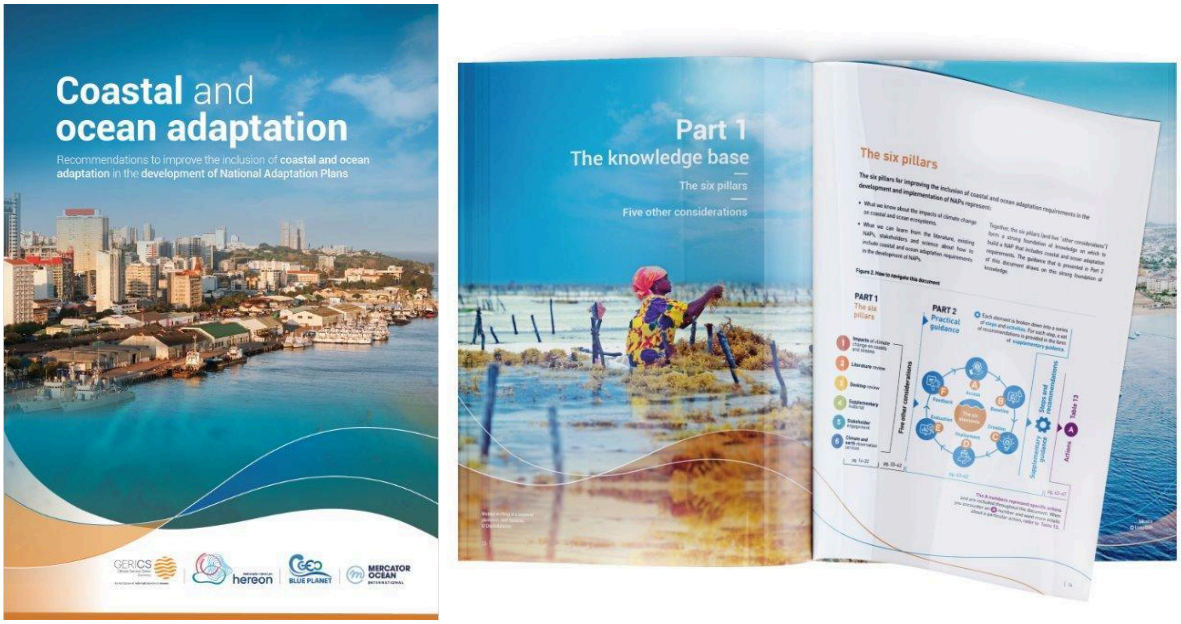
Coastal and Ocean Adaptation among SIDS and LDCs; Insights, Challenges and Opportunities highlighted at the National Adaptation Plan (NAP) Expo 2025

As part of this year's National Adaptation Plan (NAP) Expo held in Lusaka, Zambia, GEO Blue Planet alongside partners from the Climate Service Center Germany (GERICS-Hereon), hosted a workshop dedicated to coastal and ocean adaptation planning that brought to the fore some of the most pressing challenges faced by Small Island Developing States (SIDS) and LDCs (Least Developed Countries).

Workshop organizers at the opening plenary of the National Adaptation Planning (NAP) Expo
L-R, Dr David Cabana, Senior Scientist, Climate Service Center Germany (GERICS-Hereon), Dr Nikelene Mclean, GEO Blue Planet Climate Adaptation Coordinator, Dr Louis Celliers, Senior Scientist, Climate Service Center Germany (GERICS-Hereon)

Designed as a platform for vulnerable communities among SIDS and LDCs to share experiences and challenges in integrating coastal and ocean adaptation planning into National Adaptation Plans (NAPs), the workshop featured country presentations from ministerial representatives, an interactive panel discussion, technical presentations as well as a discussion of the newly launched Supplementary Material on coastal and ocean adaptation planning.



Snapshots of the recently published [Supplementary Material on Coastal and Ocean Adaptation: Recommendations to improve the inclusion of coastal and ocean adaptation in the development of National Adaptation Plans]

Key Insights: The importance of coastal and ocean adaptation planning among SIDS and LDCs

The importance of oceans and coasts was a key-takeaway of the session given their role in economic development, human settlement and food security on a global scale. It was highlighted that "annual gross marine product" is at least US$ 2.5 trillion, the total "asset" base of the ocean is at least US$24 trillion, more than 17% of animal protein for human consumption comes from the ocean as well as the fact that half of the world's population lives in coastal areas. Given their value to several sectors and increased vulnerability to climate change, their inclusion in the adaptation planning process should be a priority. However, when a recent analysis of the documents needed to support coastal and ocean adaptation among vulnerable SIDS and LDCs was carried out, the results showed a severe lack in pertinent Supplementary Materials. This provided the impetus for the development of the 2025 Supplementary Material on coastal and ocean adaptation, which was launched at the NAP Expo. Thus, the workshop provided a key opportunity to discuss potential paths forward for the uptake and implementation of the guidance outlined through the NAP process.

Current status of coastal and ocean adaptation planning among SIDS and LDCs; Advances and challenges

The workshop provided a unique opportunity to engage with ministerial representatives from diverse SIDS and LDCs to understand the current status of adaptation in their respective countries by outlining

their current progress, challenges and priorities integrating coastal and ocean considerations into their NAPs.

Participants in the coastal and ocean adaptation planning workshop at the 2025 NAP Expo
(L-R) Nikelene Mclean, GEO Blue Planet; Hana Hamadalla, UNFCCC Least Developed Countries Expert Group (LEG) member; Adão Soares Barbosa, Special Envoy with the category of Ambassador at large for Climate Affairs, Timor-Leste; Gabriel Kaparka, Deputy Director General and Focal Point at the Ministry of Environmental and Climate Change, Sierra Leone; Isoufa Fouad Ali, Minister responsible for Environment, Climatology and Disaster Management, Comoros; Jauza Khaleel, Senior Climate Adaptation Expert, Maldives; Louis Celliers, Climate Service Center (GERICS-Hereon) and David Cabana, Climate Service Center (GERICS-Hereon)

The workshop featured presentations from representatives from Timor-Leste, Maldives, Comoros and Sierra Leone which outlined the high vulnerability of these nations to sea-level rise, coastal erosion and extreme weather events which threaten critical infrastructure (i.e., airports, ports), vital economic sectors such as fisheries and tourism as well as the livelihoods of communities which necessitates substantial financial investment for adaptation. The speakers also outlined that though there were significant gaps in adaptation planning, many countries are employing mixed adaptation approaches. This is seen when countries employ a combination of hard engineering solutions (e.g., seawalls, breakwaters) and soft, ecosystem based measures (e.g., sandbags, beach replenishment, mangrove restoration) alongside policy integration, coastal zone management and multi-sectoral strategies to build resilience.

Highlights from workshop showing the hard engineering solutions being employed to support coastal adaptation in Malé, Maldives (left) and Dili, Timor-Lester(right)

The speakers also outlined a number of key barriers to effective implementation, chief among which is the cost of adaptation measures. For example, Maldives spends 35% of its national budget on adaptation. Another challenge outlined was the need for better access to fine-resolution, island-specific data and tools for decision making, as well as a prevalent lack of technical capacity in climate science and monitoring. These challenges create an opportunity for pertinent international scientific agencies to support needs among vulnerable communities as there is a strong demand for enhanced technical and data support. There is also a need for capacity building in GIS tools and ecosystem based adaptation, thus creating an opportunity for technical organizations such as GERICS-Hereon and GEO Blue Planet to provide support to these countries through the guidance outlined in the recently published Supplementary Material on coastal and ocean adaptation.

Opportunities presented through the launch of Supplementary Material: What next?

As outlined in the Supplementary Material, there are a number of ways in which both Earth observations and climate services can be leveraged throughout the NAP Process. Climate services can support coastal and ocean adaptation through the provision of historical climate data, hazard profiles, weather forecasts and projections of climate change impacts which enable LDCs and SIDS to identify the most at-risk sectors, regions and communities. To assess risk, it is important to identify and map key hazards and the exposure of vulnerable people, critical infrastructure, economic activities and ecosystems. Climate services also support evidence based planning by offering downscaled climate projections and scenario analysis. This enables LDCs and SIDS to design sector specific strategies for agriculture, fisheries, water resources, health and infrastructure. Early warning systems can also enhance preparedness for extreme weather events and facilitate the ability of governments and communities to take early action.

Panel discussion on the topic of technical needs in support of coastal adaptation among SIDS and LDCs

Similarly, Earth observation through in-situ observations such as tide gauges, drifting and fixed buoys and other platforms, provide real-time, localized data. Integrating in situ measurements with remote sensing data enhances the accuracy and reliability of coastal monitoring systems. Additionally, satellite remote sensing offers large-scale, high- resolution imagery of the world's coastal zones. For example, Copernicus Sentinel-3 satellites measure sea surface topography, sea and land surface temperature and ocean and land surface colour with exceptional precision, supporting climate and environmental assessments. Earth observation through global navigation satellite systems such as global positioning systems provide essential information to anticipate future sea level rise, especially for SIDS to understand the changes in an island's coastline and elevation. Airborne sensors can also provide high-resolution, site-specific data essential for mapping coastal elevations and underwater features, aiding in hazard assessment and resilience planning. Ocean and coastal observations can be leveraged when developing stand-alone coastal and ocean NAPs or when including coastal and ocean-specific adaptation requirements in NAPs.

Workshop organizers at GEO Blue Planet and GERICS-Hereon, with support from Mercator Ocean International and the EU4OceanObs program, look forward to identifying partners in LDCs and SIDS to develop coast and ocean adaptation actions.

Supplementary Resources:

- https://unfccc.int/sites/default/files/resource/Supplementary_Material_Coastal_and_ocean_adaptation.pdf
- https://www.sciencedirect.com/science/article/pii/S2405880720300200?via%3Dihub