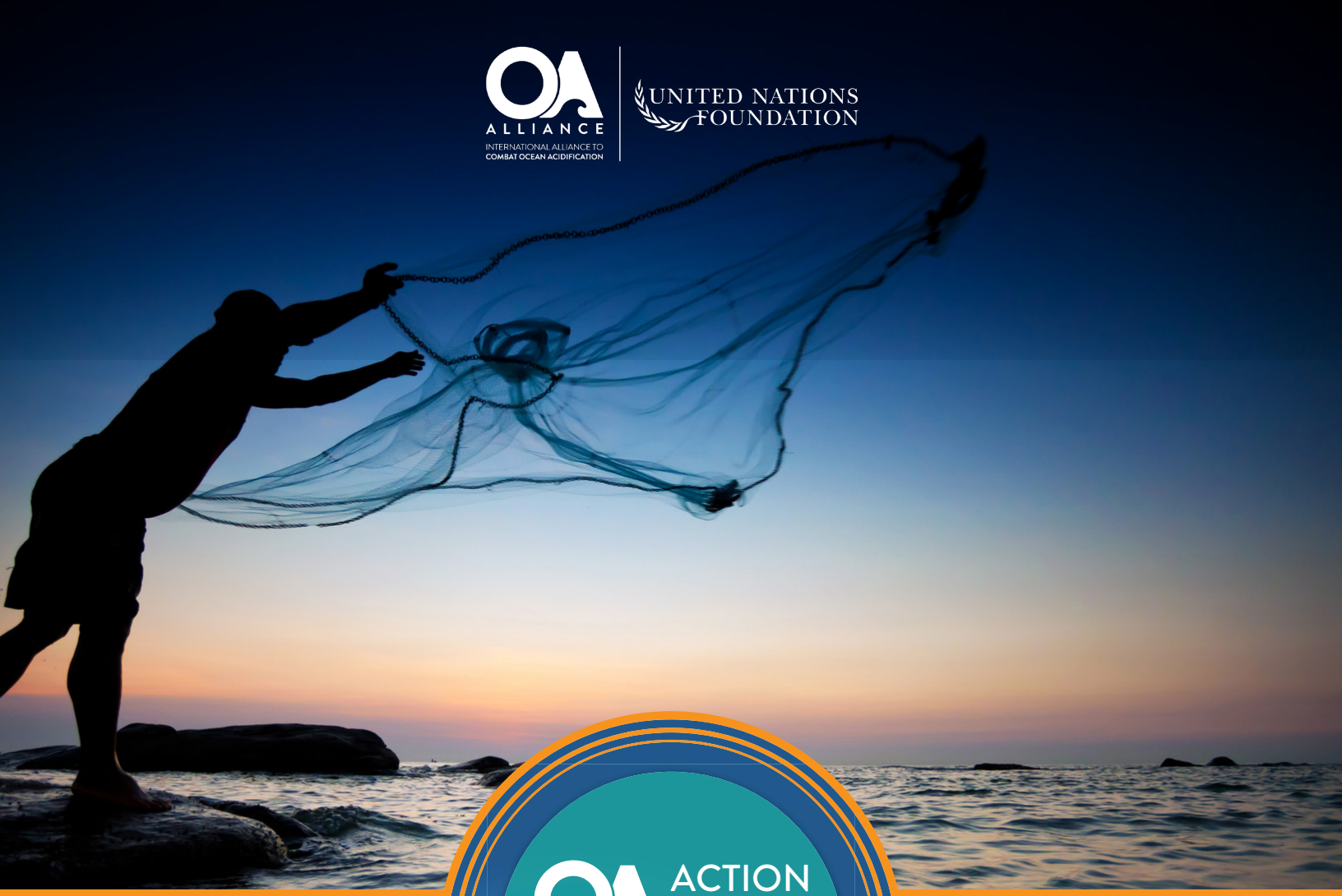
OA ALLIANCE
INTERNATIONAL ALLIANCE TO COMBAT OCEAN ACIDIFICATION

UNITED NATIONS FOUNDATION



OA ACTION PLAN
LEADERSHIP CIRCLE

INTEGRATING OCEAN ACIDIFICATION ACROSS SUSTAINABLE OCEAN PLANS

WHY CARE ABOUT OCEAN ACIDIFICATION?

- The ocean absorbs approximately 40% of the carbon dioxide (CO_2) emissions released into the atmosphere and absorbs 90% of excess heat caused by the burning of fossil fuels. The addition of CO_2 to the ocean is making seawater more acidified; in a process we call "ocean acidification" or OA.

- The chemical reactions that occur in the ocean because of OA include lowering of pH and decreasing the availability of carbonate, which many species like shellfish, finfish, and coral need to grow, and thrive.

- The IPCC states with high confidence that ocean warming and OA have already affected food production including shellfish aquaculture and fisheries in some regions. The IPCC consistently reports impacts and risks to ocean resources ecosystems from climate change under various scenarios.

- The lack of a domestic accounting and response to ocean warming and OA poses a substantial—and currently unmitigated—risk to coastal community resources, well-functioning marine ecosystems, seafood security and sustainable ocean economies.

- **Advancing a domestic response to OA improves the effectiveness of more mainstream policies and tools like Sustainable Ocean Plans, blue carbon goals, marine protected areas, and climate-resilient fisheries and aquaculture.**

NATIONAL APPROACHES TO OCEAN SUSTAINABILITY, MARINE MANAGEMENT, AND SEAFOOD ECONOMIES

Increasingly, ocean acidification must become a cross-cutting issue embedded across climate and Sustainable Ocean Plans, marine management and seafood policies. Advancing domestic action on OA will improve decision making for achieving national goals in these areas.

To achieve sustainable management of our ocean and marine resources in the context of climate change, governments must have a more comprehensive inventory of regional/ local information that will allow them to prioritize and evaluate their unique risks alongside appropriate mitigation and adaptation strategies.

This is especially important for achieving risk assessments, climate resilient fisheries and aquaculture, climate smart conservation, coastal resilience and habitat restoration, effective upgrades of infrastructure, and evaluation of marine carbon dioxide removal strategies.

Integrating OA actions across mainstream policies can help governments: take inventory; prioritize needs and make recommendations; and align policies and investments in the face of climate-ocean change.

Sustainable Ocean Plans (SOPs) are pivotal in bridging ocean management, climate action, and biodiversity conservation. They serve as a strategic framework for countries to sustainably utilize ocean resources while advancing climate mitigation and preserving marine biodiversity. Sustainable Ocean Plans can be leveraged to promote adequate and equitable investments in climate-ocean change information, gaps analysis, and capacity or technology that result in better outcomes for ocean ecosystems and people. **By aligning with global commitments like the Paris Agreement and the Convention on Biological Diversity, SOPs ensure cohesive national actions.**

SUSTAINABLE OCEAN PLANS

A Sustainable Ocean Plan (SOP) is designed to guide public and private sector decision-makers on how to sustainably manage 100% of a nation's ocean area under national jurisdiction. This commitment was initially articulated in the High-Level Panel for the Sustainable Ocean Economy's[1] foundational report *"Transformation for a Sustainable Ocean Economy: A Vision for Protection, Production, and Prosperity" (or Transformations Agenda)*[2], which outlines a bold ocean action agenda for 2030. An SOP functions as a comprehensive framework for ocean governance, consolidating various aspects of ocean management under a unified strategic vision.

According to the report, an SOP *"outlines policies and mechanisms to promote the sustainable use of ocean resources, aiming to maximize benefits and value for current and future generations. It serves to reconcile conflicting uses of the ocean and its resources, facilitating long-term sustainable growth in the ocean economy. The plan may encompass regulatory reforms, strategic investments in emerging sectors, marine spatial planning, integrated coastal and watershed management, and the establishment of marine protected areas and other effective area-based conservation measures. These mechanisms contribute to delivering nature's benefits to people, supporting economic development, enhancing biodiversity conservation, and addressing climate change mitigation and adaptation, as well as ensuring sustainable fish stocks.*

Sustainable Ocean Plans should align with the 2030 Agenda for Sustainable Development, incorporate integrated ocean management and ecosystem knowledge, address pressures from both land- and sea-based sources, and account for anticipated climate change impacts. As a cornerstone for a sustainable ocean economy, these plans must be developed and implemented through an inclusive, participatory, transparent, and accountable process."

An SOP provides a unifying 'umbrella' for national ocean-related governance, to advance long-term economic and social development by protecting the natural marine ecosystems that underpin that development. Taking a holistic approach, these plans bring together new and existing policies, plans, and mechanisms into a coherent and comprehensive whole to achieve 100% sustainable ocean management.

To assist with this commitment, the Ocean Panel released a guide in 2021 entitled *"100% Sustainable Ocean Management: An Introduction to Sustainable Ocean Plans."*[3] This guide identifies the hallmarks and attributes of a Sustainable Ocean Plan, offering initial steps for ocean and coastal states to begin or accelerate their sustainable ocean planning efforts. It describes how a well-designed SOP can offer a range of economic, social, and environmental benefits to various stakeholders, including governments, businesses, citizens, coastal communities, and indigenous peoples. While each plan is country-specific, it should reflect the nine key attributes identified in the guide, which are relevant in all contexts and lay the groundwork for maximum success and impact:

- Developed in an **inclusive** way so that all relevant interests are heard and addressed from the outset.
- **Integrative**, coordinating between government agencies, ocean sectors and processes.
- **Iterative**, in that it works for today whilst anticipating the changes of tomorrow.
- **Place-based**, encompassing all marine and coastal areas within national waters.
- **Ecosystem-based**, recognising the interactions within ecosystems and with people.

[1] The 18 members of the Ocean Panel have committed to sustainably manage 100% of the ocean area under their national jurisdictions, guided by Sustainable Ocean Plans, by 2025. Countries joining the Ocean Panel after 2020 may commit to develop and be guided by SOPs within 5 years of joining

[2] oceanpanel.org/wp-content/uploads/2022/06/HLP_Transformations_2023_v5.pdf

[3] oceanpanel.org/publication/100-sustainable-ocean-management-an-introduction-to-sustainable-ocean-plans

- **Knowledge-based**, underpinned by the best available science and knowledge, including local and indigenous knowledge.
- Politically **endorsed** by the national government at the highest levels.
- Sufficiently **financed** over the long-term.
- Sufficiently **capacitated** to ensure implementation.

Importantly, the guide also includes suggested indicators of implementation for the five transformation areas outlined in the *Transformations Agenda*:

Image extracted from: oceanpanel.org/the-agenda

To further support countries with their Sustainable Ocean Plans, the Ocean Action 2030[4] coalition has been convened. This partnership of public and private stakeholders aims to provide the technical, political and financial assistance **necessary for developing and implementing SOPs, including through the newly established Rapid Assistance Fund,**[5] which facilitates funding for countries to kick start the development and implementation of their SOP.

[4] oceanpanel.org/ocean-action-2030
[5] www.wri.org/initiatives/ocean-action-2030s-rapid-assistance-fund

OCEAN ACIDIFICATION IS RELEVANT FOR ACHIEVING SOP TRANSFORMATIONS

1

OCEAN
WEALTH

"Ocean Wealth" emphasizes the sustainable use of ocean resources to drive economic growth and improve livelihoods. By promoting responsible practices in fisheries, tourism, and maritime industries, it aims to balance economic benefits with environmental sustainability. Addressing ocean acidification is crucial in this context, as it threatens marine ecosystems and the industries that depend on them.

2

OCEAN
HEALTH

"Ocean Health" focuses on preserving and restoring the ocean's ecological integrity, ensuring that marine ecosystems can thrive and support biodiversity. Healthy oceans are more resilient to changes such as acidification, which can disrupt marine life and habitats. Protecting ocean health includes efforts to reduce carbon emissions and other pollutants that contribute to acidification, ensuring the ocean can continue to provide essential services to humanity and wildlife.

3

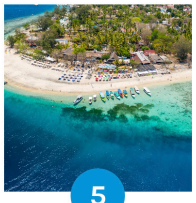
OCEAN
EQUITY

"Ocean Equity" advocates for fair and equitable access to ocean resources, ensuring that all communities, especially vulnerable and marginalized ones, benefit from ocean wealth. Ocean acidification disproportionately affects coastal communities that rely on marine resources for their livelihoods and food security. Promoting equity involves addressing these impacts by supporting mitigation, adaptation, and resilience measures for those most affected.

4

OCEAN
KNOWLEDGE

"Ocean Knowledge" underscores the importance of scientific research and traditional knowledge in understanding and managing ocean ecosystems. Increased research on ocean acidification is vital for developing effective strategies to mitigate and adapt to its impacts. By enhancing our understanding of how acidification affects marine life and ecosystems, we can create better-informed policies and practices to protect the ocean.



5

OCEAN
FINANCE

"Ocean Finance" seeks to mobilize financial resources to support sustainable ocean initiatives. Investing in projects that address ocean acidification, such as reducing carbon emissions and enhancing marine conservation efforts, is critical. By channeling funds into solutions that mitigate acidification, we can protect marine ecosystems and the economies that depend on them, ensuring long-term ocean health and prosperity.

OA ACTIONS IMPROVE OUTCOMES ACROSS SOP POLICY THEMES AND INDICATORS

Policy Theme	Considerations For OA Actions	Relevance to SOP Transformations
Reduce GHG and Carbon Emissions.	By mitigating and reducing GHG and CO_2 we are mitigating and reducing ocean acidification. • Support policies, plans and commitment that seek to reduce anthropogenic carbon emissions. • Mandate 100% clean energy, improving efficiency of building and advancing electrification of the transportation sector from cars to marine shipping. • Investment in renewable energy sources from solar to offshore wind.	• Ocean health • Ocean equity
Document change and inform risk.	By creating a comprehensive record of ocean environmental changes, specifically ocean acidification, we can assess the potential risks and prepare the required adaptation and resilience measures. • Measure local variability by establishing baselines for coastal carbon chemistry, temperature, salinity, and dissolved oxygen content. • Enhance climate early-warning systems to include forecasting of marine heat waves, harmful algal blooms, acidification trends and low oxygen content zones. • Submit information to IOC-UNESCO as part of UN SDG 14.3.1.	• Ocean health • Ocean equity • Ocean knowledge

Policy Theme	Considerations For OA Actions	Relevance to SOP Transformations

Increase food security and resilience of seafood economies.	By calculating the vulnerability of seafood species and economies we can prioritize techniques in aquaculture and mariculture to adapt and build resilience against the adverse effects of ocean acidification and increase food security.
	
	• Conduct a nationwide vulnerability assessment to identify the risks posed to coastal and marine resources and economies.
	• Which seafood species should be studied?
	  • Develop national research priorities that guide climate resilient regional fisheries and aquaculture strategies.
	  • Develop national research priorities that guide shellfish hatchery growing practices.
	• Explore aquaculture and mariculture techniques that aim to predict and mitigate corrosive conditions.
		• Ocean wealth
		• Ocean equity
		• Ocean knowledge
		• Ocean finance

Utilize marine management tools.	Local actions to improve resilience across marine ecosystems— through nature-based solutions, planning or conservation measures—can have multiple beneficial outcomes for improving ecosystem health in the context of climate change. • Support targeted regulations, seasonal closures, conservation measures like MPAs, and shared -use planning tools like MSP in response to OA Information.	• Ocean health • Ocean equity • Ocean knowledge

Policy Theme	Considerations For OA Actions	Relevance to SOP Transformations
Utilize blue carbon ecosystems, coastal or marine habitats to improve ecosystem function.	The maintenance and restoration of blue carbon ecosystems, and coastal and marine habitats can act as both a buffer and a remedy for the adverse effects of ocean acidification. • Evaluate and deploy for blue carbon ecosystems to support carbon sequestration goals (mitigation of OA). • Evaluate and deploy natural shorelines and coastal or marine habitat to support marine ecosystem resilience (*remediation of OA).*	• Ocean wealth • Ocean health • Ocean finance
Reduce land-based pollutions.	In nearshore and coastal environments, local sources of land-based pollution like nutrients (including nitrates) enter the ocean through wastewater, stormwater, and agriculture run-off additionally contributing to eutrophication, which can accelerate OA in the water column and amplify negative conditions for marine organisms. • Reduce these local land-based pollutions can reduce impacts on species and improve ecosystem function. • Invest in sewage and wastewater infrastructure to improve the health of coastal communities and reduce the impacts on marine ecosystems.	• Ocean health • Ocean knowledge • Ocean finance
Assess the potential risks, benefits, and monitoring/ evaluation needs for marine carbon dioxide removal strategies.	Efforts should be made to evaluate the costs, risks or benefits of different carbon dioxide removal strategies, as well as their monitoring/evaluation needs, which could assist in reducing ocean acidification. • Develop national research priorities to identify conditions for marine carbon dioxide removal strategies. • This might include researching risks, potential conflicts, as well other regulatory socio-economic and cultural contexts for decision-making about marine carbon dioxide removal strategies.	• Ocean knowledge • Ocean finance

STEPS FOR INTEGRATING OA ACTIONS IN SUSTAINABLE OCEAN PLANS

#1 Outline Brief Intro Text Describing the Importance of Addressing OA Nationally

Why is OA important and why does it need to be included or accounted for across your Sustainable Ocean Plan? Feel encouraged to add additional regional or national context.

#2 Pick the Policy Themes or SOP Transformations Where You Want to Include OA Actions

Select the policy theme (s) or transformation topic(s) of the Sustainable Ocean Plan where you think OA actions are most relevant. Write a brief sentence or two about the significance of OA in the intro to these sections of your SOP.

#3 Take Inventory of Existing OA Actions:

- Take inventory of any national or regional OA monitoring assets (if available).
  - *What government institution maintains them and collects data?*
  - *Where are they physically located? Gulfs/ bays/ coastal areas of significance?*

- Take inventory of national or university research institutes conducting OA research.
  - *Which institutions run field, lab, or biological experiments?*
  - *Which institutions collect bottle samples?*
  - *Are there formal or informal OA science hubs in operation?*

- Take inventory of regional seas conventions conducting ocean monitoring and/or coastal research.
  - *What are the charges of the relevant seas convention?*
  - *What parameters do they monitor and report on?*
  - *What working groups or focus areas do they embrace?*

- List whether or not your country currently reports data to SDG 14.3.1 "to minimize and address OA."

- List whether or not your country is part of the OA Research Programme under the UN Decade of Ocean Science.

#4 Align Policy Applications and Make Recommendations for Future OA Actions

- Identify the best applications for existing OA activities: What policy themes or SOP transformations do the existing science activities tie to—or should tie to more comprehensively?

- List desired build-out of OA activities in the region/ country and narratively expand upon best uses and applications for desired OA activities.
    - What policy themes or SOP transformations should a build-out of OA activities tie to—or should tie to more comprehensively? (including mitigation/ adaptation strategies).

#5 Decide How Priority OA Recommendations Will Be Implemented, Mainstreamed, and Funded Within Your SOP

- Make some assignments for how the OA recommendations might be implemented by one program, department or outside partners or embedded across many different programs, departments or outside partners. Who is responsible for carrying forward this work?

- Ensure OA recommendations are tied to policy themes across the Sustainable Ocean Plan.

- Make sure this section draws attention to the funding needed to sustain this work. This should be made available to internal and external funding sources.

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