

Strategic Pathway 2

Policy and Legal

*This **strategic pathway** establishes a robust policy and legal framework that is essential for instituting effective, efficient and secure management and exchange of geospatial information - nationally and sub-nationally.*

*The **objective** is to address current policy and legal issues by improving the policies and laws associated with, and having an impact on, geospatial information management. This is achieved by proactively monitoring the policy and legal environment, including mandating responsibility for the production of data, and keeping abreast of issues and challenges arising from the evolving, innovative and creative use of geospatial information and emerging technologies.*

Summary

A sound and enabling policy and legal environment is a critical aspect in geospatial information management. Policy and legal frameworks are particularly important as they impact many other strategic pathways within the Integrated Geospatial Information Framework (IGIF). There are a number of considerations in a policy and legal framework. These can be considered as instruments – some of which are binding, while others are non-binding. Each are necessary to address the wide range of legal and policy issues that impact the collection, use, storage and distribution of geospatial information. Some of these issues are directly related to geospatial information management. Others are more indirectly related, but are also important.

Appropriate policy and legal frameworks proactively support the development and role of geospatial information management so that applications lead to the desired benefits and public good in a more efficient manner. 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. Countries are encouraged to exploit the potential of robust policy and legal frameworks through coherent public sector-wide policies and interoperable legislations, aligned with the broader national policies aimed at delivering the country's strategic priorities.

The purpose of this pathway is to support the effective and secure management and application of geospatial information while respecting national security and privacy concerns. Four key elements are required to develop and sustain the enabling environment to implement sound policy and legal frameworks for geospatial information, while proactively keeping pace with technological change. A list of supporting common legal terms is included in Appendix 2.1.

These four elements are:



- **Legislation** – laws and regulations that provide the legal framework in which geospatial policies must operate. These laws and regulations may be specific to geospatial information or closely related.
- **Policies, Norms and Guides** – are typically aspirational and relatively easy to develop and adopt. They include proven practices that provide good direction for strengthening geospatial information management.
- **Data Protection, Licensing and Sharing** – are used to address complex legal issues with data, including risks and safeguards, sharing and dissemination, and licensing issues that impact the availability, accessibility and application of geospatial information.
- **Governance and Accountability** – the policy and legal boundary within a country or jurisdiction that engenders effective management and use of geospatial information and leads to good governance, effective implementation and accountability.

These elements are underpinned by principles that lead to robust policy and legal framework that can be adopted by each country. The principles are put into practice through several strategic actions that proactively consider, address and deliver sound instruments and provisions for implementing the IGIF, and which lead to desired benefits and public good. The overall structure for this policy and legal strategic pathway is illustrated in and anchored by Figure 2.1.

When implemented the actions (and their interrelated actions¹) will enable the achievement of the four elements, which in turn will deliver significant and sustainable national outcomes and benefits for a country. These outcomes include:

- A sound and enabling policy and legal environment that maximizes the utility of geospatial information and safeguards a jurisdiction or entity’s interests;
- Effective and secure management, sharing, integration and application of geospatial information;
- Policy and legal frameworks that evolve over time, respond to societal progress and technological developments, and keeps pace with fast changing economic, societal and personal landscapes; and
- Clarity in responsibilities and mandates, strengthening governance and accountability in geospatial information management.

¹ The interrelated actions across all Strategic Pathways are described in detail in the introductory chapter; Solving the Puzzle: Understanding the Implementation Guide.



Figure 2.1: The overall structure for the Policy and Legal Strategic Pathway - showing the four key elements, guiding principles, actions and interrelated actions, and the tools provided in the Appendices to support and achieve the outcomes.

2.1 Introduction

Policies, laws and regulations have a significant influence on geospatial information management.

Policies, laws and regulations have a significant influence on geospatial information management. These include legal instruments which range from treaties, to legislations, to presidential or executive orders, to administrative measures, to geospatial information licensing arrangements. Policies and laws can vary from those that directly relate to geospatial information to those with much broader applications such as privacy, licensing and liability. International and regional obligations, such as treaties and bilateral agreements, play a part.

When implementing the IGIF, it is important to consider the current policy and legal environment, the impact that it has on existing geospatial information management arrangements and practices, the evolving technological and user requirements, and what changes must be made to reach the desired outcome. One of the first priorities is to foster policy development leading towards robust policy and legal frameworks for integrated geospatial information management. Policy development in many countries is continually evolving, particularly in the areas of information technology, and increasingly, in data and open data, policy.

While policies relating to information technology and data sometimes have a connection with geospatial information, there are often no policies that relate more directly to geospatial information management, its access and its application. This lack of policy has negative implications for the implementation of the IGIF. Therefore, one of the earliest efforts should be to establish a sound and enabling policy and legal environment.

The IGIF places a strong emphasis on the existence of a sound and enabling legal and policy environment, as it supports many of the other strategic pathways. This is because policy and legal instruments directly impact on the availability, storage, accessibility, exchange, application and management of geospatial information. There is also the need to consider how to ‘future-proof’ policy and legal frameworks for geospatial information management. The rapid advancements in technologies used to collect, analyze and visualize geospatial information, such as using unmanned aerial systems or through machine learning, raise a number of unique policy and legal issues. In this Strategic Pathway, the recommended actions support the development of a policy and legal framework that can evolve with changing times and be updated as needed to address new and emerging technologies, applications and challenges.

Furthermore, policy and legal frameworks can proactively support the development of geospatial information management so that decisions lead to the needed ‘public good’ in a more efficient way.

The implementation of the 2030 Agenda for Sustainable Development respects national policy space for sustained, inclusive and sustainable economic growth, in particular for developing countries. While remaining consistent with relevant

international rules and commitments², the Agenda takes into account different national realities, capacities, and levels of development, as well as respecting national policies, laws and priorities.

2.2 Context and Rationale

All countries and all sectors need geospatial information for national development, policy and decision-making. Geospatial information is presented in many forms and mediums and provides the integrative platform for all digital data that has a location dimension to it. There is a new and emerging 'data ecosystem' for sustainable development in which collaborative information systems, that are comprehensive and coordinated, are able to provide evidence on the state of place, activities and occurrences, and to relate people to place, activities and events. This 'data ecosystem' can deliver timely and reliable information necessary for citizens, organizations and governments to build accountable actions and evidenced-based decisions. But it needs to be anchored by well understood and agreed policy and legal frameworks.

The importance of having a policy and legal framework that supports geospatial information management is well noted by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)³. The geospatial community must actively participate in the creation of an enabling policy and legal environment. Failure to do so will likely result in policy and legal frameworks being created by others who may not fully, if at all, understand the many elements and dimensions of geospatial information.

There is a critical need to continually keep abreast of policy and legal issues relating to geospatial information, as innovative and creative applications and emerging technologies repeatedly disrupt existing policy and legal frameworks. Examples of disruptive technologies include the acquisition and application of geospatial information from robotic sensors, unmanned aerial systems, smart infrastructure initiatives, the internet of things, autonomous vehicles, pervasive mobile applications, and a digitalized economy. Some of these technologies, devices and applications are perceived as being intrusive, and are challenging existing laws, such as privacy. The policy and legal communities must keep pace with this rapid innovation and the commensurate adoption of new laws and policies.

The digital transformation of societies and the economy is underway in many countries - disrupting conventional practices and rapidly changing the economic,

There is a critical need to continually keep abreast of policy and legal issues relating to geospatial information and its application.

² Transforming our World: The 2030 Agenda for Sustainable Development (A/RES/70/1), Para 21.

³ UN-GGIM Future Trends in Geospatial Information Management: The five to ten-year vision and its second edition. <http://ggim.un.org/documents/Future-trends.pdf> and http://ggim.un.org/documents/UN-GGIM-Future-trends_Second%20edition.pdf

societal and personal landscape. This change is particularly prevalent where geospatially-enabled information is underpinning cutting edge digital business transformations through innovative location-based applications and services.

However, geospatially-enabled digital transformation is not occurring in all countries. There are often challenges with the availability, storage, accessibility, exchange, application and management of geospatial information, and these challenges are commonly experienced across all levels of government, the economy and society. There is also the need for clarity on data custodianship and data governance within countries, and for regional and international applications that stem beyond a country's national jurisdiction.

Appropriate policy and legal frameworks on geospatial information management can address these data governance, data sharing and data integration challenges. At the same time, there is opportunity to embrace the benefits afforded by a more forward-looking and effective policy and legal framework. The ultimate goal is for a policy and legal framework that maximizes the utility of geospatial information, as well as protect a country, jurisdiction or organization against potential business and security risks.

There is a broad acceptance that geospatial information management cannot operate in a vacuum. It is strongly related to general government information policies and those related to e-Government, national security, privacy, intellectual property rights, data availability, open data, standards, education, statistical and administrative data. Trade and collaboration with the private sector may already be described in market regulation and market stimulus policies. Government needs to consider how these policies already apply to geospatial information management and whether they will require adaptation or alignment.

Governments will further need to consider which policies should be developed specifically for geospatial information management, and which policies already exist in adjoining policy areas. For example, a policy on Information Technology (IT) could apply to aspects of geospatial technologies, and a policy on Open Data could apply to geospatial data that a government organization produces.

Some countries choose to begin with an administrative measure or an executive order, or decree, to establish a governing board (See SP1: Action 1.6.1) or a geospatial coordination unit (See SP1: Action 1.6.2) when implementing the IGIF. Others may require a more comprehensive law (legislation) including regulatory provisions. When a more formal law is required, there should be a decision whether to amend existing law(s) to consider geospatial aspects, or whether a specific new law, as an example, for integrated geospatial information management, is required.

In some instances, geospatial information policies may become law. Other policies may eventually be translated into working guidelines for individual

government organizations. Governments will need to consider what legislation is required to be developed specifically for geospatial information management, and balanced with legislation that already exists in related policy areas.

In addition, there may be other laws that are not directly related to geospatial information but can impact the management and use of geospatial information, such as national security, privacy, intellectual property and liability laws. For example, space laws can impact a country's ability to collect or share satellite remote sensing data. Privacy and national security concerns can impact data sharing and may pose restrictions on usage and limit the potential value of the information. It is important to strike the right balance between data sharing and data protection and understand the impacts on the ability for third parties to use, adapt and potentially commercialize or generate societal value from the data.

It is clear that there are different approaches, circumstances, and priorities that require a country-specific approach to policy and legal frameworks. Whatever the approach, coordination of all activities is critical, and communication of the roles and responsibilities are necessary for success, including from data availability and accessibility policies to education and market regulation policies.

2.3 Approach

The approach for establishing a sound and enabling policy and legal environment is to address current policy and legal issues. This requires improving existing policies and laws, proactively monitoring the policy and legal frameworks, mandating responsibility for the production of data, and keeping abreast of the issues and challenges arising from the evolving, innovative and creative use of geospatial information and emerging technologies.

The approach includes four key elements that are a guide for countries to successfully implement the IGIF. These elements include **legislation** to provide the legal framework, appropriate **policies, norms and guides, data protection, licensing and data sharing** arrangements, and effective **governance and accountability**. These elements are explained in more detail in section 2.4 below. To implement this strategic pathway, as in all strategic pathways, the approach is dictated by national circumstances. Country-specific priorities and needs may be influenced by existing capabilities, resourcing potential, cultural and other practicalities.

The approach includes strategic pathway actions that are recommended as a means to achieve the four key elements. The actions, which are underpinned by guiding principles, provide the step-by-step guidance to implement and achieve the desired outcomes. While most of these actions may be unique to this strategic pathway, there are several interrelated and/or prerequisite actions

The way forward relies on improving policies and laws, proactively monitoring the policy and legal environment, mandating responsibility and keeping abreast of emerging trends and technologies.

detailed in other strategic pathways that are needed to be completed prior to, or in conjunction with, the strategic pathway actions. Tools to assist in completing the actions are available in the appendices to the strategic pathway. The approach for Strategic Pathway 2: Policy and Legal is illustrated in Figure 2.2 and explained in the following sections.

2.4 Elements

2.4.1 Legislation

Legislation and regulations provide the legal framework within which the geospatial policies, programs and projects are able to operate.

Legislation or laws provide the legal framework within which geospatial policies, programs and projects are able to operate. Legislation or laws refer to a feature of a policy and legal framework that are binding. It is important to note that there are many other equivalent terms that are used that have essentially the same meaning. These include decrees, orders, codes, ordinances and regulations. (For the purposes of this document, the term ‘legislation’ or ‘law’ apply to all of these types of legal instruments). Legislation and laws may be specific to geospatial information (such as legislation on geospatial data sharing) or closely related (i.e. privacy, liability, intellectual property rights management).

Although laws can be generated or created in a number of different ways, each have several similarities including, having force and thus helping create compliance, taking a long time to create and a long time to amend or change. Well drafted legislations promotes and provide that sound and enabling policy and legal environment for integrated geospatial information management.

2.4.2 Policies, Norms and Guides

Policies, norms and guides are not enforceable under law but have an important role in geospatial information management and use.

Policies, executive orders, administrative measures, norms and guides often tend to be aspirational, non-binding features of a policy and legal framework. They are useful because they are relatively easy to publish, and they can be changed or updated fairly easily. They do not have the force of law and can be difficult to enforce. However, they play an important role in the utilization of geospatial information in a country⁴. There are benefits associated with non-binding features of a policy and legal framework.

⁴ For example, until recently, one of the primary documents outlining the roles of government organization in the collection and sharing of geospatial information in the United States was OMB Circular A-16 (the “Circular”). The Circular is not law, but simply “provides direction for federal agencies that produce, maintain, or use spatial data either directly or indirectly in the fulfillment of their mission and provides for improvements in the coordination and use of spatial data.” Moreover, in time, these informal provisions can become law. For example, many components of OMB Circular A-16 were incorporated into the recently passed Geospatial Data Act.



Figure 2.2: The approach to policy and legal.

One of the primary benefits of policies, norms and guides is that they are much easier to develop and implement than laws and regulations. As a result, they can be more flexible, which makes them easier for adoption. They can also remain in force longer than an agreement and can apply to both the public and private sectors. In addition, they are the easiest to modify to adapt to new technologies or legal issues that may arise. However, there are also limitations that should be considered. Since policies, norms and guides are non-binding, they generally cannot be enforced in a court, and only apply to a limited group that has usually 'self-selected' to abide by them. That said, market pressure and integrating non-binding features in formal legal instruments (such as including standards in contracts) can increase their adoption.

2.4.3 Data Protection, Licensing and Sharing

Data protection, licensing and sharing agreements impact the flow of geospatial information.

Data protection, licensing and sharing agreements impact the flow of geospatial information. Many of these are addressed as part of a country's broader policy and legal framework. Contracts, agreements, data sharing agreements or licenses are relatively easy for parties to change. However, the arrangements will always remain subject to the applicable policy and legal framework of the country.

Contracts and other forms of agreements between parties can enable the utilization of geospatial information. Most of such agreements are legally enforceable. There are several benefits to using an agreement to address legal issues that restrict or limit geospatial information management. One benefit is that it often takes less time to negotiate and subsequently sign an agreement. However, agreements have several limitations. One limitation is that typically they are only enforceable between the organizations that enter or sign them. In addition, agreements will generally terminate after a certain period, after which time they must be renegotiated. As a result, although they play an important role in a policy and legal framework that enables geospatial information, that role can be limited.

2.4.4 Governance and Accountability

Governance and accountability is required to lead the development of policies and laws, and enable the mechanisms to strengthen geospatial information management.

There is a need for good governance and accountability to ensure a sound and enabling policy and legal environment towards the highest and widest application of geospatial information for transformational and sustainable societal, environmental and economic benefits. These needs are to firstly, lead the development and implementation of robust policy and legal frameworks to address the issues that are impacting integrated geospatial information management. Secondly, regarding the policies and laws in themselves, to provide the compliance mechanisms for effective and efficient integrated geospatial information management. Thirdly, to address which organization(s) will be responsible for implementing and sustaining the IGIF.

A critical consideration in governance and accountability is whether to designate a lead organization that is primarily responsible for geospatial information management within a country. Then, there is the collection, production and provision of geospatial information, and whether this may be limited to certain approved entities. For example, national mapping authorities, military mapping units within the national defense force, or commercial operations. A further consideration is appropriate financing, not only to collect geospatial data but also for its maintenance, storage and making it available to third parties. These aspects work together, not in isolation, enabling good leadership, governance and accountability. The potential of robust policy and legal frameworks is maximized through coherent public sector-wide policies and interoperable legislations aligned with, and able to deliver, the country's strategic priorities.

2.5 Guiding Principles

There are specific guiding principles and elements common to a robust policy and legal framework leading to a sound and enabling environment for integrated geospatial information management. While policy and legal instruments will differ between countries and the process for creating and revising these instruments varies, these guiding principles promotes a sound and enabling policy and legal environment for geospatial information management with robust geospatial legislations, regulations, policies and agreements. Replicating a successful policy and legal framework from one country to another will not work. That said, using and leveraging good ideas and successful implementations, 'adapt to adopt', across countries is encouraged. The guiding principles for policy and legal are:

- **Stewardship and Trust:** Managing geospatial data as trustees for the country and the community, enable its integration with other information. Confidentiality, privacy, security and intellectual property rights are preserved.
- **Strategic and Responsible:** The planning, acquisition and use of geospatial information achieves the most strategic use of resources and avoids duplication of effort.
- **Secure and Safeguarded:** Ensure secure and trustworthy data sharing, dissemination and use. Geospatial information are stored, maintained and accessed in a secure environment and through secure methods.
- **Available and Compatible:** Compatible and consistent with internationally recognized standards, guidelines and good proven practices, facilitates the ease of discovery, accessibility, interoperability and reusability.

By applying the guiding principles, countries can make progress in strengthening their geospatial information management.

- **Accessible and Equitable:** Provision is made for easy, efficient and equitable access to geospatial information where technology, data formats, organizational arrangements, location, costs and conditions do not inhibit its widest and highest use.
- **Optimize Value and Resources:** Geospatial information management is conducted in a way that maximizes its value and optimizes resources. Access and pricing regimes that maximize net benefits to the country and the community.
- **Future-Proof and Responsive:** Cognizant of and responsive to the changing and emerging technological, economic, societal and personal landscapes with adequate provision for long-term care and value.
- **Policy Coherence and Legal Interoperability:** Policies, laws and regulations working together, through coherent public sector-wide policies and interoperable legislations, to strengthen integrated geospatial information management.

2.6 Actions

The strategic pathway actions are recommended as a means to achieve the four key elements.

The strategic pathway actions are recommended as a means to achieve the four key elements of policy and legal. Country-specific actions may be influenced by factors such as country priorities, existing legal frameworks, national circumstances, resources, culture and other practicalities. These will influence approaches for implementing each strategic pathway and their related actions.

For ease of use, particularly to assist countries in the initial and early stages of developing and strengthening their national geospatial information management arrangements, the actions are presented in a sequential step-by-step structure. A road map illustrating this order and where the actions typically occur and are completed, is presented in Figure 2.3. However, it is acknowledged that countries, depending on existing national arrangements, may also wish to start their actions at different steps along the pathway, and in a different sequence. Therefore, a less structured road map is additionally presented in Figure 2.4.

Some actions may have interrelated and/or prerequisite actions that need to be achieved prior to, or in conjunction with, the strategic pathway actions. These interrelated actions are also illustrated in Figures 2.3 and 2.4, are referenced in the text, and detailed under other strategic pathways.

Whatever the implementation approach, each action should take into account the guiding principles in section 2.5, as these describe drivers for a sound and enabling legal and policy environment for effective and efficient geospatial information management.

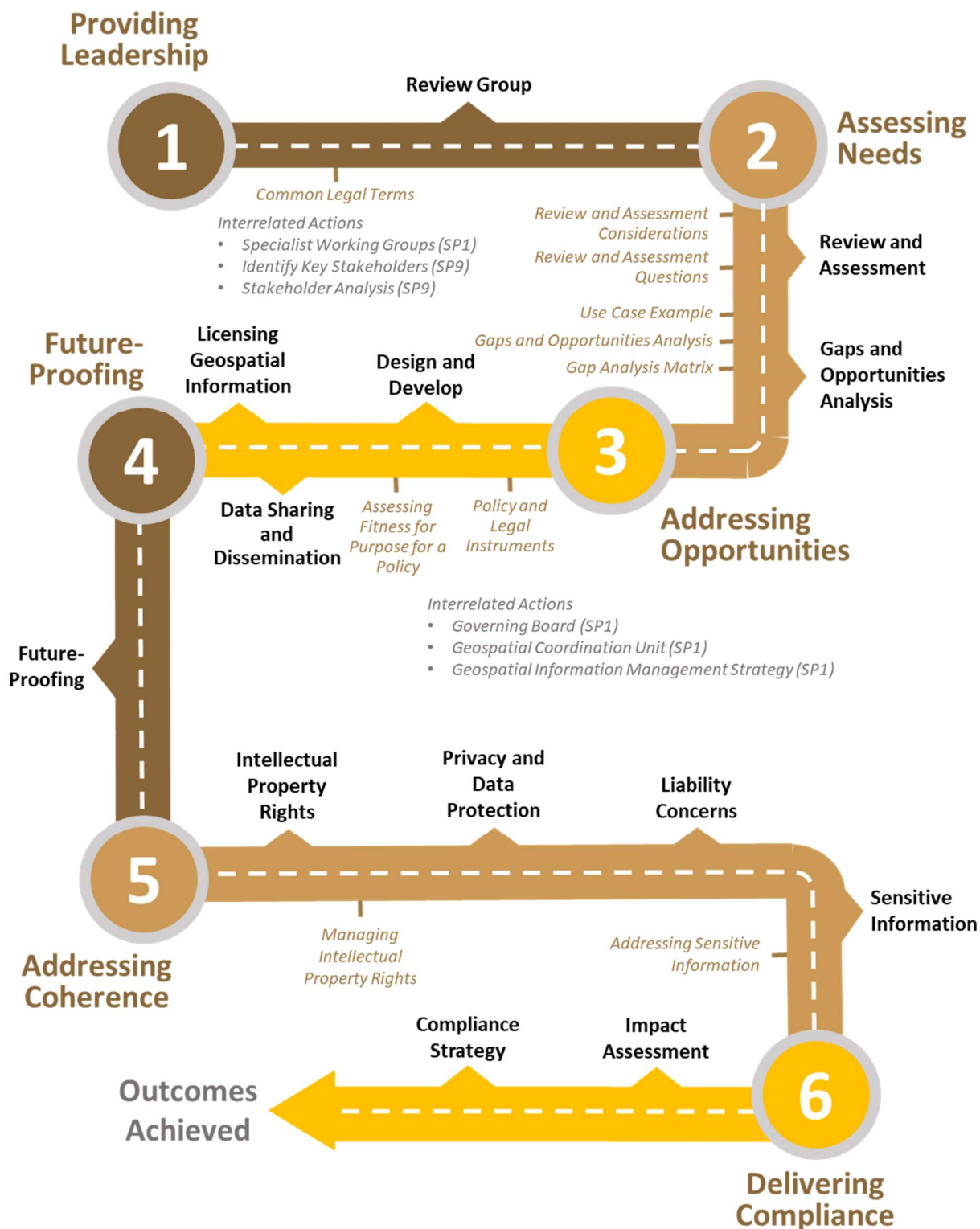


Figure 2.3: Policy and legal includes several actions and tools designed to assist countries to establish a robust policy and legal framework that is essential to implementing and sustaining the Integrated Geospatial Information Framework. The actions are divided into six categories and reflect the order with which these actions are typically completed.



Figure 2.4: Policy and legal includes several actions and tools designed to assist countries to establish a robust and enabling policy and legal framework that is essential to strengthen integrated geospatial information management. The interrelated actions provide key linkages to other strategic pathway actions.

The actions for policy and legal are divided into six categories, which are:

1. Providing Leadership
2. Assessing Needs
3. Addressing Opportunities
4. Future-Proofing
5. Addressing Coherence
6. Delivering Compliance

The following actions are typically used to address gaps in capability. They serve as a guide to developing the necessary capacity and capabilities to strengthen integrated geospatial information management processes and systems.



2.6.1 Review Group

An independent geospatial policy and legal Review Group, committee or council, comprising of both data users and data providers from government, the private sector, academia and civil society (See SP7: Partnerships and SP9: Communication and Engagement) should be established. This Group would be initially tasked to review, assess and understand the country's existing policy and legal framework. The Review Group would then consider, recommend or decide what policy and legal additions or changes are needed, or what needs to be created, when implementing the IGIF or for any Geospatial Information Management Strategy (See SP1: Action 1.6.6). Importantly, it would consist of legal practitioners and professionals who understand geospatial information-related policy and legal matters – issues, challenges and opportunities – facing the various stakeholders.

This Review Group should work in tandem with the Governing Board (See SP1, Action 1.6.1) and/or the Geospatial Coordination Unit (See SP1, Action 1.6.2), and should aim to bring together representatives from stakeholders (See SP9, Action 9.6.4), to create an inventory of policies and laws that impact geospatial information management.

Such a Review Group is often established to provide government with advice relating to geospatial information-related policy and legal matters, including the implementation of a policy, a law or a set of regulations, the drafting and consultation of policy and legal instruments, and advise on the review, revision, approval, and promulgation of policies and laws impacting integrated geospatial information management.

Importantly, a policy and legal Review Group should consist of legal practitioners and professionals who understand geospatial information-related policy and legal matters.



See Interrelated Actions on Governing Board, Geospatial Coordination Unit, Geospatial Information Management Strategy, and Specialist Working Groups (SP1); Identify Key Stakeholders (SP9); and Stakeholder Analysis (SP9).

2

Assessing Needs



One of the first priorities in working towards an effective and robust policy and legal framework is to review, assess and understand the environment within which the policies and laws will operate.

2.6.2 Review and Assessment

One of the first priorities in working towards an effective and robust policy and legal framework is to review, assess and understand the environment within which the policies and laws will operate. Implementing the IGIF must consider the current policy and legal environment, the impact that it has on existing geospatial information management practices, the evolving technological and user requirements, and what changes are required to be made to reach the desired outcome.

The geospatial community often asks whether ‘geospatial is special’. From a policy and legal standpoint – it is. There are several important considerations when developing an appropriate policy and legal framework for integrated geospatial information management. When reviewing and assessing the existing policy and legal environment it is important to consider and understand the: (a) geospatial ecosystem; (b) the different laws impacting geospatial information management; (c) the legal system itself; (d) policy instruments; (e) types of geospatial information; (f) the way in which geospatial information is used; (g) the laws and policies and how they balance risk and benefits; (h) the changing geospatial technology landscape; and (i) the changing societal and personal norms.

Due to these considerations, there is no single prescribed policy or law that can be used by all countries. Each country must review, assess, understand and develop its own policy and legal framework so that it addresses the unique legal system, culture, history and circumstances of the country.

The first step in this review and assessment process is to understand existing policy and legal frameworks (such as applicable policies or decrees or measures, laws or ordinances and regulations that impact geospatial information management) before deciding what additions or changes are needed, or what needs to be created for integrated geospatial information management. This review and assessment process should include:

- Bringing together representatives from stakeholders across the country’s geospatial ecosystem; and

- Creating an inventory of policies and laws that impact geospatial information management.



An example of Review and Assessment Considerations is provided in Appendix 2.2.

An example of types of Review and Assessment Questions is provided in Appendix 2.3.

2.6.3 Gaps and Opportunities Analysis

Once the policy and legal environment has been reviewed, assessed and understood, and the policy and legal inventory is completed, it is useful to conduct an analysis of the gaps and opportunities to systematically determine policy and legal needs with respect to integrated geospatial information management. The needs arising from the analysis will help strengthen integrated geospatial information management with improved and robust policy and legal frameworks.

Such an analysis should identify how the current policy and legal frameworks impact geospatial information management, what is needed for a sound and enabling policy and legal environment, and what are the policies and laws necessary to achieve the desired integrated geospatial information management.

Once the gaps and opportunities analysis is completed, the Review Group, preferably working with the Governing Board and/or the Geospatial Coordination Unit (See SP1: Governance and Institutions) together with representatives from key partners (See SP7: Partnership), would begin to identify how the current policy and legal framework can be improved – what are the development, revisions and changes needed for a sound and enabling policy and legal environment.

One method to accomplish this step is to conduct an exercise that involves relevant stakeholders. This could be one or more tabletop exercises, a series of consultations, roundtables or workshops, or to conduct a series of use cases. The tabletop exercise should be based upon a use case involving the collection, use, storage, distribution of geospatial information that is important to the country.

The tabletop exercise (or consultations, roundtable, etc.) should include representatives from key stakeholders from government, academia, the private sector and civil society (See SP7: Partnerships) so that their respective perspectives, requirements and contributions are considered. Such stakeholders should include both data collectors, producers, custodians and consumers. In addition, legal practitioners and professionals from these stakeholders should participate so as to ensure that the proper legal issue are considered. The results from the tabletop exercises should be analyzed to

Once the policy and legal environment has been reviewed and understood, it is useful to conduct a Gaps and Opportunities Analysis to systematically determine policy and legal needs.

determine what policies and laws need to be changed or added to reach the stated goal. The difference between the current and the desired policy and legal framework are the ‘gaps and opportunities’.



An example of a Use Case is provided in Appendix 2.4.

An example of a Gaps and Opportunities Analysis – Tabletop Exercise is provided in Appendix 2.5.

An example of a Gap Analysis Matrix template for analyzing gaps and opportunities is provided in Appendix 2.6.

3 Addressing Opportunities

2.6.4 Design and Develop

It is important to understand, identify and agree on the needs to be addressed. Once these needs and related issues are understood, possible solutions and options can be identified.

When the geospatial community discusses policy and legal frameworks, there is often an assumption that what is needed is an overarching law that addresses all the key issues. However, an expansive law is only a tool in creating or revising a policy and legal framework for geospatial information management. There are many other instruments that should be considered. Some of these instruments, such as laws, are binding (Figure 2.5). However, others are non-binding, but instead are more informal and based upon consent. While some of these instruments can be used in both the public and private sectors of the geospatial ecosystem, others are applicable only to one sector. It is important to understand the role of each, their relative strengths and weaknesses, and how they apply within their national circumstances, history, culture and legal system.

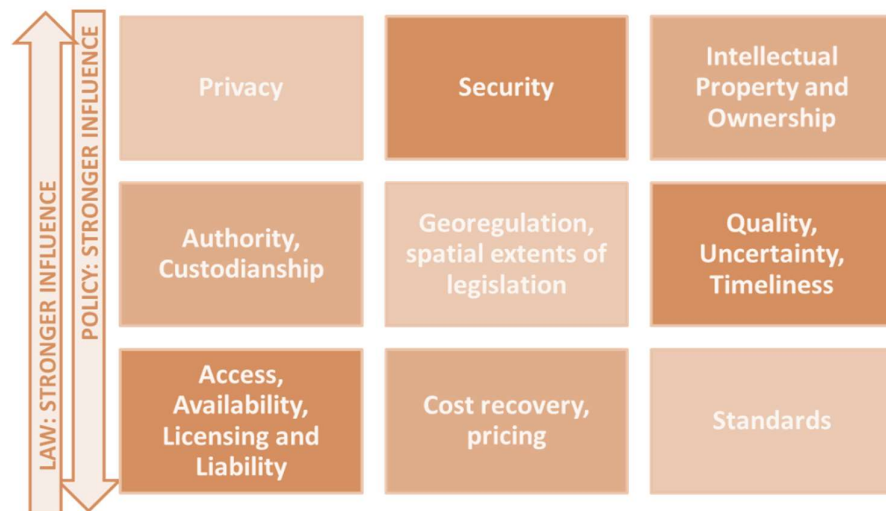


Figure 2.5: Laws and policies have different levels of influence.

When developing or revising a policy and legal framework, it is important to understand, identify and agree on the needs to be addressed. Once these needs and related issues are understood, possible solutions and options can be identified. These possibilities should be deliberated by the Policy and Legal Review Group (See SP2: Action 2.6.1), and to make recommendations to government on how best to address these needs, gaps or opportunities.

One way to approach this step is to consider the instruments within the policy and legal framework to be tools in a toolbox. The Review Group should consider which tool or instrument – e.g. law, regulation, policy, good practice, agreement, etc. – works best to address each of the needs, gaps or opportunities that have been identified. It will involve consideration of which presents a more feasible option – policy is better, or a law is better.

Any design and development, either of a policy or a law, generally involves addressing the following needs, gaps or opportunities:

Designation of lead organization

One critical consideration is whether to designate a lead organization that is primarily responsible for geospatial information management in a country. This organization would have the authority to coordinate activities between and among the stakeholders. In addition, it would be the focal organization on budget and finance issues (See SP3: Financial) for integrated geospatial information management. A lead organization can play a vital role for a country, both to initiate and implement, and manage and sustain the IGIF.

Data collection and governance

Another consideration that is typically addressed in a policy and legal framework is whether any particular government organization - or private sector party licensed and/or approved by a regulatory body - has exclusive authority to collect certain types of geospatial data. There are several reasons for the collection of geospatial data to be limited to certain approved entities such as national security or competency standards.

Sector specific provisions

There are sector specific policies and laws that must be considered in a policy and legal framework for integrated geospatial information management. Many of these policies and laws relate directly to the geospatial community. For example, surveying for land administration or utilities management, or for ports and harbors and safety of navigation. Others are more indirect, such as satellite remote sensing imageries, or aerial lidar and photogrammetry, or mapping with unmanned aerial systems which may be subject to policies and laws governing aviation. However, all play an important role in the availability of geospatial information within a country.

Financing

Financing of geospatial information management is another critical consideration that should be considered when developing policy or laws for integrated geospatial information management (See SP3: Financial).

Addressing the gaps and opportunities is closely related to general government information policies, and those related to e-Government, national security, privacy, intellectual property rights, data sharing, data integration, open data, standards, education, statistical and administrative data. Trade and collaboration with the private sector may already be described in market regulation and market stimulus policies. Governments' need to consider how these policies already apply to geospatial information management and where they will require adaptation or alignment.

When implementing the IGIF, it is important for the government, partners, users and stakeholders to understand the role of various policy and legal instruments available, their relative strengths and weaknesses and how they apply within their country. To assist countries in understanding the difference between legislation and laws, contracts and other agreements, and treaties and other international obligations, and their advantages and disadvantages, please refer to Appendix 2.7.



Information on Policy and Legal Instruments – Advantages and Disadvantages is provided in Appendix 2.7.

An example of assessment criteria for Accessing Fitness for Purpose for a Policy is provided in Appendix 2.8.

2.6.5 Data Sharing and Dissemination

Government officials at all levels are concerned that the broad availability of certain types of geospatial information is a risk to homeland or national security.

A crucial instrument in a policy and legal framework for integrated geospatial information management is a data sharing arrangement for geospatial information, in particular, that which is collected by government organizations, and shared and disseminated to third parties. This is because in order for geospatial information to be fully utilized, government organizations must be willing to make it available and accessible – share and disseminate. Such sharing and dissemination can take place between government organizations, as well as with provincial, municipal or local government agencies, international organizations, academia, the private sector or civil society.

There are many reasons for a lack of data sharing. For example, having control over information is often considered to be power. Therefore, any sharing of geospatial information is considered to be a weakening of an organization's authority. Another concern in sharing is that the organization will be responsible – either legally or in the court of public opinion - if the geospatial information is used improperly or is otherwise not fit for purpose. Some claim national security

concerns as a valid reason for not sharing data. Privacy concerns are also commonly cited. These should not be impediments.

Data sharing can be encouraged, promoted or enabled with an appropriate data sharing arrangement that can take a number of forms – a national policy, a set of sectoral guidelines, a memorandum of understanding, a data sharing agreement or contract, a license agreement (See SP2: Action 2.6.6), or a piece of legislation, as an example, a law for national spatial data infrastructure, to cite a few possibilities. Importantly, the chosen instrument must be able to adequately address the concerns by balancing the needs of the data provider with those of the data user.

A data sharing arrangement should not be too restrictive. For example, by giving the data providers too many protections, such that the data users may not be able to generate the necessary outcomes or benefits from its use. On the other hand, a government organization may worry that if the arrangement is too permissive – i.e. the data provider has limited protections – it will be held liable for any damages that arise from the use or misuse of the geospatial information provided.

In developing an appropriate policy and legal arrangement for data sharing and dissemination, it is important to consider the perspectives of both the data provider and the data user. Regardless of the form of these arrangements, most geospatial information sharing and dissemination arrangements have a number of similar considerations (Figure 2.6).



Figure 2.6: Elements for consideration in a standard licensing agreement.

Government data is increasingly being made available through ‘Open Data’ initiatives. The requirement to make data open may be pursuant to a law. However, more often these initiatives begin as government policies. Sometimes these initiatives are led by the government organization that create geospatial information. In many cases though, these initiatives are imposed upon the organization responsible for geospatial information by other government organization. As a result, these open data policies often do not take into

consideration the unique aspects of geospatial information. Therefore, it is critical for a country's geospatial community to actively participate in government-wide open data discussions to ensure its interests are understood. A more detailed discussion of Open Data Licenses for geospatial information can be found in the Compendium for the Licensing of Geospatial Information.⁵

2.6.6 Licensing Geospatial Information

A geospatial information license agreement is a legal instrument in which one party grants another party certain rights in geospatial information.

A geospatial information license agreement is a legal instrument in which one party (the 'Licensor') grants another party (the 'Licensee') certain rights in geospatial information that the Licensor either owns or has rights to license or sub-license. While a geospatial information provider gives up all rights in a sale, in a license agreement the Licensor retains the rights it does not grant to the Licensee, including ownership. Because both the Licensor and the Licensee have rights in the same geospatial information, the relationship between the parties is ongoing and therefore can be much more complex than in a sale. The geospatial information license agreement is critical in documenting the parties' respective rights and responsibilities.

One of the challenges in understanding geospatial information license agreements is that geospatial information is an intangible item. This can make it difficult to understand the applicability of certain legal principles. There are several important aspects to consider when discussing geospatial information licenses. First, many government agencies are making geospatial information 'open'. However, even if data is 'open', generally it is subject to a license agreement, unless governments are willing to give up their copyrights in the geospatial information by placing it into the public domain. While these open licenses generally have fewer restrictions than a commercial proprietary license, many do contain conditions or restrictions that a Licensee must follow.

It is also important to recognize that the purpose of a geospatial information license agreement is more than to grant rights (i.e. a license) from the Licensor to the Licensee. It also serves as a means to allocate certain operational and legal risks between the parties. In a geospatial information license agreement one such risk might be whether the Licensor has any legal responsibility to the Licensee if the geospatial information is of insufficient quality for the purpose for which the Licensee intends to use it. Another foreseeable risk is the liability of the Licensee should its use of the geospatial information violate local law or injure a third party.

Finally, geospatial information is not solely licensed through a stand-alone geospatial information license agreement. For example, a license for geospatial

⁵ Compendium on Licensing of Geospatial Information, UN Committee of Experts on Global Geospatial Information (E/C.20/2018/9/Add.2)

information may be included in the terms of a cloud hosting agreement, as the cloud provider will need certain rights in order to host or store the geospatial information. It is also increasingly common for businesses that offer Software as a Service (SaaS) to include geospatial information in their offerings. As a result, geospatial information licensing terms are often included in their Terms of Service (ToS) or similar types of documents.

The earlier referenced Compendium on Licensing of Geospatial Information refers to a geospatial information license agreement generally as any type of legal document in which geospatial information is licensed. The Compendium outlines twenty considerations or elements within a geospatial information licensing arrangement or agreement.



2.6.7 Future-Proofing

One of the challenges in developing a robust policy and legal framework for integrated geospatial information management is that the technologies that collect and process geospatial data, and the applications that utilize geospatial information, are undergoing tremendous change. For example, mobile devices, cloud computing, unmanned aerial systems (drones) and small satellites are already having a significant impact on the geospatial community. In the future, the internet of things (IoT), machine learning, and autonomous vehicles are all likely to significantly disrupt how geospatial data is collected, used, stored and distributed. Associated policy and legal issues impact – and are impacted by – these new technologies. Moreover, the immediate reaction to these disruptors is often to introduce a law or regulation to address the perceived risks associated with the technology; before the potential benefits are understood. As a result, it is important to try to ‘future-proof’⁶ a policy and legal framework as much as possible so that it does not quickly become outdated or obsolete.

Future-proofing a policy and legal framework should consider two scenarios:

- Whether existing laws and policies need to be changed in order to address new technologies and innovative applications; and
- Whether new laws or policies should be introduced to enable the use of new technologies and facilitate innovative applications.

Technologies that collect and process geospatial data, and the applications that utilize geospatial information, are undergoing tremendous change.

⁶ To **future-proof** something is to design or change it so that it will continue to be useful or successful in the future if the situation changes.

For example, in many countries unmanned aerial systems (drones) are not able to operate in the national airspace without new laws.

There are several ways in which policy and legal frameworks can be future-proofed. A method that is often used is to initially address the challenges raised through informal or non-binding provisions or instruments. For example, a government organization might issue a policy to address how a new technology should be used within the government for the collection of geospatial data, or an industry group may adopt voluntary good practices. These are relatively easy to adopt, and they can be either updated or turned into law as the implications become clearer.

If the decision is made that a law or regulation needs to be developed, there are several ways to help ensure that it can adapt to the future. One method is to put a clause into a law that it expires unless it is re-adopted by the proper authority. These provisions, sometimes called ‘sunset clauses’, give stakeholders the opportunity to review the impact of both the technology and the law to make sure there are no unintended consequences, and that the issues raised have been properly addressed. Alternatively, a law can include language that provides that it be reviewed after a certain period of time. For example, a legislative body may require a government organization to report back on an annual basis on the impact that the law is having, so as to determine whether it is still fit-for-purpose or needs to be updated.

The Review Group (or committee or council) (SP2: Action 2.6.1) plays an important role when considering how and when to ‘future-proof’ a policy and legal framework. However, since disruptive technologies and innovative applications are often developed by non-traditional actors - it is critical to make sure that their input is included. This is particularly true since the traditional stakeholders may be threatened by these new disruptive technologies and try to hold them back in order to maintain their role. On the other hand, the new stakeholders may downplay the proposed risk, or overstate the benefits – all of which play an important calculation in how to develop a robust policy and legal framework⁷⁸.

⁷ The recent report, “Drones Under the Horizon: Transforming Africa’s Agriculture”, highlights the need to future-proof a policy and legal framework. The report highlights the tremendous value that unmanned aerial systems (drones) offer in Africa, but warns that “UAV regulations are still in its infancy in Africa, the making and the presence of too restrictive, or even disabling regulations governing the import and use of UAVs can hinder the development of a very promising industry...”. The report goes on to state that appropriate regulations should balance competing security concerns with the need to encourage innovation, economic development and youth entrepreneurship. It recommends developing a continental regulatory framework for the use of UAVs in Africa, and harmonizing policies across countries and regions.

⁸ According, to the report, only 26% of African countries have drone regulations in place. See Drones Under the Horizon: Transforming Africa’s Agriculture; African Union, New Partnership for African’s Development (2018). p. 11.

5 Addressing Coherence

2.6.8 Intellectual Property Rights

A robust policy and legal framework will need to clarify intellectual property rights in respect to geospatial information for both data providers and data consumers. Geospatial products and services are increasingly created by combining geospatial data from a variety of sources. However, the intellectual property rights in data are different than in other non-tangible assets, such as software. For example, in many countries, copyright does not apply to a simple compilation of facts – which includes many types of geospatial information products. In other cases, such as those in Europe, countries provide certain intellectual property protections to databases.

In addition, there is much uncertainty as to how to apply intellectual property rights to geospatial products or services that are created by aggregating several different data sets. The issue is likely to become more complicated with sensors collecting new types of data, and in near real-time.

This uncertainty can have a significant impact on integrated geospatial information management within a country. It can result in complex data licenses, as the data providers try to protect their rights through contract rather than through law. This complexity increases the difficulty for data consumers to determine if and how they can use the geospatial information.

The intellectual property challenge is particularly complex when data providers have their own data licenses. Sometimes data providers may be unwilling to offer certain data in a country if they do not feel their intellectual property rights receive adequate protection. For example, if existing law allows a competitor to scrape their websites and resell data that was collected and organized at significant cost.

A country wishing to provide data providers more protection might adopt a law that protects intellectual property rights in databases. Alternatively, a government may place government-generated information in the public domain, essentially giving up all ownership rights in the data, or make the information available under an open data license with few restrictions. Additionally, efforts can be made to encourage legal practitioners and professionals to learn more about the various types of geospatial information, and how it is collected and used, so that they will be better prepared to advise their clients.

Intellectual Property Rights in data are different than in other non-tangible assets, and will need to be clarified and well managed.



Principles on Managing Intellectual Property Rights are provided in Appendix 2.9.

2.6.9 Privacy and Data Protection

Efforts to introduce data protection laws and policy will often occur without considering the impact on the geospatial community.

Globally, data protection and privacy laws are being introduced (or updated) to address concerns with all types of Big Data, not just geospatial information. Therefore, efforts to introduce data protection laws and policy will often occur without considering the impact on the geospatial community. In such instances, there is a real risk that the laws and policies that develop will have an unintended impact on a policy and legal framework for geospatial information management. Therefore, it is critical for the geospatial community within a country to participate in this process.

Since data protection is generally a trade-off between the benefits of the data being used (both public and private) and the perceived risks, it is important for the geospatial community to highlight the many uses and benefits of geospatial information. It is also important to explain to lawmakers and policymakers the potential impact – including unintended consequences – of proposed data protection laws on integrated geospatial information management.

There is also a growing trend to regulate the collection and use of personal information that could be used to identify an individual or infringe upon privacy. Increasingly, government regulators are recognizing that geospatial information can be used to infringe upon an individual's rights. As a consequence, laws are being passed to regulate the collection and use of certain types of geospatial information.⁹ Currently these laws do not include satellite and aerial imaging or traditional mapping technologies. However, this may change as concerns grow, for example, with unmanned aerial systems, robotic sensors or mobile location-based applications.

Currently, there are only a few laws that regulate the collection or use of geospatial information for privacy/data protection purposes. However, even if traditional geospatial information is not regulated, there is a risk that broad data protection laws may limit the ability to access and use the vast amount of new geospatially-enabled information that is now being collected or aggregated. For example, laws and regulations that treat geospatial information collected by some platforms (i.e. unmanned aerial systems) differently than others (i.e. satellites or manned aircraft) are likely to confuse data consumers. In addition, over time, lawmakers and policymakers will begin to focus on regulating the data instead of the platform. This will have a significant impact on the broader geospatial community.

⁹ Examples include the General Data Protection Regulation (GDPR) (<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32016R0679>) and the California Consumer Privacy Act of 2018 (https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB375) (accessed June 30, 2018)

2.6.10 Liability Concerns

As applications that utilize geospatial information grow, so will disagreements over which organizations are responsible for data quality issues or the misuse of geospatial information. Consequently, it is helpful for a policy and legal framework for geospatial information management to clarify issues of liability.

A lack of certainty around liability issues often impacts the adoption of new technologies or the promotion of innovative applications. For example, the testing of autonomous vehicles has been slowed due in part to concerns over which parties are responsible in the event of an accident. Some of these issues concern data quality. Similarly, some government organizations are reluctant to use crowd-sourced data as they are unsure as to the quality of the information and do not want to be liable if someone, as an example, is injured.

There are several ways in which a policy and legal framework can address liability concerns associated with geospatial information. For example, in some countries, government organizations are protected by sovereign immunity – i.e. they are immune from being sued for actions they take that are related to their governmental function. Such protections can be included in a country’s constitution or in its laws. Another way to allocate risks associated with data quality is through agreements. For example, a government organization can obligate its vendors to comply with certain geospatial standards. If these standards are not followed, the vendor can be responsible for any damages that arise. Alternatively, government organizations can include in their contracts with vendors provisions that waive or limit the liability of vendors. This will make it easier for vendors to perform tasks that have inherent risks associated with data that are difficult to quantify.

2.6.11 Sensitive Information

Government officials at all levels continue to be concerned that the broad availability of certain types of geospatial information is a risk to national security. This is historically due, in part, because in many countries geospatial technologies were initially developed and/or used by military or intelligence services. As a result, these organizations are often concerned about any new geospatial technologies and/or new applications that collect or use geospatial information. While such apprehension is understandable, given the respective services’ mandates described above, the overly restrictive laws and policies that are intended to limit the collection and use of geospatial information for national security purposes, will often have much broader consequences.

As applications that utilize geospatial information grow, it is helpful to clarify issues of liability.

There is continued concern that the broad availability of certain types of geospatial information is a risk to national security.

Concerns over national security can have a significant impact on the availability of geospatial information. For example, the commercial remote sensing industry in the United States is hampered by limitations on the resolution of electro-optical imagery. In addition, national security concerns are also responsible for the slow roll-out of other sensors on satellites, such as radar. Similarly, national security concerns associated with accurate maps have resulted in some countries restricting the creation of mapping applications.

There are also certain classes of geospatial data that need to be withheld from public access and usage e.g. location of precious gem deposits, rare fauna and flora, or what is considered critical infrastructure, etc. As each country has a unique set of internal and external security concerns, it is impossible to develop a single approach to address this issue. However, when developing a policy and legal framework, it is important to realize that such restrictions will have a broader impact on integrated geospatial information management as a whole within a country (Figure 2.7). As a result, it is useful to have a mechanism to assess the sensitivity associated with geospatial information. For example, the Federal Geographic Data Committee has guidelines for providing appropriate access to geospatial information in response to security concerns.¹⁰

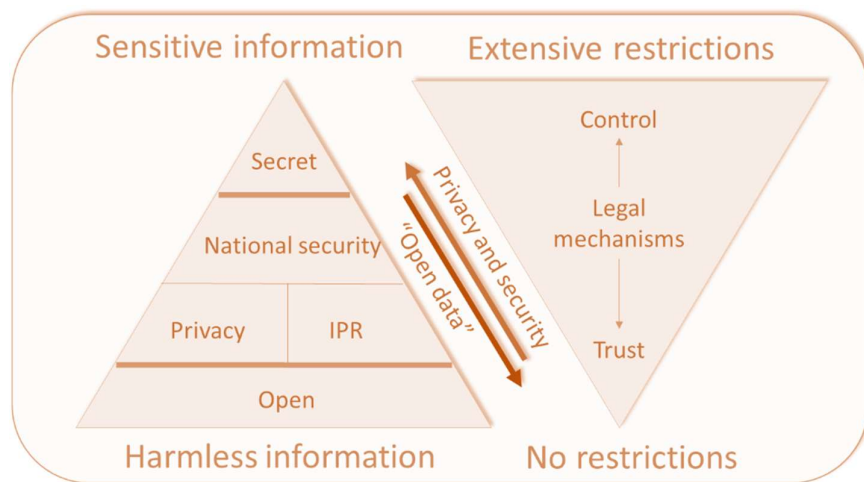


Figure 2.7: Sensitive information is subject to extensive restrictions.



Sample guidelines and examples for Addressing Sensitive Information are provided in Appendix 2.10.

¹⁰ See e.g. “Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns”, Federal Geographic Data Committee (2005) (<https://www.fgdc.gov/policyandplanning/Access%20Guidelines.pdf>) and Mapping the Risks: Assessing the Homeland Security Implications of Publicly Available Geospatial Information, Rand Corporation, 2004)

6 Delivering Compliance 

2.6.12 Impact Assessment

There is the need to bring together stakeholders and their key representatives to identify the factors that both promote and inhibit integrated geospatial information management. Identifying and addressing what needs and changes to the policy and legal framework are required, enables countries to maximize the value of geospatial information while still protecting against perceived risks.

The implementation of the IGIF should consider the:

- Current legal and policy environment, whether it is sound and enabling enough to promote the highest and widest use of geospatial information;
- Impact that it has on existing geospatial information management, its arrangements, infrastructures, practices, products and services;
- Impact from evolving and emerging technological and user requirements, including creative and innovative applications of geospatial information; and
- Changes that must be made to reach the desired goals and outcome.

As government seeks to foster a sound and enabling legal and policy environment for integrated geospatial information management, it will begin by identifying and assessing several important factors in considering the appropriate policy and legal framework. For example, a country’s geospatial community is often an ecosystem, consisting of government agencies, industry, non-governmental organizations (NGOs), citizens, research institutions and universities. Each can be a data provider and a data user, depending upon the context. As a result, a policy and legal framework must consider and cater for each of the stakeholders (Table 2.2).

Identifying and addressing what needs and changes to the policy and legal framework are required maximizes the value of geospatial information, while protecting against perceived risks.

Important Considerations	Impact
The geospatial community is an ecosystem	Need to consider impact of laws and policies on a variety of stakeholders
Geospatial information cuts across legal and policy disciplines	A policy and legal framework is complex
Geospatial information technology is rapidly changing	Continually need to review and update a framework
Jurisdictions have different legal systems	No one size fits all solution

Important Considerations	Impact
Jurisdictions' geospatial information management are at different stages of development	No one size fits all solution
Many different types of geospatial information	Important to consider impact of a framework on a wide range of data types
Geospatial information is versatile	Many potential uses impact a wide variety of sectors in a society
Geospatial has its own nomenclature	Nomenclature needs to align with other segments of government and society
Balancing benefits and perceived risks	Difficult given the many benefits of geospatial information

Table 2.1: Policy and legal framework - considerations and impact.

2.6.13 Compliance Strategy

When designing a policy, it is important to include an accompanying Compliance Strategy that defines how organizations and individuals are encouraged to comply and how compliance will be monitored.

Laws are binding and must be complied with. Laws may include economic incentives (e.g. fines) to encourage compliance. In some organizations, there may be a compliance officer or a designated officer responsible for monitoring the applicable policies and laws, including to monitor compliance and report accordingly. This will also depend on the relationship and authority that the designated officer has with the parties identified in the scope of the policy and law.

However, when designing a policy, it is important to include an accompanying Compliance Strategy that defines how organizations and individuals are encouraged to comply and how compliance will be monitored. The type of Compliance Strategy will depend on how clearly the policy defines the expected rights, restrictions and responsibilities or expected outcome, action and decision. The following strategies for encouraging compliance are based on the six metaphors for compliance strategy styles advocated by Quinn *et al* (2010) and include Sticks, Carrots, Hurdles, Fast Tracks, Enlightenment, and Conversion.

- **Sticks:** A stick compliance strategy clearly defines the implications for not complying with the policy/procedure. It is important that non-compliance can be monitored and implications for non-compliance are achievable. For example, a user's access to data and systems may be suspended if they have breached the ICT Appropriate Use or Information Security Policies.
- **Carrots:** A carrot compliance strategy influences compliance by providing a motivation (positive acknowledgement or reward) to comply with the policy/procedure.

- **Hurdles:** A hurdle compliance strategy coordinates the policy compliance, by putting checks points in place to encourage policy as part of a process. For example, accepting terms and conditions on a website or data catalog before proceeding to the next step.
- **Fast Tracks:** A fast track compliance strategy ‘makes it easier’ to comply with the policy. For example, providing a staff briefing for a new policy will fast track the knowledge transfer of the policy content.
- **Enlightenment:** An enlightenment compliance strategy is more likely used for a procedure. It helps the party understand why they should comply.
- **Conversion:** A conversion compliance strategy is best described by an organizations *Code of Conduct*. The *Code of Conduct* outlines what is morally expected e.g. compliance with policy.

A Compliance Strategy can also be considered during the design and development of policies, laws and regulations. The level of risk posed by non-compliance can be used to identify the better approach for monitoring compliance. For example, a policy on managing sensitive information has a high level of risk and requires designated officers to be responsible for monitoring breaches of non-compliance and enforcing the policy or law.

2.7 Deliverables

The list of deliverables below are the outcomes typically created as a result of completing the actions in this strategic pathway. They are key success indicators in realizing an Integrated Geospatial Information Framework. Examples include:

- A Policy and Legal Review Group (or Committee or Council) and agreed terms of reference;
- Outcome of the review and assessment process of existing policy and legal framework including an inventory of policies, laws and regulations (or equivalent);
- Analysis of the gaps and opportunities (including materials and documents in conducting the analysis such as use case, tabletop exercise, analysis matrix, etc.);
- Considerations of various policy and legal instruments options available to address gaps and opportunities;
- Assess and clarify intellectual property rights, privacy and data protection, liability concerns and sensitive information including options available to address these aspects of geospatial information;

- Review and consider evolving personal, societal, economic and technological progress, developments and norms so that existing policy and legal framework keep pace with the times;
- Review and assess impacts of any policies or legislation designed and developed (including alignment with national strategic priorities, prevailing policies and legislations - such as e-Government, open data, innovation or economic transformation); and
- Review and assess the cohesiveness and coherence in policies and legislations to support sound and enabling policy and legal environment for integrated geospatial information management to flourish and to achieve its highest and widest utility in service of people, planet, prosperity, peace and partnership.

2.8 Outcomes

The 2030 Agenda for Sustainable Development is a broad and universal policy in itself, an Agenda with 17 Goals and 169 targets that are integrated and indivisible. As an overarching and global policy, it sets forth our path towards sustainable development, and commits to collectively pursue global development that will transform our world for the better.¹¹

The following outcomes result from establishing robust policy and legal frameworks for integrated geospatial information management:

- Sound and enabling policy and legal environment that maximizes the utility of geospatial information and safeguards a jurisdiction or entity's interest;
- Effective and secure management, sharing, integration and application of geospatial information;
- Policy and legal framework that evolves over time, responds to societal progress and technological developments, and keeps pace with fast changing economic, societal and personal landscapes; and
- Clarity in responsibilities and mandates, strengthening governance and accountability in geospatial information management.

¹¹ Paragraph 18, Transforming our World: The 2030 Agenda for Sustainable Development (A/RES/70/1).

2.9 Resources

As part of the work programme of UN-GGIM, there are a number of related initiatives and activities including by the Subcommittee, Expert and Working Groups of the Committee of Experts. These initiatives and activities are multi-stakeholder when arriving at outcomes and outputs. This inclusive and participatory nature of work has allowed the preparation of a number of resource documents/publications that are helpful and useful when addressing the complexities in ensuring a sound and enabling policy and legal environment for integrated geospatial information management. These include:

- Integrated Geospatial Information Framework: Guidance and recommended actions aligned with Strategic Pathway 2 - Policy and Legal, Working Group on Legal and Policy Frameworks for Geospatial Information Management (2019);
- Compendium on Licensing of Geospatial Information, UN Committee of Experts on Global Geospatial Information Management (Working Group on Legal and Policy Frameworks for Geospatial Information Management) (2018);
- The Global Fundamental Geospatial Data Themes, UN Committee of Experts on Global Geospatial Information Management (2019);
- A Guide to the Role of Standards in Geospatial Information Management, UN Committee of Experts on Global Geospatial Information Management (2018);
- Future Trends in Geospatial Information Management: the five to ten-year vision, UN Committee of Experts on Global Geospatial Information Management (2016);
- National Institutional Arrangements: Instruments, Principles and Guidelines, Working Group on Trends in National Institutional Arrangements (2017);
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