CLIMATE CHANGE AND THE OCEAN:
Key Linkages, Needed Actions, and Options for Further Steps

August 13, 2018

INTRODUCTION

Various initiatives within the UNFCCC process, particularly the “Ocean Pathway” and “Because the Ocean,” have helped make the ocean an important part of the climate change conversation. The question now is which concrete steps interested Parties and other stakeholders should seek, both within the UNFCCC regime and elsewhere, so that the ocean is appropriately taken into account in climate change mitigation and adaptation.

This paper identifies four key climate-ocean linkages, specifies several actions that are needed, and sets forth options that might be pursued by concerned Parties.

- The options include both steps to make the ocean part of the climate solution and steps to mitigate climate impacts on the ocean.
- The options include both immediate steps (e.g., adopting an “ocean-friendly” Paris “rulebook”/implementation guidelines, reflecting ocean issues in the Talanoa outcome, and building a coalition to include ocean-related measures in NDCs) and 2019-related steps (e.g., seeking an ocean-specific UNFCCC agenda item and promoting ocean issues at the UNSG’s Climate Summit), which capitalize on the release of the IPCC’s Special Report on the Ocean and Cryosphere and prepare the ground for making COP 25 the “ocean” COP.
• The options include both positive actions (such as inclusion of ocean-related mitigation in NDCs) and precautionary steps to avoid foreclosing future options (i.e., “future-proofing” the Paris “rulebook”).
• Certain options that apply to more than one linkage are listed at the end.

The paper also includes an annex outlining various short- and longer-term “straw” options that address how and when ocean-climate linkages might be advanced within the UNFCCC process.

**OCEAN-CLIMATE LINKAGES**

**Linkage #1:** Climate change adversely affects the ocean in several ways, including by raising the temperature, reducing the amount of oxygen dissolved in seawater, increasing sea levels, and altering currents and oceanographic conditions. CO₂ emissions also drive ocean acidification. Compounded by other anthropogenic stressors (including overfishing and pollution), these changes have direct and potentially far-reaching impacts on fish and other marine life, ecosystems such as coral reefs, and communities that depend on them for food and livelihoods. Coastal communities in developing countries are disproportionately affected by these impacts.

• **Needed Actions:**
  - Implementation of Parties’ existing mitigation-related commitments
  - Enhancement of Parties’ mitigation-related ambition (which could include measures to enhance generation of renewable energy from the ocean by capturing its wind, heat, wave, and tidal energy)
  - A Paris “rulebook” that promotes ambition, particularly through a robust transparency framework and effective Global Stocktake
  - Robust action by non-Party stakeholders, including sub-national governments and business
  - Increased awareness and highlighting of the linkage, including through partnering with groups of Parties such as the High Ambition Coalition

• **Options for Further Steps:**
  - The need to limit climate change is not specific to the ocean. Thus, Parties may want to focus their efforts on the three ocean-specific linkages below.
At the same time, options for further steps on this linkage include:

- In terms of the Paris “rulebook,” supporting strong reporting and review under the Paris transparency framework (Article 13’s modalities, procedures, and guidelines), as well as an effective Global Stocktake (modalities under Article 14);
- Providing input into the Talanoa Dialogue on the importance of raising mitigation ambition, particularly from the ocean perspective – and seeking a reference to this perspective in the COP outcome (e.g., a chair’s summary on Talanoa);
- Pressing for Party and non-Party stakeholder commitments to increased mitigation action on the road to 2020, including at the Global Climate Action Summit in California, COP 24, the 2019 UN Secretary General’s Climate Summit, and COP 25;
- Encouraging Parties to consider including sustainable ocean-based mitigation measures in their NDCs (e.g., to harness the ocean’s wind, heat, wave, and tidal energy or to reduce emissions from aquaculture);
- Raising awareness of adverse impacts on the ocean, both among Parties and more broadly, including through interventions, speeches, articles, etc.

Linkage #2: Relative to other greenhouse gases, carbon dioxide has a particularly adverse effect on the ocean because it dissolves in seawater and alters the ocean’s chemistry. The resulting “ocean acidification” makes it difficult for shellfish, corals, and other species that are critical to marine food webs to form shells and skeletons. This in turn directly impacts human communities that depend on these resources. The acidity of the global ocean has increased 30% relative to pre-industrial times.

- Needed Actions:
  
  - Decreased CO₂ emissions in particular, within the basket of various greenhouse gases
  - Increased awareness and highlighting of the linkage, particularly that Global Warming Potential is not the only relevant basis for comparing greenhouse gas emissions
• **Options for Further Steps:**

  - Exploring the prospect of a coalition of Parties that take on specific CO₂ emissions commitments, within their NDCs or otherwise
  - Providing input into the Talanoa Dialogue on the particular impacts of CO₂ emissions on the ocean – and seeking a reference to this issue in the COP outcome (e.g., chair’s summary on Talanoa)
  - Ensuring that the trajectory of CO₂ emissions in particular is a specific input into, and subject of, the Global Stocktake
  - Asking the IPCC or other experts to develop an “Ocean Impact” scale for the main greenhouse gases, which integrates the effects of different greenhouse gases on both climate change and ocean acidification

**Linkage #3:** The ocean is the world’s largest carbon sink, absorbing 25% of anthropogenic CO₂ emissions to date and 93% of the heat generated by industrial-era CO₂ emissions. The ocean stores carbon in two ways: through living things and through its chemistry. Both could be adversely affected by climate change, leading to greater warming:

- Climate change, and other human induced stressors, could disrupt coastal and marine ecosystems in ways that create large-scale biological loss, particularly through loss and degradation of “blue carbon” systems such as mangroves, seagrasses, and salt marshes. Degradation of the ocean’s biological sink would result in a large increase in atmospheric carbon.
- The capacity of the ocean to continue to chemically absorb carbon dioxide is declining as it becomes more carbon-saturated. Loss of the ocean’s chemical sink would result in far faster and higher increases in global temperature, because a larger fraction of anthropogenic emissions would remain in the atmosphere, thereby raising atmospheric concentrations.

Currently, with one exception, ocean sinks are not specifically addressed by the UNFCCC regime because they are naturally occurring, rather than attributable to human activities. The exception is for actions to conserve and enhance

---

1 These options might be explored in collaboration with the International Alliance to Combat Ocean Acidification.
“blue carbon” in coastal ecosystems, such as mangrove forests, seagrass meadows, and tidal marshes. If it becomes technically feasible to manage open ocean sinks in a safe, sustainable, measurable, and verifiable manner, this could be another means of mitigating climate change.

- **Needed Actions:**
  - Increased research on ocean sinks (e.g., measurement of the effects of human management on coastal blue carbon, feasibility of conserving and protecting open ocean sinks in a safe, sustainable, measurable, and verifiable manner)
  - Increased awareness of the importance of ocean sinks
  - Cooperation on the conservation, protection, and restoration of ocean sinks, including through marine protected areas and activities and policies to reduce local sources of acidification (e.g., reducing nutrient pollution and run-off)
  - Incentives for the conservation, protection, and restoration of ocean sinks, particularly blue carbon systems.

- **Options for Further Steps:**
  - Developing a coalition of Parties that include in their NDCs measures to conserve, protect, and restore blue carbon in coastal ecosystems
  - Ensuring that the Paris “rulebook” addresses possibilities to account and report on coastal blue carbon
  - Encouraging pilot projects involving cooperative approaches to conserve, protect, and restore coastal blue carbon (Article 6)
  - Ensuring that nothing in the Paris rulebook precludes Parties from including in their NDCs measures to conserve, protect, and restore ocean sinks more generally (Article 4)
  - Ensuring that the rules for the new “sustainable development mechanism” do not exclude Parties’ actions to conserve, protect, and restore ocean sinks, at a minimum, in their territorial seas and EEZs (Article 6.4)
  - Ensuring that information on the status of ocean sinks is an input into, and subject of, the Global Stocktake

---

2 This step might be explored in conjunction with the Blue Carbon Initiative and the International Partnership on Blue Carbon.
o Exploring the creation of a mechanism, like REDD+, that focuses on the conservation, protection, and restoration of ocean sinks (Article 5.1)

**Linkage #4:** Protecting coastal and marine ecosystems against the adverse effects of climate change is vital for human and ecosystem adaptation and, in many cases, also contributes to reduction of emissions. Reducing anthropogenic stressors on the oceans, such as overfishing and other unsustainable exploitation of marine resources, habitat degradation, pollution and nutrient runoff, may also enhance the ocean’s capacity to absorb the impacts of climate change.

- **Needed Actions:**
  
  o Increased ocean-related adaptation, including through creation of a comprehensive network of “climate smart” marine protected areas designed to safeguard ocean resilience, coral reef protection, and integrated coastal zone management
  
  o Increased funding for ocean-related adaptation
  
  o Increased awareness and highlighting of the linkage
  
  o Stronger recognition and inclusion of coastal and marine ecosystems in landscape approaches

- **Options for Further Steps:**
  
  o With respect to the Paris “rulebook,” ensuring that ocean-related adaptation can be included in adaptation communications (Article 7.10)
  
  o Providing input into the Talanoa Dialogue on the importance of ocean-related adaptation – and reflecting this point in the COP 24 outcome (e.g., in the chair’s summary of Talanoa)
  
  o Ensuring that the Global Stocktake’s review of the “adequacy and effectiveness of adaptation and support for adaptation” (Article 7.14(c) includes ocean-related adaptation (Article 14, Decision paragraph 101)
  
  o Raising awareness of the Agreement’s express recognition that mitigation co-benefits from adaptation actions can contribute to mitigation outcomes (Article 4.7)
o Ensure financing possibilities of ocean-related climate actions within the FCCC’s financial mechanisms

**Options Serving Multiple Linkages:**

- Continuing to build awareness of ocean-climate linkages to lay the foundation for the IPCC’s 2019 IPCC Special Report on the Ocean and Cryosphere and for an effort to make COP 25 the “oceans” COP
- Requesting SBSTA to hold an in-session workshop to consider ocean-climate linkages
- Seeking an ocean-specific agenda item within the FCCC by 2020, potentially including special consideration of the linkages in 2019
- Seeking to reflect the above linkages in the IPCC’s Special Report on the Ocean and Cryosphere
- Factoring the above linkages into ocean-related conferences, including the next Our Ocean conference and the Norway-led high-level panel on oceans
- Seeking an oceans component to the UN Secretary General’s Climate Summit
- Including the climate-ocean linkages, as appropriate into the role of the UN Special Envoy for the Ocean
- Factoring the above linkages, as appropriate, into the UN negotiations on an implementing agreement under the LOS Convention on Biodiversity Beyond National Jurisdiction
- Including a focus on research and action on climate-ocean linkages in the UN Decade of Ocean Science, as well as in the context of Sustainable Development Goals 13 and 14 (on climate action and the ocean, including climate impacts).
- Raising the above linkages, as appropriate, at the November 2018 Conference of Parties to the Convention on Biological Diversity, potentially under the agenda item “biodiversity and climate change”
ANNEX

Straw Strategic Options for Addressing Ocean-Climate Linkages within the UNFCCC Process

This annex addresses strategies for how and when interested Parties might pursue steps to address ocean-climate linkages within the UNFCCC process. It identifies four straw options for steps in the short term, as well several longer-term options. Elements of the options could also be combined in various ways.

Straw Option 1:

Option 1 rests on the view that, at least in the short term, focusing on operationalizing the Paris Agreement (through the “rulebook”) and on the Talanoa Dialogue is the best approach for addressing ocean-climate linkages. Interested Parties would support a “rulebook” that promotes overall climate ambition, “screen” the rulebook to ensure that ocean-related aspects are appropriately included/not excluded, and use the Talanoa Dialogue to highlight the ocean as a means of increasing ambition and encouraging adaptation.

Specifically, Parties would support a Paris Agreement “rulebook” that:

- promotes ambition through strong reporting and review under the transparency framework;
- provides for ocean-related inputs to the Global Stocktake;
- provides for accounting guidelines for conservation and restoration of blue carbon; and
- does not preclude ocean-related mitigation and adaptation options.

They would also make best use of the Talanoa Dialogue for advancing ocean issues, including through inputs such as the multi-institutional submission resulting from the March 2018 Lisbon meeting on the ocean and climate.

Straw Option 2:

This option would augment Option 1 by adding a focus on nationally determined contributions (NDCs). The inclusion of ocean-related mitigation (e.g., renewable energy, blue carbon) in Parties’ NDCs and of ocean-related adaptation (e.g., coastal protection) in, as appropriate, NDCs or adaptation
communications, would be encouraged. This could be further promoted by Because the Ocean, the Ocean Acidification Alliance, relevant workshops, etc.

**Straw Option 3:**

This option goes beyond options 1 and 2 by creating a SBSTA entry point on the ocean that could lay the groundwork for a future ocean agenda item:

- It could involve an in-session SBSTA workshop in June 2019 on opportunities to conserve and enhance the ocean and other coastal/marine ecosystems, with a view to sharing best practices and lessons learned, including in relation to NDCs.
- Submissions would be invited from Parties, stakeholders, etc., and the Secretariat would prepare a synthesis report.

**Straw Option 4:**

This option would involve one or more responses to what is likely to be a “gloomy” IPCC Special Report on the Ocean and Cryosphere, such as:

- a call for a Ministerial meeting on the issues raised by the Report; and/or
- the preparation of an Ocean agenda item, for submission to COP 25, that entrenches the role of the ocean in the UNFCCC.

**Longer-Term Options:**

Other steps to address ocean-climate linkages are not ripe for immediate action, and will likely require a longer process of socialization within the UNFCCC process. These include, e.g.:

- a new COP agenda item on the ocean and climate;
- development of an ocean impact index that assesses the relative impact on the ocean of different greenhouse gases – including, in particular, the impact of carbon dioxide emissions on ocean acidification;
- the establishment of a Blue REDD+ mechanism; and
- development of methodologies for measuring, verifying, and assessing the environmental soundness of techniques to conserve and restore ocean sinks.
Parties will likely also want to promote the ocean-climate agenda as part of the 2019 UN Secretary General’s Summit; one of the six challenge areas -- “nature-based solutions” -- already includes the ocean-climate link.