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(of UNESCO)

INFORMATION DOCUMENT

**IOC AND THE FUTURE OF THE OCEAN: RESULTS OF THE PHASE 2
CONSULTATION – FINAL REPORT, JUNE 2026**

Summary. This information document has been prepared by the consultancy firm OpenCities Ltd as part of Phase II of the consultation process entitled 'The IOC and the Future of the Ocean' that was launched following a decision by the IOC Assembly in 2023.

IOC and the Future of the Ocean: Results of the Phase 2 Consultation

Final Report to the Intergovernmental Oceanographic
Commission (June 2026)

OpenCities Ltd

Executive Summary

Purpose and Context

The Future of the Ocean consultation responds to IOC Assembly Decision A-32/5 and the subsequent Executive Council decision to review how IOC can best support Member States and stakeholders in science-based sustainable ocean planning, ocean-science support to UN environmental conventions and frameworks, and the development of a sustainable ocean economy. Phase 1 assessed Member State demand for ocean services. Phase 2 assesses the supply side: the global and regional ecosystem of actors, mechanisms, programmes and projects that currently address those needs. The results are intended to inform a final Phase 3 in 2026/27, which will develop recommendations on IOC's future strategic role and feed into the next IOC Medium-Term Strategy.

This report was prepared by Open Cities Consultancy and has been used to develop the documentation for the 59th Session of the IOC Executive Council.

Overall Conclusion

The Phase 2 report reframes the strategic question for IOC. The issue is not simply which ocean priorities matter most; it is what regional services are still missing that prevent Member States from acting on those priorities. The evidence from the Ocean Decade portfolio, the institutional scan, regional consultations and interviews points to a persistent science-to-service gap. Observations, data systems, scientific networks and technical expertise exist, but they are not consistently converted into usable planning tools, risk guidance, decision-support services, capacity packages or finance-ready programme concepts for Member States.

Core Message for IOC

IOC's comparative advantage is not to duplicate academic research, compete with every ocean actor, or become a large implementation agency across all themes. Its distinctive role is to act as a regional service integrator: organizing science, data and standards; convening partners; identifying gaps where provision is thin; supporting policy uptake; building capacity along the full chain from observation to implementation; and helping Member States access finance and delivery partnerships.

Key Messages

- The global ocean services landscape is crowded but fragmented; its main layers include law and diplomacy, science and observing, data infrastructure, maritime and coastal safety, sustainable ocean economy finance, fisheries governance, and regional conservation implementation.
- The Ocean Decade portfolio is strongest around biodiversity and ecosystem restoration, capacity development and ocean literacy, and sustained observation, forecasting and prediction.
- The thinnest areas of activity include sustained investment in observing and data infrastructure, ocean acidification, sustainable ocean planning support, physical oceanography, eutrophication/hypoxia and data-use tools for adaptive planning.
- High levels of activity does not necessarily mean adequate service delivery. Several large portfolios still show weaknesses in translation, equity, regional usability and long-term impact.
- IOC's future value proposition should be "ocean science to ocean services for Member States": focused, regionalised, implementation-facing and partnership-based.

What Phase 2 Did

Phase 2 followed a three-step approach. First, the consultation reviewed databases that could be used to map the supply of projects and programmes against the Member State priorities identified in Phase 1. The Ocean Decade database was selected as the primary repository because it contains detailed information on approximately 1,000 endorsed programmes, projects and contributions, including lead organisations and descriptions of activities. Each action could be matched to up to three Phase 1 priorities.

Second, the priorities were ranked by the number of Ocean Decade actions that contributed to them. This ranking is not a measure of impact, quality or unmet need, but it is useful for showing where the supply landscape is crowded and where it is relatively thin. The analysis was complemented by a wider institutional scan of ocean actors, including UN agencies, finance platforms, regulatory bodies and regional mechanisms.

Third, the ranking and regional findings were tested through discussions (i) with the four IOC sub-commissions — IOC UNESCO Africa, IOC UNESCO CARIBE, IOC UNESCO INDIO and IOC UNESCO WESTPAC — and (ii) with key IOC member states representatives and experts. These discussions tested whether the priority list remained valid, whether the ranking resonated regionally, and where IOC might focus effort given the presence of other partners and the extent of still unmet need.

The Supply-Side Ecosystem

The global ocean landscape is a multi-layered system. The legal and diplomatic layer is anchored in UNCLOS, UN-Oceans, the UN Ocean Conference process, the BBNJ Agreement, ISA and CBD-related processes. This layer sets the rules, but it depends on science, safety systems and economy actors for implementation.

The science, observing and data layer is where IOC is most central. IOC-UNESCO, the Ocean Decade, GOOS, IODE, OBIS, GEBCO, OceanOPS, Argo, GEO Blue Planet, Copernicus Marine and scientific networks such as SCOR, POGO and ICES/PICES provide the knowledge base, infrastructure, standards and expert credibility needed for ocean management. These systems are the backbone for climate services, marine safety, hazard warnings, ecosystem management, BBNJ implementation, marine spatial planning and blue-economy investment.

The safety layer includes IMO, IHO, IALA, WMO, IOC's tsunami programme, Cospas-Sarsat and search-and-rescue communities. The economic and finance layer includes PROBLUE, the Ocean Panel, OECD, UNCTAD, UNEP FI, the UN Global Compact, GEF International Waters, ORRAA and other blended-finance and private-sector coalitions. Fisheries and aquatic foods are led through FAO, RFMOs/RFBs, the Port State Measures Agreement, the Global Record, Global Fishing Watch and the WTO fisheries subsidies agreement. Conservation and regional implementation are anchored in UNEP Regional Seas, CBD, IUCN, UNEP-WCMC, the Global Fund for Coral Reefs, Large Marine Ecosystem programmes and MPA networks.

The institutional implication is that IOC operates in a dense ecosystem. It should therefore position itself where its intergovernmental legitimacy, science mandate and regional architecture add distinctive value: standards, observing and data systems, science-policy translation, regional coordination and capacity for Member State implementation.

What the Ocean Decade Mapping Shows

The Ocean Decade mapping identifies 856 active actions in the database, generating 1,725 priority-action matches across 17 priority headings. The portfolio includes 63 programmes, 660 projects and 133 contributions, led by 734 distinct lead institutions. This confirms that the Ocean Decade is a broad live implementation framework rather than a single programme, and that it offers a useful lens on where global and regional ocean-service provision is concentrated.

Indicator	Finding
Largest portfolios	Marine biodiversity conservation and ecosystem restoration (294); capacity development and ocean literacy (260); coordination and technical support for sustained observation, forecasting and prediction (227); ocean-climate mitigation and adaptation (152); equity and social issues (142).
Second tier	Technological innovation and investment barriers (129); science-policy-economics-industry engagement (116); ocean pollution (107).
Smaller but strategic portfolios	Early warning and disaster risk preparedness (55); dissemination of time series marine datasets (40); planning for MPAs and area-based management tools (39); data-use tools for adaptive planning (36); eutrophication, hypoxia and nutrient cycles (35); physical oceanography (35); sustainable ocean planning support (28); ocean acidification (27); sustained investment/funding gaps for observing and data infrastructure (3).

The ranking separates two broad groups. One group of priorities represents a relatively small share (20%) of the mapped activity, while a larger group accounts for most actions (80%). The less extensively serviced priorities are not necessarily less important. In several cases — for example sustained investment in observing and data infrastructure, acidification, eutrophication and sustainable ocean planning tools — they correspond to enabling systems that are essential for many other services.

On the other hand, the strongest portfolios are not automatically “solved” areas. Biodiversity, capacity development and observations are highly active, but the consultations show that Member States still struggle to convert knowledge into operational capacity, policy tools and financing pathways. Conversely, smaller portfolios may contain high-value network or infrastructure actions, such as early warning, data systems or acidification monitoring, that serve multiple regions.

What is Already Working

Several areas are working well. Tsunami and early warning systems are repeatedly identified as one of IOC’s clearest success stories and a model for visible, practical, Member State-facing services. Physical oceanography and forecasting are comparatively more mature than biogeochemical, ecosystem or climate-linked services. In several regions, existing frameworks provide foundations for further work: the Cartagena system and MPA activity in IOCARIBE; national institutes, WESTPAC convening functions and NEAR-GOOS in the Pacific; South Asian Seas, the Kuwait Convention and IOCINDIO working groups in the Indian Ocean region; and ECOWAS, UEMOA, the African Union, Regional Seas and IOCAFRICA processes in Africa.

The significance of these assets is that IOC does not need to start from zero. In most regions the opportunity is to connect, strengthen and focus existing institutions, rather than create parallel mechanisms. The main gap is alignment, delivery capacity, science-policy translation and sustained finance.

What is Missing: Five Recurring Service Gaps

First, Member States need sustained regional observation and data services. Data availability is not the same as data usability. WESTPAC participants highlighted the existence of satellites, models, Argo floats, national observations and open-ocean work, but also weaknesses in access, organisation, interoperability and practical use. IOCINDIO similarly framed sustained and real-time observation and data sharing as foundational to forecasting, early warning, pollution tracking, hypoxia, climate impacts and ocean planning. IOCAFRICA underlined that gaps in observations, accessibility and interoperability weaken coastal erosion, pollution, MSP, MPAs and blue-economy planning.

Second, long-term observing and data systems remain structurally underfunded. The report notes that long time series, data archives and observing infrastructure require continuity over decades, but are poorly matched to short-term project funding. This creates chronic under-provision of the infrastructure on which most other services depend.

Third, sustainable ocean planning is not yet sufficiently operational. The report treats sustainable ocean planning as broader than marine spatial planning: it requires monitoring, evidence generation, risk identification, adaptive feedback loops, plan revision and decision-support tools that can inform policy and investment under climate change. This makes it a strong integrator for IOC because it connects observations, data systems, ecosystem knowledge, climate risk, governance, capacity and finance.

Fourth, capacity development remains too disconnected from implementation. The regional consultations emphasise needs along the full chain from observation to analysis, interpretation, service development and policy uptake. Capacity development should therefore be a core design principle of regional service delivery, not a training add-on.

Fifth, equity and participation are service gaps in their own right. Financial, technical, language and institutional barriers mean that inclusion on paper does not always translate into practical participation, particularly for developing countries, SIDS, early-career professionals and less-resourced institutions.

Regional Differentiation

In IOCARIBE, existing regional frameworks, biodiversity and pollution coverage and MPA activity provide a relatively strong base. The main opportunities are to raise the profile of science with policymakers, improve database access for SIDS, support sustainable ocean economy and ecosystem restoration priorities, strengthen integrated and interoperable datasets, and facilitate cross-island learning. Specific needs include marine spatial planning, sustainable ocean planning and observation systems.

In WESTPAC, the strongest needs relate to time-series marine data, regional data centres, AI-enabled synthesis, ocean planning, small-island development, practical participation by less-resourced states, and access to climate and development finance. The region has important assets, but global-regional links remain weak and direct access to implementation partners and finance is insufficient.

In IOCINDIO, the key gaps include real-time observing, data sharing, multi-hazard early warning, marginal seas–open ocean links, pollution and nutrient dynamics in semi-enclosed seas, monitoring of the central Indian Ocean, and BBNJ-related science for EIAs, MPAs, ABMTs and the Clearing-House Mechanism. IOC's role should include regional data-sharing standards, technology transfer, BBNJ guidance and a more deliverables-focused IOCINDIO hub.

In IOCAFRICA, participants emphasised coastal erosion and resilience, climate impacts on fisheries and marine resources, pollution, eutrophication, harmful algal blooms, MSP, blue

economy planning, ocean literacy and people-centred approaches. IOC's role should include Africa-specific science-to-policy and policymaker literacy, stronger national coordination and investment in IOCAFRICA as a regional delivery pillar.

IOC's Emerging Added Value

The evidence points to a strategic proposition for Phase 3: IOC should focus on converting ocean science into trusted, policy-relevant, regionally grounded services for Member States. This would make IOC more focused, more regionalised, more visibly service-oriented and more explicitly linked to implementation. The role is neither to do everything itself nor to retreat into convening alone. IOC's value is to act where its mandate, legitimacy and regional structures give it a distinctive contribution.

Six practical dimensions follow from this proposition. First, IOC should steward long-term observations and data as public-good infrastructure, advocating for sustained finance, protecting time series, supporting interoperability and connecting regional systems to global architectures. Second, it should make sustainable ocean planning a main integrator priority, linking observation, data, ecosystem science, climate risk, capacity development and policy advice. Third, it should strengthen science-to-policy services for ministries, planners and policymakers through decision-support products, risk information, policy guidance and ocean literacy for decision-makers.

Fourth, IOC should selectively deepen support for less mature thematic services, including biogeochemical forecasting, eutrophication, hypoxia, ocean acidification, carbon cycling, biodiversity restoration, ecosystem recovery, coastal resilience and ocean-climate risk. These should not become isolated silos; they should be attached to planning, early warning, ecosystem management and climate adaptation. Fifth, regional committees and sub-commissions should be treated as core delivery assets, because they are where global science becomes relevant to Member State realities. Sixth, IOC should mobilise climate and development finance through partnerships with larger UN agencies, development banks, accredited entities and regional institutions.

Implications for Phase 3

Phase 3 should test how IOC can move from a broad list of priorities toward a focused service offer. The strongest candidate areas are sustained observation and data-sharing services; sustainable ocean planning; applied science-to-policy tools; early warning and resilience; pollution, ecosystem health and ocean-climate services; BBNJ-related technical support; implementation-oriented capacity development; and inclusive participation mechanisms.

A useful organising principle is “regional services, global standards”. IOC can use its global mandate to set standards, curate methods, connect observing systems and maintain scientific legitimacy, while using sub-commissions and regional partners to tailor services to Member State needs. This avoids both extremes: a purely global model that is too distant from national implementation, and a fragmented regional model that lacks common standards and comparability.

The report also suggests that IOC should prioritize areas where the supply landscape is thin but the enabling value is high. Sustained investment for observing and data infrastructure is the clearest example: it is the least-served priority in the Ocean Decade mapping, yet it underpins forecasting, early warning, climate services, ecosystem assessment, BBNJ implementation and sustainable ocean planning. Similarly, acidification, eutrophication, hypoxia and biogeochemical services are relatively small portfolios but connect directly to climate adaptation, fisheries, coastal resilience and ecosystem management.

The strategic conclusion is clear. Member States need IOC to help convert science into sustained, equitable and regionally grounded capability. IOC should therefore position itself as an intergovernmental science-to-service platform: setting standards, organising data and observing systems, translating knowledge into tools for decision-makers, strengthening regional delivery platforms, and brokering partnerships and finance so that Member State priorities become practical services.

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Context

At its 32nd session (21–30 June 2023), the IOC Assembly discussed the long-term sustainability and expansion of the IOC in view of the fast-evolving developments in ocean science and action. The Assembly called for a consultation on:

how IOC could on the basis of its purpose as defined in its Statutes optimally facilitate activities of Member States and other stakeholders in science-based sustainable ocean planning, ocean science support to implementation of UN environmental conventions and frameworks, and development of a sustainable ocean economy

(IOC Decision A-32/5).

In June 2024, the *Executive Council of the Intergovernmental Oceanographic Commission* considered a proposal developed by the Secretariat regarding IOC and the Future of the Ocean and inviting the Executive Council to consider and provide guidance on the proposed framework and timeline for the consultation. The Executive Council:

- (i) Noted the proposal in document IOC/EC-57/3.1.Doc(4) that the 'IOC and Future of the Ocean' consultation allow for a three-year process synchronized with the calendar of IOC governing body sessions;
- (ii) Decided that the consultation will first focus on an overall review of activities relevant to the role of IOC in assisting Member States and other stakeholders, including identifying gaps and needs in IOC programmes, in order to optimally facilitate current and emerging activities in science-based sustainable ocean planning, ocean science support to implementation of relevant UN conventions and frameworks, and development of a sustainable ocean economy.

The results of the Phase 1 consultation – an assessment of member state demand for ocean services - were presented to the 33rd Session of the IOC Assembly in June 2025. Phase 2 is intended to assess the ecosystem of global and regional actors and mechanisms - i.e. the supply side - addressing the needs identified in Phase 1. Based on the results of Phase 1 (demand side assessment) and Phase 2 (supply side assessment), and taking into account IOC's comparative advantage and the availability of funding, a final Phase 3 (during 2026/27) will develop recommendations on the future strategic role of IOC to inform the development of the next Medium-Term Strategy.

Methodology

The consultation and analyses were carried out by Open Cities Consultancy. The results presented in this report have been used to develop the documentation for the 59th Session of the IOC Executive Council.

Phase 2 began with a review by IOC management of the priorities identified under Phase 1 of the consultation to provide further context and insight including possible explanations for the emergence of the issues identified, including surprises and outliers.¹ Based on this further review a final list of priorities was generated to inform Phase 2 of the consultations. These comprised:

¹ Factors considered by management included Criteria for possible inclusion of topics assessed as only 'moderately problematic' or problematic but not underserved could be (i) an assessment by a small group of Phase 1 respondents of the topic as highly problematic even though the average assessment is 'moderately problematic'; an assessment

- 1. Knowledge gaps and gaps in MS capacity to generate this knowledge:**
 - marine biodiversity conservation and ecosystem restoration
 - eutrophication, hypoxia and nutrient cycles (including links to harmful algal blooms)
 - physical oceanography
 - ocean pollution
 - ocean acidification
 - ocean based solutions to climate change mitigation and adaptation
- 2. Ocean science infrastructure, tools and systems:**
 - dissemination of time series marine datasets
 - tools to enable the use of data for adaptive planning and decision making including to meet national obligations
 - planning for Marine Protected Areas (MPAs) & Area-Based Management Tools
 - early warning systems and disaster risk preparedness and reduction
 - coordination and technical support for sustained observation, forecasting, and prediction
 - sustained investment/funding gaps for observation and data infrastructure
 - opportunities for technological innovation and barriers to further investment
 - support for Sustainable Ocean Planning including risk identification and management tools for planning under climate change
- 3. Social, economic and institutional development to support increased generation and uptake of knowledge in priority themes:**
 - capacity development and broader approaches to ocean literacy, including for policy makers
 - the need for more engagement between science and policy, economics and industry
 - social issues such as the importance of equity

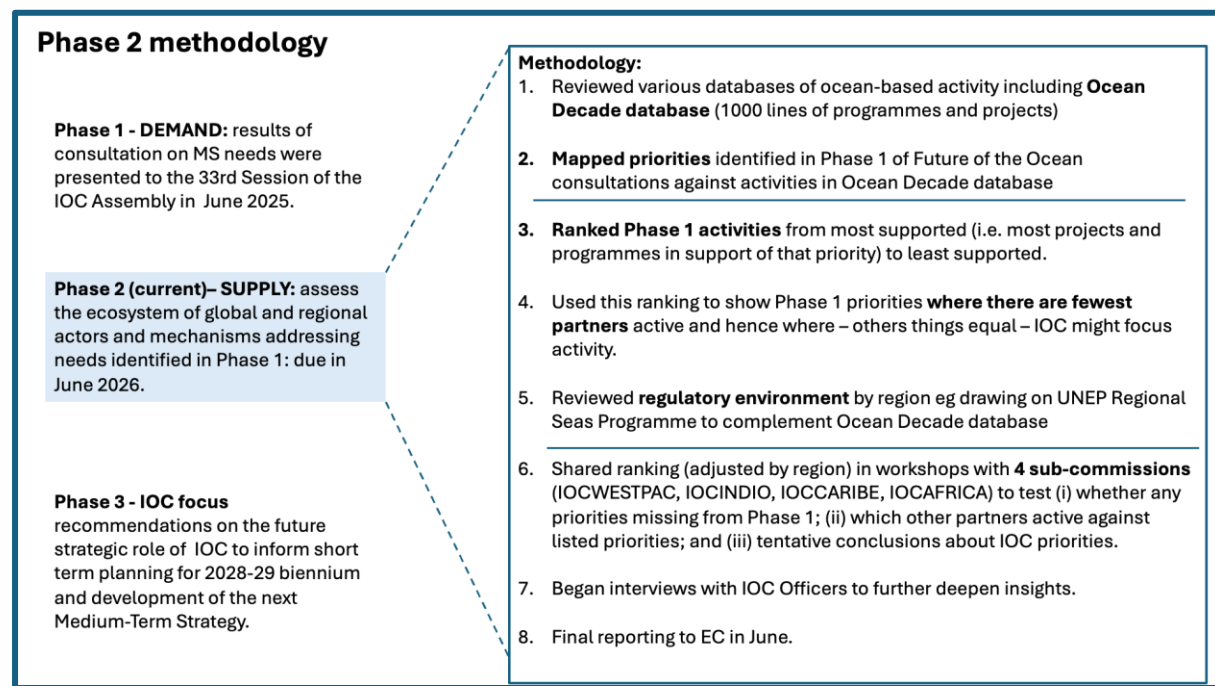
Phase 2 of the Future of the Ocean has followed a 3 step process.

- First, a number of databases were assessed for their suitability as comprehensive repositories of projects and programmes addressing the priorities identified in Phase 1. The primary database selected was the Ocean Decade database which comprises approximately 1000 programmes and projects with substantial detail about the nature of these engagements, lead organizations etc. The mapping allowed for the fact that the Ocean Decade projects and programmes might contribute to up to three of the priorities identified in Phase 1.
- The second step of the methodology involved ranking all the Phase 1 priorities by the number of Ocean Decade projects/programmes that contributed to them. This ranking showed which Phase 1 priorities were most supported and those where the number of supporting partners was thinnest. This is a relevant consideration for IOC when judging where best to allocate its scarce resources. This second step of the process also included additional in-depth mapping of the wider supply of ocean services to provide (i) additional context at a global level² and (ii) further granular detail of the contents of the Ocean Decade database as it related to Phase 1 priorities.

by a minority of respondents that their needs are not met even though a majority feels otherwise; (iii) other factors identified by IOC Secretariat during discussions/review.

² By mapping contributions in the key priority areas identified under Phase 1 made by other UN agencies (notably UNEP, FAO, ISA, WMO) Phase 2 also provides a basis for realizing opportunities to deliver UN80 in the oceanographic space.

- The third and final step of the methodology consisted of sharing the ranking with the 4 IOC sub-commissions (IOC UNESCO Africa, IOC UNESCO CARIBE, IOC UNESCO INDIO and IOC UNESCO WESTPAC and IOC vice chairs to test whether (i) any priorities were missing from the Phase 1 consultation; and (ii) the presented ranking (adjusted for each region) resonated with participants and interviewees; and obtain early indications where IOC might focus its efforts given the presence of other partners and the extent of still unmet need.



High-Level Institutional Overview of Supply Side Provision of Ocean Services

The global ocean landscape is a multi-layer system. The layers include: (i) a legal and diplomatic layer anchored in UNCLOS, UN-Oceans, the UN Ocean Conference process, the new BBNJ Agreement, and the International Seabed Authority; (ii) a science-and-observing layer led by IOC-UNESCO, the UN Ocean Decade, GOOS, IODE, OBIS, GEBCO and related scientific networks; (iii) a safety layer is led by IMO, IHO, IALA, WMO, IOC's tsunami programme, Cospas-Sarsat and search-and-rescue communities; (iv) an economy-and-finance layer is led by the World Bank's PROBLUE programme, the Ocean Panel, OECD, UNCTAD, UNEP FI, UN Global Compact, GEF and a set of blended-finance and private-sector coalitions. See Table 1.

Table 1: summary of key ocean actors and initiatives by functional family

Functional family	Key actors / initiatives	Core role	Connection across science, safety and economy
1. Global law, diplomacy and coordination	UNCLOS/DOALOS, UN-Oceans, UN Ocean Conference, BBNJ Agreement, ISA, CBD/Kunming-Montreal processes	Sets the legal and political frame. Defines jurisdictions, rights, duties, high-seas biodiversity rules, seabed governance, and SDG14 follow-up.	Science supplies evidence; safety bodies implement operational rules; economy actors translate principles into finance, investment and sector reform.
2. Ocean science, assessment and capacity	IOC-UNESCO, Ocean Decade, World Ocean Assessment, Global Ocean Science Report, GESAMP, SCOR, POGO, ICES/PICES and regional science bodies	Builds the knowledge base, assesses ocean status, develops scientific capacity and convenes mission-oriented science partnerships.	Feeds early warning, marine spatial planning, fisheries management, BBNJ implementation, blue-economy investment and public accountability.
3. Observing, data and digital ocean systems	GOOS, OceanOPS, Argo/OCG networks, IODE, OBIS, GEBCO/Seabed 2030, GEO Blue Planet, Copernicus Marine	Provides measurements, data infrastructure, models, maps, forecasts and decision-support systems.	The backbone for climate services, marine safety, hazard warnings, ecosystem management, market confidence and blue-economy planning.
4. Maritime safety and safety of life at sea	IMO, IHO, IALA, WMO METAREA/GMDSS services, Cospas-Sarsat, IMRF, flag/coastal/port state authorities	Regulates ship safety, navigational charts, aids to navigation, distress communications, search and rescue and maritime safety information.	Connects directly to shipping, ports, offshore energy, fisheries, tourism and human safety in the blue economy.
5. Coastal hazard safety and resilience	IOC tsunami programme, WMO coastal inundation systems and Early Warnings for All, GOOS, WACA, ORRAA, national hydro-meteorological services	Reduces risks from tsunamis, storm surge, coastal flooding, sea-level rise, marine heatwaves and extreme weather.	Needs observing data and locally trusted warnings; creates a bridge between safety, climate adaptation and finance.
6. Sustainable ocean economy, trade and finance	World Bank PROBLUE, Ocean Panel, OECD, UNCTAD, UNEP FI, UN Global Compact, GEF International Waters, MDBs, WOC	Frames and finances sustainable ocean sectors: fisheries, aquaculture, shipping, tourism, offshore renewable energy, ports, blue carbon, coastal infrastructure and pollution reduction.	Depends on credible science, risk disclosure, safeguards, governance quality and implementation capacity.
7. Fisheries, aquatic foods and ocean	FAO, COFI, Blue Transformation, RFMOs/RFBs, PSMA, FAO Global Record, WTO	Manages aquatic foods, combats IUU fishing, supports transparency and	Spans food security, livelihoods, trade, biodiversity, safety at sea and enforcement.

Functional family	Key actors / initiatives	Core role	Connection across science, safety and economy
resource governance	Fisheries Subsidies Agreement, Global Fishing Watch	reforms subsidies and fisheries value chains.	
8. Conservation, restoration and regional implementation	UNEP Regional Seas, CBD, IUCN, UNEP-WCMC/Protected Planet, GFCR, regional seas conventions, LMEs, MPA networks	Translates global commitments into regional and ecosystem-based governance, protected areas, restoration, pollution controls and monitoring.	Most effective when linked to finance, local livelihoods, science-policy advice and enforcement capacity.

Note: short descriptions of key organizations and frameworks sourced and listed below are included in Annex 1 from Source 1 (S1) to S50.

Law, Diplomacy and Global Coordination

The law-and-coordination layer provides the rules of the game. UNCLOS and DOALOS structure ocean jurisdiction, the rights and duties of States, and the UN reporting process. UN-Oceans adds a coordination function across the UN system and the ISA, but it is not a delivery agency and does not have an independent programme budget [S1].

The new BBNJ Agreement is the most consequential recent addition. It moves high-seas biodiversity from negotiation to implementation and will require scientific evidence, benefit-sharing rules, environmental impact assessment capacity, area-based management tools, and financial and technology-transfer mechanisms [S35]. ISA sits alongside this as the formal body for mineral-resource activities in the Area; its dual mandate makes it central to deep-sea mining debates and to deep-sea science [S36].

The UN Ocean Conference process is the highest-profile global political platform for SDG14. Its value is agenda-setting and commitment-tracking, not regulation. UNOC3 in Nice refreshed the political narrative and voluntary commitments around ocean action [S47-S48].

Ocean Science, Assessment and Capacity

IOC-UNESCO is the central intergovernmental science node. It hosts or coordinates many of the systems that make ocean science usable: the Ocean Decade, GOOS, IODE, OBIS, GEBCO collaboration, tsunami warning coordination and capacity development. The Global Ocean Science Report is the best global baseline on ocean-science capacity and maps research infrastructure, workforce, funding, publications, data and strategy [S3].

The Ocean Decade is the live implementation framework for mission-oriented science. Its endorsed actions are not one programme but a portfolio of initiatives across regions, themes and partners; this makes it useful for scanning who is already working on a topic [S4]. Scientific networks such as SCOR, POGO, ICES and analogous regional bodies provide the working-group and advice architecture that connects academic capability to management questions [S13-S15]. Their authority comes less from legal mandate and more from expert credibility, standards, peer networks and sustained relationships with decision-makers.

Observing, Data and the Digital Ocean

GOOS is the foundational observing architecture. It connects physical, chemical and biological essential ocean variables to climate, operational services and ocean health, and is led by IOC with WMO, UNEP and the International Science Council as co-sponsors [S5-S6].

OceanOPS provides the operational coordination and monitoring function for global in-situ networks, including Argo, moorings, ships, gliders and sea-level systems [S7].

IODE, OBIS and GEMCO/Seabed 2030 handle the data and product layer: data exchange, biodiversity records and bathymetry. These are the quiet infrastructure behind BBNJ implementation, EIAs, marine spatial planning, hazard modelling, ecosystem management and navigation [S8-S10].

GEO Blue Planet and Copernicus Marine illustrate the transition from observing to service delivery: turning earth observation, model outputs and forecasts into decision support for safety, fisheries, climate adaptation, shipping, coastal management and blue markets [S11-S12].

Maritime Safety and Safety of Life at Sea

IMO is the central regulator for maritime safety, shipping standards, collision rules, search and rescue conventions, dangerous goods, seafarer standards and related codes [S16]. IHO, IALA and WMO then provide essential operational layers: hydrographic surveying and charts, aids to navigation, and meteorological warnings and safety information [S18-S22].

Search and rescue is a system rather than a single organization. The IMO SAR Convention defines global SAR areas and cooperation principles; Cospas-Sarsat supplies the satellite-aided distress alert layer; and the IMRF supports the practitioner network and capacity exchange [S17, S23-S24].

Safety increasingly extends beyond conventional shipping. It includes safe ports, offshore energy, digital navigation, alternative fuels, fishing-vessel safety, seafarer welfare, coastal hazards, maritime cybersecurity and safety in emerging blue-economy sectors. The Lloyd's Register Foundation Ocean Centres initiative is notable because it explicitly frames safety as a condition for sustainable blue economy transitions [S25].

Coastal Hazards, Early Warning and Resilience

Ocean safety for coastal communities is built around warnings, preparedness and resilience finance. The IOC tsunami programme provides one of the clearest examples of global science-to-safety infrastructure, connecting risk assessment, early-warning systems and community preparedness [S20]. WMO's coastal inundation work sits in the wider Early Warnings for All agenda and links weather, water, climate and ocean hazards [S21].

The same observing infrastructure that supports science also supports coastal safety. Tide gauges, wave buoys, Argo, satellites, bathymetry, ocean forecasts and coastal models all feed warnings. The implementation challenge is not only technical; it is last-mile communication, trust, evacuation planning, institutional accountability and sustainable financing. World Bank regional programmes such as WACA, and finance coalitions such as ORRAA, translate coastal risk into investment and insurance solutions. This is where ocean safety, adaptation, natural capital and the economy converge [S44, S50].

Sustainable Ocean Economy, Trade and Finance

The blue economy layer has several distinct actor types. PROBLUE is the strongest operational donor platform, supporting countries with diagnostics, policy advice, technical assistance and investment preparation [S26-S28]. The Ocean Panel offers a high-level policy narrative on sustainable ocean management for people, nature and the economy [S29]. OECD provides comparative policy analysis and indicators, while UNCTAD frames the ocean economy through trade, development and the needs of SIDS and coastal developing economies [S30-S31].

Finance and business initiatives translate policy into investment norms. UNEP FI's Sustainable Blue Economy Finance Initiative provides the financial-sector guidance layer; the UN Global Compact Ocean Stewardship Coalition provides corporate principles and sector roadmaps; the World Ocean Council mobilizes cross-sector private-sector leadership [S32-S33, S45]. Blended and catalytic finance mechanisms such as GEF International Waters, the Global Fund for Coral Reefs and ORRAA are important because they operate in areas where public goods, risk, biodiversity and community resilience are hard for conventional finance to handle [S42-S44].

Fisheries, Aquatic Foods and Ocean Resource Governance

Fisheries and aquatic foods are where ocean science, safety, trade, economy and food security meet. FAO's Blue Transformation sets the global framing around fisheries management, sustainable aquaculture and value-chain efficiency, transparency, traceability and food safety [S37].

RFBs and RFMOs translate global norms into regional fishery management. Some have binding decision-making power, making them critical to high-seas and transboundary fish-stock governance [S38]. Enforcement and transparency are strengthened by the FAO Port State Measures Agreement, the Global Record and Global Fishing Watch [S39-S40, S46]. The WTO Agreement on Fisheries Subsidies adds a trade-law lever to fisheries sustainability by disciplining subsidies associated with IUU fishing, overfished stocks and unmanaged high-seas fishing [S41]. This makes subsidy reform part of the ocean-governance taxonomy rather than a separate trade issue.

Conservation, Restoration and Regional Implementation

UNEP Regional Seas is the main regional implementation architecture for pollution, biodiversity, climate and integrated ocean governance. It covers 18 regions with action plans, conventions and protocols, making it a practical bridge between global commitments and regional institutions [S34].

CBD, IUCN, UNEP-WCMC and protected-area systems provide conservation targets, standards, knowledge and reporting. The value of this layer is not only protected-area designation but also management effectiveness, ecological representativeness, connectivity, monitoring and benefits for local communities [S49].

Large Marine Ecosystem programmes and GEF-backed International Waters projects operate at a scale that fits ecological systems better than national borders. They are particularly relevant where ocean pressures cross jurisdictions, such as pollution, hypoxia, overfishing, habitat loss and ecosystem restoration [S42].

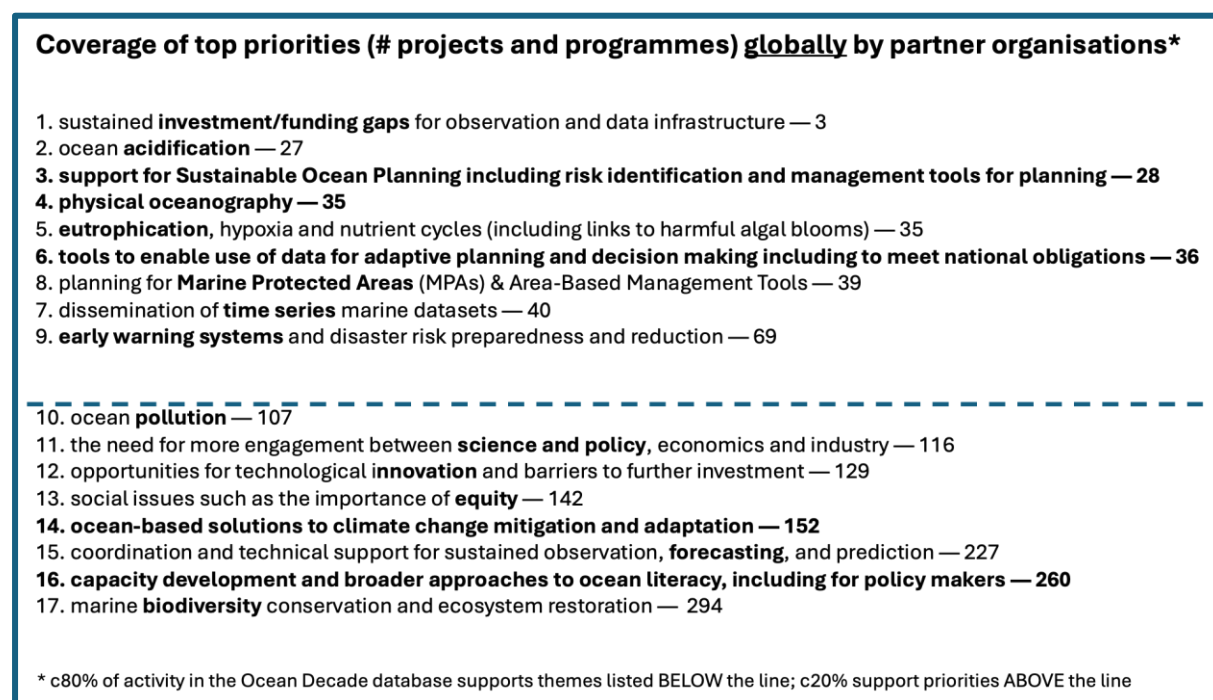
Results of Ranking of Phase 1 Priorities by # Supporting Projects and Programmes Listed in Ocean Decade Database

Across all Phase 1 priorities marine biodiversity and ecosystem restoration, capacity development and ocean literacy, and sustained observations/forecasting are the most extensive areas of activity. A second tier of priorities - including ocean-climate solutions, equity, technological innovation, science-policy-industry engagement and pollution - is also substantial. More specialised priorities such as ocean acidification, eutrophication, physical oceanography, early warning and disaster-risk preparedness and sustained investment in data infrastructure have smaller portfolios, but these often contain high-value programme-scale or network actions that serve multiple regions.

Active actions in database	856
Priority-action matches	1725 across 17 priority headings
Action type mix	63 programmes, 660 projects and 133 contributions
Distinct lead institutions	734
Largest priority portfolios	Marine biodiversity conservation and ecosystem restoration (294); Capacity development and broader approaches to ocean literacy, including for policy makers (260); Coordination and technical support for sustained observation, forecasting, and prediction (227); Ocean based solutions to climate change mitigation and adaptation (152); Social issues such as the importance of equity (142)

Nine priorities represent just 20% of all projects and programs whereas a further 8 priorities account for 80% of all projects and programs. These two groups of priorities are separated by a dotted line in 1X. The priorities above the line, as measured by the number of projects and programmes addressing them in the Ocean Decade database, are those that appear to be relatively less extensively serviced than those below the line. See Annex 2 for detailed listings.

Figure 1: Ranking of priorities by number of supporting programmes and projects³



Results of Focus Group Discussions and Interviews

The Phase 2 discussions broadly confirm the priority areas identified in Phase 1, but they sharpen the strategic question facing IOC. The issue is not primarily whether the topics are the right ones.

³ Note this ranking differs marginally from the ranking shared during the Phase 2 consultations as it excludes closed projects, programmes and contributions.

Across interviews and the regional consultations with the sub-commissions, the stronger message is that IOC and its partners are active across many priority areas, but Member States still lack the sustained, regionally grounded services needed to turn ocean science into usable capacity, policy tools, investment cases and implementation support.

The clearest cross-cutting finding is the persistence of a science-to-service gap. The Vice-Chair interviews describe this as a “last mile” problem: observations, databases and scientific outputs exist, but they are not consistently converted into actionable information, decision-support tools, planning frameworks, risk guidance or policy-relevant services for Member States. The regional consultations reinforce the same point from the demand side. Participants did not simply ask for more science or more data; they asked for services that help ministries, planning agencies, coastal managers and national focal points to use that science in practice.

This has important implications for IOC’s positioning. The consultations suggest that IOC’s distinctive role is not to duplicate academic research, compete with every ocean actor, or become a large project implementer in all areas. Its comparative advantage lies in acting as a regional service integrator: identifying gaps where needs are high and provision is thin; organising science, data and standards; convening partners; building capacity; supporting policy uptake; and helping Member States access finance and implementation support.

What is Already Working?

The wider ecosystem is not uniformly weak. Several areas already have active provision, useful institutions or promising regional platforms. Tsunami and early warning systems are repeatedly identified as one of IOC’s clearest success stories and a model for visible, practical, Member State-facing services. Physical oceanography and forecasting are also comparatively more mature than biogeochemical, ecosystem or climate-linked services. Some areas, including biodiversity and general capacity development, show high activity in the Ocean Decade ecosystem, although both documents caution that activity levels do not necessarily imply adequate impact, equity or service delivery.

At regional level, the PowerPoint identifies important existing assets. In IOCARIBE, the Cartagena regional framework, biodiversity and pollution coverage, and Marine Protected Area activity provide a platform for further work. In WESTPAC, Regional Seas programmes, national institutes, the WESTPAC convening function and NEAR-GOOS all demonstrate that regional cooperation and data collaboration are possible. In IOCINDIO, South Asian Seas, the Kuwait Convention, national agencies and IOCINDIO working groups already provide foundations across observation, disaster risk reduction, pollution and capacity. In IOCAFRICA, ECOWAS, UEMOA, the African Union, Regional Seas programmes and IOCAFRICA processes provide political, technical and coordination anchors.

The significance of these assets is that IOC does not need to start from zero. In most regions, the opportunity is to connect, strengthen and focus existing institutions rather than create parallel mechanisms. The gap is therefore less about institutional absence and more about alignment, delivery capacity, science-policy translation, and access to sustained finance.

What is Missing?

Five service gaps emerge consistently across the interviews and regional consultations.

First, Member States need sustained regional observation and data services. Both documents stress that data availability does not equal data usability. WESTPAC participants highlighted large volumes of data from satellites, models, Argo floats, national observations and open-ocean work, but noted continuing weaknesses in access, organisation, interoperability and practical use. IOCINDIO similarly framed sustained and real-time observation and data sharing as foundational to forecasting, early warning, pollution tracking, hypoxia, climate impacts and ocean planning. IOCAFRICA underlined that gaps in observations, accessibility and interoperability undermine coastal erosion, pollution, MSP, MPAs and blue economy planning.

Second, long-term observing and data systems remain structurally underfunded. The Vice-Chair interviews make the point that long-term observations, archives and data infrastructure require decades of continuity, but are poorly matched to short-term project funding. This creates chronic under-provision of the very infrastructure on which most other services depend. Support for sustained investment and addressing funding gaps for observation and data infrastructure is one of the least-covered priority areas in the wider project landscape.

Third, sustainable ocean planning is still insufficiently operationalised. Across the documents, sustainable ocean planning is framed as broader than conventional marine spatial planning. It requires monitoring, evidence generation, risk identification, adaptive feedback loops, plan revision and decision-support tools that can inform policy and investment under conditions of climate change. This makes it a potentially powerful integrating platform for IOC because it links observations, data systems, ecosystem knowledge, climate risk, governance, capacity development and finance.

Fourth, capacity development remains too disconnected from implementation. The regional consultations emphasised that capacity needs exist along the whole chain from observation to analysis, interpretation, service development and policy uptake. WESTPAC stressed the need to connect capacity development with research and implementation; IOCINDIO argued that human resources and technology transfer should be treated as headline priorities; and IOCAFRICA linked national institutional constraints with the limited capacity of the regional secretariat itself. The implication is that capacity development should not be an occasional training add-on, but a core design principle of regional service delivery.

Fifth, equity and participation are service gaps in their own right. Interviews point to regional disparities in Africa, participation barriers in Asia and developing countries, and perceptions that IOC can appear Western- or Europe-centric. The regional consultations make this more concrete: financial, technical, language and institutional barriers mean that inclusiveness on paper does not always translate into practical participation.

Regional Differentiation Across the Four Sub-Commissions

The consultations also show that the common service gaps take different forms by region.

In IOCARIBE, the existing regional framework and coverage of biodiversity, pollution and MPAs provide a relatively strong base. The remaining opportunity appears to lie in raising science in the minds of policymakers, improving access to databases for SIDS, supporting sustainable ocean economy and ecosystem restoration priorities, strengthening integrated and interoperable datasets, and facilitating cross-island learning and coordination. In addition, there are specific existing requests from Guatemala on MSP, Antigua and Barbados on sustainable ocean planning, and Venezuela on observation systems.

In WESTPAC, the strongest needs relate to time-series marine data, regional data centres, AI-enabled synthesis, ocean planning, small-island development, practical participation by less-resourced states, and access to climate and development finance. The region has important assets, including national institutes, WESTPAC's convening function and NEAR-GOOS, but global-regional links remain weak and direct access to implementation partners and finance is insufficient.

In IOCINDIO, the key gaps include real-time observing systems, data sharing, multi-hazard early warning, marginal seas–open ocean linkages, pollution and nutrient dynamics in semi-enclosed seas, monitoring of the central Indian Ocean, and BBNJ-related science for EIAs, MPAs, ABMTs and the Clearing-House Mechanism. IOC's added value in this region lies in supporting real-time observation systems and regional data-sharing standards, integrating capacity development and technology transfer, providing regional BBNJ guidance, focusing on under-served seas and the central Indian Ocean, and strengthening IOCINDIO as a more deliverables-focused regional hub.

In IOCAFRICA, participants placed particular emphasis on coastal erosion and coastal resilience, climate impacts on fisheries and marine resources, pollution, eutrophication, harmful algal blooms, MSP, blue economy planning, ocean literacy and people-centred approaches. IOC's role should include Africa-specific science-to-policy and policymaker literacy programmes, support for MSP and integrated ocean planning, stronger national coordination and empowered focal points, and investment in the IOCAFRICA secretariat as a regional delivery pillar.

IOC's Added Value – An Emerging Picture

Taken together, the evidence points to a clearer strategic proposition for IOC that can be tested in the proposed third and final phase of the Future of the Ocean consultation: ocean science to ocean services for Member States. IOC's niche is to turn ocean science into trusted, policy-relevant, intergovernmentally legitimate services. These could include standards, guidance, risk tools, planning frameworks, indicators, capacity packages, data services, regional coordination mechanisms and finance-ready programme concepts.

This proposition has six practical dimensions.

First, IOC should continue to steward long-term observations and data as public-good infrastructure. This includes advocating for sustained financing, protecting long time series, supporting interoperability, and helping regional systems connect to global observing and data architectures.

Second, IOC should make sustainable ocean planning one of its main integrator priorities. This would allow IOC to connect observation, data, ecosystem science, climate risk, capacity development and policy advice in a way that directly supports Member State implementation.

Third, IOC should strengthen science-to-policy services. This includes support for ministries and policymakers, not only scientists: decision-support products, risk information, policy guidance, ocean literacy for decision-makers, and translation of complex scientific priorities into policy-relevant applications.

Fourth, IOC should selectively deepen support for less mature thematic services. The interviews identify weaker provision in biogeochemical forecasting, eutrophication, hypoxia, ocean acidification, carbon cycling, biodiversity restoration, ecosystem recovery, coastal resilience

and ocean-climate risk. These should not necessarily become standalone silos, but they should be connected to planning, early warning, ecosystem management and climate adaptation.

Fifth, IOC should treat regional mechanisms as core delivery assets. Regional committees and sub-commissions should not be seen as peripheral cost centres, but as the places where global science becomes relevant to Member State realities. The regional consultations reinforce this, showing that Member States value IOC most when it can organise regional science and data systems, convene partners and support policy uptake.

Sixth, IOC should mobilise climate and development finance through partnerships. The interviews suggest that IOC should not necessarily try to become a large implementing agency on its own. Rather, it should use its scientific, normative and intergovernmental legitimacy while partnering with larger UN agencies, development banks, accredited entities and regional institutions for programme design and delivery.

Strategic Conclusion

The Phase 2 consultation potentially reframes the strategic challenge for IOC. The question is no longer only “which ocean priorities matter most?” It is “what regional services are missing that prevent Member States from acting on these priorities?” The answer is consistent across interviews and regional consultations: Member States need IOC to help convert science into sustained, equitable and regionally grounded capability.

This points toward a future IOC offer that is more focused, more regionalised, more visibly service-oriented and more explicitly linked to implementation. The strongest candidate areas are sustained observation and data-sharing services; sustainable ocean planning; applied science-to-policy tools; early warning and resilience; pollution, ecosystem health and ocean-climate services; BBNJ-related technical support; implementation-oriented capacity development; and inclusive participation mechanisms.

In this model, IOC’s role would be neither to do everything itself nor to retreat into convening alone. Its value would be to act where its mandate, legitimacy and regional structures give it a distinctive contribution: setting standards, organising data and science systems, translating knowledge into tools for decision-makers, strengthening regional delivery platforms, and brokering the partnerships and finance needed to turn Member State priorities into practical services.

Annex 1: Stakeholders Consulted

To be completed

Annex 2: Source Register

(Lists the main sources used to build the taxonomy. Source IDs in the body refer to this register.)

S1	UN-Oceans / CEB: the UN-system inter-agency mechanism for coordination, coherence and effectiveness on ocean and coastal issues, including the ISA. https://unsceeb.org/un-oceans
S2	Third World Ocean Assessment / UN Regular Process is the global integrated assessment of the state of the marine environment, including environmental, economic and social aspects. https://www.un.org/regularprocess/woa3
S3	IOC-UNESCO Global Ocean Science Report: Global record of how, where and by whom ocean science is conducted, including workforce, infrastructure, funding, publications, data and strategies. https://www.ioc.unesco.org/en/global-ocean-science-report
S4	UN Ocean Decade endorsed actions: The Ocean Decade portfolio reached 831 endorsed initiatives after the March 2026 wave of actions. https://oceandecade.org/news/new-wave-of-endorsed-decade-actions-over-100-new-initiatives-accelerating-ocean-science-and-partnerships-towards-2030/
S5	Global Ocean Observing System (GOOS): GOOS provides countries and end-users with information on essential ocean variables for climate, operational services and ocean health. https://www.ioc.unesco.org/en/global-ocean-observing-system
S6	WMO on GOOS co-sponsorship: GOOS is led by IOC-UNESCO and co-sponsored by WMO, UNEP and the International Science Council. https://wmo.int/site/knowledge-hub/programmes-and-initiatives/global-ocean-observing-system-goos
S7	OceanOPS / IOC-UNESCO: OceanOPS coordinates and monitors oceanographic and marine meteorological observing platforms, including Argo, DBCP, OceanSITES, GO-SHIP, SOT, GLOSS and OceanGliders. https://www.ioc.unesco.org/en/joint-centre-oceanographic-marine-meteorological-observing-programme
S8	IODE: The International Oceanographic Data and Information Exchange facilitates oceanographic data and information exchange among IOC Member States and users. https://iode.org/
S9	Ocean Biodiversity Information System (OBIS): OBIS is an IOC flagship data system integrating, quality-controlling and providing access to marine species occurrence records. https://www.ioc.unesco.org/en/obis
S10	GEBCO: GEBCO produces global bathymetric data products and hosts the Seabed 2030 collaboration to map the world ocean floor by 2030. https://www.gebco.net/
S11	GEO Blue Planet: GEO Blue Planet connects ocean and coastal observations with policy and decision-making through a network of experts and partner organizations. https://geoblueplanet.org/
S12	Copernicus Marine Service: Copernicus Marine provides free and open scientifically assessed ocean data, monitoring and forecasting products across the global ocean. https://marine.copernicus.eu/
S13	SCOR: The Scientific Committee on Oceanic Research addresses interdisciplinary ocean science questions through working groups, projects and capacity development. https://scor-int.org/
S14	Partnership for Observation of the Global Ocean (POGO): POGO is a partnership of major ocean research institutions supporting innovation, capacity development and advocacy for ocean observing. https://pogo-ocean.org/
S15	International Council for the Exploration of the Sea (ICES): ICES provides scientific advice on marine ecosystems to governments and international regulatory bodies in the North Atlantic and adjacent seas. https://www.ices.dk/advice/pages/latest-advice.aspx

S16	IMO maritime safety: IMO develops global maritime safety regulations, conventions, codes and standards including collision regulations, seafarer standards and search and rescue conventions. https://www.imo.org/en/ourwork/safety/regulations
S17	IMO SAR Convention: The 1979 SAR Convention divides the world's oceans into 13 search and rescue areas and supports cooperation on rescue of persons in distress at sea. https://www.imo.org/en/about/conventions/pages/international-convention-on-maritime-search-and-rescue-%28sar%29.aspx
S18	International Hydrographic Organization (IHO): IHO works to ensure that seas, oceans and navigable waters are surveyed and charted, supporting safety of navigation and marine environmental protection. https://iho.int/
S19	WMO maritime safety: WMO coordinates marine meteorological information and warnings through the World-Wide Met-Ocean Information and Warning Service and GMDSS-related METAREAs. https://wmo.int/maritime-safety-0
S20	IOC-UNESCO tsunami programme: The IOC-UNESCO tsunami programme supports Member States in risk assessment, tsunami early warning systems and preparedness education. https://www.ioc.unesco.org/en/global-tsunami-early-warning-and-mitigation-programme
S21	WMO coastal inundation early warning: WMO guidance on coastal inundation forecasting and early warning supports multi-hazard early warning systems under Early Warnings for All. https://public.wmo.int/media/magazine-article/implementing-coastal-inundation-early-warning-systems-blueprint-ew4all
S22	IALA: IALA became an intergovernmental organization in August 2024 to strengthen the development and harmonization of marine aids to navigation worldwide. https://www.iala.int/about-iala/
S23	Cospas-Sarsat: Cospas-Sarsat is the international satellite-aided search and rescue system for distress beacons on land, sea and air. https://www.cospas-sarsat.int/en/system-overview/cospas-sarsat-system
S24	International Maritime Rescue Federation: IMRF is a global network of search and rescue organizations, authorities, volunteers and industry partners focused on saving lives at sea. https://www.international-maritime-rescue.org/
S25	Lloyd's Register Foundation Ocean Centres: The Ocean Centres initiative places safety at the heart of blue economy transitions in emerging ocean economies. https://www.lrfoundation.org.uk/programmes/ocean-centres
S26	World Bank PROBLUE: PROBLUE is a World Bank-administered multi-donor trust fund supporting sustainable and integrated development of marine and coastal resources. https://www.worldbank.org/en/programs/problue
S27	PROBLUE Annual Report 2025: In FY25 PROBLUE reported a portfolio of US\$229 million across more than 100 economies, including 55 low- and lower-middle-income economies. https://thedocs.worldbank.org/en/doc/c2b10aa06282d8d5fe03a79b33d179e7-0320072025/
S28	Blue Economy Development Framework: The World Bank / PROBLUE Blue Economy Development Framework is a toolkit for sustainable ocean economy development. https://thedocs.worldbank.org/en/doc/e5c1bdb0384e732de3cef6fd2eac41e5-0320072021/the-blue-economy-development-framework
S29	High Level Panel for a Sustainable Ocean Economy: The Ocean Panel advances a policy agenda for putting sustainability at the heart of ocean management for people, nature and the economy. https://oceanpanel.org/

S30	OECD sustainable ocean economies: OECD analysis frames the ocean as a source of opportunities and vulnerabilities for developing countries and SIDS, including diversification, decarbonisation and climate risk. https://www.oecd.org/en/publications/promoting-sustainable-ocean-economies_72055d7f-en/full-report.html
S31	UNCTAD Sustainable Ocean and Blue Economy: UNCTAD links the ocean economy to trade, development, livelihoods and international trade routes. https://unctad.org/topic/trade-and-environment/oceans-economy
S32	UNEP Finance Initiative Sustainable Blue Economy Finance Principles: UNEP FI hosts the first global guiding framework for financial institutions towards a sustainable blue economy. https://www.unepfi.org/blue-finance/
S33	UN Global Compact Ocean Stewardship Coalition: The coalition convenes companies and partners around Sustainable Ocean Principles for responsible ocean business. https://unglobalcompact.org/take-action/ocean
S34	UNEP Regional Seas Programme: UNEP Regional Seas covers 18 regions with regional action plans, conventions and protocols on pollution, biodiversity, climate and integrated governance. https://www.unep.org/topics/ocean-seas-and-coasts/regional-seas-programme
S35	BBNJ Agreement: The Agreement on marine biodiversity of areas beyond national jurisdiction was adopted in June 2023 and entered into force on 17 January 2026. https://www.un.org/bbnjagreement/en
S36	International Seabed Authority: ISA organizes and controls mineral-resources-related activities in the Area for the benefit of humankind and must protect the marine environment from harmful effects. https://www.isa.org.jm/about-isa/
S37	FAO Blue Transformation: FAO's Blue Transformation focuses on fisheries management, sustainable aquaculture and efficient, transparent, traceable value chains. https://www.fao.org/policy-support/policy-themes/blue-transformation/en
S38	FAO Regional Fishery Bodies / RFMOs: RFBs and RFMOs are intergovernmental bodies through which States cooperate on regional fisheries management; some can adopt binding measures. https://www.fao.org/in-action/vulnerable-marine-ecosystems/background/regional-fishery-bodies/en/
S39	FAO Port State Measures Agreement: The PSMA is the first binding international agreement specifically targeting illegal, unreported and unregulated fishing. https://www.fao.org/iuu-fishing/international-framework/psma/en/
S40	FAO Global Record: The Global Record provides a single access point for fishing-vessel information to support transparency and combat IUU fishing. https://www.fao.org/global-record/en/
S41	FAO on WTO Agreement on Fisheries Subsidies: The WTO Agreement on Fisheries Subsidies prohibits subsidies linked to IUU fishing, overfished stocks and unmanaged high-seas fishing. https://www.fao.org/iuu-fishing/news-events/detail/en/c/1742372/
S42	Global Environment Facility International Waters: GEF supports sustainable management of coastal and marine ecosystems through multi-country cooperation in large marine ecosystems and transboundary systems. https://www.thegef.org/what-we-do/topics/international-waters
S43	Global Fund for Coral Reefs: GFCR mobilizes public and private resources for reef-positive businesses and innovative finance for coral reef ecosystems and communities. https://globalfundcoralreefs.org/
S44	Ocean Risk and Resilience Action Alliance: ORRAA drives investment into coastal and ocean natural capital to improve resilience of people in coastal areas. https://oceanriskalliance.org/

S45	World Ocean Council: WOC is a cross-sectoral business alliance for private-sector leadership and collaboration on ocean sustainability, stewardship and science. https://worldoceancouncil.org/
S46	Global Fishing Watch: Global Fishing Watch promotes transparency of vessel and ocean activity data to improve governance, accountability and fisheries management. https://globalfishingwatch.org/transparency/
S47	UN Ocean Conference 2025 / Nice Ocean Action Plan: The 2025 UN Ocean Conference concluded with a declaration and voluntary commitments intended to accelerate SDG14 implementation. https://www.un.org/en/desa-en/UNOC3-delivers-unified-call-to-action
S48	UN Ocean Conference ocean commitments registry: The UN tracks voluntary ocean commitments and action networks supporting SDG14 implementation. https://sdgs.un.org/partnerships/action-networks/ocean-commitments
S49	IUCN: IUCN is a global Union of government and civil society organizations providing knowledge and tools for conservation and sustainable development. https://iucn.org/
S50	WACA / World Bank coastal resilience: The World Bank's West Africa Coastal Areas programme supports coastal resilience and blue economy development. https://www.worldbank.org/en/programs/west-africa-coastal-areas-management-program

Annex 3: Supply-Side Provision by Phase 1 Priorities

Marine Biodiversity Conservation and Ecosystem Restoration

Portfolio size	294 active actions (163 Priority 1, 89 Priority 2, 42 Priority 3 matches)
Action type mix	14 programmes, 249 projects, 31 contributions
Lead institutions	273 distinct lead institutions
Regional orientation	Europe (125); IOC WESTPAC / Pacific (94); Global / cross-regional (93); North America (57)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, data platforms, modelling and decision-support tools, and training, ocean literacy, outreach and co-design
Programme-scale examples	"The Nippon Foundation-Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation), "World Harbour Seascape Restoration Programme" (led by Sydney Institute of Marine Science), and "Marine Life 2030" (led by Marine Biodiversity Observation Network (MBON) & National Oceanographic and Atmospheric Administration (NOAA))

Synthesis by Region

Global / Cross-Regional

Across global and cross-regional actions, 93 active actions led by 91 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and technology innovation, autonomous systems and AI. Programme-scale examples include "The Nippon Foundation-Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation) and "World Harbour Seascape Restoration Programme" (led by Sydney Institute of Marine Science). Illustrative larger projects include "Kelp Forest Challenge" (led by Kelp Forest Alliance, contributing to the wider Marine Life 2030 initiative) and "Global Coastal Ocean Restoration and Resilience" (led by the Institute for Corporate Citizenship (ICC), UNISA, contributing to the wider CoastPredict initiative). For example, the Nippon Foundation-Nekton Ocean Census is a global alliance of partners uniting to accelerate the discovery of marine biodiversity to galvanise sustainable management and protection.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 94 active actions led by 92 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, observing, monitoring and forecasting systems, and technology innovation, autonomous systems and AI. Programme-scale examples include "World Harbour Seascape Restoration Programme" (led by Sydney Institute of Marine Science) and "Global Climate Impacts of Methane Seeps" (led by Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou)). Illustrative larger projects include "Kelp Forest Challenge" (led by Kelp Forest Alliance, contributing to the wider Marine Life 2030 initiative) and "Making environmental DNA FAIR" (led by Commonwealth Scientific and Industrial Research Organization, contributing to the wider Ocean Biomolecular Observing Network (OBON)). For example, World Harbour Seascape Restoration Programme, in collaboration with the internationally awarded Living Seawalls Project, will enhance and rehabilitate ecosystem services of urbanized areas where ecosystem restoration is unfeasible with the use of innovative solutions.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 22 active actions led by 22 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, training, ocean literacy, outreach and co-design, and technology innovation, autonomous systems and AI. Illustrative larger projects include "Blue Ocean Credits Program" (led by Reef Aquaculture Conservancy, contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme) and "One Ocean, many rocky shores to monitor & restore" (led by Museo Argentino de Ciencias Naturales Bernardino Rivadavia, contributing to the wider CoastPredict initiative). For example, Blue Ocean Credits Program (BOCP) focuses on three pillars: (1) Identifying key ocean knowledge by studying blue carbon ecosystems (mangroves, seagrass, seaweed), monitoring coral biodiversity via initiatives like CRUWITS, and promoting sustainable low-trophic aquaculture for food.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 26 active actions led by 26 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and training, ocean literacy, outreach and co-design. Illustrative larger projects include "Blue Ocean Credits Program" (led by Reef Aquaculture Conservancy, contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme) and "Korea-Indonesia Coastal Ocean Env. Survey Training" (led by Korea-Indonesia Marine Technology Cooperation Research Center (MTCRC), contributing to the wider Global Ocean Corps and Conveyor programme). For example, Korea-Indonesia Coastal Ocean Environment Survey Training aims to strengthen Indonesia's capacity to address marine biodiversity conservation, seawater pollution and coastal erosion through practical training, advanced survey equipment and cooperation with Korea.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 25 active actions led by 24 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and climate adaptation, mitigation and ocean-climate science. Programme-scale examples include "GEMS Ocean for Ocean and Coasts" (led by UN Environment Programme (UNEP)) and "Western Indian Ocean Marine Conservation Program (MARCOP)" (led by Western Indian Ocean Marine Science Association). Illustrative larger projects include "Global Coastal Ocean Restoration and Resilience" (led by Institute for Corporate Citizenship (ICC), UNISA, contributing to the wider CoastPredict initiative) and "Rewilding the Oceans with Giant Kelp (Kelp Blue)" (led by Kelp Blue, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, the GEMS Ocean for Ocean and Coasts Programme is a multi-stakeholder partnership bringing together experts from earth observation, monitoring and modelling communities, together with end users and stakeholders to provide fit-for-purpose information.

Europe

In Europe, 125 active actions led by 110 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools. Programme-scale examples include "The Nippon Foundation-Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation) and "CoastPredict - Observing and Predicting the Global Coastal Ocean" (led by Alma Mater Studiorum University of Bologna). Illustrative larger projects include "Global Sounds: Low-Cost Hydrophone Project" (led by Partnership for Observation of the Global Ocean (POGO) and Scientific Committee on

Oceanic Research (SCOR), contributing to the wider Ocean Decade Research Programme on the Maritime Continent) and "Fish biodiversity facing global change (FishGLOB)" (led by University of Montpellier, University of British Columbia, contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme). For example, the Nippon Foundation-Nekton Ocean Census is a global alliance of partners uniting to accelerate the discovery of marine biodiversity to galvanise sustainable management and protection.

North America

In North America, 57 active actions led by 52 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and technology innovation, autonomous systems and AI. Programme-scale examples include "Marine Life 2030" (led by Marine Biodiversity Observation Network (MBON) & National Oceanographic and Atmospheric Administration (NOAA)) and "Deep Ocean Observing Strategy (DOOS)" (led by Deep Ocean Observing Strategy). Illustrative larger projects include "F3 Future of Fish Feed" (led by Anthropocene Institute, contributing to the wider Sustainable Blue Food Futures for People and Planet programme) and "Fish biodiversity facing global change (FishGLOB)" (led by University of Montpellier, University of British Columbia, contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme). For example, Marine Life 2030 will establish the globally coordinated system to deliver actionable, transdisciplinary knowledge of ocean life to those who need it, promoting human well-being, sustainable development, and ocean conservation.

Capacity Development and Broader Approaches to Ocean Literacy, including for Policy Makers

Portfolio size	260 active actions (151 Priority 1, 77 Priority 2, 32 Priority 3 matches)
Action type mix	27 programmes, 185 projects, 48 contributions
Lead institutions	244 distinct lead institutions
Regional orientation	Global / cross-regional (112); Europe (107); IOC WESTPAC / Pacific (72); North America (44)
Main activity themes	training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools
Programme-scale examples	"Global Artificial Light at Night Network (GOALANN)" (led by University of Plymouth), "Ocean Practices for the Decade" (led by International Oceanographic Data and Information Exchange (IODE) & GOOS), and "Cultural Heritage Framework Programme" (led by Ocean Decade Heritage Network (ODHN))

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 112 active actions led by 107 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Global Artificial Light at Night Network (GOALANN)" (led by University of Plymouth) and "Ocean Practices for the Decade" (led by International Oceanographic Data and Information Exchange (IODE) & GOOS). Illustrative larger projects include "Growing International Knowledge of Coastal Oceans" (led by

Rutgers, The State University of New Jersey, contributing to the wider CoastPredict initiative) and "Plastic Clever Schools" (led by Common Seas, contributing to the wider Ocean Literacy With All (OLWA) programme). For example, Global Artificial Light at Night Network (GOALANN) brings together research professionals, NGO's and government entities from around the world to provide a central resource of expertise, projects and tools for policy makers, environmental managers, and maritime industries. The collective contribution to the priority is therefore to expanding skills, networks, educational materials and co-designed engagement so that scientists, practitioners, communities and policy makers can use ocean knowledge.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 72 active actions led by 69 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Global Hadal Exploration Programme (GHEP)" (led by Institute of Deep-Sea Science and Engineering, Chinese Academy of Sciences) and "Global Ocean Negative Carbon Emissions" (led by Xiamen University). Illustrative larger projects include "Ocean Accounts for Sustainable Ocean Development" (led by Global Ocean Account Partnership Secretariat, contributing to the wider Sustainable Ocean Planning programme) and "Ocean Literacy Across Languages" (led by Guangdong Ocean University, contributing to the wider Early Career Ocean Professionals Programme (ECOPs)). For example, the multidisciplinary initiative Global Hadal Exploration Programme (GHEP) aims to investigate the biodiversity, ecosystem, pollution, and geological processes unique to this extreme environment.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 32 active actions led by 31 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Protect Restore Ocean Capital and Blue Economies (PROCARIBE+)" (led by United Nations Office for Project Services (UNOPS) and United Nations Development Programme (UNDP)). Illustrative larger projects include "EUceano" (led by EUceano, contributing to the wider Ocean Literacy With All (OLWA) programme) and "SSF Curriculum: Youth Voices for Fishful Futures" (led by Coast 2 Coast, contributing to the wider Cultural Heritage Framework Programme (CHFP)). For example, Protect Restore Ocean Capital and Blue Economies (PROCARIBE+) will enable and support sustainable and resilient blue economies through upscaling of actions on marine spatial planning, marine conservation, Blue Carbon, sustainable fisheries, community grants, and enhanced regional ocean governance.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 28 active actions led by 27 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Nutrition sensitive marine aquaculture in Africa (AfriMAQUA)" (led by Institut de Recherche pour le Développement (IRD)). Illustrative larger projects include "Marine Plastics Abatement Through Hopeful Youth (MPATHY)" (led by Enviheals Foundations, contributing to the wider Cultural Heritage Framework Programme (CHFP)) and "Fisherman Weather Field School (SLCN)" (led by Agency for Meteorology Climatology and Geophysics (BMKG), contributing to the wider Observing Together programme). For example, through Nutrition sensitive marine aquaculture in Africa (AfriMAQUA) new interdisciplinary and multi-stakeholder partnerships and collaborations in and

among African countries will foster solution-oriented research and new technological innovations, capacity development, and knowledge and technology transfers, among others.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 23 active actions led by 22 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "SEAWARD Africa" (led by IOCAFRICA). Illustrative larger projects include "Bluer Africa" (led by Bluer Coast Community Development Initiative, contributing to the wider SEAWARD Africa programme) and "African Youths Sustainable Ocean Campaign" (led by The Atlantic Maritime Academy Nigeria (Institute of Nautical Studies and Ocean Research), contributing to the wider Ocean Literacy With All (OLWA) programme). For example, SEAWARD Africa is structured around four thematic components addressing sustainable management of marine resources; climate change and marine biodiversity; ocean pollution; and extreme events and disaster risk reduction.

Europe

In Europe, 107 active actions led by 100 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Global Artificial Light at Night Network (GOALANN)" (led by University of Plymouth) and "Ocean Practices for the Decade" (led by International Oceanographic Data and Information Exchange (IODE) & GOOS). Illustrative larger projects include "Plastic Clever Schools" (led by Common Seas, contributing to the wider Ocean Literacy With All (OLWA) programme) and "Ocean Citizen Science Project" (led by German Ocean Foundation, contributing to the wider Global Ocean Corps and Conveyor programme). For example, Global Artificial Light at Night Network (GOALANN) brings together research professionals, NGO's and government entities from around the world to provide a central resource of expertise, projects and tools for policy makers, environmental managers, and maritime industries.

North America

In North America, 44 active actions led by 38 lead organisations are linked to this priority. Taken together, they focus on training, ocean literacy, outreach and co-design, ecosystem restoration, biodiversity monitoring and habitat protection, and science-policy, industry and blue-economy engagement. Programme-scale examples include "Global Ocean Corps and Conveyor" (led by University of Michigan) and "The Hydrous presents: The Decade of Ocean Empathy" (led by The Hydrous). Illustrative larger projects include "Growing International Knowledge of Coastal Oceans" (led by Rutgers, The State University of New Jersey, contributing to the wider CoastPredict initiative) and "SeaKeepers' Seabed 2030 Project (SeaKeepers CSB)" (led by The International SeaKeepers Society, contributing to the wider Nippon Foundation-GEBCO Seabed 2030 Project). For example, Global Ocean Corps and Conveyor, based on experience in Peace Corps and with the Coastal Ocean Environment Summer School in Ghana aims to inspire large numbers of scientists, especially early-career scientists, into its ranks.

Coordination and Technical Support for Sustained Observation, Forecasting, and Prediction

Portfolio size	227 active actions (119 Priority 1, 77 Priority 2, 31 Priority 3 matches)
Action type mix	22 programmes, 178 projects, 27 contributions
Lead institutions	212 distinct lead institutions
Regional orientation	Europe (103); Global / cross-regional (99); IOC WESTPAC / Pacific (69); North America (46)
Main activity themes	observing, monitoring and forecasting systems, ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and technology innovation, autonomous systems and AI
Programme-scale examples	"Global Climate Impacts of Methane Seeps" (led by Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou)), "CoastPredict - Observing and Predicting the Global Coastal Ocean" (led by Alma Mater Studiorum University of Bologna), and "Digital Deep-sea Typical Habitats (Digital DEPTH)" (led by China Deep Ocean Affairs Administration)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 99 active actions led by 96 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection. Programme-scale examples include "Global Climate Impacts of Methane Seeps" (led by Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou)) and "CoastPredict - Observing and Predicting the Global Coastal Ocean" (led by Alma Mater Studiorum University of Bologna). Illustrative larger projects include "Marine Environment Reanalyses Evaluation Project" (led by Mercator Ocean International, contributing to the wider ForeSea ocean prediction programme) and "Coastal Ocean Resource Environment" (led by The Balearic Islands Coastal Ocean Observing and Forecasting System (SOCIB), contributing to the wider CoastPredict initiative). For example, the Global Climate Impacts of Methane Seeps surveys will create distribution maps of global methane seep ecosystems and help understanding of how they function over time, and conduct interdisciplinary research to help understand the fate and pathways of marine methane.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 69 active actions led by 65 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Programme-scale examples include "Global Climate Impacts of Methane Seeps" (led by Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou)) and "Digital Deep-sea Typical Habitats (Digital DEPTH)" (led by China Deep Ocean Affairs Administration). Illustrative larger projects include "Synergistic Observing Network for Ocean Prediction" (led by OceanPredict Observing System Evaluation Task Team (Meteorological Research Institute/Japan Meteorological Agency), contributing to the wider ForeSea ocean prediction programme) and "Animal-Borne Ocean Sensors: A decadal vision through new eyes" (led by Sydney Institute of Marine Science, contributing to the wider Ocean Observing Co-Design programme). For example, the Synergistic Observing Network for Ocean Prediction seeks to improve ocean and coastal prediction by combining satellite and in-situ observations, coastal

and open-ocean platforms, and new assimilation methods that draw more value from different observing systems.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 12 active actions led by 12 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, observing, monitoring and forecasting systems, and coastal resilience, hazards and disaster-risk work. Illustrative larger projects include "Red de Tecnologías para el Océano" (led by Colectivo Internacional Pelagos Okeanos, contributing to the wider Observing Together programme) and "Forecasting the Argentine Sea" (led by Centro de Investigaciones del Mar y la Atmósfera (CIMA/CONICET-UBA) - Center for Oceanic and Atmospheric Research (CIMA/CONICET-UBA), contributing to the wider CoastPredict initiative). For example, the mission of Red de Tecnologías para el Océano is to generate and provide free access to oceanographic data for the sustainable development of society and coastal communities.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 20 active actions led by 19 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Programme-scale examples include "Digital innovation Hand-in-Hand with fisheries and ecosystems..." (led by FAO of the UN, FI Division). Illustrative larger projects include "Earth Observation on Deltas and Estuaries" (led by Qingdao Institute of Marine Geology, China Geological Survey, contributing to the wider large-river deltas resilience initiative) and "An observatory of the North Atlantic Gateway" (led by Senckenberg, contributing to the wider Deep Ocean Observing Strategy (DOOS)). For example, Digital innovation Hand-in-Hand with fisheries and ecosystems...:

IOCAFRICA / Africa

In IOCAFRICA / Africa, 13 active actions led by 12 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, observing, monitoring and forecasting systems, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "GEMS Ocean for Ocean and Coasts" (led by UN Environment Programme (UNEP)) and "SEAWARD Africa" (led by IOCAFRICA). Illustrative larger projects include "Ocean to climate seamless forecasting in Africa" (led by Institut de Recherches Halieutiques et Océanologiques du Bénin (IRHOB), contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)) and "Global Coastal Ocean Restoration and Resilience" (led by Institute for Corporate Citizenship (ICC), UNISA, contributing to the wider CoastPredict initiative). For example, the GEMS Ocean for Ocean and Coasts Programme is a multi-stakeholder partnership bringing together experts from earth observation, monitoring and modelling communities, together with end users and stakeholders to provide fit-for-purpose information.

Europe

In Europe, 103 active actions led by 97 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection. Programme-scale examples include "CoastPredict - Observing and Predicting the Global Coastal Ocean" (led by Alma Mater Studiorum University of Bologna) and "Challenger 150 - A Decade to Study Deep-Sea Life" (led by DOSI - Deep Ocean Stewardship Initiative). Illustrative larger projects include "Marine Environment Reanalyses Evaluation Project" (led by Mercator Ocean International, contributing to the wider ForeSea ocean prediction programme) and

"Coastal Ocean Resource Environment" (led by The Balearic Islands Coastal Ocean Observing and Forecasting System (SOCIB), contributing to the wider CoastPredict initiative). For example, CoastPredict - Observing and Predicting the Global Coastal Ocean will integrate observations with numerical models to produce predictions with uncertainties from extreme events to climate, for the coastal marine ecosystems (their services), biodiversity, co-designing transformative response to science and societal needs.

North America

In North America, 46 active actions led by 41 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Programme-scale examples include "An Observing Air-Sea Interactions Strategy (OASIS)" (led by SCOR Working Group #162 -- Developing an Observing Air-Sea Interactions Strategy (OASIS)) and "Ocean Decade Research Programme on the Maritime Acoustic Environment" (led by Interagency Working Group for Ocean Sound and Marine Life). Illustrative larger projects include "FathomNet: Scaling up marine life observing" (led by Monterey Bay Aquarium Research Institute, contributing to the wider Marine Life 2030 initiative) and "Fishing Vessel ocean Observing Network" (led by Ocean Data Network, contributing to the wider CoastPredict initiative). For example, the Observing Air-Sea Interactions Strategy (OASIS) programme will provide observational-based knowledge to fundamentally improve weather, climate and ocean prediction, promote healthy oceans, the blue economy, and sustainable food and energy.

Ocean Based Solutions to Climate Change Mitigation and Adaptation

Portfolio size	152 active actions (73 Priority 1, 59 Priority 2, 20 Priority 3 matches)
Action type mix	16 programmes, 119 projects, 17 contributions
Lead institutions	143 distinct lead institutions
Regional orientation	Europe (71); Global / cross-regional (50); IOC WESTPAC / Pacific (44); IOCAFRICA / Africa (19)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, technology innovation, autonomous systems and AI, and coastal resilience, hazards and disaster-risk work
Programme-scale examples	"Global Ocean Negative Carbon Emissions" (led by Xiamen University), "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania), and "Global Subseafloor Ecosystem and Sustainability (GSES)" (led by Shanghai Jiao Tong University (SJTU) on behalf of International Center for Deep Life Investigation (IC-DLI))

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 50 active actions led by 49 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "Global Ocean Negative Carbon Emissions" (led by Xiamen University) and "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania).

Illustrative larger projects include "International Blue Carbon Institute" (led by Conservation International, contributing to the wider Global Ocean Decade Programme for Blue Carbon (GO-BC)) and "OZEON" (led by OZEON, contributing to the wider Early Career Ocean Professionals Programme (ECOPs)). For example, Global Ocean Negative Carbon Emissions: Securing mitigation and adaptation solutions to climate change is an urgent requirement.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 44 active actions led by 44 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and technology innovation, autonomous systems and AI. Programme-scale examples include "Global Ocean Negative Carbon Emissions" (led by Xiamen University) and "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania). Illustrative larger projects include "Governing Changing Oceans" (led by The University of Melbourne, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)) and "Action Plan for the Ocean" (led by CSIRO Environment, contributing to the wider Sustainable Ocean Planning programme). For example, Governing Changing Oceans examines how marine governance can adapt to novel ocean-based climate interventions, including seaweed farming and marine carbon dioxide removal, bringing together expertise in governance, fisheries, climate science, blue carbon, finance, conservation, Indigenous governance, co-management and community resilience.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 16 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "Protect Restore Ocean Capital and Blue Economies (PROCARIBE+)" (led by United Nations Office for Project Services (UNOPS) and United Nations Development Programme (UNDP)). Illustrative larger projects include "Popular Observatory of the Sea - Amazon coast" (led by Instituto de Pesquisas Científicas e Tecnológicas do Estado do Amapá- IEPA, contributing to the wider CoastPredict initiative) and "OceanWISE: Indigenous Knowledge Alliance" (led by Asociación Centro para la Autonomía y Desarrollo de los Pueblos Indígenas - CADPI, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, Protect Restore Ocean Capital and Blue Economies (PROCARIBE+): The OCM will enhance cross-sectoral collaboration and coordination among the region's countries and IGOs with ocean-relevant mandates and consider cross-cutting issues of climate change and gender.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and climate adaptation, mitigation and ocean-climate science. Illustrative larger projects include "SeaChange" (led by Centre of Marine Socioecology (CMS), University of Tasmania (UTAS), contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative) and "Coastal & Ocean Resilience Data Collaborative" (led by CivicDataLab Pvt. Ltd., contributing to the wider Ocean Practices for the Decade programme). For example, the goal of SeaChange is to connect researchers and end-users to share knowledge that can help resource managers understand autonomous adaptations, identify barriers to adaptation, co-design solutions at local and industry levels, and showcase success stories.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 19 active actions led by 19 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "Western Indian Ocean Marine Conservation Program (MARCOP)" (led by Western Indian Ocean Marine Science Association). Illustrative larger projects include "South African Innovation Lab for Ocean-Climate Resilience (SAILOR)" (led by Kinjani, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)) and "Southern Gulf of Guinea Upwelling System" (led by Institut National de Recherche en Sciences Exactes et Naturelles (IRSEN), contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative). For example, under the Western Indian Ocean Marine Conservation Program (MARCOP), the Western Indian Ocean Marine Science Association (WIOMSA) and Macquarie University are implementing a regional marine conservation programme to assist and build the capacity of Eastern and South African nations to achieve sustainable development.

Europe

In Europe, 71 active actions led by 65 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and data platforms, modelling and decision-support tools. Programme-scale examples include "Global Ocean Decade Programme for Blue Carbon" (led by The University of St Andrews) and "Global Ocean Oxygen Decade" (led by GEOMAR Helmholtz Centre for Ocean Research Kiel, on behalf of the Global Ocean Oxygen Network (GO2NE)). Illustrative larger projects include "OZEAN" (led by OZEAN, contributing to the wider Early Career Ocean Professionals Programme (ECOPs)) and "Marine Management and Climate" (led by Norwegian Ministry of Climate and Environment, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, Global Ocean Decade Programme for Blue Carbon recognizes the multiple roles BC ecosystems play beyond mitigation, including adaptation and resilience to the effects of climate change, and helps generate climate responses comprehensively, while supporting people and biodiversity.

North America

In North America, 16 active actions led by 13 lead organisations are linked to this priority. Taken together, they focus on climate adaptation, mitigation and ocean-climate science, ecosystem restoration, biodiversity monitoring and habitat protection, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "Blue Climate Initiative- Tetiaroa Society" (led by Blue Climate Initiative (sponsored by Tetiaroa Society)) and "Sustainability, Predictability and Resilience of Marine Ecosystems..." (led by National Oceanic and Atmospheric Administration). Illustrative larger projects include "International Blue Carbon Institute" (led by Conservation International, contributing to the wider Global Ocean Decade Programme for Blue Carbon (GO-BC)) and "Advocating for humane capture fisheries to support ocean and fisheries..." (led by Aquatic Life Institute, contributing to the wider Ocean Practices for the Decade programme). For example, Blue Climate Initiative (Tetiaroa Society) brings together scientists, community groups, engineers, entrepreneurs, investors, government leaders and global influencers to collaboratively identify, develop and implement science-based programs to protect the ocean.

Social Issues, such as the Importance of Equity

Portfolio size	142 active actions (44 Priority 1, 62 Priority 2, 36 Priority 3 matches)
Action type mix	9 programmes, 118 projects, 15 contributions
Lead institutions	137 distinct lead institutions
Regional orientation	IOC WESTPAC / Pacific (55); Europe (47); Global / cross-regional (43); North America (38)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, equity, inclusion, livelihoods and community participation, training, ocean literacy, outreach and co-design, and technology innovation, autonomous systems and AI
Programme-scale examples	"Deep Ocean Microbiomes and Ecosystems (DOME)" (led by Shanghai Ocean University), "Sustainability of Marine Ecosystems through global knowledge networks..." (led by International Council for the Exploration of the Sea (ICES) The North Pacific Marine Science Organization (PICES)), and "Empowering Women for the United Nations Decade of Ocean Science for..." (led by World Maritime University - Sasakawa Global Ocean Institute)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 43 active actions led by 42 lead organisations are linked to this priority. Taken together, they focus on equity, inclusion, livelihoods and community participation, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Deep Ocean Microbiomes and Ecosystems (DOME)" (led by Shanghai Ocean University) and "Sustainability of Marine Ecosystems through global knowledge networks..." (led by International Council for the Exploration of the Sea (ICES) The North Pacific Marine Science Organization (PICES)). Illustrative larger projects include "Textile X Ocean Connector Project" (led by Materevolve, LLC., contributing to the wider Ocean Literacy With All (OLWA) programme) and "My Blue Future – propelling women ECOPs" (led by The Nippon Foundation-University of Edinburgh Ocean Voices Programme, contributing to the wider Ocean Voices programme). For example, **Global Offshore Aquaculture and Low-carbon energy** develops offshore aquaculture systems linked to floating wind and low-carbon technologies, with training, co-design with local and Indigenous knowledge holders, and open-access knowledge sharing to support inclusive participation and equitable benefits.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 55 active actions led by 53 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, equity, inclusion, livelihoods and community participation, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Deep Ocean Microbiomes and Ecosystems (DOME)" (led by Shanghai Ocean University) and "Global Subseafloor Ecosystem and Sustainability (GSES)" (led by Shanghai Jiao Tong University (SJTU) on behalf of International Center for Deep Life Investigation (IC-DLI)). Illustrative larger projects include "Co-Management Models for Fisheries & Ocean Health" (led by Conectar para Conservar/Connecting People Conserving Nature, contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative) and "Global Offshore Aquaculture and Low-carbon energy" (led by China Ship Scientific Research Center, contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)). For example, Deep Ocean Microbiomes

and Ecosystems (DOME) will (1) co-design and co-develop transdisciplinary research, using molecular technologies to determine the emergent ecosystem properties of the water column and seafloor sediment; and (2) use artificial intelligence and genome-enabled, process-based models.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 17 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on equity, inclusion, livelihoods and community participation, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Illustrative larger projects include "Co-Management Models for Fisheries & Ocean Health" (led by Conectar para Conservar/Connecting People Conserving Nature, contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative) and "SSF Curriculum: Youth Voices for Fishful Futures" (led by Coast 2 Coast, contributing to the wider Cultural Heritage Framework Programme (CHFP)). For example, Co-Management Models for Fisheries & Ocean Health works to enhance fishermen and other stakeholders' understanding and engagement with co-management, providing capacity building and knowledge exchange, in support of gender equity, participation and the effective climate resilient management of ocean.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 16 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, training, ocean literacy, outreach and co-design, and equity, inclusion, livelihoods and community participation. Programme-scale examples include "Nutrition sensitive marine aquaculture in Africa (AfriMAQUA)" (led by Institut de Recherche pour le Développement (IRD)). Illustrative larger projects include "Blue Tourism Initiative" (led by Eco-union, contributing to the wider Ocean Practices for the Decade programme) and "National Best Practices for Marine Monitoring" (led by NESP Marine and Coastal Hub, contributing to the wider Ocean Practices for the Decade programme). For example, Nutrition sensitive marine aquaculture in Africa (AfriMAQUA) enables new interdisciplinary and multi-stakeholder partnerships and collaborations in and among African countries to foster solution-oriented research and new technological innovations, capacity development, and knowledge and technology transfers.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 12 active actions led by 11 lead organisations are linked to this priority. Taken together, they focus on equity, inclusion, livelihoods and community participation, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design. Illustrative larger projects include "Empowering Msme in Tanzania Blue Economy" (led by Sote Hub, contributing to the wider SEAWARD Africa programme) and "Boosting Women's access to Maritime Training" (led by Ministry of Maritime Economy and Coastal Protection, contributing to the wider Empowering Women for the UN Decade of Ocean Science initiative). For example, the Blue Enterprise Tanzania Project empowers 250 women- and youth-led MSMEs in coastal regions to advance a resilient, inclusive blue economy.

Europe

In Europe, 47 active actions led by 47 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, equity, inclusion, livelihoods and community participation, and technology innovation, autonomous systems and AI. Programme-scale examples include "Sustainability of Marine Ecosystems through global knowledge networks..." (led by International Council for the Exploration of the Sea (ICES) The North Pacific Marine Science Organization (PICES)) and "Empowering Women for the

United Nations Decade of Ocean Science for..." (led by World Maritime University - Sasakawa Global Ocean Institute). Illustrative larger projects include "My Blue Future – propelling women ECOPs" (led by The Nippon Foundation-University of Edinburgh Ocean Voices Programme, contributing to the wider Ocean Voices programme) and "Empowering Women in Hydrography" (led by International Hydrographic Organization (IHO), contributing to the wider Empowering Women for the UN Decade of Ocean Science initiative). For example, Sustainability of Marine Ecosystems through global knowledge supports and leverages ICES/PICES member countries' activities related to UNDOSS, by emphasizing areas of mutual research interest including climate change, fisheries and ecosystem-based management, social, ecological and environmental dynamics of marine.

North America

In North America, 38 active actions led by 36 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, training, ocean literacy, outreach and co-design, and equity, inclusion, livelihoods and community participation. Programme-scale examples include "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas) and "Deep Ocean Observing Strategy (DOOS)" (led by Deep Ocean Observing Strategy). Illustrative larger projects include "Textile X Ocean Connector Project" (led by Materevolve, LLC., contributing to the wider Ocean Literacy With All (OLWA) programme) and "Edges of Earth: A Driving Force for Change" (led by Edges of Earth, contributing to the wider Ocean Literacy With All (OLWA) programme). For example, Global Ecosystem for Ocean Solutions (GEOS) is an Ocean Visions program that seeks to accelerate collaboration across multiple sectors and geographies to help build a globally distributed community of scientists, entrepreneurs, public officials, and other.

Opportunities for Technological Innovation and Barriers to Further Investment

Portfolio size	129 active actions (49 Priority 1, 52 Priority 2, 28 Priority 3 matches)
Action type mix	5 programmes, 94 projects, 30 contributions
Lead institutions	124 distinct lead institutions
Regional orientation	Europe (74); Global / cross-regional (54); IOC WESTPAC / Pacific (30); North America (17)
Main activity themes	technology innovation, autonomous systems and AI, ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and observing, monitoring and forecasting systems
Programme-scale examples	"Harmful Algae Bloom Solutions" (led by Intergovernmental Oceanographic Commission (IOC) and Food and Agriculture Organization (FAO) Intergovernmental Panel on Harmful Algae Blooms (IPHAB)), "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas), and "Deep Ocean Microbiomes and Ecosystems (DOME)" (led by Shanghai Ocean University)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 54 active actions led by 52 lead organisations are linked to this priority. Taken together, they focus on technology innovation, autonomous systems and AI, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Programme-scale examples include "Harmful Algae

Bloom Solutions" (led by Intergovernmental Oceanographic Commission (IOC) and Food and Agriculture Organization (FAO) Intergovernmental Panel on Harmful Algae Blooms (IPHAB)) and "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas). Illustrative larger projects include "CoastSnap Community Beach Monitoring" (led by University of New South Wales (UNSW Sydney) Australia, contributing to the wider CoastPredict initiative) and "Centre of Excellence in Ocean Res. & Engineering" (led by INESC TEC, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, Harmful Algae Bloom Solutions (HAB-S) will be co-created with stakeholders, leading to improved data resources, innovative observing instrumentation, and sound knowledge for decision-making to manage and mitigate HAB impacts to human health and activities such as aquaculture.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 30 active actions led by 30 lead organisations are linked to this priority. Taken together, they focus on technology innovation, autonomous systems and AI, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Programme-scale examples include "Deep Ocean Microbiomes and Ecosystems (DOME)" (led by Shanghai Ocean University) and "Global Subseafloor Ecosystem and Sustainability (GSES)" (led by Shanghai Jiao Tong University (SJTU) on behalf of International Center for Deep Life Investigation (IC-DLI)). Illustrative larger projects include "CoastSnap Community Beach Monitoring" (led by University of New South Wales (UNSW Sydney) Australia, contributing to the wider CoastPredict initiative) and "The Green Sink Initiative" (led by Geosentinel Australia Pty Ltd, contributing to the wider Nutrient Pollution Global Action Network). For example, Global Subseafloor Ecosystem and Sustainability develops international protocols, investigation platforms, tools and ecological indicators to explore, monitor and manage the subseafloor environment, linking microbial life, carbon dynamics and sustainability.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on technology innovation, autonomous systems and AI, ecosystem restoration, biodiversity monitoring and habitat protection, and climate adaptation, mitigation and ocean-climate science. Illustrative larger projects include "Blue Economy Coalition for Ocean Climate Solutions" (led by Mar y Comercio, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)) and "Tides of Innovation" (led by Kneyzus Energy, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, Blue Economy Coalition for Ocean Climate Solutions is a transformative response to the UN Ocean Decade's call for collaboration.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 11 active actions led by 11 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools. Programme-scale examples include "Digital innovation Hand-in-Hand with fisheries and ecosystems..." (led by FAO of the UN, FI Division). Illustrative larger projects include "FISHTWIN" (led by PICKOUN, contributing to the wider Digital Twins of the Ocean (DITTO) programme) and "Fish for Africa Innovation Hub" (led by World Fish Center (Registered Name: International Center for Living Aquatic Resources Management)). For example, Digital innovation Hand-in-Hand with fisheries and ecosystems...: NA

IOCAFRICA / Africa

In IOCAFRICA / Africa, 5 active actions led by 5 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection,

technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Picture Perfect: rapid classification of plankton" (led by Department of Forestry, Fisheries and the Environment, contributing to the wider Marine Life 2030 initiative) and "High resolution seafloor habitat mapping – WIO" (led by Kenya Marine and Fisheries Research Institute, contributing to the wider Nippon Foundation-GEBCO Seabed 2030 Project). For example, Picture Perfect: rapid classification of plankton aims to move to image analysis using a rapid flow through system, machine learning and AI technology that will allow an entire sample to be analysed for routine monitoring.

Europe

In Europe, 74 active actions led by 71 lead organisations are linked to this priority. Taken together, they focus on technology innovation, autonomous systems and AI, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection. Programme-scale examples include "Harmful Algae Bloom Solutions" (led by Intergovernmental Oceanographic Commission (IOC) and Food and Agriculture Organization (FAO) Intergovernmental Panel on Harmful Algae Blooms (IPHAB)) and "Digital innovation Hand-in-Hand with fisheries and ecosystems..." (led by FAO of the UN, FI Division). Illustrative larger projects include "Centre of Excellence in Ocean Res. & Engineering" (led by INESC TEC, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)) and "Ocean Online - web-based information platform" (led by The German Marine Research Alliance (DAM), contributing to the wider Ocean Literacy With All (OLWA) programme). For example, Harmful Algae Bloom Solutions: HAB-S will be co-created with stakeholders, leading to improved data resources, innovative observing instrumentation, and sound knowledge for decision-making to manage and mitigate HAB impacts to human health and wellbeing-related activities (aquaculture,...

North America

In North America, 17 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and observing, monitoring and forecasting systems. Programme-scale examples include "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas). Illustrative larger projects include "The Internet of Oceans (Oceaners)" (led by MMersive Technology, Inc., contributing to the wider Ocean Practices for the Decade programme) and "F3 Future of Fish Feed" (led by Anthropocene Institute, contributing to the wider Sustainable Blue Food Futures for People and Planet programme). For example, Global Ecosystem for Ocean Solutions (GEOS) is an Ocean Visions program that seeks to accelerate collaboration across multiple sectors and geographies to help build a globally distributed community of scientists, entrepreneurs, public officials.

The Need for More Engagement Between Science and Policy, Economics and Industry

Portfolio size	116 active actions (32 Priority 1, 50 Priority 2, 34 Priority 3 matches)
Action type mix	9 programmes, 82 projects, 25 contributions
Lead institutions	108 distinct lead institutions
Regional orientation	Europe (66); Global / cross-regional (46); North America (25); IOC WESTPAC / Pacific (25)
Main activity themes	science-policy, industry and blue-economy engagement, ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools

Programme-scale examples	"Fisheries Strategies for Changing Oceans and Resilient Ecosystems by..." (led by Gulf of Maine Research Institute), "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania), and "An Observing Air-Sea Interactions Strategy (OASIS)" (led by SCOR Working Group #162 -- Developing an Observing Air-Sea Interactions Strategy (OASIS))
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Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 46 active actions led by 44 lead organisations are linked to this priority. Taken together, they focus on science-policy, industry and blue-economy engagement, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Fisheries Strategies for Changing Oceans and Resilient Ecosystems by..." (led by Gulf of Maine Research Institute) and "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania). Illustrative larger projects include "Ocean Tracking Network" (led by Ocean Tracking Network, Dalhousie University, contributing to the wider Marine Life 2030 initiative) and "EDITO contributing to the DITTO" (led by European Commission, contributing to the wider Digital Twins of the Ocean (DITTO) programme). For example, Fisheries Strategies for Changing Oceans and Resilient Ecosystems (Fish-SCORE 2030) will bring together scientists, fishers, resource managers, community practitioners, and policymakers to drive marine fisheries toward climate resilience by 2030.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 25 active actions led by 25 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, science-policy, industry and blue-economy engagement, and technology innovation, autonomous systems and AI. Programme-scale examples include "The Future of Fisheries & Marine Ecosystems (FishMIP)" (led by Institute for Marine & Antarctic Studies, University of Tasmania). Illustrative larger projects include "Cross sector collaboration grows circular economy" (led by Fisheries Research and Development Corporation (FRDC), contributing to the wider Ocean Practices for the Decade programme) and "Sustainable Aquaculture under Climate Change" (led by Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)). For example, the goal of the Future of Fisheries & Marine Ecosystems (FishMIP) is to ensure healthy ecosystems and seafood for future generations, and help understand how best to mitigate and adapt to the effects of climate change and other human pressures.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 6 active actions led by 6 lead organisations are linked to this priority. Taken together, they focus on science-policy, industry and blue-economy engagement, ecosystem restoration, biodiversity monitoring and habitat protection, and sustained finance and infrastructure investment. Illustrative larger projects include "Lusophone Hub of the Ocean Decade" (led by University of São Paulo - USP, contributing to the wider Global Ocean Corps and Conveyor programme) and "SIDS Ocean Science Policy Network - Pilot Project" (led by University of the West Indies - St. Augustine Campus, contributing to the wider Ocean Voices programme). For example, Lusophone Hub of the Ocean Decade will focus on improving access to data and knowledge available to policymakers in order to improve public policies and address relevant issues in a transversal way (e.g. considering the law of the sea, interactive governance, etc.)

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 6 active actions led by 6 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, science-policy, industry and blue-economy engagement, and training, ocean literacy, outreach and co-design. Programme-scale examples include "The EAF-Nansen Programme - Supporting the Application of the Ecosystem..." (led by Food and Agricultural Organisation of the United Nations (FAO)). Illustrative larger projects include "SeaChange" (led by Centre of Marine Socioecology (CMS), University of Tasmania (UTAS), contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative) and "Blue Tourism Initiative" (led by Eco-union, contributing to the wider Ocean Practices for the Decade programme). For example, The EAF-Nansen Programme aims to intensify the focus on fisheries management, emphasizing the critical nexus between science and management and reinforcing ocean governance.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 5 active actions led by 5 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, science-policy, industry and blue-economy engagement, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Western Indian Ocean Marine Conservation Program (MARCOP)" (led by Western Indian Ocean Marine Science Association). Illustrative larger projects include "Blue Links Conservation" (led by Blue Links Conservation, contributing to the wider Ocean Voices programme) and "Participatory Modeling for Nature-based Solutions in the WIO-Region..." (led by Leibniz Centre for Tropical Marine Research (ZMT); Institute of Marine Sciences (IMS) University of Dar es Salaam). For example, Western Indian Ocean Marine Conservation Program (MARCOP): The Western Indian Ocean Marine Science Association (WIOMSA) and Macquarie University are implementing a regional marine conservation programme (MARCOP) to assist and build the capacity of Eastern and South African nations to achieve sustainable development.

Europe

In Europe, 66 active actions led by 59 lead organisations are linked to this priority. Taken together, they focus on science-policy, industry and blue-economy engagement, ecosystem restoration, biodiversity monitoring and habitat protection, and technology innovation, autonomous systems and AI. Programme-scale examples include "Global Artificial Light at Night Network (GOALANN)" (led by University of Plymouth) and "The EAF-Nansen Programme - Supporting the Application of the Ecosystem..." (led by Food and Agricultural Organisation of the United Nations (FAO)). Illustrative larger projects include "EDITO contributing to the DITTO" (led by European Commission, contributing to the wider Digital Twins of the Ocean (DITTO) programme) and "82 SurfSustainable Community - Slide Water Sports for Science in Action..." (led by Posidonia Green Project, contributing to the wider Ocean Literacy With All (OLWA) programme). For example, Ocean Practices for the Decade supports ocean stakeholders to secure, share and advance methodological knowledge by linking communities of practice through FAIR digital technologies, improving interoperability and training so that wider global participation can develop.

North America

In North America, 25 active actions led by 24 lead organisations are linked to this priority. Taken together, they focus on science-policy, industry and blue-economy engagement, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Fisheries Strategies for Changing Oceans and Resilient Ecosystems by..." (led by Gulf of Maine Research Institute) and "An Observing Air-Sea Interactions Strategy (OASIS)" (led by SCOR Working Group #162 -- Developing an Observing Air-Sea Interactions Strategy (OASIS)). Illustrative larger projects include "Ocean Tracking

Network" (led by Ocean Tracking Network, Dalhousie University, contributing to the wider Marine Life 2030 initiative) and "F3 Future of Fish Feed" (led by Anthropocene Institute, contributing to the wider Sustainable Blue Food Futures for People and Planet programme). For example, Fisheries Strategies for Changing Oceans and Resilient Ecosystems by...: Fish-SCORE 2030 will bring together scientists, fishers, resource managers, community practitioners, and policymakers to drive marine fisheries toward climate resilience by 2030.

Ocean Pollution

Portfolio size	107 active actions (55 Priority 1, 30 Priority 2, 22 Priority 3 matches)
Action type mix	7 programmes, 90 projects, 10 contributions
Lead institutions	102 distinct lead institutions
Regional orientation	Europe (56); Global / cross-regional (32); IOC WESTPAC / Pacific (20); IOCARIBE / Atlantic Latin America and Caribbean (14)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, technology innovation, autonomous systems and AI, and training, ocean literacy, outreach and co-design
Programme-scale examples	"Healthy Rivers, Healthy Ocean" (led by Global Water Partnership Organization), "Nutrient Pollution – Global Action Network" (led by Centre for Environment, Fisheries and Aquaculture Science), and "Global Estuaries Monitoring (GEM) Programme" (led by State Key Laboratory of Marine Pollution, City University of Hong Kong)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 32 active actions led by 30 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and data platforms, modelling and decision-support tools. Programme-scale examples include "Healthy Rivers, Healthy Ocean" (led by Global Water Partnership Organization) and "Nutrient Pollution – Global Action Network" (led by Centre for Environment, Fisheries and Aquaculture Science). Illustrative larger projects include "Global plastic ingestion bioindicators" (led by Hopkins Marine Station of Stanford University, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "Plastic Mop Up" (led by Aquaworld, contributing to the wider SEAWARD Africa programme). For example, Healthy Rivers, Healthy Ocean addresses disconnects in policy development and implementation across basin, coastal and marine areas that can lead to management failures, pollution, altered sediment flows and habitat fragmentation. The collective contribution to the priority is therefore to monitoring, preventing and reducing marine litter, plastics, contaminants, oil-related pressures and land-based pollution pathways.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 20 active actions led by 20 lead organisations are linked to this priority. Taken together, they focus on plastic, litter, contaminant and nutrient pollution responses, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Global Estuaries Monitoring (GEM) Programme" (led by State Key Laboratory of Marine Pollution, City University of Hong Kong) and "Global Hadal Exploration Programme (GHEP)" (led by Institute of Deep-Sea

Science and Engineering, Chinese Academy of Sciences). Illustrative larger projects include "Cross sector collaboration grows circular economy" (led by Fisheries Research and Development Corporation (FRDC), contributing to the wider Ocean Practices for the Decade programme) and "Whales and polar bear in a petri dish" (led by University of Bergen, Department of Biological Sciences, contributing to the wider Ocean Biomolecular Observing Network (OBON)). For example, the Global Estuaries Monitoring (GEM) Programme is co-designed by partners and stakeholders to develop a global monitoring network for environmental contaminants.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 14 active actions led by 14 lead organisations are linked to this priority. Taken together, they focus on plastic, litter, contaminant and nutrient pollution responses, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Illustrative larger projects include "A Caribbean SIDS Pollutants Observatory" (led by Institute of Marine Affairs, contributing to the wider Global Environment Monitoring System for the Ocean and Coasts) and "Hyperspectral sensing of coastal soils" (led by Federal University of Santa Catarina, contributing to the wider Global Estuaries Monitoring (GEM) initiative Programme). For example, a goal of the Caribbean SIDS Pollutants Observatory is to unify programmes and efforts while strengthening technical capacities through institutional expertise across the region, so that partners can develop integrated solutions and regularly publish information on marine pollution.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 11 active actions led by 11 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and training, ocean literacy, outreach and co-design. Programme-scale examples include "The EAF-Nansen Programme - Supporting the Application of the Ecosystem..." (led by Food and Agricultural Organisation of the United Nations (FAO)). Illustrative larger projects include "ShaRED Sea, towards a plastic-free Red Sea" (led by EcoPeace Middle East, contributing to the wider Ocean Practices for the Decade programme) and "Marine Plastics Abatement Through Hopeful Youth (MPAthy)" (led by Enviheals Foundations, contributing to the wider Cultural Heritage Framework Programme (CHFP)). For example, from 2024 to 2028, the EAF-Nansen Programme will intensify its focus on fisheries management, emphasizing the nexus between science and management and reinforcing ocean governance.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 10 active actions led by 10 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and training, ocean literacy, outreach and co-design. Illustrative larger projects include "Plastic Mop Up" (led by Aquaworld, contributing to the wider SEAWARD Africa programme) and "Comparable microplastics monitoring of oceans" (led by Department of Forestry, Fisheries and the Environment, contributing to the wider Global Environment Monitoring System for the Ocean and Coasts). For example, Plastic Mop Up responds to the widespread presence of single-use plastics, especially PET bottles, in Nigerian landfills, drainage channels and aquatic environments, where they pose risks to ocean life and local ecosystems.

Europe

In Europe, 56 active actions led by 52 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and technology innovation, autonomous

systems and AI. Programme-scale examples include "Healthy Rivers, Healthy Ocean" (led by Global Water Partnership Organization) and "Nutrient Pollution – Global Action Network" (led by Centre for Environment, Fisheries and Aquaculture Science). Illustrative larger projects include "Regenerative Tides: Sailing for Solutions" (led by The Floating Stories Lab, contributing to the wider Global Estuaries Monitoring (GEM) initiative Programme) and "Automated Debris Imaging System of ocean plastic" (led by Stichting The Ocean Cleanup). For example, the Nutrient Pollution – Global Action Network will catalyse action on nutrient and wastewater pollution impacts on ocean ecosystems and human health, with a focus on agrochemical run-off and sewage or domestic wastewater.

North America

In North America, 10 active actions led by 9 lead organisations are linked to this priority. Taken together, they focus on plastic, litter, contaminant and nutrient pollution responses, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Global plastic ingestion bioindicators" (led by Hopkins Marine Station of Stanford University, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "EPIC Academy: Plastic Pollution Education" (led by Ocean Legacy Foundation, contributing to the wider Ocean Practices for the Decade programme). For example, Global plastic ingestion bioindicators treats plastic pollution as both a chemical and physical contaminant and uses bioindicator work to strengthen understanding of this worldwide threat.

Disaster Risk Reduction

Portfolio size	44 active actions (30 Priority 1, 9 Priority 2, 5 Priority 3 matches)
Action type mix	3 programmes, 34 projects, 7 contributions
Lead institutions	42 distinct lead institutions
Regional orientation	Europe (18); Global / cross-regional (17); IOCINDIO / Indian Ocean and adjacent Asian regions (10); IOC WESTPAC / Pacific (10)
Main activity themes	coastal resilience, hazards and disaster-risk work, data platforms, modelling and decision-support tools, observing, monitoring and forecasting systems, and technology innovation, autonomous systems and AI
Programme-scale examples	"Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.), "SEAWARD Africa" (led by IOCAFRICA), and "The Ocean Decade Tsunami Programme" (led by Intergovernmental Oceanographic Commission, IOC/UNESCO)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 17 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, data platforms, modelling and decision-support tools, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.) and "SEAWARD Africa" (led by IOCAFRICA). Illustrative larger projects include "Global Tsunami Model Association" (led by Universität Hamburg, Dept. of Mathematics, contributing to the wider Ocean Decade Tsunami Programme) and "Building coastal resilience against climate change" (led by UNSW, contributing to the wider Sustainability,

Predictability and Resilience of Marine Ecosystems (SUPREME) programme). For example, the large-river-deltas programme focuses on delta systems facing threats such as increased erosion, flood risk, and shrinking salt marshes and mangroves. The collective contribution to the priority is therefore to improving hazard knowledge, preparedness, vulnerability assessment and resilience planning for coastal and ocean-related risks.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 10 active actions led by 10 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, ecosystem restoration, biodiversity monitoring and habitat protection, and equity, inclusion, livelihoods and community participation. Programme-scale examples include "Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.). Illustrative larger projects include "Building coastal resilience against climate change" (led by UNSW, contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme) and "Coastal hazards mitigation in Asian major deltas" (led by First Institute of Oceanography, Ministry of Natural Resources, China, contributing to the wider large-river deltas resilience initiative). For example, Coastal hazards mitigation in Asian major deltas addresses delta systems where climate warming and intensifying human activities are increasing hazards with potentially severe consequences for people and ecosystems.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 4 active actions led by 4 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Integrating Coastal Hazard Warning Systems for TAC" (led by IOCARIBE + ICG, contributing to the wider CoastPredict initiative) and "Updating Tsunami Hazard Assessments for Costa Rica" (led by National University Costa Rica – SINAMOT Program, contributing to the wider Ocean Decade Tsunami Programme). For example, Integrating Coastal Hazard Warning Systems for TAC will prioritize existing and new coastal-hazard early warning systems and services across monitoring and warning, risk knowledge, warning dissemination and communication, and response capabilities.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 10 active actions led by 9 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, equity, inclusion, livelihoods and community participation, and observing, monitoring and forecasting systems. Illustrative larger projects include "Coastal & Ocean Resilience Data Collaborative" (led by CivicDataLab Pvt. Ltd., contributing to the wider Ocean Practices for the Decade programme) and "Periodic cyclone effects on Gangetic food web" (led by Estuarine and Coastal Studies Foundation, contributing to the wider large-river deltas resilience initiative). For example, the Coastal & Ocean Resilience Data Collaborative will enhance resilience in South and Southeast Asia by tackling the ocean–climate nexus through data sharing, disaster risk reduction, climate adaptation and blue financing.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools. Programme-scale examples include "SEAWARD Africa" (led by IOCAFRICA). Illustrative larger projects include "Mangroves as Nature-based Solutions to Coastal Hazards in Eastern..." (led by

Helmholtz-Zentrum Hereon, GmbH; Department of Marine and Fisheries Sciences, University of Ghana; Institute of Environment and Sanitation Studies, University of Ghana, contributing to the wider CoastPredict initiative). For example, SEAWARD Africa is structured around four thematic components: sustainable management of marine resources, climate change and marine biodiversity, ocean pollution, and extreme events and disaster risk reduction.

Europe

In Europe, 18 active actions led by 18 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, data platforms, modelling and decision-support tools, and equity, inclusion, livelihoods and community participation. Programme-scale examples include "The Ocean Decade Tsunami Programme" (led by Intergovernmental Oceanographic Commission, IOC/UNESCO). Illustrative larger projects include "Global Tsunami Model Association" (led by Universität Hamburg, Dept. of Mathematics, contributing to the wider Ocean Decade Tsunami Programme) and "Global Real-time Early Alarm for Tsunami (GREAT)" (led by Cardiff University, contributing to the wider Ocean Decade Tsunami Programme). For example, the Ocean Decade Tsunami Programme includes the Tsunami Ready programme and multi-hazard early-warning-system capacity development.

North America

In North America, 5 active actions led by 4 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, and climate adaptation, mitigation and ocean-climate science. Illustrative larger projects include "Science Monitoring And Reliable Telecommunications (SMART) Subsea..." (led by Joint Task Force SMART Subsea Cables, contributing to the wider Ocean Observing Co-Design programme) and "Climate Data for Community Action" (led by Hohonu, contributing to the wider CoastPredict initiative). For example, SMART Subsea uses sensor-enabled submarine telecommunications cables to observe the oceans and Earth at planetary scale, supporting climate, ocean and hazard-related services.

Dissemination of Time Series Marine Datasets

Portfolio size	40 active actions (15 Priority 1, 12 Priority 2, 13 Priority 3 matches)
Action type mix	1 programme, 34 projects, 5 contributions
Lead institutions	40 distinct lead institutions
Regional orientation	Europe (21); Global / cross-regional (17); IOC WESTPAC / Pacific (12); North America (6)
Main activity themes	data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, observing, monitoring and forecasting systems, and training, ocean literacy, outreach and co-design
Programme-scale examples	"An Ocean Data and Information System supporting the UN Decade of Ocean..." (led by International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission (IOC).)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 17 active actions led by 17 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, training, ocean literacy, outreach and co-design, and observing, monitoring and

forecasting systems. Programme-scale examples include "An Ocean Data and Information System supporting the UN Decade of Ocean..." (led by International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission (IOC)). Illustrative larger projects include "Global Integration of Seabird Time Series" (led by Farallon Institute, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "From global gazetteer to global community" (led by Flanders Marine Institute (VLIZ), contributing to the wider Ocean Data and Information System (ODIS)). For example, OceanData 2030 is developing an open-source data and information system that links existing ocean information systems around the world and enables more efficient discovery of data, information and knowledge products. The collective contribution to the priority is therefore to curating, sustaining and opening long-running observing datasets so that they can support research, forecasting and management.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 12 active actions led by 12 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and observing, monitoring and forecasting systems. Illustrative larger projects include "Making environmental DNA FAIR" (led by Commonwealth Scientific and Industrial Research Organization, contributing to the wider Ocean Biomolecular Observing Network (OBON)) and "Quantitative Tools for Responsible Marine Energy" (led by Sandia National Laboratories, contributing to the wider Ocean Decade Research Programme on the Maritime Continent). For example, Making Environmental DNA FAIR will make eDNA data findable, accessible, interoperable and reusable through work on shared vocabularies, data-publication practices and practical scripts and tools.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, one active action is linked to this priority. "ECOPs Empowered through FuncTec Monitoring" (led by the Center for Research and Advanced Studies of the National Polytechnic Institute, Mérida Unit, contributing to the wider Early Career Ocean Professionals Programme), through FuncTec Monitoring, will combine stereo-video, environmental DNA, respirometry and AI tools to generate an open fish-trait database and video repository that reveal hidden ecosystem functions such as nutrient cycling, connectivity and resilience. Overall, the focus is on observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 3 active actions led by 3 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, observing, monitoring and forecasting systems, and ecosystem restoration, biodiversity monitoring and habitat protection. Illustrative larger projects include "Padjadjaran Oceanographic Data Centre" (led by Universitas Padjadjaran, contributing to the wider CoastPredict initiative) and "Coastal & Ocean Resilience Data Collaborative" (led by CivicDataLab Pvt. Ltd., contributing to the wider Ocean Practices for the Decade programme). For example, Padjadjaran Oceanographic Data Centre fosters collaboration with partners such as the Marine Science Institute in the Philippines, KOMITMEN and AIS-UNDP to democratize ocean data, support marine ecosystem and climate studies, and guide sustainable policy.

IOCAFRICA / Africa

In IOCAFRICA / Africa, one active action is linked to this priority. The "African Ocean Biodiversity Atlas" (led by Ocean Rock Base, contributing to the wider Sustainable Ocean Planning programme) includes a Carbon Biodiversity initiative for African landing beaches, providing

recommendations to governments on Marine Protected Areas. Overall the focus includes data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and climate adaptation, mitigation and ocean-climate science.

Europe

In Europe, 21 active actions led by 21 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, observing, monitoring and forecasting systems, and training, ocean literacy, outreach and co-design. Programme-scale examples include "An Ocean Data and Information System supporting the UN Decade of Ocean..." (led by International Oceanographic Data and Information Exchange (IODE) of the Intergovernmental Oceanographic Commission (IOC).). Illustrative larger projects include "From global gazetteer to global community" (led by Flanders Marine Institute (VLIZ), contributing to the wider Ocean Data and Information System (ODIS)) and "Global Ocean Oxygen Database and Atlas" (led by LEGOS Laboratoire d'Études en Géophysique et Océanographie Spatiales on behalf of GO2NE/GOOD, contributing to the wider Global Ocean Oxygen Decade (GOOD)). For example, From global gazetteer to global community builds on Marine Regions as an open global gazetteer of georeferenced marine and coastal place names and locations.

North America

In North America, 6 active actions led by 6 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and observing, monitoring and forecasting systems. Illustrative larger projects include "Global Integration of Seabird Time Series" (led by Farallon Institute, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "Quantitative Tools for Responsible Marine Energy" (led by Sandia National Laboratories, contributing to the wider Ocean Decade Research Programme on the Maritime Continent). For example, Global Integration of Seabird Time Series builds on earlier work to integrate biological time series by harmonizing seabird datasets globally and strengthening the scientific basis for ecosystem assessment.

Planning for Marine Protected Areas (MPAs) & Area-Based Management Tools

Portfolio size	39 active actions (20 Priority 1, 12 Priority 2, 7 Priority 3 matches)
Action type mix	1 programme, 32 projects, 6 contributions
Lead institutions	38 distinct lead institutions
Regional orientation	IOC WESTPAC / Pacific (17); North America (14); Global / cross-regional (13); Europe (12)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools
Programme-scale examples	"Digital Deep-sea Typical Habitats (Digital DEPTH)" (led by China Deep Ocean Affairs Administration)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 13 active actions led by 13 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and

observing, monitoring and forecasting systems. Programme-scale examples include "Digital Deep-sea Typical Habitats (Digital DEPTH)" (led by China Deep Ocean Affairs Administration). Illustrative larger projects include "eDNA expeditions II" (led by Ocean Biodiversity Information System under IODE of IOC of UNESCO, contributing to the wider Ocean Biomolecular Observing Network (OBON)) and "Somos OceanoS: ocean stories for conservation" (led by Sea Around Us, University of British Columbia, contributing to the wider Marine Life 2030 initiative). For example, Digital Deep-sea Typical Habitats (Digital DEPTH) will use advanced technology for deep-sea research, build intelligent observation systems, promote data and sample sharing, and develop mapping and simulation techniques for cross-habitat analysis. The collective contribution to the priority is therefore to providing ecological evidence, spatial planning methods and stakeholder processes that support MPAs and other area-based tools.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 17 active actions led by 17 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and observing, monitoring and forecasting systems. Programme-scale examples include "Digital Deep-sea Typical Habitats (Digital DEPTH)" (led by China Deep Ocean Affairs Administration). Illustrative larger projects include "Ocean Decade Expeditions" (led by SOI Foundation, contributing to the wider Marine Life 2030 initiative) and "Marine Biodiversity Library & MPA eDNA monitoring" (led by Fisheries and Oceans Canada, contributing to the wider Ocean Biomolecular Observing Network (OBON)). For example, Ocean Decade Expeditions is designed to support the protection, conservation and management of Canada's marine environment and to demonstrate outcomes for Marine Protected Areas and other effective area-based conservation measures.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, one active action is linked to this priority. The "Ocean World of Sound: MesoAmerican Reef" (led by Ocean World of Sound, contributing to the wider Ocean Decade Research Programme on the Maritime Continent) includes developing and refining methods for sound recording, listening-station infrastructure, data exploration and analysis, citizen science, and the incorporation of soundscape analysis into Marine Protected Area management. The overall focus is on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, one active action is linked to this priority. The "SPACEWHALE for designating Marine Protected Areas" (led by BioConsult SH GmbH & Co. KG, contributing to the wider Marine Life 2030 initiative) focuses on designating Marine Protected Areas and studying previously unexplored areas, supporting faster designation of Marine Protected Areas, informing offshore-wind environmental impact assessments and providing an efficient tool for baseline monitoring. Overall the focus is on observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 4 active actions led by 4 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and equity, inclusion, livelihoods and community participation. Illustrative larger projects include "Global Coastal Ocean Restoration and Resilience" (led by Institute for Corporate Citizenship (ICC), UNISA, contributing to the wider CoastPredict initiative) and "African Ocean Biodiversity Atlas" (led by Ocean Rock Base,

contributing to the wider Sustainable Ocean Planning programme). For example, Global Coastal Ocean Restoration and Resilience will consider passive restoration measures, including the removal of disturbance sources and the establishment of marine protected areas.

Europe

In Europe, 12 active actions led by 12 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and data platforms, modelling and decision-support tools. Illustrative larger projects include "eDNA expeditions II" (led by Ocean Biodiversity Information System under IODE of IOC of UNESCO, contributing to the wider Ocean Biomolecular Observing Network (OBON)) and "New Copernicus capability for ocean food networks" (led by Mercator Ocean international (MOi), contributing to the wider Marine Life 2030 initiative). For example, eDNA expeditions II is a citizen-science initiative designed to establish repeated eDNA sampling across marine protected areas.

North America

In North America, 14 active actions led by 13 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and technology innovation, autonomous systems and AI. Illustrative larger projects include "Somos OceanoS: ocean stories for conservation" (led by Sea Around Us, University of British Columbia, contributing to the wider Marine Life 2030 initiative) and "Blue Parks" (led by Marine Conservation Institute). For example, Somos OceanoS 2030 promotes community perspectives on marine management and raises awareness of the ecological, social and economic value of Marine Protected Areas through accessible science communication.

Tools to Enable the Use of Data for Adaptive Planning and Decision Making including to Meet National Obligations

Portfolio size	36 active actions (9 Priority 1, 15 Priority 2, 12 Priority 3 matches)
Action type mix	3 programmes, 28 projects, 5 contributions
Lead institutions	36 distinct lead institutions
Regional orientation	Global / cross-regional (20); Europe (19); IOC WESTPAC / Pacific (14); North America (8)
Main activity themes	data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and science-policy, industry and blue-economy engagement
Programme-scale examples	"The Nippon Foundation-Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation), "Pacific solutions to save our ocean: an integrated ocean science..." (led by Pacific Community (SPC)), and "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 20 active actions led by 20 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, technology innovation, autonomous systems and AI, and science-policy, industry and blue-economy engagement. Programme-scale examples include "The Nippon Foundation-

Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation) and "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas). Illustrative larger projects include "GIRT Scientific Divers" (led by GIRT Scientific Divers, contributing to the wider Cultural Heritage Framework Programme (CHFP)) and "DEVELOPMENT OF BLUE FOOD&FEED BIOREFINERY" (led by KTH Royal Institute of Technology, contributing to the wider Sustainable Ocean Planning programme). For example, one aim of the Nippon Foundation-Nekton Ocean Census is to increase the accessibility and interoperability of ocean-life data so that decision-makers can use open and equitable information for the common good. The collective contribution to the priority is therefore to developing usable platforms, indicators, models and decision-support products for national planning, reporting and adaptive management.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 14 active actions led by 14 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, training, ocean literacy, outreach and co-design, and technology innovation, autonomous systems and AI. Programme-scale examples include "Pacific solutions to save our ocean: an integrated ocean science..." (led by Pacific Community (SPC)). Illustrative larger projects include "GIRT Scientific Divers" (led by GIRT Scientific Divers, contributing to the wider Cultural Heritage Framework Programme (CHFP)) and "Ocean Accounts for Sustainable Ocean Development" (led by Global Ocean Account Partnership Secretariat, contributing to the wider Sustainable Ocean Planning programme). For example, Pacific solutions to save our ocean seeks to increase scientific capacity and create opportunities for ocean science to feed into decision making.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, one active action is linked to this priority. "A framework for effective trans-national consolidation" (led by V. I. Il'ichev Pacific Oceanological Institute, Far Eastern Branch of Russian Academy of Sciences), FREM-PAMS, has the objective of supporting blue growth and the UN Sustainable Development Goals by developing a science-based joint strategy for environmental decision-making in the region. The overall focus includes data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and coastal resilience, hazards and disaster-risk work.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, plastic, litter, contaminant and nutrient pollution responses, and ecosystem restoration, biodiversity monitoring and habitat protection. Illustrative larger projects include "Comparable microplastics monitoring of oceans" (led by Department of Forestry, Fisheries and the Environment, contributing to the wider Global Environment Monitoring System for the Ocean and Coasts) and "Participatory Modeling for Nature-based Solutions in the WIO-Region..." (led by Leibniz Centre for Tropical Marine Research (ZMT); Institute of Marine Sciences (IMS) University of Dar es Salaam). For example, Comparable microplastics monitoring of oceans supports baseline data generation, change-over-time estimates of microplastics in coastal zones, and the establishment of a regional and potentially global monitoring network.

Europe

In Europe, 19 active actions led by 19 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and science-policy, industry and blue-economy engagement. Programme-scale examples include "The Nippon Foundation-Nekton Ocean Census" (led by The Nippon Foundation & Nekton Foundation). Illustrative larger projects include

"DEVELOPMENT OF BLUE FOOD&FEED BIOREFINERY" (led by KTH Royal Institute of Technology, contributing to the wider Sustainable Ocean Planning programme) and "Future Coastal Ocean Climates" (led by National Oceanography Centre, contributing to the wider CoastPredict initiative). For example, Future Coastal Ocean Climates will generate high-resolution, downscaled projections of future coastal ocean climates and their impacts on ecosystems, hazards, services and resources at the local and regional scales needed for planning.

North America

In North America, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and training, ocean literacy, outreach and co-design. Programme-scale examples include "Global Ecosystem for Ocean Solutions (GEOS)" (led by Ocean Visions and Future Seas). Illustrative larger projects include "Quantitative Tools for Responsible Marine Energy" (led by Sandia National Laboratories, contributing to the wider Ocean Decade Research Programme on the Maritime Continent) and "Canada's Coastal Environmental Baseline Program" (led by Fisheries and Oceans Canada, contributing to the wider Marine Life 2030 initiative). For example, Global Ecosystem for Ocean Solutions (GEOS) facilitates knowledge exchange across Ocean Decade-endorsed projects, leverages project synergies and helps build a global coalition to advance science and innovation for ocean-climate solutions.

Eutrophication, Hypoxia and Nutrient Cycles (including links to Harmful Algal Blooms)

Portfolio size	35 active actions (14 Priority 1, 11 Priority 2, 10 Priority 3 matches)
Action type mix	4 programmes, 28 projects, 3 contributions
Lead institutions	34 distinct lead institutions
Regional orientation	Europe (16); Global / cross-regional (11); North America (9); IOC WESTPAC / Pacific (9)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, climate adaptation, mitigation and ocean-climate science, and technology innovation, autonomous systems and AI
Programme-scale examples	"Sustainable Blue Food Futures for People & Planet (BlueFood Futures)" (led by Stanford Center for Ocean Solutions, Stanford University, USA), "Ocean Biomolecular Observing Network" (led by The Partnership for Observation of the Global Ocean (POGO)), and "Global Ocean Oxygen Decade" (led by GEOMAR Helmholtz Centre for Ocean Research Kiel, on behalf of the Global Ocean Oxygen Network (GO2NE))

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 11 active actions led by 11 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, training, ocean literacy, outreach and co-design, and data platforms, modelling and decision-support tools. Programme-scale examples include "Sustainable Blue Food Futures for People & Planet (BlueFood Futures)" (led by Stanford Center for Ocean Solutions, Stanford University, USA) and "Ocean Biomolecular Observing Network" (led by The

Partnership for Observation of the Global Ocean (POGO)). Illustrative larger projects include "Sustainable Aquaculture under Climate Change" (led by Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)) and "Satellite Observations of Coastal Ocean (SOCO)" (led by Second Institute of Oceanography (SIO), Ministry of Natural Resources (MNR), contributing to the wider CoastPredict initiative). For example, Sustainable Blue Food Futures for People & Planet (BlueFood Futures) highlights that blue foods are diverse, rich in essential nutrients and often produced sustainably, but are still too often left out of future-food discussions. The collective contribution to the priority is therefore to tracking nutrient inputs, oxygen stress and harmful algal bloom dynamics, and translating this information into management responses.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 9 active actions led by 9 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and observing, monitoring and forecasting systems. Illustrative larger projects include "Sustainable Aquaculture under Climate Change" (led by Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)) and "Satellite Observations of Coastal Ocean (SOCO)" (led by Second Institute of Oceanography (SIO), Ministry of Natural Resources (MNR), contributing to the wider CoastPredict initiative). For example, Sustainable Aquaculture under Climate Change addresses how climate change can disrupt aquaculture through reduced yields, shifting species distributions, lower quality and higher risks of disease and harmful algal blooms.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, and ecosystem restoration, biodiversity monitoring and habitat protection. Illustrative larger projects include "Digital Observing System of the Yucatan Shelf" (led by CINVESTAV, contributing to the wider CoastPredict initiative) and "Ocean Monitoring and Prediction Network for the Sustainable..." (led by Consorcio de Investigación del Golfo de México (CIGOM), contributing to the wider Ocean Observing Co-Design programme). For example, the Digital Observing System of the Yucatan Shelf highlights how nutrient dynamics in the region can contribute to harmful algal blooms.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and climate adaptation, mitigation and ocean-climate science. Illustrative larger projects include "Coastal Oxygen and Hypoxia in Asian waters" (led by Second Institute of Oceanography, Ministry of Natural Resources, China, contributing to the wider Global Ocean Oxygen Decade (GOOD)) and "Ocean Solutions in the East Asian Seas" (led by UNESCO/IOC Sub-Commission for the Western Pacific (WESTPAC), IOC/UNESCO & Centre for Marine and Coastal Studies (CEMACS), Universiti Sains Malaysia). For example, Coastal Oxygen and Hypoxia in Asian waters aims to advance understanding of deoxygenation and seasonal hypoxia in Asian coastal waters under the combined pressures of intense eutrophication and global warming.

IOCAFRICA / Africa

In IOCAFRICA / Africa, one active action is linked to this priority. "Southern Gulf of Guinea Upwelling System" (led by Institut National de Recherche en Sciences Exactes et Naturelles (IRSEN), contributing to the wider Fisheries Strategies for Changing Oceans and Resilient

Ecosystems initiative), examines how warming, freshwater discharge and stronger stratification could affect This includes focusing on ecosystem restoration, biodiversity monitoring and habitat protection, coastal resilience, hazards and disaster-risk work, and technology innovation, autonomous systems and AI.

Europe

In Europe, 16 active actions led by 16 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and plastic, litter, contaminant and nutrient pollution responses. Programme-scale examples include "Ocean Biomolecular Observing Network" (led by The Partnership for Observation of the Global Ocean (POGO)) and "Global Ocean Oxygen Decade" (led by GEOMAR Helmholtz Centre for Ocean Research Kiel, on behalf of the Global Ocean Oxygen Network (GO2NE)). Illustrative larger projects include "Global Ocean Oxygen Database and Atlas" (led by LEGOS Laboratoire d'Études en Géophysique et Océanographie Spatiales on behalf of GO2NE/GOOD, contributing to the wider Global Ocean Oxygen Decade (GOOD)) and "Climate Resilient Aquatic Food: Feeding the Future (CLIME Food)" (led by Institute of Marine Research). For example, the Ocean Biomolecular Observing Network will help communities detect biological hazards such as harmful algal blooms and pathogens and contribute to next-generation ocean observing systems.

North America

In North America, 9 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and plastic, litter, contaminant and nutrient pollution responses. Programme-scale examples include "Sustainable Blue Food Futures for People & Planet (BlueFood Futures)" (led by Stanford Center for Ocean Solutions, Stanford University, USA). Illustrative larger projects include "St. Lawrence Estuary Research and Observation Plan" (led by Fisheries and Oceans Canada, contributing to the wider Global Ocean Oxygen Decade (GOOD)) and "West Coast Ocean Biomolecular Observing Network" (led by Scripps Institution of Oceanography, contributing to the wider Ocean Biomolecular Observing Network (OBON)). For example, the West Coast Ocean Biomolecular Observing Network will help break down barriers to biomolecular observing by advancing the Southern California Ocean Biomolecular Network.

Physical Oceanography

Portfolio size	35 active actions (12 Priority 1, 14 Priority 2, 9 Priority 3 matches)
Action type mix	2 programmes, 28 projects, 5 contributions
Lead institutions	32 distinct lead institutions
Regional orientation	Europe (16); Global / cross-regional (11); IOC WESTPAC / Pacific (10); North America (8)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, physical oceanography and ocean process understanding, and observing, monitoring and forecasting systems
Programme-scale examples	"Powering the Blue Economy - Global (PBE-Global)" (led by United States Department of Energy - Water Power Technologies Office) and "Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 11 active actions led by 11 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, technology innovation, autonomous systems and AI, and data platforms, modelling and decision-support tools. Programme-scale examples include "Powering the Blue Economy - Global (PBE-Global)" (led by United States Department of Energy - Water Power Technologies Office) and "Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.). Illustrative larger projects include "European Knowledge Hub on Sea Level Rise" (led by Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans), contributing to the wider CoastPredict initiative) and "Regenerative Tides: Sailing for Solutions" (led by The Floating Stories Lab, contributing to the wider Global Estuaries Monitoring (GEM) initiative Programme). For example, Powering the Blue Economy – Global is establishing an international hub for knowledge sharing, coordination, collaboration and capacity building around the energy needs of ocean economies. The collective contribution to the priority is therefore to improving understanding of circulation, waves, hydrography and ocean processes that underpin forecasting, climate services and ecosystem applications.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 10 active actions led by 10 lead organisations are linked to this priority. Taken together, they focus on physical oceanography and ocean process understanding, ecosystem restoration, biodiversity monitoring and habitat protection, and coastal resilience, hazards and disaster-risk work. Programme-scale examples include "Deltas associated with large rivers: Seeking solutions to the problem..." (led by the State Key Laboratory of Estuarine and Coastal Research (SKLEC), East China Normal University.). Illustrative larger projects include "ACCIÓN SHOA-SEABED 2030" (led by Hydrographic and Oceanographic Service of Chilean Navy, contributing to the wider Nippon Foundation-GEBCO Seabed 2030 Project) and "Detection of Undersea Features" (led by Canadian Hydrographic Service, Department of Fisheries and Oceans., contributing to the wider Nippon Foundation-GEBCO Seabed 2030 Project). For example, ACCIÓN SHOA-SEABED 2030 supports seabed mapping and safe navigation by providing technical information and assistance for Chilean territorial waters.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 3 active actions led by 3 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, technology innovation, autonomous systems and AI, and coastal resilience, hazards and disaster-risk work. Illustrative larger projects include "South Atlantic Ocean biogeochemical estimation" (led by Universidade Federal Fluminense, contributing to the wider CoastPredict initiative) and "Reef-shaped coastlines: effects of climate change" (led by University of São Paulo/Oceanographic Institute, contributing to the wider CoastPredict initiative). For example, South Atlantic Ocean biogeochemical estimation responds to a lack of oceanographic data from the South Atlantic, which limits validation of biogeochemical models and understanding of ocean processes relevant for coastal communities.

IOCAFRICA / Africa

In IOCAFRICA / Africa, one active action is linked to this priority. "The Western Indian Ocean (WIO), Productivity under climate change" (led by Kenya Marine Fisheries Research Institute, contributing to the wider Fisheries Strategies for Changing Oceans and Resilient Ecosystems initiative) focuses on upwelling and downwelling as mechanisms that mix nutrients and plankton

through different layers of the ocean. The emphasis is on ecosystem restoration, biodiversity monitoring and habitat protection, plastic, litter, contaminant and nutrient pollution responses, and climate adaptation, mitigation and ocean-climate science.

Europe

In Europe, 16 active actions led by 13 lead organisations are linked to this priority. Taken together, they focus on data platforms, modelling and decision-support tools, ecosystem restoration, biodiversity monitoring and habitat protection, and physical oceanography and ocean process understanding. Illustrative larger projects include "European Knowledge Hub on Sea Level Rise" (led by Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans), contributing to the wider CoastPredict initiative) and "Regenerative Tides: Sailing for Solutions" (led by The Floating Stories Lab, contributing to the wider Global Estuaries Monitoring (GEM) initiative Programme). For example, the European Knowledge Hub on Sea Level Rise supports sea-level-related policy development by facilitating interaction among research and policy professionals and stakeholders with different disciplinary backgrounds.

North America

In North America, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, physical oceanography and ocean process understanding, and data platforms, modelling and decision-support tools. Programme-scale examples include "Powering the Blue Economy - Global (PBE-Global)" (led by United States Department of Energy - Water Power Technologies Office). Illustrative larger projects include "SeaKeepers' Seabed 2030 Project (SeaKeepers CSB)" (led by The International SeaKeepers Society, contributing to the wider Nippon Foundation-GEBCO Seabed 2030 Project) and "Science Monitoring And Reliable Telecommunications (SMART) Subsea Cables" (led by the Joint Task Force SMART Subsea Cables, contributing to the wider Ocean Observing Co-Design programme). SMART Subsea uses sensor-enabled submarine telecommunications cables to observe the ocean and Earth at planetary scale, supporting climate, ocean and hazard-related services.

Support for Sustainable Ocean Planning including Risk Identification and Management Tools for Planning Under Climate Change

Portfolio size	28 active actions (17 Priority 1, 5 Priority 2, 6 Priority 3 matches)
Action type mix	3 programmes, 19 projects, 6 contributions
Lead institutions	28 distinct lead institutions
Regional orientation	Europe (15); Global / cross-regional (8); IOCARIBE / Atlantic Latin America and Caribbean (5); IOC WESTPAC / Pacific (4)
Main activity themes	sustainable ocean planning, marine spatial planning and MPAs, ecosystem restoration, biodiversity monitoring and habitat protection, data platforms, modelling and decision-support tools, and science-policy, industry and blue-economy engagement
Programme-scale examples	"GEMS Ocean for Ocean and Coasts" (led by UN Environment Programme (UNEP)), "Ocean Decade Programme Sustainable Ocean Planning (SOP Programme)" (led by Intergovernmental Oceanographic Commission of UNESCO), and "Protect Restore Ocean Capital and Blue Economies (PROCARIBE+)" (led by United Nations Office for Project Services (UNOPS) and United Nations Development Programme (UNDP))

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on sustainable ocean planning, marine spatial planning and MPAs, training, ocean literacy, outreach and co-design, and ecosystem restoration, biodiversity monitoring and habitat protection. Programme-scale examples include "GEMS Ocean for Ocean and Coasts" (led by UN Environment Programme (UNEP)) and "Ocean Decade Programme Sustainable Ocean Planning (SOP Programme)" (led by Intergovernmental Oceanographic Commission of UNESCO). Illustrative larger projects include "Sustainable Ocean Management Program" (led by COAST Center, University of Oldenburg, contributing to the wider Cultural Heritage Framework Programme (CHFP)) and "Global Tsunami Model Association" (led by Universität Hamburg, Dept. of Mathematics, contributing to the wider Ocean Decade Tsunami Programme). For example, GEMS Ocean for Ocean and Coasts seeks to strengthen the capacity of sectors across society to access, analyse, use and communicate information for the protection and sustainable use of marine and coastal resources. The collective contribution to the priority is therefore to combining spatial, environmental and risk information to support sustainable ocean plans under changing climate conditions.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 4 active actions led by 4 lead organisations are linked to this priority. Taken together, they focus on sustainable ocean planning, marine spatial planning and MPAs, climate adaptation, mitigation and ocean-climate science, and ecosystem restoration, biodiversity monitoring and habitat protection. Illustrative larger projects include "Global MSP 2060 under the ONCE program" (led by First Institute of Oceanography (FIO), Ministry of Natural Resources of China, contributing to the wider Global Ocean Negative Carbon Emission (Global ONCE) programme) and "Climate Resilient - Marine Spatial Planning Project" (led by The Pacific Community SPC, contributing to the wider Pacific Solutions to Save our Ocean initiative). For example, Global MSP 2060 under the ONCE programme treats marine spatial planning as a way to guide how, when and where the ocean is used, including in relation to the marine carbon sink and carbon reduction.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 5 active actions led by 5 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, science-policy, industry and blue-economy engagement, and sustainable ocean planning, marine spatial planning and MPAs. Programme-scale examples include "Protect Restore Ocean Capital and Blue Economies (PROCARIBE+)" (led by United Nations Office for Project Services (UNOPS) and United Nations Development Programme (UNDP)). Illustrative larger projects include "Pampa Azul Bonaerense" (led by Ministry of Environment of the Province of Buenos Aires, Argentina, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "Engineering Resilient Caribbean Coastlines (ENRICO)" (led by Smith Warner International, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example, PROCARIBE+ will support resilient blue economies by scaling up work on marine spatial planning, marine conservation, blue carbon, sustainable fisheries, community grants and regional ocean governance.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on sustainable ocean planning, marine spatial planning and MPAs, ecosystem restoration, biodiversity monitoring and habitat protection, and observing, monitoring and forecasting systems. Illustrative larger projects

include "BRIDGES Research Program" (led by CNRS, contributing to the wider Sustainable Ocean Planning programme). For example, the BRIDGES Research Program will study how marine spatial planning and networks of area-based conservation tools can enable a healthy ocean, stronger biodiversity conservation and sustainable blue-food production under global change.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and science-policy, industry and blue-economy engagement. Programme-scale examples include "GEMS Ocean for Ocean and Coasts" (led by UN Environment Programme (UNEP)). For example, GEMS Ocean for Ocean and Coasts will help feed marine and coastal information into global, regional and national processes for sustainable resource management.

Europe

In Europe, 15 active actions led by 15 lead organisations are linked to this priority. Taken together, they focus on sustainable ocean planning, marine spatial planning and MPAs, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection. Programme-scale examples include "Ocean Decade Programme Sustainable Ocean Planning (SOP Programme)" (led by Intergovernmental Oceanographic Commission of UNESCO). Illustrative larger projects include "Sustainable Ocean Management Program" (led by COAST Center, University of Oldenburg, contributing to the wider Cultural Heritage Framework Programme (CHFP)) and "Quieting Oceans for a Sustainable Future" (led by University of Trieste, contributing to the wider Sustainable Ocean Planning programme). For example, the Ocean Decade Programme Sustainable Ocean Planning has been co-designed to support the Ocean Panel goal of 100% sustainable ocean planning and to make use of the broader Ocean Decade ecosystem.

North America

In North America, one active action is linked to this priority. "Global Fishing Watch Marine Manager, a new technology portal" (led by Global Fishing Watch) will provide dynamic, interactive data on human-use activity, ocean conditions and biology in near real time to support MPA management, marine spatial planning and scientific research. Overall goals include ecosystem restoration, biodiversity monitoring and habitat protection, sustainable ocean planning, marine spatial planning and MPAs, and data platforms, modelling and decision-support tools.

Ocean Acidification

Portfolio size	27 active actions (16 Priority 1, 4 Priority 2, 7 Priority 3 matches)
Action type mix	3 programmes, 23 projects, 1 contribution
Lead institutions	23 distinct lead institutions
Regional orientation	North America (14); Global / cross-regional (8); IOC WESTPAC / Pacific (8); Europe (7)
Main activity themes	ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, observing, monitoring and forecasting systems, and data platforms, modelling and decision-support tools
Programme-scale examples	"Mitigation of Natural Incidence To increased Ocean (MoNITOR)" (led by Second Institute of Oceanography, MNR), "Sustainability, Predictability and Resilience of Marine Ecosystems..." (led by National Oceanic and Atmospheric Administration), and "Ocean Acidification Research for Sustainability (OARS)" (led by Plymouth Marine Laboratory, University of Washington, IOC UNESCO)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 8 active actions led by 7 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and observing, monitoring and forecasting systems. Programme-scale examples include "Mitigation of Natural Incidence To increased Ocean (MoNITOR)" (led by Second Institute of Oceanography, MNR) and "Sustainability, Predictability and REsilience of Marine Ecosystems..." (led by National Oceanic and Atmospheric Administration). Illustrative larger projects include "Enhancing Accessibility of OA Reference Materials" (led by NOAA, contributing to the wider Ocean Acidification Research for Sustainability (OARS) programme) and "Ghost Fishing Solutions (GFS)" (led by Ghost Fishing Solutions, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative). For example, MoNITOR addresses ocean-related natural hazards across basins, including oxygen deficiency in the Indian Ocean, tropical cyclones in the Atlantic, ocean acidification in the Pacific and glacier melting in Antarctic waters. The collective contribution to the priority is therefore to monitoring carbonate chemistry, building adaptation knowledge and connecting acidification science to policy and local response plans.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and observing, monitoring and forecasting systems. Programme-scale examples include "Mitigation of Natural Incidence To increased Ocean (MoNITOR)" (led by Second Institute of Oceanography, MNR). Illustrative larger projects include "Canadian Ocean Climate Simulation: 1958 to Present (CanOCS)" (led by Fisheries and Oceans Canada (DFO), contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme) and "Canadian Ocean Acidification Community of Practice" (led by University of Calgary, contributing to the wider Ocean Acidification Research for Sustainability (OARS) programme). For example, the Canadian Ocean Acidification Community of Practice has formed around growing interest in ocean acidification and helps connect practitioners and researchers working on the issue.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, one active action is linked to this priority. "Ocean Monitoring and Prediction Network for the Sustainable Gulf" (led by Consorcio de Investigación del Golfo de México (CIGOM), contributing to the wider Ocean Observing Co-Design programme) will develop observation systems and regional forecasting models to provide baseline information on the oceanographic, biogeochemical and ecological state of the Gulf ecosystem. Overall objectives include improved observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and ecosystem restoration, biodiversity monitoring and habitat protection.

IOCAFRICA / Africa

In IOCAFRICA / Africa, 3 active actions led by 3 lead organisations are linked to this priority. Taken together, they focus on climate adaptation, mitigation and ocean-climate science, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Enhancement of hydrographic and oceanographic observations" (led by National Commission for Education, Sciences and Culture - Kingdom of Morocco (MarocNatCom), contributing to the wider Observing Together programme) and "South African Innovation Lab for Ocean-Climate Resilience (SAILOR)" (led by Kinjani, contributing to the wider Global Ecosystem for Ocean Solutions (GEOS)). For example,

Enhancement of hydrographic and oceanographic observations in support of climate action will help lay the ground for national climate adaptation and mitigation strategies, including better understanding of ocean acidification impacts.

Europe

In Europe, 7 active actions led by 7 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and data platforms, modelling and decision-support tools. Programme-scale examples include "Ocean Acidification Research for Sustainability (OARS)" (led by Plymouth Marine Laboratory, University of Washington, IOC UNESCO). Illustrative larger projects include "Ghost Fishing Solutions (GFS)" (led by Ghost Fishing Solutions, contributing to the wider Sustainability of Marine Ecosystems through global knowledge networks initiative) and "COCAS: Coastal Observatory for Climate, CO₂ and Acidification" (led by Sorbonne Université, LOCEAN-IPSL, contributing to the wider Ocean Observing Co-Design programme). For example, Ocean Acidification Research for Sustainability (OARS) will foster ocean-acidification science, including work on impacts on marine life and ecosystem sustainability across estuarine, coastal and open-ocean environments.

North America

In North America, 14 active actions led by 10 lead organisations are linked to this priority. Taken together, they focus on ecosystem restoration, biodiversity monitoring and habitat protection, climate adaptation, mitigation and ocean-climate science, and observing, monitoring and forecasting systems. Programme-scale examples include "Sustainability, Predictability and Resilience of Marine Ecosystems..." (led by National Oceanic and Atmospheric Administration). Illustrative larger projects include "Enhancing Accessibility of OA Reference Materials" (led by NOAA, contributing to the wider Ocean Acidification Research for Sustainability (OARS) programme) and "Canadian Ocean Climate Simulation: 1958 to Present (CanOCS)" (led by Fisheries and Oceans Canada (DFO), contributing to the wider Sustainability, Predictability and Resilience of Marine Ecosystems (SUPREME) programme). For example, SUPREME will implement infrastructure for climate- and ocean-related forecasts, predictions and projections that guide marine ecosystem management and adaptation strategies.

Early Warning Systems and Disaster Risk Preparedness and Reduction

Portfolio size	25 active actions (9 Priority 1, 13 Priority 2, 3 Priority 3 matches)
Action type mix	2 programmes, 20 projects, 3 contributions
Lead institutions	24 distinct lead institutions
Regional orientation	Europe (9); Global / cross-regional (9); IOC WESTPAC / Pacific (8); IOCINDIO / Indian Ocean and adjacent Asian regions (7)
Main activity themes	coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, data platforms, modelling and decision-support tools, and technology innovation, autonomous systems and AI
Programme-scale examples	"Ocean to climate Seamless Forecasting system" (led by First Institute of Oceanography, Ministry of Natural Resources) and "The Ocean Decade Tsunami Programme" (led by Intergovernmental Oceanographic Commission, IOC/UNESCO)

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 9 active actions led by 9 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, and data platforms, modelling and decision-support tools. Programme-scale examples include "Ocean to climate Seamless Forecasting system" (led by First Institute of Oceanography, Ministry of Natural Resources) and "The Ocean Decade Tsunami Programme" (led by Intergovernmental Oceanographic Commission, IOC/UNESCO). Illustrative larger projects include "Sea Level Station Monitoring Facility" (led by Flanders Marine Institute (VLIZ), contributing to the wider Ocean Decade Tsunami Programme) and "Global Real-time Early Alarm for Tsunami (GREAT)" (led by Cardiff University, contributing to the wider Ocean Decade Tsunami Programme). For example, the Ocean to Climate Seamless Forecasting system aims to understand the ocean–climate nexus, strengthen observation capabilities using novel technologies, integrate observations with advanced models, and provide public services and products. The collective contribution to the priority is therefore to advancing operational warning, preparedness, risk communication and response capacity for tsunamis, storms and other coastal hazards.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, 8 active actions led by 8 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, and equity, inclusion, livelihoods and community participation. Programme-scale examples include "Ocean to climate Seamless Forecasting system" (led by First Institute of Oceanography, Ministry of Natural Resources). Illustrative larger projects include "JOint INternational laboratory of Deltas" (led by State Key Laboratory of Estuarine and Coastal Research, East China Normal University, contributing to the wider large-river deltas resilience initiative) and "Island Governance Toolkit" (led by South China Sea Ecological Center, Ministry of Natural Resources of China, contributing to the wider Ocean to Climate Seamless Forecasting System (OSF)). For example, the Island Governance Toolkit includes marine ecological early warning and monitoring, ecological conservation and restoration, disaster prevention and mitigation, regulatory technologies, policy development and science communication.

IOCARIBE / Atlantic Latin America and Caribbean

In IOCARIBE / Atlantic Latin America and Caribbean, 3 active actions led by 3 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, ecosystem restoration, biodiversity monitoring and habitat protection, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Integrating Coastal Hazard Warning Systems for TAC" (led by IOCARIBE + ICG, contributing to the wider CoastPredict initiative) and "Updating Tsunami Hazard Assessments for Costa Rica" (led by National University Costa Rica – SINAMOT Program, contributing to the wider Ocean Decade Tsunami Programme). For example, Integrating Coastal Hazard Warning Systems for TAC will prioritize the integration of existing and new early-warning systems across monitoring and warning, risk knowledge, warning dissemination and communication, and response capabilities.

IOCINDIO / Indian Ocean and adjacent Asian regions

In IOCINDIO / Indian Ocean and adjacent Asian regions, 7 active actions led by 6 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, observing, monitoring and forecasting systems, and technology innovation, autonomous systems and AI. Illustrative larger projects include "JOint INternational laboratory of Deltas" (led by State Key Laboratory of Estuarine and Coastal Research, East China

Normal University, contributing to the wider large-river deltas resilience initiative) and "INCOIS Submarine Cable Multi-Parameter Observatory" (led by Indian National Centre for Ocean Information Services (INCOIS), contributing to the wider Ocean Decade Tsunami Programme). For example, the JOint International Laboratory of Deltas uses international academic cooperation, exchange, training and resource sharing to establish intelligent databases, forecasting and early-warning capacity for delta systems.

IOCAFRICA / Africa

In IOCAFRICA / Africa, one active action is linked to this priority. "Sustainable Ocean Resilience for African Community" (led by African Marine Environment Sustainability Initiative (AFMESI), contributing to the wider SEAWARD Africa programme), will strengthen resilience in African coastal areas through early warning systems, ocean literacy and adaptive-capacity building. Overall objectives include coastal resilience, hazards and disaster-risk work, equity, inclusion, livelihoods and community participation, and technology innovation, autonomous systems and AI.

Europe

In Europe, 9 active actions led by 9 lead organisations are linked to this priority. Taken together, they focus on coastal resilience, hazards and disaster-risk work, data platforms, modelling and decision-support tools, and observing, monitoring and forecasting systems. Programme-scale examples include "The Ocean Decade Tsunami Programme" (led by Intergovernmental Oceanographic Commission, IOC/UNESCO). Illustrative larger projects include "Sea Level Station Monitoring Facility" (led by Flanders Marine Institute (VLIZ), contributing to the wider Ocean Decade Tsunami Programme) and "Global Real-time Early Alarm for Tsunami (GREAT)" (led by Cardiff University, contributing to the wider Ocean Decade Tsunami Programme). For example, the Ocean Decade Tsunami Programme includes the Tsunami Ready programme and multi-hazard early-warning-system capacity development.

North America

In North America, one active action is linked to this priority. The Addressing Precipitation Prediction Grand Challenge project can integrate advances in precipitation prediction into early warning systems. It focuses on observing, monitoring and forecasting systems, coastal resilience, hazards and disaster-risk work, and data platforms, modelling and decision-support tools.

Sustained Investment/Funding Gaps for Observation and Data Infrastructure

Portfolio size	3 active actions (0 Priority 1, 3 Priority 2, 0 Priority 3 matches)
Action type mix	3 projects
Lead institutions	3 distinct lead institutions
Regional orientation	Global / cross-regional (2); Europe (2); IOC WESTPAC / Pacific (1); North America (1)
Main activity themes	training, ocean literacy, outreach and co-design, observing, monitoring and forecasting systems, sustained finance and infrastructure investment, and data platforms, modelling and decision-support tools
Programme-scale examples	No action is classified as a programme in this priority; illustrative large projects are therefore used in the regional synthesis.

Synthesis by Region

Global / cross-regional

Across global and cross-regional actions, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, training, ocean literacy, outreach and co-design, and data platforms, modelling and decision-support tools. Illustrative larger projects include "Solutions for Cost-effective Ocean Observation (SCOOPp)" (led by SMHI, the Swedish Meteorological and Hydrological Institute, contributing to the wider CoastPredict initiative) and "The Global GO-SHIP Survey in support of the Ocean Decade 2021-2030" (led by GO-SHIP program office, contributing to the wider Ocean Observing Co-Design programme). For example, Solutions for Cost-effective Ocean Observation (SCOOPp) will initially demonstrate its concept at pilot sites, with a longer-term legacy of cost-effective observation technologies, methodologies and best practices that can be deployed more widely for coastal resilience. The collective contribution to the priority is therefore to making the case for stable investment in observing systems, shared infrastructure, data management and long-term coordination.

IOC WESTPAC / Pacific

In IOC WESTPAC / Pacific, one active action is linked to this priority: "Developing a conservation plan for Maui's corals" (led by University of California, Santa Cruz, contributing to the wider Marine Life 2030 initiative). Developing a conservation plan for Maui's corals uses workshops, training, resort partnerships and knowledge sharing to support coral restoration on Maui. It focuses on ecosystem restoration, biodiversity monitoring and habitat protection, training, ocean literacy, outreach and co-design, and sustained finance and infrastructure investment.

Europe

In Europe, 2 active actions led by 2 lead organisations are linked to this priority. Taken together, they focus on observing, monitoring and forecasting systems, training, ocean literacy, outreach and co-design, and data platforms, modelling and decision-support tools. Projects comprise "Solutions for Cost-effective Ocean Observation (SCOOPp)" (led by SMHI, the Swedish Meteorological and Hydrological Institute, contributing to the wider CoastPredict initiative) and "The Global GO-SHIP Survey in support of the Ocean Decade 2021-2030" (led by GO-SHIP program office, contributing to the wider Ocean Observing Co-Design programme). For example, the Global GO-SHIP Survey will expand real-time data provision, provide fit-for-purpose calibration data to partner networks such as Argo, and develop new stakeholder-driven data products.

North America

In North America, one active action is linked to this priority: "Developing a conservation plan for Maui's corals" (led by University of California, Santa Cruz, contributing to the wider Marine Life 2030 initiative). See above.

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