

SCOR Working Group Proposal

Title: Risk Assessment for the Ocean

Acronym: OceanRisk

Summary/Abstract

A combination of climate driven stressors and human exploitation threaten the ocean's capacity to provide food security, climate regulation and economic stability. Yet despite a plethora of assessments of the state of the ocean, there is no operational method for comparing risks across ocean systems.

OceanRisk will develop a scientific method for undertaking risk assessments that can guide adaptive decision-making at local, regional, and global ocean scales. The scientific challenge associated with risk assessments is to integrate understanding of current and future threats, ocean values, and societal needs. OceanRisk will co-design a risk assessment method that draws on available global assessments, regional expertise, and local and traditional knowledge to identify, compare, and rank risks across diverse ocean systems. We will first synthesize existing ocean assessments, then develop a globally applicable methodology for assessing and ranking risks, collate data on activities that lead to risk, and publish a best practice approach for the methodology. OceanRisk will thereby produce a blueprint for a transferrable and scalable risk assessment - including methodological guidance and decision-support tools - and identify pathways for sustained global coordination by linking with existing initiatives. We will build capacity through activities such as online workshops and webinars and through the international network OCEAN100+, which includes participants representing more than 50 maritime nations. By uniting natural, social, and policy sciences, this initiative will provide the scientific foundation required to support sustainable and equitable ocean planning and to equip societies with feasible, risk-based options for action in a rapidly changing ocean.

Scientific Background and Rationale

The global ocean is undergoing rapid, unprecedented, and in many cases irreversible change ([IPCC AR6 WG1 SPM](#)). Rising temperatures, increasing stratification, ocean acidification, deoxygenation, sea-level rise, biodiversity loss, and the intensification of extreme events are already reshaping marine ecosystems and the human communities that depend on them (e.g. Portner et al 2020; IPBES 2024; Wernberg et al 2025). These transformations threaten the ocean's capacity to provide essential ecosystem services, including food security, climate regulation, and economic stability, placing millions of people at risk (e.g. [World Ocean Assessment 2021](#)). The scale, complexity, and interconnectedness of these challenges demand a coordinated scientific response that can guide decision-making at local, regional, and global levels (e.g. Stott et al 2026). This response is urgent and can only be achieved with a global interdisciplinary effort.

Despite the proliferation of global and regional status assessments (**Figure 1**), the ocean science community lacks an integrated, and operational method for assessing and comparing risks across ocean systems. Existing efforts provide critical insights (e.g. Payne et al 2021) but remain globally fragmented, often using different definitions, metrics, and scales of analysis. Murphy et al (2021) emphasize that a

patchwork of activities will not provide the scientific or advisory basis required for developing and implementing appropriate responses. Without a unified approach, decision-makers struggle to prioritize risks, evaluate trade-offs, or identify feasible options for action. The result is a global response landscape that is reactive rather than anticipatory, uneven across regions, and insufficiently informed by the best available science (Stott et al 2026).

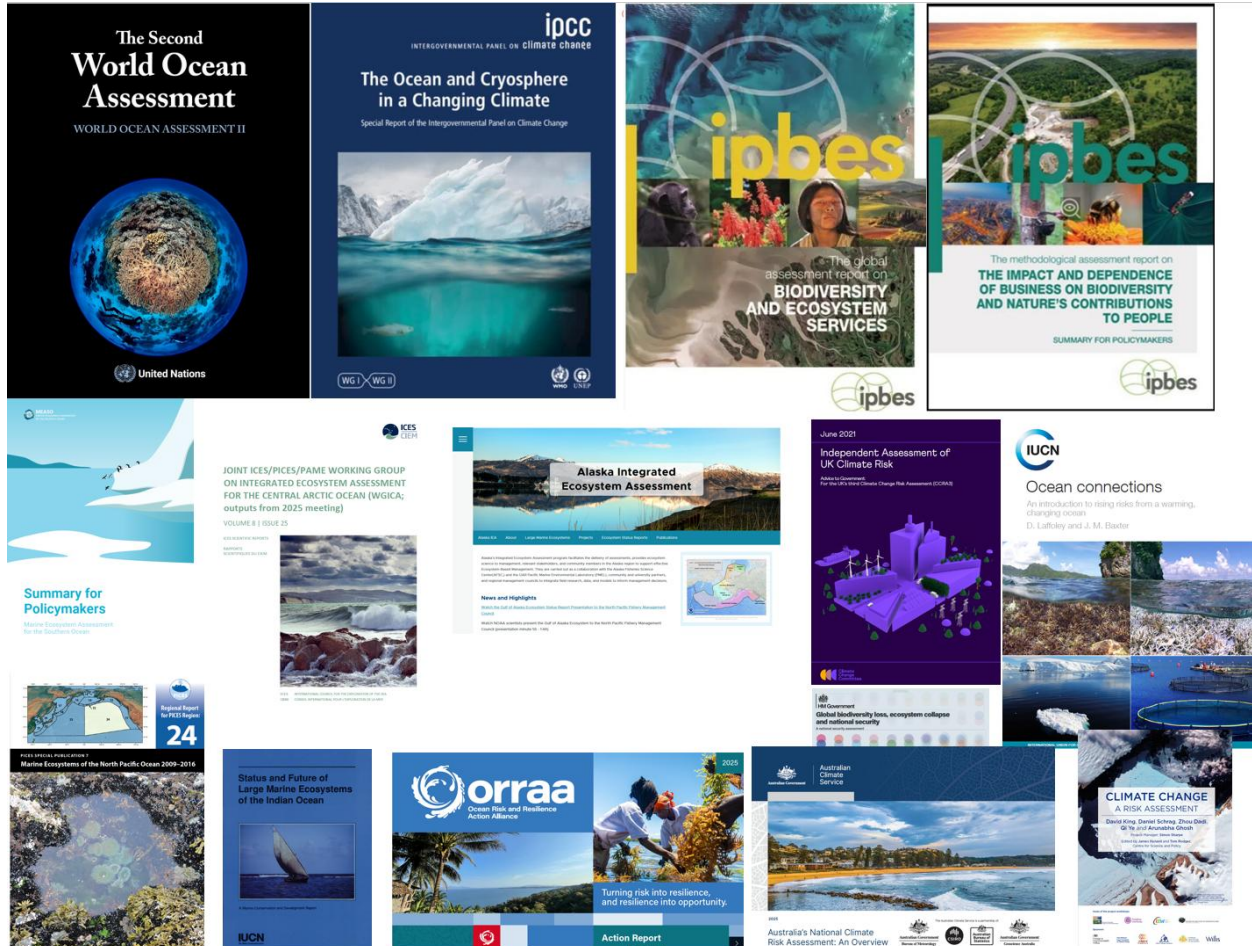


Figure 1: A montage of assessments of ocean condition and threats. Many of these can be used to inform risk assessments, but a unified single method to allow global ocean risk assessment is missing.

The COVID-19 pandemic and other global economic disruptions have underscored the consequences of failing to prepare for known risks. Although the likelihood of a global pandemic had been repeatedly identified, responses were often slow, inconsistent, or poorly coordinated. Murphy et al. (2021) argue that this experience provided a powerful analogy for ocean change as the impacts of major shifts in ocean state will likely far exceed the global social and economic consequences of the COVID-19 pandemic. The lesson is clear: risk awareness, risk literacy, and risk-based planning are essential for timely and effective action. Yet the ocean community currently lacks the tools, processes, and global coordination mechanisms needed to translate scientific understanding of risk into actionable guidance for policy and management (Prado et al 2026).

To address this gap, Murphy et al (2021) proposed a three-component process for developing an **Action Plan for the Ocean**: (1) assess and rank risks, (2) identify options for action, and (3) define adaptive action plans (**Figure 2**). This framework provides a structured, iterative, and scalable approach for evaluating uncertainties, and supporting decision-making under changing conditions. It is designed to be continuously updated as new information becomes available, ensuring that the Action Plan remains responsive to emerging threats and evolving scientific understanding. The approach aligns with best practices in risk management, ecosystem-based management, and adaptive governance, while offering a unifying structure that can be applied across regions and sectors.

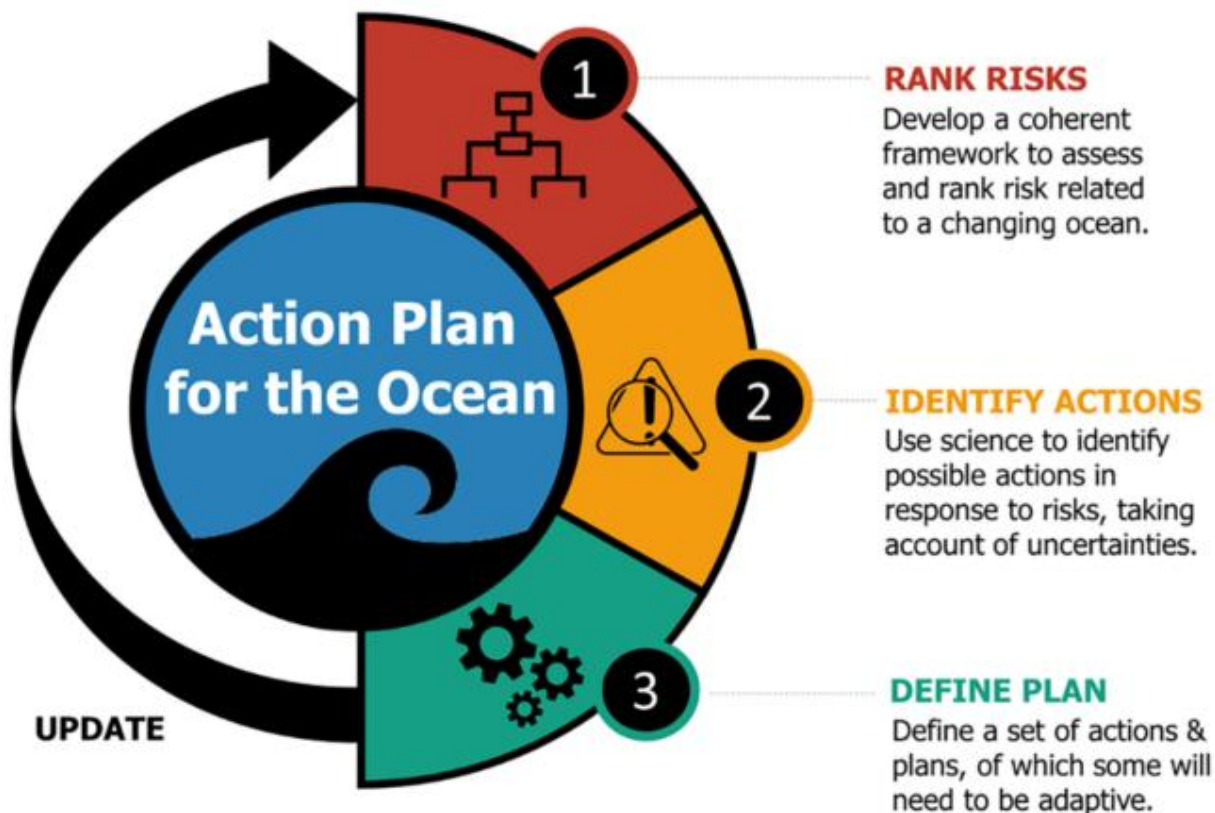


Figure 2. Schematic illustrating the main elements of the Action Plan for the Ocean (Murphy et al 2021). OceanRisk will focus on the first element, and lay the conceptual foundations for subsequent steps.

The focus for OceanRisk is on assessing risks which requires development of an approach for comparing risks across different ocean systems and time horizons (Maltby et al 2022). This includes identifying which risks are most likely, which could have the greatest impacts, and which components are most vulnerable. It also requires shared definitions of risk, transparent criteria for ranking, and approaches that integrate natural, social, and economic dimensions (Stott et al 2026). Significant progress has been made through the IPCC and various national risk-assessment and adaptation exercises, generating substantial knowledge, methods, and expertise. However, this work remains dispersed across sectors and regions, and no coordinated effort currently exists to adapt and apply these approaches specifically to ocean planning. OceanRisk will draw on available status and threat assessments (e.g. **Figure 1**) and

local and regional knowledge to identify risks and develop a framework for ranking risks in different ocean systems, including from novel proposed activities such as marine carbon dioxide removal (**Figure 3**). Integration of global assessments with local expertise is essential for ensuring that the framework is both scientifically robust and contextually relevant.

While the second and third components (**Figure 2**) are integral to the OceanRisk vision, they extend beyond the scope of this Working Group. These activities involve evaluating response strategies, exploring interactions among risks, and translating options into coordinated, adaptive plans across scales. OceanRisk will lay the scientific foundations for these steps, but fully developing actionable pathways and implementation blueprints will require additional coordination, resources, and future collaborative efforts.

Why now?

The need for the OceanRisk group is underscored by the growing demand from governments, NGOs, and international bodies for actionable, science-based guidance on ocean risk and adaptation. Countries are committing to developing Sustainable Ocean Plans, climate adaptation strategies, and Blue Economy policies, yet many lack the scientific tools or capacity to assess risks systematically or evaluate options for action (Stott et al 2026). By developing a globally applicable risk-assessment methodology, decision-support tools, and an implementation blueprint, OceanRisk will provide essential scientific infrastructure to support these efforts.

This effort is possible because of an emerging global collaboration. A central innovation of the [Action Plan initiative](#) (Murphy et al 2021) is the creation of the OCEAN100+ Network—an interdisciplinary, globally distributed network of participants, ultimately from more than 100 countries. This network is designed to ensure broad geographic representation, disciplinary diversity, and equitable participation, and will allow global reach of OceanRisk methods. The Network brings together early-career professionals, regional experts, and diverse stakeholders, and aims to enable inclusive contributions to mitigation and adaptation strategies. The network is growing, with members in 57 countries (**Appendix 2**). This global reach is essential for capturing the full diversity of ocean systems, governance contexts, and societal priorities in assessing ocean risks.

Why a SCOR WG?

SCOR is uniquely positioned to convene international, interdisciplinary teams; develop methodological standards; and catalyze bottom-up scientific innovation. OceanRisk aligns directly with SCOR's mission to advance ocean science through global collaboration and to support activities that require coordination across disciplines, regions, and knowledge systems. SCOR's track record of producing influential, widely adopted frameworks, while championing capacity development, makes it an ideal platform for developing the risk assessment for the Action Plan. OceanRisk aligns with the UN Ocean Decade, particularly Challenge 4 (Develop a sustainable and equitable ocean economy) and the UN Sustainable Ocean Planning (SOP) Programme, which recently endorsed the [OCEAN100+](#) activity.

In summary, the scientific background and rationale for OceanRisk rests on four pillars:

1. The urgency of accelerating ocean change and its societal impacts.
2. The absence of a coherent, globally applicable framework for assessing and responding to ocean risks.
3. The opportunity to build on the Integrated Marine Biosphere Research's (IMBeR) proposed three-component Action Plan and the emerging OCEAN100+ network.
4. The unique opportunity to convene the expertise needed for this global vision

OceanRisk will not achieve this vision without a focus on capacity building and training to develop ocean literacy, as indicated in the Terms of Reference (below). OceanRisk will help establish the scientific basis for a coordinated, inclusive, and adaptive global response to ocean change that equips societies with the knowledge, tools, and capacity required to navigate an uncertain future.

Terms of Reference

1. **Synthesize existing global, regional, and local assessments to inform the risk-assessment framework.** Building on IPCC, IPBES, WOA, and other assessments, the group will identify commonalities, gaps, and opportunities for harmonization, ensuring that the framework is grounded in the best available science and adaptable to diverse contexts and improves future assessments.
2. **Develop a globally-applicable regional framework for assessing and ranking risks in ocean systems.** OceanRisk will co-design a transparent, interdisciplinary risk assessment methodology that defines key risk concepts, identifies relevant biophysical and socio-economic indicators, and establishes criteria for comparing risks across regions, sectors, and scales. This method may be hierarchical, to ensure that base assessments can be completed for all the regions under consideration.
3. **Establish best-practice approaches for inclusive global co-production and engagement.** OceanRisk will define processes for including local and Indigenous knowledge, supporting equitable participation across the OCEAN100+ network, and building long-term capacity.
4. **Recommend pathways for sustained coordination and alignment with international initiatives.** OceanRisk will ensure links to relevant SCOR WGs, UN Ocean Decade, and the Sustainable Ocean Planning Programme, and other bodies (IPCC, UNESCO, DOALOS) to ensure long-term relevance and uptake beyond 2030.
5. **Strengthen capacity** across participants and maritime nations to allow comprehensive data collation, risk assessment and development of community-supported response options. OceanRisk will seek to embed capacity building and mentoring into all WG activities.

Deliverables

A synthesis report of existing global, regional, and local assessments. A comparative analysis of major assessment efforts (e.g., IPCC, IPBES, WOA), highlighting commonalities, gaps, and opportunities for harmonization that can improve future assessments. (TOR 1; published on project website, enduring repositories (e.g. [Zenodo](#)), and webinars).

1. **A globally applicable risk-assessment framework for ocean change.** An open-access methodological report defining key risk concepts, identifying biophysical and socio-economic components, and providing criteria and procedures for assessing and ranking risks across ocean systems. (TOR 2 and 3, to be published on the project website).
2. **Guidance for identifying science-based options for action.** A structured set of tools and decision pathways linking ranked risks to feasible mitigation, adaptation, and preparedness options, including approaches for managing uncertainty, will be hosted on the project website and duplicated to enduring initiatives, such as the [Ocean Best Practice Initiative](#) and the [Sustainable Ocean Program](#) (TOR 3 and 4).
3. **At least one peer-reviewed open-access publication** and presentation at a relevant international conference covering OceanRisk outputs, including the risk-assessment framework, co-production principles, and methodological innovations. ECR leadership will be integral. Publications will ensure broad scientific visibility and support adoption by assessment bodies, national ocean-planning processes, and the UN Ocean Decade community (TOR 1,2 and 3).
4. **Training materials.** Participation in testing the risk assessment methods by the Oceans100+ network, via a series of training workshops and webinars as detailed in the capacity building section, and contributed to the IOC's Ocean Teacher Global Academy ([OTGA](#)) and YouTube channels (TOR 5).

Working plan

OceanRisk will operate over a 3-year period, following a structured sequence of activities designed to produce the four core deliverables (**Figure 3**). The plan is organized into four phases: (1) scoping and consolidation, (2) framework development, (3) co-production and testing, and (4) synthesis and dissemination. Each phase integrates virtual collaboration, targeted workshops, and engagement with the OCEAN100+ network to ensure global representation and methodological robustness.

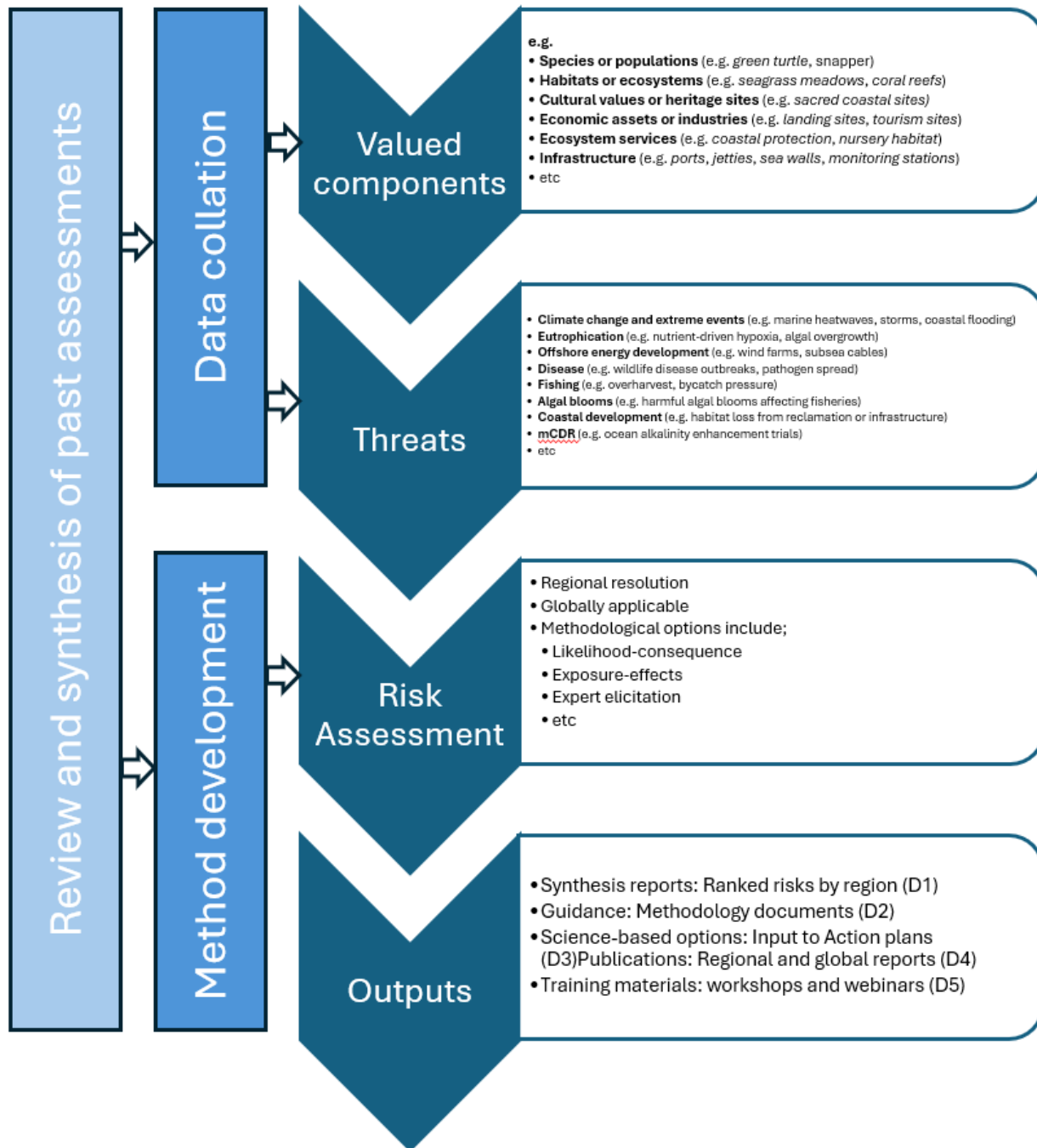


Figure 3. OceanRisk will review existing material to inform data collation on important ocean components and threats, develop a risk assessment approach, and deliver a range of outputs.

Phase 1 (Months 1–9): Scoping, Consolidation, and Assessment Synthesis

1.1 Establish shared definitions and conceptual foundations. OceanRisk will begin by agreeing on key terminology related to risk, impact, vulnerability, exposure, and uncertainty. This step ensures conceptual consistency across disciplines and regions.

1.2 Map existing global, regional, and local assessments. Members will compile and review

major assessment efforts—including IPCC, IPBES, the World Ocean Assessment, regional ecosystem assessments, and national ocean plans. The group will identify methodological commonalities, gaps, and opportunities for harmonization.

1.3 Develop a typology of components and threats. OceanRisk will collate data for example regions on the valued ocean components and threats (e.g. **Figure 3**) that can be used globally. This step will inform the design of the new risk-assessment framework.

Outputs of Phase 1:

- Draft synthesis of existing assessments (supports Deliverable 1)
- Agreed conceptual foundations for risk assessment (supports Deliverable 2)
- Typology of components and threats (supports Deliverable 2)

Phase 2 (Months 10–20): Development of the Risk-Assessment Framework

2.1 Co-design of the risk-assessment methodology. OceanRisk will develop a globally applicable framework to assess risk from ocean threats to biophysical and socio-economic valued components, define criteria for ranking risks, and outline procedures for integrating multiple knowledge systems. This includes approaches for handling uncertainty.

2.2 Iterative refinement through expert consultation. Draft components of the framework will be reviewed by regional experts, early-career scientists, and members of the OCEAN100+ network. Feedback will be incorporated through structured virtual consultations.

2.3 Documentation and publication preparation. The framework will be written as an open-access methodological document to be hosted on the project webpage (Deliverable 1). In parallel, OceanRisk will begin drafting peer-reviewed publication(s) (Deliverable 3), focusing on methodological innovations and co-production principles.

Phase 3

Outputs of Phase 2:

- Draft risk-assessment framework (Deliverable 2)
- Initial manuscript outline for first peer-reviewed publication (supports Deliverable 4)

(Months 21–30): Co-Production, Testing, and Development of Action-Oriented Guidance

3.1 Develop tools and decision pathways for identifying options for action. Building on the risk-assessment framework, the group will design structured tools that link ranked risks to feasible mitigation, adaptation, and preparedness options. These tools will incorporate scenario-based thinking, uncertainty analysis, and pathways for rapid response to threats.

3.2 Pilot testing with regional partners. Selected members of the OCEAN100+ network will test components of the framework and action-identification tools in diverse regional contexts. These pilots will assess usability, clarity, and adaptability across governance systems and data environments.

3.3 Develop templates for nested, adaptive Action Plans. Using insights from pilot testing, OceanRisk will design practical templates for local, regional, and global Action Plans. These

templates will include guidance on adaptive updating, monitoring, and alignment with existing planning processes.

3.4 Integrate co-production principles. OceanRisk will formalize best-practice approaches for inclusive engagement, ensuring that the framework and guidance documents reflect diverse knowledge systems, including Indigenous and local perspectives.

Outputs of Phase 3:

- Tools and decision pathways for identifying options for action (Deliverable 3)
- Tested and refined framework components (tests Deliverable 2)

Phase 4 (Months 30–36): Synthesis, Publication, and Dissemination

4.1 Finalize all deliverables OceanRisk will finalize the open-access risk-assessment framework, the synthesis report of existing assessments, the guidance for identifying options for action, and the extension materials. All documents will be prepared for publication on the project webpage and in appropriate enduring repositories, such as [OTGA](#).

4.2 Complete and submit peer-reviewed publication(s) presenting the framework, methodological innovations, and co-production principles - submitted to high-impact open-access journal(s).

4.3 Dissemination through global networks OceanRisk will share outputs through:

- IMBeR, IMECaN and SCOR channels, and the OCEAN100+ network
- UN Ocean Decade programmes, including the Sustainable Ocean Planning Programme
- Regional scientific and policy forums, including international conferences, such as the World Ocean Conference or Effect of Climate Change on the World Ocean.

4.4 Planning for long-term uptake and coordination OceanRisk will develop recommendations for sustaining the use of the risk assessment approach beyond the Working Group’s lifetime, including pathways for integration with national ocean plans, assessment bodies, and international initiatives.

Outputs of Phase 4:

- Final versions of all deliverables, including
 - Peer-reviewed publication submitted and conference presentations (Deliverable 4)
 - Dissemination, capacity and uptake strategy (Deliverable 2 and 3)
 - Training materials (Deliverable 5)

Coordination and Communication

OceanRisk will meet virtually every two months, with one in-person workshop per year (subject to funding) to support framework development and synthesis. A project webpage will host draft and final outputs, ensuring transparency and accessibility, and we will seek a long-lasting platform beyond the project. Members of the OCEAN100+ network will be engaged throughout to ensure global representation and co-production (**Appendix 2**).

Capacity Building

Building long-lasting global capacity is central to OceanRisk's mission and essential for the successful development of the risk assessment and implementation of the Action Plan for the Ocean. Ocean change affects all regions, yet the ability to assess risks, identify options for action, and develop adaptive plans is unevenly distributed across countries, institutions, and communities. OceanRisk will therefore embed capacity building throughout its activities, ensuring that the tools, frameworks, and knowledge generated are accessible, usable, and co-produced with a diverse global community. The OCEAN100+ network, already spanning more than 50 countries and expanding, provides a strong foundation for this effort (**Appendix 2**).

The capacity-building strategy is organized around five pillars: (1) inclusive global participation, (2) knowledge co-production, (3) skills development and methodological training, (4) open access to tools and outputs, and (5) long-term institutional strengthening.

1. Inclusive Global Participation

A core objective of OceanRisk is to ensure that the development of the risk assessment reflects the perspectives, needs, and expertise of a globally representative community. The OCEAN100+ network is explicitly designed to include participants from more than 100 countries, with particular emphasis on:

- Early-career ocean professionals
- Researchers and practitioners from low- and middle-income countries
- Indigenous and local knowledge holders
- Regional experts from underrepresented ocean basins
- Stakeholders from government, NGOs, and community organizations

The Working Group will actively recruit and support participation from these groups through targeted outreach, regional referrals, and collaboration with IMBeR, the [Interdisciplinary Marine Early Career Network \(IMECaN\)](#), [Ocean Decade Early Career Ocean Professionals \(ECOP's\)](#), [Association of Polar Early Career Scientists \(APECS\)](#), [Young Earth System Scientists \(YESS\)](#), and other UN Ocean Decade partners. This ensures that capacity building is not an add-on but a foundational principle of the initiative.

2. Knowledge Co-Production

Co-production is not only a scientific necessity given the diversity of ocean systems and governance context, but also a powerful mechanism for building capacity (van Putten et al 2021).

OceanRisk will implement co-production through:

- Regional consultations to gather local knowledge, priorities, and risk perspectives
- Collaborative drafting of framework components with regional and thematic experts
- Pilot testing of tools and templates in diverse geographic and socio-economic settings
- Iterative feedback loops that allow participants to shape the methodology

This approach ensures that participants gain experience in risk assessment, scenario development, and adaptive planning while contributing directly to OceanRisk outputs. It also strengthens local ownership and increases the likelihood of long-term uptake.

3. Skills Development and Methodological Training

OceanRisk will provide structured opportunities for participants to develop skills in:

- Risk assessment and ranking methodologies

- Integration of biophysical and socio-economic indicators
- Approaches for handling uncertainty, tipping points, and extreme events
- Scenario development and evaluation of response options
- Adaptive planning and decision-support tools
- Co-production and inclusive engagement methods

Training will be delivered through:

- Virtual workshops and webinars hosted across time zones
- Hands-on sessions during in-person OceanRisk meetings (subject to funding)
- Online modules and guidance documents accompanying each deliverable
- Regional pilot activities that provide practical experience applying the framework

These activities will build technical and conceptual capacity across the global network, enabling participants to apply the Action Plan framework within their own institutions and regions.

4. Open Access to Tools, Frameworks, and Outputs

All OceanRisk outputs will be openly accessible, in multiple languages, ensuring that capacity building extends beyond direct participants. This includes:

- The risk-assessment framework
- The synthesis report of existing assessments
- The guidance for identifying options for action
- The peer-reviewed open-access publication

These materials will be hosted on the project webpage and shared through IMBeR, SCOR, the UN Ocean Decade, and partner networks. OceanRisk will also provide:

- Downloadable tools and decision pathways
- Annotated examples from pilot regions
- Step-by-step instructions for applying the framework
- FAQs and troubleshooting guidance

By ensuring that all outputs are freely available, OceanRisk supports long-term capacity building in countries and institutions that may lack access to subscription-based resources or specialized training, including the provision of teaching resources for undergraduate students.

5. Long-Term Institutional Strengthening

OceanRisk aims to build not only individual capacity but also institutional capacity to support sustained, risk-informed ocean planning. This will be achieved through:

- Integration with the Sustainable Ocean Planning Programme, which supports national planning processes
- Alignment with UN Ocean Decade Challenge 4, ensuring that outputs feed directly into global capacity-building initiatives
- Collaboration with regional scientific bodies, such as [ICES](#), [PICES](#), [WIOMSA](#), [SPC](#) and [SPREP](#)
- Support for national and regional adoption of the Action Plan framework
- Development of a long-term coordination pathway for maintaining and updating the framework beyond the Working Group's lifetime

By embedding the risk assessment outcomes into the Action Plan and within existing international structures, OceanRisk ensures that capacity building continues after the SCOR project concludes.

Role of Early-Career Researchers

Early-career researchers (ECR) will play a central role in all phases of OceanRisk. They will:

- Serve as full and associate members

- Lead components of the synthesis and framework development
- Co-author the peer-reviewed publication
- Participate in pilot testing and regional consultations
- Receive mentorship from senior experts
- Gain experience in international scientific coordination

This approach aligns with SCOR’s commitment to supporting the next generation of ocean scientists and ensures that ECRs gain skills that will shape their careers.

Equity, Diversity, and Inclusion

OceanRisk will adopt best practices for equitable participation (Shellock et al 2023), including:

- Providing virtual participation options for all major activities
- Scheduling meetings across time zones
- Ensuring gender balance in leadership and membership
- Incorporating Indigenous and local knowledge respectfully and meaningfully

These practices ensure that capacity building is inclusive and that OceanRisk activities reflect the full diversity of global ocean perspectives.

Sustained Impact

OceanRisk’s capacity-building activities will leave a lasting legacy by:

- Creating a globally representative network of practitioners trained in risk-based ocean planning
- Providing open-access tools that can be used by governments, NGOs, Universities and research institutions
- Strengthening regional and national capacity to assess risks and develop adaptive plans
- Embedding the Action Plan framework within international initiatives that will continue beyond the WG’s lifetime

By combining co-production, training, open access, and institutional alignment, OceanRisk will build durable capacity that supports sustainable ocean planning for years to come.

Working Group composition

Core Members:

Name	Gender	Years since degree*	Country and institution of affiliation(s)	Expertise relevant to proposal
1. Alistair Hobday (co-chair)	M		Australia, CSIRO	Risk assessment method development
2. Carol Robinson (co-chair)	F		United Kingdom, University of East Anglia	Expertise in comparative assessments
3. Amber LeBlanc	F	PhD student	Canada, Dalhousie University	Pollution and cumulative risk assessment
4. Ella Burgun	F	ECR 1 year after MSc	Australia, University of Tasmania	Engagement, networking, communication and ECRs
5. Pedro Echeveste	M		Spain, University of Balearic Islands	Multi-stressor risk assessment

6. John Pinnegar	M		United Kingdom, CEFAS	Risk assessment method development for national action plans
7. Gianpaolo Coro (TBC)	M		Italy, CNR-ISTI	Risk methods
8. Zeng Zhou	M		China, Hohai University	Coastal hazards, sea level and runoff risks
9. Colette Wabnitz	F		Canada, University of British Columbia & USA, Stanford	Ocean risks, fisheries, insight to impact, social-ecological systems, equity
10. Susa Niiranen	F		Sweden, Stockholm Resilience Centre	multiple stressors, food webs

* Field only required for members identified as early career: 10 years or less post-degree, not counting time off for family leave.

Associate Members (no more than 10)

Name	Gender	Years since degree*	Country and institution of affiliation(s)	Expertise relevant to proposal
1. Karen Evans	F		France, Intergovernmental Oceanographic Commission, UNESCO	Science-policy link at global and regional scales, linkages with global assessment processes, linkages with IOC Capacity Development Programme and OTGA and linkages with the Ocean Decade and the endorsed SOP programme.
2 Nina Bednarsek	F		Slovenia, Jozef Stefan Institute	Threshold-based risk framework, quantitative risk metrics, standardizing biological risk thresholds for global application, link with IMBeR
3. Rosa Maria Canedo Apolaya	F	ECR- PhD	Australia/Peru, Univ of Tasmania	Multi-level risk assessment
4. Zara Sanya Prew	F	ECR - PhD	South Africa, University of Cape Town	Coastal habitat status and risk expertise
5. Catriona Macleod	F		Australia, Independent consultant	Aquaculture international, biosecurity risks, multi-use management

6 Juan Carlos Villaseñor-Derbez	M		USA/Mexico, University of Miami	Policy, coastal habitats, deep-sea mining risk
7. Mark Dickey-Collis	M		United Kingdom, Independent consultant	Fisheries, ICES working group connection, risks & BBNJ expertise
8. Eugene Murphy	M		United Kingdom, British Antarctic Survey	Action Plan lead, polar assessments, such as MEASO (Marine Ecosystem Assessment for the Southern Ocean)
9. Eddie Allison	M		Malaysia, Worldfish	Small scale fisheries, risk assessments, socio-economic aspects
10. TBC - after we see balance of members				

* Field only required for members identified as early career: 10 years or less post-degree, not counting time off for family leave.

Proponents may also include a short rationale for the composition and balance.

The composition of the OceanRisk Working Group has been designed to ensure the breadth of expertise, disciplinary diversity, and global representation required to develop a coherent, internationally relevant framework for assessing and ranking ocean risks. The ten Full Members collectively bring deep experience in risk-assessment method development, multi-stressor analysis, comparative assessments, coastal hazards, and socio-ecological system dynamics. Their combined expertise spans natural and social sciences, modelling, field observation, and policy engagement, ensuring that OceanRisk can integrate diverse knowledge systems and methodological approaches.

OceanRisk is co-chaired by Alistair Hobday (Australia), a global leader in risk-assessment frameworks, and supported by Full Members with complementary strengths. These include specialists in comparative assessments (Robinson, co-chair), cumulative pollution and risk (LeBlanc), multi-stressor microbial processes (Echeveste), climate-impact risk modelling (Pinnegar, Coro), coastal geomorphology and hazards (Zhou), and fisheries and ocean-risk governance (Wabnitz, Niiranen). This balance ensures that the group can address risks across biological, physical, and human dimensions, consistent with the proposal's emphasis on integrating natural, social, and economic factors. The inclusion of early-career researchers (Burgun, LeBlanc) strengthens capacity development and ensures that emerging perspectives and skills are embedded in the Working Group's activities.

Geographically, the Full Members represent institutions across Australia, the UK, Canada, Spain, Sweden, Italy, China, and the USA, providing broad coverage of ocean basins and governance contexts. This diversity is essential for developing a framework that is globally applicable yet sensitive to regional differences in data availability, management needs, and socio-ecological conditions. Each member will co-lead deliverables relevant to the TOR, to be established at the first meeting.

Working Group Member contributions (core)

1. [Alistair Hobday](#) co-developed the Ecological Risk Assessment for the Effects of Fishing (ERAEF), an hierarchical framework now used in more than 15 countries to guide

evidence-based, risk-based fisheries management. His research spans climate impacts, extreme events, marine insurance, and adaptation planning, including pioneering work on marine heatwave detection and the world's first operational marine heatwave forecasts.

2. [Carol Robinson](#) studies the role of marine ecosystems in the global cycling of carbon, and increasingly the imperative for humanity to mitigate and adapt to ocean change. She has extensive experience in co-chairing international interdisciplinary research programmes including IMBeR, and the IOC expert group on Integrated Ocean Carbon Research, and has a passion for mentoring, capacity development, outreach and engagement.
3. [Ella Burgun](#), a Westpac Future Leaders Scholar, completed a Master of Marine and Antarctic Science at the University of Tasmania in 2025. She is convener for the Ocean100+, and is committed to advancing evidence-based ocean management and public engagement.
4. [Amber LeBlanc](#) is an environmental scientist specialising in marine and atmospheric microplastics, She focuses on translating complex, cumulative-risk evidence into clear, actionable guidance for coastal communities, contributing to methodological innovation in monitoring, assessment, and standardisation. An Indigenous Canadian and member of the One Ocean Youth Panel, she collaborates with NGOs, educators, and youth networks to amplify underrepresented voices thus advancing equity-centred, science-based pathways for ocean resilience.
5. [Pedro Echeveste](#) investigates how pollutants and climate stressors shape microbial communities, and how microbial processes contribute to contaminant biodegradation and ecosystem resilience. By linking microscopic dynamics to ecosystem-level outcomes and human pressures, his work supports multi-stressor risk assessments and evidence-based coastal management.
6. [John Pinnegar](#) focuses on assessing ecological and socio-economic risks from ocean warming, extreme events, and long-term climate change. As Director of the [Cefas Climate Change Group](#), he leads efforts to translate climate-impact evidence into practical adaptation guidance for fisheries and coastal communities, contributing to international risk-assessment and resilience initiatives across Europe, the Indo-Pacific, and Small Island Developing States.
7. [Gianpaolo Coro](#) is a computational marine scientist whose work applies machine-learning and high-performance modelling to assess species vulnerability, climate-driven ecosystem shifts, and marine biodiversity risk. He contributes to international efforts on digital twins and FAIR data infrastructures, advancing transparent, interoperable approaches to ocean risk assessment and supporting equitable access to decision-support tools across Europe, the Mediterranean, and the global South.
8. [Zeng Zhou](#) is a coastal and marine geomorphologist whose work centres on risk-focused assessments of shoreline change, ecosystem degradation, and coastal vulnerability. He integrates coastal physics, ecology, and engineering to develop process-based understanding of bio-morphodynamic interactions and their implications for hazard exposure and long-term resilience. He co-develops practical, risk-informed frameworks to support coastal planning and adaptation.
9. [Colette Wabnitz](#) focuses on marine social-ecological systems, co-developing pragmatic, solutions-oriented strategies that bridge science, policy, and practice to advance environmental

health, sustainable development, nutrition security, and equitable livelihoods for coastal communities, particularly in emerging economies.

10. [Susa Niiranen](#) investigates how change in marine ecosystems is driven by multiple environmental and anthropogenic stressors. She leads the ecosystem risk assessment work package in the EU project Mission Atlantic that seeks to map and assess the present and future status of Atlantic marine ecosystems under the influence of climate change and exploitation (<https://missionatlantic.eu/>).

The **Associate Members** will broaden OceanRisks disciplinary, geographic, and sectoral reach, ensuring that the outputs are globally relevant, methodologically robust, and grounded in diverse forms of expertise. They will contribute targeted knowledge to specific tasks, such as regional case studies, methodological review, data synthesis, and testing of draft frameworks, while also providing critical feedback during key stages of development. Their networks across academia, government, NGOs, and community organisations will strengthen science-policy connections to related international efforts, including UN Ocean Decade programmes, regional observing systems, and national adaptation initiatives. Through their engagement, the Working Group will be able to pilot tools in varied socio-ecological contexts, validate the usability of risk-assessment templates, and ensure that guidance documents reflect the needs of both data-rich and data-limited settings. Collectively, they will help translate OceanRisk’s scientific outputs into actionable pathways for decision-makers, enhancing the global uptake and long-term impact of risk methods underpinning the Action Plan for the Ocean.

Relationship to other international programs and SCOR Working Groups

OceanRisk is strongly aligned with major international scientific and policy initiatives focused on ocean sustainability, risk assessment, and adaptive planning. It builds directly on IMBeR’s long-standing leadership in integrating natural and human-system science and on the emerging OCEAN100+ network, which aims to engage participants from more than 100 countries in co-developing the global Action Plan for the Ocean. The Action Plan initiative has been [endorsed](#) by the UN Ocean Decade Sustainable Ocean Planning (SOP) Programme, which seeks to fast-track SOP implementation in coastal nations through technical and scientific support. OceanRisk will provide the methodological foundation and scientific tools needed to support that implementation.

OceanRisk is closely aligned with the UN Ocean Decade’s broader goals, particularly Challenge 4 (Develop a sustainable and equitable ocean economy) and Challenge 6 (Increase community resilience to ocean hazards) (e.g. Bassan et al 2025). The risk assessment directly supports the Decade’s emphasis on actionable, co-produced science. By producing open-access tools and guidance, OceanRisk will contribute to the Decade’s global capacity-building objectives and strengthen linkages between scientific networks, national ocean plans, and international assessment bodies.

The initiative complements and extends the work of several existing SCOR WGs. Recent WGs that we will complement have focused on topics that will inform the risk assessment, including subsurface marine heatwaves (WG 175), changing ocean biological systems (WG 149) and

small plastics in the ocean interior (WG 174), as well as co-sponsored initiatives such as [GlobalHAB](#). While these groups address specific scientific challenges, none focus on developing a globally applicable, interdisciplinary risk-assessment and action-planning framework for ocean change. OceanRisk therefore fills a critical gap by providing the methodological backbone needed to integrate outputs from other SCOR WGs into decision-support processes.

OceanRisk will also benefit from synergies with SCOR's long history of advancing best practices, standards, and global coordination. SCOR's mandate to address "scientific issues that are impeding the advancement of contemporary ocean science" and to add value through international networking aligns directly with the goals of OceanRisk. In turn, OceanRisk's focus on harmonizing indicators, integrating biophysical and socio-economic dimensions, and developing globally relevant templates for adaptive planning complements SCOR's emphasis on methodological innovation and open access to data and methods.

Beyond SCOR, OceanRisk core and affiliate members will engage with other major international programs, including IPCC, [IPBES](#), [UNESCO-IOC \(State of the Ocean Report\)](#), [DOALOS \(World Ocean Assessment\)](#), and regional bodies such as [ICES](#) and [PICES](#). The synthesis of existing assessments (Deliverable 1) will explicitly map connections to these initiatives, identifying opportunities for harmonization and uptake. The risk-assessment framework and action-planning templates will provide tools that can be used by national governments, NGOs, and UN agencies to support sustainable ocean planning and climate adaptation.

In summary, OceanRisk is well positioned through its membership for strong connection to the international ocean science landscape. OceanRisk complements existing SCOR efforts, aligns with major global programs, and will deliver the data compilation and risk assessment methods needed to support coordinated, risk-informed action across scales.

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Appendix 1 - For each Full Member, indicate 5 key publications related to the proposal.

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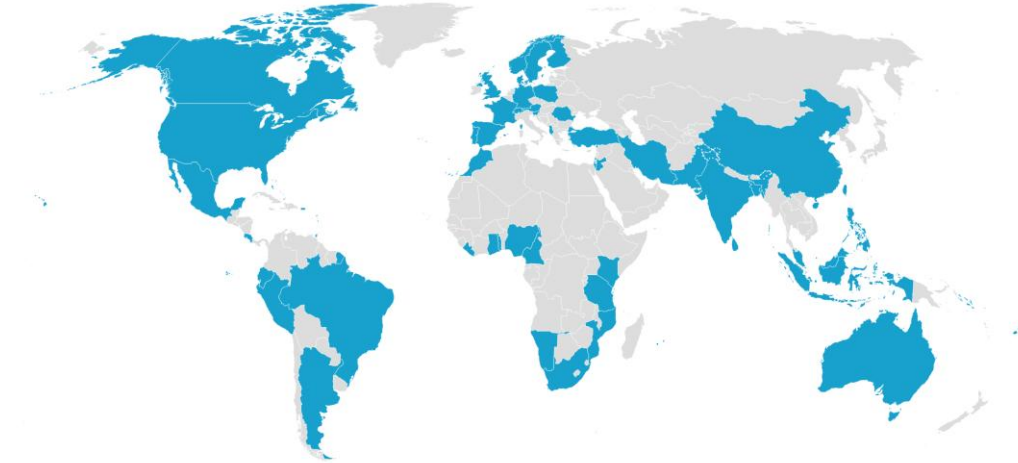
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Appendix 2. List of participating countries in the Ocean100+ network. Representatives from each country span academic, NGO, policy, and management roles. We are seeking members from countries not represented here, and welcome suggestions from the SCOR community. Nominations can be sent to actionplanfortheocean@gmail.com



Region	Country	Region	Country
Africa	Cameroon	Asia	Iran
Africa	Ghana	Asia	Jordan
Africa	Kenya	Asia	Malaysia
Africa	Mozambique	Asia	Pakistan
Africa	Namibia	Asia	Philippines
Africa	Nigeria	Asia	Sri Lanka
Africa	South Africa	Asia	Taiwan
Africa	Tanzania	Asia	Turkiye
Africa	Mauritius	Europe	Albania
Africa	Israel	Europe	Finland
Africa	Liberia	Europe	France
Africa	Togo	Europe	Germany
Africa	Seychelles	Europe	Poland
Africa	Morocco	Europe	Portugal
Americas	Argentina	Europe	Romania
Americas	Brazil	Europe	Slovenia
Americas	Canada	Europe	Spain
Americas	Costa Rica	Europe	Sweden
Americas	Mexico	Europe	Switzerland
Americas	Morocco	Europe	United Kingdom
Americas	Peru	Europe	Austria
Americas	Ecuador	Europe	Denmark
Americas	The Bahamas	Europe	Norway
Americas	Trinidad and Tobago	Oceania	Australia
Americas	Turks and Caicos Islands	Oceania	Fiji
Americas	United States of America	Oceania	Indonesia
Asia	Bangladesh	Oceania	Solomon Islands
Asia	China		Malaysia
Asia	India		