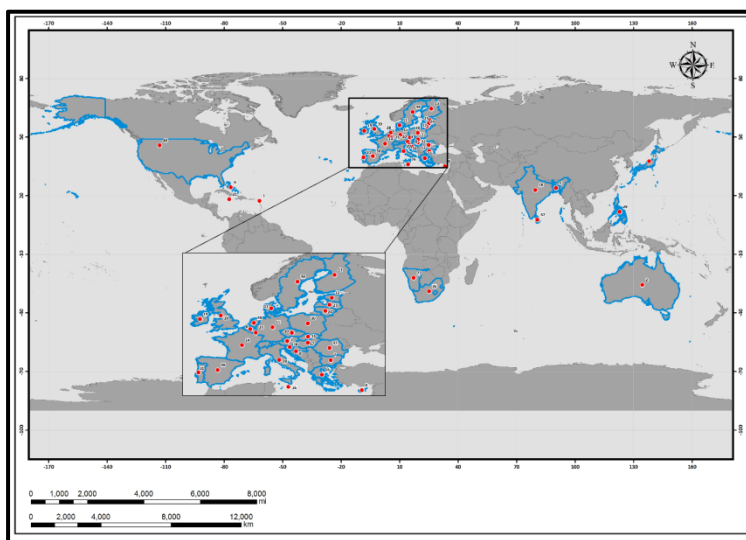


Figure 1: Member States where Legislative and Policy Frameworks examined

<sup>1</sup>UN-GGIM (2015): Improving Geospatial Information Policy, Processes and Services to Support Emergency Responses – Fact Finding Analysis and Proposed Strategic Framework (Final Report). Available at: <http://ggim.un.org/docs/20151215%20Final%20UN-GGIM%20Report%20on%20Emergency%20Response.pdf>

## 2.0 GLOBAL RESOLUTIONS AND FRAMEWORKS

7. The **UN General Assembly Resolution 59/212**<sup>2</sup> calls upon States, to adopt and continue to implement effectively necessary legislative measures to mitigate the effects of natural disasters and integrate disaster risk reduction strategies into development planning as well as disaster preparedness and capacity building in disaster response and mitigation. The resolution further encourages the sharing of geographical data including remote sense images and GIS data among Governments, space agencies and relevant international humanitarian organizations.
8. The **Sendai Framework for Disaster Risk Reduction (2015-2030)**<sup>3</sup> is the first major agreement of the post-2015 development agenda, with seven targets and four priorities for action. The framework recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders. It aims for “*the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.*”
9. The Sendai Framework articulates the need for “*improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics*” with recognition of stakeholders and their respective roles.
10. Sendai recognizes as a guiding principle, that DRR requires a multi-hazard approach and inclusive risk-informed decision-making based on the open exchange and dissemination of disaggregated data.... complemented by traditional knowledge. It further recognizes among its priorities for action, with respect to understanding disaster risk, it is important to promote the collection, analysis, management and use of relevant; make non-sensitive hazard exposure and risk information freely available; develop, periodically update and disseminate location-based disaster risk information, including risk maps by using geospatial information technology; and to promote real time access to reliable data, make use of space and in situ information including GIS. (Articles 24 a -f).
11. The Inter-Agency Standing Committee (IASC) Task Force on Information Management has developed a set of guidelines relating to improving the effectiveness of humanitarian response during times of disasters, the operation of the Humanitarian Information Centres (HIC) and to ensure that information management (IM) activities support national information systems, standards, build local capacities and maintain appropriate links with relevant Government and local authorities. Among these are, (a) **IASC Guidelines on Common Operational Datasets (CODs) in Disaster Preparedness and Response** which outlines the common datasets needed for response in humanitarian emergencies, as well as the governance model for the management of the data (i.e. accountabilities and responsibilities);<sup>4</sup> (b) **IASC Operational Guidance on**

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<sup>2</sup> General Assembly Resolution 59/212 *International Cooperation on Humanitarian Assistance in the Field of Natural Disasters, from Relief to Development* A/RES/59/212 (3 March 2005) available from [undocs.org/A/RES/59/212](http://undocs.org/A/RES/59/212).

<sup>3</sup> United Nations (2015): Sendai Framework for Disaster Risk Reduction 2015-2030: Available from [undocs.org A/CONF.224/CRP.1](http://undocs.org/A/CONF.224/CRP.1)

<sup>4</sup> Inter-Agency Standing Committee (IASC) Task Force on Information Management Guidelines on the Humanitarian Profile Common Operational Dataset, 2011. Available at:

**Responsibilities of Cluster/Sector Leads & OCHA in Information Management**, which is intended for use at the country level to help Cluster/Sector leads, OCHA and humanitarian partners ensure that relevant information related to a humanitarian emergency is provided to the right person at the right time in a usable form to facilitate situational understanding and decision-making;<sup>5</sup> and (c) **IASC Terms of Reference for the Operations of Humanitarian Information Centres (HIC)** which basically provides guidance for the operations of the HICs to ensure greater coordination of international efforts in responding to disasters.<sup>6</sup> This document notes that “[The] coordination challenge can be mitigated through the provision of predictable information management products and services to humanitarian actors in the field by a HIC”, underscoring the importance of data to support response efforts.

### 3.0 REGIONAL FRAMEWORKS

#### *The European Union*

12. Within the **European Union**, Regulation (EU) No 377/2014<sup>7</sup> of the European Parliament and of The Council established the Copernicus Programme and repealed Regulation (EU) No 911/2010 (establishing the European Earth monitoring programme (GMES) and the rules for the implementation of its initial operations). Copernicus is a programme being delivered under the Europe 2020 Strategy for smart, sustainable and inclusive growth (the ‘Europe 2020 strategy’). It is benefitting a wide range of Union policies and contributing to reaching the objectives of the Europe 2020 strategy, in particular by developing an effective space policy to provide the tools to address some of the key global challenges and meet the targets on climate change and energy sustainability.
13. The Regulation focuses on data for pre and post disaster events. There is mention of data and information produced in the framework of Copernicus being made available on a full, open and free-of-charge basis subject to appropriate conditions and limitations, in order to promote their use and sharing.
14. Copernicus speaks to a service component to ensure delivery of information in climate change mitigation, emergency management and security. In particular, Copernicus delivers information to support the implementation of local, national and European policies; climate change adaptation and mitigation; geospatial information in support of emergency management, including through prevention activities, and civil security including support for the Union's external action.

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[https://www.humanitarianresponse.info/system/files/documents/files/iasc\\_guidelines\\_on\\_common\\_operational\\_datasets\\_in\\_disaster\\_preparedness\\_and\\_response\\_2010-11-01.pdf](https://www.humanitarianresponse.info/system/files/documents/files/iasc_guidelines_on_common_operational_datasets_in_disaster_preparedness_and_response_2010-11-01.pdf)

<sup>5</sup> IASC Operational Guidance on Responsibilities of Cluster/Sector Leads & OCHA in Information Management. Available at [https://www.humanitarianresponse.info/system/files/documents/files/Operational\\_Guidance\\_on\\_Responsibilities\\_of\\_Sector\\_Cluster\\_Leads\\_and\\_OCHA\\_in\\_Information\\_Management\\_V3.0.pdf](https://www.humanitarianresponse.info/system/files/documents/files/Operational_Guidance_on_Responsibilities_of_Sector_Cluster_Leads_and_OCHA_in_Information_Management_V3.0.pdf)

<sup>6</sup> Inter-Agency Standing Committee (IASC) Task Force on Information Management (IASC) Terms of Reference Humanitarian Information Centres (HICs), 2008. Available at: [https://interagencystandingcommittee.org/system/files/legacy\\_files/IASC%20-%20Humanitarian%20Information%20Centre%20Terms%20of%20Reference%20-%20May%202008.pdf](https://interagencystandingcommittee.org/system/files/legacy_files/IASC%20-%20Humanitarian%20Information%20Centre%20Terms%20of%20Reference%20-%20May%202008.pdf)

<sup>7</sup> Regulation (EU) No 377/2014 of the European Union. OJ L 122, 24.4.2014, p. 44–66 available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1465604918278&uri=CELEX:32014R0377>.

## *African Union*

15. The **Africa Regional Strategy for Disaster Risk Reduction**<sup>8</sup> recognizes that “*Governments need to expand the scope of national information systems to enable them to be used for both day-to-day development planning and for disaster risk reduction planning during times of crises*”. The Strategy further recognizes the need to strengthen disaster risk reduction information services and public communications mechanisms, including space technology and geographical information systems in a bid to enhance access to information and to expand information dissemination.
16. The Strategy speaks to public awareness, partnerships and institutional arrangements for regional response, noting that national Governments will lead the process of developing disaster risk reduction capacities and the integration of disaster risk reduction into sustainable development. All the core strategies have therefore been included in this regional strategy.

## *Asia/Pacific*

17. The Asia/Pacific region in the **Strategy for Disaster Risk Reduction and Emergency Preparedness and Response in the Asia Pacific Region**<sup>9</sup> articulated that disaster preparedness and response planning should be based on a comprehensive and integrated approach, recognising the efforts of governments, relevant organisations, businesses and the community. As an overarching vision, it speaks to the “*active exchange of knowledge, experience, and expertise using various sharing and learning modes and through the facilitation of risk and disaster information/data sharing for more effective disaster management and emergency response.*”
18. The ten-year strategic successor document, the **ASEAN Vision 2025 on Disaster Management**<sup>10</sup> charts the direction of ASEAN towards becoming a global leader in disaster management; the new AADMER Work Programme 2016-2020 refers in great detail the value of communications exchange between all stakeholders involved in a situation and the availability of “*timely and accurate information before, during and after a disaster is crucial in disaster management*” (paragraph 41). Despite its currency, there is no reference to geospatial data, however the core strategies of communication, coordination, policies, resources mobilization are fully considered.

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<sup>8</sup> Africa Regional Strategy for Disaster Risk Reduction. Available at [http://www.unisdr.org/files/4038\\_africaregionalstrategy1.pdf](http://www.unisdr.org/files/4038_africaregionalstrategy1.pdf)

<sup>9</sup> Asia Pacific Economic Cooperation (APEC) Strategy for Disaster Risk Reduction and Emergency Preparedness and Response in the Asia Pacific region: 2009 to 2015. Available at : [http://mddb.apec.org/documents/2008/TFEP/TFEP1/08\\_tfep1\\_012.pdf](http://mddb.apec.org/documents/2008/TFEP/TFEP1/08_tfep1_012.pdf)

<sup>10</sup> ASEAN Vision 2025 on Disaster Management. Available at: <http://www.asean.org/storage/2016/02/ASEAN-Vision-2025-on-Disaster-ManagementAdopted.pdf>

## 4.0 NATIONAL FRAMEWORKS AND EXPERIENCES IN SELECT MEMBER STATES

19. Each Member State examined for this study already has its own national policy or guidelines for coordinating disaster response and recovery with variations in institutional strength and internal mechanism. This mechanism lies in legal frameworks, organization/agencies responsible for disaster management, SDI focal points, disaster management partners, and international frameworks.
20. Countries such as The Philippines, and some countries in the European Union (for example Latvia, Finland) provide excellent examples of specific legislation that speak to the use of geospatial information and its sharing amongst actors during disaster response. Other countries such as the United States and Jamaica have established national frameworks based on Federal Directives or Cabinet Decree respectively, relevant to the use of GIS and the provision of geospatial information for disaster response and emergency management. The proceeding paragraphs outline some of the provisions in select pieces of legislation.

### *The Philippines*

21. The **Philippines Republic Act 10121** (Philippines Disaster Risk Reduction and Management Act, 2010)<sup>11</sup> is an Act to strengthen the Philippine disaster risk reduction and management system, providing for the national disaster risk reduction and management framework and institutionalizing the national disaster risk reduction and management plan, appropriating funds therefor and for other purposes. The Act recognizes the importance of multi-stakeholder participation in the development, updating, sharing of and access to information for policy and planning and decision making before during and after disasters.
22. A fairly comprehensive framework legislation, the Act speaks to the 6 core strategies of the Strategic Framework (see paragraph 2 above) and is also completely in line with the Sendai Framework. Section 4 of this legislation defines the scope to being “*for the development of policies and plans and the implementation of actions and measures pertaining to all aspects of disaster risk reduction and management, including good governance, risk assessment and early warning, knowledge building and awareness raising, reducing underlying risk factors, and preparedness for effective response and early recovery.*”
23. Section 8 defines the role of The Office of Civil Defense (OCD) as providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters. The Act also speaks to institutional and organizational frameworks at the regional and local government levels (Sections 10, 11 and 12). As it relates to standards and protocols, Section 9 (d) of the Act speaks to developing and ensuring the implementation of national standards in carrying out disaster risk reduction programs including preparedness, mitigation, prevention, response and rehabilitation works, from data collection and analysis, planning, implementation, monitoring and evaluation.

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<sup>11</sup> Philippines Republic Act 10121 (Philippines Disaster Risk Reduction and Management Act, 2010). Available at [http://www.preventionweb.net/files/22035\\_17303ra10121drmmact1.pdf](http://www.preventionweb.net/files/22035_17303ra10121drmmact1.pdf)

Section 9 (g) speaks to formulating standard operating procedures for the deployment of rapid assessment teams, information sharing among different government agencies, and coordination before and after disasters at all levels. Sections 9 (h) and (i) define rules relating to communication and capacity building respectively.

24. Concomitant with the Philippines DRM Act are the Joint Memorandum Circular No. 2015-01<sup>12</sup> (dated May 2015) **Guidelines for the Implementation of the Open Data** to support information sharing and exchange across and in all levels of governance; in addition to Memorandum Circular No 2/2016<sup>13</sup> (dated January 2016) on **Creating The Information Management - Technical Working Group (IMTWG) and Ensuring the Availability and Accessibility of Quality Operational Datasets to Support the Disaster Risk Reduction and Management System in The Philippines**. Memorandum Circular 2/2016 aims to provide the guidelines in establishing, managing and sharing Common and Fundamental Operational Datasets with applicability to all national, regional and local disaster risk reduction and management committees, key partners whether government or private responsible for the sharing of fundamental datasets.

### *Latvia*

25. Section 25 (6) of **The Geospatial Information Law of Latvia**<sup>14</sup> notes explicitly that users of geospatial data sets, which are involved in the disaster management, rescue operations or the liquidation of consequences caused by emergency situations, shall, in timely manner, provide themselves with a written permission of the holder of the geospatial data set for the use of the dataset.
26. The holder of a geospatial data set shall provide free access to the information regarding the provisions for the joint use and re-use of the relevant geospatial data set. The Cabinet shall determine the mandatory content of the provisions for the use of geospatial data sets and the procedures for the receipt of a permit. (Section 25(7))
27. Section 30 of the Act further specifically, provides that:
  - a. In cases when an extraordinary state or mobilisation has been announced, geospatial information shall be transferred to the National Armed Forces and the authorities, which perform the tasks specified in the civil protection plans, upon the request free of charge.
  - b. In case of a disaster or announcement of an emergency situation State or local government authorities shall receive or download geospatial information regarding the territory where the disaster has taken place or the emergency situation has been announced from the uniform geospatial information portal free of charge.
28. The Core Strategies addressed in the Latvia Geospatial Law include Standards (Section 4 para 6) in co-operation with sectoral ministries ensure the development of standards and/or adaptation of international standards in the field of geospatial information.

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<sup>12</sup> Available at <https://drive.google.com/open?id=0Byxi2nIWRoGfX1Bua0U2VTg3WFU>

<sup>13</sup> Available at <https://drive.google.com/open?id=0B6enNobOP9SZWkhJaVd3Qm9WQzQ>

<sup>14</sup> The Geospatial Information Law of Latvia. Available at [http://www.lgia.gov.lv/~media/LGIA/MK%20noteikumi/Geospatial\\_Information\\_Law.ashx](http://www.lgia.gov.lv/~media/LGIA/MK%20noteikumi/Geospatial_Information_Law.ashx)



29. Concomitant with the Latvia Geospatial Law, the **Civil Protection Law, 2006**<sup>15</sup> was established to create a system of civil protection for disaster management, ensuring the legal and organizational grounds for the protection of persons, property and the environment in cases of disasters and when there are threats of disaster.
30. Section 7 of the Act speaks to the State services being responsible to establish and maintain a database for the existing disaster management resources (including collective means of protection), as well as regarding the objects of increased danger. While not explicitly speaking to GI, Section 13 (Planning of Civil protection) prescribes that *“legal and natural persons shall provide free of charge information in the field of civil protection, in order to ensure the planning of civil protection in cases of disaster (sources of risk at the object, external threats, the amount of dangerous substances at the object, characteristics of the dangerous substances, amounts of leakage of dangerous substances ... civil protection structures, resources at the disposal of the object, which depending on the type of threat may be used for disaster management, preventive and readiness measures planned and performed, planned response and emergency measures for the elimination of the consequences, training of employees in civil protection matters, instruction carried out, civil protection units, data regarding the accidents that have occurred at the object).”*
31. **Rules of the Cabinet of Ministers No 423, 2007** speaks to the structure of the civil protection plan for local municipality, enterprise and institution and procedure for development and approval of this plan.

### ***Finland***

32. In Finland, the **Law on Spatial Data Infrastructure (421/2009)**<sup>16</sup> stipulates how the Infrastructure for Spatial Information in the European Community (INSPIRE)<sup>17</sup> requirements are implemented in Finland. It does not expand the scope of the Directive. The Law defines the obligations of public authorities which administer the original spatial data, subject to the Directive. The scope of the law is defined in the Regulation on SDI. The authorities must provide metadata on spatial data and services and integrate them in the search service. Also other geographic information producers can publish metadata in search service. It also provides guidelines for metadata compilation. The law further stipulates that authorities must prepare and keep up to date shared spatial data as well ensure that it is available for online viewing and data transfer.
33. The **Finland Rescue Act 379/2011**<sup>18</sup> was established to improve the safety of people and to ensure that when there is the threat of an accident or when an accident has occurred, people are rescued, important functions are secured and the consequences of the accident are successfully limited.

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<sup>15</sup> Civil Protection Law, 2006 Available at [http://www.ifrc.org/docs/IDRL/Laws/Civil\\_Protection\\_Law\\_Latvia.pdf](http://www.ifrc.org/docs/IDRL/Laws/Civil_Protection_Law_Latvia.pdf)

<sup>16</sup> Available at <https://drive.google.com/open?id=0B3zrekVRttRfQ1I1Y3E3YWxJc1E>

<sup>17</sup> The Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007.

<sup>18</sup> Available at <http://www.finlex.fi/en/laki/kaannokset/2011/en20110379.pdf>

34. Section 89 of the Act makes provisions for *right of access to information for rescue operations and supervisory duties and states specifically that* rescue authorities have, for the purpose of carrying out the duties laid down for them in the Act, the right to access, free of charge, information necessary for the planning and implementation of rescue operations and for the carrying out of supervisory duties laid down for rescue services. Rescue authorities have the right of access to information on the spatial data sets referred to in the Act on Spatial Data Infrastructure (421/2009) and in the statutes issued under it as well as information laid down in the Act on the Population Information System and the Certification Services of the Population Register Centre (661/2009) including property and building identifier, coordinates etc.

### ***Hungary***

35. The **Act on Disaster Recovery (CXXVIII.2001)**<sup>19</sup> declares that disaster management is a national matter and it is the duty of the State. This Act is applied, in order to prevent disasters in the territory of Hungary, to human activities threatening with disaster, in case of danger, disaster, and if prevention is necessary against the harmful effects of a disaster.

36. Chapter II of the Act provides for the governance of disaster recovery, including the tasks of the Government and governmental coordination, of the minister in charge of disaster management, of local governmental offices and of local commissions for protection, of the mayor, of services, of voluntary organizations. Anybody perceiving or having information of a disaster or the hazard thereof, must report it to the disaster recovery authorities. Chapter III contains detailed rules regarding disaster recovering organs under the control of the minister and their tasks. Chapter V contains the definition of risk of disaster and of danger, and provides for extraordinary measures to be taken by the Government in case of danger.

### ***United Kingdom***

37. The **Civil Contingencies Act, 2004**<sup>20</sup> establishes a legislative framework for civil protection in the United Kingdom. It imposes a clear set of roles and responsibilities on those organisations with a role to play in preparing for and responding to emergencies. Part One of the Act speaks to local arrangements for civil protection while Part Two defines what constitutes emergency powers. Part One establishes a clear set of roles and responsibilities for those involved in emergency preparation and response at the local level. Whilst there is no reference in the Act to the use and sharing of geospatial data, there are specific duties that require response agencies to:

- a. Assess the risk of emergencies occurring and use this information to inform contingency planning in the form of a Community Risk Register;
- b. Share information with other local responders to enhance co-ordination.

38. To facilitate multi-agency engagement in the assessment of risks and sharing of information during emergency planning and response activities a suite of collaboration tools, including document management and online mapping is provided by the Cabinet Office Civil Contingency Secretariat. This service, known as ResilienceDirect, is funded centrally by Cabinet Office and is used widely by response agencies throughout the UK. It ensures that the same 'common

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<sup>19</sup> Act on Disaster Recovery (CXXVIII.2001). Available at website (Hungarian) <http://njt.hu/>

<sup>20</sup> Available at [http://www.legislation.gov.uk/ukpga/2004/36/pdfs/ukpga\\_20040036\\_en.pdf](http://www.legislation.gov.uk/ukpga/2004/36/pdfs/ukpga_20040036_en.pdf)

operating picture' is visible to everyone from frontline responders on mobile devices to Ministers across departments in London.

39. The ResilienceDirect online mapping capability has been developed using open source technologies by Ordnance Survey, Britain's mapping agency. It brings together over 2,000 geospatial datasets and OGC compliant web mapping services from response agencies. These include the Environment Agency (e.g. live flood alerts), British Geological Survey (e.g. landslide susceptibility), Met Office (e.g. live rainfall prediction) and Health and Safety Labs (e.g. population density) and also live feeds from traffic cameras, river gauges and other sensors. Detailed base mapping layers and property addressing information is provided free at the point of use to all users under the terms of the Public Sector Mapping Agreement between Ordnance Survey and the UK Government. The service is accredited by CESG, the UK government's National Technical Authority for Information Assurance and hosted in a secure cloud infrastructure, allowing situational reports, documents, site plans, mapping layers and other information to be shared securely between authorised individuals, groups and organisations. This ensures that sensitive personal or critical national infrastructure information remains secure and visible only to those agencies that require it.
40. In addition, the UK Government has created the Natural Hazards Partnership to enable more coordinated and coherent advice from the government and the resilience communities. It brings together expertise from across the UK's leading public sector agencies with the aim of drawing upon scientific advice in the preparation, response and review of natural hazards. UK geospatial agencies are a key part of this partnership.

### *Australia*

41. The **Queensland Disaster Management Strategic Policy Framework**<sup>21</sup> sets key objectives for disaster management and guides the development and implementation of disaster management policy and Programs that align with Queensland government priorities. This policy framework focuses on action in planning, mitigation, preparedness, response and recovery. In particular, involving the systematic data collection and analysis. It considers as a strategy establishing a web based, good practice clearing house that is accessible to stakeholders to share disaster management information while at the same time implement the interoperability of information and communications system across all levels of the disaster management arrangements.
42. The core strategies covered are Awareness raising, capacity building and training; collaboration, coordination and communication; policies and governance; resources mobilization; monitoring and evaluation.

### *Sri Lanka*

43. The **Sri Lanka Disaster Management Act, No13**<sup>22</sup> of 2005 provides for the establishment of the National Council for Disaster Management; the Disaster Management Centre; the appointment of

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<sup>21</sup> Queensland Disaster Management Strategic Policy Framework. Available at <https://drive.google.com/open?id=0B6enNobOP9SZSmFJX250dV93TIU>

<sup>22</sup> Sri Lanka Disaster Management Act, No 13. Downloaded from <http://www.dmc.gov.lk/attchments/DM%20Act%20English.pdf> [Accessed January 2016]

the technical advisory committee; the preparation of the disaster plans; the award of compensation and for matters connected there with or incidental thereto.

44. There is no specific mention of geospatial information, however, Section 8 of 2 (f) of the Act speaks to the promotion of research and development programmes in relation to disaster management and setting up and maintaining a database on disaster management.

### ***The Bahamas***

45. The **Bahamas Spatial Data Infrastructure Act**<sup>23</sup> is an act to establish the Bahamas National GIS Centre as a Department of Government within Section 127 (c) of the constitution to define the special purposes and functions of the infrastructure system and program and the Geospatial Advisory Council: to define the functions and objectives of the System, program and the Council and for connected matters.
46. The Bahamas NSDI Act highlights the benefit to ensure access use, exchange, sharing and dissemination of interoperable non-confidential spatial information for The Bahamas and spatial data services, including across different sectors (Part II, Section 4k). Whereas there is no specific reference to geospatial information for disaster response highlighted in the Act, Section 13 (4) prescribes that all Government entities shall deliver on a timely basis, updated base data to the NSDI Centre to update the spatial information held on behalf of the entity by the Centre and other Government entities.

### ***Antigua & Barbuda***

47. The **Antigua and Barbuda Disaster Management Act, 2002**<sup>24</sup> is an Act to provide for the effective organization of preparedness, management, mitigation of, response to and recovery from emergencies and disasters natural and man-made in Antigua and Barbuda.
48. The Act establishes the post of Director who is responsible for coordinating the general policy of the Government of Antigua and Barbuda relating to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Antigua and Barbuda as well as liaising with persons and organizations within and without Antigua and Barbuda for the purpose of exchanging information and facilitating the harmonization of the policies. Without making specific reference to GI, the Director is also responsible to prepare and review hazard risk assessment maps of Antigua and Barbuda. Section 11 of the Act specifies the responsibilities of other public officers to provide information to the Director for the purposes of preparing the National Disaster Preparedness Response Plan.

### ***Jamaica***

49. Vide **Cabinet Decision 25/10**<sup>25</sup> dated 28th June 2010, approval was granted for the establishment of the National Emergency Response Geographical Information Systems Team (NERGIST), the

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<sup>23</sup> Bahamas Spatial Data Infrastructure Act , 2014. Available from [http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2014/2014-0009/BahamasSpatialDataInfrastructureAct2014\\_1.pdf](http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2014/2014-0009/BahamasSpatialDataInfrastructureAct2014_1.pdf)

<sup>24</sup> Antigua and Barbuda Disaster Management Act, 2002. Available from <https://drive.google.com/open?id=OB3zrekVRttRfUE9iYzM3dTM5YIE>

guidelines governing the operations of the emergency response team pre, during and post emergency and disaster events; and further that data collected by Ministries, Agencies and Departments post disaster events must be geo-referenced and shared with the government members of NERGIST and the National Disaster Coordination Team.

50. Although not enacted legislation, the NERGIST framework considers the 3 phases of the emergency cycle and clearly outlines responsibilities of various entities that are engaged in disaster response and humanitarian relief. This policy framework ensures that data and mapping products created are used to support disaster response and recovery efforts island wide, with specific operating guidelines. The core strategies covered are awareness raising, capacity building and training; common standards, protocols and processes; collaboration, coordination and communication; common infrastructures and services; resources mobilization and monitoring and evaluation.
51. In addition to NERGIST, Jamaica's **Disaster Risk Management Act, 2015**<sup>26</sup> replaces the previous Disaster Preparedness and Emergency Management Act, 1993. The 2015 Act in some areas emphasizes the need for geo-spatial information in support of the various elements of the disaster risk management framework. Some examples include more detailed description of the functions of the National Disaster Office in section 8.2(c) to include preparation and periodic review of disaster risk assessment maps of each parish. The 2015 Act also has new provisions (Section 30) authorizing the national disaster office to designate specially vulnerable areas and in so doing delimit the area that has been so designated. Under Section 51, the Office is also mandated by new provisions in the Act to carry out post-disaster reviews and during this process, the Office shall have **free** access to all information held by any government ministry, department or agency or request from other agencies and persons any information relevant and necessary for the review.

### ***Bangladesh***

52. The **Bangladesh Disaster Management Act, 2012**<sup>27</sup> was enacted to make the activities about disaster management coordinated, object oriented and strengthened and to formulate rules to build up infrastructure of effective disaster management to fight all types of disaster.
53. With specific accommodation for international cooperation, under that Act, (Section 53) provision is made for the government to receive cooperation from any foreign state, government, and international and regional organizations and provide them cooperation to conduct relief operation during disaster period including exchange of disaster management related information data, analysis and research and uses of geo- satellite. Essentially, this Act therefore speaks specifically to post disaster response.

### ***India***

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<sup>25</sup> Cabinet Decision 25/10 dated 28th June 2010 - Establishment of The National Emergency Response GIS Team (NERGIST). Extract available at <https://drive.google.com/drive/folders/0B3zrekVRttRfRnRPejB3SEpCWGc>

<sup>26</sup> Disaster Risk Management Act, 2015. Available at [http://www.japarliament.gov.jm/attachments/341\\_The%20Disater%20and%20Preparedness%20and%20Emergency%20Management%20Act,%202015%20No.1.pdf](http://www.japarliament.gov.jm/attachments/341_The%20Disater%20and%20Preparedness%20and%20Emergency%20Management%20Act,%202015%20No.1.pdf)

<sup>27</sup> Available at <https://drive.google.com/open?id=0B3zrekVRttRfQTntamQ3Qkp3SGc>

54. The **Disaster Management Act, 2005**<sup>28</sup> No 53 of 2005 is an Act to provide for the effective management of disasters and for matters connected therewith or incidental thereto. The Act establishes under Section 3, the National Disaster Management Authority for the purpose of laying down policies on disaster management, approving the National Plan and coordinating the enforcement and implementation of the policy and plan for disaster management for India. While there is no reference made to GI, the Act speaks to State Executive Committee, which are responsible for implementing the National Plan at the state level, being mandated to provide information to the National Authority relating to different aspects of disaster management (Section 22); and to disseminate information to the public to deal with any threatening disaster situation or disaster (Section 24).
55. At this same time, India **NSDI**<sup>29</sup> and the **National Data Sharing and Accessibility Policy, 2012**<sup>30</sup> facilitates the availability of and access to spatial data acquired and held by different organizations. The NDSAP applies to “*all data and information created, generated, collected and archived using public funds provided by Government of India directly or through authorized agencies*” While giving a specific definition for geospatial data, the policy in Section 6.5 speaks to ready access to existing valuable data for many decision making tasks such as protecting the environment, development planning and controlling disasters. The issues of GI availability during times of disaster are therefore effectively covered under this piece of policy and the other core strategies are incorporated in the Disaster Management Act.

### *Japan*

56. The **Disaster Countermeasures Basic Act 2007 (Act No. 223, 1961)**<sup>31</sup> of Japan was established for the purpose of protecting the national territory, the life and limb of the citizens and their property. Under the provisions of the Act, the greatest of the city or town, head of the village, representative of the designated public corporation, or chief officer of the designated administrative organ shall be particularly vigilant in gathering information needed to gauge the scale of the disaster. As it regards the sharing of data, the Act makes provision in Article 8 for international cooperation with respect to human control of typhoons, and other necessary research on disaster prevention, observation and exchange of information and the provision of accurate information to disaster victims. Article 47 of the Act prescribes that the chief officer of a designated national by law or under an appropriate disaster prevention plan, shall strive to forecast or speedily transmit information on disaster. Likewise, Article 51 notes that the designated national or local public corporation, any public organization, and administrators of important for disaster prevention establishments are required to strive for information gathering and transmission related to disaster, as prescribed by law or under an appropriate disaster prevention plan.

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<sup>28</sup> Sourced from: [http://www.ndma.gov.in/images/ndma-pdf/DM\\_act2005.pdf](http://www.ndma.gov.in/images/ndma-pdf/DM_act2005.pdf)

<sup>29</sup> National Spatial Data Infrastructure, 2006 No. SM/25/003/05. Available at <https://nsdiindia.gov.in/nsdi/nsdiportal/images/NSDIStrategyActionPlan.pdf>

<sup>30</sup> Government of India (2012) National Data Sharing and Accessibility Policy-2012 (NDSAP-2012). Available at <https://nsdiindia.gov.in/nsdi/nsdiportal/meetings/NDSAP-30Jan2012.pdf>

<sup>31</sup> Available at: <http://www.adrc.asia/documents/law/DisasterCountermeasuresBasicAct.pdf>

57. The Disaster Countermeasure Basic Act is complemented by **The Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of May 30, 2007)**<sup>32</sup> which promotes policies for the advancement of utilizing GI in a comprehensive and well planned manner by establishing basic principles and clarifying the responsibilities of the State and local governments for policies on the advancement of utilizing GI as well as defining the basic elements of policies on the advancement of utilizing GI. The importance and use of geospatial data for disaster prevention is highlighted under Chapter I, Article 3 Section 4, in terms of policies for the advancement of utilizing Geospatial Information must contribute to the promotion of effective use, development and conservation of the national land, and to the protection of the lives of the people, their persons and their property by enhancing the effective and efficient management of public facilities, and the promotion of measures against disasters.
58. Chapter III of that Act in Section 2 Article 16 (1) speaks to the development and maintenance of standards noting that “*the State shall provide technical standards pertaining to the development of Fundamental Geospatial Data in order to disseminate the use of Geographic Information System by promoting the sharing of Fundamental Geospatial Data.*”

### ***United States of America***

59. The US Federal government role in geospatial information is best captured by the U.S. Office of Management and **Budget Circular A-16** (revised), ***Coordination of Geographic Information and Related Spatial Data Activities, the National Spatial Data Infrastructure (NSDI)***.<sup>33</sup> While this document does not directly discuss how geospatial information is shared for disaster related applications, it does set the coordination framework for civilian geospatial activities at the US Federal level. This Circular describes the effective and economical use and management of spatial data assets in the digital environment for the benefit of the government and the nation. It affirms and describes the National Spatial Data Infrastructure (NSDI) as the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data. The Circular establishes a coordinated approach to electronically develop the National Spatial Data Infrastructure and establishes the Federal Geographic Data Committee (FGDC).
60. Section 5 speaks to the scope of the application of the circular which applies to all entities that collects, produces, acquires, maintains, distributes, uses, or preserves analog (e.g., paper maps) or digital spatial data to fulfill their mission, either directly or through a relationship with other organizations. Such organizations include, but are not limited to, State and local governments, tribes, academia, federal government business partners and contractors, and citizens. Section 6 speaks to the type of data activities to which the circular applies.
61. While the NSDI provides an overall framework for coordination of geospatial information, it should be noted that many US Departments and Agencies have specific authorities for geospatial information and for disaster support.

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<sup>32</sup> The Basic Act on the Advancement of Utilizing Geospatial Information is dubbed NSDI Act of Japan. Available at <http://www.gsi.go.jp/common/000002047.pdf>

<sup>33</sup> Available at [https://www.whitehouse.gov/omb/circulars\\_a016\\_rev/](https://www.whitehouse.gov/omb/circulars_a016_rev/)

62. US Federal leadership for the coordination and provisioning of geospatial information and services for disaster response is assigned to the Federal Emergency Management Agency (FEMA), a component of Department of Homeland Security (DHS) under the **National Response Framework (NRF)**<sup>34</sup>. Under the NRF, FEMA is specifically authorized to lead information analysis, collection and dissemination. Geospatial information, including remote sensing, coordination and services are considered to be part of FEMA's responsibilities as the lead agency for Emergency Support Function
63. As a result of the complexity of geospatial provisioning in the US prior to, during and post disasters, DHS has developed a **Geospatial Concept of Operations (GeoCONOPS)**<sup>35</sup>. This documents attempts to address issues of authoritative data, responsibilities for production and provisioning of key geospatial products, and best practices. This is complemented by a Geospatial Interoperability Reference Architecture (GIRA).

### *South Africa*

64. South Africa has a specific piece of legislation that speaks to making data available for use to other government agencies. Section 4 (1) of **Law No. 54 of 2003: Spatial Data Infrastructure Act, 2003**<sup>36</sup> speaks to the Minister being given the authority to prescribe standards and measures on the sharing and integration of spatial information.
65. In addition to the SDI specific law, Section 17 of the **Disaster Management Act, 2002**<sup>37</sup> speaks specifically to the establishment of a Disaster Management Information System and that the National Centre must act as a repository of and conduit for information concerning disasters and disaster management, and must for this purpose - collect, analyze and process information on all aspects of disasters and disaster management; as well as develop and maintain an electronic database; and take steps to disseminate such information, especially to communities that are vulnerable to disasters. The electronic database developed by the National Centre must contain extensive information concerning disasters that occur or may occur in southern Africa and disaster management issues, including information on risk factors underlying disasters and ways and means to reduce such risks; prevention and mitigation; early warning systems; emergency response resources and the **location** and size of critical infrastructure such as hospitals; emergency medical services; fire-fighting services; and airports etc.

### *Namibia*

66. The sharing of data and allowance for its use and availability including during times of disaster is captured in the **Namibia National Spatial Data Infrastructure (NSDI) Policy of 2015**<sup>38</sup> (Section 7), which speaks specifically to promoting the use and sharing of spatial data in support of spatial planning, socioeconomic development and related activities; and to creating an

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<sup>34</sup> Department of Homeland Security National Response Framework (NRF) Second Edition May 2013 Available at [https://www.fema.gov/media-library-data/20130726-1914-25045-1246/final\\_national\\_response\\_framework\\_20130501.pdf](https://www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf)

<sup>35</sup> Available at: [https://cms.geoplatform.gov/sites/default/files/geoconops/Geoconops\\_FoldOutPoster\\_v11\\_PRINT.pdf](https://cms.geoplatform.gov/sites/default/files/geoconops/Geoconops_FoldOutPoster_v11_PRINT.pdf)

<sup>36</sup> Available at <http://www.sasdi.gov.za/About/Spatial%20Data%20Infrastructure%20Act%2054%20of%202003.pdf>

<sup>37</sup> Available at [http://www.cogta.gov.za/cgta\\_2016/wp-content/uploads/2016/06/DISASTER-MANAGEMENT-ACT.pdf](http://www.cogta.gov.za/cgta_2016/wp-content/uploads/2016/06/DISASTER-MANAGEMENT-ACT.pdf)

<sup>38</sup> Available at <https://cms.my.na/assets/documents/p1a1lgd9ll1s0q19ncq5gilf1ggh1.pdf>



environment which facilitates coordination and cooperation among stakeholders regarding access to spatial data.

67. Section 4 of the **Disaster Risk Management Act, 2012 (Act No. 10 of 2012)**<sup>39</sup> of Namibia further establishes a National Disaster Risk Management Committee and speaks to supporting and mobilizing resources for improved disaster risk assessment, the quality of information and data on disaster risk and for strengthening early warning systems. Sections 14 and 17 of the Act ensure the alignment of regional early warning systems and facilitating the establishment of a regional disaster risk information database.

## 5.0 SUMMARY ANALYSIS

68. Only a limited number of countries examined have specific laws, rules or regulations in place to facilitate the provision of geospatial data and services to other stakeholders and partners during a crisis; or incorporate this into their overall spatial data infrastructures. Others may speak in general terms to the sharing of information but do not specifically state geospatial information, or some have frameworks existing that are highly fragmented owing to the fact that there may be diverse owners of geospatial data relevant to disaster operations. Those that do exist for the most part have some of the essential elements of the five (5) strategic priorities fully integrated into these laws<sup>40</sup>. **Table 1** below gives a basic summary of select global, regional and national frameworks examined and which of the strategic priorities are covered. **Annex I** to this document provides a more comprehensive summary.

**Table 1: Summary Analysis of Select Pieces of Legislative/policy frameworks**

Document Reviewed	Core Strategies					
	Policies	Awareness raising, capacity building and training	Common standards, protocols and processes	Common infrastructure and services	Resource Mobilization	Collaboration, coordination and communication
<b>Global frameworks, laws and regulations</b>						
Sendai Framework	•	•	•	•	•	•

<sup>39</sup> Available at [http://www.ifrc.org/docs/IDRL/-%20To%20add/Namibia\\_2012\\_Disaster%20Risk%20Management%20Act.pdf](http://www.ifrc.org/docs/IDRL/-%20To%20add/Namibia_2012_Disaster%20Risk%20Management%20Act.pdf)

<sup>40</sup> The six core strategies initially identified were collapsed into 5 priority areas for action needed to be adopted for a collaborative and coordinated approach within and across sectors in Member States

- 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.

Document Reviewed	Core Strategies					
	Policies	Awareness raising, capacity building and training	Common standards, protocols and processes	Common infrastructure and services	Resource Mobilization	Collaboration, coordination and communication
<b>Regional frameworks, laws and regulations</b>						
Regulation (EU) No 377/2014 of The European Parliament and of The Council	■	■	■	■	■	■
Africa Regional Strategy for Disaster Risk Reduction	■	■	■	■	■	■
ASEAN Vision 2025 on Disaster Management	■	■	■		■	■
<b>National frameworks, laws and regulations</b>						
Finland, Law on Spatial Data Infrastructure (421/2009)	■	■	■	■	■	■
Jamaica, NERGIST National Emergency Geographical Information Systems Response Team or (NERGIST), Cabinet Decision 2010	■	■	■	■	■	■
Japan , The Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of May 30, 2007)	■	■	■	■	■	■
Bangladesh Disaster Management Act, 2012	■	■	■		■	■
The Disaster Countermeasures Basic Act 2007 Japan (Act No. 223, 1961)	■	■	■	■	■	■
Latvia, Geospatial Information Law	■	■	■	■	■	■
Latvia, Civil Protection Law, 2006	■				■	■
The Bahamas Spatial Data Infrastructure Act, 2014	■	■	■	■		
The Philippines, Republic Act 10210 (Disaster Risk Reduction and Management Act, 2010)	■	■	■	■	■	■

Document Reviewed	Core Strategies					
	Policies	Awareness raising, capacity building and training	Common standards, protocols and processes	Common infrastructure and services	Resource Mobilization	Collaboration, coordination and communication
Sri Lanka Disaster Management Act, No 13 of 2005	■		■			
Australia, Queensland, Disaster Management Strategic Policy Framework	■	■		■	■	■
U.S. Office of Management and Budget Circular A-16 (revised), 199 Coordination of Geographic Information and Related Spatial Data Activities, the National Spatial Data Infrastructure (NSDI)	■	■	■	■	■	■

69. Governments in general lead the process of developing disaster risk reduction capacities and the integration of disaster risk reduction into national emergency responses. It is therefore the role of Government to ensure the establishment of enabling environments, including the enactment of specific legislation and setting up the relevant institutional mechanisms to engage participation by all stakeholders and the sharing of information including geospatial data.

70. Some jurisdictions, with established SDI laws or policies, have sought to include specific provisions to ensure that geospatial data is effectively shared during times of disasters. Reference here The Bahamas and countries such as The People’s Republic of China. China has in their **Surveying and Mapping Law of the People’s Republic of China, 1992**, a specific provision that directs that ...[spatial data] completed with State investment are to be used for decision-making by State organs and for public welfare undertakings, and shall be provided **gratis**. It further specifies that “*the relevant government departments and the army may use them free of charge in their efforts to meet the needs of such public interests as taking precautions against natural calamities, ameliorating natural disasters and building up national defence.*” (Article 31).<sup>41</sup> Similarly, the European Union, Regulation (EU) No 377/2014 of the European Parliament which established the Copernicus Programme speaks to data and information being made available on a full, open and free-of-charge basis subject to appropriate conditions and limitations, in order to promote their use and sharing. As such, countries such as Latvia (Latvia Geospatial Law) and Finland (Law on Spatial Data Infrastructure) have provisions that speak to the right to access, free of charge to information necessary for the planning and implementation of rescue or for the use of the relevant geospatial data in cases of disasters.

71. Other jurisdictions have integrated provisions for the sharing of spatial data within their disaster management framework legislation. Reference here The Republic of South Africa, Namibia, EU

<sup>41</sup> Surveying and Mapping Law of the People’s Republic of China, 1992

States such as Hungary. Commendably, the Bangladesh Disaster Management Act, speaks to making data available to international responders. Meanwhile, other disaster management Acts may reference data sharing and availability but do not specifically refer place-based data or the attendant standards/protocols for sharing. Additionally, several of the disaster management policies and legislation follow a **post responsive** approach to disasters and the legislative and institutional models in place do not integrate GI across the emergency management framework. This is even true of some recently promulgated pieces of disaster management framework laws that make no reference to the availability of GI or the critical importance of its integration as part of the emergency management/disaster response framework especially the pre-disaster phase. Jamaica's Disaster Risk Management Act, 2015, for example, speaks to the Minister having the authority to make regulations relating only to the "collection and publication of data (not GI) pertaining to disaster mitigation and preparedness" (Section 54), notwithstanding the presence of an excellent framework in the form of NERGIST which currently exists.

72. Some jurisdictions have established frameworks, which have been working fairly well in terms of providing mechanisms for the provision of GI post disaster events and pre planning activities in order to facilitate the response, humanitarian relief and recovery operations. Reference here, Jamaica which has a NERGIST Operating Centre that is activated within 24 hours of a disaster event, and begins spatial data collection within 48 hours to facilitate the deployment of relief to affected areas in the shortest possible time. Extensive pre disaster planning and mitigation activities are also undertaken including the preparation of base maps and essential data overlays prior to the onset of an event. This body finds its authority in a Cabinet decree. Similarly, the US Framework at the Federal Government level, finds its authority in a Whitehouse circular speaking to the coordination of Geographic Information and related spatial data activities.
73. Generally, there is quite a bit of fragmentation of laws in Member States when it comes to comprehensive GI for disaster response legislation, whether in the framework legislation itself or in the defined role and responsibility. The Philippines, Latvia are noteworthy in terms of the extent of details provided in the referenced pieces of legislation, integrating the five (5) strategic priorities identified.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

74. The fragmentation in the various pieces of legislation examined underscores the need to develop the UN Strategic Framework to address the provision of GI during times of disaster given the lessons learned from the application of geospatial technology to disaster response and emergency management.
75. Effective disaster risk management legislation should encompass all phases of the disaster cycle, risks and capacities, and with the participation of all key stakeholders. This requires the adequacy and reliability of appropriate geospatial information, which provides additional value for more effective decision making. As such, the five (5) strategic priorities should at minimum be included. Such legislation should specify the role of key agencies at the national level, international organizations and civil society actors in preparedness and response to avoid confusion in the early days of a response.
76. The laws should at minimum make provision for data to be provided free of charge for the disaster response effort (during and post events). Ideally, the laws should speak to data being made available free of charge for all phases of the disaster cycle (prior, during and post). Legal issues affecting the access and the use of geographic information such as copyright or the privacy of individual information would need to be weighed against the critical importance of data provision during the times of emergency.
77. National legislation, regulations, policies, rules or guidelines should explicitly outline the institutional framework for coordination as well as outline a monitoring and evaluation regime, with specific reference to who is responsible for what and during what stage of the process. Consideration should be given to the establishment of spatial data centres for the management and distribution of GI. In addition to spatial data centres, national disaster management authorities should be given the powers to instruct the provision of GI for disaster response activities.
78. In support of the core strategy speaking to resources mobilization and capacity building, legislation and regulations should be developed around frameworks requiring the pooling of resources to include organized groups of GIS professionals for data collection, analysis, interpretation etc. to effectively respond to disasters.
79. Provisions in relation to regional or international partnerships/alliances (with specific recognition for regional coordinating bodies) for DRM could be established into specific national legislation/frameworks to also include data, human resources or technical capacity.
80. Provisions should be made to strengthen and align data management and system interoperability including data standards and protocols for the collection and maintenance of data. National regulations should therefore define acceptable standards (including geographical, attribution and metadata) for any repositories and individual datasets.
81. National legislation, regulations, policies, rules or guidelines should ensure that key agencies are regulated to maintain and update any provided data on a regular basis according to the frequency of change of specific data and that such updates are shared widely and unambiguously to all national level, international organizations and civil society actors likely to be involved in any response. Any monitoring and evaluation regime should review progress on updates as well as progress on development of data sharing protocols.

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<sup>42</sup> All documents utilized for the review are available in the document repository which can be accessed at  
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**ANNEX I**  
**SUMMARY REVIEW OF LAWS, POLICIES, FRAMEWORKS**

Member State	Title of Document	Description	Specific Provisions	Core Strategies Addressed <sup>43</sup>
<b>Antigua &amp; Barbuda</b>	Disaster Management Act, 2002	An act to provide for the effective organisation of preparedness, management, mitigation of, response to and recovery from emergencies and disasters natural and man-made in Antigua and Barbuda	<p>Section 4. (1) The Director shall, subject to section 5, be responsible Functions of the to the Prime Minister for co-ordinating the general policy of the Government of Antigua and Barbuda relating to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Antigua and Barbuda.</p> <p>Section 4 (2) g) The Director shall prepare and review hazard risk assessment maps of Antigua and Barbuda.</p> <p>Section 11 of the Act specifies the responsibilities of other public officers to provide information to the Director for the purposes of preparing the National Disaster Preparedness Response Plan.</p>	<ul style="list-style-type: none"> <li>■ Collaboration, coordination and communication</li> <li>■ Policies and governance</li> </ul>
<b>Australia</b>	Disaster Management Strategic Policy Framework	The Australian Disaster Management Strategic Policy Framework (the Framework) sets key objectives for disaster management and guides the development and implementation of disaster management policy and Programs that align with Queensland government priorities.	<p>This policy framework focuses on action in planning, mitigation, preparedness, response and recovery. In particular involving the systematic data collection and analysis.</p> <p>Strategies relating to policy and governance are articulated including specific strategy to integrate effective disaster risk reduction initiatives into strategic and corporate plans at all levels of government, industry and commerce.</p> <p>The policy also speaks to improving the understanding, coordination and resource allocation of disaster risk management at all levels through informed research.</p>	<ul style="list-style-type: none"> <li>■ Resources mobilization.</li> <li>■ Common standards, protocols and processes</li> <li>■ Collaboration, coordination and communication</li> <li>■ Awareness raising, capacity building and training;</li> </ul>

<sup>43</sup> Core strategies outlined in the draft strategic framework.

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<b>Bangladesh</b>	Disaster Management Act, 2012	An Act enacted to make the activities about disaster management coordinated, object oriented and strengthened and to formulate rules to build up infrastructure of effective disaster management to fight all types of disaster.	Section 53 makes provision for the government to receive cooperation from any foreign state, government, and international and regional organizations and provide them cooperation to conduct relief operation during disaster period including exchange of disaster management related information data, analysis and research and uses of geo- satellite.	<ul style="list-style-type: none"> <li>● Awareness raising, capacity building and training;</li> <li>● Collaboration, coordination and communication;</li> <li>● Policies and governance</li> <li>● Resources mobilization.</li> <li>● Monitoring and evaluation</li> </ul>
<b>China</b>	Surveying and Mapping Law of the People's Republic of China	This Law is enacted to strengthen the administration of the surveying and mapping undertaking, promote its development and ensure that it renders service to development of the national economy, the building up of national defence, and progress of the society.	Under Article 31 as Where basic surveying and mapping results and other results of surveying and mapping completed with State investment are to be used for decision-making by State organs and for public welfare undertakings, they shall be provided gratis. For results other than the ones specified in the preceding paragraph, the system for paid use shall be applied in accordance with law; but the government, the relevant government departments and the army may use them free of charge in their efforts to meet the needs of such public interests as taking precautions against natural calamities, ameliorating natural disasters and building up national defence.	<ul style="list-style-type: none"> <li>● Collaboration, coordination and communication;</li> <li>● Policies and governance</li> <li>● Resources mobilization.</li> </ul>

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<b>Hungary</b>	Rules of the Cabinet of Ministers No 423, 2007 Act on Disaster Recovery (CXXVIII.2001)	This Act declares that disaster management is a national matter and it is duty of the State. It is composed of eight chapters. This Act shall be applied, in order to prevent disasters in the territory of Hungary, to human activities threatening with disaster, in case of danger, disaster, and if prevention is necessary against the harmful effects of a disaster.	<p>Chapter II provides for the governance of disaster recovery, including the tasks of the Government and governmental coordination, of the minister in charge of disaster management, of local governmental offices and of local commissions for protection, of the mayor, of services, of voluntary organizations. Anybody perceiving or having information of a disaster or the hazard thereof must report it to the disaster recovery authorities, to the local fire-service and to the mayor's office.</p> <p>Chapter III contains detailed rules regarding disaster recovering organs under the control of the minister and their tasks.</p> <p>Chapter V contains the definition of risk of disaster and of danger, and provides for extraordinary measures to be taken by the Government in case of danger.</p>	<ul style="list-style-type: none"> <li>● Collaboration, coordination and communication;</li> <li>● Policies and governance</li> <li>● Resources mobilization.</li> </ul>
<b>Jamaica</b>	NERGIST National Emergency Geographical Information Systems Response Team or (NERGIST), Cabinet Decision 2010	In Jamaica by way of a Cabinet decision the National Emergency Geographical Information Systems Response Team or (NERGIST) was established in 2010. There are guidelines governing the operations of the emergency response team pre, during and post emergency and disaster events and that geospatial data collected by Ministries, Agencies and Departments (MDA's) post disaster events must be geo-referenced and shared with the government members of NERGIST.	This policy framework makes provision for ensuring that data and mapping products created are used to support disaster response and recovery efforts island wide, with operating guidelines.	<ul style="list-style-type: none"> <li>● Awareness raising, capacity building and training;</li> <li>● Common standards, protocols and processes</li> <li>● Collaboration, coordination and communication</li> <li>● Policies and governance</li> <li>● Common infrastructures and services;</li> <li>● Resources mobilization</li> </ul>

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Member State	Title of Document	Description	Specific Provisions	Core Strategies Addressed <sup>43</sup>
Japan	The Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of May 30, 2007)	The purpose of this Act is to promote policies for the advancement of utilizing Geospatial Information in a comprehensive and wellplanned manner by establishing basic principles and clarifying the responsibilities of the State and local governments for policies on the advancement of utilizing Geospatial Information as well as defining the basic elements of policies on the advancement of utilizing Geospatial Information.	<p>Chapter I Article 3 (4) Policies for the advancement of utilizing Geospatial Information must contribute to the promotion of effective use, development and conservation of the national land, and to the protection of the lives of the people, their persons and their property by enhancing the effective and efficient management of public facilities, and the promotion of measures against disasters, etc., through active engagement of the State and local governments in accomplishing their administrative work and projects.</p> <p>Chapter III Section 2 Article 16 (1) speaks to standards noting that The State shall provide technical standards pertaining to the development of Fundamental Geospatial Data in order to disseminate the use of Geographic Information System by promoting the sharing of Fundamental Geospatial Data.</p>	<ul style="list-style-type: none"> <li>● Capacity building and training;</li> <li>● Common standards, protocols and processes</li> <li>● Collaboration, coordination and communication</li> <li>● Policies and governance</li> <li>● Common infrastructures and services;</li> <li>● Resources mobilization</li> </ul>
Latvia	Civil Protection Law, 2006	The purpose of this Law is to create a system of civil protection for disaster management, ensuring the legal and organisational grounds for the protection of persons, property and the environment in cases of disasters and when there are threats of disaster.	<p>Section 7) 7. speaks to the State services being responsible to establish and maintain a database for the existing disaster management resources (including collective means of protection), as well as regarding the objects of increased danger;</p> <p>Section 13 (Planning of Civil protection) prescribes that “legal and natural persons shall provide free of charge information in the field of civil protection, in order to ensure the planning of civil protection in cases of disaster (sources of risk at the object, external threats, the amount of dangerous substances at the object, characteristics of the dangerous substances, amounts of leakage of dangerous substances ...).”</p>	<ul style="list-style-type: none"> <li>● Collaboration, coordination and communication;</li> <li>● Policies and governance;</li> <li>● Resources mobilization.</li> </ul>

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Member State	Title of Document	Description	Specific Provisions	Core Strategies Addressed <sup>43</sup>
Latvia	Geospatial Information Law	The purpose of this Law is to specify the institutional system in the field of geospatial information, incorporating the conditions for the preparation, use, exchange and maintenance of geospatial information (including geodetic and cartographic basic data) in order to create an infrastructure for geospatial information in the Republic of Latvia.	<p>This law indicates that users of geospatial data sets, which are involved in the disaster management, rescue operations or the liquidation of consequences caused by emergency situations, shall, in timely manner, provide themselves with a written permission of the holder of the geospatial data set for the use of the data base in any of the ways referred to in Paragraphs two and three of this Section for the use of the relevant geospatial data set upon the request in cases of disasters, upon existence of threats of a disaster and in case of announcement of emergency situation.</p> <p>Section 25 : Protection of Copyright of Holders of Geospatial Information and of Holders of Geospatial Data Sets</p>	<ul style="list-style-type: none"> <li>● Collaboration, coordination and communication</li> </ul>
Latvia	Geospatial Information Law	The purpose of this Law is to specify the institutional system in the field of geospatial information, incorporating the conditions for the preparation, use, exchange and maintenance of geospatial information (including geodetic and cartographic basic data) in order to create an infrastructure for geospatial information in the Republic of Latvia.	<p>Chapter VI: Special Provisions for the Circulation of Geospatial Information. Chapter VI demonstrates that in cases where an extraordinary state or mobilization has been announced, geospatial information shall be transferred to the National Armed Forces and the authorities, which perform the tasks specified in the civil protection plans, upon the request free of charge.</p> <p>Section 30. Circulation of Geospatial Information in Case of Emergency Situations, Extraordinary States or Announcement of Mobilization. Section 30 illustrates in the case of a disaster or announcement of an emergency situation State or local government authorities shall receive or download geospatial information regarding the territory where the disaster has taken place or the emergency situation has been announced from the uniform geospatial information portal free of charge.</p>	<ul style="list-style-type: none"> <li>● Resources mobilization</li> <li>● Collaboration, coordination and communication</li> </ul>

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Namibia	Disaster Risk Management Act, 2012	This act provides for the establishment of institutions for disaster risk management in Namibia; to provide for an integrated and coordinated disaster management approach that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery; to provide for declarations of national, regional and local disasters; to provide for the establishment of the National Disaster Management Risk Fund; and to provide for incidental matters.	Local Authorities Disaster Risk Management Committees  Section 12 : align regional early warning systems and facilitate the establishment of a regional disaster risk information database; Functions, duties and powers of the Committee  Section 5: supporting and mobilizing resources for improved disaster risk assessment, the quality of information and data on disaster risk and for strengthening early warning systems;.	<ul style="list-style-type: none"> <li>● Awareness raising, Capacity building and training;</li> <li>● Common standards, protocols and processes</li> <li>● Collaboration, coordination and communication</li> <li>● Policies and governance</li> <li>● Common infrastructures and services;</li> <li>● Resources mobilization</li> </ul>
Namibia	National Spatial Data Infrastructure (NSDI) Policy 2015	The purpose of this National Spatial Data Infrastructure (NSDI) Policy is to provide guidance for improving the initiation, collection, processing, integration, storage, distribution, awareness of, access to, and utilisation of spatial data and services, compatible with the stated objectives of the NSDI as set out in the Statistics Act, 2011,(No. 9 of 2011).	Section 7 promotes the use and sharing of spatial data in support of spatial planning, socioeconomic development and related activities; create an environment which facilitates coordination and cooperation among stakeholders regarding access to spatial data.	<ul style="list-style-type: none"> <li>● Common standards, protocols and processes</li> <li>● Collaboration, coordination and communication</li> </ul>
Republic of Moldova	Law No. 778-XV on geodesy and cartography	This Law regulates activities in the sphere of geodesy and cartography including: (a) distant zoning of the earth; and (b) mapping and demarcation of the state frontier, administrative boundaries and plots of land pertaining to private ownership. The object of geodetic and cartographic activity shall be national territory. The State Agency of Land Relations and Cadastre shall carry out geodetic and cartographic activity, mapping, zoning and updating of land cadastre data.		

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South Africa	South Africa - Spatial Data Infrastructure Act (No. 54 of 2003)	This act establishes the South African Spatial Data Infrastructure, the Committee for Spatial Information and an electronic metadata catalogue; to provide for the determination of standards and prescriptions with regard to the facilitation of sharing of spatial information	Section 4 (1) under Powers of Minister The Minister may –prescribe standards and measures on the sharing and integration of spatial information	<ul style="list-style-type: none"> <li>● Common standards, protocols and processes</li> <li>● Resources mobilization</li> </ul>
South Africa	South Africa No. 57 of 2002: Disaster Management Act, 2002.	This act provides for-an integrated and coordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery; the establishment of national, provincial and municipal disaster management centres; disaster management volunteers; and matters incidental thereto.	Under Section 17, Disaster management information system, The National Centre must act as a repository of and conduit for information concerning disasters and disaster management, and, use for this purpose. The electronic database developed by the National Centre must contain extensive vulnerable to disasters. information concerning disasters that occur or may occur in southern Africa and disaster management issues, including information on location and size and other relevant information relating to (i) police stations; (ii) hospitals, clinics and other health institutions	<ul style="list-style-type: none"> <li>● Common standards, protocols and processes</li> <li>● Awareness raising, Capacity building and training;</li> <li>● Collaboration, coordination and communication</li> <li>● Policies and governance</li> <li>● Common infrastructures and services;</li> <li>●</li> </ul>
Sri Lanka	Sri Lanka Disaster Management Act, No 13 of 2005	This act provides for the establishment of the National Council for Disaster Management; The Disaster Management centre; The appointment of the technical advisory committee; The preparation of the disaster plans; the award of compensation and for matters connected there with or incidental thereto.	Section 8; of 2 (f ) of the act speaks to the promotion of research and development programmes in relation to disaster management and setting up and maintaining a data base on disaster management;	<ul style="list-style-type: none"> <li>● Collaboration, coordination and communication;</li> <li>● Policies and governance;</li> </ul>

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The Bahamas	Bahamas NSDI Act, 2014	An act to establish the Bahamas National GIS Centre as a Department of Government within Section 127 (c) of the constitution to define the special purposes and functions of the infrastructure system and program and the Geospatial Advisory Council: to define the functions and objectives of the System, program and the Council and for connected matters.	Bahamas NSDI Act highlights the benefit to ensure access use, exchange, sharing and dissemination of interoperable non-confidential spatial information for the Bahamas and spatial data services (including across different sectors. (Part II, Section 4k)	<ul style="list-style-type: none"> <li>■ Collaboration, coordination and communication;</li> <li>■ Policies and governance;</li> <li>■ Common standards, protocols and processes</li> <li>■ Awareness raising, capacity building and training;</li> </ul>



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The Philippines	Republic Act 10210 (Disaster Risk Reduction and Management Act, 2010)	An Act to strengthen the Philippine disaster risk reduction and management system, providing for the national disaster risk reduction and management framework and institutionalizing the national disaster risk reduction and management plan, appropriating funds therefor and for other purposes.	<p>This act recognizes the importance of multi stakeholder participation in the development updating sharing of and access to information for policy and planning and decision making before during and after disasters.</p> <p>Section 4 defines the scope to be for the development of policies and plans and the implementation of actions and measures pertaining to all aspects of disaster risk reduction and management, including good governance, risk assessment and early warning, knowledge building and awareness raising, reducing underlying risk factors, and preparedness for effective response and early recovery.</p> <p>Section 8 defines the role of The Office of Civil Defense (OCD) as providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters.</p> <p>Section 9 (d) speaks to developing and ensuring the implementation of national standards in carrying out disaster risk reduction programs including preparedness, mitigation, prevention, response and rehabilitation works, from data collection and analysis, planning, implementation, monitoring and evaluation.</p> <p>Section 9 (g) speaks to formulating standard operating procedures for the deployment of rapid assessment teams, information sharing among different government agencies, and coordination before and after disasters at all levels Section 9 (h) and (i) define rules relating to communication and capacity building.</p>	<ul style="list-style-type: none"> <li>■ Awareness raising, capacity building and training;</li> <li>■ Common standards, protocols and processes</li> <li>■ Collaboration, coordination and communication</li> <li>■ Policies and governance</li> <li>■ Common infrastructures and services;</li> <li>■ Resources mobilization</li> </ul>

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<p><b>United States of America</b></p>	<p>Federal Emergency Management Agency (FEMA, a component of DHS) under the National Response Framework (NRF)</p>	<p>The National Response Framework is a guide to how the Nation responds to all types of disasters and emergencies. The Framework describes specific authorities and best practices for managing incidents that range from the serious but purely local to large-scale terrorist attacks or catastrophic natural disasters. The Framework describes the principles, roles and responsibilities, and coordinating structures for delivering the core capabilities required to respond to an incident and further describes how response efforts integrate with those of the other mission areas.</p>	<p>The Framework (under Response Core Capabilities) speaks to the collection, analysis, and dissemination of risk assessment data and the development of plans, procedures, mutual aid and assistance agreements, strategies, and other arrangements to perform specific missions and tasks. Governments at all levels have a responsibility to develop all-hazards response plans prior to and during an incident.</p> <p>The Framework also speaks to effective response, noting that jurisdictions must provide accurate and accessible information to decision makers and the public. This includes development of accessible message content, such as incident facts, health risk warnings, pre-incident recommendations, evacuation guidance, and other protective measures.</p>	<ul style="list-style-type: none"> <li>■ Collaboration, coordination and communication</li> </ul>
<p><b>United States of America</b></p>	<p>Section 8201 of the Intelligence Reform and Terrorism Prevention Act of 2004</p>	<p>This law describes the use of geospatial technologies and geospatial data improve government capabilities to detect, plan for, prepare for, and respond to disasters in order to save lives and protect property.</p>	<p>Section C (Coordination of Geospatial Information) of the Act speaks to providing such geospatial information as may be necessary to implement the critical infrastructure protection programs; providing leadership and coordination in meeting the geospatial information requirements of those responsible for planning, prevention, mitigation, assessment and response to emergencies, critical infrastructure protection, and other functions of the Department and; coordinating with users of geospatial information within the Department to assure interoperability and prevent unnecessary duplication.</p>	<ul style="list-style-type: none"> <li>■ Collaboration, coordination and communication</li> <li>■ Policies and governance;</li> <li>■ Common infrastructures and services;</li> <li>■ Resources mobilization.</li> </ul>

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<p><b>United States of America</b></p>	<p>U.S. Office of Management and Budget Circular A-16 (revised), 199 Coordination of Geographic Information and Related Spatial Data Activities, the National Spatial Data Infrastructure (NSDI)</p>	<p>This Circular describes the effective and economical use and management of spatial data assets in the digital environment for the benefit of the government and the nation. It affirms and describes the National Spatial Data Infrastructure (NSDI) as the technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data. The Circular establishes a coordinated approach to electronically develop the National Spatial Data Infrastructure and establishes the Federal Geographic Data Committee (FGDC). Entities involved include NOAA, FEMA, USGS etc</p>	<p>Section 5 of circular speaks to the scope of the application of the circular which applies to all entities that collects, produces, acquires, maintains, distributes, uses, or preserves analog (e.g., paper maps) or digital spatial data to fulfill their mission, either directly or through a relationship with other organizations. Such organizations include, but are not limited to, State and local governments, tribes, academia, federal government business partners and contractors, and citizens.</p> <p>Section 6 speaks to the type of data activities to which the circular applies.</p>	<ul style="list-style-type: none"> <li>■ Awareness raising, capacity building and training;</li> <li>■ Common standards, protocols and processes;</li> <li>■ Collaboration, coordination and communication;</li> <li>■ Policies and governance;</li> <li>■ Common infrastructures and services;</li> <li>■ Resources mobilization.</li> </ul>

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<p><b>United States of America</b></p>	<p>US Department of Homeland Security (DHS), Geospatial Concept of Operations (GeoCONOPS), Federal Emergency Management Agency (FEMA)</p>	<p>This Homeland Security (HLS) Geospatial Concept of Operations (GeoCONOPS) has been developed as a strategic starting point for understanding how the coordination of Homeland Security and Homeland Defense (HD) geospatial activities can be improved at the federal level.</p>	<p>This document outlines federal geospatial capabilities in support of state, local, and tribal authorities during homeland security and emergency management operations across the entire emergency management life cycle.</p> <p>Section 2 of the document speaks in a comprehensive way about geospatial data. It notes that immediately following an event, priority is given to the collection of key information on the nature and scope of damages and this data is formally defined as Essential Elements of Information (EEI) and typically collected under the guidance of an Information Collection Plan (ICP). The EEIs contribute directly to situational awareness and revolve around a time-based reporting cycle. The overall list of EEIs may vary by a specific event or type, but generally include information such as: disaster boundaries, socio-economic impacts, and status of communications, transportation systems, and CI.</p> <p>Section 2.3.3 speaks to authoritative data while 2.3.4 deals with Specific Products.</p>	<ul style="list-style-type: none"> <li>■ Awareness raising, capacity building and training;</li> <li>■ Common standards, protocols and processes;</li> <li>■ Collaboration, coordination and communication;</li> <li>■ Policies and governance;</li> <li>■ Common infrastructures and services;</li> <li>■ Resources mobilization.</li> </ul>