



Fagatele Bay National Marine Sanctuary | National Oceanic and Atmospheric Administration

Ocean-Climate Action Agenda

Global Climate Action Summit | September 2018



Challenge Statement

The ocean is critical to the global fight against climate change and to all life on Earth. It plays a central role in absorbing human-caused greenhouse gas emissions and provides myriad other services that underpin the world's economic, political, and cultural systems.

To help secure global health and prosperity, we're challenging governments and all sectors of society to commit to accomplish the goals in this action agenda.

Contents

- p1** Executive Summary
- p2** Why the Ocean Is Important in Climate Action
- p3** Priority Ocean-Related Climate Goals
- p6** Notes

Executive Summary

About this Agenda

The purpose of the Ocean-Climate Action Agenda is to identify priority ocean-related climate goals for the Global Climate Action Summit, which will take place in San Francisco, California on September 12 to 14, 2018. The Summit will bring leaders together from around the world to deepen commitments and accelerate action from countries—supported by all sectors of society—to prevent dangerous climate change and realize the historic Paris Agreement. The goals in this Agenda were developed to increase global attention on the importance of the ocean in achieving the vision of the Paris Agreement, and to focus global action on priority ocean-related climate mitigation and adaptation measures.

The Ocean’s Critical Role in Achieving the Goals of the Paris Agreement

A healthy ocean underpins the world’s economic, political, and cultural systems, and is the foundation of successful and stable societies around the globe. 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 and ocean acidification. The following priority ocean-related climate goals are critical for achieving the climate mitigation and adaptation goals of the Paris Agreement, and for securing global health and prosperity over the long term.

Priority Ocean-Related Climate Goals

Priority Goals for Ocean-Related Climate Mitigation	Goal 1: By 2030, the global area of coastal wetlands that are critical to global carbon sequestration and storage—mangroves, tidal marshes, and seagrasses—is increased by 20 percent over 2018 levels. Goal 2: By 2030, ocean industries have significantly reduced their greenhouse gas emissions.
Priority Goals for Ocean-Related Climate Adaptation	Goal 3: By 2030, the world’s coastal and island populations, especially those on the frontlines of climate change, are prepared for the impacts of climate change and ocean acidification. Goal 4: By 2030, at least 30 percent of the global ocean is included in effectively managed marine protected areas to ensure food security, coastal protection, and biodiversity preservation in the face of climate change and ocean acidification. Goal 5: By 2025, global ocean fishing and aquaculture is sustainably managed to ensure food security in the face of climate change and ocean acidification.
Priority Goals for Advancing Ocean-Related Climate Mitigation and Adaptation	Goal 6: Coastal and island parties to the Paris Agreement include specific and meaningful ocean-related climate mitigation and adaptation measures in their nationally determined contributions and adaptation communications going forward, as appropriate. Goal 7: By 2025, the world’s coastal and island populations, especially those on the frontlines of climate change, have sufficient financing and support to implement ocean-related climate mitigation and adaptation measures. Goal 8: By 2030, global ocean and climate research, monitoring, and forecasting meet the information needs necessary to adequately address the impacts of climate change and ocean acidification on ocean ecosystems and the human communities that depend on them.

Call to Action

The Summit calls on all sectors of society to achieve these ocean-related climate goals as vital steps toward realizing the Paris Agreement.

Why the Ocean Is Important in Climate Action

A Healthy Ocean Is Essential to All Life on Earth

A healthy, diverse ocean underpins the world's economic, political, and cultural systems, and is the foundation of successful and stable societies around the globe. The ocean plays a central role in regulating our climate and absorbing human-caused greenhouse gas emissions, and provides myriad other services to the planet and its people.

- **The ocean is a major driver of the global economy.** The world's ocean and coasts produce products and services worth an estimated US\$2.5 trillion dollars per year.¹
- **The ocean is a primary source of food for the world's population.** Seventeen percent of all animal protein consumed worldwide comes from fish, and seafood is a primary source of protein for over 3 billion people.²
- **The coast is home to nearly half of all people on Earth.** Today, 40 percent of the world's population lives within 100 km (62 mi) of the coastline.³ This number will jump to 50 percent—4.25 billion people—by 2030.⁴
- **The ocean is humankind's most effective buffer against climate change.** The ocean is the Earth's largest heat and carbon sink. It has absorbed 93 percent of the heat generated by industrial-era CO₂ emissions, and it captures nearly 30 percent of the carbon dioxide released into the atmosphere every year.⁵

Climate Change Is the Biggest Threat to the Ocean and to Humanity

The vital role the ocean plays in human health and prosperity is under threat now more than ever before. Industrial-era greenhouse gas emissions have led to unprecedented ocean warming and acidification. Rising seawater temperatures are altering the ocean's circulation and oxygen levels, changing species distributions, melting sea ice, and flooding our coasts. The acidity of the ocean's surface waters has increased by 30 percent.⁶ These climate-driven ocean changes are producing intensifying impacts on human societies. In the past ten years, hundreds of thousands of lives have been lost and billions of dollars have been spent in the wake of powerful hurricanes and cyclones.⁷ Millions of "climate refugees" have been displaced from their coastal communities.⁸ These changes also pose a significant risk to global food security, tourism, transportation, and maritime security and governance, among other impacts.⁹

The Ocean is a Source of Solutions

The ocean plays a pivotal role in mitigating greenhouse gas emissions and enhancing our ability to successfully adapt to the intensifying impacts of climate change. To sustain these life-giving services, the world must take swift and meaningful action to reverse the current degradation of ocean resources, and ensure coastal and island communities have the resources and support needed to protect against the impacts of climate change and thrive into the future.

Priority Ocean-Related Climate Goals

The following priority ocean-related climate goals are critical for achieving the vision of the Paris Agreement, and for securing global health and prosperity over the long term.

Priority Goals for Ocean-Related Climate Mitigation

Goal 1: By 2030, the global area of coastal wetlands that are critical to global carbon sequestration and storage—mangroves, tidal marshes, and seagrasses—is increased by 20 percent over 2018 levels.

Coastal wetlands—tidal marshes, mangroves, and seagrasses—are powerful “blue carbon” sinks that sequester up to 5 times more carbon by area than terrestrial forests, resulting in globally significant carbon stores.¹⁰ If destroyed, these ecosystems can release their carbon stores back to the atmosphere, turning what were significant carbon sinks into sources of carbon emissions. These “blue carbon” ecosystems are some of the most threatened on Earth. Approximately 30 percent of seagrass meadows, for example, have been lost over the past century, and 20 percent of seagrass species are considered endangered, vulnerable, or near threatened.¹¹ Meanwhile, up to half of mangrove forests have been lost worldwide in the past 50 years, and nearly all unprotected mangroves could be lost over the next century if this trend continues.¹² While mangroves comprise less than 1 percent of the world’s tropical forests, their annual ongoing destruction results in up to 10 percent of the global greenhouse gas emissions from tropical deforestation.¹³ Arresting the degradation of these “blue carbon” ecosystems, and accelerating their restoration, are critical components of an effective global climate mitigation strategy.¹⁴

Goal 2: By 2030, ocean industries have significantly reduced their greenhouse gas emissions.

Ocean-based industries—shipping, fishing and aquaculture, offshore energy development, and tourism—have an important role to play in reducing global greenhouse gas emissions. Shipping generates about three percent of global greenhouse gas emissions each year—a figure set to increase quickly.¹⁵ The United Nations International Maritime Organization recently made a commitment to reduce the shipping industry’s total annual greenhouse gas emissions by at least 50 percent by 2050.¹⁶ Given the growth of global shipping, a continued focus on reducing shipping emissions is critical. Ocean fisheries-related emissions grew by 28 percent between 1990 and 2011.¹⁷ Aquaculture is the fastest growing food sector worldwide,¹⁸ but there is no global estimate of emissions for this industry. About 25 percent of global oil supply currently comes from offshore, with the industry looking to expand into deeper waters in the future.¹⁹ Ocean and coastal tourism is growing at a rate of 3.5 percent a year, and will become the largest segment of the ocean economy by 2030.²⁰ Emissions from many of these industries cannot be attributed to any specific nation, and therefore are not directly covered under the Paris Agreement. This makes it urgent for each of these industries—and the international community—to set emissions reduction targets consistent with the Paris Agreement.

Priority Goals for Ocean-Related Climate Adaptation

Goal 3: By 2030, the world’s coastal and island populations, especially those on the frontlines of climate change, are prepared for the impacts of climate change and ocean acidification.

Climate change is threatening the health and vitality of coastal populations around the world, especially in low-income communities. Forty percent of the world’s population live within 100 km (62 mi) of the coastline,²¹ and most of the world’s megacities are located in the coastal zone.²² As the global population increases, the largest growth is expected in urban areas along the coast.²³ These communities are on the frontlines of sea level rise, coastal storms, flooding, and other intensifying climate impacts. In the past few years alone, major weather events have put human lives at risk and caused unprecedented damage to regional economies. Rising ocean acidity is endangering the

health of subsistence and commercial fisheries. Increased investments and stronger policy, legal, and planning frameworks are needed to safeguard human life and maintain thriving coastal economies in the face of these impacts. These actions should prioritize nature-based actions, including protecting natural buffers and planning for inward migration of coastal ecosystems such as mangroves and wetlands, as well as reducing pollution, habitat destruction, and other human stressors that exacerbate the impacts of climate change and ocean acidification. Action is also needed to support coastal communities that are forced to migrate away from heavily-impacted regions.

Goal 4: By 2030, at least 30 percent of the global ocean is included in effectively managed marine protected areas to ensure food security, coastal protection, and biodiversity preservation in the face of climate change and ocean acidification.

Marine protected areas (MPAs) are important tools for sustaining the health of ocean areas and resources—and the services they provide to human communities—in the face of climate change and ocean acidification. By safeguarding coral reefs, wetlands, and other coastal ocean ecosystems, MPAs help buffer coastal communities from storms, sea level rise, and coastal erosion caused by climate change. Coastal and offshore MPAs help ensure food security by aiding in the recovery of exploited fish populations, rebuilding their habitats, increasing reproductive output, and bolstering the resilience of commercially valuable species to environmental fluctuations.²⁴ And by limiting non-climate stressors like pollution, MPAs can help protect water quality and prevent deoxygenation and dead zones in the face of climate change and ocean acidification. MPAs also enhance climate mitigation by protecting “blue carbon” ecosystems like mangroves, tidal marshes, and seagrasses that sequester and store carbon. However, MPAs currently cover only 6 percent of the global ocean, with less than 2 percent of the ocean in the highest protection level of “fully protected” MPAs.²⁵ Many existing MPAs also lack effective regulation and management plans.²⁶ A greater percentage of the global ocean should be included in MPAs that are well managed and specifically designed to mitigate and adapt to the increasing threat of climate change and ocean acidification.

Goal 5: By 2025, global ocean fishing and aquaculture is sustainably managed to ensure food security in the face of climate change and ocean acidification.

Climate change is threatening the health of global fisheries and aquaculture operations that underpin livelihoods and economies in coastal communities around the world: Hundreds of millions of people are employed through marine fisheries, many of whom work for small-scale operations.²⁷ Aquaculture now accounts for 50 percent of the world’s seafood supply.²⁸ Increasing ocean temperatures, shifting currents, and ocean acidification are imperiling already stressed ocean ecosystems and causing dramatic changes in fishery productivity, species abundance, and stock locations, among other impacts. Aquaculture is affected by extreme weather events, unstable feed supplies, and more acidic waters. Global food security hinges on our ability to sustainably manage fisheries and aquaculture amid these major climate-driven changes. Ending overfishing, enforcing against illegal, unreported, and unregulated fishing, and protecting key habitats are critical components of this adaptation strategy, as is ensuring that aquaculture operations are properly sited and managed to prevent pollution, avoid escapes, and use sustainable feed. More investment is also needed to support coastal communities in creating climate adaptation strategies.

Priority Goals for Advancing Ocean-Related Climate Mitigation and Adaptation

Goal 6: Coastal and island parties to the Paris Agreement include specific and meaningful ocean-related climate mitigation and adaptation measures in their nationally determined contributions and adaptation communications going forward, as appropriate.

Ocean-related action is critical for achieving the climate mitigation and adaptation goals of the Paris Agreement. Accordingly, coastal and island parties to the Paris Agreement should include ocean-related mitigation and adaptation measures in their nationally determined contributions and adaptation communications, as appropriate. These parties should also integrate ocean-related measures into other aspects of the Paris Agreement process, such as their long-term low-carbon development strategies, and the tracking of their national progress under the transparency framework. Ocean-related mitigation and adaptation measures should also be integrated into the global stocktake process designed to assess collective progress toward the goals of the Paris Agreement, and to identify

what still has to be done. Similarly, subnational governments and nongovernmental actors should include specific and meaningful ocean-related climate mitigation and adaptation measures within applicable climate commitments.

Goal 7: By 2025, the world’s coastal and island populations, especially those on the frontlines of climate change, have sufficient financing and support to develop and implement ocean-related climate mitigation and adaptation measures.

Coastal and island populations are on the frontlines of impacts caused by climate change and ocean acidification. Coastal and island regions are also home to many of the “blue carbon” ecosystems that are globally significant carbon stores. Yet many coastal and island communities, especially those on the frontlines of climate change, lack the resources and support needed to develop and implement ocean-related climate mitigation and adaptation measures. Coastal and island parties to the Paris Agreement should include ocean-related mitigation and adaptation measures in their nationally determined contributions and adaptation communications, which will help drive demand for ocean-based climate finance. Likewise, multilateral institutions, national and subnational governments, and non-state organizations should increase funding and technical assistance for these measures. More market-based and similar innovative climate financing approaches are also essential to meet the growing need for stronger ocean-related mitigation and adaptation actions in coastal communities.

Goal 8: By 2030, global ocean and climate research, monitoring, and forecasting meet the information needs necessary to adequately address the impacts of climate change and ocean acidification on ocean ecosystems and the human communities that depend on them.

The past decade has brought rapid scientific progress and innovative new technology to improve our understanding of the pivotal role the ocean plays in climate change. However, many questions remain about how climate-driven changes in the ocean will continue to impact ocean resources and the human communities that depend on them, and what actions are needed to respond to these changes. More investment is needed in local, regional, and global ocean research, monitoring, and observing systems to help detect and deter the biggest climate-related threats to society. Priority research includes increasing our knowledge of the ocean’s role as a major carbon sink, as well as understanding how to develop “climate-ready” fisheries and improve nature-based approaches to climate adaptation. More robust ocean observation systems, including the Global Ocean Observing System and Global Ocean Acidification Observing Network—and the many local and regional networks connected to these global systems—are vital for knowing how the climate is changing, and how related shifts in ocean conditions will impact regional communities around the world.

Notes

- ¹ Ove Hoegh-Guldberg, “Reviving the Ocean Economy: The Case for Action–2015” (Gland, Switzerland: WWF International, 2015).
- ² Food and Agriculture Organization of the United States, “The State of World Fisheries and Aquaculture 2016: Contributing to Food Security and Nutrition for All” (2016).
- ³ U.N. Commission on Sustainable Development: Indicators of Sustainable Development, “Ocean, Seas, and Coasts: Percentage of Total Population Living in Coastal Areas.”
- ⁴ Oz Sahin, “Dynamic Assessment of Coastal Vulnerability and Adaptation to Sea Level Rise: An Integrated Spatial-Temporal Decision Making Approach (Thesis),” *Griffith School of Engineering* (2011).
- ⁵ J. -P. Gattuso et al., “Contrasting Futures for Ocean and Society from Different Anthropogenic CO₂ Emissions Scenarios,” *Science* 349 (6243) (2015).
- ⁶ Pacific Marine Environmental Laboratory (PMEL) Carbon Program, “What is Ocean Acidification?” available at <https://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F>.
- ⁷ Marshall Shepherd, “Weather-Related Natural Disasters Now Cost \$250B Globally Each Year,” *Forbes* (2016).
- ⁸ Bina Desai et al., “Global Report on Internal Displacement (GRID) 2018” (Geneva, Switzerland: Internal Displacement Monitoring Centre, 2018).
- ⁹ “National Climate Assessment” (2014).
- ¹⁰ Elizabeth Mcleod et al., “A Blueprint for Blue Carbon: Toward an Improved Understanding of the Role of Vegetated Coastal Habitats in Sequestering CO₂,” *Frontiers in Ecology and the Environment* 9 (2011). Yude Pan et al., “A Large and Persistent Carbon Sink in the World’s Forests,” *Science* 333 (2011). James Fourqurean et al., “Seagrass Ecosystems as a Significant Global Carbon Stock,” *Nature Geoscience*. 5 (2012).
- ¹¹ Michelle Waycott et al., “Accelerating Loss of Seagrasses Across the Globe Threatens Coastal Ecosystems,” *PNAS* (2009). Frederick T. Short et al., “Extinction Risk Assessment of the World’s Seagrass Species,” *Biological Conservation* 144 (2011).
- ¹² Linwood Pendleton et al., “Estimating Global “Blue Carbon” Emissions from Conversion and Degradation of Vegetated Coastal Ecosystems,” *PLOS ONE* 7 (9) (2012).
- ¹³ Daniel C. Donato et al., “Mangroves Among the Most Carbon-Rich Forests in the Tropics,” *Nature Geoscience* (2011). J Boone Kauffman et al., “The Jumbo Carbon Footprint of a Shrimp: Carbon Losses from Mangrove Deforestation,” *Frontiers in Ecology and the Environment* 15 (4) (2017).
- ¹⁴ Jennifer Howard et al., “Clarifying the Role of Coastal and Marine Systems in Climate Mitigation,” *Frontiers in Ecology and the Environment* 15 (1) (2017).
- ¹⁵ Naya Olmer et al., “Greenhouse Gas Emissions from Global Shipping, 2013–2015” (Washington: The International Council on Clean Transportation, 2017).
- ¹⁶ International Maritime Organization (IMO), “UN Body Adopts Climate Change Strategy for Shipping,” available at <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/06GHGinitialstrategy.aspx>.
- ¹⁷ Robert W. R. Parker et al., “Fuel Use and Greenhouse Gas Emissions of World Fisheries,” *Nature Climate Change* 8 (2018).
- ¹⁸ Max Troell et al., “Aquaculture and Resilience,” *Proceedings of the National Academy of Sciences* 111 (37) (2014).
- ¹⁹ “The Next Big Trend in Offshore Oil and Gas,” *Oilprice.com* (2018).
- ²⁰ OECD, “The Ocean Economy in 2030” (Paris: OECD Publishing, 2016).
- ²¹ U.N. Commission on Sustainable Development: Indicators of Sustainable Development, “Ocean, Seas, and Coasts: Percentage of Total Population Living in Coastal Areas.”
- ²² Sally Brown et al., “Sea-Level Rise Impacts and Responses: A Global Perspective.” In Charles W. Finkl, ed., *Coastal Hazards* (Netherlands: Springer, 2013).
- ²³ Karen C. Seto et al., “A Meta-Analysis of Global Urban Land Expansion,” *PLOS ONE* 6 (8) (2011).
- ²⁴ The 10X20 Initiative Conference on Marine Protected Areas: An Urgent Imperative, “Scientists’ Consensus Statement on Marine Protected Areas (MPAs): Characteristics, Governance, and Sustainable Financing” (Rome, Italy: 2016).
- ²⁵ IUCN, “Marine protected areas and climate change” (2017).
- ²⁶ Enric Sala et al., “Assessing Real Progress Towards Effective Ocean Protection,” *Marine Policy* 91 (1): 2018.
- ²⁷ Lydia C. L. Teh and U. R. Sumaila, “Contribution of Marine Fisheries to Worldwide Employment,” *Fish and Fisheries* 14 (1) (2013).
- ²⁸ Food and Agriculture Organization of the United States, “Aquaculture,” available at <http://www.fao.org/aquaculture/en/>.

A committee of government and nongovernmental representatives developed this document as a call to action for participants at the Global Climate Action Summit in San Francisco, September 12 to 14, 2018. It is meant to identify and amplify key ocean-related goals for mitigating and adapting to climate change.

—

California Ocean Protection Council

Benioff Ocean Initiative | California Coastkeeper Alliance | Center for American Progress | Climate Advisers
Conservation International | Monterey Bay Aquarium | Natural Resources Defense Council
Ocean Conservancy | Resources Legacy Fund | The Nature Conservancy | World Economic Forum

GLOBAL
CLIMATE
ACTION SUMMIT