

UN Secretary General Climate Action Summit
Nature Based Contribution
Submitted on behalf of the International Alliance to Combat Ocean Acidification
(5.6.19)

Title/Heading:

The International Alliance to Combat Ocean Acidification: Mobilizing Global Leadership to Advance Ocean Acidification Action Plans that Address Root Causes and Protect Coastal Communities and Livelihoods from a Changing Ocean.

Context and Rationale:

The ocean plays a central role in regulating our climate and absorbing human caused greenhouse gas emissions. Healthy ocean and coastal ecosystems help safeguard global populations from intensifying impacts caused by climate change; are critical for ensuring food security in highly vulnerable regions; and support thriving coastal communities and cultures, traditions and economies.

The ocean has already absorbed 93% of the excess heat resulting from increased greenhouse gas emissions since the 1970s and absorbed 28% of carbon dioxide generated by human activities since the 1750s. Increasing CO₂ levels have altered the basic chemical composition of our oceans causing them to become 30% more acidified than pre-industrial levels.

Increasing acidification combined with other climate-change driven changes in ocean conditions, including warmer temperatures and reduced oxygen levels, is already having significant, adverse impacts on fisheries, aquaculture, and marine ecosystems and these impacts will worsen in the future without urgent action.

Acidification adversely impacts commercial, recreational, subsistence, and ceremonial shellfish harvest and other species around the world like crab, lobsters, clams, mussels, squid and some species of plankton. Scientific research demonstrates that acidification impacts can cascade into effecting entire marine food webs and can even have deleterious impacts on behavior of fish. These species are essential for sustaining jobs, supporting coastal economies, and feeding billions of people. Coral reefs are threatened by combined impacts of warming, acidification, and rising sea levels. Some models project that 92% of global coral cover will be lost by 2100. This could lead to declines in fish landings for populations that rely on reefs for habitat as well as devastating impacts to coastal communities where reefs are a mainstay of their tourism and recreation-based economies.

If CO₂ emissions are not reduced quickly and dramatically, acidification will worsen and further damage ocean species, marine ecosystems, and coastal communities, cultures, traditions and economies.

We must increase global attention, dramatically increase ambition, and drive implementation of actions, including nature-based solutions, that address the causes of ocean acidification and changing ocean conditions and increase adaptation and resiliency of coastal communities to reduce current and future impacts. Efforts like the Ocean Acidification Alliance help promote and advance solutions that are, innovative, scalable and replicable, address social and economic issues, are cross-sectoral and multi-stakeholder, create co-benefits for sustainable development, and have measurable impacts.

An Overview of the Contribution:

Under the leadership of its diverse members, [The International Alliance to Combat Ocean Acidification](#) (OA Alliance) is harnessing growing scientific knowledge about impacts of ocean acidification and transforming it into increased urgency and ambition for climate mitigation and visible and innovative actions. National, subnational, regional and tribal governments are proactively responding to the impacts of ocean acidification as they chart their course of action for sustaining coastal communities and livelihoods.

The OA Alliance was established in 2016 as an outgrowth of regional collaboration by subnational governments responding to the observed impacts of ocean acidification in the mid-2000's to oyster hatchery production across the North American West Coast. Today, over 70 members from across the globe have joined forces to take action on ocean acidification through the OA Alliance including nations, states and provinces, tribes, cities, and a wide array of affected industries, academic and research institutions, and NGOs.

Members of the OA Alliance commit to take individual actions that address the environmental, cultural and economic threat posed by ocean acidification within their region by creating an OA Action Plan. The OA Alliance has committed to deliver 20 OA action plans and to increase its membership to 100 by the end of 2019.

How the contribution leverages living natural systems as a solution to avert climate change?

OA Action Plans describe tangible actions members will take to respond to the threat of ocean acidification. OA Action Plans help governments identify key species at risk in their region (e.g. those of economic, cultural, or ecological importance) and develop strategies to protect them, including those focused on using living natural systems.

For example, Washington State's ocean acidification action plan included expanding the protection and restoration of native shellfish and aquatic vegetation habitats such as kelp and eelgrass that can absorb carbon and improve water quality locally. The plan also calls for recycling shells to remediate impacts locally, investing in adaptive measures in partnership with local shellfish companies, developing predictive forecasting models, and performing monitoring and research to understand vulnerability of and impacts to key species in the region to ocean acidification.

The OA Alliance asks members to take actions across five areas described below. Examples of the types of actions being taken by members are provided.

(1) Advance Scientific Understanding of Ocean Acidification

- Joining, launching, or expanding nearshore and deep ocean monitoring networks that help determine where and at what rate regions are experiencing changing conditions.
- Conducting studies to better understand the biological responses of local species to increased acidification.

(2) Take Meaningful Actions to Reduce Causes of Acidification

- Assessing and reducing the impact of local inputs and nutrients that can exacerbate OA impacts nearshore and in estuaries.
- Managing stormwater and other land-based pollutants that cause damage to critical marine habitats and ecosystems.

(3) Protect the Environment and Coastal Communities from Impacts of a Changing Ocean

- Restoring or protecting habitats, including seagrass, kelp, saltmarshes, or mangroves which can sequester carbon, improve water quality locally, and provide protection for vulnerable marine species.
- Protecting and restoring species such as native shellfish or corals with greater genetic resilience to changing ocean conditions.
- Incorporating OA into existing management practices including habitat restoration projects and the creation of Marine Protected Areas.

(4) Expand Public Awareness and Understanding of Acidification

- Engaging government, scientists, industry, community members and other key stakeholders through panels, task forces, committees, and workshops to increase understanding and awareness, develop recommendations, and build support for implementing actions.
- Engaging the seafood industry, aquaria, NGOs and other private sector partners around ways to connect with their membership about what is at risk.
- Creating public education curriculum to teach youth about climate change impacts felt in our oceans.

(5) Build Support for Addressing this Global Problem

- The OA Alliance registered a voluntary commitment to build the coalition and advance OA Action Plans at the United Nations Ocean Conference to Implement Sustainable Development Goal 14.
- Government leaders are engaging across international climate and ocean forums to elevate the issue of ocean acidification, increase ambition and urgency for climate action, partner with like-minded organizations, and motivate additional partners to join and take action.

Specifically, the OA Alliance has a [toolkit](#) which includes a suite of nature-based solutions as options for both mitigating and/or sequestering carbon within some submerged aquatic vegetation like seagrass, salt marshes, or mangroves. Some of these solutions include:

- Develop vegetation-based remediation systems, for use in upland habitats and in vulnerable areas.
- Preserve, protect, and restore submerged aquatic vegetation.

- Manage resources and human activities to reduce co-occurring stressors that exacerbate the impacts of OA (i.e., precautionary fisheries policies, support and establish Marine Protected areas, climate-smart human development, etc.)

The toolkit also describes a suite of nature-based solutions that may help communities and businesses adapt and build resiliency in nearshore ecosystems. Some of these solutions include:

- Support local remediation of OA impacts, such as adding shell to marine waters or expanding bivalve populations through restoration or aquaculture.
- Support development and incorporation of acidification indicators and thresholds to guide adaptive management action for species and places at varying scales.
- Enhance restoration and conservation techniques to help ensure the adaptability and resilience of native flora and fauna to OA conditions.
- Maintain and enhance genetic diversity of native flora and fauna (i.e. using conservation hatchery techniques, selective breeding for OA tolerance, etc.)
- Incorporate resilience planning initiatives (e.g., insurance, cooperation, relocation) in uncertain environments to support coastal businesses.
- Encourage or require climate-conscious growth and land use planning, resilience planning, and OA monitoring.
- Support inclusion of climate change and OA in fisheries management planning and harvest decisions.
- Identify and protect refuges for OA-vulnerable organisms.
- Use existing laws and conservation measures to designate waters threatened by OA exacerbating pollution "Vulnerable" or "Protected" statuses to enhance restoration, remediation, and abatement efforts.

How might the contribution support both climate, mitigation and adaptation as well as other important co-benefits and social, economic and environmental outcomes in coming years. They may include:

- ***Reduction in carbon emission and carbon capture (GTonnes)***
- ***Increasing climate resilience***
- ***Social impact (job increase; poverty reduction; Just transition, etc.)***
- ***Net economic impact (total in US\$; how was it achieved?)***
- ***Impact on realization of the 2030 Agenda for Sustainable Development (in particular SDGs 1,2,6,12,13,14,15,16)***
- ***Food security***
- ***Minimising species extinction and ecological losses and fostering an increase of biodiversity.***

As described above, OA Action Plans provide a vehicle for increasing visibility of tangible climate impacts on oceans, raising urgency and ambition in the types of actions taken, motivating quicker and on-the-ground action, and elevating the ways in which ocean impacts need to be addressed across climate, economic and social frameworks .

OA Alliance members are also calling for emissions reductions and ocean adaptation and resiliency actions under international and national climate frameworks like the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Sustainable Development Goals (particularly UN SDG 14). The best mitigation plan for ocean acidification is to drastically curb carbon dioxide emissions, which will require ongoing commitments to international collaboration across national, subnational, sovereign and civil society leaders.

Work underway through the OA Alliance has important co-benefits by targeting and advancing actions that improve adaptation and resilience of those whose food security and jobs are most at risk.

For example, New Zealand is working to protect critical aquaculture industries like the Green Shelled Mussel through strategies that help to mitigate OA impacts on mussel farms through waste shell dissolution, aeration techniques, and identifying resilient families and using stocks from selective breeding. New Zealand is also working to improve management of land-based activities in locations where economically significant marine species are most vulnerable.

Actions such as reducing local land-based pollution and protecting and restoring marine habitats will not only reduce impacts of acidification, but also minimize species extinction and ecological loss. Additionally, these marine habitats are often very effective at capturing and storing carbon.

The City of Vancouver in British Columbia, Canada launched a Blue Carbon pilot project that aims to explore how blue carbon projects can be better incorporated in city carbon accounting, conservation, development and restoration efforts and have discovered many co-benefits of the pilot project along the way.

The Secretariat of the Pacific Regional Environment Programme has been working with governments in the region to build resilience to ocean acidification impacts. Efforts include ongoing monitoring efforts and an emphasis on identifying adaptation approaches that are community driven and focus on reducing other compounding stressors.

Which countries and organisations are involved in the contribution?

All members of the International Alliance to Combat Ocean Acidification are listed in **Appendix A**.

Executive Committee members of the OA Alliance include the governments of: Chile, Fiji, France, New Zealand, the Province of British Columbia in Canada, State of New York, State of California, State of Washington, State of Oregon, the Northwest Indian Fisheries Commission, the Secretariat of the Pacific Regional Environment Programme, and the City of Vancouver in British Columbia, Canada.

How have stakeholders (for example local communities, youth and indigenous peoples, where applicable) been consulted in developing the contribution?

Government members of the OA Alliance includes many indigenous peoples (Tribes, First Nations and Sovereign governments) and local municipalities. The Alliance also has affiliate members which include universities, non-governmental organizations, businesses and associations, all critical to advance the work of the Alliance.

Where can the contribution be put into action?

OA Alliance has made international commitments with the United Nations through Sustainable Development Goal 14.3 and at the 2017 and 2018 Our Ocean Conferences to support the development of 20 OA Action Plans by the end of 2019 and is well on pace to meet that goal. Each member's ocean acidification action plan is implemented according to their jurisdiction, yet many members are coordinating the development and implementation of their work as a broader region.

How the contribution will be delivered? How will different stakeholders be engaged in its implementation? What are the potential transformational impacts?

Increasingly, the OA Alliance is seen as an organization capable of delivering tangible and government-led mitigation, adaptation and resiliency actions on the ground. This work is inspiring high-level leadership and demonstrating the types of comprehensive plans, pilot projects, and investments that are required to deliver on the high-level commitments.

Over the next two years, there are a number of opportunities to continue to advance the work of the OA Alliance and deliver meaningful results.

Throughout 2019-2020, the OA Alliance plans to:

- (1) Advance OA Action Plans through targeted workshops, engagements and support products for US Domestic and International Partners.
- (2) Engage OA Alliance Members at Workshop and High-Level Meetings in 2019-2021. Participation at high-level international meetings like the UN Secretary General's Climate Summit, Our Oceans Conference, UN Sustainable Development Goal 14, and COP25 throughout 2019 and 2020 will allow the OA Alliance to continue to elevate ocean-climate impacts, press for urgent action on climate mitigation and inclusion of oceans in climate agreements, and demonstrate leadership and actions being taken by members. The OA Alliance seeks to highlight OA Action Plans including examples of nature-based solutions from a diverse range of its members at these events.

The OA Alliance has the potential for even more transformational impacts by continuing to increase the visibility for tangible, observable impacts to ocean and people from climate change, motivating social and political will to act, and demonstrating actions that are innovative, scalable and replicable around the globe.

Is this initiative contributing to other Climate Action Summit workstreams (industry transition; energy transition; climate finance and carbon pricing; infrastructure, cities and local action; resilience and adaptation; youth and citizen mobilization; social and political drivers; mitigation strategy)?

As described elsewhere, work by the OA Alliance and its members are contributing to advancing actions that are relevant to these other work streams. In particular, this initiative is using and contributing to

social and political drivers for more urgent action, highlights and incorporates actions for mitigation, resilience and adaptation, and has members that are taking action at a local and city level. The OA Alliance is not formally submitting a contribution under these other work streams, however.

How does this contribution build upon examples of experience to date? How does the contribution link with different ongoing initiatives?

The OA Alliance is not alone in its efforts and has strategically identified and built relationships with strong partners and potential new members each month, ultimately securing commitments to collaborate across organizations and increasing commitments to join. The OA Alliance has been steadily increasing the number of government and affiliate members that are regularly engaged with OA Alliance efforts which provides diversity of membership from members focused on impacts from the Arctic to the Indian Ocean.

Organizations like the Global Ocean Acidification-Observing Network (GOA-ON) and the OA-ICC help to coordinate research that is critical for the ultimate creation of decision support tools, the OA Alliance is unique in that it specifically focuses on governmental action on the international scale.

What are the mechanisms for funding (with specific emphasis on potential for partnerships)? What are the means of stewardship, metrics for monitoring?

- Number of completed OA Action plans
- Length of coastline covered by action plans
- Monetary investments in monitoring, adaptation and resiliency projects
- Status of action plan development/implementation
- NDC incorporation

What is the communication strategy?

The OA Alliance is expanding public awareness and understanding of acidification including the economic, social and cultural impacts.

The OA Alliance communications strategy is divided into three sections which align with its priority goals: 1) advance OA Action Plans; 2) elevate ocean health and acidification in climate agreements; and 3) strategically recruit new members. This includes communications targeted around the IPCC Ocean and Cryosphere Report, the UN Secretary General Climate Action Summit, and COP25, which will help many governments, organizations and initiatives further message and advance nature-based solutions as key actions governments can take in response.

We also encourage each member's OA Action Plan to address communication and outreach messaging that is most relevant to their region.

What are the details of proponents (indicating the degree of commitment among the countries and organizations that are named).

The rapid growth and stature of the OA Alliance in just two years clearly demonstrates the strong interest from high-level policy and decision-makers in better understanding local climate impacts to key marine resources within their regions and in taking action to reduce impacts and build resiliency.

Appendix A

OA Alliance Government Members:

Canada	New Zealand	State of Virginia, USA
Republic of Chile	Province of British Columbia	State of Washington, USA
City of Imperial Beach, California	Province of Quebec	Sweden
City of Portland, Oregon	Quileute Nation	The French Republic
City of Seattle, Washington	Quinault Indian Nation	The Netherlands
City of Vancouver, British Columbia	Secretariat of the Pacific Regional Environment Program	The Nisqually Tribe
Cross River State, Nigeria	Seychelles	The Suquamish Tribe
Fiji	State of California, USA	Tsleil-Waututh First Nation
Gullah/ Geechee Nation	State of Hawaii, USA	United Arab Emirates
Iceland	State of New York, USA	
Makah Tribe	State of Oregon, USA	

OA Alliance Affiliate Members:

2030 District Seattle	Latin America Ocean Acidification Network	Surfrider Foundation
Alaska OA Network	Marine Stewardship Council	Tanzania Fisheries Research Institute
Asian Marine Conservation Association (AMCA)	Monegasque Association on OA (MAAO)-	Taylor Shellfish Farms
California Coast Keeper Alliance	Monterey Bay Aquarium	The Nature Conservancy
California Ocean Science Trust	Mook Sea Farm	Union of Concerned Scientist
Center for Ocean Solutions	Natural Resources Defense Council (NRDC)	Univeristy Cote D'Azur
Daniel Devereaux (Casco Bay Maine Oyster Farm)	New Zealand Ocean Acidification Community (NZOAC)	University of Hawaii Manoa (SOEST)
Edaphic Scientific	Northwest Indian Fisheries Commission	University of Otago (OA Research Theme)
Georgia Aquiarum	Ocean Conservancy	US Climate Advisors
Global Ocean Health	Ocean Networks Canada	Vigilent
Hakai Institute	Ocean Sanctuaries	Washington Ocean Acidification Center (WOAC)
Hog Island Oyster	Pacific Coast Shellfish Growers Association (PCSGA)	We Mean Business
Intake Works LLC	Pacific Community (jessie will add more here)	Wildcoast
J Hunter Pearls	Puget Sound Restoration Fund	World Ocean Council
Jewelmer	Scripps Institution of Oceanography	World Wildlife Fund (WWF)
Joint Ocean Commission Initiative	Seattle Aquarium	