

**First Expert meeting of the UN-GGIM & IHO Joint Working Group on Marine Geospatial Information**  
**with the theme “Advancing Integrated Marine Geospatial Information Management”**

**Chiang Mai, Thailand**  
**4 – 8 May 2026**



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# KINGDOM OF TONGA

## MINISTRY OF LANDS, SURVEY, SPATIAL PLANNING AND NATURAL RESOURCES



IHO

International  
Hydrographic  
Organization

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# Location Map of the Kingdom of Tonga

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# Where is your country today in enhancing the management and use of marine geospatial information ?

## Current Institutional Set Up

- Tonga's **marine geospatial information management** is coordinated through a multi-sectoral approach involving key government ministries and technical agencies.
  - i. **Ministry of Lands, Survey, Spatial Planning and Natural Resources**, through its Natural Resources and Lands & GIS Divisions, leads geospatial data management, coastal and offshore mapping, and spatial planning.
  - ii. This work is coordinated with the **Ministry of Infrastructure, His Majesty's Armed Force Navy, Ports Authority Tonga**.
- Marine hazard monitoring and disaster risk management are supported by **Tonga Geological Services, TMS and National Disaster Risk Management Office (NDRMO)**, with additional collaboration from regional and international partners such as Pacific Community, **International Hydrographic Organization, United Nations Global Geospatial Information Management, Geoscience Australia**, and other development partners.



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# Main datasets or platforms

- Tonga maintains and **utilizes several marine and geospatial datasets** and platforms that support marine spatial planning, disaster risk reduction, environmental monitoring, and maritime boundary management.
- These include:
  - **maritime boundary and EEZ datasets**, coastal and bathymetric mapping data, satellite imagery, topographic and hydrographic datasets, tsunami and seismic monitoring data, GNSS
  - monitoring data, and coastal vulnerability information.
- GIS platforms such as ArcGIS Online, Survey123, and other geospatial databases are used for data collection, visualization, and analysis. Also works closely with **regional platforms and datasets supported** by SPC and other international partners for ocean and marine spatial information management

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# Existing coordination mechanisms

- Coordination of marine geospatial information in Tonga is undertaken through inter-agency collaboration among relevant ministries and technical agencies. National coordination is strengthened through :
  - **technical working groups,**
  - consultation processes, and collaborative projects related to maritime boundaries,
  - coastal management, disaster preparedness, and marine resource management.

Regional coordination is supported through participation in **SPC** initiatives, **Pacific regional geospatial programs**, and international forums including UN-GGIM and IHO activities. Partnerships with regional and international organizations continue to support capacity building, technical assistance, and data-sharing initiatives.



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# Recent progress or achievements

- Tonga has made significant progress in strengthening **marine geospatial information management** through improved **mapping and monitoring initiatives**.
- Recent achievements include continued work on **maritime boundary and Extended Continental Shelf**, strengthening geospatial and hydrographic data management capabilities, enhancement of **tsunami and seismic monitoring** systems, and improved use of GIS technologies for coastal and marine resource management.
- The country has also advanced collaboration with regional and international partners on **marine scientific research, spatial data management, and disaster resilience initiatives**. **Capacity-building** efforts and participation in regional technical workshops have further strengthened national capability in integrated marine geospatial information management.



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# Where does your country aim to be in the next five years?

## Expected policy or governance improvements

- Aims to strengthen its national policy and governance frameworks for integrated marine geospatial information management to support sustainable ocean governance, climate resilience, disaster risk reduction, and the sustainable management of marine resources.
- To improve policies relating to marine spatial planning, data governance, data-sharing arrangements, hydrographic and marine spatial data standards, and coastal and offshore resource management.
- Strengthen institutional capacity and develop clearer governance arrangements to support the coordination, accessibility, and long-term sustainability of marine geospatial information systems.
- Strengthening alignment with international standards and regional frameworks under UN-GGIM, IHO, and Pacific regional initiatives will also remain a priority.



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# Where does your country aim to be in the next five years?

## Integration across institutions

- To achieve **stronger integration and collaboration** across government institutions involved in marine and geospatial information management.

### This includes:

- i. improving **coordination and data-sharing among agencies** responsible for lands and surveys, natural resources, fisheries, maritime safety, environment, disaster management, infrastructure, and national planning.
  - ii. The goal is to establish **more integrated and interoperable geospatial information** systems that support evidence-based decision-making and whole-of-government planning for marine and coastal management.
- **Strengthen collaboration with regional and international partners** to improve technical capacity, access to marine geospatial data, and the use of innovative technologies for integrated ocean management and resilience planning.



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# What do you see as the main challenges in reaching this “ideal” situation within the next five years?

## Governance and Coordination

- Limited coordination between government ministries responsible for marine, land, hydrographic, environmental, and geospatial data management.
- **Overlapping mandates** and lack of a centralized national framework for sharing and managing marine geospatial information.
- Need for **stronger institutional arrangements** and inter-agency collaboration mechanisms to support integrated decision-making.



What do you see as the main challenges in reaching this “ideal” situation within the next five years?

## Funding and Sustainability

- Heavy reliance on **external donor support and development partners** for projects, equipment, and technical assistance.
- **Limited national budget allocation** for long-term maintenance of geospatial infrastructure, monitoring systems, and data platforms.
- **Maintaining software licenses, equipment servicing**, internet connectivity, and operational costs after project completion.



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# What do you see as the main challenges in reaching this “ideal” situation within the next five years?

## Data Availability and Quality

- **Incomplete or outdated marine geospatial datasets, particularly for bathymetry, coastal mapping, seabed resources, and hazard assessments.**
- **Data fragmentation across agencies** with limited interoperability and restricted access to shared datasets.
- **Standardizing data collection** methods, metadata, and quality assurance processes.



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# What do you see as the main challenges in reaching this “ideal” situation within the next five years?

## Skills and Capacity Gaps

- **Limited number of trained technical personnel in GIS, hydrography, marine spatial planning, remote sensing, and marine data management.**
- **Need for continuous professional development and specialized training in emerging geospatial technologies and data analytics.**
- **Staff retention challenges** due to limited technical workforce and competing opportunities abroad.



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# What do you see as the main challenges in reaching this “ideal” situation within the next five years?

## Standards, Policy, and Technology Constraints

- Lack of comprehensive national policies, standards, and **legal frameworks** for marine geospatial information management and data sharing.
- **Limited adoption of international standards** for marine geospatial data integration and interoperability.
- Technology limitations, including inadequate **ICT infrastructure**, unreliable **internet connectivity** in remote islands, and **limited access** to advanced geospatial tools and cloud-based systems.



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# What potential opportunities could help address some or all of these challenges?

## National Reforms and Strategies

- Develop a **national marine geospatial information** management strategy aligned with Tonga's national development priorities and ocean governance objectives.
- Establish clear **policies and institutional frameworks for data sharing**, interoperability, and inter-agency coordination.
- Strengthen **integration of marine geospatial information** into national planning, disaster risk reduction, climate resilience, and sustainable ocean management initiatives.
- Promote government commitment for **long-term budget allocation** to support marine geospatial infrastructure and operations.



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# What potential opportunities could help address some or all of these challenges?

## Partnerships and Regional Cooperation

- Strengthen **collaboration with regional and international organizations** such as the SPC, IHO, UN-GGIM, development partners, and research institutions.
- **Enhance regional data-sharing initiatives** and technical cooperation among Pacific Island countries.
- **Leverage donor-funded programs and technical assistance to support** infrastructure development, hydrographic surveys, and capacity building.
- Foster partnerships with academic institutions and private sector technology providers for innovation and technical expertise.



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# What potential opportunities could help address some or all of these challenges?

## Technology and Innovation

- Expand the use of cloud-based GIS platforms, remote sensing, satellite imagery, and web-based data-sharing systems.
- Utilize emerging technologies such as **unmanned aerial systems (UAS)**, autonomous survey systems, and AI-supported geospatial analytics for improved marine mapping and monitoring.
- **Promote integrated geospatial platforms that combine marine, coastal, environmental, and hazard-related datasets for better decision-making.**
- **Improve ICT infrastructure** and digital connectivity to support real-time data access and monitoring systems.



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# What potential opportunities could help address some or all of these challenges?

## Capacity Development Opportunities

- Increase technical training programs in **GIS, hydrography, marine spatial planning, remote sensing, and marine data management.**
- Support **professional exchanges, attachments, and regional training workshops with partner organizations and neighboring Pacific countries.**
- **Develop long-term workforce development plans,** including scholarships and certification programs for specialized marine geospatial fields.
- **Strengthen institutional knowledge** transfer and succession planning to address staff retention challenges.



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# What potential opportunities could help address some or all of these challenges?

## Quick Wins or Pilot Initiatives

- Establish a pilot inter-agency marine geospatial data-sharing platform to improve coordination and accessibility of existing datasets.
- Conduct **targeted pilot projects for coastal mapping, bathymetric surveys, or marine spatial planning** in priority areas.
- Standardize metadata and data management procedures across agencies as an early step toward interoperability.
- Develop a small-scale integrated marine geospatial dashboard to support disaster response, coastal monitoring, and planning activities.



# How familiar are you with the UN-IGIF, and IHO C-17?

- Tonga is increasingly becoming familiar with the UN-IGIF and the IHO C-17 framework through participation in regional and international geospatial and marine governance initiatives.
- These frameworks are **recognized as important guidance tools for strengthening national geospatial information management, marine spatial data integration, and cross-sector coordination.**



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# How familiar are you with the UN-IGIF, and IHO C-17?

## Interactions with UN-GGIM, IHO, and Related Working Groups

- Tonga has participated in regional engagements and discussions associated with **UN-GGIM and collaborative** initiatives involving the IHO.
- Participating in the **First Expert Meeting of the UN-GGIM and IHO Joint Working Group on Marine Geospatial Information**, which focuses on advancing integrated marine geospatial information management.
- Engaged with **regional partners and development partners** supporting marine mapping, maritime boundaries, hydrography, disaster risk reduction, and ocean governance initiatives.
- Collaboration with **regional and international organizations** has supported technical discussions on marine geospatial standards, data integration, and capacity development.



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# How familiar are you with the UN-IGIF, and IHO C-17?

## Use or Adaptation of UN-IGIF and/or IHO C-17 in Tonga

- While Tonga has not yet formally adopted the UN-IGIF or IHO C-17 as national frameworks, elements of these frameworks are reflected in ongoing efforts to strengthen coordination between agencies responsible for geospatial, marine, environmental, and disaster-related information.
- **Data sharing, interoperability, governance, and integrated geospatial information management** are increasingly being recognized in national planning and technical discussions.
- **Marine and geospatial data are being used to support coastal management, maritime boundary activities, disaster risk reduction, tsunami and earthquake monitoring, climate resilience planning, and sustainable ocean resource management.**
- Existing initiatives involving GIS platforms, marine datasets, hydrographic information, and hazard monitoring systems provide a foundation that could align with the objectives of UN-IGIF and IHO C-17 in the future.



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# How familiar are you with the UN-IGIF, and IHO C-17?

## Future Plans and Potential Application

- **Strengthen integrated marine geospatial information management** through improved **inter-agency coordination and development of national data-sharing mechanisms**.
- There is potential to **use the UN-IGIF as a guiding framework for developing national geospatial** governance arrangements, policies, and institutional coordination mechanisms.
- The **IHO C-17 guidance could support future efforts in marine spatial data integration, hydrographic information management, and marine spatial planning activities**.
- **Future national activities may include development of standardized geospatial data management** practices, establishment of interoperable marine geospatial platforms, and enhanced use of geospatial information for disaster preparedness, climate resilience, and sustainable ocean governance.
- **Capacity building, regional cooperation, and technical partnerships** will remain important to support the practical implementation of these frameworks in Tonga.



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# What kind of support would you like to receive from UN-GGIM-IHO Joint Working Group?

## Guidance and Methodology

- Practical guidance on implementing integrated marine geospatial information management at the national level, particularly for SIDS.
- **Technical methodologies for integrating hydrographic, marine, coastal, environmental, and hazard-related datasets into interoperable national platforms.**
- **Support** in developing governance frameworks, **data-sharing policies**, metadata standards, and institutional coordination mechanisms aligned with international best practices.
- Guidance on aligning national marine geospatial activities with the principles of the UN-IGIF and IHO C-17 frameworks.



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# What kind of support would you like to receive from UN-GGIM-IHO Joint Working Group?

## Capacity Development and Training

- Specialized training in marine GIS, hydrography, bathymetric data management, marine spatial planning, remote sensing, and marine data interoperability.
- **Capacity building on data standards**, geospatial analytics, web-based GIS platforms, and integrated marine geospatial systems.
- Opportunities for technical attachments, mentorship programs, and regional workshops for Pacific Island countries.
- Support for strengthening long-term institutional and technical capacity to sustain marine geospatial information management systems.



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## Peer Exchange and Communities of Practice

- Establishment of **regional and international communities** of practice where countries can exchange experiences, lessons learned, and best practices.
- Opportunities for peer-to-peer learning among SIDs facing similar challenges in marine geospatial information management.
- **Regular technical forums**, knowledge-sharing sessions, and collaborative working groups focused on marine geospatial integration and ocean governance.
- **Improved collaboration between government agencies, regional organizations, academia, and technical experts.**



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# What kind of support would you like to receive from UN-GGIM-IHO Joint Working Group?

## Case Studies, Templates, and Examples

- Access to practical case studies from countries that have successfully implemented integrated marine geospatial information systems and governance frameworks.
- Templates for national **marine geospatial strategies**, **data-sharing agreements**, governance structures, and interoperability standards.
- Examples of operational **marine geospatial dashboards**, marine spatial planning systems, and **integrated coastal** and **ocean management** platforms.
- Guidance materials tailored for small island and resource-constrained countries to support phased and practical implementation approaches.



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# THANK YOU



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