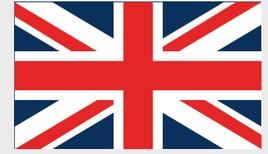


Commonwealth Marine Economies Programme

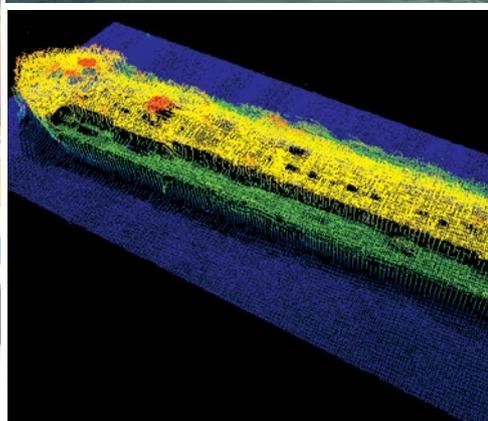
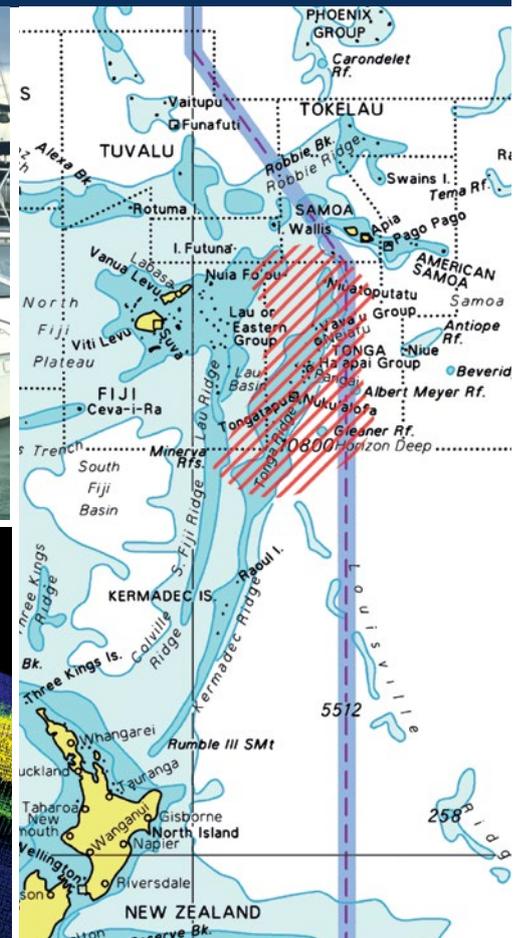
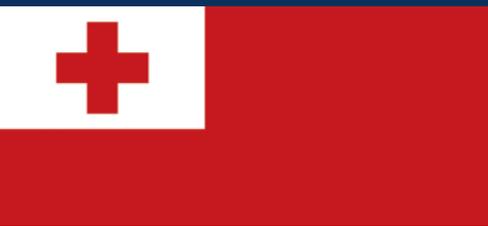


Funded by
UK Government

Enabling safe and sustainable marine economies
across Commonwealth Small Island Developing States

Tonga

Country review



Centre for Environment
Fisheries & Aquaculture
Science



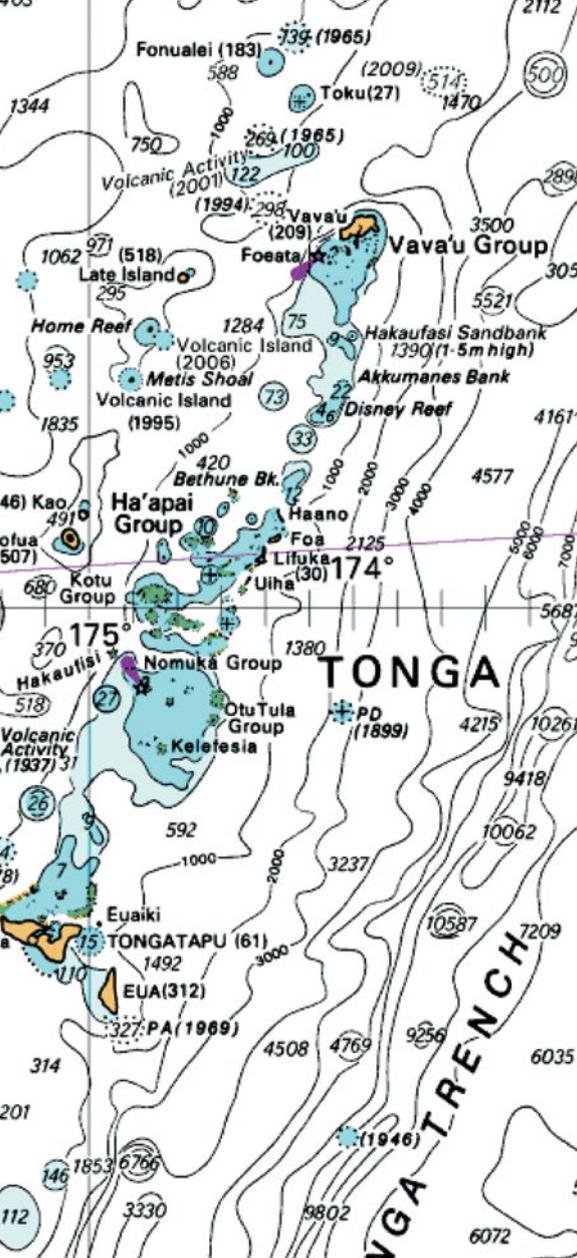
UK Hydrographic
Office



National
Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL



Foreign &
Commonwealth
Office



The CME Programme is designed to support sustainable, growing marine economies that create jobs, drive national economic growth, reduce poverty, ensure food security and build resilience against forces of nature. Funded by the UK Government and delivered by a partnership of world-leading marine organisations from the UK, the programme aims to ensure marine resources in Commonwealth SIDS are better understood and managed.

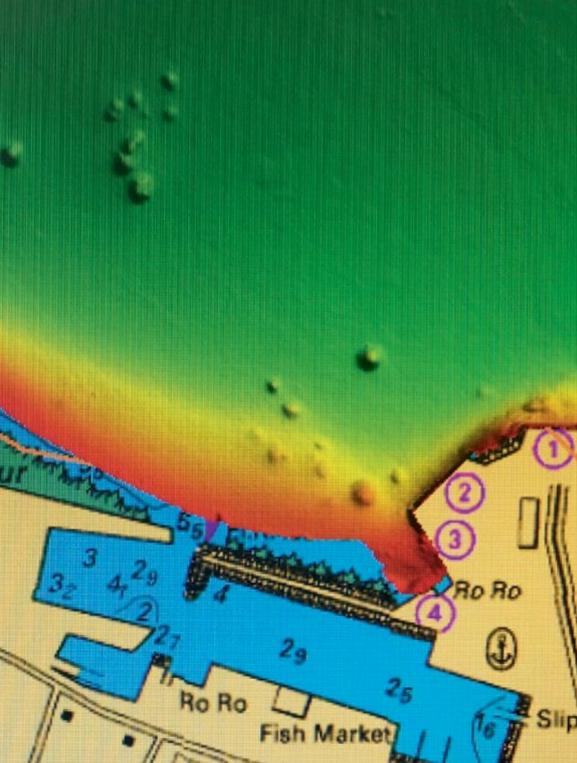
This review highlights opportunities where the UK can apply and leverage its world-leading expertise to make significant, cost-effective and lasting positive impacts on each country.

Relevant strategic plans

International – Tonga is subject to international requirements and obligations as listed under the UN Convention on the Law of the Sea; Safety of Life at Sea; Conservation of Biological Diversity (Aichi Targets); SIDS Accelerated Modalities of Action (SAMOA) Pathway; and the 2030 Agenda for Sustainable Development (including Sustainable Development Goals; 2 – Zero hunger; 9 – Industry, innovation and infrastructure; 13 – Climate action; 14 – Life below water).

Regional – The two main regional organisations delivering geospatial outputs that operate in the Pacific are the Pacific Community (SPC) and the Secretariat of the Pacific Regional Environment Programme (SPREP), both of which are active in Tonga. The regional objectives of both organisations are outlined in their 2016-2020 and 2017-2026 Strategic Plans respectively, with relevant goals including: sustainable economic development; strengthened resilience to climate change; healthy and resilient island and ocean ecosystems; improved waste management and pollution control; and the commitment to, and best practice of, environmental governance. Land Information NZ (LINZ) and NZ Ministry of Foreign Affairs and Trade (MFAT) are providing regional assistance through a range of initiatives including the Pacific Regional Navigational Initiative (PRNI) and the South-West Pacific Regional Hydrography Programme, both of which have safety of navigation improvement outcomes.

National – National strategies for enabling the safe and sustainable development of Tonga's marine environments include the Kingdom of Tonga National Biodiversity Strategy and Action Plan (2006); the Tonga Fisheries Sector Plan (2016-2024) and the Tonga Marine Aquarium Fishery Management and Development Plan (2017-2019). Tonga previously had a Hydrographic Unit based within His Majesty's Armed Forces (HMAF), and national plans are in place to re-establish the Tonga Hydrographic Unit, to develop priorities and improve and capitalise on national hydrography.



Challenges faced

Management of coastal and marine environments –

The lack of up-to-date, modern data has a number of impacts on the successful management of Tonga's marine estate and coastal protection, and presents additional risk and costs to shipping. In fisheries management there is a lack of capacity for stock assessment and policy development. There is also a need to develop capacity in spatial planning and data management, and evaluate data to understand the cost and benefits of different policy options.

Data collection and charting capabilities – Tonga is seeking to re-establish its Tonga Hydrographic Unit, but they currently lack the required education, training and equipment to be able to survey to fully modern standards, and lack sufficient resource to fully meet the national requirements for seabed mapping. Current charts for the numerous routes and islands within the Ha'apai Group have not been modernised and are based on 1898 surveys. They are still in fathoms and on unknown horizontal datums, and modern data is required to produce modern navigational products.

Climate change impact assessment – Tonga's marine environments are vulnerable to the impacts of climate change through factors such as ocean acidification, sea-level rise and invasive species. Understanding, quantifying and monitoring those factors and their effects on local marine ecosystems is essential for developing appropriate risk mitigation and coastal planning strategies.

Protection and preservation of the marine environment – Maintaining the health and biodiversity of marine ecosystems within Tonga is fundamental for sustainable development. In particular, the protection and preservation of coral reefs is of critical importance from both an environmental perspective and for their role in the tourism sector, and there is a need for more habitat/species data to facilitate development of new and manage existing protected areas, and a refinement of this information to support sensitivity mapping of features. Characterisation of the impacts of marine pollution on the health of the marine ecosystems and water quality is needed to help improve wastewater management practices, and to identify regions most at risk. Plastic pollution has been identified as a particularly important issue but little detailed information exists to enable management (including distribution).

Natural and environmental disasters – Tonga is at risk from tropical cyclones, and was devastated by Cyclone Gita in February 2018. This was the worst storm to affect the country in the last 60 years, and caused widespread damage and flooding that affected 79% of the population (including destroying part of Parliament House). Marine infrastructure and environments need to be better protected from the impact of storms and other natural hazards, and resilience built into coastal systems as a mechanism for mitigating these risks.

Training and capacity building – Improved awareness, skills and knowledge are required across marine sectors to enable Tonga to implement integrated ocean governance. There is also a need to increase both national and regional cooperation through the sharing of assets and knowledge in order to help reduce costs and improve decision makers' understanding.

Tonga – Activities and benefits

By providing data, training, advice and support, the CME Programme is designed to help address economic and environmental needs, leaving a lasting legacy of self-sufficiency in marine management.

Programme activities are split across six core themes, though potential action is not identified in every category in all Small Island Developing States.

Priority projects identified for Tonga include:

Marine data collection for environmental resilience, and safe and efficient trade (core output 1)

Activity – High quality hydrographic data collection, alongside use of satellite derived bathymetry in priority areas, with provision for later augmentation for habitat mapping, leading to new modern editions of navigational charts, improved compliance with international obligations and data supplied to local states. Key areas identified include the Northern Approach to Tongatapu, the Ha'apai Group and the west coast of Eua.

Benefits – Improving overall safety of navigation – reducing risk to lives and the environment. Enabling ships to reduce their under keel clearance with confidence, therefore reducing costs and thereby increasing profit. Helping encourage cruise ships to visit.

Activity – Mapping of key ecosystems (e.g. seagrass) areas for small and large-scale habitat maps.

Benefits – To enable decision makers to determine sustainable development priorities. Understand the importance of the ecosystems as storage for blue carbon.

Activity – Development of a baseline strategy report and training of local officials who will be developing and implementing the Sea Bed Minerals Act.

Benefits – Local stakeholders will have a better understanding of the potential natural resources of the area and how they should be assessed. In particular, the Tonga Ministry of Lands, Survey and Natural Resources (Government ministry in charge of seabed mining) needs this information to help improve sustainability of planned deep-sea mining operations. This is important in national waters for Tonga and to support sponsorship of exploration claims in the area with the International Seabed Authority.

Monitoring and risk assessment to increase climate change resilience (core output 2)

Activity – Regional Climate Change Report Card.

Benefits – To provide climate change information to support effective climate change adaptation.

Decreasing pollution and improving human health (core output 3)

Activity – Support capacity development to enable understanding of key actions and reporting in relation to key international agreements.

Benefits – To ensure SIDS meets its international obligations and reduces pollution and improves environmental resilience.

Natural capital assessment (core output 5)

Activity – To quantify the socio-economic value of key ecosystems.

Benefits – To enable cost benefit analysis of different policy options (e.g. placement of coastal infrastructure in relation to marine habitats).

Science infrastructure development, training and knowledge exchange (core output 6)

Activity – Work with key maritime staff to develop local hydrographic governance.

Benefits – Key elements of governance in place in line with IHO Phase 1 compliance, reducing potential barriers to international trade.

Activity – Support the capacity to assess fish stocks.

Benefits – To enable a self-reliant sustainable exploitation of fisheries.

Programme outputs

If all of the potential activities were to be delivered, the CME Programme, working with key departments in Tonga, would result in the following development of marine capacity by the end of the scheduled Programme.

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Limited, or no, characterisation of physical parameters in marine and maritime sectors.	The physical parameters of the key marine and maritime environments and sectors are mapped and quantified.	The physical parameters are analysed in terms of the biological, sociological and economic context, resulting in a more in depth appreciation of their vulnerabilities and opportunities/limitations for sustainable use.	Defensible policy is produced for the marine and maritime sectors that details consideration for the sustainable development of the ocean economy.	Full competency in undertaking the previous phases is developed and sustained across multiple sectors, leading to the safe and sustainable development of marine and maritime economies.

Output 1 – Marine data collection for environmental resilience and safe and efficient trade.

Output 2 – Monitoring and risk assessment to increase climate change resilience.

Output 3 – Decreasing pollution and improving human health.

Output 4 – Sustainable fisheries development.

Output 5 – Natural capital assessment.

Output 6 – Infrastructure development, training and knowledge exchange.

Expected impact

Through delivering these activities, outputs and benefits the CME Programme would help to facilitate:

Output 1 – Adherence to the UN convention on the Law of the Sea and Safety of Life at Sea; Reduction in the cost of imports and increase in the profitability of exports; Reduction in the risk of maritime accidents and damage to the environment.

Output 2 – Identification of communities and environments vulnerable to the impacts of climate change; Integration with regional and global hazard monitoring networks; Informed coastal management and planning decisions.

Output 3 – Characterisation of the dispersion of sewage and industrial outfalls and their effects on water quality; Identification and prioritisation of pollution control mechanisms; Improved health of humans and marine ecosystems.

Output 4 – Reduced pressure on existing fish stocks and marine environments; Development of new opportunities for aquaculture diversification; Enhanced economic potential of existing products; Access to insurance services following climatic events.

Output 5 – Enhanced awareness of the social and economic value of marine ecosystems; Quantification of the cost/benefit ratio of existing policy options, supporting decision making.

Output 6 – Confidence and ability to make sound independent decisions regarding the development of marine environments; Access to state-of-the-art marine equipment, models and techniques; Development of national and international networks.

Strategic outcomes

By better understanding and managing the marine resource potential within Tonga the CME Programme will help create jobs, drive national economic growth and reduce poverty through:

Prosperity – Diversifying revenue potential by opening up new economic opportunities.

Sustainability – Ensuring all marine and maritime activities are environmentally safe and sustainable.

Security – Making infrastructure and human capital resilient to natural disasters and climate change.

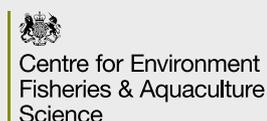
Legacy – Building the capacity of national authorities to plan and optimise their marine spaces.

Commonwealth Marine Economies Programme

The CME Programme is being delivered on behalf of the UK Government by a partnership of world-leading marine expertise.



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