

**16th MEETING OF THE IHO INTER-REGIONAL COORDINATING COMMITTEE
IHO-IRCC15**

Galapagos, Ecuador, 10-12 June 2024

Report of the GEBCO Guiding Committee (GGC)

Submitted by:	Chair, GGC
Related Documents:	SCUFN Work Plan TSCOM Work Plan SCRUM Work Plan SCOPE Work Plan SCET Work Plan
Related Projects:	Nippon Foundation-GEBCO Seabed 2030

Chair:	Evert Flier, Norway
Vice-Chair:	Marzia, Rovere
Secretary:	Sam Harper, IHO
Member States:	Please see Annex A – GGC Officials are individual experts rather than representatives of Member States
Expert Contributors:	N/A – See statement above
<i>see Annex A for full details</i>	

1. Meetings Held During Reporting Period

GEBCO Meeting Schedule

2023 was a special year for GEBCO, celebrating 120 years of ocean discovery after its inaugural meeting in April of 1903. The GEBCO Guiding Committee meeting went back to a one week meeting in November, Monday to Friday set-up, with condensed Sub-Committee meetings on the Monday, a two-day Map the Gaps symposium and two days of GGC meeting. For 2024, GEBCO intends to engage with the Pacific community and will combine their meetings with the Seabed 2030 Pacific Region meetings in Fiji. In order to allow for better prepared GGC meetings, the Sub-Committee meetings in preparation of the GGC meetings now take place virtually well in advance of the GGC meeting.

Dates and Venues of GEBCO Meetings

The dates of the GEBCO Meetings held since IRCC15 are as follows:

- Sub-committee on Undersea Feature Names (SCUFN): 6 Nov – 10 Nov 23 (SCUFN36; Wollongong, Australia).
- 40th meeting of the Technical Sub-committee on Ocean Mapping (TSCOM40): 6th November 2023
- 11th Meeting of the Sub-committee on Regional Undersea Mapping (SCRUM11): 6th November
- 6th Meeting of the Sub-committee on Communications and Public Engagement (SCOPE6): 6 November 2023

- 2nd Meeting of the Sub-committee on Education and Training (SCET2): 6 November 2023
- Map the Gaps Symposium: 7-8 November 2023, Monaco
- GGC40: 9.10 November 2023 (IHO, Monaco – Hybrid)
- GGC Intersession Meeting 01 2024: 3 April (VTC)
- GEBCO Community Vision for Improving the Availability, Discoverability & Accessibility of Bathymetric Data – A Working Meeting (11-13 March 2024, Boulder, Colorado)

Future Meetings

The dates and venues of future meetings are as follows:

- 2024 GEBCO Guiding Committee meeting: week: 4-9 November (Fiji)
- Sub committee meetings to be arranged

2. Work Program

New Office Holders

Since IRCC15, one new Office Holder has started his/her tenure. These are summarized as:

Position	Incoming	Outgoing	Tenure
IHO appointed GGC member	Mr. Hiroaki SAITO (Japan)	VADM Shin Tani (Japan)	2024-2029

Bathymetric Publications

The GGC is responsible for the following Bathymetric Publications, listed here with a summary of their status and relevant activity:

B-6 – *Standardisation of undersea feature names*. The latest edition 4.2.0 of Publication B-6 was published in October 2019. SCUFN has recently been working on making “The Repository of Typical Cases” and “The Cookbook for Generic Terms” as the two living documents that are complementary to B-6.

B-8 – *Gazetteer of Undersea Feature Names*. Although the Gazetteer version 4.3.7 is currently used, SCUFN is now testing the Gazetteer version 5 developed by National Oceanographic and Atmospheric Administration (NOAA). The SCUFN Operational Web Services (SCUFN-OWS), originally started as the online review tools for SCUFN members in 2015 developed by Korea Hydrographic and Oceanographic Agency (KHOA), is now becoming a fundamental site for SCUFN activity. SCUFN now aims to integrate the Gazetteer and SCUFN-OWS in the future.

B-9 – *GEBCO Digital Atlas*. Publication B-9 has been redundant for some time given the digital nature of the GEBCO Global Gridded Product. It has been decided that this publication should be withdrawn and not replaced.

B-10 – *The history of GEBCO*. Publication of B-10 was last published in 2003 to coincide with GEBCO’s 100th anniversary. Work is currently underway to produce a new Edition in 2023 to coincide with the 120th anniversary. Last twenty years when GEBCO has experienced in dramatic advances in technologies and policies will be dealt with additional two chapters, one of which covers the period from 2004 to before Seabed 2030 project. The other does period after 2023 project. About 60 percent of the new Edition are ready in first drafts and the 40 percent need to be written and revised with reflecting GEBCO strategy plans in 2024.

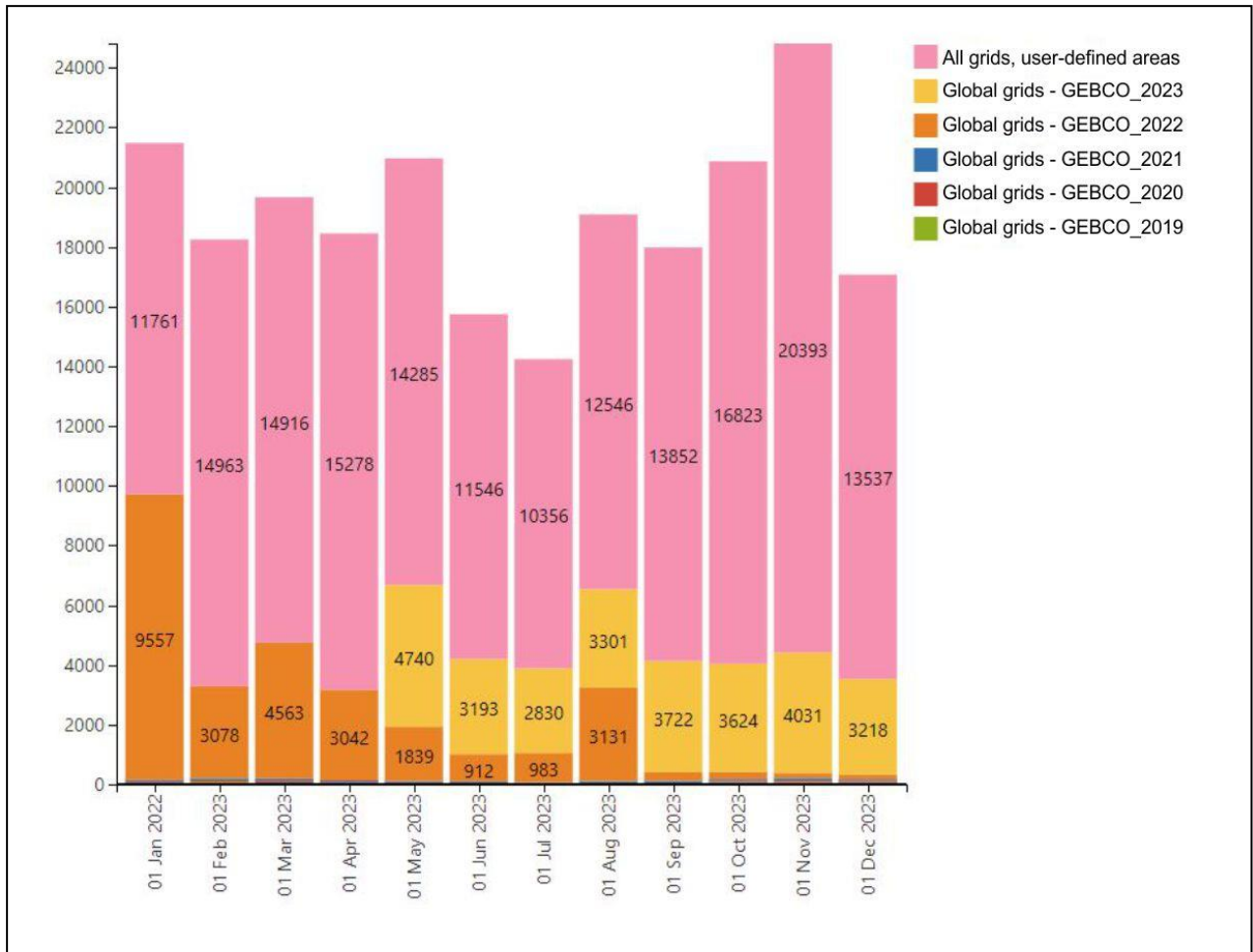
B-11 IHO/IOC Manuals and Guides – *GEBCO Cookbook*. Christie Reiser (NOAA/DCDB), Chief Editor/Chief of the Editorial Board is stepping down for the editorship as of April 2024. A new editor can be appointed by TSCOM. The GEBCO Cookbook was migrated into the InDesign format, but the Editorial Board and TSCOM agreed, this reference text would better serve the community as a Wiki-style Cookbook page. It was proposed that the IHO host the new page and contain only the updated chapters. Once new authors are identified to take over abandoned chapters, new material can be regularly added and updated on the Wiki page. A DOI was generated for the Cookbook and the Editorial Board needs to find out if that can be associated with a Wiki page as well as the setup and design of the Wiki page.

Gridded bathymetric products

The GEBCO_2023 Grid – a global terrain model at 15 arc-second intervals – was released in May 2023. It is made available for download, along with previous releases of the GEBCO grid, via GEBCO’s web site and download app: (https://www.gebco.net/data_and_products/gridded_bathymetry_data/).

The grids are made available for download as a complete global grid file or for user-defined geographic areas in a number of formats. For the 2023, 2022 and 2021 releases of the GEBCO grid, versions are made available with ice surface elevation or with sub-ice topography information for areas around Antarctica and Greenland.

During 2023, there were over 206,800 downloads of GEBCO’s data sets. The figure below shows the number of downloads for each of GEBCO’s data sets and if these are downloads of the global grid file or for user-defined sub-sections of the global grids.



The above image shows the number of downloads of GEBCO's grids per month for 2023

A DOI is minted for each release of the GEBCO grid. Since the release of the GEBCO_2019 grid there have been 290 citations of the data sets. Information on the DOI for the GEBCO_2023 Grid can be accessed from:

https://www.bodc.ac.uk/data/published_data_library/catalogue/10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b.

The GEBCO grid is also included for viewing/access through a number of external applications, for example in the Cesium World Bathymetry layer:

<https://cesium.com/platform/cesium-ion/content/cesium-world-bathymetry/>.

Work is in progress to investigate making the gridded bathymetric data sets available at multiple resolutions, where the source data support this.

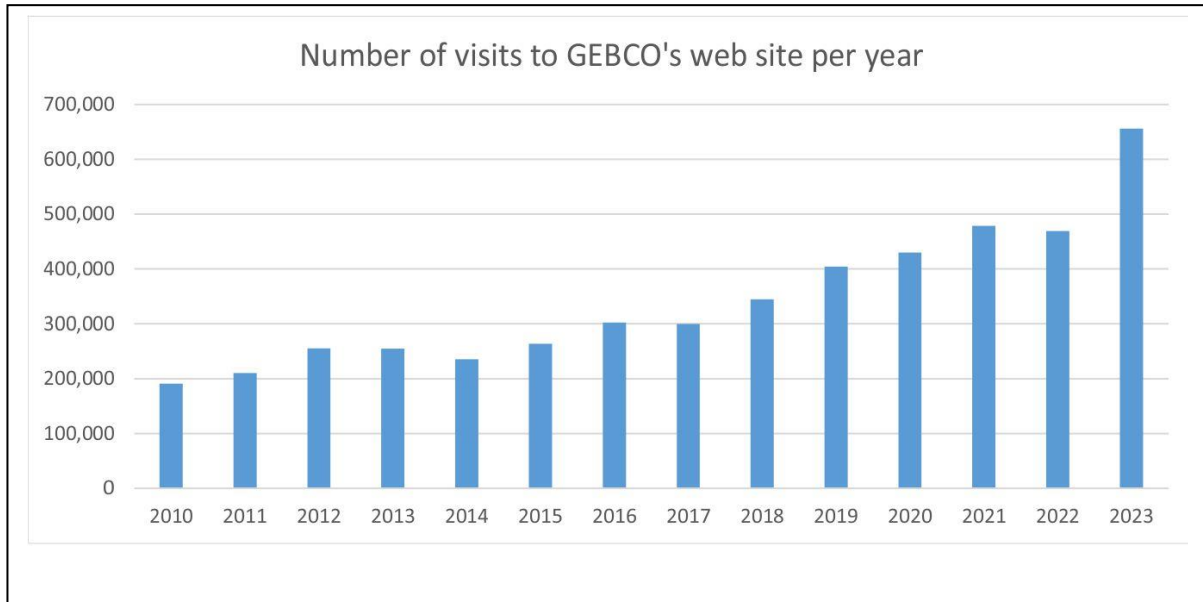
A dedicated Web Map Service (WMS) is created for each release of the GEBCO grid. The WMS can be accessed from GEBCO's web site

(https://www.gebco.net/data_and_products/gebco_web_services/web_map_service/).

GEBCO Website

GEBCO's web site (<https://www.gebco.net>) is maintained and updated at BODC. News items, meeting information and ad hoc page update requests from the GEBCO committees have

been added to the web sites throughout the year. The image below shows the number of visits to the GEBCO web site since 2010.



Visits to GEBCO's web site since 2010

GEBCO Guiding Committee

At its 40th meeting, the GGC received brief reports from its Sub-Committees and Working Groups and endorsed the work which they had undertaken. The GGC also received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies, IHO and IOC, on activities since the previous meeting.

Most importantly, the GGC approved a first GEBCO strategy (attached as Appendix A) with clear vision and mission statements and outcomes and objectives and outcomes that provide guidance for GEBCO's sub-commissions. Work is underway for the implementation of the strategy.

In addition, the GGC approved the Governance Review report (attached as Appendix B) as a blue print of the current, complex and organically grown organization of GEBCO, identifying key areas for improvement. A draft discussion paper on potential future organization of the GEBCO Guiding Committee was discussed at the intersessional GGC meeting April 2024 and it was agreed to further develop this paper for more in depth discussion at the upcoming GGC meeting in November in Fiji.

The GGC also reviewed its current financial situation in relation to proposed planned projects. The Committee addressed the budget submissions from its subordinate bodies and approved the proposed allocations. The new GEBCO strategy, the GEBCO Governance Review report and the draft consolidated GEBCO Work Plan and budget will be reported to the 16th meeting of the IHO Inter-Regional Coordination Committee (IRCC) and the 57th IOC Executive Council, for consideration and endorsement of the parent organizations.

Sub-Committee on Undersea Feature Names (SCUFN) Activities

The SCUFN-36 meeting had significant challenge to face with about 450 naming proposals, a record in the history of SCUFN. There was thus a huge risk to be obliged to defer a significant number of proposals. To prevent SCUFN from facing this situation again in the near future, the SCUFN adopted a new rule to cap the number of naming proposals per organization/country (25 max.) and per year for SCUFN meetings in total (250 max.). This new rule “25/250” was incorporated in the revised SCUFN ToR/RoP, and this revision later endorsed by the GEBCO Guiding Committee. The 450 naming proposals included a total number of 284 proposals located in the South China Sea (SCS). There were significant concerns raised by the observers from the coastal states around the SCS, requesting to freeze the SCS for undersea feature naming. A question, "In application of RoP 2.10, do SCUFN Members consider that all proposals located in the SCS should be frozen until a joint proposal on the way forward is made to SCUFN by all interested parties?", was then put to a vote in application of SCUFN RoP 2.10 (political sensitivity). The outcome of this vote is that the SCS has become a “no-go area” for undersea feature naming.

The Vice Chair Dr. Yasuhiko Ohara was serving as the Acting Chair at the SCUFN-36 meeting. At the end of the meeting, election of the new Chair and Vice-Chair was conducted. SCUFN Members elected Dr. Yasuhiko Ohara [IHO] for the position of Chair, and First Admiral Dr. Najhan MD Said [IHO], for the position of Vice-Chair.

Technical Sub-Committee on Ocean Mapping (TSCOM) Activities

Over the past reporting period TSCOM has held two meetings. One virtual (interim) meeting on 12 September 2023 as preparation for the yearly GGC meeting and one (official) in person meeting at the IHB in Monaco as part of the GEBCO week, from 6 to 10 November 2023 where the 2024 workplan was approved.

TSCOM is currently, in addition to ongoing supporting activities, conducting the following tasks.

1. Development of a GEBCO Community Vision for Improving the Availability, Discoverability & Accessibility of Bathymetric Data.

In the previous report to IRCC it was mentioned that a series of four virtual workshops took place in 2023 at Lamont-Doherty Earth Observatory covering topics as Data Stewardship, Data Discovery & Identifying Data Gaps, Data Access & Community Needs and Data Processing, Transformation & Integration. These workshops resulted in a GEBCO Community Vision document for Improving the Availability, Discoverability & Accessibility of Bathymetric Data.

Building upon the new draft GEBCO Strategy and the above mentioned GEBCO Community Vision document, a group of experts came together in March to develop a workplan for the implementation of the vision document. In Boulder, USA, this group met for three days and has developed detailed workplans, with associated budgets and prioritized the joint DCDB and TSCOM work for the coming year.

Main driver for this work is the realization that improving the availability and accessibility of global bathymetry data requires an understanding of the needs of a diverse community of individuals and organizations who create, manage and utilize data for a wide variety of purposes. Sharing data and use-case-driven metadata enables equitable data discovery, access and use, and is the foundation upon which bespoke data and information products can be built.

Gathering input from users to understand their data and metadata uses and challenges ensures that

standards meet community needs, and reveals opportunities for collaboration, coordination, and knowledge sharing. Enhancing metadata, recommending common format standards and sharing tools and approaches for managing, documenting, curating and assembling data can deliver significant efficiency and will ultimately help our community achieve mutually beneficial goals.

With continuing activities to professionalize GEBCO, this TSCOM work item must provide the necessary input for the implementation of the new GEBCO strategy.

A 3-day working meeting, co-organized and hosted by TSCOM and the IHO-DCDB, was held 11-13 March 2024. The meeting, hosted by the National Oceanic and Atmospheric Administration National Centers for Environmental Information, met to further develop topics and progress actions captured in the draft 2023 TSCOM Action Plan and to rework the plan into a more inclusive GEBCO Technical Action Plan. The key objectives of the meeting were to (1) Finalize and activate the GEBCO Technical Strategic Plan, in collaboration with GEBCO subcommittee chairs and in line with the draft GEBCO Strategy and (2) Develop and begin building the Communication Campaigns (audience, comms mechanisms, intended outcomes and timelines) for each Strategic Goal. A meeting report is currently being drafted and will be made available in the coming months.

2. Development of an opportunistic mapping tool

Work on developing an opportunistic mapping tool is continuing and is now integrated with the activities mentioned under 1 above. In the previous reporting period, a study was completed on the current status and available of various tools and application currently in use to keep track of data/no data areas. Based on discussion with many stakeholders it can now be concluded that although these existing tools and application do serve a purpose, they do not fulfill the requirements laid out in the GEBCO community vision. Although the discussion took valuable time without any real development, all stakeholders now are aligned and TSCOM is in the process of securing funding for the actual delivering of the tool.

The current application developed by CCOM (New Hampshire, USA) will form the basis of further development. Future hosting is envisioned to be at the DCDB. In addition to being a data/no data tool, Metadata will form an important backbone of the tool allowing future accountability of GEBCO deliverables.

3. Study of Discrete Global Grids

This work item is based on the Seabed 2030 work items to find better solution to use data at multiple resolutions and to overcome the limitations of the geographic map projection used for the current GEBCO grid. The study on Discrete Global Grids first mentioned in the previous report to IRCC is continuing and has resulted in an actual implementation testbed of the H3 Global Hexagon Index System originally developed by Uber. The H3 system is an open source implementation and available on GitHub and also supported by the major GIS systems. The TSCOM testbed consisted of a European dataset loaded into the H3 system using the FME workbench. Both bathymetric data and metadata were used in this test.

The test showed that the software is mature enough to load the bathymetric data without and problems. Also, as this was a prerequisite of the study, a link with the underlying metadata could easily be established.

A second test was performed to see if the complete global GEBCO TID grid could be loaded into H3. Comparing statistics from the H3 with Seabed 2030 will contribute to a better understanding of the H3 system and its accuracy. Result of this test are currently being evaluation together with the Seabed 2030 project.

4. Maintenance of the GEBCO Cookbook

The idea to create an on-line repository of the GEBCO Cookbook was presented by the chair of the Cookbook editorial board at the GEBCO GGC40 meeting in Monaco. Although the idea was generally received well, it remains complicated because of the official publication status of the GEBCO cookbook. Ultimately it is not up to TSCOM to make that decision, although, TSCOM is free to create the repository in addition to the official Cookbook. TSCOM therefore decided to go forward with this idea. Unfortunately, the Chair of the Cookbook editorial board has stepped down due to a job change. Until a new chair has been found the work is progressing slowly but the latest draft of the Cookbook is available.

5. Deep ARGO float groundings as potential calibration and qc of bathymetric data

A working group within TSCOM is studying the feasibility to use data on deep ARGO float groundings for calibration and qc of bathymetric data. First statistical results were presented during the intermediate TSCOM meeting last September. These results look promising, but more research is required.

In addition to above tasks, the Chair of TSCOM has visited the Seabed 2030 South & West Pacific Regional Mapping Community Meeting in July 2023. The meeting took place in Lima, Peru.

As preparation to the TSCOM will meet virtually (VTC) in September this year. 1 more time before the upcoming GEBCO GGC41 meeting in Fiji.

Sub-Committee on Regional Undersea Mapping (SCRUM) Activities

Recognizing the importance of the contributions of regional experts in improving its global bathymetric models, GEBCO established the Sub-Committee on Regional Undersea Mapping (SCRUM) in 2009. SCRUM's aims are to facilitate a closer collaboration with regional mapping efforts and coordinate, as well as encourage, the incorporation of their compilations into GEBCO.

This reporting year has seen SCRUM interacting closely with the Alumni of the Nippon Foundation-GEBCO Training Program. For the first time, coordinated by SCRUM, the expertise and experience of the NF-GEBCO alumni was utilized to contribute in the 2024 grid review. As well as the grid review, the Chair and Vice-Chair attended the Alumni Conference in Tokyo in July of 2023, and raised awareness of SCRUM within the Alumni community, with two alumni choosing to join SCRUM as a result, representing two member states.

A key activity for SCRUM this past reporting year has been working closely with the CSBWG, to provide support and guidance for Seabed2030/CSB coordinators, as well as better defining the roles and duties of the coordinators. To date, coordinators have been identified for 15 RHC's with 1 still to be determined. Coordinated participation in regional IHO and IOC meetings has resulted in all Regional Hydrographic Commission meetings having GEBCO/Seabed2030 and/or CSB presentations. Additionally, work continues in supporting and encouraging the reinitializing of the IBCSEP. SCRUM continues to maintain the SCRUM web pages on the GEBCO website, and ensuring information remains updated, as well as ensuring outreach materials are kept up to date. The prioritization application remains active, which allows for input to identify priority areas for regional mapping. Additionally, the SCRUM Twitter account remains active.

In coordination with University College Dublin (UCD) and Eduardo Mondlane University (UEM), a seabed mapping workshop was held at the Department of Geography in UEM which included virtual presentations from 2 GEBCO alumni from the region- Victoria Obura from Kenya and Tinah Martin from Madagascar. Materials were provided in support, to raise awareness of GEBCO and Seabed2030.

SCRUM has been working closely with TSCOM in standardizing our work plans, and increasing

communication between the sub-committees. Additionally, TSCOM, SCRUM and Seabd2030 have been having regular meetings and are working closely together. SCRUM took part in the 3 day 'Executing a GEBCO Community Vision Working Meeting'. SCRUM continues to provide scientific expertise, regional connections, and outreach support to the Seabed 2030 project director, RDACCs and GDACCs. SCRUM has worked closely with the Seabed23030 GDACC, ensuring that the metrics of completeness and the SCRUM regional Mapping activities web page are all updated.

Sub-Committee on Communications and Public Engagement (SCOPE) Activities

As a relatively new GEBCO sub-committee, SCOPE continues to grow and increase activities documented in the 2021, 2022 and 2023 workplans. Tactical activities in the last year include continued work to update the IHO Publication B-10 and the execution and delivery of the Map the Gaps (MtG) Symposium in conjunction with GEBCO Week 2023 (Monaco, Nov. 2023). SCOPE also assisted with affiliates to plan and deliver a GEBCO/Seabed 2030 booth at the IHO General Assembly in Monaco in May of 2023. This included planning, brochure development, new logo for the anniversary, poster printing and distribution, swag, and booth design.

There were changes to SCOPE leadership during this reporting period; Mr. Tim Kearns stepped down from his position as Chair but remains involved in SCOPE. Ms. Sarah Grasty was elected as new Chair, and Ms. Eunmi Chang continued as Vice-Chair.

The decision was made to deactivate the SCOPE website and the Sub-Committee will deliberate how to port relevant information to the proper location(s). A Map the Gaps Symposium is on hold for 2024 with discussions ongoing between SCOPE and MtG about a potential event in 2025 and what the scope and goal of that meeting would be. Last year, SCOPE had plans to develop a social media campaign, but after further consideration this initiative is paused until higher priority items are addressed and there is a clearer goal for the social media engagement. SCOPE has recruited a handful of new members and plans to actively recruit additional personnel in the coming months to increase the group's capacity, particularly because several current members serve on multiple committees.

In 2024-2025, SCOPE will continue to support various activities, including assisting with the planning of the Seabed 2030 Pacific Ocean Mapping Meeting in November 2024. SCOPE has also received several tasks in support of the Technical Action Plan for GEBCO it plans to address in collaboration with the other Sub-Committees. The Sub-Committee will also consider the new GEBCO Strategy (2024 – 2030) as it develops new tasks and priorities.

Sub-Committee on Education and Training (SCET)

SCET continues to work on the inaugural year work plan, with some minor additions in year two. This includes the work to expand SCET membership beyond that of those already involved in the GEBCO community. SCET continues to attract the attention of mapping professionals outside the GEBCO community with aspirations to further build capacity in educational offerings that meet the goals and objectives of GEBCO. It will be the recruitment of membership and mobilizing the membership to move forward the important work of the subcommittee; overarching goals of identifying, building, and promoting global capacity in ocean mapping education will serve well the goals of GEBCO. The development of an inventory of the various International and national groups undertaking seabed mapping capability-building programs and performing a gap analysis to identify the role that GEBCO and SCET can take in promoting these programs.

In our 2024 work, SCET will look to contribute to GEBCO publications and promote those publications' use and uptake by educational institutions as core curriculum documents that will inform and promote the Goals and Objectives of GEBCO.

While SCET is still a new subcommittee, there is significant work to do to unwrap and integrate it with the work of other subcommittees of GEBCO.

The following is a report on the UNH NF GEBCO training program. There are initial discussions on a governance review of the program within GEBCO and a framework that could see expanded program inclusion. Developing a governance structure and cooperation ToR between SCET and the Nippon Foundation—GEBCO Training Programme at the University of New Hampshire is high on SCET's priority list this year.

The Nippon Foundation /GEBCO Training Program

The Training Program is in its 20th year. Including the seven students currently at UNH, 120 alumni from 50 Coastal States have been through the course. The Training Program has returned to pre-COVID in person classes and labs, although the increase to 7 students this year reflects COVID era delays in acquiring student visas and a required deferral due to late visa processing.

The Nippon Foundation – GEBCO Seabed 2030 Project

1 August 2022 saw the start of the 6th year of The Nippon Foundation – GEBCO Seabed 2030 Project (SB2030). The project is split into five work packages, with key developments summarized below (as of end of Year 5, unless otherwise stated):

- **WP1 – Data.** Ocean map coverage stood at 23.4% in June 2022 (Year 5), and there was a steady growth to 24.9% when the next version of the Grid was published in May 2023 (Year 6). IBCAO v4.2 and IBCSO v2.0 were published for the Arctic and Southern Oceans respectively in the spring of 2022. Extensive engagement with data donors is ongoing, and work was undertaken to establish what additional data sets located in the NOC/BODC archives could be contributed.
- **WP2 – Systems and tools.** Statistics routines developed on Amazon Web Services have been implemented and now allow better tracking of coverage progress and more efficient capturing of metadata. Collaboration continues with Scripps on SRTM15+ base grid improvements as well as with the University of New Hampshire (UNH) on improving capabilities of the BathyGlobe product. The SB2030 Global Center is now acting as a Trusted Node for Crowdsourced Bathymetry Data and is working closely with the IHO-DCDB on associated data workflows.
- **WP3 – Technology Innovation.** A professionally drafted strategic white paper was delivered, which included discussion on the use of remotely operated and autonomous technology, cloud computing and machine learning. The development of a new generation of CSB loggers (UNH) has been undertaken, with the first batch due for roll-out late in Year 6.
- **WP4 – Mapping activities.** Several data gathering initiatives have been undertaken via the Ocean Frontier Mapping Project, during which funding was provided for alumni participation, covering travel costs and their services as onboard mappers and remote data processors. Crowdsourced Bathymetry activities are ongoing in South Africa, Greenland, Palau and in the Southwest Pacific. The International Seakeepers Society have been supportive in their efforts to roll out CSB data loggers to its membership and are now frequently submitting data sets via the Global Center. Seabed 2030 collaborated in the *NIWA- Nippon Foundation Tonga Eruption Site Mapping Project (TESMaP)* which saw a blend of crewed and uncrewed technology conduct extensive research around the Hunga Tonga–Hunga Ha'apai area.

WP5 – Management. As a Decadal Flagship Programme, SB2030 continues to work alongside the UN Decade team and other global initiatives. There is also ongoing engagement with the wider GEBCO community, as well as the Strategic Advisory Group, which held its first in person meeting in October 2022. There was increased face-to-face engagement during Year 5 following the gradual return of events following the COVID-19 pandemic, with the highlight being the UN Ocean Conference in June 2022, where the Seabed 2030 team delivered a successful side event entitled ‘Seabed 2030: Mapping for People and Planet), which attracted over 200 people in person/virtually. The Wind in The Sails (WITS) project is ongoing, with a comprehensive seabed mapping benefits analysis model having been delivered during Year 5, and work on a global prioritisation tool continuing into Year 6/7.

Sustained outreach and engagement activities means the number of MoUs and active supporters are growing:

- 14 new MoUs during Year 5 – 31 in total.
- 192 supporters in total have pledged support to the Project in some way.
- Increased network of potential stakeholders through attendance at key events.

NF Alumni Engagement included:

- Ocean Frontier Mapping activities; survey planning, mobilization of vessels, remote surveying and data processing.
- Extensive support provided to TESMaP Project during both *RV Tangaroa* and *USV Maxlimer* phases.
- Head of Engagement is Chair of 2023 Alumni Seminar organising committee (July 2023).

Key media activity includes:

- ‘In-depth’ periodic newsletters.
- Press releases widely circulated.
- 350 media items published in Year 5, including high profile articles in Hydro International, Scientific American and BBC.
- Phased roll out of rebrand and new media strategy planned for late Year 6.

GEBCO Governance Review

At IRCC14, the creation of a dedicated Project Team to conduct a Governance Review of GEBCO was endorsed. The Project Team was to be led by Mr Sam Harper (IHO) and Supported by Mr Julian Barbier (IOC). The initial findings of the review were presented to, and discussed by GGC39. Subsequently, further work has been completed by the project team which was reported to GGCIS01 2023. It was proposed and agreed by the GGC that given the nature of the findings, these should be properly considered by GGC40 before any necessary actions are requested of IRCC16.

The GEBCO Governance review outcomes were duly considered at GGC40 and subsequently approved via correspondence following the two circulations of the final report (Appendix A). The findings and recommendations presented in the report provide the GGC with an independent evidence base to inform any structural or process changes that may be required, as well as proposing the adoption of a continuous improvement framework to support the evolution of GEBCO against its new strategy.

3. Progress on IRCC Action Items

There were no specific action items for the GGC arising from IRCC13

4. Problems Encountered

The principal challenge to delivery of GEBCO objectives is funding. The GEBCO Programme relies heavily on the goodwill of a large number of volunteers. During GGC39 travel funding for one ex-officio GGC member was granted in one specific case but it was acknowledged that the annual income is simply not enough to sustain this. Whilst no specific action is required of IRCC15 at this stage, it should be noted that this position may change following the completion of the Governance Review and Strategic Plan.

Given the tight budget, we are moving to quarterly reporting and calendar year budgets. The assumption will be that funding will not be carried over unless properly justified and agreed by the GGC.

At IHO Assembly 3 a proposal was approved for the establishment of a task force that will look into alternative ways to increase the budget for Capacity Building and related activities such as GEBCO.

5. Any Other Items of Note

None

6. Conclusions and Recommended Actions

During the last few years GEBCO has significantly increase its visibility on the international stage, both within the IHO and IOC community but also in international media. The celebration of the 120th anniversary of GEBCO was given a high profile at IHO Assembly 3, at the 32nd IOC Assembly, and finally at the Map the Gaps symposium at the Oceanography Museum in Monaco. Many have contributed and especially Seabed 2030 has really accelerated the visibility and the coverage of directly mapped global seabed knowledge which has now increased to 24.9%.

The GGC has set itself an ambitious yet challenging agenda of delivery, strategic planning and governance. This has been thought through very carefully noting the other pressures on the various stakeholders and participants. It is however deemed necessary if GEBCO is to remain relevant given the extent of the change occurring within the ocean science and seabed mapping landscape.

The GGC work plan (Annex B) reflects this both in terms of new activity and the amount of the existing budget that has been allocated to activities in this reporting year.

7. Justification and Impacts

Justifications for planned activities have been provided in the description provided in the body text of this report.

There are no anticipated impacts on IRCC or any of its other bodies.

8. Action Required of IRCC

The IRCC is invited to:

- a. Note this report
- b. Note the funding challenges faced by the GEBCO Programme
- c. Endorse the GEBCO strategy
- d. Endorse the GEBCO Governance Review report

ANNEX A

**IHO-IOC GEBCO GUIDING COMMITTEE
(GGC)**

List of GGC members – 20 April 2024

1. IHO Appointed Members:	Term
Period:	
Mr. Hiroaki Saito (Japan)	(2024-2029)
Mr David Millar (USA)	(2023-2028)
Mr Evert Flier (Norway) (<i>Chair</i>)	(2019-2024)
Dr Geoffroy Lamarche (New Zealand)	(2021-2026)
Ms Yerinelys Santos (Colombia)	(2022-2027)
2. IOC Appointed Members:	
Dr Marzia Rovere (Italy)* (<i>Vice-chair</i>)	(2019-2024)
Vacant	
Ms Kim Picard (Australia)	(2021-2026)
Commander Prashant Srivastava (India)	(2021-2026)
Mr Paul Brett (Canada)	(2022-2027)
3. Ex-officio Members:	
Ms Aileen Bohan (<i>Chair of SCRUM</i>)	
Mr George Spoelstra (<i>Chair of TSCOM</i>)	
Mr Yasuhiko Ohara (<i>Chair of SCUFN</i>)	
Ms Sarah Grasty (<i>Chair of SCOPE</i>)	
Ms Jennifer Jencks (<i>Director of IHO-DCDB</i>)	
* Members serving a second 5-year term.	
4. Secretary:	
Mr Sam Harper (IHO)	(2021-2026)

NOTE: Members of the Secretariats of the IHO and IOC are permanent non-voting Observers in the Committee.

IHO-IOC GEBCO Guiding Committee (GGC) Work Plan 2024

GGC Tasks

- A Organise and conduct GGC 41 meeting in 2024 (IHO Task 3.6.1)
- B Ensure conduct of TSCOM, SCRUM, SCOPE and SCUFN meetings in 2024 (IHO Tasks 3.6.1)
- C Ensure effective operation of IHO DCDB (IHO Task 3.6.2)
- D Ensure the delivery of the SCUFN Work Plan
- E Ensure the delivery of the TSCOM Work Plan
- F Ensure the delivery of the SCRUM Work Plan
- G Ensure the delivery of the SCOPE Work Plan
- H Ensure the development of a SCET Work Plan
- I Liaise with and provide support to Seabed2030 project (IHO Task 3.6.5)
- J Implement GEBCO Governance Review
- K Implement GEBCO Strategic Plan

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
A	Organise and conduct GGC41 meeting	H		2024	2024	P	Chair GGC Sec		0	0
B	Ensure conduct of TSCOM, SCRUM, SCOPE, SCUFN and SCET meetings	H		2024	2024	P	Chair GGC, Chair, TSCOM, Chair SCRUM, Chair SCOPE and Chair SCUFN		0	0
C	Ensure effective operation of IHO DCDB	H		Continuous		O	Director DCDB	See TSCOM Work Plan	0	0

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard	Funding Bid (€)	Approved Funding (€)
D	Ensure the delivery of the SCUFN Work Plan (Annex x)	H		Continuous		O	GGC + SCUFN Chair		12,000	15,000
E	Ensure the delivery of the TSCOM Work Plan (Annex x)	H		Continuous		O	GGC + TSCOM Chair		42,500	42,500
F	Ensure the delivery of the SCRUM Work Plan (Annex x)	H		Continuous		O	GGC + SCRUM Chair		8000	8000
G	Ensure the delivery of the SCOPE Work Plan (Annex x)	H		Continuous		O	GGC + SCOPE Chair		0	0
H	Ensure the development of a SCET Work Plan	H		2023	2024	O	SCET Chair		0	0
I	Support Seabed2030	H	Provide scientific expertise, regional connections and outreach	2018	2030	O	GGC + Chairs TSCOM, SCRUM, SCOPE, SCUFN, SCET	See SC Work Plans	0	0
J	Implement GEBCO Governance Review	H		2024	2025	O	GGC Chair		0	0
K	Implement GEBCO Strategic Plan	H		2024	2025	O	GGC Chair		0	0



IHO

International
Hydrographic
Organization

The General Bathymetric Chart of the Oceans

STRATEGY 2024-2030

The vision

To bring knowledge about our planet's seabed to everyone

The mission

To produce free, open and complete seabed data and information for the world's oceans. This is achieved by enabling and inspiring seabed mapping efforts through international collaboration, technological innovation, capacity development, and education.

1 Introduction

To this day GEBCO has proudly upheld its original mission to deliver “the most authoritative, publicly available bathymetry of the world’s oceans” by providing depth data to the world. Bathymetry provides a measure of the shape of the seabed; as the science of measuring ocean depth, it is foundational to ocean sciences. It underpins disciplines ranging from hydrography and oceanography to marine geology and ecology. It encompasses the mapping and charting of underwater features and the topography of the seabed.

To enable GEBCO to fulfil its expansive and ambitious mission, GEBCO will focus its efforts on providing data that support information and knowledge on the shape of the seabed.

The present structure of the General Bathymetric Chart of the Oceans (GEBCO) reflects its long evolution since its creation in 1903 by Prince Albert I of Monaco. It has been shaped by its successes and the opportunities created through many transitions over the years.

GEBCO has a rich history; its successes are numerous and global.¹ Today, GEBCO is an internationally recognised and well-respected programme that operates under the joint auspices of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO). GEBCO collaborates with international, multi-sector stakeholder organisations which use seabed data to achieve their goals and meet their needs. GEBCO will contribute to the purpose and function of both IOC/UNESCO and IHO and seek advice and cooperation about seabed related services and capacity.

While both parent organisations have their own respective strategies, GEBCO has developed its own strategy which is outlined in this document. This strategy aims to:

- provide a vision and a mission to see GEBCO's legacy enduring over multiple generations.
- broaden GEBCO's focus to encompass seabed data and datasets, including bathymetry and its derivatives, positioning the programme firmly in the twenty-first century mainstream of ocean science.
- support a dedicated governance that strives to increase GEBCO's visibility and relevance in a world increasingly more aware of the importance of the ocean.
- provide clarity of GEBCO's direction within the complex structure and relationships between parent organisations, subcommittees, and subordinate projects.
- ensure that GEBCO complements and supports the parent organisations' objectives.
- ensure that GEBCO subcommittees and subordinate projects have the support they require to optimise their work and outcomes.
- inform GEBCO stakeholders and partners of its intentions and ambitions so that together they can support each other in support of the GEBCO mission under the dedicated governance.

1.1 GEBCO's parent organisations

The present strategy supports the missions and objectives of the parent organisations - the IHO and the IOC of UNESCO - and recognises their leading and supporting roles for GEBCO.²

IHO's vision is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment. Its mission is to create a global

¹ See 100 years of GEBCO

² IHO Strategic Plan for 2021-2026 and Draft IOC medium-term strategy for 2022–2029 (41 c/4)

environment in which coastal states provide adequate, standardised and timely hydrographic data, products and services, and ensure their widest possible use.

IOC's vision is to bring together governments and the science community to achieve the 'Ocean We Need for the Future We Want'. Its mission is to promote international cooperation and coordinate programmes in research, services, and capacity-building to increase knowledge about the nature and resources of the ocean and coastal areas. The IOC sees that knowledge is applied for the improved management, sustainable development, the protection of the marine environment, and the decision-making processes of all coastal states.

2 GEBCO's vision and mission

The scientific knowledge derived from ocean sciences is critical to achieving all six outcomes of the United Nations Decade of Ocean Science for Sustainable Development (the Ocean Decade), which the parent organisations proactively support.

GEBCO therefore considers seabed data and information to be at the heart of its pursuit with:

- A **vision** to bring knowledge about the seabed to everyone on the planet; and
- A **mission** to produce free, open, and complete seabed datasets of the world's oceans by enabling and inspiring seabed mapping efforts through international capacity development, education, and collaboration.

3 Outcomes and Objectives

GEBCO's outcomes and objectives are organised through five pillars critical to achieving its Vision and Mission: Data, Technologies and Standards, Capacity, Community, and Governance.

GEBCO aims to contribute to the overarching Ocean Decade outcomes, whereby striving for Oceans will be clean, healthy and resilient, productive, predictable, safe, accessible as well as inspiring and engaging.

GEBCO will promote seabed mapping activities focused on the creation of a definitive set of seabed data of the world ocean through initiatives such as its Nippon Foundation GEBCO Seabed 2030 project.

To achieve its mission, GEBCO seeks the following outcomes and strives towards objectives for each of the five pillars that are in line with and build on the vision, while supporting the parent organisations' goals.

3.1 Delivering open and fit for purpose seabed data

GEBCO supports, promotes, and encourages the acquisition, compilation, curation, distribution and scientific use of bathymetric and other seabed data and information acquired

during hydrographic surveys and ocean mapping. Seabed data, including bathymetric data in the first instance, are obtained through direct measurements, engineering, and technological innovation.

Objective

- To compile, maintain and improve the most accurate, reliable, and relevant sets of seabed data based on internationally approved geospatial standards focused on bathymetry and the authoritative GEBCO Gazetteer of Undersea Feature Names.
- Open and equitable (free and easy) access to comprehensive seabed data and information for everyone under *Creative Commons* or comparable license terms.

Outcomes

- A fully explored and well understood global seabed contributing towards improved ocean science and facilitating decision making on sustainable ocean management, conservation and the global economy.

3.2 Supporting, promoting and using innovative solutions to continuously improve the GEBCO data value chain

Seafloor mapping has evolved over the life of GEBCO from lead lines to sonar to multibeam echosounders. The future is bringing new technologies which are and will be critical to the success of GEBCO's mission.

GEBCO supports technological innovation and the development and adoption of standards as a means to better achieve its mission. Through technology and standards, GEBCO aims at serving and advising on the technical aspects of building and use of GEBCO datasets and products.

Objective

- To actively support, promote and use innovative solutions to continuously improve the seabed data value chain, including solutions contributing to ocean management, conservation and the global economy.

Outcome

- Innovative technologies and standards that improve the seabed data value chain and maximise benefits for GEBCO and the broader community.

3.3 Establishing global infrastructure to develop capacity

GEBCO aims to assist in developing capacity, mobilise contributors facilitate an enabling environment to engage users and decision-makers from all sectors in the development and use of science-based solutions. Through its endorsement of the mission statement both the UNESCO/IOC and IHO, GEBCO supports capability and capability development, including through the support of the Nippon Foundation GEBCO alumni network. This will be accomplished via stakeholder engagement, communications, and capacity development / training.

Objectives

- Establish a globally distributed network of facilities and experts to support communication, encourage education and promote training.
- To double global ocean mapping capacity in the next five years.

Outcome

- An engaged, qualified, and diverse global community of professionals inspired to support GEBCO in executing its mission and vision.

3.4 Engaging communities and partners to best deliver GEBCO's mission

Developing and nurturing a diverse, global, and dynamic community that shares GEBCO's vision and has a will to increase our knowledge of the ocean is key for the success of GEBCO.

Objectives

- Increase engagement with the general public to improve their awareness of the relevance of GEBCO's work.
- Seek ongoing support of global leadership from all sectors and parent organisations for GEBCO.

Outcome

- A diverse community that understands the importance of GEBCO and engages and actively contributes to the programme.

3.5 Gaining support for our mission through robust processes that influence decision-making

Ensuring synchronisation and coherence between GEBCO Guiding Committee's governance and strategy is critical for formulating a clear vision and ensuring the effective execution of the strategy. The development of a Governance review encompassing stakeholder engagement, organisational structure mapping, legal framework assessment, governance instrument gap analysis, and financial status review will provide means to enhance oversight and accountability of GEBCO.

Objectives

- To build a sustainable GEBCO Marine Spatial Data Infrastructure (MSDI).
- To influence policy through robust science-based evidence to increasing support for sustained public and industry seabed mapping.

Outcomes

- An adequately funded long-term programme under the IHO and IOC of UNESCO.
- Improved coordination of ocean mapping efforts that maximise benefits to all ocean stakeholders.

4 Principles and strategies to deliver our objectives.

To deliver its strategy in the most effective way, GEBCO embraces the following principles:

- Support the IOC and IHO in engaging with national government and coordinating efforts, including for waters under national sovereignty from a coastal state and national government perspective.
- Engage at the UN and other multilateral organisations to make sure that GEBCO is represented in relevant policy discussions.
- Leverage the parent organisations, subcommittees, subordinate projects and other relevant initiatives, such as the Nippon Foundation GEBCO Seabed 2030 project.
- Nurture and develop partnerships with stakeholders to enhance visibility and efficiency in delivering this strategy
- Ensure the entire ocean space is considered by focusing the efforts on both the areas beyond national jurisdictions (ABNJ) as well as regions under national sovereignty.
- Ensure open, diverse, equitable and inclusive cultures striving for outcomes that are overarching, ambitious, and span generations, gender, cultures, nations, and sectors.

5 A better future

After 120 years of activity, GEBCO more than ever must think about the future it wants for the ocean for the coming generations. GEBCO's future activities will continue to aim at improving humanities knowledge of the ocean through striving to increase free and easy access to seabed datasets and related knowledge built on. Beyond 2030, GEBCO is committed to sustaining the significant momentum built in the field of ocean science during the early part of the twenty-first century, primarily through the efforts of initiatives such as the Nippon Foundation GEBCO Seabed 2030 project and the United Nations Decade of Ocean Science for Sustainable Development, ensuring their dynamic achievements continue into the next decade

New initiatives, partnerships, and projects should be freely discussed, as long as they follow the fundamental principles of GEBCO as set in this strategy and have a clear purpose.

A better or an enhanced future for GEBCO could include but is not limited to:

- Evolving GEBCO's governance to allow the programme and community to properly and effectively exert itself as the thought leaders in the world of seabed mapping, and to be able to embark on new innovations and initiatives in pursuant of our aims and objectives.
- The promotion and acquisition of an expanding type of datasets pertinent to the geologic nature of the seafloor, and immediate sub-seafloor, benthic ecosystems, and

administrative layout of Marine Protected Areas (MPAs) that will support the enhanced understanding of the seafloor in a three-dimensional context.

- Support coastal communities and indigenous knowledge.
- Continue to support ocean literacy to raise awareness, knowledge and caring about the ocean.
- Endeavour to promote the development of new technology for the benefit of seafloor data and products and promote their use.

GEBCO Governance Review

Executive Summary

The GEBCO (General Bathymetric Chart of the Oceans) Governance Review Report provides an in-depth analysis of the entity's governance structures and practices, aimed at enhancing its operational efficiency and alignment with the strategic objectives of its parent organizations, the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO. The review was motivated by the recognition of the rapidly changing ocean science and seabed mapping landscape, necessitating a more robust programme management and continuous improvement approach.

Key components of the review include an examination of the organizational and governance arrangements within GEBCO, its committees, and its interactions with external bodies. The review also highlights the importance of GEBCO's work considering the UN Decade of Ocean Science for Sustainable Development and the need for increased international coordination in ocean data collection.

Findings and recommendations address the need for clearer governance structures, enhanced stakeholder engagement, risk management practices, and the establishment of a continuous improvement culture. The review emphasizes the importance of aligning GEBCO's work with the newly commissioned GEBCO Strategy, which was developed in parallel to this governance review.

The report suggests several next steps, including the presentation of the report to the GEBCO Guiding Committee (GGC) for consideration, individual evaluation of recommendations, the development of an implementation plan, and the integration of a continuous improvement regime. Additionally, it calls for a governance review of the Sub-Committee on Undersea Feature Names (SCUFN) and an examination of the oversight of the Nippon Foundation-GEBCO Seabed 2030 project.

In conclusion, the review outlines the necessity for GEBCO to evolve its governance structures and processes to remain relevant and effective in the changing landscape of ocean science and seabed mapping.

1. Introduction

GEBCO was proposed in 1899 and became a reality in April 1903 when HSH Prince Albert I of Monaco offered to organize and finance the production of a new chart series designated: “The General Bathymetric Chart of the Oceans” (GEBCO), under the Prince’s Scientific Cabinet. In 1922 the responsibility for GEBCO was passed to the Director of the Oceanographic Museum of Monaco and in 1929 was transferred to the International Hydrographic Bureau (today the IHO). Since 1973, GEBCO has been a joint Programme of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

In December 2021, an informal meeting between the IHO, IOC and GEBCO Chair/Vice Chair was held to discuss areas of mutual interest and implications of emerging initiatives. In doing so it was acknowledged that a routine review of governance is not only good practice but would likely help to ensure GEBCO remained relevant during this period of change. In considering how to move forward, it was agreed that there was a strong need to ensure that the work of GEBCO continued to support the strategic objectives of IHO and IOC. The issue was further discussed at the 38th GEBCO Guiding Committee Meeting (GGC38) and it was agreed that a Governance Review should be commissioned under the leadership of IHO Assistant Director and GEBCO Secretary, Mr Sam Harper. A GEBCO Governance Review Project Team (GGRPT) was assembled to provide support to support the governance review process.

The results of the Governance review were initially planned for delivery to the 15th IHO Inter-Regional Coordination Committee (IRCC15) and the 32nd IOC Assembly, however the complexity of the task and available resources meant that this was deferred to the 16th IHO Inter-Regional Coordination Committee (IRCC16) and the 57th Session of the IOC Executive Council.

This report serves as a summary of the analysis, associated findings and recommendations of this Governance Review. In particular it sets out the methodology employed and sets out the basis for a more robust Programme Management and Continuous Improvement approach to the management of GEBCO activity.

2. Objectives and Context

The ocean science and seabed mapping landscape are undergoing significant change and the work of GEBCO (including that of the Nippon Foundation GEBCO Seabed 2030 Project) has never been so relevant or visible. The advent of the UN Decade of Ocean Science for Sustainable Development, together with the broader UN 2030 Agenda and associated Sustainable Development Goals (SDGs) necessitate increased international coordination in the collection and provision of ocean data to support a range of critical science interventions. The GEBCO programme entered its 120th Year in 2023 and it is widely accepted that GEBCO will need to evolve with this changing environment in order to remain relevant, and that its organizational structure has grown in recent years; to support this evolution this governance review has been commissioned.

The **aim** of the governance review is to ensure that the GEBCO programme has the appropriate governance in place to effectively and efficiently deliver its annual work plan (and those of its subordinate bodies and activities), guided by the strategic objectives of its parent organizations (IHO and IOC) and the GEBCO Strategy.

The main **objectives** of the governance review are to examine:

- The organizational and governance instruments and practices associated with GEBCO, its Guiding Committee and its Subcommittees;
- The organizational and governance arrangements between GEBCO and external bodies that it routinely interacts with;

- The organizational and governance arrangements for projects and any work items that GEBCO is involved in.

3. GEBCO Strategy

In preparing for undertaking the governance review, GGC noted that ordinarily, such an exercise would be designed to facilitate the delivery of a central strategy. For GEBCO, no such strategy existed; instead GEBCO had a central mission statement “to deliver the most authoritative, publicly available bathymetry of the world’s oceans”. Whilst the respective strategies of the parent organizations provided some guidance, nowhere was the connection explicitly stated. As a consequence, GGC commissioned the creation of a dedicated GEBCO Strategy which has been developed in parallel with this governance review.

Given that the GEBCO Strategy has not yet entered into force, GGC approved the following assumptions to be used in conducting the governance review:

- GEBCO is a Programme and will be an enduring endeavor;
- GEBCO will remain a joint Programme of the IHO and IOC;
- GEBCO relies on its parent organizations to hold funds;
- GEBCO needs to be able to fundraise, spend and allocate funds to its bodies, projects, collaborative activities and contracted services;
- The funds held on GEBCO’s behalf will/could increase significantly;
- GEBCO as a Programme will have subordinate committees, working groups, projects and other work packages.

Further, it was noted at GGC level that once the strategy enters into force, its aims and objectives should be carefully considered in future iterations of the governance review, or in the adoption of a continuous improvement approach to programme management.

4. GEBCO Governance Review Project Team (GGRPT) Terms of Reference and Rules of Procedure

Dedicated Terms of Reference (ToRs) and Rules of Procedure (RoPs) for the GGRPT were approved by 14th IHO Inter-Regional Coordination Committee (IRCC14) and the 56th Session of the IOC Executive Council. The ToRs and RoPs can be found at Appendix A.

5. External Advisory Panel

The GGRPT ToRs and RoPs state that “the project team is empowered to identify suitably qualified members of an External Advisory Panel, and to engage them as required in order to provide assurance to the GGC (and the bodies to which the GGC is accountable) that the work that undertaken is of sufficient quality, is impartial and is objective in its recommendations”. The GGRPT considered carefully how they would make use of such a resource, and it was decided that they could be used on an ad hoc basis.

To date, three of the four positions identified have been filled with only a representative from industry to be appointed. Currently the EAP is constituted of:

Legal Representative – Dr Virginie Tassin Campanella, Avocat à la Cour (Paris Bar) & EU/EFTA Attorney-at-Law (Zürich Bar), Vice President of the Scientific Council of INDEMER (Monaco)

Financial Representative – Mrs Sandrine Brunel, IHO Secretariat

Academic Representative – Dr Paul Elsner, University of London

Industry/Private Sector Representative – TBC

6. Governance Framework

In undertaking this governance review, it was essential to draw upon standardized best practices that exist as they relate to programme management and delivery. Whilst there is a huge amount of literature on the subject, and many different approaches to programme governance, two principal sources were referenced:

- ISO 21500:2021 (Guidance on project management), and ISO 21502:2020 (Guidance on programme management)
- The UK Government Functional Standard for Project Delivery

These two references were chosen on the basis that the ISO standards are by definition generic and cross cutting, whilst the UK Government Functional Standard for Project Delivery has proven utility (from the experience of the author) for the implementation and delivery of projects using the principles set out in the ISO Standards.

Below follows a summary of the key relevant elements that were considered in undertaking this review.

6.1. ISO 21500:2021 (Guidance on Project Management) and ISO 21502:2020 (Guidance on Programme Management)

ISO 21500:2021 and ISO 21502:2020 provide international standards and guidance on project and programme management. These standards offer a structured approach to managing initiatives effectively. In the context of a governance review of GEBCO, the following principles apply:

Governance Framework: Evaluate the presence of a well-defined governance framework within GEBCO. Ensure that roles, responsibilities, and authorities are clearly defined, and that there is alignment between project and programme governance structures.

Benefit Realization: Assess GEBCO's approach to defining, tracking, and realizing the benefits of its initiatives. Ensure that benefit realization plans are in place and that they align with the organization's mission and objectives.

Documentation and Record-Keeping: Examine GEBCO's documentation practices, including records of decisions, project plans, and governance meeting minutes. Ensure that documentation is thorough and accessible.

Change Management: Review how GEBCO handles changes to its projects and programmes. Assess the effectiveness of change control processes to minimize disruptions and ensure alignment with strategic goals.

Continuous Improvement: Promote a culture of continuous improvement within GEBCO by identifying opportunities to enhance governance processes and practices. Regularly review and update the governance framework to adapt to changing needs and best practices.

6.2. UK Government Functional Standard for Project Delivery

The UK Government Functional Standard for Project Delivery provides a comprehensive framework for managing projects effectively within governmental organizations. Whilst GEBCO is a jointly owned programme of two inter-governmental organizations (so not strictly speaking government

organizations), the expectations of good governance placed upon the parent organizations of GEBCO by their respective member states, means that this resource is highly relevant. In addition, the framework was used as the basis for the governance of a number of highly successful UK seabed mapping programmes (e.g. the Civil Hydrography Programme, The Commonwealth Marine Economies Programme and the Overseas Territories Seabed Mapping Programme). When applied to a governance review of GEBCO, the following key components and principles become relevant:

Governance Structure: Assess GEBCO's existing governance structure, including roles, responsibilities, and decision-making bodies. Ensure that the structure aligns with best practices and promotes accountability.

Stakeholder Engagement: Evaluate how GEBCO engages with its stakeholders, including government agencies, international organizations, and the public. Ensure transparency and consider the needs and expectations of various stakeholders.

Risk Management: Review GEBCO's risk management practices, including the identification, assessment, mitigation, and monitoring of risks. Ensure that risks are adequately addressed to protect the 'organization's mission and objectives.

Performance Measurement: Examine the key performance indicators (KPIs) and metrics used by GEBCO to measure project and programme success. Ensure that these measurements align with organizational goals.

Decision-Making Processes: Assess the clarity and effectiveness of decision-making processes within GEBCO, particularly at the governance and executive levels. Ensure that decisions are well-informed and transparent.

In summary, the UK Government Functional Standard for Project Delivery, ISO 21500:2021, and ISO 21502:2020 collectively provide a structured approach to governance and project/programme management. In conducting the governance review, these standards were used to assess and enhance governance structures, stakeholder engagement, risk management, performance measurement, decision-making processes, benefit realization, documentation, change management, and continuous improvement practices to align with best practices and meet GEBCO's objectives effectively.

7. Methodology and Scope

7.1. Stakeholder Engagement

The stakeholder engagement process undertaken blended desk-based research with targeted consultations to ensure a thorough understanding and integration of stakeholder perspectives into the review's development. Below is a summary of the approach taken:

Desk-Based Study. The majority of the research and analysis took the form of a desk-based study, which served as the primary method for gathering initial data, insights, and identifying findings. This approach allowed for the collection of extensive background information, setting a solid foundation for subsequent consultations.

Consultations with Key Stakeholders. A series of consultations were conducted with key stakeholders to delve deeper into the issues identified during the desk-based study. These

interactions were crucial for obtaining firsthand insights, feedback, and recommendations, ensuring that the governance review's direction was informed by those with a vested interest in its outcome.

Consultations with Chairs of the Sub-Committees. Special attention was given to engaging the Chairs of the Sub-Committees, who played a critical role in the consultation phase. All Chairs were given the opportunity to review the initial findings and, in many cases, have already begun addressing them. This targeted engagement ensured that the project's preliminary outcomes were scrutinized before specific recommendations were made.

Support from the External Advisory Panel (EAP): The External Advisory Panel (EAP) provided a key source of support and perspective from outside of the immediate GEBCO community. The legal advisor's input was instrumental in navigating the governance norms and legal structures of various international bodies, providing a nuanced understanding of the legal considerations impacting the programme.

7.2. Analysis and Identification of findings

Whilst the focus governance review was far broader than just the workings of the main GEBCO bodies, a series of guiding questions were developed to assist in the review of governance instruments and work plans. These questions were used as the starting point for the research and analysis, and provided consistency of approach, as well enabling the process to be repeatable. These questions were as follows:

- Do the relevant governance instruments exist?
- Are the governance instruments up to date and do they adequately support the work of the group or committee?
- Is the work plan clear, current and logically structured?
- Is the work of the GGC and SCs appropriately structured in terms of programme delivery hierarchy?
- Is the membership of the group or committee appropriate and are there any barriers to effective contribution?
- Are any relevant working practices sufficiently clear, formalized and fit for purpose?

7.3. Scope

The detailed analysis in the governance review is limited to the main GEBCO Bodies (GGC and the Sub-Committees), as well as those activities, projects and organizations that GEBCO interacts with or has some kind of functional relationship. One exception is SCUFN, as it operates far more independently than the other Sub-Committees and was deemed too complex to be included in the initial phase.

The internal workings and joint oversight of the Nippon Foundation – GEBCO Seabed 2030 Project is also out of scope in this initial phase. A general description and the nature of the relationship to the GEBCO and the GGC are described for completeness.

Both SCUFN and Seabed 2030 could be considered for future phases as it would certainly be valuable to have the most complete governance picture possible. In the case of SB2030, this would be particularly relevant if or when GEBCO develops other projects and partnerships.

The following specific areas of analysis are in scope of the governance review:

- Mapping of GEBCO organizational and functional structure, detailing the nature of any relationships, reporting lines, obligations or liabilities;
- Review of the legal structure and framework with a statement on the current and recommended future status (if change is deemed necessary);
- Review of financial arrangements with a statement on the current and recommended future status (if change is deemed necessary);
- A gap analysis of the current governance instruments (e.g. MoUs, ToRs etc.);

8. Organizational Mapping

8.1. Organizational Structure

A key element of the governance review was the mapping the organizational structure of the GEBCO Programme. This was a complex exercise; not least because the GEBCO Programme has evolved organically over the past 120 years. It is also the case that in some cases, the lack of governance instruments means that the exact nature of the reporting lines, and levels of autonomy and responsibilities are at best unclear, and at worst disputed. Figure 1 shows a representation of the organizational structure of the GEBCO Programme. It has been used for the basis of the governance review, analysis and governance instrument gap analysis.

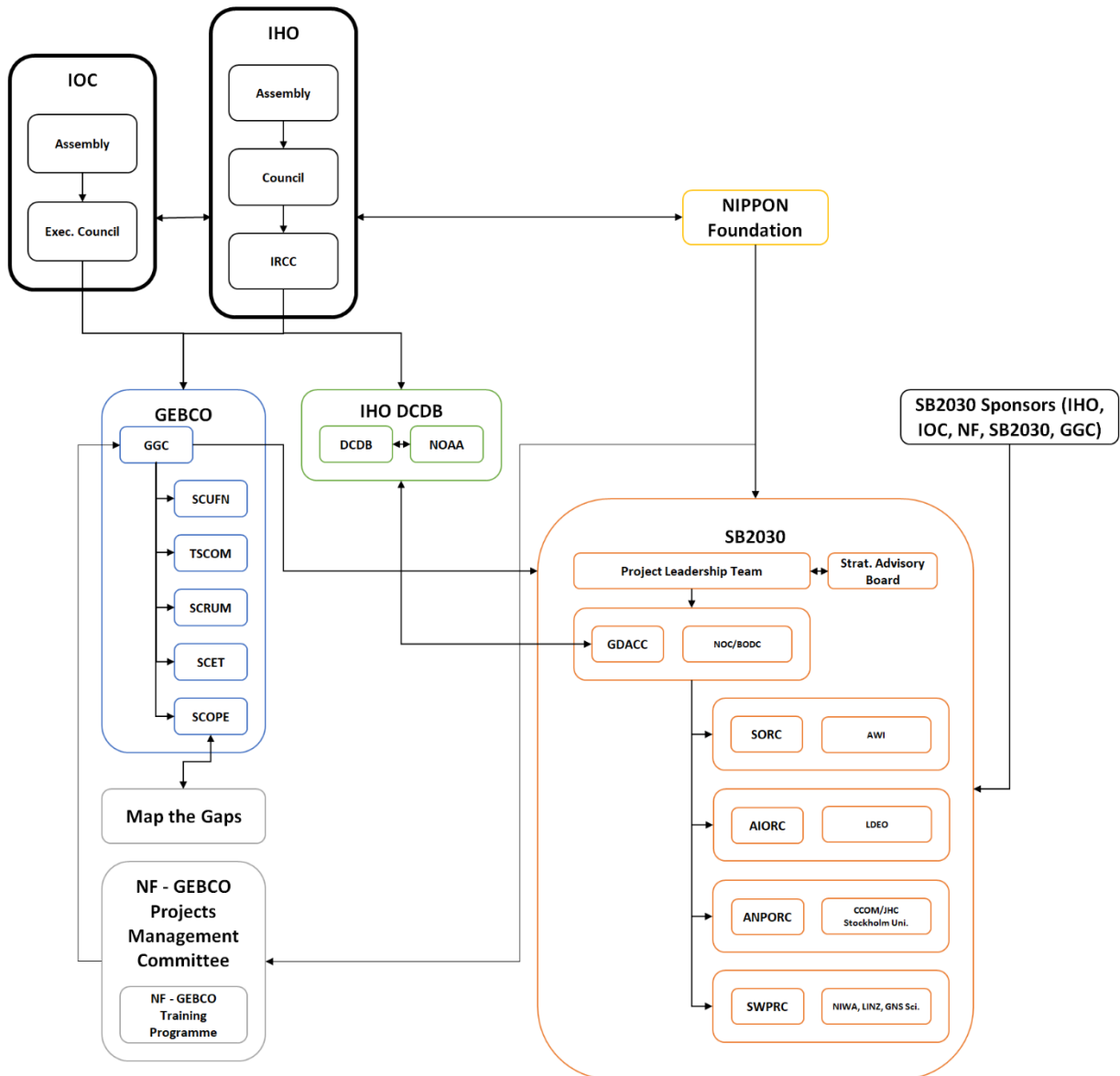


Figure 1 GEBCO Organizational Structure

Recommendation: The organizational diagram should be reviewed by the GGC with a definitive version agreed and included in the ToRs and RoPs of the GGC.

8.2. Key bodies and organs of GEBCO

8.2.1. GEBCO Guiding Committee

The GEBCO Guiding Committee leads the delivery of the GEBCO Programme. The GGC's operations are governed by its ToRs and RoPs (Appendix B) of which the latest version was adopted by the IOC on 4 July 2019 and the IHO on 5 June 2019. The GGC is made up of sixteen members; five Members appointed by the IHO, five Members appointed by the IOC, as well as the Chairs of GEBCO Sub-Committees and the Director of the IHO Data Centre for Digital Bathymetry (DCDB). Members of the GGC serve as experts in their personal capacity rather than as representatives of their organization and/or country. Representatives of the Secretariats of the IHO and IOC are permanent Observers in the GGC.

The objectives of the GGC are summarized as:

The GEBCO Guiding Committee shall:

- Guide the IHO-IOC GEBCO Project, under the general governance of IHO and IOC while recognizing and following IHO and IOC policies.
- Authorize the preparation and dissemination of maps, grids, data files and other appropriate depictions of the ocean floor.
- Identify the needs of the various user communities of the bathymetry of the world's oceans; study the ways and means whereby these needs can be met.
- Identify the necessary resources, both human and financial, for its undertakings and make appropriate recommendations to its parent organizations.
- Stimulate the flow of data relevant to the GEBCO Programme by actively identifying sources of new data and encouraging and promoting the release of data to appropriate data banks, with the objective of ensuring that maximum available data are provided to the IHO Data Centre for Digital Bathymetry (DCDB).
- Supervise the development, maintenance and routine updating of GEBCO products. Activities are to include but are not restricted to:
 - o Study and set out procedures for new compilations of bathymetry.
 - o Develop standards and methodologies for the production of bathymetric maps and grids and recommend their adoption to the IHO and IOC and to the seafloor mapping community.
 - o Supervise the development, production and updating of a worldwide grid of digital bathymetric data.
 - o Supervise the preparation and maintenance, in association with national and international bodies, of an authoritative IHO/IOC GEBCO Gazetteer of Undersea Feature Names.
 - o Study and implement the best distribution mechanism for the effective use of GEBCO products by all users.
 - o Investigate and develop appropriate logistical and financial arrangements necessary for the furtherance of the GEBCO Project, recognizing and taking into account the relevant IHO and IOC policies, and seeking the assistance of the Secretariats of the IHO and IOC as appropriate.
 - o Integrate into its products the geographical names of undersea features that appear in the IHO-IOC GEBCO Gazetteer of Undersea Feature Names.

8.2.2. Sub-Committee on Undersea Feature Names (SCUFN)

The Sub-Committee on Undersea Feature Names reports to the Joint IOC-IHO GEBCO Guiding Committee (GGC) as its designated authority for all matters concerning undersea feature names. It is the function of the Sub-Committee to select those names of undersea features in the world ocean appropriate for use on GEBCO graphical and digital products, on the IHO small-scale international chart series, and on the regional IBC series.

8.2.3. Technical Sub-Committee on Ocean Mapping (TSCOM)

The Technical Sub-Committee on Ocean Mapping (TSCOM) was established in 2006 to advise the GEBCO Guiding Committee and all associate groups interested in the building and use of the GEBCO product. In addition, TSCOM serves the greater bathymetric, hydrographic, and maritime communities as authoritative source for technical expertise in seafloor mapping and forum for discussion on emerging technologies and applications of bathymetric and hydrographic data. The

importance of this advising group is further stressed by The Nippon Foundation-GEBCO Seabed 2030 project.

TSCOM reports to the GGC as its designated authority for all technical matters relevant to the goals of GEBCO as set out in the ToRs and RoPs (Appendix C).

8.2.4. Sub-Committee on Regional Undersea Mapping (SCRUM)

At a meeting of some GEBCO Guiding Committee (GGC) members (and one IHB representative) in Silver Spring, Maryland, USA on 18-29 May 2009, it was decided that a new Sub-Committee was required to coordinate, encourage, and provide an interface with the various regional mapping efforts being conducted by IOC, IHO and others. In addition, such a Sub-Committee on Regional Undersea Mapping (SCRUM) could function as an Editorial Board endorsing regional products to be included in GEBCO. These Terms of Reference and Rules of Procedure were presented to the full GGC at the annual meeting on 1-2 October 2009 in Brest, France, and the creation of the Sub-Committee was approved on an interim basis. At the following GGC meeting in Lima, Peru, on 18 September 2010, the Committee approved the formation of SCRUM on a permanent basis, subject to the approval of IOC and IHO. Authority for the creation of this sub-committee is included in the GGC Terms of Reference, paragraph 1.9, which states that “As required, establish subordinate bodies (sub-committees and working groups) to fulfil the Committee Work Programme and approve the Terms of Reference and Rules of Procedure of those bodies, reviewing annually the continuing need for each subordinate body.” In accordance with paragraph 1.11 of the GEBCO Terms of Reference, SCRUM shall coordinate with regional mapping projects on the specifications and preparation of regional digital bathymetric models and charts, to ensure their compatibility with, and eventual inclusion in, GEBCO products.

SCRUM reports to GGC as its designated authority for all regional mapping and coordination matters relevant to the goals of GEBCO as set out in the ToRs and RoPs (Appendix D).

8.2.5. Sub-Committee on Outreach and Public Engagement (SCOPE)

At a meeting of the GEBCO Guiding Committee (GGC) in Busan, Republic of Korea on 16-17 November 2017, it was agreed that a new Sub-Committee was required to coordinate the communications, outreach and external relations strategy and activities being conducted to support and raise awareness of the GEBCO Project and to complement the focused outreach activities of the Seabed 2030 Initiative. SCOPE is required to work closely with all GEBCO Sub-Committees and with the Seabed 2030 Project Team to ensure a coordinated message, communications and engagement are achieved to support the activities of the IHO-IOC GEBCO Project. SCOPE also seeks to awareness of the GEBCO programme across regional and global communities with an interest in and need for ocean bathymetry data. The annual GEBCO Symposium, which has come to be known as the ‘Map the Gaps Symposium’ forms part of the SCOPE annual work plan.

SCOPE reports to the GGC as its designated authority for all outreach matters relevant to the goals of GEBCO as set out in the ToRs and RoPs (Appendix E).

8.2.6. Sub-Committee on Education and Training (SCET)

The Sub-Committee on Education and Training (SCET) was established in 2022 to develop and coordinate the education and training strategy of the GEBCO Programme. In addition, SCET aims to raise awareness amongst academic institutions of gaps in education and training that may impact on the progress and development of ocean mapping and in particular, the objectives of the GEBCO Programme. As the newest GEBCO Sub-Committee, SCET is still in the initiation phase and is yet to make meaningful progress against its work plan.

SCET reports to the GGC as its designated authority for all education and training matters relevant to the goals of GEBCO as set out in the ToRs and RoPs (Appendix F).

8.3. Relationship and reporting mapping

Based upon the entity's mapping exercise, an analysis of the key functional and reporting relationships was undertaken. This included a review of the existing governance instruments and the identification of where gaps exist. This analysis is summarized in table 1.

Table 1 Governance Instrument Gap Analysis

Relationship	Description	Existing Instruments	Gaps and Recommendations
IHO – IOC	<p>The nature of the relationship is a partnership between the parent organizations. This is currently described in a generic MoU that is far broader than just GEBCO. However, it also predates the advent of endeavors such as the UN Decade of Ocean Science for Sustainable Development and the Nippon Foundation – GEBCO Seabed 2030 Project.</p> <p>As noted in the summary of the financial review, there is currently no mechanism for the exchange of funds from the IOC to the IHO. This limits how this contribution can be applied and requires a separate funding allocation process.</p>	MoU	<ol style="list-style-type: none"> 1. The MoU should be revisited and refreshed to make sure it reflects all current endeavors. 2. A partnership arrangement should be established between the two organizations to allow the distribution/holding of funds in the central GEBCO fund at the IHO.
IHO – NOAA (DCDB)	<p>The Data Centre for Digital Bathymetry (DCDB) is the repository for much of the publicly available data that feeds into the GEBCO Grid as well as the Gazetteer of Undersea Feature Names. The DCDB is an IHO resource that is managed on behalf of the IHO Member States by the United States National Oceanic and Atmospheric Administration (NOAA). Prior to the start of the governance review, no</p>	MoU	<ol style="list-style-type: none"> 1. Review the MoU periodically or after any organizational change to ensure it is current and fit for purpose.

	<p>specific instrument other than the record of the IHO Conference Decision to establish the DCDB existed to describe this relationship. This has subsequently been rectified in the form of an MoU which was signed during the 3rd Session of the IHO Assembly in 2023.</p>		
IHO/IOC – GEBCO	<p>The only instrument that describes the relationship between the parent organizations and the GEBCO Programme are the GGC ToRs and RoPs, last updated in 2021.</p> <p>This document details that the GEBCO Guiding Committee is classed as a Joint Group of Experts under the IOC guidelines for subsidiary bodies, however there is no explanation of the status of the GGC as it relates to the IHO. In practice, the GGC reports into the IRCC and can be considered a subsidiary body of this IHO organ, however its exact status is not stipulated.</p> <p>The ToRs and RoPs refer to GEBCO as a project, despite a decision taken at GGC38 to reclassify it as a programme.</p>	GGC ToRs and RoPs	<ol style="list-style-type: none"> 1. The exact status of the GGC should be clarified as it relates to the IHO operating structure. 2. The ToRs and RoPs should be updated to reflect the GGC38 decision to reclassify the GEBCO Project as a Programme.
GGC – SCUFN	<p>The relationship and reporting lines for the ‘parent-child’ relationship between the GGC and SCUFN are described in SCUFN’s ToRs and RoPs. This document is currently under revision and is not in scope of this review</p>	ToRs and RoPs	nil

GGC – TSCOM	The relationship and reporting lines for the ‘parent-child’ relationship between the GGC and TSCOM are described in TSCOM’s ToRs and RoPs.	ToRs and RoPs	See 13.2.2
GGC – SCRUM	The relationship and reporting lines for the ‘parent-child’ relationship between the GGC and SCRUM are described in SCRUM’s ToRs and RoPs.	ToRs and RoPs	See 13.2.3
GGC – SCOPE	The relationship and reporting lines for the ‘parent-child’ relationship between the GGC and SCOPE are described in SCOPE’s ToRs and RoPs.	ToRs and RoPs	See 13.2.4
GGC – SCET	The relationship and reporting lines for the ‘parent-child’ relationship between the GGC and SCET are described in SCET’s ToRs and RoPs.	ToRs and RoPs	See 13.2.5
GEBCO/SCOPE – Map the Gaps	There is currently no instrument that describes the relationship between any of the GEBCO bodies and the Not For Profit organization ‘Map the Gaps’. In recent years, Map the Gaps has delivered what used to be the GEBCO Science week, now the Map the Gaps Symposium. Section 13.3.3 goes into more detail regarding the background and complexities regarding this situation, however given that Map the Gaps is an autonomous entity that draws a budget from GEBCO through SCOPE, an instrument of some kind should be put in place to	Nil	1. Develop an MoU or partnership agreement that clearly sets out the nature of the relationship between GEBCO and Map the Gaps. As a minimum this should set out clearly any joint decision making processes, liability, levels of autonomy and detail relating to branding and identify. See Feil! Fant ikke referansechilden.

	describe the operating relationship.		
GGC – SB2030	A number of documents exist that describe the operation of Seabed 2030, however there have been many iterations of these documents since the inception of the project. Whilst the operation of SB2030 is out of scope of this review, a dedicated piece of work should be undertaken to ensure that the latest versions of these documents a submitted to the GGC for review.		<p>1. SB2030 Governance documentation should be reviewed, and the latest versions submitted to the GGC and SB2030 Sponsors to ensure that all parties are aware of the current governance arrangements. See Feil! Fant ikke referansekinden.</p>
SCET/GGC – NF – GEBCO Training Programme	<p>The Nippon Foundation GEBCO Training Programme is in its 20th Year and predates the creation of SCET. More detail as to the background is provided in Feil! Fant ikke referansekinden., together with a specific recommendation for the oversight of the Programme.</p> <p>With the creation of SCET, it makes sense that the relationship between GEBCO’s nominated lead for education and training have a formal relationship with the NF - GEBCO Training Programme and the Parent Organizations, as happens with all the other Courses/Educational Programmes sponsored by donors (e.g. administrative aspects, management of the course, selection of the candidates, etc.).</p>	Nil	<p>1. Clarify the relationship between SCET and the NF – GEBCO Training Programme, especially as relates to oversight, and ensure that either existing instruments are adjusted, or new ones created to describe the governance arrangements.</p>
TSCOM - BODC	BODC manages the GEBCO website and, a number of	Nil	<p>1. Develop and Service Level Agreement that</p>

	<p>other GEBCO assets on behalf of the GEBCO programme. In doing so it draws a budget from TSCOM. Currently there is no instrument which describes the nature of this relationship and what the expected service level/deliverables are.</p>		<p>describes agreed deliverables from BODC on behalf of TSCOM/GEBCO.</p>
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9. GEBCO Programme Work Structure

As part of the Governance Review, the way in which GEBCO’s programme of work is structured was investigated. In doing so, the general principles of programme and project delivery were considered to identify where current work practices differed from the expected norms. Specifically, the UK Government Functional Standard for Project Delivery was used as the primary reference.

Within this governance framework, the principle of work programme hierarchy is established. Organizing programmatic work into a sensible hierarchy allows an organization to make sure that the cascade of information, guidance and reporting flows correctly, which in turn allows for effective performance management. Figure 2 shows the relationship between portfolios, programmes, projects, related non-project work and specific work packages.

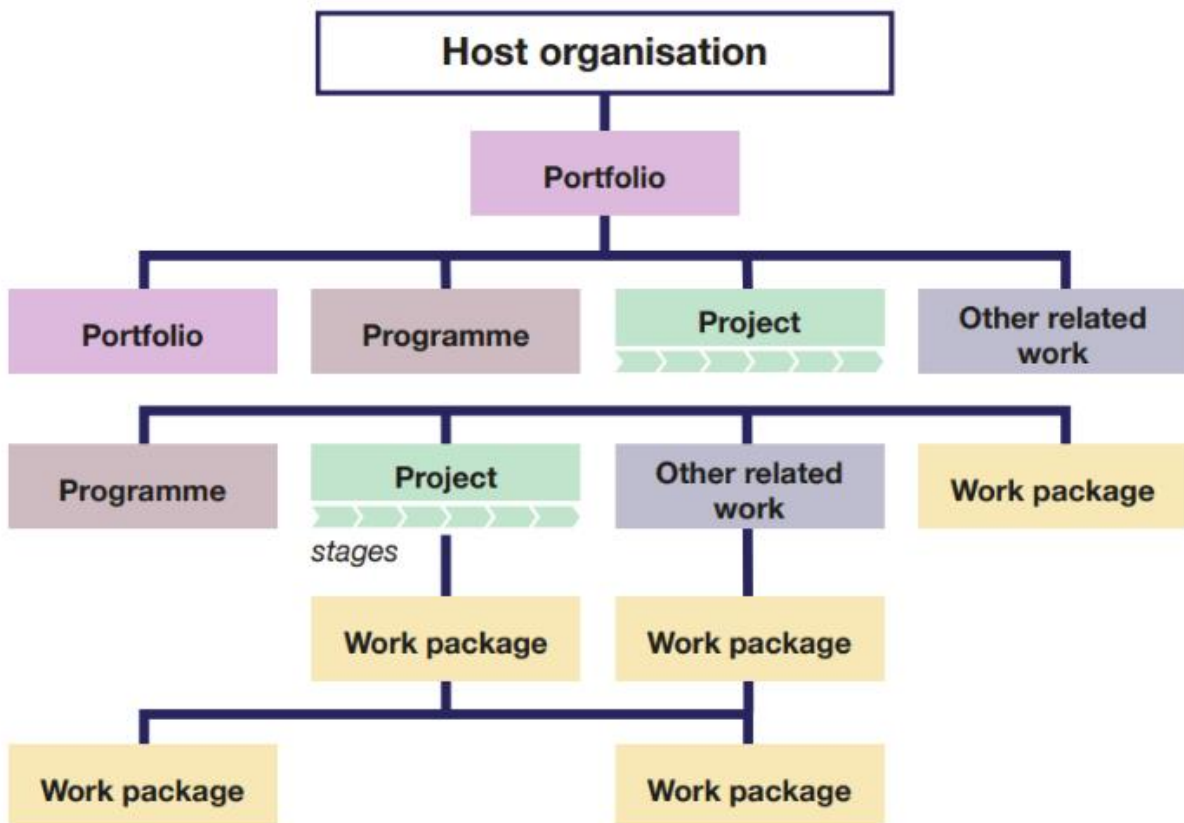


Figure 2 Programmatic Work Hierarchy (Reproduced from the UK Government Functional Standard for Project Delivery)

In considering how these principles might map across to the GEBCO Programme, it was also possible to identify whether the appropriate reporting and management bodies and practices were in place.

9.1. Current Programme Work Structure

In considering the current GEBCO Programme Work Structure, it was possible to map across from the generic work categories presented in the UK Government Functional Standard to the activity currently being undertaken within the programme. Figure 3 shows the current GEBCO Programme Work Structure, utilizing the same color coding as that presented in Figure 2.

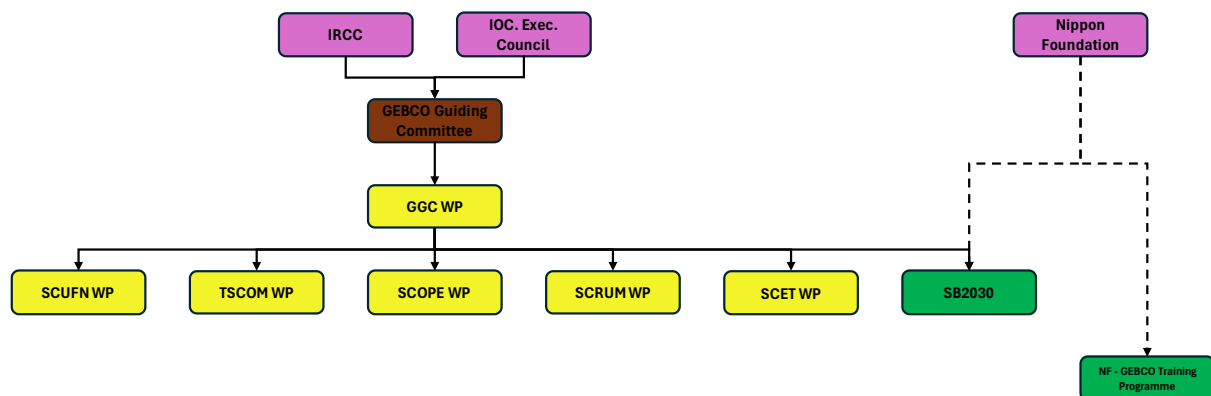


Figure 3 Suggested future GEBCO Work Programme Structure

Portfolio. Both the IRCC and the IOC Exec Council can be considered to manage portfolios of work of which the GEBCO Programme is a constituent part. Similarly, the NIPPON Foundation manages a portfolio of Programmes and Projects of which Seabed 2030 is one.

Programme. GEBCO itself is considered a programme, as it is enduring in nature and has within its work plan various activities that could be considered projects, work items or other non-project work.

Project. GEBCO has two main projects, the Seabed 2030 Project, and the GEBCO Training Programme, both of which are jointly managed with the Nippon Foundation as the main funding partner. It is possible that in the future, there may be other projects established and in doing so, careful consideration should be given to whether a dedicated programme management board needs to be established.

Work Package. GEBCO's programme of activity is currently described in a series of Work Plans. These work plans are analogous to Work Packages. The GGC has a master Work Plan which largely includes the delivery of the Work Plans of the Sub-Committees. However, in reality the work plans of the Sub-Committees are developed independently of the GGC and there is a question as to how the GGC can properly monitor performance.

9.2. Processes and Procedures

Within the work of GEBCO, there are a number of complex processes and procedures that are not covered by the ToRs and RoPs. These mainly relate to the management and oversight of the formal publications and products that GEBCO is responsible for. An example would be the procedure for the production of official GEBCO products, and how the appropriate checks and safeguards are put in place to ensure that international norms and best practices are observed. This is also important to ensure the protocols of the parent organizations are adhered to.

It is suggested that where these processes exist, they should be captured in a Standard Operating Procedure (SOP) or similar and maintained on a regular basis. Such documents should have a clear owner and reference that can be referred to in any continuous improvement schema.

9.3. Recommendations

In considering how well GEBCO's work programme structure conforms to expected norms, it is obvious that there is very good alignment with the UK Government Functional Standard. However, what is unclear is how well the cascade of activity connects from discrete work items in each of the sub-committees work plans, through to the master work plan of the GGC and on to the objectives of the GEBCO Programme. This may well be because of the absence of a dedicated strategy and once complete, this should certainly be used to set clear measurement criteria that can be used to assess the relevance of activities to achieving GEBCO's aims.

Recommendation: Ensure there is a clear cascade and linkage between the objectives set out in the GEBCO Strategy and the individual work items included in the work plans.

As the number of Projects that GEBCO manages increases, consideration should be given as to whether a programme management board should be established with key stakeholders who can advise on and monitor delivery. This would ideally sit in between the Sub-Committees and the GGC or be a subset of the GGC.

Recommendation: Consider the creation of a dedicated programme management board.

In the absence of a programme management board, it appears that there is a need for dedicated programme management resources. While the Chair teams of the Sub-Committees have responsibility for the management of their individual work plans, as do the GGC of theirs, the Programme is so complex and made up of so many discrete activities (and associated budget lines), that ordinarily there would be a dedicated programme management resource that is responsible for monitoring and reporting on progress. This responsibility is beyond the scope of the role of any of the GGC Officials or the Secretary.

Recommendation: Consider the need for a dedicated GEBCO Programme Manager

10. Finance

The review of the financial situation as part of the governance review was limited to a review of the GEBCO budget, funding and approval process. This process has been revised and is described in Appendix G. of this report.

10.1. Funding

The General Bathymetric Chart of the Oceans (GEBCO) programme, despite its significant size and importance, operates on a relatively modest budget. It secures funding from a variety of sources: approximately 10,000 Euros from the International Hydrographic Organization (IHO) budget, 8,000 Euros from the Government of Monaco, and 20,000 Euros biannually from the Intergovernmental Oceanographic Commission (IOC), though this latter amount is not directly transferred to GEBCO's central fund but is instead redistributed if not utilized. Notably, the Nippon Foundation stands out as GEBCO's largest benefactor, contributing roughly 4 million USD across both the Seabed 2030 (SB2030) and GEBCO Training Programmes, highlighting the foundation's significant investment in the advancement of oceanographic research and seabed mapping.

10.2. Future ambition

It is a stated ambition, if not a necessity, for GEBCO to increase the funding it has available, as well as diversify its funding sources. In doing so, a dedicated funding strategy was commissioned in 2020 to identify options for how GEBCO could achieve this.

The resulting report detailed a number of approaches to soliciting funding, as well as options for how GEBCO would need to adapt its structure (and potential legal status) to accommodate these activities. This report is included at Appendix H. of this report.

Recommendation: The options proposed within the Funding Proposal report should be considered alongside the legal review once this governance review has been considered and an implementation plan produced. Consideration should also be given to work of the IHO Funding Project Team to avoid duplication and take advantage of synergies.

11. Legal Review

No full legal review has been conducted to date. In consultation with the legal advisor from the External Advisory Panel, it was agreed that until the GEBCO Strategy was in place, and in light of this the options set out in the funding Strategy had been considered by the GGC and Parent organizations, there would be limited benefit in undertaking this exercise.

Recommendation: A full review of the current and potential future legal status of the GEBCO Programme be commissioned. This review should consider the GEBCO Strategy and the previously commissioned Funding Strategy.

12. Risk Management

Risk management in the context of programme delivery involves identifying, assessing, and mitigating risks that could potentially impact the programme's success. This process is critical for several reasons:

Ensures Programme Objectives Are Met. By identifying and mitigating risks early, risk management helps ensure that the programme can achieve its objectives within the set timelines and budget.

Improves Decision Making. Through a structured approach to identifying and evaluating risks, programme managers can make informed decisions, prioritizing resources and efforts where they are most needed.

Enhances Resource Efficiency. Risk management allows for the efficient allocation of resources, ensuring that time, money, and other resources are invested in areas that mitigate significant risks and support the programme's success.

Increases Stakeholder Confidence. By demonstrating a proactive approach to identifying and managing risks, confidence among stakeholders (including future potential funders of the GEBCO Programme who may wish to do due diligence), that the programme will be delivered successfully.

Facilitates Continuous Improvement. By learning from identified risks and the outcomes of mitigation strategies, a Programme such as GEBCO can continuously improve their risk management practices and programme delivery capabilities.

In conducting the governance review, and specifically assessing the current GEBCO Programme work structure and practices, it is obvious that there is no discernable risk management process in place, nor does it appear to be considered in the designing of work items. Work plans include a very simplistic prioritization score against individual work items but only for the purposes of assigning budget.

Risk management is a key component of a Continuous Improvement process which is further elaborated on in section 13.3.

Recommendation: All bodies that have a work plan adopt a risk management process to support effective programme delivery

13. Analysis and Findings

Based upon organizational and functional mapping of the GEBCO Programme, the following findings have been identified. They are presented by organizational entity to aid discussion and validation. Each finding has been categorized by 'type' and where appropriate, a recommendation for onward action suggested. It should be noted that the suggested recommendations (where made) are to stimulate discussion and are subject to agreement by those bodies affected and ultimately endorsement by the GGC.

13.1. Parent Organizations

Table 2 provides a summary of the key finding relating to the two parent organizations. The review of existing governance instruments showed that the MoU between the two organizations predated key developments such as the UN Decade of Ocean Science for sustainable development and Seabed 2030.

Table 2 Parent Organization Findings

Finding Ref.	Type	Detail	Recommendation
IHO - IOC 1	Instrument	MoU between two organizations is out of date and predates SB2030 and the UN Ocean Decade	Review and update MoU
IHO – IOC 2	Instrument	No Mechanism to transfer funds between parent organizations	Develop partnership arrangement

13.2. Analysis of Key GEBCO bodies

13.2.1. GEBCO Guiding Committee

Table 3 summarizes the findings as relate to the GGC. The main themes relate to the membership of the GGC and the way that the modern portfolio of work is structured. The nature of the findings identified are largely a reflection of how the work of the GEBCO Programme has evolved over recent years into a complex portfolio of different work items.

One of the key challenges identified was the size and nature of the GGC, currently at 16 members. Further, there was a lack of clarity around the roles and responsibilities of the GGC members given that 10 are appointed by either IHO and IOC, 5 are Chairs of the Sub-Committees, and 1 is the ex-officio member by virtue of the role of the director of the DCDB. This structure makes the GGC large, flat in structure, and opaque when it comes to authority and circular reporting. It is felt that the structure of the GGC could be adapted to reduce its size and separate the functions of the executive strategic leadership, and the tactical programme manager functions.

Table 3 GGC Findings

Finding Ref.	Type	Detail	Recommendation
GGC 1	Instrument	ToRs largely fit for purpose but should be reviewed in light of the Strategy to ensure that objectives are consistent	Review ToRs to ensure alignment with strategy
GGC 2	Process	No portfolio/project board and lack of programme structure	Consider these deficiencies when approving future versions of WPs
GGC 3	Membership	Membership (especially Ex-Officio) is problematic in that there is the potential for conflict of interest where committee members are the recipient of GEBCO project funds	Consider the make up of the GGC membership against new strategy and governance norms
GGC 4	Finance	No formal guidance on financial management and accountability	Note and include in financial review
GGC 5	Membership	Unlike IHO/IOC appointed members of the GGC, it is not a condition of SC Chair's membership of GGC to be able to attend annual meetings, with associated T&S covered by their employer or individually.	Develop a policy that makes it clear to what extent all members of the GGC are expected to fund their own travel.
GGC 6	Membership	The number of GGC members (15) is quite large for a body such as GEBCO	Consider the shape and size of the GGC
GGC 7	Membership	The roles and responsibilities of GGC members are not clear, and further confused by the three categories of appointment.	ToRs and GGC Membership list to clarify roles and responsibilities of GGC member and whether the categories of appointment support or hinder effective delivery of GGC business

13.2.2. TSCOM

Table 4 summarizes the findings as they relate to TSCOM. TSCOM (with perhaps the exception of SCUFN) has the largest and most complex programme of work. As such, it has a number of functional relationships and dependencies on external entities. A number of the findings relate to how these relationships could be formalized and the potential for consolidating work items. It is likely that the latter will only be possible once the GEBCO Strategy has been completed.

Table 4 TSCOM Findings

Finding Ref.	Type	Detail	Recommendation
TSCOM 1	Instrument	ToRs largely fit for purpose but should be reviewed in light of the Strategy to ensure that objectives are consistent	Review ToRs to ensure alignment with Strategy
TSCOM 2	Operations	Work Plan is very complex and could be rationalised	Rationalise work plan to reduce items and improve clarity
TSCOM 3	Instrument	No instrument in place to describe the role of NOAA in hosting GEBCO Data in the DCDB	Incorporate into IHO - DCDB MoU
TSCOM 4	Instrument	No instrument in place to describe the role of NOC/BODC in managing the GEBCO website	IHO/IOC to consider implementing an MoU
TSCOM 5	Membership	Need for dedicated secretary that can accommodate more frequent meetings	Identify a secretary from within the membership, establish terms of service and update ToRs accordingly
TSCOM 6	Instrument	No formal instrument/agreement to describe interface with SB2030	Conduct a review of the SB2030 Governance Documents
TSCOM 7	Product	No formal statement of the ownership of GEBCO products	Give all GEBCO products an IHO/IOC formal publication reference e.g. Digital Atlas
TSCOM 8	Membership	Number of full members could hinder decision making and ability to be quorate.	Review and potentially reduce number of full members – adjusting ToRs as required.

13.2.3. SCRUM

Table 5 summarizes the findings as they relate to SCRUM. The main issue identified related to the work of SCRUM that supports other activities/bodies such as TSCOM and Seabed 2030. In discussion with the SCRUM Chair Team it is evident that this is likely to be an exercise in clarifying the wording in the work plan as opposed to materially adjusting any activity.

Table 5 SCRUM Findings

Finding Ref.	Type	Detail	Recommendation
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SCRUM 1	Instrument	ToRs largely fit for purpose but should be reviewed in light of the Strategy to ensure that objectives are consistent	Review ToRs to ensure alignment with Strategy
SCRUM 2	Work Plan	Potential overlap in terms of scope with TSCOM/SB2030 - May just need clarification in Work Plan	Work with other SCs and SB2030 team to review work plan and add notation where required to clarify areas of common interest
SCRUM 3	Work Plan	Work plan is complicated and could be rationalised	Review Work plan once strategy has been published and agree prioritisation
SCRUM 4	Process	Timing of meetings could be adjusted to have one preparatory virtual meeting and one in person meeting alongside Map the Gaps and GGC	SCRUM to consider and agree on a routine that works for membership
SCRUM 5	Membership	Number of full members could hinder decision making and ability to be quorate.	Review and potentially reduce number of full members – adjusting ToRs as required.

13.2.4. SCOPE

Table 6 summarizes the findings as they relate to SCOPE. The main issues identified surround the interaction between SCOPE and the other GEBCO bodies, including the parent organizations. Given the purpose of SCOPE is to coordinate and support the outreach and communication requirements of the GEBCO Programme, strong coordination with the other GECBO bodies is essential. Further, the Parent Organizations being IGOs that are accountable to their member states, need to have a more effective means of supporting the work of SCOPE. It is felt this could be achieved by the creation of a new category of participation/membership for the Communication leads of the parent organization, together with the formalization of a process for review planned communication material.

Table 6 SCOPE Findings

Finding Ref.	Type	Detail	Recommendation
SCOPE 1	Instrument	ToRs largely fit for purpose but should be reviewed in light of the Strategy to ensure that objectives are consistent	Review ToRs to ensure alignment with Strategy
SCOPE 2	Process	Potential need to define a formal process for approval of comms material that affects other SCs or bodies.	Define process diagram that can be appended to ToRs

SCOPE 3	Process	Timing of meetings could be adjusted to have one preparatory virtual meeting and one in person meeting alongside Map the Gaps and GGC	SCRUM to consider and agree on a routine that works for membership
SCOPE 4	Membership	Role of Reps of IHO/IOC unclear and process for reviewing outward communications activity not in place.	Consider a new category of participation of IHO/IOC Comms Reps in SCOPE
SCOPE 5	Membership	Number of full members could hinder decision making and ability to be quorate.	Review and potentially reduce number of full members – adjusting ToRs as required.
SCOPE 6	Relationship	Formal relationship between Map the Gaps and SCOPE/GEBCO is unclear and undocumented.	Relationship should be clarified and formalized via an appropriate instrument.

13.2.5. SCET

SCET is the newest Sub-Committee and is still in its initiation phase. As a consequence, the only finding relates to the need to review the ToRs once the new GEBCO Strategy has been developed.

13.3. Ancillary Bodies, Entities and Activities

In addition to the GEBCO Sub-Committees, there are several bodies, entities and activities that GEBCO either collaborates on or with to deliver its objectives. The governance that surrounds these endeavors is briefly described below, but in all cases, further work may be required to fully review the associated working practices once the core GEBCO governance has been refreshed.

13.3.1. Nippon Foundation GEBCO Seabed 2030 Project

The Nippon Foundation-GEBCO Seabed 2030 (SB2030) Project is a collaborative project aimed at mapping the entire ocean floor by the year 2030. This initiative seeks to bring together existing data with new information obtained through various mapping efforts to create a comprehensive, freely available map of the world's seabed. The project is a partnership between The Nippon Foundation, a private philanthropic organization in Japan, and GEBCO.

SB2030 reports annually to the GGC on progress and is supported by a Strategic Advisory Group. In addition, a SB2030 ‘Sponsors’ meeting is convened at least annually where items of mutual strategic interest are discussed informally. As described in 8.3, whilst SB2030 the internal management of SB2030 was out of scope of this governance review, the existing governance documentation should be reviewed and submitted to the GGC (and other concerned parties) for consideration.

One challenge identified with involving the GGC in the planning of SB2030 activity is the differing reporting years associated with the Nippon Foundation and the senior bodies of the Parent

Organizations. This may be helped by an adjustment to the structure of the GGC or the creation of a Programme Management Board as recommended in 9.2.

13.3.2. Nippon Foundation – GEBCO Training Programme

The Nippon Foundation – GEBCO Training Programme, delivered at UNH is in its 20th year. In addition to seven students currently at UNH, 112 scholars, from 45 countries have been through the course. Following the Alumni gathering in Tokyo in August of 2023, a detailed survey of the Alumni was conducted to better understand how well the program meets current and future needs. The results of this review are currently under discussion with the Nippon Foundation. The review will be completed in time to introduce any changes for the 21st year of the programme starting in September 2024.

The course is funded by the Nippon Foundation and delivered by the University of New Hampshire. The funds are held by the IHO on behalf of the UNH and re-distributed as required.

It was reported to GGC 40 that “the NF Project Management Committee has oversight, on behalf of the GGC, of the training programme at UNH and other NF funded projects; not including Seabed 2030. Current members are Robin Falconer (chair), Shin Tani, Martin Jakobsson, Hugo Montoro, Taisei Morishita, Dave Monahan and Rochelle Wigley. However, it is not clear what the status of this committee is, and no governance documentation describing its remit has been identified. The role of the two parent organizations (IHO and IOC) is unclear, and is notably different from the management of other donor funded educational programmes that exist. As recommended in 8.3, consideration should be given as to the relationship between the NF – GEBCO Training Programme and SCET, especially as relates to oversight, and appropriate governance instruments should be put in place. In any case, some manner of formal oversight or external guidance should be available to those delivering the Training Programme.

13.3.3. Map the Gaps

Map the Gaps (MtGs) non-profit organization registered in the USA, is focused exclusively on ocean floor exploration and committed to providing open-access data via international collaboration. MtGs is overseen by a board of five directors and is engaged in a range of projects around the world. In recent years, MtGs has delivered the eponymous annual symposium which evolved from the original GEBCO Science Week. MtGs delivers the symposium as part of the SCOPE Work Programme and as such receives funding from GEBCO. As reported in 8.3, there is no governance instrument in place that describes either the relationship between MtGs and GEBCO, nor the associated roles and responsibilities. It is not clear whether MtGs is delivering the symposium for GEBCO, or whether GEBCO is supporting an independent activity that supports the mutual aims of both organizations. This situation should be clarified as recommended in 8.3.

14. Continuous Improvement

A key component of this governance review is the proposal for a continuous improvement process that would help GEBCO evolve alongside good governance whilst negating the need for another full review in the future. In considering the gaps in risk and programme management processes, together with the key characteristics of the GEBCO programme, it is suggested that implementing a continuous improvement process that integrates an issues log and risk register could significantly enhance the effectiveness, efficiency, and safety of the programme. Below is a tailored proposal outlining a structured approach to developing such a mechanism which is adapted from those principles set out in ISO 21500:2021 and ISO 21502:2020.

Continuous Improvement Process Proposal for the GEBCO Programme

Objective: Establish a framework for continuous improvement within the GEBCO Programme, leveraging an issues log and risk register to identify, assess, and mitigate risks and issues promptly and effectively.

Issues Log. A key component of any continuous improvement process is an issues log. This is a simple means of capturing any issues or observations during the delivery of the work plan, or in the conducting of meetings, undertaking an initial analysis of the nature of the issue, identifying or connecting to any specific programme risks, agreeing a priority for resolution and tracking progress. Such an issues log could take the form of a spreadsheet and could be held centrally at the GGC level or individually at the Sub-Committee level.

Risk Register. Develop a comprehensive risk register that identifies potential risks, their likelihood, impact, and strategies for mitigation. This register should be dynamic, allowing for the addition of new risks as they are identified.

Linking the Issues Log and Risk Register. Establish a process where issues from the log are reviewed to identify new risks or reassess existing ones in the risk register. This integration ensures that the programme is proactive in risk management.

Regular Review. The review of the issues log and risk register should be built into the standing agendas of the annual meetings of the GGC and Sub-Committees. Key risks and issues should be included in the annual reporting of the GGC to the IHO IRCC and the IOC Executive Council.

Continuous Improvement Culture. It is important to embed a culture of continuous improvement by encouraging all GEBCO contributors to engage in identifying risks and issues. This should be an expectation of those proposing work items, especially those for which GEBCO funding is being allocated.

Lessons Identified. On completion of key pieces of work, where a risk is successfully mitigated or an issue is appropriately managed, time should be taken to identify any lessons that would be useful consideration when undertaking future activity. These lessons can be included in the issues log.

Performance measurement. Whilst developing dedicated key performance indicators relating to risk and issues management would probably be overkill for a programme such as GEBCO, a general review as to the utility of the process and whether it is fit for purpose should be encouraged.

Feedback Mechanism. Create a mechanism for receiving feedback on the continuous improvement process from team members and stakeholders. Use this feedback to refine and enhance the process continuously.

Recommendation: Consider the proposal for a continuous improvement process and implement into GEBCO Programme business as usual practices.

15. Conclusion and Next Steps

15.1. Key Observations

The governance review process was significantly more extensive and complex than initially anticipated, highlighting the intricate nature of the structures involved. Central to the issues identified were the need for better formalization of processes and a clearer definition of roles, responsibilities, and accountabilities, which combined may result in a systemic lack of clarity that could hamper operational effectiveness. A key gap identified was the absence of dedicated

programme management resource which would ideally bridge the operational gap between the Sub-Committee Chairs and the GGC.

A key finding is the need to review the GGC in terms of its size, structure, and function. This reform is deemed essential and should involve the parent organizations. Further, particular care should be taken to avoid dilution of purpose and effectiveness by expanding the GGC membership in the quest for inclusivity.

As GEBCO continues on its growth trajectory, it's clear that its governance practices must evolve in tandem to support this development effectively. The absence of a GEBCO strategy during the governance review limited the ability to pinpoint specific structural reforms. This highlights the necessity for future governance iterations to be closely aligned with the new strategy once in place, integrating a continuous improvement regime as a fundamental aspect of GEBCO's operational ethos. Together, these observations paint a picture of an organization at a crossroads, where strategic planning, clarity in governance, and the establishment of dedicated management resources are critical for its future direction and effectiveness.

15.2. List of Recommendations

Table 7. lists all Recommendations that have been discussed in this report. They are provided here with the corresponding section number and subject area. Table 7 is provided as aid to assessing the findings in this report and care should be taken to read them in the context of the analysis provided in the corresponding sections.

Table 7 Summary of Recommendations

Section Number	Subject	Recommendation
8.1	Organizational Structure	The organizational diagram should be reviewed by the GGC with a definitive version agreed and included in the ToRs and RoPs of the GGC.
8.3	Relationship and Reporting Mapping – IHO – IOC	The MoU should be revisited and refreshed to make sure it reflects all current endeavors.
8.3	Relationship and Reporting Mapping – IHO – IOC	A partnership arrangement should be established between the two organizations to allow the distribution/holding of funds in the central GEBCO fund at the IHO.
8.3	Relationship and Reporting Mapping – IHO – NOAA (DCDB)	Review the MoU periodically or after any organizational change to ensure it is current and fit for purpose.
8.3	Relationship and Reporting Mapping – IHO/IOC - GEBCO	The exact status of the GGC should be clarified as it relates to the IHO operating structure.

8.3	Relationship and Reporting Mapping – IHO/IOC - GEBCO	The ToRs and RoPs should be updated to reflect the GGC38 decision to reclassify the GEBCO Project as a Programme.
8.3	Relationship and Reporting Mapping – GBECO/SCOPE – Map the Gaps	Develop an MoU or partnership agreement that clearly sets out the nature of the relationship between GEBCO and Map the Gaps. As a minimum this should set out clearly any joint decision-making processes, liability, levels of autonomy and detail relating to branding and identify.
8.3	GGC – SB2030	SB2030 Governance documentation should be reviewed, and the latest versions submitted to the GGC and SB2030 Sponsors to ensure that all parties are aware of the current governance arrangements.
8.3	Relationship and Reporting Mapping – SCET/GGC – NF – GEBCO Training Programme	Clarify the relationship between SCET and the NF – GEBCO Training Programme, especially as relates to oversight, and ensure that either existing instruments are adjusted, or new ones created to describe the governance arrangements.
8.3	Relationship and Reporting Mapping – TSCOM - BODC	Develop and Service Level Agreement that describes agreed deliverables from BODC on behalf of TSCOM/GEBCO.
9.3	Current Programme Work Structure	Ensure there is a clear cascade and linkage between the objectives set out in the GEBCO Strategy and the individual work items included in the work plans.
9.3	Current Programme Work Structure	Consider the creation of a dedicated programme management board.
9.3	Current Programme Work Structure	Consider the need for a dedicated GEBCO Programme Manager.
10.2	Finance – Future Ambition	The options proposed within the Funding Proposal report should be considered alongside the legal review once this governance review has been considered and an implementation plan produced. Consideration should also be given to work of the IHO Funding Project Team to

		avoid duplication and take advantage of synergies.
11	Legal Review	A full review of the current and potential future legal status of the GEBCO Programme be commissioned. This review should consider the GEBCO Strategy and the previously commissioned Funding Strategy.
12	Risk Management	All bodies that have a work plan adopt a risk management process to support effective programme delivery.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Review ToRs to ensure alignment with strategy.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Consider these deficiencies when approving future versions of WPs.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Consider the make up of the GGC membership against new strategy and governance norms.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Note and include in financial review.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Develop a policy that makes it clear to what extent all members of the GGC are expected to fund their own travel.
13.2.1	Analysis of Key GEBCO Bodies - GGC	Consider the shape and size of the GGC.
13.2.1	Analysis of Key GEBCO Bodies - GGC	ToRs and GGC Membership list to clarify roles and responsibilities of GGC member and whether the categories of appointment support or hinder effective delivery of GGC business.
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Review ToRs to ensure alignment with Strategy.
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Rationalise work plan to reduce items and improve clarity.
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Incorporate into IHO - DCDB MoU
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	IHO/IOC to consider implementing an MoU.

13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Identify a secretary from within the membership, establish terms of service and update ToRs accordingly
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Conduct a review of the SB2030 Governance Documents.
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Give all GEBCO products an IHO/IOC formal publication reference e.g. Digital Atlas.
13.2.2	Analysis of Key GEBCO Bodies - TSCOM	Review and potentially reduce number of full members – adjusting ToRs as required.
13.2.3	Analysis of Key GEBCO Bodies - SCRUM	Review ToRs to ensure alignment with Strategy.
13.2.3	Analysis of Key GEBCO Bodies - SCRUM	Work with other SCs and SB2030 team to review work plan and add notation where required to clarify areas of common interest.
13.2.3	Analysis of Key GEBCO Bodies - SCRUM	Review Work plan once strategy has been published and agree prioritization.
13.2.3	Analysis of Key GEBCO Bodies - SCRUM	SCRUM to consider and agree on a routine that works for membership.
13.2.3	Analysis of Key GEBCO Bodies - SCRUM	Review and potentially reduce number of full members – adjusting ToRs as required.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	Review ToRs to ensure alignment with Strategy.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	Define process diagram that can be appended to ToRs.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	SCRUM to consider and agree on a routine that works for membership.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	Consider a new category of participation of IHO/IOC Comms Reps in SCOPE.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	Review and potentially reduce number of full members – adjusting ToRs as required.
13.2.4	Analysis of Key GEBCO Bodies - SCOPE	Relationship should be clarified and formalized via an appropriate instrument.

14	Continuous Improvement	Consider the proposal for a continuous improvement process and implement into GEBCO Programme business as usual practices.

15.3. Next steps and future activities

The following next steps are presented for consideration subject to discussion by the GGC and other key stakeholders:

Presentation of Report. The report will be submitted for the consideration of the GGC as set out in the GGRPT ToRs and RoPs.

Individual Consideration of Recommendations. These recommendations are to be evaluated either by the GGC as a whole or by a designated sub-group. This step ensures focused attention on each suggestion, facilitating thorough analysis and decision-making. Care should be taken when deciding whether or not to implement a recommendation, as some recommendations may or may not be mutually exclusive.

Development of Implementation Plan. A structured plan for implementing the agreed-upon recommendations should be developed. This plan will serve as a roadmap, outlining the steps necessary to deliver the desired changes and improvements.

Integration of Continuous Improvement Regime. There is a clear directive to embed a continuous improvement framework into the working practices of all committees and subcommittees. This approach aims to foster an ongoing culture of evaluation and enhancement, ensuring that governance mechanisms evolve in line with organizational needs and challenges.

Governance Review of SCUFN. A specific governance review using the same model employed for the broader analysis could be conducted for the Sub-Committee on Undersea Feature Names (SCUFN). This targeted review will assess SCUFN's governance structures and processes, with findings to be reported back to the GGC.

Review of SB2030 Oversight. An examination focused on the oversight of the Seabed 2030 (SB2030) project could be considered. Such a review should consider how GEBCO's governance needs to adapt to support a growing portfolio of projects and programmes. It is crucial that this review is conducted with caution to avoid disrupting the operations of SB2030, which is recognized as a well-functioning project. Further, any review should be discussed and planned in consultation with the Nippon Foundation and Parent organizations to ensure it adheres to and meets the needs of all parties.

Review of the legal status of GEBCO. Depending on the outcome of the GEBCO Strategy activity, and in considering the future ambition of GEBCO to undertake fundraising for future activities, a targeted review of the options for the future legal status of GEBCO should be undertaken. This should ideally be led by the Parent Organizations.