

# LEGAL ASPECTS OF AVAILABILITY OF GEOSPATIAL INFORMATION<sup>1</sup> – WHITE PAPER

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## WORKING GROUP ON LEGAL AND POLICY FRAMEWORKS FOR GEOSPATIAL INFORMATION MANAGEMENT

### 1. Summary

The Committee of Experts on Global Geospatial Information Management (UN-GGIM) requested the Working Group on Legal and Policy Frameworks for Geospatial Information Management to analyse complex policy and legal issues in geospatial information management, including definitions of open data, personal data, data privacy, data protection, data licensing and the security and misuse of data. The Working Group embarked on a use case exercise to methodologically consider and begin to understand some of these complex policy and legal issues, including those related to authoritative data<sup>2</sup>.

This White Paper presents the result of the use case exercise and demonstrates the application of the approach described in the Implementation Guide - Strategic Pathway 2: Policy and Legal of the Integrated Geospatial Information Framework (IGIF)<sup>3</sup> produced by the Working Group to contribute to the preparation and development of the IGIF Implementation Guide<sup>4</sup>. The White Paper is a part of the Working Group's report for the consideration by UN-GGIM at its tenth session in August 2020 around the legal aspects on the availability and application of geospatial information.

The scope of the use case exercise was to address geospatial data sharing across borders, where the need of making data more openly or readily available and accessible is difficult to achieve for policy and legal reasons. The use case exercise resulted in identifying four policy and legal gaps based on responses from eight respondents<sup>5</sup>.

- a) Policies and laws requiring data be collected by “authoritative” data providers limit the availability of geospatial information to address certain issues.
- b) Licensing terms of data providers can restrict the use of geospatial information to address key governmental functions.

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<sup>1</sup> The Integrated Geospatial Information Framework Strategic Pathway: Data used the terms ‘geospatial data’ and ‘geospatial information’ interchangeably in general contexts. In specific contexts, ‘Geospatial Data’ refers to unprocessed facts and figures; ‘Geospatial Information’ refers to data that has been processed, organised, structured and presented in a meaningful way.

<sup>2</sup> Authoritative data are officially recognized data that can be certified and provided by an entity that is authorized by legal authority to develop or manage data for a specific purpose

<sup>3</sup> “The Integrated Geospatial Information Framework – a strategic guide to develop and strengthen national geospatial information management” <http://ggim.un.org/IGIF/part1.cshml>

<sup>4</sup> <http://ggim.un.org/IGIF/documents/SP2-Policy-and-Legal-23Feb2020-GLOBAL-CONSULTATION.pdf>

<sup>5</sup> Respondents from Australia, Canada, China, Finland, Malaysia, Mexico, Sweden and United States.

- c) Existing policy and legal frameworks may have to be strengthened to address new technologies critical to the collection, use, and sharing of geospatial information.
- d) In the absence of multilateral international agreements, national and homeland security concerns may affect the ability of the geospatial community to collect and use certain types of geospatial information.

In general, the approach to address policy and legal issues may be different depending on the circumstances. Based on the findings and possible approaches identified in this situation, the working group concluded that:

- a) There are many similarities among countries as to concerns/perceived risks associated with the collection and use of geospatial data.
- b) There are some differences as to how countries address these concerns.
- c) These perceived risks can impact availability and accessibility of geospatial information at the local, national and international level.
- d) Possible approaches to address these risks and minimize the differences are to
  - Create exceptions in existing policy and legal frameworks catering to specific purposes with data sharing.
  - Create or improve transboundary cooperation on data sharing.
  - Strengthen the existing policy and legal framework in the relevant country as an initial step, if there is a lack of or a weak policy and legal framework.
  - Develop a standard license agreement or draft a standard policy for the sharing of certain types of geospatial data for certain uses.

The use case exercise showed that the guidance, options and actions presented in the IGIF Implementation Guide Strategic Pathway 2: Policy and Legal serves well as an approach to address some of the complex policy and legal issues.

The Working Group proposes to include into its activities for 2020-2021 to operationalize this approach by working with one or two countries currently designing and developing their IGIF country-level Action Plan. The candidate country must have identified, in their assessment and analysis of their national situation, the need to strengthen their policy and legal framework to proactively support the development and role of geospatial information management, and that applications lead to the desired benefits and public good in a more efficient manner.

The Working Group also proposes to review the Implementation Guide of the Integrated Geospatial Information Framework and map the other eight strategic pathways with relevant portions of national policy and legal frameworks for geospatial information management.

Robust policy and legal frameworks are critical to organize or improve geospatial information management arrangements, can maximize the utility of geospatial information and safeguard a country's interests. The Working Group further proposes to include into its activities for 2020-2021 an action to coordinate with one or more expert or working groups to develop a standard license agreement and/or data sharing policy to improve the availability and accessibility of geospatial information.

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## 2. Background

### 2.1 The Working Group on Legal and Policy Frameworks for Geospatial Information Management

At its seventh session in August 2017 UN-GGIM established a Working Group on Legal and Policy Frameworks for Geospatial Information Management (Working Group) to address policy and legal issues impacting geospatial information management.

In 2018 the Working Group presented a use case on data availability to methodologically consider and begin to understand the complex policy and legal issues in geospatial information management.<sup>6</sup> The priority areas of focus were privacy, security, intellectual property, and licensing.

At its ninth session in August 2019, UN-GGIM additionally requested the Working Group to consider the issue of custodianship and authority of geospatial data. The Working Group was also encouraged to consider solutions together with proven practices, including that from the Arctic Spatial Data Infrastructure (Arctic SDI)<sup>7</sup>, a regional level example.<sup>8</sup>

### 2.2 Purpose of this White Paper

The purpose of this White Paper is to document the result of the use case exercise. Recognizing the need to consider national circumstances, the evolving technological landscape, and diversity of policy and legal frameworks, the purpose of this White Paper is also to demonstrate an approach to identify policy and legal issues and gaps, and possible ways to address these issues and gaps. This approach is discussed in Section 4 below and is further described in the IGIF Implementation Guide for Strategic Pathway 2: Policy and Legal.

The final aim of the White Paper is to address complex policy and legal issues in geospatial information management, and to support the implementation of the Integrated Geospatial Information Framework<sup>9</sup>. In this regard, the Implementation Guide assists and provides countries with guidance and recommended actions to establish, strengthen or organize their national (or sub-national) arrangements towards reaching the societal, environmental and economic benefits from geospatial information management.

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<sup>6</sup> UN-GGIM, note by the Secretariat, "Legal and policy frameworks, including issues related to authoritative data." [http://ggim.un.org/documents/E-C20-2018-9-Add\\_1.pdf](http://ggim.un.org/documents/E-C20-2018-9-Add_1.pdf)

<sup>7</sup> The Arctic SDI is a collaborative partner-based effort of the National Mapping Agencies of Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and USA seeking to lead and guide the development of an Arctic Spatial Data Infrastructure; and to provide open access to a coherent and authoritative Arctic reference maps and thematic Arctic data through the publication of selected data from their respective holdings and from other sources. The aim of the Arctic SDI is to provide politicians, governments, policy makers, scientists, private enterprises and citizens in the Arctic with access to geographically related Arctic data, digital maps and tools to facilitate monitoring and decision making.

<sup>8</sup> UN-GGIM, decision 9/110, Legal and policy frameworks, including issues related to authoritative data.

<sup>9</sup> "The Integrated Geospatial Information Framework – a strategic guide to develop and strengthen national geospatial information management" <http://ggim.un.org/documents/Part%201-IGIF-Overarching-Strategic-Framework.pdf>

The IGIF and its guidance are built upon the existing body of work of UN-GGIM, its Subcommittee, expert and working groups and the World Bank. The IGIF Implementation Guide provides the specific guidance, options and actions for each of the nine strategic pathways, including Strategic Pathway 2: Policy and Legal, to guide the user through the approach, content, rationale, options and considerations, and principles that align with actions.

### 2.3 Target audience of the White Paper

This White Paper is a part of the Working Group's report for consideration by UN-GGIM at its tenth session in August 2020.

The following understanding will be useful -

“Data availability” in this White Paper, means acquisition, storage, sharing, and application of geospatial data.

“Geospatial data” and “geospatial information” are used interchangeably in the IGIF in the general contexts. In specific contexts, “Geospatial Data” refers to unprocessed facts and figures; “Geospatial Information” refers to data that has been processed, organized, structured and presented in a meaningful way.

“Authoritative data”, in this White Paper, are officially recognized data that can be certified and provided by an entity that is authorized by legal authority to develop or manage data for a specific purpose<sup>10</sup>.

## 3. Why is the role of policy and legal frameworks important in developing geospatial information management?

The answer to this question is probably easier to find by asking; what happens if policy and legal frameworks are not considered in geospatial information management? The three main consequences are:

- (a) Unnecessary policy and legal barriers will impede the potential of geospatial information.
- (b) The lack of sound policies and laws will create unnecessary national security and privacy risks for data sharing.
- (c) The return on investments in new technology will be diminished since laws and policy impact data sharing.

Countries should exploit the potential of robust policy and legal framework through coherent public sector-wide policies and interoperable legislations aligned with the broader national policies aimed at delivering the country's strategic priorities.

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<sup>10</sup> This definition may vary across countries, but contain the basic elements to define authoritative data.

### 3.1 The potential of geospatial information

The development of geospatial information management is part of a global development trend arising from the transformative impact of new technologies and digital processes. The increasing digitalization of personal, societal, and economic spaces including within government, increasingly demand timely, reliable, and quality information.

Geospatial information provides the integrative platform for all digital data that has a location dimension to it. All countries and all sectors need geospatial information for national development and decision-making.<sup>11</sup> The paradigm of geospatial information is changing; no longer is it used just for mapping and visualization, but also for integrating with statistics and other data sources, modelling and data analytics. The integrative capacity of geospatial information also raises complex - and in many instances, novel - policy and legal challenges. Knowing where people, events and activities are, and their relationship to each other, is essential for informed policy and decision-making. Not only is real-time information needed to prepare for, and respond to natural disasters and political crises, but geospatial-based services are helping governments to develop strategic priorities and measure and monitor outcomes.<sup>12</sup>

There is now an urgency, the current public health crisis<sup>13</sup> reinforces the need for a nationally integrated information ecosystem that leverages geospatial information management to provide the geographical and temporal context, that is agile, adaptive and able to respond adequately and timely to any emerging crisis.

### 3.2 Policy and legal barriers for data availability across borders

Given the potential of geospatial information, the need of data availability across borders is desirable but may not be possible due to a myriad of policy and legal barriers. Common policy and legal barriers that could unnecessarily impede the availability of geospatial information are:

- Sectoral or geographical restrictions in access, storage or use of data;
- Different and vague data license models;
- Over-restrictive obligations to use specific digital technologies or delivery models to provide public services;
- Contradictory requirements for the same or similar business processes;
- Outdated security and data protection regulations or lack of such regulations;
- Insufficient understanding of or appreciation for the licensing of data; and

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<sup>11</sup> UNGGIM, "Integrated Geospatial Information Framework - a strategic guide to develop and strengthen national geospatial information management, Part 1". <http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/Part%201-IGIF-Overarching-Strategic-Framework-24July2018.pdf>

<sup>12</sup> UNGGIM, "Future Trends in geospatial information management: the five to ten year vision, second edition", [http://ggim.un.org/ggim\\_20171012/docs/meetings/GGIM5/Future%20Trends%20in%20Geospatial%20Information%20Management%20the%20five%20to%20ten%20year%20vision.pdf](http://ggim.un.org/ggim_20171012/docs/meetings/GGIM5/Future%20Trends%20in%20Geospatial%20Information%20Management%20the%20five%20to%20ten%20year%20vision.pdf)

<sup>13</sup> The COVID-19 Pandemic declared by the World Health Organization on 11 March 2020.

- Excessive concerns over intrusions, privacy, and confidentiality, or inadequate means to address these concerns.

The potential of geospatial information may also increase the need for policy and legal mechanisms, to ensure, for example, that privacy concerns are appropriately addressed. Such mechanisms could, for example, be instruments for compliance, for coercion, and for cooperation. Different policy and legal barriers can be addressed by different policy and legal mechanisms.

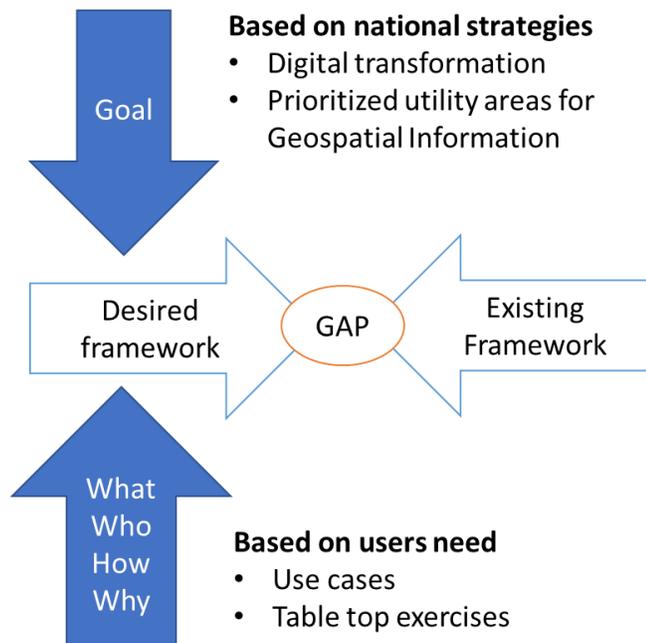
## 4. Approach

This White Paper builds upon the approach described in the IGIF Implementation Guide, Strategic Pathway 2 – Policy and legal.<sup>14</sup> The White Paper demonstrates how this approach can be applied in a certain situation – here, captured as a use case scenario.

The basic steps of the approach are to:

- Assess existing policy and legal frameworks;
- Identify and analyze gaps and opportunities;
- Address gaps and opportunities;
- Future proof policy and legal frameworks;
- Address policy coherence and legal interoperability; and
- Monitor compliance.

These steps can be illustrated as in the diagram to the right. The starting activity is to describe the situation from a bottom’s up perspective (users need) and if necessary, a top down perspective (national strategies). The top down perspective is important for future proofing of solutions, coherence and interoperability with other policy and legal fields.



The resulting description of the situation should point out what information is needed, which actors need to process the information, how and why they need to process it. In other words, the resulting description should identify relevant business processes or types of such processes.

The main processes in geospatial information life cycle are: Acquisition, Storage, Distribution/Access, and Use. The life cycle process of geospatial information is always connected to a

<sup>14</sup> <http://ggim.un.org/igif>

purpose from other business processes. For example, geospatial information may be collected in connection to a “Land Administration Process” and forwarded to a national register for further re-use in other processes like for example a “Disaster Recovery Process” or “Urban Planning and Development Process”.

Based on the description of the situation, the applicable existing national policies and legal frameworks can be identified. This includes identifying policies and legal frameworks on “Governance and Accountability” and “Data Protection, Licensing, and Sharing”.

- “Governance and accountability” element typically contain policies, laws or regulations which give answers to questions concerning authority and custodianship. One such question is whether the identified actors have enough authority to perform the intended processing. Authority can be formed as a custodianship over certain information themes.
- “Data Protection, Licensing, and Sharing” element typically contain policies, laws or regulations which give answers to questions concerning the flow of information between actors; in other words, whether the actors are allowed to give access to the information. The following main policy and legal fields are relevant to consider.
  - Confidentiality: This includes regulations that prohibit or limit access due to a national interest which outweighs the interest of giving access to the information, for example in matters of national security.<sup>15</sup>
  - Privacy: This includes regulations that protect personal information from being misused for unwanted purposes, for example commercial purposes.<sup>16</sup>
  - Use restrictions: This includes regulations that limit use of information to protect data owner’s intellectual property, for example copyright to maps.<sup>17</sup>
  - Data security: This includes regulations that surround all the other fields with restrictions due to the sensitivity of the information. A general principle is that the more sensitive the information, the stricter the data security regulations. Sensitivity of information can be determined based on confidentiality, correctness and availability. Relevant international standards on data security are ISO/IEC 27001 and 27002.

Each identified actor and process in the description must be scrutinized by applying the existing policy and legal framework. If the result shows that an intended data processing is in total or part not allowed, or if there is lack of policy and legal regulations to answer the basic policy and legal questions, a gap is identified. A simple method to scrutinize the description of the need of data is to systematically go over the existing policy and legal framework in four basic steps. If a gap is identified in one step, this will need to be solved before continuing to the next step.

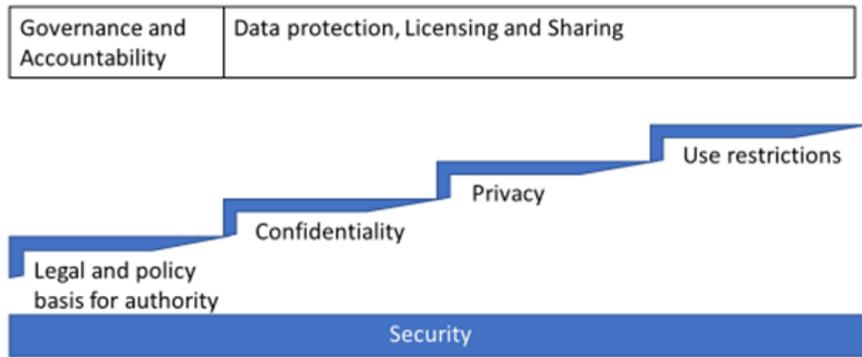
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<sup>15</sup> For example please see Geospatial Information Regulation Bill (India).

<sup>16</sup> For example please see African Union Convention on Cyber Security and Personal Data Protection or Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR).

<sup>17</sup> For more information please see UNGGIM, Compendium on Licensing of Geospatial Information, 2017.

However, a gap analysis is more than just identifying if there is a policy or a law that covers the issue. The analysis should also answer whether the policy or the law addresses geospatial information and if so, what is the impact. In addition, the analysis should also address the need for coherence in public sector-wide policies and interoperable legislations aligned with the broader national policies aimed at delivering the country's strategic priorities.



*This diagram shows the basic steps in a policy and legal scrutiny of any proposed processing of geospatial information.*

The step taken to identify a gap depends on which policy and legal tool the current national policy and legal regulations are based on. The policy and legal tools (laws, policies, norms, guides, contracts etc.) can in short terms be described as either binding or non-binding. Furthermore, the scope of each regulation and framework can be general (enabling) or detailed (prescriptive), giving the actor a broader or smaller (restrictive) authority to decide when access is allowed in every specific situation.

Choosing a different policy and legal tool or making regulations more detailed or general can solve many policy and legal issues. An approach to a gap consisting of over-restrictive requirements on access to information could, for example, mean that the regulations should be more general and giving the actor a broader authority.



The key policy and legal fields and tools described in general above form four key elements of the IGIF Strategic Pathway 2: Policy and Legal; see the diagram to the right.

This White Paper demonstrates step a) to c) of the approach described above, based on a use case on availability of geospatial information across borders.

## 5. Use case – data availability

### 5.1 General scope of the use case

Recognizing the need to account for cultural differences and diversity, the Working Group considered the following aspects in defining a use case suitable to analyze the policy and legal issues connected to security, privacy, intellectual property and licensing.

- The aim of the use case should be to gather facts to show what policy and legal challenges might exist.
- More than one country should be involved in the scope of the use case.
- The event and response of the use case should be over longer term, not an immediate response.
- The use case should describe a situation when new technology can be involved and where no regulatory framework exists.
- Different types of geospatial information should be covered, which might be governed by different policies and laws (e.g. telecommunications, military, aviation, etc.)
- Open data should be covered by the use case, noting that from a legal point of view open data still has a license and that any licensing restriction still need to be understood.

The scope of the use-case was to address geospatial data sharing across borders, where the need of making data more openly available and accessible can be difficult to achieve for legal and policy reasons.<sup>18</sup> The use case utilizes scenarios with questions, and requested the respondent to assume that they are the senior legal officer in the government agency of Country A and that the policy and legal framework of Country A is identical to that of the respondent's country.

### 5.2 Use case scenario

“Many parts of Country A are suffering from a drought, which is leading to starvation in several parts of Country A. As a result, several thousand citizens from Country A have migrated to Country B and Country C, which also borders Country A. Some experts predict that tens of thousands of others will attempt to cross the borders in the next several months if the situation in Country A does not improve. Countries B and C are seeking help in better understanding how many refugees they are likely to receive and where.”

- > Key Components
  - Different jurisdictions - different policy and legal frameworks
  - Critical but slowly developing crisis
  - Emphasis on need for data availability

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<sup>18</sup> E/C.20/2020/13/Add.1 - Report of the Working Group on Legal and Policy Frameworks for Geospatial Information Management to the ninth session of the Committee of Experts on Global Geospatial Information Management

“Civil unrest in Country A has resulted in damage to a chemical storage facility, with some toxic chemicals being released into the atmosphere. Although Country A claims that the chemical storage facility was being used solely to produce chemicals for commercial and agricultural use, some military experts outside of Country A believe that chemical weapons are stored there as well.”

- > Key Components
  - Different types of sensors
  - Military versus humanitarian purpose

“The United Nations and various Non-Governmental Organizations (NGOs) are trying to understand the extent of the drought and food shortage in order to determine how much aid is needed and where it should be sent. They also want to share this information with the governments of Countries B and C so they can better prepare for the refugees. The entire international community is interested in learning the composition of the chemicals that have been leaked and how far and in what direction the chemicals are likely to spread.”

- > Key Components
  - Global Issue
  - Intersection of various issues/technologies

“Countries A, B, and C and other stakeholders from around the globe will require vast amounts of relevant geospatial information to help answer these questions. However, Country A’s has limited capabilities to collect, process and use geospatial information. In addition, the International Charter on Space and Major Disasters has not been activated due to the slow-moving nature of a drought. As a result, the needed information will need to come from government agencies, industry, and transnational organizations from around the globe. A number of different types of geospatial information will be required to address these issues, collected from many types of sensors, and deployed on several different platforms - i.e., satellite, air (both manned and unmanned), and ground-based. In addition, smart phones could also collect and share valuable geospatial information.”

- > Key Components
  - Involvement of stakeholders
  - Whether information will be publicly available

The stakeholders wish to create geospatial products and services by aggregating the different types of geospatial information. In some cases, this information will be publicly available, but in most cases, it must be obtained (i.e., licensed) from either industry or government sources.

## 6. Use case – identification and analysis of gaps

Respondents are members of the Working Group that were asked to analyze the scenario assuming to be the senior lawyer in the government agency of Country A and that the policy and legal framework is identical to national policy and legal framework of the respondent.<sup>19</sup> Respondents were posed four questions and requested to examine the implications of each of the questions considering the scenario, and respond accordingly (as if the policy and legal framework of Country A is identical to their circumstances).

### 6.1 Question 1

OpenStreetMap (OSM) has offered to come in and work with local communities to map areas impacted by the drought. Are there any laws or policies in your country that would restrict them from creating these maps or sharing them with others outside of the country?

- > Description for a policy and legal analysis.

What	Information: Areas of drought. Impact on crops and water supply.
Who	Actors: Data producers – Civil society offered to collect and share the information.
How	Technology: Field survey with application on a smart phone.
Why	Process: Acquisition of information to create a map. Publication of the information on the Internet.  Purpose: Governance and planning; Evidence; Disaster risk reduction;

- > Policy and legal inquiry based on the elements of the Implementation Guide Strategic Pathway 2 of the IGIF.

<b>Process:</b> Acquisition of drought related information to create a map.	
Governance and Accountability	<ul style="list-style-type: none"> <li>▪ Who may collect geospatial data?</li> <li>▪ What geospatial data may be collected?</li> <li>▪ How much geospatial data to be collected?</li> <li>▪ Must the collected data meet any requirements on quality and validity to be considered as authoritative for further distribution from the mapping agency?</li> </ul>

<sup>19</sup> Responses were received from Australia, Canada, China, Finland, Malaysia, Mexico, Sweden and the United States.

Data Protection, Licensing and Sharing	<ul style="list-style-type: none"> <li>▪ What restrictions for re-use will the collector of the data require?</li> <li>▪ Are these restrictions applicable in situations of disaster risk management?</li> </ul>
Policy and legal tools	<ul style="list-style-type: none"> <li>▪ What governance body is authorized to decide who may collect drought related information to create a map?</li> <li>▪ What governance body is authorized to change the applicable regulations?</li> </ul>

- > Summary of responses:
  - Permission/authorization was required for certain types of mapping (surveying).
  - Some concerns were raised over quality and classified information.
  - OSM’s license could make it difficult for government agencies to contribute data to OSM.
  - Countries which had approaches to address this case nationally had developed the regulations as binding legislation. Detailed restrictions were driven by the possible sensitive nature of maps and the need to verify quality of the maps.
- > Identified gap: Policies and laws requiring data be collected by “authoritative” data providers limit the availability of geospatial information to address certain issues. Uncertainty as to whether law allows, or how it applies, to a certain activity (lack of policy and legal clarity).
- > Consequences of the gap: Stakeholders are unable to get access to all types of geospatial information that may be available.

## 6.2 Question 2

A commercial satellite imagery provider has offered to donate high resolution satellite imagery to your agency but is asking for a license that is very restrictive on transfer to other government agencies, re-use and/or derivative products. You have been asked what rights you need in the satellite imagery in order to develop effective products and services to address the drought?

- > Description for a policy and legal analysis.

What	Information: Areas of drought. Impact on crops and water supply.
Who	Actors: Data producer – commercial satellite imagery provider. National data dissemination authority – the mapping agency.

How	Technology: Data-service based on access to satellite imagery.
Why	Process: Dissemination and re-use of high-resolution commercial satellite imagery.  Purpose: Governance and planning; Disaster risk reduction;

- > Policy and legal inquiry based on the elements of the Implementation Guide Strategic Pathway 2 of the IGIF.

<b>Process:</b> Dissemination and Re-use of high-resolution satellite imagery from commercial satellite imagery provider.	
Governance and Accountability	<ul style="list-style-type: none"> <li>▪ Does the mapping agency have authority to receive the imagery and create a product or a service from it?</li> </ul>
Data Protection, Licensing and Sharing	<ul style="list-style-type: none"> <li>▪ Is there any legal right to access the information from the mapping agency?</li> <li>▪ Are there any legal obligations for the mapping agency to allow access to the information for certain purposes or certain actors?</li> <li>▪ Is the mapping agency allowed to provide the information? <ul style="list-style-type: none"> <li>○ Are there applicable confidentiality provisions?</li> <li>○ Are there applicable privacy provisions?</li> <li>○ Are there applicable data security provisions?</li> </ul> </li> <li>▪ Is the mapping agency obliged to charge for access to the data?</li> <li>▪ What restrictions for re-use will the imagery owner require?</li> <li>▪ Will the product developed by the mapping agency be restricted for re-use by a license? If yes, what is the policy and legal basis for the mapping agency to set such restrictions?</li> <li>▪ What standard re-use terms and conditions are applied by the mapping agency and will these need to be adjusted?</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Are there any standard licenses terms and conditions for purposes of disaster and emergency management?</li> </ul>
Policy and legal tools	<ul style="list-style-type: none"> <li>▪ What governance body is authorized to decide on licensing of geospatial information products developed by a mapping agency?</li> <li>▪ What governance body is authorized to change restrictions on re-use of products from a mapping agency?</li> </ul>

- > Summary of responses:
  - The use rights should be as broad as possible.
  - There is a need to invoke disaster and emergency management agreements or protocols.
  - Data should be downloadable.
  - Derivative products should be permitted for humanitarian assistance and disaster relief.
  - Unlimited copies should be permitted.
  - National approaches to address this issue is via licensing agreements.
- > Identified gap: Licensing terms of data providers impacts the use of geospatial information to address key governmental functions.
- > Consequences: Stakeholders that are unable to pay for broader use rights will not have valuable geospatial information.

### 6.3 Question 3

Several non-governmental organizations (NGOs) have asked permission to operate drones over the country to collect data on the chemical release and share this with a number of countries around the globe so that they can prepare in case the chemicals enter their atmosphere. What legal issues do you see?

- > Description for a policy and legal analysis.

What	Information: Data on chemical release and impact.
Who	Actors: Data producers - Private sector request to collect and share data.
How	Technology: Remotely operated or remotely piloted (drone) collection.

Why	<p>Process: Acquisition of data with remotely operated technology. Sharing the data with relevant stakeholders.</p> <p>Purpose: Governance and planning; Hazardous substances emergency; Emergency response; Disaster and emergency management</p>
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- > Policy and legal inquiry based on the elements of the Implementation Guide Strategic Pathway 2 of the IGIF.

<b>Process:</b> Acquisition of information with remotely operated technology. Share the information with relevant stakeholders.	
Governance and Accountability	<ul style="list-style-type: none"> <li>▪ Who may collect geospatial data with drones?</li> <li>▪ What geospatial data may be collected with drones?</li> <li>▪ How may geospatial data be collected with drones?</li> <li>▪ Must the data meet any requirements on quality and validity to be considered as authoritative for further distribution from the mapping agency?</li> </ul>
Data Protection, Licensing and Sharing	<ul style="list-style-type: none"> <li>▪ Confidentiality: Is any information on the incident confidential, for example about the facility?</li> <li>▪ Privacy: Will the drones collect unnecessary information, especially about individuals?</li> <li>▪ Re-use: Will the collector have copyright to the information, and will the use terms be acceptable?</li> <li>▪ Data security: What security requirements must be accounted for concerning collected data?</li> <li>▪ Are there any exemptions for disaster and emergency management?</li> </ul>
Policy and legal tools	<ul style="list-style-type: none"> <li>▪ What governance body is authorized to decide on collection of geospatial data with drones?</li> <li>▪ What governance body is authorized to change regulations to collect geospatial data with drones?</li> </ul>

- > Summary of responses:
  - Role of non-geospatial government agencies (i.e., Civil Aviation authorities, internal security, or policing authorities) play a role in this aspect of geospatial information management.
  - Restrictions on size (weight), speed, altitude, operational range, (e.g. line of sight) and hours exist.
  - Permit/licensing requirements exist for remotely operated data collection platforms (e.g. drones) or for the data collected.
  - Privacy and national security are two of the biggest concerns.
  - National approaches to address this issue were in the form of binding legislations with prescriptive regulations.
- > Identified gap: Existing policy and legal frameworks currently may not address new technologies critical to the collection, use, and sharing of geospatial information.
- > Consequences: Geospatial community will not be able to use new technologies as quickly and broadly as they would like due to the lack of enabling policies and laws.

#### 6.4 Question 4

Your military department wishes to use geo-location data from mobile phones to identify and monitor the movement of refugees. It has asked the mobile phone carrier to turn over all of its records. You have been asked if there are any legal issues that need to be considered.

- > Description for a policy and legal analysis.

What	Information: Geo-location data on refugees from mobile phones.
Who	Actors: Data producer – the mobile phone carrier. Data user – the military department.
How	Technology: Digital access to records from mobile phone carrier.
Why	Process: Acquisition of geo-location information from mobile phones. Purpose: Humanitarian crisis management;

- > Policy and legal inquiry based on the elements of the IGIF Implementation Guide Strategic Pathway 2: Policy and Legal.

<b>Process:</b> Acquisition of geo-location information from mobile phones.	
Governance and Accountability	<ul style="list-style-type: none"> <li>▪ How is accountability for the relevant information regulated in national regulations?</li> <li>▪ Who may access and process geo-location information from mobile phones?</li> <li>▪ Can mobile phone operators share/provide geo-location information of mobile phones (hence users)?</li> </ul>
Data Protection, Licensing and Sharing	<ul style="list-style-type: none"> <li>▪ Confidentiality: Is such information confidential?</li> <li>▪ Privacy: What rights does the owner of the mobile phone have?</li> <li>▪ Re-use: For what purposes may such information be re-used if accessed?</li> <li>▪ Data security: What security requirements must be accounted for when processing such information?</li> <li>▪ Are there any exemptions for disaster risk and emergency management?</li> </ul>
Policy and legal tools	<ul style="list-style-type: none"> <li>▪ What governance body is authorized to decide on processing of geo-location information from mobile phones?</li> <li>▪ What governance body is authorized to change regulations processing of geo-location information from mobile phones?</li> </ul>

- > Summary of responses:
  - There are restrictions of the use of geo-location information collected by smart devices.
    - Privacy
  - Need approval of third party to use data
    - Regulatory body or courts
- > Identified gap: National and homeland security, and privacy concerns affect the ability of the geospatial community to collect and use certain types of geospatial information.
- > Consequences: Lack of effective mechanism to address policy and legal concerns can result in data not being used in a timely fashion.

## 7. Use case – Addressing the gaps

The results of the use case highlight two key considerations for the use of geospatial information to address transnational issues. First, that national (and subnational) policy and legal frameworks (or policy and legal uncertainty) have a significant impact on the collection of critical geospatial information. The second is that even if a country has collected the necessary geospatial information there are often concerns with sharing this data with parties outside of the country. For example, countries may be unwilling to share data with other countries due to national security and data protection laws. As a result, an enabling policy and legal framework must address both obstacles.

In general, the approach to address policy and legal issues will differ depending on what *information, actors, and purposes* are involved to meet the users need. Two main types of solutions may be applicable, depending on the circumstances.

a) “Exceptions for specific purposes with data sharing”.

If the specific purpose for data sharing is of national interest, the information is also specific and only collected for that purpose – the existing policy and legal barriers could be complemented with exceptions that allow data sharing in these situations.

This type of solution might result in unique or specific provision(s) to handle difficult data sharing issues, but very often is only effective to the particular case or situation. It may not be possible to apply to other similar cases. Each case must be dealt with uniquely and separately.

This solution is adaptable to the level of data standardization as it appears in the current state.

b) “Transboundary cooperation for data sharing”.

If the geospatial information is frequently requested by users and considered as “fundamental” in decision making – the existing policy and legal frameworks could be developed to support a transboundary cooperation for data sharing of the information.

This type of solution makes it possible to re-use the solution for many purposes if these need the same information. The information must be assessed in advance from a security perspective. This solution may require high level of data and service standardization.

Transboundary cooperation may also lead to development of a standard license agreement or draft on a standard policy for the sharing of certain types of geoinformation for certain uses.

Possible additional types of solutions that may be useful depending on the circumstances are:

c) Strengthen the existing policy and legal framework in the relevant country.

In order to maximize the benefit of the Integrated Geospatial Information Framework, it will be necessary to align its key elements with a county’s policy and legal framework. This will require coordinating activities among key stakeholders from the geospatial

community (both government, industry, and civil society) and the legal and policy communities.

- d) Develop a standard license agreement or draft a standard policy for the sharing of certain types of geospatial data for certain uses.

Developing a “one-size fits all” license agreement or data policy for sharing geospatial data is a challenge, given the wide variety of geospatial data type, the many diverse potential uses and the significant differences between laws and policies around the globe. However, it is possible to develop application-specific license agreements or data sharing policies that pertain to a designated set of data types and uses.

In a policy and legal framework for geospatial information management these solution types or a combination of these may be useful to consider. In general, the above-mentioned types of solutions mean that the following activities might be involved. Policy and legal makers might need to:

- Adjust or create a new policy or law;
- Adjust or create new policies or preconditions for licenses; or
- Create preconditions for transboundary data sharing agreements for defined purposes or for defined fundamental geospatial data.

The applicability of a particular solution will depend in part upon whether the gap is the result of a country’s general policy and legal framework or in sharing the data with particular parties outside the country. In the use case, the need of sharing information (acquisition, re-use, or other processing) was connected to disaster risk and emergency purposes. Such specific purposes could allow gaps to be addressed by forming the purpose as an exception to the restrictive applicable national regulations. However, there might be other fundamental purposes where the exact same information is needed. The gaps may therefore also need to be addressed from a broader scope, where a policy and legal solution could be re-used for other similar situations.

The following solutions could be considered to address the above identified gaps.

*Gap 1: Policies and laws requiring data be collected by authoritative data providers limit the availability of geospatial information to address certain issues<sup>20</sup>.*

This gap is mainly connected to the element of “Governance and Accountability”.

The policy- or lawmaker can consider adjusting national policy and legal frameworks to allow exceptions for disaster risk and emergency purposes or to make existing regulations more general giving the mapping agency broader authority to make assessments depending on the situation. The government can also consider a transboundary agreement on data sharing for these purposes.

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<sup>20</sup> Where this relates to data collected by indigenous peoples or community-based sources, it shall be consistent with the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) was adopted by the General Assembly on 13 September 2007,

An example of a transboundary cooperation agreement is the Arctic SDI – Memorandum of Understanding. The Arctic SDI Memorandum enables eight circumpolar nations, with vastly different legal frameworks to share and integrate their data via web standards. The agreement also enables integration of scientific and marine data from circumpolar Arctic Council scientific and national hydrographic agencies respectively. In effect, the collaboration is an example of technical and scientific diplomacy that can accommodate differing national legal frameworks.<sup>21</sup>

*Gap 2: Licensing terms of data providers can restrict the use of geospatial information to address key governmental functions.*

This gap is mainly connected to the element of “Data Protection, Licensing and Sharing”.

The mapping agency can, within its power of authority, consider adjusting licensing models for these specific purposes. The policy- or lawmaker can consider regulating obligations for data providers to support key government functions for mentioned purposes.

An example from the Arctic SDI cooperation is the terms of use and a glossary of terms.<sup>22</sup>

*Gap 3: Existing policy and legal frameworks currently may not address new technologies critical to the collection, use and sharing of geospatial information.*

This gap is mainly connected to the elements of “Legislation” and “Policies, norms, and guides”.

The policy or lawmaker can consider regulating obligations (detailed and binding law) for public agencies concerning digital distribution of high value geospatial information nationally, and principles when these obligations should be applied (flexible to users need). The obligations may also be applicable for other purposes.

The above-mentioned example on Arctic SDI cooperation, is an example on a chosen policy and legal approach based on non-binding obligations, from a legal perspective.

*Gap 4 National and homeland security concerns affect the ability of the geospatial community to collect and use certain types of geospatial information.*

This gap is mainly connected to the element of “Data Protection, Licensing, and Sharing”.

The policy- or lawmaker can consider adjusting applicable regulations to allow exceptions for disaster risk and emergency purposes or to make existing regulations more general giving the relevant government agency broader authority to make assessments depending on the situation.

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<sup>21</sup> [https://arctic-sdi.org/wp-content/uploads/2018/12/Arctic-SDI-Governance\\_v3.0.pdf](https://arctic-sdi.org/wp-content/uploads/2018/12/Arctic-SDI-Governance_v3.0.pdf) (see appendix 1), see also the manual for the Arctic SDI [https://arctic-sdi.org/wp-content/uploads/2017/04/SDI-Manual-for-the-Arctic-EDITED2\\_PS.pdf](https://arctic-sdi.org/wp-content/uploads/2017/04/SDI-Manual-for-the-Arctic-EDITED2_PS.pdf)

<sup>22</sup> <https://arctic-sdi.org/wp-content/uploads/2017/05/Arctic-SDI-Glossary-of-Terms-Version-1.0.pdf> and <https://geoportal.arctic-sdi.org/termsfuse.html>

## 8. Strengthening policy and legal frameworks for geospatial information management

The Working Group recognized that many countries are at different stages of strengthening their policy and legal framework for geospatial information management. The use case highlights that policy and legal uncertainty impacts both the country itself but also nearby countries that need its geospatial information to address transnational issues.

In such cases a first step is to create or strengthen the key elements of a national policy and legal framework on geospatial information management, as in the IGIF Implementation Guide - Strategic Pathway 2: Policy and Legal.

*Governance and Accountability.* Creation of such regulations starts by attaining political endorsement, strengthen institutional mandates and build a cooperative data sharing environment. These actions are described in the Implementation Guide, Strategic Pathway 1 and 3, of the IGIF. Another initial step is to prioritize national fundamental geospatial data themes and to form the custodianship mandate around them (this is described in the Implementation Guide, Strategic Pathway 4, of the IGIF.) In overall, these steps will involve policy and lawmakers to create the necessary regulations.



*Data Protection, Licensing and Sharing.* Regulations on data protection are driven by a need to protect certain national interests, for example national security or personal privacy. National regulations with this purpose are often formed to cover all types of information that could be sensitive in respect of the interest. However, policy- and lawmakers would be advised to consider whether the applicable regulations are clear on when geospatial information in particular may be lawfully released.

As a result, regulations on data protection are often formed as a risk or damage assessment. These often give agencies the authority to decide on the balance between, on one hand, confidentiality, privacy, security, and, on the other hand, open data use. Some information may be sensitive by default, and therefore pointed out in general terms in a regulation. However, in many cases sensitivity of information depends on the circumstances. An assessment is then required every time processing of the information is requested. Such regulations will not define what is sensitive or not. Instead they will define how to assess what is sensitive data. For example, an assessment provision may contain a list of purposes which are considered as approved for open use of the information, or a list of circumstances that speak for protecting the information. If certain requests for access and processing of information are very frequent, regulations may also be formed to define obligations on data sharing.

Assessments of lawful accessibility of information lead to categorization of information. The Implementation Guide, Strategic Pathway 4, of the IGIF, contains guiding principles on how to categorize data.

Strengthening of the above key elements also require early engagement and cooperation with legal and other relevant professions at the national level. This is described in the Strategic Pathway 6 on Standards, the Strategic Pathway 7 on Partnerships, the Strategic Pathway 8 on Capacity and Education, and the Strategic Pathway 9 on Communication and Engagement. Strategic Pathway 5 on Innovations enhance opportunities for innovation and creativity, including process improvements.

## 9. Conclusions

In the overall, the following conclusions can be drawn from the analysis of the use case responses.

- a) There are many similarities among countries as to concerns/perceived risks associated with the collection and use of geospatial information.
- b) There are some differences as to how nations address these concerns.
- c) These differences can impact availability of geospatial information at the local, national and international level.
- d) Possible approaches to consider in addressing these risks and minimizing the differences are to:
  - i) Create exceptions in existing policy and legal frameworks catering to specific purposes with data sharing.
  - ii) Create or improve transboundary cooperation on data sharing.
  - iii) Consider strengthening the existing policy and legal framework as an initial step, if differences are due to a lack of or weak regulations.
  - iv) Develop a standard license agreement or draft a standard policy for the sharing of certain types of geoinformation for certain uses.

The use case exercise showed that the method presented in the Strategic Pathway 2 of the IGIF serves well as a tool to address some of the complex policy and legal issues. However, there are no general solutions that will solve all types of policy and legal issues. The solutions will be different depending on the nature of the policy and legal gaps in every specific situation. Learning more about these potential solutions to provide recommendations require comparison of these solutions and proven practices.

## 10. Possible next steps

The Working Group agreed to limit its current considerations to the influences of laws and policies with respect to licensing, privacy and security of geospatial information within an overall scope (areas of focus) that includes:

- (a) privacy;
- (b) security;
- (c) intellectual property and ownership;
- (d) authority, custodianship;
- (e) geo-regulation, spatial extents of legislation;
- (f) quality, uncertainty and timeliness;
- (g) access, availability;
- (h) licensing and liability;
- (i) cost recovery, pricing; and
- (j) standards.

Possible next area of focus for the Working Group to consider -

- Address the issue of authority and custodianship including that of authoritative data, the implications of not using authoritative data, and ensuring continuing availability of authoritative data for a multiplicity of purposes.
- Address the accessibility and availability of geospatial information, and the impact of open government policies and principles.
- Address the issues around geo-location data for public good (and in time of crisis and emergencies), and its implications including confidentiality and privacy (of individuals)

Possible additional activities for the Working Group to consider -

- Review the Implementation Guide of the Integrated Geospatial Information Framework and map the other eight strategic pathways with relevant portions of policy and legal frameworks for geospatial information management.
- Apply the approach, as demonstrated through a 'theoretical' scenario to 'real-world' situation<sup>23</sup>, to document and share the experience.
- Work through the approach with one or two countries currently designing and developing their IGIF country-level Action Plan to strengthen their policy and legal framework to proactively support the development and role of integrated geospatial information management, that applications lead to the desired benefits and public good in a

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<sup>23</sup> A possible 'real-world' situation could be around the data sharing and exchange for the recent Australian bush fires incident

more efficient manner, and for delivering evidence for implementation of national development priorities, the 2030 Agenda, and national response in times of crisis.

- Identify common challenges and possible solutions (legal, policy, operational and technical) when implementing the Integrated Geospatial Information Framework nationally.
- Coordinate and work with UN-GGIM Expert and Working Groups by jointly identifying and addressing policy and legal gaps. Proposed areas:
  - a) The operationalization of the Framework for Effective Land Administration with the Expert Group on Land Administration and Management. The nine pathways of the Framework for Effective Land Administration (FELA) align with the nine strategic pathways of the IGIF. FELA's second pathway is Policy and Legal, as land administration finds its basis in land (property or cadastral) policies, laws and regulations. Robust policy and legal frameworks are critical to effective land administration.
  - b) Policy and legal considerations for data-sharing partnerships to facilitate the availability and accessibility of marine geospatial information<sup>24</sup>, and issue of crowdsourced or volunteered geographic information such as crowdsourced bathymetry with the Working Group on Marine Geospatial Information.
  - c) Deliverables may include:
    - An inventory of policy and legal resources that stakeholders within the relevant domain can use when considering data collection, use and sharing.
    - A standard license agreement and/or data sharing policy applicable to geospatial information and uses within the relevant domain;
    - A tabletop exercise with technical, operational and legal professionals with the respective domain to identify potential issues and possible solutions.

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<sup>24</sup> Under UN-GGIM, marine geospatial information encompasses inland water bodies and waterways, coastal zones, seas and oceans