

# Terms of Reference (ToR) for the Caribbean Geospatial Development Initiative (CARIGEO)

## INTRODUCTION

1. This Terms of Reference (ToR) serves as the governing guidelines under which the Caribbean Geospatial Development Initiative (CARIGEO) will be executed and managed. It sets out the background and genesis of the initiative, provides a high-level overview on the objectives and expected results, outlines the main activities to be undertaken and the organizational and management structures deemed critical to the initiatives successful implementation. The ToR also takes into consideration assumptions and risks identified for this initiative and details the monitoring and evaluation mechanisms that will be put in place.
2. CARIGEO intends activities to be multiphased and multipronged and to positively impact social, economic and environmental sectors across national economies. The strategy therefore is to design, initiate and execute a series of geospatial technology oriented developmental projects under the CARIGEO initiative, subject to the availability of financing.

## GUIDING PRINCIPLES

3. In order to be effective, it is desirable that guiding principles are incorporated in the operating frameworks that govern geospatial information management and understood at all political levels and by all stakeholders. The CARIGEO Initiative has therefore been designed taking into consideration [the Statement of Shared Guiding Principles for Geographical Information Management](#) adopted by the Committee of Experts on UN-GGIM. The key guiding principles under which CARIGEO intends to operate are as follows:

- **Collaboration and coordination:** encourage national, regional and global collaborations fundamental to the facilitation of improvements in the development, management, use and exchange of geospatial information, as well as the integration of statistical data and other information, in order to create new knowledge and supply products and services meeting beneficiary needs.
- **Use of and adherence to geospatial standards:** embrace the development of, adherence to, and use of nationally and internationally recognized geospatial standards and interoperable geoprocessing technologies.
- **Ownership and accountability:** facilitate trust amongst geospatial data creators, providers and users, create a clear understanding of geospatial data through the publication of information on ownership and intellectual property rights, access and usage conditions.
- **Transparency:** identify and make available the sources and the processes that are used to create and provide official geospatial data.

- **Respect and confidentiality:** exhibit high levels of responsibility and consideration to stakeholders in the execution of its operations. Particular care is to be exercised to protect the confidentiality of geospatial information that may adversely impact an individual, community and/or Member State. Personal data is to be especially respected and protected.
- **Standards of service:** employ geospatial information management good practices and solutions and pursue excellence in the delivery of geospatial data and services. Appropriate access, fairness and equity are to be accorded to all stakeholders.
- **Adherence to law:** observe laws, regulations and administrative practices of the Member States and territories, as well as national laws and conventions, avoid conflict of interest and make stakeholders aware of those laws and conventions, which govern and are related to operations.

## BACKGROUND

4. CARIGEO is a collaborative effort among the Regional Committee of the United Nations Committee of Experts on Global Geospatial Information Management for the Americas (UN-GGIM: Americas), the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC or CEPAL), the United Nations Group of Experts on Geographical Names (UNGEGN), public agencies of Member States and Territories within the Caribbean, geospatial private sector organizations, academic institutions and civil society representatives, which seeks to empower the countries and territories of the Caribbean region to advance the greater use and sharing of geospatial, statistical and related information to support improved decision making for sustainable national and regional development.

5. The reality for most countries and territories of the Caribbean region is that their location, limited land space, and economic dependence on international markets leave the region exposed to shocks from economic upheavals, natural disasters and climate change. These shocks threaten the Caribbean's economic stability, social prosperity and environmental sustainability.

6. The national and regional transformation of the Caribbean countries and territories can be assisted by using empirical evidence-based data analysis and existing and untapped data sources to inform decision making and policies. Geospatial information and location intelligence should provide critical components of national and regional infrastructures and the knowledge economy; a blueprint of what happens where, the means to integrate previously disparate data-including statistical data, and the potential for informed analysis and coordinated response to important local, national and regional issues, and support for monitoring the objectives and indicators of the 2030 Agenda for Sustainable Development.

7. CARIGEO aims to propel the Caribbean forward and help bridge the geospatial divide. This initiative will build on the gains of the "Project for the Strengthening of Spatial Data Infrastructures" in Member States and Territories of the Association of Caribbean States (Caribbean Project) sponsored by the Government of Mexico with support from the Association of Caribbean States and the University of the West Indies, between 2014 and 2018. At the initial stage of the Caribbean Project, a preliminary diagnosis of Spatial Data Infrastructures (SDI) found most countries lacking in the areas of data sharing agreements and policies, data services, SDI culture, education and training. Through technical cooperation, capacity building workshops and sponsorship of global navigation satellite systems (GNSS) equipment and services, significant progress was made towards SDI implementation at the national and regional levels. Additionally, the Caribbean Project realized the integration and active participation of 17

Caribbean countries and territories in the work of the United Nations Committee of Experts on Global Geospatial Information Management ([UN-GGIM](#)) and its regional committee for the Americas UN-GGIM: Americas.

8. The beneficiaries under CARIGEO will be national land and mapping agencies, national geospatial bodies as well as national statistical organizations and will be supported by international and regional partners. The marine environment is also highly relevant in the Caribbean context – leveraging both marine and land SDIs will be key to the success of this initiative. Examples such as the Arctic Spatial Data Infrastructure (Arctic SDI) and the Caribbean Marine Atlas (<https://www.caribbeanmarineatlas.net/>) will be considered to provide guidance on successful regional collaboration with the maritime sector. The Initiative will also incorporate internationally accepted frameworks, including the General Assembly resolution on a Global Geodetic Reference Frame ([GGRF](#)) for sustainable development,<sup>1</sup> the [Integrated Geospatial Information Framework](#) (IGIF), the [Global Statistical Geospatial Framework](#) (GSGF), UNGEEN Resolution I/4 on National Standardization of Geographical Names, and [the Strategic Framework on Geospatial Information and Services for Disasters](#) (E/RES/2018/14), to ensure they are fit-for-purpose within the context of the Caribbean’s specific conditions.

## **PURPOSE, OBJECTIVES, AND EXPECTED RESULTS**

### **Purpose**

9. CARIGEO intends to improve and enhance the use of geospatial information for evidence-based decision making in the Caribbean. CARIGEO will support the implementation of national integrated geospatial information frameworks and the development and strengthening of Spatial Data Infrastructures (SDI’s), in support of management and monitoring sustainable development goals and targets in the Caribbean, disaster planning and management as well as other key issues such as climate change and economic development. This is in keeping with UN-GGIM: Americas overall mandate as outlined in Article 5 of its Statutes. These efforts will build upon recent and on-going geospatial developments, leveraging indigenous skills and resources, as well as exploring and utilizing external resources and technical expertise. The overall aim is to ensure that this initiative is sustainable in the long-term and has a positive impact on the life of citizens of Caribbean states and territories.

### **Objectives**

10. The overall objective of the CARIGEO Initiative is to increase resilience through the strengthening of geospatial information management to support decision making in favor of disaster risk reduction, action for climate change, economic and sustainable development.

11. This objective will be accomplished through:

- strengthening geospatial information management governance and policies
- creating of datasets and procurement and development of tools for decision making
- enhancing collaboration and partnerships

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<sup>1</sup> A/RES/69/266) 69/266 entitled “A global geodetic reference frame for sustainable development”, adopted on 26 February 2015.

- capacity development, communication and engagement to upskill people to benefit the region

### ***Governance and policy objectives***

12. Provide support in strengthening national governance models, leadership and institutional arrangements to build a cooperative data sharing environment and an appreciation of the value of geospatial information for decision-making by assisting the countries to:

- establish or strengthen the governing board, geospatial coordination units, and governance model
- further develop national geospatial management strategies
- support a country level action plan for geospatial information management
- establish a monitoring and evaluation framework to follow up the achievements in fulfilling the national geospatial information management strategies
- support countries to define and establish their data governance frameworks
- encourage the creation or improvement of national geographical names standardization principles, policy procedures and bodies

### ***Datasets and tools objectives***

13. Provide support to develop national and regional fundamental geospatial datasets that meet national and regional quality standards and specifications by:

- Supporting and assisting the development of inventories of geospatial data and information held by beneficiary institutions to know the extent of its geospatial national data holdings.
- Supporting and assisting in the identification of national data gaps
- Supporting and assisting in the preparation of roadmaps for creating and/or maintain fundamental geospatial datasets
- Formulating and implementing sustainable mechanisms for discovering, accessing, maintaining, and using fundamental datasets and other data (i.e., tools and services)
- Supporting countries in the implementation of national geostatistical frameworks
- Identifying specific applications and tools that address national and/or regional needs; and
- Evaluating and recommending options on the use of Earth observation data (including satellite data) to meet regional needs in the areas of resource management, ecosystem management, disaster preparedness and other relevant applications

### ***Collaboration and partnerships objectives***

14. Develop collaboration mechanisms and institutional arrangements that empower stakeholders to use fundamental and other datasets to address societal challenges, including:

- Exploring opportunities for engaging with different sectors in delivering products and services that are tailored to meet user needs at the regional, national and local levels
- Implementing a co-design/co-development approach to the development of a fit-for-purpose knowledge base, while ensuring ownership and uptake of decision-making at the national level.

### ***Capacity Development, communication and engagement objectives***

15. Provide the capacity building and knowledge transfer and the general capacity development needed for partner agencies to operate, enhance and maintain all the data, tools and applications envisioned by this initiative, including:

- Designing, evaluating and implementing strategies to build the human and technological capacity needed to develop and maintain fundamental and other datasets for each member country
- Design and create communication and engagement strategies and plans to raise awareness and advocacy for stakeholders on the importance of geospatial information management for sustainable national development
- Providing knowledge transfer needed to design, operate, enhance and maintain the regional and national technological platforms to be implemented
- Keeping all partners abreast of enhancements on ITC and geospatial technology that benefit the development of the region

### **Expected Results**

16. The results expected from this initiative include the following:

- Development decisions and policy formulation take greater advantage of geospatial information
- Efficient planning and coordination of the governments' geospatial information resources
- Information products that are aligned with and support national priorities such as sustainable development, SDG reporting, e-government, climate change and disaster risk management
- Geospatial data is shared more broadly and more openly in the Caribbean
- Data management and analysis capacities are improved across the region
- A cooperative data sharing environment is adopted at local, national and regional levels
- An active community of geospatial data producers and users is established

- An increased range and scope of authoritative, integrated geospatial data is available for decision-making and aligned with national development agendas
- Increased funding is available for the creation and updating of fundamental geospatial datasets
- Agreements for collaboration and cooperation on the use of geospatial information regionally are instituted
- National Legislation to regulate and promote the use of geospatial information is enacted
- Countries having a fully functioning framework based on common principles for national standardization of geographical names that identify location and respect the associated culture and heritage and having these names easily accessible for national and international use.

## 1. MAIN ACTIVITIES

17. The activities proposed to be done under CARIGEO were identified through extensive consultation with national agencies across the Caribbean and international stakeholders with experience and interest in the region. The consultation included feedback and outputs from a Caribbean SDI and GIM workshop sponsored by W.K. Kellogg Foundation, in co-organization with INEGI, Esri and the National Autonomous University of Mexico in October of 2019. The overall strategy was informed by a review of several regional assessments, including those conducted by UN-GGIM: Americas, INEGI, ECLAC and UWI.

It is anticipated that the following activity areas will constitute the overall thrust of CARIGEO:

- **Assessment on the current situation of the national geospatial information management facing the challenges of the IGIF implementation**  
Conduct collaborative and interinstitutional workshops to identify current situation and to provide guidance and support for the development of national geospatial roadmaps and action plans based on the Integrated Geospatial Information Framework
- **Development of national and regional fundamental geospatial datasets**  
Conduct work to identify fundamental datasets to be generated and assist national organizations in defining, adopting and/or adhering to standards for data creation or acquisition, interoperability, management and quality control.
- **Implementation of regional and national Web-based GIS services to improve data sharing**  
Define and establish an architectural model and implementation guidelines for IT (Information Technology) including Hardware, Software, connectivity and interoperability requirements, based on best practices, application patterns of use, and project goals. This includes options to host services, APIs and storage requirements. Envisioned tools to include regional portals, template solutions which can be shared and configured based on the needs of each country, and focused applications to address key issues such as disaster monitoring.

- **Establish a regional strategy to better connect data to decision making**

Work with national and regional stakeholders to identify regional and global standards, good practices, and use cases on fundamental datasets to produce information products that engage decision makers.

- **Establish a study on geospatial information policy: recommendations and good practices**

Such study will contain elements that inform stakeholders and policymakers about data governance, funding mechanisms and supra-national agreements and MoUs, among others.

- **Capacity building, Communication and Engagement**

As part of a sustainable Capacity Development, Communication and Engagement Strategy and Action Plan, CARIGEO will work with stakeholders to define and implement a set of role-based training workshops and manuals to increase human capacity of national organizations in each country and territory in the Caribbean.

## **CARIGEO MANAGEMENT**

18. The CARIGEO is intended to support the greater Caribbean region. The overall management team for the initiative will therefore be drawn from relevant stakeholders from the countries and regional and international organizations across the region.

### **Executive Board**

19. The Executive Board will be the governing body of CARIGEO, will report during the UN-GGIM Americas annual sessions - or as project needs require, and it will be comprised of the following:

1. Chair - President of UN-GGIM: Americas
2. Technical Secretary – Representative of Statistics Division of UN-Economic Commission for Latin America and Caribbean (UN-ECLAC)
3. Vocals: representatives of CARICOM, ACS, and OECS
4. Two subject matter experts - one from the statistical and one from the geospatial community

### **Functions of the President**

20. The following will be the functions of the President:

1. Represent and direct the CARIGEO Executive Board.
2. Convene Executive Board meetings, instructing the Technical Secretary for this purpose.
3. Preside over the meetings of the Executive Board.
4. Exercise a casting vote in case of a tied vote in the Executive Board meetings.
5. During the meetings ensure compliance with any applicable legal provisions, give the right to speak, put issues to vote and announce decisions.
6. Arrange with the relevant regional and international agencies the funding required for the proposed projects under the CARIGEO Initiative

7. In case of temporary absence from the President of UNGGIM: Americas, the Technical Secretary will conduct the operation of CARIGEO and the development of the activities.

#### **Functions and Powers of the Technical Secretary**

21. The following will be the functions of the Technical Secretary:
  1. Report to the President and the Executive Board
  2. Prepare the minutes of the meetings and submit them for consideration by the Executive Board
  3. Convene meetings
  4. Prepare and compile, with the approval of the President, documentation to be forwarded to the CARIGEO stakeholders
  5. Maintain updated directories of members of CARIGEO
  6. Implement communication actions that may be assigned by the President of the Executive Board.
  7. Organize the documentation of the Executive Board.
  8. Manage the administrative affairs of the Executive Board.
  9. Receive and circulate when needed, the documentation and communications that are sent by international and regional organizations.
  10. Attend all meetings of the Executive Board. In case of absence, the Executive Board may designate an alternate at the same level to take the place of the Technical Secretary in any meeting.
  11. Prepare the Agendas and meeting materials for the meetings of the Executive Board.
  12. Implement actions that may be assigned by the Executive Board in connection with the Project Steering Committee (PSC), mainly, keep track of activities and programs of the same.
  13. Keep a record of the progress of implementing CARIGEO
  14. Execute other duties as they may be assigned by the Executive Board, provided that they have a direct relationship with the objectives of CARIGEO

#### **Functions and Responsibilities of the Vocals.**

22. The functions and responsibilities of the Vocals shall be the following:
  1. Attend all meetings of the Executive Board.
  2. Advise, coordinate, and monitor the CARIGEO plans, projects and other related activities
  3. Prepare or obtain reports on activities for which they have responsibility and submit them to the Executive Board for consideration.
  4. Contribute to and support the formation and operations of CARIGEO.
  5. Contribute to project work when needed

### **Functions and Responsibilities of the Subject Matter Experts.**

23. The functions and responsibilities of the Subject Matter Experts shall be the following:
1. Attend meetings of the Executive Board as applicable
  2. Provide technical advice on CARIGEO plans, projects and other related activities
  3. Contribute to project work when needed

### **Project Steering Committee (PSC)**

24. A Project Steering Committee (PSC) will be in charge of the design, preparation and management of the different projects developed under CARIGEO. The PSC will work in coordination and collaboration with representatives, committed stakeholders from inside and outside the region and eventually donors where appropriate.
25. The composition of the PSC will be determined on a project by project basis and shall have a basic structure comprised of a project manager, administrative officer and technical specialist.
26. The representatives serving at the PSC will be approved by and report to the Executive Board. The PSC will identify implementation arrangements and needed resources to implement the projects and ensure proper management of funds, including accounting, financial control and audit procedures.
27. The PSC will assign sub-committees for the project including:
- Finance
  - Administration
  - Public Relations
  - Evaluations
  - Technical
28. The PSC and various sub-committees will establish statutory meeting times. These will include:
- Meetings of the PSC and all Sub-Committees at the UN-GGIM annual session in New York.
  - Monthly Statutory remote meetings until project is established, then quarterly of the Sub-committees.
  - Technical committee will determine meeting schedules based on project needs.

## **ASSUMPTIONS AND RISKS**

29. Undertaking the development of an ambitious regional initiative such as CARIGEO will involve certain foreseen risks and challenges as described in this section. This development also entails assumptions related to the expectations of a varied community or local, national and regional stakeholders and how well the initiative is aligned with the needs of these communities.

### **Assumptions**

30. The CARIGEO initiative will be aligned with, support and positively impact local, national and regional development agendas

31. The initiative will be able to secure funding for key CARIGEO projects

32. National Caribbean agencies will actively support, participate and contribute to the initiative

33. The initiative will contribute to greater sharing, use and analysis of geospatial data in the region for improved decision making

### **Risks**

34. The initiative aims to achieve significant participation from the mapping, statistical and land agencies of the countries and territories of the Caribbean, as it has been formulated to consider their business and technical needs. However, there is a risk that some agencies might not participate actively due to human or technological capacity constraints. CARIGEO will plan to mitigate this risk by seeking a basic level of participation from agencies that face these types of challenges, to make the initiative more inclusive and impactful.

35. A second foreseen risk is related to legal and policy constraints that might limit data sharing within some participating agencies. This is an inherent risk in projects with broad participation from many agencies from different sectors. To mitigate this risk the project will work closely with the legally mandated national agencies to lead in coordinating data sharing based on good practices, policies and legislation that promote data sharing underpinned by solid security schemas and within institutional frameworks and regulations.

36. A third foreseen risk is the perceived or apparent lack of ownership and stakeholder commitment to the project. This risk will be addressed by engaging senior government officials as well as the local communities at every stage of project development.

37. A risk management approach will be adopted by the project that follows the classic five-step process, namely: risk identification; risk analysis; risk evaluation and ranking; risk treatment and response; and risk monitoring and review, to address the risks outlined above.

## MONITORING AND EVALUATION

38. Monitoring and evaluation are critical components of any successful program. Monitoring is an ongoing process of collecting and analyzing data to check a program's effectiveness and efficiency.

39. Projects implemented under the CARIGEO initiative will be monitored through project management meetings, interim reports and final reports and list of deliverables.

40. Periodic surveys as defined within specific project plans will be conducted to ensure activities are on track, milestones are being achieved and deliverables are being produced according to agreed plans.

41. The monitoring and evaluation processes will be managed by an independent committee of CARIGEO (to include UN-GGIM: Americas, donors and members of academic and private networks).

42. In the case of CARIGEO, for each project identified for implementation a set of key performance indicators (KPIs) - based on project objectives and activities will be defined. These KPI's will be used to measure and monitor project implementation.

43. KPIs should include questions such as:

- Was the target group adequately reached?
- Was the program implemented effectively?
- Was the program implemented differently at different locations - and if so why?

44. Some of the KPIs that will be considered for inclusion in project monitoring are:

- Number and percent of country agencies actively participating in the initiative
- Increase in number of portals across the region
- Increase in number of new institutional arrangements put in place to support data sharing
- Data availability improvements (quantity and quality)
- Increase in number and type of users of data
- Successful completion of milestones as agreed and set out in individual CARIGEO projects
- Engagement in executive and other CARIGEO committees and CARIGEO meetings and events
- Engagement in UN-GGIM as well as UN-GGIM: Americas
- Other measures of the return on investment (ROI) to be defined in project documents