



United Nations Framework Convention on Climate Change  
**15th Conference of the Parties**  
Copenhagen, Denmark  
December 7-18, 2009

# Oceans Day at Copenhagen

*The Importance of Oceans, Coasts, and Small Island Developing States in the Climate Regime*

December 14, 2009, 8:00 to 22:00  
Venue: European Environment Agency, Copenhagen





## Purpose

*Oceans Day provides the opportunity for Parties and Observer States, intergovernmental organizations, non-government organizations, and members of civil society to address the implications of the emerging Copenhagen agreement for oceans, coasts, and coastal communities around the globe. Oceans Day will highlight the direct link between climate change, the health of the oceans, and human well-being, as well as the need for sufficient funding to support bold mitigation and adaptation actions that will minimize climate change impacts on coastal communities and ocean resources.*

Coastal communities and indigenous peoples, in both developed and developing countries, as well as in small island developing States (SIDS), are at the frontline of climate change impacts. As the global community negotiates, carbon dioxide continues to be emitted at an ever-increasing rate. The ocean, as a result, has experienced an increase in acidity, altered circulation patterns, warming, and a rise in sea level. Weather patterns and precipitation events have also changed. These changes will continue and are leading to increased “risks to global food security, economic prosperity, and the well-being of human populations” (Manado Declaration 2009). Such projected impacts heighten the urgency to develop appropriate response measures, take strong mitigation actions, and implement innovative adaptation measures. At the same time we need to continue ocean observations and impact assessments so we can adapt our actions as conditions continue to change.

Oceans Day targets an audience of negotiators, high level officials, experts, media, and interested members of the public.

## Organizers

Global Forum on Oceans, Coasts, and Islands  
Government of Indonesia  
European Environment Agency  
University of Delaware Gerard J. Mangone Center for Marine Policy

With funding support from:

Global Environment Facility/United Nations Development Programme  
Department for Environment, Food, and Rural Affairs, UK  
European Environment Agency  
Food and Agriculture Organization of the United Nations  
Oceana  
Center for Ocean Solutions  
Government of Republic of Korea  
Global Forum on Oceans, Coasts, and Islands  
Lighthouse Foundation  
United Nations Environment Programme

And in collaboration with the following:

European Commission Directorate-General for Maritime Affairs and Fisheries  
Global Change Institute - University of Queensland  
Government of Grenada  
Government of Seychelles  
Institute for Sustainable Development and International Relations (IDDRI)  
InterAcademy Panel on International Issues (IAP)  
Intergovernmental Oceanographic Commission/UNESCO  
International Union for Conservation of Nature (IUCN)  
Partnership for Climate, Fisheries, and Aquaculture (comprising twenty intergovernmental organizations, non-governmental organizations, and civil society organizations)

Plymouth Marine Laboratory/Partnership for the Observation of the Global Oceans  
Principality of Monaco  
Scripps Institution of Oceanography - UC San Diego  
Sea Level Rise Foundation  
The Nature Conservancy  
United Nations Development Programme  
World Ocean Network  
World Ocean Observatory  
WorldWildlife Fund  
WorldFish Center  
World Bank

## Background

The World Ocean Conference (May 11-15, 2009, Manado, Indonesia) produced the Manado Oceans Declaration (signed by 76 governments), which stresses the importance of having oceans on the climate change agenda at COP15 and beyond. (The Declaration can be viewed at [http://www.globaloceans.org/planning/pdf/MOD\\_ADOPTED\\_ON\\_14MAY09\\_Final.pdf](http://www.globaloceans.org/planning/pdf/MOD_ADOPTED_ON_14MAY09_Final.pdf).) The Manado Global Ocean Policy Day (the multistakeholder dialogue organized by the Global Forum and partners) produced the Co-Chairs' Statement Emanating from the Global Ocean Policy Day (<http://www.globaloceans.org/planning/pdf/GOPD-FinalStatement.pdf>) detailing major ocean, coasts, and SIDS issues related to climate change mitigation, adaptation, financing, capacity development and civil society.

The Oceans Day at Copenhagen will bring together in one venue the latest scientific understanding about the impacts of climate change and increased concentration of atmospheric carbon on the oceans. This enhanced knowledge, in addition to the Manado Declaration, underpins the strong need to focus on oceans, coasts, and coastal communities in the climate negotiations and provides the context for charting the way forward.

Climate change is having a profound impact on the world's oceans. Ocean warming directly impacts humans and ocean life – from sea level rise and increased storm intensity to habitat shifts and receding coastlines. This in turn disrupts ocean and coastal foodwebs, making it harder for fish, seabirds, and humans to find the food they need at the time they need it. These changes cause severe impacts to vulnerable coastal areas, sometimes resulting in loss of life, damage to infrastructure and economy, to tourism and fisheries, and possible displacement and resettlement of populations.

In addition, the oceans have absorbed approximately 30-50% of the CO<sub>2</sub> produced by humans over the last 200 years – CO<sub>2</sub> that would have otherwise contributed to global warming. The absorbed CO<sub>2</sub> is fundamentally changing sea water chemistry, resulting in ocean acidification—the other CO<sub>2</sub> problem—with substantial impacts on ocean chemistry and life. (Please see the InterAcademy Panel on International Issues (IAP) Statement on Ocean Acidification, <http://royalsociety.org/displaypagedoc.asp?id=34007>.)

## Reaching a Worldwide Audience

A special website ([http://www.ceoe.udel.edu/cmp/oceans\\_day/index.html](http://www.ceoe.udel.edu/cmp/oceans_day/index.html)) has been set up to invite all relevant groups and individuals to participate in the Oceans Day at Copenhagen, manage participant registration, publicize the event, and disseminate the Oceans Day activities through the Internet.

The activities and outputs of Oceans Day will be disseminated through a variety of media:

- Video footage of panel discussions, high-profile speakers, and other Oceans Day events will be streamed online for public viewing
- Posters, pamphlets, and other materials will be disseminated on site and on the Internet

An oceans and climate website, OceanClimate.org, has been developed to build public understanding of the synergy between ocean and climate systems through an Internet-based presentation of the current situation and possible solutions. This website features an interactive forum for individuals to engage in a dynamic conversation about policy and proposed actions to sustain ocean/climate benefit for all mankind.

## Registration Information

Space at Oceans Day in the European Environment Agency conference hall is limited and already at capacity. Other participants may view a live broadcast of the Oceans Day proceedings in other areas of the European Environment Agency (outside of the conference hall) and at the World Wildlife Fund exhibition tent in Nytorv Square, Copenhagen.

All participants must be registered to participate in Oceans Day (in the EEA and at the World Wildlife Fund tent) for security reasons. If you wish to register, please write a note to Ms. Caitlin Snyder ([csnyder@udel.edu](mailto:csnyder@udel.edu), +1-302-831-8086) with information on your organization and your interest in oceans and climate issues.

All registered participants (in the EEA and at the World Wildlife Fund tent) will receive notification of their registration via email (the proof of registration will be needed to gain admittance to Oceans Day venues).

Please note that the session on Perspectives from World Leaders and Reception from 7:00 – 10:00 PM is by invitation only.

## Follow-up Discussions at the 5th Global Oceans Conference, Paris, May 2010

The major climate/oceans topics addressed at Oceans Day in Copenhagen will be the subject of detailed analysis and discussion at the 5th Global Oceans Conference to be held on May 3-7, 2010 at UNESCO in Paris, hosted by the Government of France and the Intergovernmental Oceanographic Commission, UNESCO.

# OCEANS DAY AT COPENHAGEN

*The Importance of Oceans, Coasts, and Small Island Developing States in the Climate Regime*

**December 14, 2009, 9:00 AM-10:00 PM**

European Environment Agency, Kongens Nytorv 6, Copenhagen, Denmark

**8:00 AM Registration**

All participants should be seated by 8:45 AM

**9:00-9:45 AM Welcome and Opening Ceremony**

*Welcome Remarks*, Professor Jacqueline McGlade, Executive Director, European Environment Agency

*Oceans, Coasts and Small Island Developing States at the Frontline of Climate Change*, Dr. Biliana Cicin-Sain, Co-chair and Head of Secretariat, Global Forum on Oceans, Coasts, and Islands, and University of Delaware

*The Imperative of Linking Climate and Oceans in the New Climate Regime*, Dr. Fadel Muhammad, Minister of Marine Affairs and Fisheries, Indonesia

*Oceans and Climate Change*, The Rt Hon Hilary Benn MP, Secretary of State, Department for Environment, Food and Rural Affairs, United Kingdom

*Keynote Address*, H.S.H. Prince Albert II of Monaco

**9:45-10:00 AM Coffee Break**

**10:00-11:45 AM Panel 1: Impacts of Climate Change on Oceans, Coasts, and Small Island Developing States (SIDS): Ocean Warming, Sea Level Rise, Extreme Weather Events, Ocean Acidification, Coastal Erosion, Polar Changes, Impacts on Fisheries and Aquaculture, Impacts on Marine Biodiversity**

**Chair:** Dr. Patricio Bernal, Executive Secretary, Intergovernmental Oceanographic Commission, UNESCO

**Panelists:**

**Overview**

Dr. Tony Haymet, Director, Scripps Institution of Oceanography  
Dr. Susan Avery, Director and President, Woods Hole Oceanographic Institution

**Impacts on Tropical Environments**

Dr. Ove Hoegh-Guldberg, Director, Global Change Institute, University of Queensland

Dr. Indroyono Soesilo, Secretary, Coordinating Ministry for Peoples' Welfare, Indonesia

**Polar Changes and Impacts on the World**

Dr. Martin Sommerkorn, Senior Climate Change Advisor, Arctic Program, WWF

Ms. Sheila Watt-Cloutier, former Chair, Inuit Circumpolar Council

**Impacts on Fisheries and Aquaculture**

Ms. Cassandra De Young, Fisheries Policy, FAO

Dr. Edward Allison, Policy Director, WorldFish Center

Dr. Svein Sundby, Leader of The Climate-Fish Programme, Institute of Marine Research, Norway

**Impacts on Marine Biodiversity**

Dr. Gary Boris, Woods Hole Marine Biological Laboratory

Senator Richard Ariihau Tuheiava, Sénateur de la Polynésie française, Membre de la Commission des lois, Secrétaire Exécutif ICOMOS Pacific

**Discussion**

**11:45-12:30 PM Panel 2: Ocean Acidification: The Other CO<sub>2</sub> Problem**

**Chair:** Dr. Carol Turley, Senior Scientist, Plymouth Marine Laboratory, POGO, European Project on Ocean Acidification and the UK Programme on Ocean Acidification

**Panelists:**

Dr. Victoria Fabry and Dr. Andrew Dickson, Scripps Institution of Oceanography

Prof. Meg Caldwell and Dr. Robert Dunbar, Center for Ocean Solutions, Stanford University

Dr. Scott Doney, Woods Hole Oceanographic Institution

Mr. Tariq Banuri, Director, Division for Sustainable Development, UNDESA

Dr. Michael Hirshfield and Ms. Jacqueline Savitz, Oceana

**Discussion**

**12:30-1:45 PM Posters, Exhibits, and Films**  
*(Lunch sponsored by the government of the Republic of Korea/Yeosu World Expo Oceans 2012)*

*Korea Exhibit, Yeosu World Expo Oceans 2012*

*The Importance of the Sea Orbiter project as a Key Tool for Ocean/ Atmosphere Monitoring*, Jacques Rougerie, France

*The Relationship Between Societies and the Environment: Native Land*, Cartier Foundation for Contemporary Art (art exhibition in Kunsthall Charlottenborg, next door to EEA)

*World Ocean Network Exhibit*, with Jean-Michel Cousteau, Ocean Futures Society

*Exhibit on Blue Carbon*, UNEP

*Poster*, Plymouth Marine Laboratory - Partnership for the Observation of the Global Oceans

*Poster*, Global Biodiversity Information Facility (GBIF)

*Poster*, Sustaining the World's Large Marine Ecosystems during Climate Warming, International Council for the Exploration of the Sea (ICES)

CALAMAR Project, Ecologic Institute for International and European Environmental Policy

**Films:**

*Corals Reefs and Climate Change*, Simon Harding, Globe International Commission on Land Use Change and Ecosystems, and the Zoological Society of London

*Acid Test: The Global Challenge of Ocean Acidification*, Natural Resources Defense Council

*Team Marine*, Lynne Cherry

*The Other CO<sub>2</sub> Problem*, Plymouth Marine Laboratory

**1:45-2:45 PM Panel 3. Ocean-Based Mitigation Responses to Climate Change**

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European Environment Agency, Kongens Nytorv 6, Copenhagen, Denmark

**Chair:** Dr. Alan Simcock, Former Co-Chair, UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea

**Panelists:**

Dr. Ralph Rayner, Vice President, IMarEST  
Ms. Karin Sjölin-Frudd, Senior Adviser, Marine Environment Division, IMO  
Dr. David Johnson, Executive Secretary, OSPAR  
Mr. Jonathan McDonnell, Project Manager, Danish Yacht  
Mr. Carl Lundin, Head, IUCN Global Marine Programme

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**2:45–4:00 PM Panel 4. Adaptation Responses to Climate Change**

**Chair:**

Dr. Veerle Vandeweerd, Director, Energy and Environment Group, UNDP

**Panelists:**

**Global Perspectives**

Ms. Lynne Hale, Director, Global Marine Initiative, The Nature Conservancy

Dr. Jacqueline Alder, Coordinator, Marine and Coastal Ecosystems Branch, UNEP

Mr. Christian Severin, Program Manager, International Waters, GEF

**Regional, National, and Local Perspectives**

Dr. Nguyen Chu Hoi, Deputy Administrator, Vietnam Administration for Seas and Islands

Mr. Fernando E. Ortega Bernes, Governor, State of Campeche, Mexico

Mr. Mike Chrisman, Secretary for Natural Resources, California, US

Dr. Ram Boojh, National Professional Officer, Ecological and Earth Sciences, UNESCO, India

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**4:00–4:15 PM Coffee Break**

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**4:15–5:15 PM Panel 5. Mobilizing Governments and the Public and Private Sectors for Action**

**Chair:**

Mr. David S. McCauley, Principal Climate Change Specialist, Climate Change Program Coordination Unit, Regional and Sustainable Development Department, Asian Development Bank

**Panelists:**

**National and Regional Initiatives**

Dr. Paul N. Otuoma, Minister for Fisheries Development, Kenya

Dr. Kwame Koranteng, Coordinator, EAF-Nansen Project, Fisheries Management and Conservation Service (FIMF), Food and Agriculture Organization

**The Coral Triangle Initiative**

Dr. Fadel Muhammad, Minister of Marine Affairs and Fisheries, Indonesia

Mr. Gordon Darcy Lilo, Minister of Environment, Conservation and Meteorology, Solomon Islands

**Mobilizing the Public and Private Sectors for Action**

Mr. Philippe Vallette, General Manager, NAUSICAA and Co-President, World Ocean Network

Mr. Morten Lorenzen, CEO, Royal Danish Yacht Club

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**5:15–6:30 PM Panel 6. Moving Forward on Oceans and Climate in a Post-Copenhagen Regime**

**Chair:** Ambassador Ronald Jumeau, Seychelles Ambassador to the UN

*Special Address: Ms. Monique Barbut, Chief Executive Officer, Global Environment Facility*

*Special Address: Ms. Angela Cropper, Deputy Executive Director, United Nations Environment Programme*

**Panelists:**

Mr. Robert Calcagno, Head, Oceanographic Museum, Monaco

Mr. William Eichbaum, Vice-President, WWF-US

Mr. Tiago Pitta e Cunha, Cabinet of Commissioner Joe Borg, DG MARE, European Commission

Dr. Jung-Keuk Kang, President, Korea Ocean Research and Development Institute (KORDI)

Prof. Raphael Lotilla, Partnerships in Environmental Management for the Seas of East Asia

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**7:00–10:00 PM Perspectives from World Leaders and Reception**

**Moderators:**

Dr. Gellwynn Jusuf, Chair, Agency for Marine and Fisheries Research, Ministry of Marine Affairs and Fisheries, Indonesia

Prof. Jacqueline McGlade, Executive Director, European Environment Agency

Dr. Biliiana Cicin-Sain, Co-chair and Head of Secretariat, Global Forum on Oceans, Coasts, and Islands

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**7:00–8:00 PM**

**Speakers:**

Dr. Jane Lubchenco, Under Secretary of Commerce and Administrator of National Oceanic and Atmospheric Administration (NOAA), US

Mrs. Rejoice Mabudafhasi, Deputy Minister of Environmental Affairs, South Africa

Mr. Karl Falkenberg, Director General, DG Environment, European Commission

Ambassador Dessima Williams, Permanent Representative of Grenada to the United Nations, and Chair, Alliance of Small Island States (AOSIS)

Dr. Ibrahim Thiaw, Director, Division of Environmental Policy Implementation (DEPI), United Nations Environment Programme (UNEP)

Mr. Warren Evans, Director, Environment Department, World Bank

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**8:45 PM**

Ambassador Brice Lalonde, Ambassador for Climate Change Negotiations, Ministère de l'Ecologie, de l'Energie, du Développement Durable et de la Mer, France

**Exhibit:** Center for Ocean Solutions

Launching of Oceans/Climate Website: World Ocean Observatory and Global Oceans Forum

# HIGHLIGHTS FROM OCEANS DAY AT COPENHAGEN

On December 14, 2009, during the 15th Conference of the Parties (COP-15) of the United Nations Framework Convention on Climate Change (UNFCCC), the Global Forum on Oceans, Coasts, and Islands, the Government of Indonesia, and the European Environment Agency hosted Oceans Day at Copenhagen. Oceans Day brought together 320 leaders from intergovernmental organizations, government, UN agencies, nongovernmental organizations, science, and industry from 40 countries to focus on the central role of the oceans in climate change and the fact that close to 50% of the world's population living in coastal areas will suffer disproportionately from ocean warming, melting ice, sea level rise, altered upwelling and currents, coastal erosion, extreme weather events, salinity changes, and ocean acidification. Oceans Day featured six expert panels, as well as an evening reception with perspectives from world leaders.

Dr. Biliana Cicin-Sain, Co-Chair and Head of Secretariat of the Global Forum on Oceans, Coasts, and Islands, opened Oceans Day by urging the international community to retain the references to oceans and coasts in the UNFCCC negotiating text and to craft an integrated oceans and coasts program within the UNFCCC by 2013. Such a program would focus on ensuring the continuing function of the oceans in sustaining life on Earth, giving special consideration to small island developing States (SIDS) and other coastal nations that are especially vulnerable to climate change; emphasize the positive contributions that oceans make in the mitigation of global warming, particularly through carbon sequestration by coastal habitats; and provide sufficient funding for adaptation efforts in coastal communities and island nations around the world. Excerpts from Dr. Cicin-Sain's speech are below.

## Dr. Biliana Cicin-Sain



*UNFCCC COP-15 is truly a historic meeting. What happens here, positive or negative, will affect generations to come. For oceans, this is also a historic meeting. Oceans play a central role in climate – oceans generate oxygen, absorb CO2 and regulate climate and temperature.*

*Just as you cannot do without a healthy heart and lungs, the world cannot do without healthy oceans. Close to 50% of the world's population lives in coastal areas and 44 small island States. These areas are at the frontline of climate change. Coastal populations and 183 coastal countries will suffer disproportionate impacts from ocean warming, sea level rise, extreme weather events, ocean acidification and other phenomena. The most recent scientific information indicates that the impacts will be more extensive and more disastrous than anticipated by the 2007 IPCC report.*

*Strangely, oceans have not figured in the UNFCCC climate negotiations until recently. Initially, when the UNFCCC was first adopted in 1992 in Rio, there were references to integrated coastal management, but as implementation proceeded, references to oceans and coasts largely ceased. This situation began to change in 2008, in the wake of the worldwide understanding of global warming brought out by the 2007 IPCC report, with the 4th Global Oceans Conference in Vietnam, among the most vulnerable coastal countries. At this conference, the global oceans community squarely put the issue of climate on the global oceans agenda and vowed this is not an easy task. Notwithstanding the centrality of*

*oceans in climate processes, the UNFCCC deliberations have tended to regard any realm other than the atmosphere as a sectoral nuisance. Fortunately, placing oceans on the climate agenda was given a special push by the Indonesian government in May 2009 when it organized the World Oceans Conference in Manado with 76 other countries. The Conference produced the Manado Oceans Declaration and a statement on oceans and climate issues that came out of the Global Oceans Policy Day, a multi-stakeholder dialogue organized by the Global Forum and partners. Since that time, text on oceans and coasts, through the efforts of the Indonesian government and allied governments and many partners throughout the world, has been added to the negotiated text, but it remains to be seen whether this text will survive the negotiating process here in Copenhagen.*

*At Oceans Day today, we are 320 strong from 39 countries and from all sectors – governments, NGOs, UN agencies, industry, science, and museums and aquaria. All of us are deeply concerned about the impacts of changing climate change on oceans, coasts, and SIDS.*

*Oceans Day represents an important opportunity to urge the international climate community to do a number of things. First, retain the references to oceans and coasts in the UNFCCC negotiating text. It is important to have some mention of oceans - of the centrality of oceans - in that text, and of the coasts being at the frontline of climate change. Second, begin to craft an integrated oceans and coasts program within the UNFCCC by 2013 emphasizing the following major elements: the need to proceed with utmost caution to ensure the continuing function of the oceans in sustaining life on Earth by adopting the most strin-*

gent regulations in greenhouse gas emissions, within a short time frame, and giving special consideration to the position of those nations that are most affected, i.e. small island developing States and low-lying nations. Third, emphasize the positive contribution that oceans can play in the mitigation of global warming, i.e. using natural carbon sinks in coastal areas, curbing air emissions from ships, developing offshore renewable energy, and the potential of developing carbon capture and storage. Finally, provide sufficient funding for adaptation efforts in coastal communities and island nations around the world, including for capacity building and public information efforts. Adaptation strategies should encourage ecosystem-based adaptation that in-

creases the resilience of key coastal and marine ecosystems, and should be implemented through integrated coastal and oceans management institutions and processes at local, national, and regional scales. Adequate financing must be there – the current estimates of adaptation costs for coastal areas that the UNFCCC has developed so far are woefully inadequate and a key job for the oceans community is to determine what those costs will be and to push for getting the necessary funding. Time is of the essence and decisive action is needed now to protect the central role of oceans on Earth and the threats posed by climate change to coastal and island communities throughout the world.

To date, the oceans have not been a focus of the UNFCCC negotiations and were not a priority issue in the Bali Roadmap leading up to COP-15. The Government of Indonesia has been trying to increase the visibility of oceans and climate change at the international level, namely through the World Ocean Conference in May 2009 and subsequent Manado Oceans Declaration, signed by 76 countries, encouraging the UN Secretary General to facilitate and coordinate the inclusion of ocean and climate issues into the UN System.

During Oceans Day, world leaders underscored the centrality of oceans in climate and the hazards faced by coastal and island communities. In the opening session, the keynote speakers – Dr. Fadel Muhammad, Minister of Marine Affairs and Fisheries, Indonesia, The Rt Hon Hilary Benn MP, Secretary of State, Department for Environment, Food and Rural Affairs, United Kingdom, and H.S.H. Prince Albert II of Monaco –all emphasized the importance of oceans to economic and environmental security, and the urgent need to protect ocean resources and ecosystem services from the impacts of climate change.

### Minister Fadel Muhammad



*As one of the co-organizers in this meeting, I am very happy to see the great number people showing their attention to this issue would like to extend my sincere thanks to the organizers of this event.*

*Since 2008, the world has been facing many crises – food, energy, and finance – and the climate divide has become a very big issue.*

*According to experts, we understand that current and future problems of the world are mainly that of natural resources and the ocean. Ocean issues will be brought forward and discussed in many ways.*

*Indonesia is one of the countries that is experiencing a number of effects on marine and coastal areas and its President has focused a lot of attention on this issue. Many researchers believe that climate change is already increasing negative impacts on the oceans including food supply and fisheries, and causing other problems in the seas.*

*The impact on global food security is really worrying, as a high percentage of the world's population depends upon marine resources for their protein requirements. In many tropical and*

*equatorial regions, coral reef ecosystems play a particularly important role for coastal livelihoods through fisheries and tourism. In December 2004, we experienced a huge tsunami. The impacts of the tsunami to coastal communities were reduced by coastal ecosystems. Recently, we have experienced many earthquakes in Indonesia. Coral reefs and mangroves serve to protect coastal areas from these threats.*

*It is clear that our precious marine resources are under threat and, in many parts of the world, climate change will exacerbate this destruction. Many people, including leading scientists, now fear the process of climate change is now beyond control.*

*The Coral Triangle region, which is home to significant hotspots of marine biological diversity, is seriously threatened by climate change impacts including sea level rise and ocean warming, as well as by ocean acidification.*

*In order to address issues of the ocean ecosystem management and climate change, we all need to build on this framework and take action now. This action needs to extend from the global community of nations down to the earth and protect the human beings. We need to support these activities. We need to think and act to solve this issue with the current and advanced technology that we have today. We, from Indonesia, believe that with your support that we can solve these problems.*

## The Rt. Hon. Hilary Benn



*As we fess up to the task that we have as a world as we meet here in Copenhagen to try to put our world on the path to a low carbon future, let's tell each other the truth -- this is a massive undertaking. We have 192 nations, we set aside 14 days, we have one deadline,*

*and we have one deal that we have to reach. Why does it matter? Because our planet is changing and we have to change course before it is too late, because our oceans are changing too and that is why we are meeting here today for the first Oceans Day.*

*As you know, the oceans make up 2/3 of our planet; we live on the other third. Half of us live within 60 km of the coast and if you want to try and imagine it, just look at the pictures of our planet taken at night and look at where the lights are. They mark the coasts of our world and, although we live on the land, our lives are inextricably linked with our blue seas.*

*Our oceans give us food. As we've heard, fish are the principal source of protein for about one billion human beings, and we've got to feed another 2-3 billion men, women, and children in the next 40-50 years. Oceans also give us pleasure as we sail, swim, and dive in them and marvel in the wonders beneath them. Oceans help us move things around the world...They supply us with energy...; and supplies us with the oil and gas that we need to depend less upon as a world and enables us to imagine the huge potential of wind, wave,*

*and tidal power to generate the energy of the new century. These are the most obvious expressions of our relationships with the seas. Less obvious to many is the way in which they affect our weather and our climate and how our behavior affects them. This, so far, is the untold story of climate change, and the truth is that the world is just beginning to understand what is happening to our oceans.*

*600 million of us live no more than ten meters above present sea levels and we know that climate change is causing those sea levels to rise. We know that flooding from seawater will cause loss of crops, land, and fresh water and, ultimately, loss of life unless people move to find a new life elsewhere. And it's not just what is happening to the surface of our seas that we should worry about, it's what's happening in their depths.*

*As you know better than anyone else, our oceans have an enormous capacity to store carbon and in the past 150 years, they have absorbed half of all of the carbon dioxide that we as human beings have generated and it has made our seas much more acidic. And it's only relatively recently, thanks to scientists, that we have begun to understand the extent of the problem of ocean acidification. And as they have told us, it*

*is happening very fast. Since the industrial revolution, acidification has increased by 30%. This is a faster rate of change than any time in the last 55 million years, a change that threatens many marine organisms, stopping them from making their shells and their skeletons. We should worry about this change because a decline in their numbers may well be felt all the way up the food chain.*

*We have just heard about how our coral reefs are being damaged by this acidification and by the rise in the temperature that surrounds corals, which are fantastically rich in biodiversity and vital to our fisheries and to our tourism. As if this were not enough, the warming of our oceans is reducing their ability to absorb carbon dioxide.*

*...The message that we have to get out to the world is that our oceans are trying to tell us something about what we are doing and we need to tell the story of the damage that we are doing to our seas as we seek to do something about it here in Copenhagen.*

*...What else do we need to do to besides drastically reduce our carbon emissions? Well, we need to protect our environment from the stresses that we as humankind have put upon it. We need to manage our fisheries sustainably so that we don't tip commercial species into permanent decline. This means continuing to create marine protected areas to protect marine biodiversity and habitats.... We need to make sure that communities threatened by rising sea levels are adequately protected. We need to invest in technology to store carbon and technologies that harness the power of the waves, the wind, and the tides; technologies that will create the jobs of this new century and help to create the green economy.*

*The truth is that humankind's existence on this planet is the story of what we have taken from the riches it has given us with little thought to the consequences; that is the truth. We have behaved as if the supply of those riches was inexhaustible. Now it is true that nature is generous in what it gives us, but it is not infinite in its capacity to sustain us. We have to give it a hand. And that is why we need today's Oceans Day to remind us of the importance of the two-thirds of our world, our blue spaces, which are just as precious as the one-third of our world, our green spaces. What we are discussing here today is a very powerful reason as to why we need to get an agreement here this week. Science is a great spur to action but it will require a huge amount of political will. This is a very difficult task because we try to balance the consequences of our market-based development, as it has given a country like mine prosperity, education, and health services. But not every child is in school. The developing world wants the chance to improve the lives of their own citizens and that is what we are trying to balance in these negotiations.*

*What we need is for countries to put on the table this week the commitments that they are prepared to make to reduce their*

*emissions. In the end, it's a question of counting because we will go around the world and say "America, what are you in for? Europe, what can you offer? China? India?" And then we can go around and say "What kind of temperature change are we heading for? Is everybody happy with that? Have we done enough?" That's one part of an agreement. And the second part is to raise*

*the financing from the rich world to help support the transition to a low carbon economy in the emerging and developing economies, without which we will not make the changes needed. That is the task that faces us this week. 192 nations, one world, and we have one week left to get it right.*

## His Serene Highness Prince Albert II of Monaco



*The ocean is a key, universal, vital element. It raises our awareness and bears the scars of the invisible damage done to the world. It renders this damage a perceptible reality for each of us. It heightens our awareness of the dangers that threaten all of us. By all of us, I mean*

*everyone here today, myself included, who come from countries whose horizons are dominated by the sea. Countries for which the harm inflicted on the marine element will have considerable consequences. By all of us, I also mean the human race, for which oceans are fundamental and irreplaceable.*

*They are sources of food, industry, and energy. They are the lungs of our planet; precious generators of oxygen. They are indispensable thermal regulators that attenuate climate change, absorbing carbon dioxide. Last, but not least, they are the places of dreams, catalysts of progress of adventure, gateways to infinity, and reservoirs of life and hope.*

*Unfortunately, they are now the arena of new fears and new challenges. Global warming, threats to biodiversity, threats to our ecosystems, overexploitation, pollution...the oceans concentrate the main problems afflicting our planet. It is for this reason that their preservation is so important yet so difficult. This is because the sea is a living world, beyond frontiers and human boundaries, an extremely complex universe, still largely unknown...*

*...Faced with so many challenges, we need to display inventiveness, determination and courage. It is for this reason that today's meeting plays an important role in COP-15 by raising the immediate problem of preserving the oceans in all their richness and diversity.*

*We need to convince our contemporaries of the vital importance of the changes that we need to make to the way in which we lead our lives, produce, and consume. How would it be possible to protect the oceans if the single and vain alternative remains between overfishing and aquaculture? Those are important contradictions.*

*The risk lies in believing that a new green growth will be able to replace our current systems, purely and simply, effortlessly, with no self-examination. The risk lies in neglecting to perform the necessary calling to account incumbent on all of us. Therefore, we need to be inventive, not only in terms of the ways we manage our resources but also in the manufacturing, farming, and financial sectors. We need to forge a worldwide social link around common challenges.*

*We also need to develop clean, innovative technological solutions whose sources can be found in the oceans, in particular for renewable energies. Finally, we need to formulate effective multilateral action that addresses and reconciles divergent interests – those of the States that border the oceans, economic players, populations, as well as those of future generations.*

*Even if time is short, and if the task is huge, it is not impossible. ...The oceans are today the last utopia. Partially unexplored areas of our planet, they also bear the brunt of the ravages that we are inflicting on our environment. This is why their preservation is of prime importance for humanity.*

*...By protecting the threatened seas now, man will be able to enter a new era: that of sustainable shared development, for humanity as a whole.*

*For populations that live along its shores and those far away, we have to find a common answer for all of us and for generations to come.*

## Summary of Panels

Following the opening ceremony, Oceans Day featured six panels comprised of ocean experts from around the world, providing an in-depth look at the latest scientific evidence of the various impacts of climate change on ocean and coastal communities and resources, as well as emerging mitigation and adaptation efforts involving ocean and coastal resources and communities. The Oceans Day panels focused on the following issues:

- Impacts of Climate Change on Oceans, Coasts, and Small Island Developing States (SIDS): Ocean Warming, Sea Level Rise, Extreme Weather Events, Ocean Acidification, Coastal Erosion, Polar Changes, Impacts on Fisheries and Aquaculture, Impacts on Marine Biodiversity
- Ocean Acidification: The Other CO<sub>2</sub> Problem
- Ocean-Based Mitigation Responses to Climate Change
- Adaptation Responses to Climate Change
- Mobilizing Governments and the Public and Private Sectors for Action
- Moving Forward on Oceans and Climate in a Post-Copenhagen Regime

### Highlights from the panels are presented below.

Coastal resources provide food, income, coastal protection and stability, medicine, and hold cultural significance for communities all over the world. The ocean is an integral part of the climate system, but the ocean environment and its resources are vulnerable due to growing human uses of the marine environment at both local and global levels, including overfishing, increased aquaculture, coastal development, oil and gas extraction, and maritime transportation, as well as the changing climate and increased levels of CO<sub>2</sub>, which influences ocean acidification, polar changes, sea level rise, ecosystem degradation, and salinity. The ocean is a major regulating force of the climate system and is the largest carbon sink on the planet: there is fifty times more CO<sub>2</sub> in the ocean than in the atmosphere. Currently, the oceans absorb approximately 30% of the CO<sub>2</sub> emitted into the atmosphere, but its ability to store CO<sub>2</sub> is weakening, as the increased absorption of CO<sub>2</sub> is leading to the acidification of the ocean.

### Tropical Ecosystems and Coral Reefs

Tropical coastal resources are critical to one hundred million people, serving as sources of food, income, coastal protection and stability, traditional medicines, and cultural significance. Both local factors, such as overfishing, pollution, and development, and global factors, such as ocean warming, sea level rise, ocean acidification, and storm intensity are resulting in tropical resources facing a myriad of severe threats. The waters of the Coral Triangle are rapidly warming and acidifying.

Presently, 30-50% of coral reefs are declining at rates of 1-2% each year. It is not too late to save tropical coral reefs, but the international community needs to take four urgent steps: stabilize atmospheric CO<sub>2</sub> at well below 450 ppm (and +2°C); reduce the impact of local stressors on coastal ecosystems; decrease vulnerability of coastal people and infrastructure; and establish a financial mechanism to allow Coral Triangle countries to respond to inevitable changes.

### Polar Regions

Polar regions are facing a number of challenges brought about or exacerbated by climate change; such impacts will affect not just local communities and ecosystems, but the global community, as well. The Arctic is warming, which leads to a number of global impacts, including permafrost melting, accelerating glacial retreat and melting of the Greenland Ice Sheet, snow cover decline, sea ice melt, ocean surface warming, and rising of air temperatures. These changes have global implications. For example, the amplification of global warming in the Arctic will have fundamental impacts on weather and climate in the Northern Hemisphere. Also, the increasing rate of loss of ice from the Greenland Ice Sheet will contribute substantially to global sea level rise, and ice sheet melt will be the primary contributor to future sea level rise. Further, Arctic marine systems currently provide a substantial carbon sink but the continuation of this service depends critically on climate change impacts.

Arctic communities are facing a number of challenges to sustaining their way of life and cultural traditions. The Inuit people are closely tied to the Arctic ice and coastal resources. However, melting permafrost leaves the shoreline vulnerable and the disappearing sea ice, which no longer forms a barrier of protection along the coastline, is leading to coastal erosion. Communities will continually be forced to relocate further inland.

### Fisheries and Aquaculture

Fisheries and aquaculture, which serve as important sources of economic and food security in coastal communities, will be impacted by climate change impacts. Climate change will impact temperate, boreal and arctic fish species in different ways. Although high latitude regions are projected to increase their catch potential, tropical regions may face catch reductions. Two-thirds of the countries most economically and nutritionally vulnerable to projected climate change impacts on their fisheries are least-developed countries. As oceans warm and currents change, fish stock distributions may shift. In addition, nutritionally and socially important reef and inshore fisheries are threatened by over-exploitation and coral bleaching induced by global warming. Recommended post-Copenhagen actions include: recognize the importance of oceans and coasts in any post-Kyoto agreement; develop ocean and coastal-based mitigation options that benefit fishing communities; ensure a fair allocation of adaptation funds to vulnera-

ble coastal communities; and provide development support to sustain the benefits of fisheries and aquaculture for food security and poverty reduction.

### **Marine Biodiversity**

The impacts of climate change on marine biodiversity represent a 'vicious cycle' of climate change, ocean changes, and biodiversity loss. Marine species are threatened by ocean acidification, coral reef loss, and coastal habitat destruction. The loss of marine and coastal species will have negative impacts on marine food webs and ecosystem processes, and weaken ecosystem resilience to climate change. The linkage between marine biodiversity and ecosystem function needs to be better understood; a number of international efforts to discover and catalogue marine biodiversity exist, including the Census of Marine Life. As 2010 is the UN International Year of Biodiversity, continued support for such efforts is critical and the international community is encouraged to place a special focus on the improved understanding of marine ecosystems and biodiversity.

Moving forward from COP-15, the impacts of climate change on the oceans cannot be emphasized enough. The road to success will feature international partnerships and coordination; leveraging of global assets; sharing technical expertise; and creating ocean-climate information systems.

### **Ocean Acidification: The Other CO<sub>2</sub> Problem**

As humans continue to burn fossil fuels, the resulting increase in atmospheric greenhouse gases contributes to global warming. Observations from the Mauna Loa Observatory in Hawaii show an increase of atmospheric CO<sub>2</sub> concentration from 315.98 ppm in 1958 to 377.38 pm in 2004 – a 19.4% increase. The oceans serve as vast CO<sub>2</sub> sinks, absorbing the carbon dioxide – a very important, yet problematic function. The increasing amounts of CO<sub>2</sub> in the oceans are leading to a lowering of the pH of the ocean – research indicates that the ocean has absorbed approximately one-third of anthropogenic atmospheric CO<sub>2</sub>, which has rendered the oceans 30% more acidic since pre-industrial times. By 2060, the oceans could become 120% more acidic. The current rate of ocean acidification is one not experienced by marine organisms in millions of years.

Ocean acidification threatens fisheries and aquaculture, coral reef ecosystems, and ecosystem services and poses particular risks to coastal and island populations. Impacts of ocean acidification on marine communities may be seen as directly affecting carbonate organisms, through the dissolution of shells and skeletons, the increased energy demand to build and maintain shells, the loss of carbonate reefs, and decreased biodiversity. These impacts will result in trickle-down effects on other marine organisms, for example reduced reproduction success. Ocean acidification will impact both tropical and cold-water organisms. In cold-water ecosystems, increasing acidity threatens the base of the food chain, e.g. diatoms, and research has shown that at higher CO<sub>2</sub> levels, there are major

changes in the relative abundances of marine plants in the Antarctic. Shell-forming molluscs and crustaceans are valuable fisheries for many communities, i.e. in the United States, where approximately 50% of the primary fishery revenue comes from molluscs and crustaceans. Coral reefs protect coastal shorelines from storms and waves and support fisheries that generate \$5.7 billion/year. The impacts of ocean acidification are too great to ignore.

The international community, through the Convention on Biological Diversity and the United Nations General Assembly, have recognized the threat of ocean acidification. The 64th Session of the UN General Assembly on the Oceans and the Law of the Sea, held in October 2009, expressed serious concern over the ability of coral reefs to withstand ocean acidification and called for further research on ocean acidification, especially programmes for observation and measurement, and encouraged States and international organizations to improve efforts to address coral bleaching. It is now crucial for the UN-FCCC to address this issue as well.

### **Ocean-Based Mitigation Responses to Climate Change**

The Ocean-Based Mitigation Responses to Climate Change panel considered the mitigating role of what happens on, and in, the oceans and seas under three aspects: the role of marine ecosystems in mitigating the impact of atmospheric CO<sub>2</sub> and the threats to them; specific mitigation measures that can be taken in marine space; and the measures that can be taken by industries operating on the oceans and seas. The panel emphasized the importance of sustained observation of the oceans and seas, in order to understand their role in climate change and how this may change. The UN Regular Process for Global Reporting and Assessment of the Marine Environment can play an important role in this effort.

### **The role of marine ecosystems and the threats to them**

Both open ocean and coastal marine ecosystems play vital roles as natural carbon sinks. Coastal marine ecosystems (e.g. mangroves, seagrass beds, kelp forests and tidal marshes) have a greater capacity (per unit of area) than terrestrial carbon sinks in achieving long-term carbon sequestration in sediments. They should be treated the same way as terrestrial carbon sinks such as forests. Controls parallel to those on land should apply any activities that harm their function (such as land-reclamation and coastal development).

Other threats also risk impairing the natural functions of all marine ecosystems. Acidification from absorption of atmospheric CO<sub>2</sub> is a growing and serious threat. Human activities that disrupt marine ecosystems (e.g. polluting discharges, over-fishing, excessive CO<sub>2</sub> emissions) must be controlled to ensure the ecosystems' continued proper functioning. Such conservation is further justified through the economic and social benefits that it will provide.

## Mitigation measures in marine space

The seabed offers significant scope for mitigation measures through carbon capture and sequestration. CO<sub>2</sub> emissions from fossil fuel power plants can be captured, transported, and sequestered in the voids left by offshore oil and gas extraction. Such measures, however, need carefully agreed standards and regulation for site selection, operation, and long-term monitoring.

Marine space also offers mitigation through tapping new renewable power sources – winds, waves, and tides. Again, carefully agreed standards and regulation are needed to protect marine ecosystems and other sea-based activities. Regional seas agreements can provide appropriate standards and regulation in both cases. Marine spatial planning is also needed to regulate potential conflicts over locations of marine-based energy sites.

## Mitigation measures in sea-based activities

Shipping contributes nearly 3% of anthropogenic CO<sub>2</sub> emissions, and this may grow as ships become larger and faster and world trade increases. The International Maritime Organization, through its Marine Environment Protection Committee (MEPC), has developed operational and technical measures to address greenhouse gas emissions from ships. Market-based measures are also under consideration. Operational and technical measures need to be supported and applied urgently and effectively, alongside improvement of enforcement of existing standards on other ship-based pollution. At the same time, given the ever-increasing amount of ship movements, new technologies need to be developed towards the goal of the “clean ship.” The ultimate goal should be carbon neutral, non-polluting vessels, but this cannot be achieved without the continued development of technology. Future solutions may include the increased use of biodiesel and wind, implementation of technologies from other industries, and fuel cell power plants for commercial vessels and yachts. At present, it is important to implement the technologies that are available and viable to the shipping industry. Offshore oil and gas industries also need to work toward comparable goals.

## Adaptation Responses to Climate Change

Seven presentations relating to adaptation strategies, tools, and methods in the marine and coastal systems were made, ranging across global, regional, and local levels. Panelists stressed the need to increase resilience in both the natural and socio-economic systems, and important climate change adaptation strategies that provide not only soft defenses but also beneficial ecosystem services. The presentations showed that changes can already be observed and are severe. There is, therefore, a need to act urgently. Many adaptation technologies are already available, but better baseline information is required to improve our understanding of impacts and vulnerabilities and, hence, the need to adapt. It was also noted that players and actions at various scales (i.e. global, national, and local) would need to act together and in a coordinated manner.

## Mobilizing Governments and the Public and Private Sectors for Action

Governments and intergovernmental organizations play important roles in the assistance of supporting and funding research on climate change impacts on the oceans, particularly through supporting ocean observing programs that expand our knowledge base on ocean ecosystems and provide essential information to allow for the development of models and mapping.

The role of the general public and the private sector, however, cannot be discounted when addressing climate change issues. The World Ocean Network (WON), an international network of 400 aquaria, science, and education centers, works to raise public awareness on the importance of sustainable management of the ocean. Through its public engagement and education activities, WON encourages citizens to change their everyday behavior to include more sustainable habits. Developing public awareness campaigns focused on the impacts of climate change on ocean and coastal resources and coastal communities is a necessary component. With the widespread use of internet-based platforms, such as YouTube and Facebook, for information exchange, the oceans community has additional options to use in communicating its message to the world.

## Moving Forward on Oceans and Climate in a Post-Copenhagen Regime

A number of countries and organizations are already planning the best way to move forward from Copenhagen. The November 2009 East Asian Seas Congress focused on Partnerships at Work: Local Implementation and Good Practices and featured sessions on integrated coastal management (ICM) and adaptation. From these sessions, it became clear that scaling-up ICM is the preferred approach to addressing existing and emerging challenges to sustainable development of marine and coastal areas, including climate change and its impacts.

Initiatives, such as the Monaco Blue Initiative, which will launch in March-April 2010, will highlight the importance of preserving marine biodiversity and focusing on vulnerable marine ecosystems, such as the deep sea, and large marine species, such as sharks, as these are particularly vulnerable to climate change impacts. The Monaco Declaration, signed by 155 scientists from 26 countries, urged governments to address several initiatives, including the need to improve and understand the impacts of ocean acidification.

Monique Barbut, CEO of the Global Environment Facility, and Angela Cropper, Deputy Executive Director, UNEP, provided insights on moving forward from Copenhagen; excerpts from these speeches are provided below.

## Ms. Monique Barbut



*...As you know, the powerful link between oceans and climate is too often a neglected one. When you protect the oceans, you protect the planet. Yet, the oceans are, in political terms, the poor relation of this and other conventions...*

*It is a sad story but it bears repeating: our coasts and oceans are degraded almost to the point of no return. Ocean fish stocks are depleted, vast coastal "dead zones" have been created from pollution, and habitats have been lost. These large water systems cover most of our planet but, if we continue to manage them in fragmented ways, food supplies are at risk for billions of people.*

*The world does not need a new set of adaptation programs operating in a vacuum through competing organizations to address sea-level rise, coastal storm vulnerability, drought, or floods. What is needed is to integrate these stresses into existing institutions focused on integrated coastal management for multiple benefits. Indeed, the majority of GEF funding in the international waters focal area, over two-thirds of a billion dollars, has been devoted to these integrated approaches that help reduce land-based pollution, conserve coastal habitats, and reverse coastal and marine fisheries depletion. During these times of global change, achieving sustainability will depend on fostering trust and commitments among governments—all the way down to the community level. The GEF International Waters focal area has built this needed trust in these harsh economic times through its integrated programming approach designed to address the linked issues of water, coasts, oceans, and climate change.*

## Angela Cropper



*I believe it was the German philosopher, Hans Jonas, who said that 'today, humans are doing more to harm the oceans than the oceans have ever done to humanity.' These remarks seem even more appropriate today than when they were made a few decades ago. Climate change*

*is fast emerging as one of the riskiest chemistry experiments ever perpetrated and one, on a vast and without serious action, on an irreversible scale.*

*We knew from the 2007 IPCC report that there has been growing disquiet over the changing pH composition of the oceans due to the build-up of carbon dioxide. Today, we speak a lot about the acidification of the oceans. Today, the CBD launched a new report, compiled by partners, which underlines new and*

*Now GEF's experience in securing blue carbon sinks, which support one half of the world's fisheries and nourish almost one half of our planet's population, is being recognized as contributing to climate mitigation just as terrestrial forests do. But it would be short-sighted to focus just on the habitat without the integrated approaches piloted by GEF that have multiple beneficial impacts on marine ecosystems, community livelihoods, food security, and now a high capacity to sequester carbon to help meet climate change challenges. Even in Copenhagen, we must not forget about "dead zones" that come from agriculture and sewage pollution: they threaten food and economic security for billions of people; too often the most vulnerable and poor. Therefore we cannot just focus on funds for blue carbon but also on integrated approaches with partners who can deliver different types of assistance...*

*Think of GEF as having the delivery system to support not only REDD programs but "Blue" REDD programs. The GEF, as a unique, networked institution with its many partners, can undertake different roles in assisting countries to secure their coasts, oceans, and islands. We have a history of delivering multiple benefits through this approach, not just single thematic interventions. Depending on the level of GEF replenishment ... our International Waters focal area may devote up to one-third of a billion dollars in the next 4 years with another billion of projected co-financing to deliver this integrated approach for coasts and oceans. In short, we stand ready to support countries as they work with their neighbors to sustain shared coastal and marine resources. This will help secure the coastal blue forests of our planet and help build a stable, productive future for all.*

*emerging science in this field. This is not just about chemistry; it is about poverty, food security, livelihood security, and environmental security.*

*If, as the scientists advise, CO2 emissions continue to build in the seas and the oceans, then shell-building organisms, some of which are the very basis of the food chain, may be unable to generate their skeletons. We know this very much, those of us who come from island States and are very familiar with the fate of the coral reefs and the chain reaction ensuing from that. The prospects are truly alarming, especially for coastal communities in developing economies who are reliant on fish and marine products for survival and for livelihoods. Thus it is clear, that nations here in Copenhagen need to match the scientific reality of the impacts on the marine environment with ambitious and sustained emission reductions.*

*The “oceans as victims” is only one side of the coin. The ecosystems of oceans and seas as allies are the other side of the coin, and perhaps this is a less well-known story. What is widely known is the historical role of oceans and seas in relation to food security, livelihood security, and environmental security. Only a few weeks ago, UNEP launched the Blue Carbon report in partnership with UNESCO, FAO, and IUCN. It found that the world’s sea grasses, mangroves, and salt marshes may be sequestering as much as half of all the world’s current transport-related emissions. These blue carbon stores are also efficient at locking that carbon pollution away in the sediments. Unfortunately, we have lost some 30-40% of these marine ecosystems over the past half-century or so, to coastal developments and also to activities such as aquaculture, especially shrimp farming. Reversing this decline makes environmental, social, and economic sense on multiple levels. This is part of the work we are trying to advance within the enterprise that goes under the name of green economy, in which UNEP and partners are engaged. These nature-based assets are natural flood defenses, water purifying systems, and nurseries for fish. Now, they emerge also as natural carbon capture and storage systems.*

*So, why do we not develop funds or market mechanisms to factor them into carbon markets and the global economy? There*

*are several countries here this week that are actively supporting such a move. Perhaps it is a little too soon and it has not yet been sufficiently prepared to be encompassed into the discussions here in Copenhagen this week. Perhaps not, perhaps there is still time and there is still room and space for this market to be put into the Copenhagen decisions, so we can continue to build on that...*

*It seems clear to us in UNEP that Copenhagen, at the very least, needs to recognize the double-dividend opportunity that oceans and seas represent. What they represent in terms of economically important services operating across multiple challenges. In other words, let us recognize, at the very least, that blue carbon needs to be considered, at some future, but not very distant future, date. It is a point that negotiators should perhaps heed as they try to whittle down the various texts into shorter and more palatable lengths in the next couple of days. While it is right to make text comprehensive and concise, especially this very diverse subject that we are addressing here in all its complexity, this should not be at the expense of the marine environment, otherwise we may miss or delay for too many years the chance to bring forward yet another ally in the climate change challenge and the delivery, also, of the Millennium Development Goals.*

The evening reception featured remarks by ocean leaders, including Dr. Jane Lubchenco, Under Secretary of Commerce and Administrator of the National Oceanic and Atmospheric Administration (NOAA), US; Mrs. Rejoice Mabudafhasi, Deputy Minister of Environmental Affairs, South Africa; Mr. Karl Falkenberg, Director General, DG Environment, European Commission; Dr. Ibrahim Thiaw, Director, Division of Environmental Policy Implementation (DEPI), United Nations

Environment Programme (UNEP); Mr. Warren Evans, Director, Environment Department, World Bank; and Ambassador Brice Lalonde, Ambassador for Climate Change Negotiations, Ministère de l’Ecologie, de l’Energie, du Développement Durable et de la Mer, France. Excerpts from some of these speeches are included below.

## Dr. Jane Lubchenco



*...Healthy oceans matter because they are vital to our prosperity, our health, our security and our quality of life....Today, as never before, we better comprehend the connections between healthy oceans and healthy people, and the myriad interactions among land, air, fresh water, ocean, ice, and human activities. We recognize that change is occurring rapidly and must be addressed. The Obama Administration is eager to develop a national ocean policy and be a strong international partner. But today is also about our individual responsibilities as stewards of the oceans.*

*The oceans sustain life on Earth. In turn, we must commit to sustaining the oceans. Our collective challenge as individuals and working together internationally is to: reverse the decline along our coasts and in the oceans, and restore them to a healthy, productive and resilient state. Our fisheries, the rich biodiversity of life swimming in and flying above the oceans, and our own well-being all depend upon the actions we take this year and this decade.*

*...The Obama Administration is saying loudly and clearly: healthy oceans matter. Our prosperity, health, security and well being depend upon it.*

## Mrs. Rejoice Mabudafhasi



*We all know that the universe these days is facing challenges in the area of environmental sustainability that calls for embracing a sustainable development paradigm that prioritizes meeting the needs of the present without compromising the abilities of the future. The envi-*

*ronmental and social challenges before us, such as climate change, the depletion of natural resources, the side effects of rampant consumerism, and a widening of the economic divide should not be seen as creating insurmountable limitations for humankind, but as a window of unprecedented opportunity for change. Business, governments, non-profit organizations, and other stakeholders should join with scientists and all of us, and, if we do so, we should be able to nurture transformative collaboration.*

*With developing countries – Africa, small islands – we stand to lose most from stalled development, forgone incomes, and lives blighted by disease, drought, and poverty caused by an unpredictable and changing climate. A changing climate presents other developmental challenges to us in Africa, which is not on track to achieving the MDGs, to meet our deadline, which is 2015. According to various estimates, the costs of adapting to climate change are likely to cost us a lot in Africa, and the impact of climate change on our continent is far-reaching, and hence we are more interested in developments beyond Copenhagen. We want to take this conference beyond rhetoric and grandstanding.*

## Mr. Karl Falkenberg



*Oceans are a significant wealth of our planet, and more than wealth they are the source of life in many forms, and we're still discovering a lot of this. The oceans are still part of the undiscovered part of this planet, and we're still learning. But I cannot talk to you tonight*

*without, at the same time, referring to where I come from, and I guess you're all expecting me to say a word on the state of the negotiations.*

*It is worrisome, as much as climate change is worrisome. But sometimes I wonder, when you are inside the negotiating track, whether everyone has really understood the lateness of the hour. We see world championship-like discussions of procedure, and I can tell you, we have many world champions in this forum. Unfortunately we haven't seen, and I haven't been able to test the capacity of all of those world champions in procedure to handle*

*Oceans, of course, are a major part of the air surface area. Any discussion of the well being of the earth must include the oceans, both as driver of the earth's natural systems and buffer to variability and change. It is only recently that we have come to realize the integrated way in which the earth's systems operate, and central to that idea is the interdependency among oceans, coastland, and the people.*

*The Johannesburg Declaration of 2002, which is relevant to this discussion, relates the well being of oceans to the well being of national economies, especially in developing countries. This recognizes that, in developing countries and economies of coastal and islands States, ocean services play a very significant role in providing both immediate contributions to food security, for many communities, and for accessing regional and global trade. Our destiny as a species has been molded, from its earliest beginnings, by the ocean and coastal spaces. At this important juncture, where we aim to define and reach our destiny in the context of climate change, we must look to the knowledge that exists in the oceans and in conjunction with the land and atmosphere. At this stage, I wish to reiterate the Johannesburg Declaration and the call for a greater emphasis on research and monitoring of the ocean and coastal areas. In the aftermath of Copenhagen, it is my wish that the world will focus on initiatives that will promote those goals. We face these challenges as nations and as all those on the planet. If we have a healthy planet and a healthy environment, we will have healthy people, and that will leave a good history for generations to come. It is our responsibility to do it now.*

*the substance of what is on the table. But that really is why we're here – not to demonstrate who is going to be clever - to make sure who is going to be chairing a subcommittee of a subcommittee, or whether it has to be completely open, or whichever other format.*

*Unfortunately, we have lost another complete day on those niceties. I left at the end at a moment when both under the Kyoto track and the LCA track, we managed to launch ministerial consultations that should help the technical negotiators bridge some of the outstanding very contentious issues. Those contentious issues are very much at the heart of what this whole negotiation is about. We have contentious issues on mitigation goals, targets, for developed countries. We're not where science is telling us we should be at the end of this week. That is very much at the responsibility of the developed country partners. We need to make sure that, eventually, our friends from the United States are joining an international agreement. We know, they tell us, that they*

*are not going to join the Kyoto Protocol; They are looking for an international framework where they, too, could contribute to making their reduction offer international commitments. But somehow, this is very, very complex.*

*When you say we need a broader framework to deal with climate, people interpret this as you want to run away from Kyoto. You say we need to bring in more countries, with more ambition, and the translation is you're a Kyoto killer. We need to get to the bottom of this. We need to accept that we are all working in good faith. We need to be honest. The emperor does not have very beautiful clothes on for the moment. The Kyoto Protocol is a landmark, and Europe is certainly well placed to save it. We fought for Kyoto, from the beginning until now. We've implemented; we've built our frameworks; we are respecting our Kyoto commitments. But if we are the only one, this is not going to help the planet. If you're honest, the Kyoto commitments cover 30% of CO<sub>2</sub> emissions of the world. That's not going to be enough, and we have scientific evidence for the fact that this is not enough. We need to bring in other players. I mentioned the United States, and the second biggest which we're not having any form of consensus is the contribution of developing countries.*

*But, again, whether we like it or not, China has become the biggest emitter in the world. India is rapidly growing. Other developing countries are following suit. They have every right, according to us, to their economic development. They have every right to fight poverty. But the right to fight poverty by burning carbon is not a right that we would recognize. We would not recognize that it is good for growth, because it is not sustainable. India, for the moment, is already paying something like 2% of its GDP in simply adapting to climate change consequences. Adaptation is taking away growth, wealth, and income, and we need to collectively come to understand this, rather than simply thinking in terms of Annex I, and the rest of the world. We're in this, collectively, together, and, if we want to have a solution by Friday, and we want to do something about climate, it will have*

## **Dr. Ibrahim Thiaw**



*When all of you went to Manado, Indonesia, and came up with the Manado Declaration, we in UNEP, we thrashed our heads and said "What can we do to assist the international community push for oceans in Copenhagen?" We came up with the idea of producing a report, which we eventually called Blue Carbon. The report is meant to assist you in your discussions and your negotiations. Biliiana, I think, is the one who asked, this evening, about what we can do to push for oceans to be reflected even more in the negotiations. Blue Carbon is one concrete report that you can use that has*

*to happen together. That brings me back, in a way, to oceans, because oceans link us. Oceans link us all, and we will see the consequences in oceans. Oceans and climate have another thing in common, which is that we, in Europe, certainly have not respected our oceans, in any decent way in the past. We have taken out of the oceans whatever we could grab, and we have put into the oceans whatever we didn't need any longer. That cannot be the way in which we move forward. We have reformed. We are beginning to understand. We have moved from a DG fisheries to a DG MARE, to highlight also in the name that it is no longer simply about getting out of the water a maximum of the resource, but to look at the ecosystem ocean that we have and that we have to value and that we have to defend. We have to do this together.*

*Climate change is a big threat. The economics of ecosystems and biodiversity is telling us the consequences of climate change on coral reefs, and I'm sure you all know the absolute value of coral reefs in terms of life in the ocean, but also the number of livelihoods on this planet that depend on a viable ocean ecosystem. If we lose the coral reefs, it is estimated that 500 million people will directly lose their income, and I have the impression that that number might even be on the conservative side; when we look closer into issues, normally numbers grow. So we have a real big challenge, and that is why I think it's useful that you have taken the initiative, I think Indonesia has been very much involved in this, to organize this Oceans Day here, to show the link with global climate change and the importance of the oceans for people. In a way, it's a link into next year because next year is the UN year of biodiversity, which, again, has a lot to do with oceans. There is an enormous amount of biodiversity, of genetic information, of all these things, hidden in the seas. We need to cherish this, value it, and defend it. If that's the message from here, together with halting climate change, then I think it was a very good day.*

*facts and figures, and has actually been used by negotiators.*

*We now know from this report that oceans capture even more carbon than forests – we did not know that. It is very important to understand that if you want to use low-hanging fruit, this is one of them.*

*Now, it's all good to say that these oceans are important and they sequester carbon and so forth, but the problem is that we see the reality – the fact is that oceans are even more vulnerable than forests, and the report argues that they are seven times more vulnerable than forests. They deserve attention. Unless we act now, we may see irreversible trends two decades from now. The good news is that restoration can do a lot, and those of you who were in the forest day session yesterday, we know that some estimates*

say that we can plant up to 1 billion hectares of forest to basically reforest the world, to increase the rate of forestation and forest cover to increase sequestration. Mangroves are one of them. It is important to ensure that, in our efforts toward mitigation and adaptation, we also think about these mangroves. We came up with an idea of creating a blue carbon fund. This is not to set up a separate fund from the existing mechanism, but just to highlight the importance of taking into consideration oceans in the mitigation monies that you are talking about.

As much as the world attention has been brought to forests over

the last few years, thanks to the scientific work and the evidence that has been given to prove that forests are important, it is extremely important to work on oceans.

So what can we do? We need more science. We need more scientific evidence that probably has to be peer-reviewed by the IPCC, maybe in the 5th Assessment report, so that negotiators and world leaders understand really, based on science, the importance of oceans for climate change.

This report - it has gotten more hits than the Millennium Ecosystem Assessment.

## Mr. Warren Evans



*I think it's really important to come back to the people when we're talking about these issues and recognize the very large portion of the world's poorest of the poor that rely on coastal zones and resources for their livelihoods. They also rely on many of the ecosystems that Dr.*

*Lubchenco was talking about to protect them from the increasing frequency of storms, storm surges, and so on. So we've got a very large portion of the global poor in an area that we've been talking about today.*

*What we've seen in the last decade is a significant reduction in investments in many of these resources and the protection of these resources and the formation of coastal resource management plans and programs. We hit a peak in the late 1990s and we've seen a drop since about 1997 in this, and, with the financial crisis that we've got today, we're even seeing less in terms of countries investing in this resource base as part of their development practice. So, we've got a problem of money. At the same time, we're seeing a dramatic increase in vulnerability. Again, these are some of the most vulnerable populations around the globe, and with, climate change, they're just increasingly going to be exposed.*

*At some point we have to talk about financing for this, and I do think the Blue Carbon fund is a great idea, but I do think that you need more science to back it up, having worked in carbon finance for a while. So, I would encourage that to happen.*

*In the meantime, we'd better find some money, and, I would argue, that what's going on in the Bella Center, if successful, is the primary source of funding for the near-term. I think it's very important to recognize a few options that could be put on the table. First, along with the science on the ocean, is better valuation of ecosystem services so that countries are willing to invest in the protection of coastal resources and extensions out into marine ecosystems. There are a lot of marine protected areas in many of the developing countries of the world - some of them are well*

*funded and managed, but most are not. There's a real gap in financing for both coastal resource management and marine protected areas. Isn't there a way to tap what's going on here in the climate financing that's likely to come out, to help pay some of the costs that need to be urgently borne? I think there is. One point is valuation - if the ecosystem services are not valued, it's going to be hard to convince ministers of finance to invest in them.*

*The second is the adaptation agenda. There is going to be money, eventually, put on the table to help these vulnerable communities to adapt to the impacts of climate change. It's going to be very important to do enough work on the ground to demonstrate that protecting these ecosystems is one of the most cost-effective approaches to adaptation. There's a lot being written about it, but there's very little being demonstrated at scale, on the ground. So, another task that we've got ahead of us, as a community, is to demonstrate the value of protecting ecosystems to increase climate resilience and adapt to the impacts of climate change.*

*Finally, carbon markets - maybe not the Blue Carbon Fund yet - but certainly those mangroves you pointed out have tremendous potential to generate carbon credits. We've tried, at the World Bank, under two of the funds that we manage, and it's extremely difficult, because of the methodologies, because of the lack of science, and because priorities are given to other forests. So, I think there's a great opportunity now to look at the co-benefits of mangrove restoration and other coastal forest restoration - use the carbon market to help pay for it, and get the co-benefits of protection from impacts like storm surges and increasing livelihoods.*

*There's a great story there, we just have to take it to scale, but it's not happening yet. So, I think we've got an opportunity, but when you listen to the discussions on REDD, mangroves are not typically a big part of that discussion. We've got some challenges in front of us that all require getting the message out - better awareness and better proposals to actually take the ideas that are being discussed in many communities, that are represented here, and demonstrate that they can be taken to scale.*



Indonesia



Held during the United Nations Framework Convention on Climate Change,  
15th Conference of the Parties

14 December 2009 • European Environment Agency • Copenhagen, Denmark



## Oceans Day Highlights the Need to Focus Attention on Oceans, Coasts, and SIDS in the Climate Negotiations Beyond Copenhagen

Oceans Day at Copenhagen UNFCCC COP-15 (December 14, 2009), the first-ever Oceans Day at a UNFCCC Conference of the Parties, brought together 320 leaders from governments, UN agencies, NGOs, science, and industry from 40 countries to focus on the central role of the oceans in climate change and the fact that close to 50% of the world's population living in coastal areas will suffer disproportionately from ocean warming, sea level rise, extreme weather events, and ocean acidification.

Oceans Day underscored the following for consideration by UNFCCC negotiators in the climate talks beyond Copenhagen:

1. The UNFCCC negotiating text should recognize that oceans (70% of the earth) play a central role in climate--oceans generate oxygen, absorb carbon dioxide (about 30%) and regulate climate and temperature. When these functions are threatened, the future of the planet is threatened.
2. There is a need to craft an integrated oceans and coasts program within the UNFCCC by 2013 emphasizing the following major elements:
  - a) Proceed with utmost caution to ensure the continuing functioning of the oceans in sustaining life on Earth by adopting the most stringent reductions in greenhouse gas emissions, within a short time-frame, to avoid disastrous consequences on oceans and coastal communities around the world;
  - b) Emphasize the positive contribution that oceans can play in mitigation of global warming, such as: Using natural carbon sinks in coastal areas (such as mangroves, kelp forests, coral reefs); carbon capture and storage through injection into deep seabed geological formations; taking further measures to reduce air pollution from ships; developing ocean-based renewable energy (such as windpower, currents, tides);
  - c) Provide sufficient funding to support adaptation for coastal and island communities that are at the frontline of climate change in 183 coastal countries. Current estimates of adaptation costs in coastal areas and small island States are woefully inadequate.

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*European Commission Directorate-General for Maritime Affairs and Fisheries, Global Change Institute--University of Queensland, Government of Seychelles, Institute for Sustainable Development and International Relations (IDDRI), InterAcademy Panel on International Issues (IAP), Intergovernmental Oceanographic Commission/UNESCO, International Union for Conservation of Nature (IUCN), Plymouth Marine Laboratory/Partnership for the Observation of the Global Oceans, Principality of Monaco, Scripps Institution of Oceanography--UC San Diego, Sea Level Rise Foundation, The Nature Conservancy, United Nations Development Programme, World Ocean Network, World Ocean Observatory, The World Bank, WorldWildlife Fund, and WorldFish Center*

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- d) Adaptation strategies in coastal communities and island nations should encourage ecosystem-based adaptation strategies that increase the resilience of key coastal and marine ecosystems, and be implemented through integrated coastal and ocean management institutions and processes at local, national, and regional scales (e.g., Large Marine Ecosystems, Regional Seas).
3. The global oceans community will be articulating a comprehensive program of work related to climate and oceans and coasts, including mitigation, adaptation, financing, capacity development, and public involvement, for consideration by the UNFCCC Parties in their continuing deliberations beyond Copenhagen.

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For Oceans Day at Copenhagen proceedings, please refer to <http://www.oceansday.org/>.



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