



The Global Forum on Oceans, Coasts, and Islands
and The Ministry of Marine Affairs and Fisheries, Indonesia

World Ocean Conference

May 11-15, 2009, Manado, Indonesia

Global Ocean Policy Day (May 13) and
Associated Preparatory Sessions (May 11 and 12)

*Multistakeholder Policy Dialogues on Oceans,
Climate, and Security*

Major Organizers



Additional Support



Fisheries and Oceans CANADA





The Government of Indonesia is hosting the World Ocean Conference 2009 (WOC 2009), which will bring together Ministers, high-level government officials and representatives from international organizations from around the world to focus on three major themes: the implications of climate change for the world's oceans and coastal communities, the role of the oceans in climate change phenomena, and the need for mitigation and adaptation measures to climate change. The formal goal of the Conference is to produce the Manado Oceans Declaration, which will set forth a strong commitment by governments to implement measures addressing the role of the oceans in regulating climate change and the importance of protecting the oceans as an effort to mitigate and adapt to climate change.

The Global Forum on Oceans, Coasts, and Islands, with funding support from the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP) and from the United Nations Environment Programme, is co-organizing the Global Ocean Policy Day with the Indonesian Ministry of Marine Affairs and Fisheries, the United Nations Environment Programme (UNEP), The Nature Conservancy (TNC), the World Wildlife Fund (WWF), the Institute for Sustainable

Development and International Relations (IDDRI), the Sea Level Rise Foundation, NAUSICAA, and the World Ocean Network. The Global Ocean Policy Day, scheduled for May 13, will provide the major opportunity during the World Ocean Conference for multi-stakeholder dialogue among high-level government officials, international organizations, NGOs, industry, and scientists on the importance of the oceans in climate change, mitigation strategies, adaptation strategies, and financing issues.

The Global Ocean Policy Day will be preceded by panel discussions and other events on the major conference themes noted above during May 11 and 12, organized by the Global Forum and other collaborators. Key decision-makers, scientists, ocean and coastal managers, and other practitioners will lead these sessions.

Preparation for the panel sessions and for the Global Ocean Policy Day will involve the preparation of a number of Policy Briefs (aimed at high-level decision-makers and the public) on the major climate/oceans themes. A volume containing the Policy Briefs, Oceans and Climate Change: Issues and Recommendations for Policymakers and for the Climate Negotiations will be distributed at the World Ocean Conference. A Summary Statement will be disseminated to the decisionmakers present at the Manado Conference and to the press.



Global Ocean Policy Day

May 13, 2009 (Wednesday), Grand Kawanua Convention Center

9:00AM-10:00AM **Opening Ceremony**

Co-Chairs: Biliana Cicin-Sain, Global Forum on Oceans, Coasts, and Islands, and Gellwynn Jusuf, Ministry of Marine Affairs and Fisheries (MoMAF), Indonesia

The Challenges of Climate Change for Oceans, Coasts, and Small Island Developing States

Minister Freddy Numberi, Minister of Marine Affairs and Fisheries, Indonesia

Angela Cropper, Deputy Executive Director, UNEP

Biliana Cicin-Sain, Global Forum on Oceans, Coasts, and Islands

Van Duc Nguyen, Acting Vice-Minister of Seas and Islands, Ministry of Natural Resources and Environment, Vietnam

Keynote Presentation: Ambassador Dessima Williams, Permanent Representative of Grenada to the United Nations, and Chair, Alliance of Small Island States, (AOSIS), *Perspectives of Small Island Developing States on Climate Change and on the Climate Negotiations*

Jacqueline Alder, Head, Marine and Coastal Environment Branch, Division of Environmental Policy Implementation, United Nations Environment Programme

10:00AM-10:15AM **BREAK**

PANEL 1 THE IMPORTANCE OF THE OCEANS IN CLIMATE CHANGE: MITIGATION MEASURES

This panel will address the importance of the oceans in addressing climate change as well as focus on proper management of mitigation efforts that use the oceans, including carbon capture and storage, ocean fertilization, and curbing air pollution from ships; the need for public/private partnerships to mitigate climate change; the risks to marine ecosystem services especially vulnerable ecosystems

10:15AM-11:30AM Chair: Angela Cropper, Deputy Executive Director, UNEP

Panelists: Tony Haymet, Director, Scripps Institution of Oceanography, US
Patricio Bernal, Executive Secretary, Intergovernmental Oceanographic Commission, UNESCO

Ove Hoegh-Guldberg, Professor, University of Queensland, Australia

Roberto Calcagno, Chief Executive Officer, Oceanographic Institute Prince Albert 1er, Monaco

Bernard Giraud, Director for Sustainable Development and Social Responsibility, Danone Group, France, and Christophe Lefebvre, French Marine Protected Areas Agency, and Councillor, IUCN

Jeff Price, Managing Director, Climate Change Adaptation, World Wildlife Fund US

Duncan Currie, Legal Counsel, Greenpeace International, New Zealand

PANEL 2 ADAPTATION MEASURES AND MEETING SECURITY CONCERNS

This panel will address the need to undertake a wide range of adaptation efforts (soft, hard, floating) in the context of ecosystem-based and integrated coastal and ocean management (EBM/ICM) and to ensure that the vulnerability of societies and marine ecosystems, especially in developing countries and in small island developing States, is addressed.

What adaptation efforts will increase the resilience of coastal and ocean systems (including social ones) to climate change and how can implementation of such efforts be facilitated?

11:30AM-1:00PM Chair: Mary Glackin, Deputy Under Secretary for Oceans and Atmosphere, NOAA, US

Panelists: Ambassador Laurent Stefanini, Ambassador for the Environment, Ministry of Foreign and European Affairs, France
Raphael Lotilla, Executive Director, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Philippines
Antonio Diaz de Leon, Director General, Environmental, Regional and Sectoral Integration Policy, Environment and Natural Resources Ministry (SEMARNAT), Mexico
Poh Poh Wong, Coordinating Lead Author, IPCC Fourth Assessment Report, Chapter 6 Coastal Systems and Low-lying Areas, and Associate Professor, National University of Singapore
Nicole Glineur, Program Manager, Biodiversity and Private Sector, The Global Environment Facility (GEF)

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Thabit Zahran Al Abdessalaam, Director,
Marine Biodiversity Management Sector,
Environment Agency, Abu Dhabi, United
Arab Emirates

1:00PM-2:00PM

LUNCH

Launch and Signing of Joint Agreement on the Integrated and Sustainable Management of Tomini Bay by the Governors of North Sulawesi, Central Sulawesi, and Gorontalo, Indonesia

PANEL 3

FINANCING CLIMATE CHANGE MITIGATION AND ADAPTATION

This panel will address the “climate divide” and international and national commitments and funding initiatives to respond to the differential effects of climate change on different regions and peoples, including the issue of climate change induced population movements. What funding is needed (and according to what modalities) to implement adaptation and mitigation initiatives for marine and coastal systems and populations?

2:00PM-3:30PM

Chair: Andrew Hudson, Principal Technical Advisor, International Waters, The Global Environment Facility (GEF), United Nations Development Programme (UNDP)

Panelists:

Al Duda, Senior Advisor, International Waters, Global Environment Facility
David McCauley, Principal Environment Specialist, Environment and Safeguards Division, Regional and Sustainable Development Department, Asian Development Bank
Rolph Payet, Special Advisor to the President, Seychelles, Chair and CEO, Sea Level Rise Foundation, IPCC Lead Author, Fourth Assessment Report Working Group 2.
Michael Koehler, Head of Cabinet, Cabinet of Commissioner Joe Borg, Directorate-General for Maritime Affairs and Fisheries, European Commission

3:30PM-3:45PM

BREAK

3:45PM-5:00PM

SUMMARY REPORTS FROM CLIMATE AND OCEANS SESSIONS PREPARATORY TO THE GLOBAL OCEAN POLICY DAY (held on May 11 and 12, 2009)

Co-Chairs: Gunnar Kullenberg, Professor and former Executive Secretary, Intergovernmental Oceanographic Commission (IOC-UNESCO) and Chair, Working Group on Climate, Oceans, and Security, Global Forum on Oceans, Coasts, and Islands, and

Biliana Cicin-Sain, Global Forum on Oceans, Coasts, and Islands

- *Emphasize the Central Role of Oceans in Climate and Put Ocean/Climate Issues in the Climate Negotiations:* Bill Eichbaum, World Wildlife Fund US
- *Understand and Develop Policy Responses to Global Ocean Changes-- Ocean Warming, Sea Level Rise, Ocean Acidification, Changes in Currents, Changes in Polar Regions:* Patricio Bernal, IOC/UNESCO
- *Address the “Climate Divide” and Promote International Commitments and Funding Mechanisms to Respond to the Differential Effects of Climate Change on Different Regions and Peoples:* Rolph Payet, Seychelles
- *Encourage a Wide Range of Adaptation Efforts (Soft, Hard, Floating) in the Context of Ecosystem-Based and Integrated Coastal and Ocean Management:* Steve Murawski, NOAA, and Lynne Hale, The Nature Conservancy
- *Encourage Adaptive Management Institutions at Scales from Regional (e.g., LMEs, Regional Seas), to National, to Local:* Peter Bjornsen, Global Environment Facility
- *Understand the Impacts of Climate Change on Marine Biodiversity and the Role of Networks of Marine Protected Areas:* Salvatore Arico, UNESCO
- *Mitigation and Oceans: Properly Manage Mitigation Efforts that Use the Oceans— Carbon Capture and Storage, Ocean Fertilization; Curb Air Pollution from Ships; and Alternative Forms of Energy Using the Oceans (Wind Power, Tides, Currents, etc.):* Gunnar Kullenberg, Professor and former Executive Secretary, IOC-UNESCO
- *Oceans and Climate Change: Mobilizing the Public and the Private Sector for Action:* Philippe Vallette, NAUSICAA and World Ocean Network
- *Recommendations from NGO Workshop on Ocean Governance and Sustainable Development, May 6-7, 2009, held in Bangkok, Thailand:* Cherdsak Virapat, Executive Director, International Ocean Institute, Malta

Global Ocean Policy Day

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PANEL 4 **THE OCEAN AND CLIMATE CHANGE**
AGENDA: HANOI, MANADO,
COPENHAGEN AND BEYOND
 Next Steps on the Way to UNFCCC COP15

5:00PM-5:45PM **Chair:** Michael Koehler, Head of Cabinet,
 Cabinet of Commissioner Joe Borg,
 Directorate-General for Maritime Affairs and
 Fisheries, European Commission

Panelists: Andrew Hudson, Principal Technical Advisor,
 International Waters, The Global Environ-
 ment Facility (GEF), United Nations
 Development Programme (UNDP)
 Raphael Bille, Biodiversity Programme
 Director, Institute for Sustainable Develop-
 ment and International Relations (IDDRI)
 Biliana Cicin-Sain, Co-Chair and Head of
 Secretariat, Global Forum on Oceans,
 Coasts, and Islands
 5th Global Oceans Conference, May 2010,
 Paris, France
 Ambassador Laurent Stefanini, France,
 Patricio Bernal, Intergovernmental
 Oceanographic Commission, UNESCO

6:00 PM **PRESS CONFERENCE (By Invitation)**

6:15 PM **Reception, Novotel Hotel**
 Co-hosted by Center for Ocean Solutions
 and Government of North Sulawesi,
 Indonesia



Preparatory Panel Meetings and Discussions

May 11 and 12, 2009, Tomohon Room, Bank of Indonesia*

May 11 (Monday)

All Day

Workshop on Global Climate Change Adaptation Strategies in the Coastal Zone, University of Rhode Island Coastal Resources Center, United States Agency for International Development, IUCN Mangroves for the Future Initiative, and the Ministry of Marine Affairs and Fisheries, Indonesia

Afternoon

Panel Sessions on Climate, Oceans, and Security organized by the Global Forum on Oceans, Coasts, and Islands and partners

1:00PM Overview

Biliana Cicin-Sain, Co-Chair and Head of Secretariat, Global Forum on Oceans, Coasts, and Islands, and Gellwynn Jusuf, Chair, Agency for Marine and Fisheries Research, Ministry of Marine Affairs and Fisheries, Indonesia

1:15-2:30PM

Understand and Develop Policy Responses to Global Ocean Changes—Ocean Warming, Sea Level Rise, Ocean Acidification, Changes in Currents, Changes in Polar Regions

Co-Chairs:

Patricio Bernal, Executive Secretary, Intergovernmental Oceanographic Commission (IOC), UNESCO
 Gunnar Kullenberg, Professor, former Executive Secretary, IOC, UNESCO

Panelists:

Miriam Balgos, Program Coordinator, Global Forum on Oceans, Coasts, and Islands
 Linda S. Evans, Secretary for Environmental Protection, California
 Hiroshi Terashima, Executive Director, Ocean Policy Research Foundation, Japan
 Julian Barbiere, Programme specialist, IOC, UNESCO
 Meg Caldwell, Director, Center for Ocean Solutions, US
 Michael Jones, Chief Technology Advocate, Google

2:30-3:45PM

Emphasis on the Central Role of Oceans in Climate and Putting Ocean/Climate Issues in the Climate Negotiations and Vice Versa

Co-Chairs:

Tony Haymet, Director, Scripps Institution of Oceanography, UC San Diego

* Bank of Indonesia, Jl. 17 Agustus No. 56, Manado, Sulawesi Utara

Preparatory Panel Meetings and Discussions May 11 and 12, 2009, Tomohon Room, Bank of Indonesia

Bill Eichbaum, Vice President, Marine and Arctic Policy,
World Wildlife Fund U.S.

Panelists:

Ove Hoegh-Guldberg, Professor, University of Queensland,
Australia

Raphael Bille, Biodiversity Programme Director, IDDRI
Christopher Tompkins, UK

3:45-5:30PM

Adaptive Management Institutions at Scales from LMEs to Local

Co-Chairs:

Ken Sherman, Director, Northeast Fisheries Science Center, NOAA
Peter Bjornsen, Senior Policy Officer, Global Environment Facility

Panelists:

David Vousden, Regional Director, UNDP GEF Agulhas and Somali
Currents Large Marine Ecosystem (ASCLME) Project

Al Duda, Senior Advisor, International Waters,
Global Environment Facility

Anjan Datta, Programme Officer, UNEP Global Programme of
Action for the Protection of the Marine Environment from
Land-based Activities

Magnus Ngoile, Policy and Governance Coordinator, GEF-UNDP
ASCLME Project

Kateryna Wowk, National System Policy Specialist, National
Marine Protected Areas Center, NOAA, and Global Forum

Sebastian Troeng, Director of Regional Marine Strategies,
Conservation International

May 12 (Tuesday)

All Day

Session on Sharing of Experiences from GEF Projects,
United Nations Environment Programme, Takehiro Nakamura

Panel Sessions on WOC Themes, Global Forum on Oceans, Coasts, and Islands (Continued)

9:00AM Overview

Biliana Cicin-Sain, Co-Chair and Head of Secretariat, Global
Forum on Oceans, Coasts, and Islands, and Gellwynn Jusuf,
Chair, Agency for Marine and Fisheries Research, Ministry of
Marine Affairs and Fisheries, Indonesia

9:15-10:15AM

Addressing the "Climate Divide" and Promoting International Commitments and Funding Mechanisms to Respond to the Differential Effects of Climate Change on Different Regions and Peoples

Co-Chairs:

Rolph Payet, Special Advisor to the President, Seychelles,
Chair and CEO, Sea Level Rise Foundation, IPCC Lead Author,
Fourth Assessment Report Working Group 2.



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

Panelists:

Janot-Reine Mendler de Suarez, former Deputy Director and
Project Coordinator, The Global Environment Facility International
Waters Learning Exchange and Resource Network
(GEF IW:LEARN)

Magnus Ngoile, Policy and Governance Coordinator, GEF-UNDP
ASCLME Project

Andre Stochniol, Founder, International Maritime Emission
Reduction Scheme (IMERS)

10:15AM-12:00Noon

Encourage a Wide Range of Adaptation Efforts (Soft, Hard, Floating) in the Context of Ecosystem-based and Integrated Coastal and Ocean Management

Co-Chairs:

Steve Murawski, Director of Scientific Programs and Chief
Science Advisor, NOAA

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



Preparatory Panel Meetings and Discussions May 11 and 12, 2009, Tomohon Room, Bank of Indonesia

Panelists:

Poh Poh Wong, Coordinating Lead Author, IPCC Fourth Assessment Report, Chapter 6 Coastal Systems and Low-lying Areas, and Associate Professor, National University of Singapore

Raphael Bille, Biodiversity Programme Director, Institute for Sustainable Development and International Relations (IDDRI)

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

Raphael Lotilla, Executive Director, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

Thabit Zahran Al Abdessalaam, Director, Marine Biodiversity Management Sector, Environment Agency, Abu Dhabi, UAE

Andy Hudson, Principal Technical Advisor, International Waters, The Global Environment Facility (GEF), United Nations Development Programme (UNDP)

Jackie Alder, Head, Marine and Coastal Environment Branch, Division of Environmental Policy Implementation, United Nations Environment Programme

Don Robadue, Associate Coastal Resources Manager, Coastal Resources Center, University of Rhode Island

Caleb McClennen, Director, Marine Conservation, Wildlife Conservation Society

1:00-2:30PM

Properly Manage Mitigation Efforts that Use the Oceans, Including Carbon Capture and Storage, Ocean Fertilization, Air Pollution from Ships; Encourage Alternative Forms of Energy Using the Oceans (Wind Power, Tides, Currents, etc.)

Chair:

Gunnar Kullenberg, Professor and former Executive Secretary, Intergovernmental Oceanographic Commission, UNESCO

Panelists:

Bernard Giraud, Sustainable Development Director, Danone Group, France

Loic Blanchard, Policy Officer, Directorate General for Maritime Affairs and Fisheries, European Commission

Andre Stochniol, Founder, International Maritime Emission Reduction Scheme (IMERS)

Tony Haymet, Director, Scripps Institution of Oceanography, UC San Diego

Caitlin Snyder, Global Forum and University of Delaware

Jeff Price, Managing Director, Climate Change Adaptation, World Wildlife Fund US

Joe Appiott, Global Forum and University of Delaware

Ik Kyo Chung, Professor, Pusan National University, Republic of Korea



2:30-4:00PM

Understand the Impacts of Climate Change on Marine Biodiversity and the Role of Networks of Marine Protected Areas

Co-Chairs:

Christophe Lefebvre, French Marine Protected Area Agency, and Councillor, IUCN

Salvatore Arico, Programme Specialist, Biodiversity, UNESCO

Panelists:

Alan White, Marine Protected Areas Senior Scientist, Global Marine Initiative, The Nature Conservancy

Nicole Glineur, Program Manager, Biodiversity and Private Sector, The Global Environment Facility (GEF)

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

Anna Tengberg, Senior Technical Advisor, Land Degradation, Regional Technical Advisor, International Waters, UNDP Regional Centre, Bangkok

Emily Pidgeon, Director, Marine Climate Change Program, Regional Marine Strategies, Conservation International

Stuart Campbell, Coordinator, Indonesia Marine Program, Wildlife Conservation Society

4:00-5:30PM

Oceans, Climate Change and the Public: Mobilizing the Public and the Private Sector for Action

Chair:

Philippe Vallette, Co-President, World Ocean Network, and General Manager, NAUSICAA Centre National de la Mer, France

Panelists:

Miriam Balgos, University of Delaware and Global Forum

Manuel Cira, Coordinator, World Ocean Network, and Head of Cultural Services, NAUSICAA Centre National de la Mer, France

Roberto Calcagno, Chief Executive Officer, Oceanographic Institute Prince Albert 1er, Monaco

Bernard Giraud, Director for Sustainable Development and Social Responsibility, Danone Group

Michael Jones, Chief Technology Advocate, Google

BACKGROUND

The Global Forum on Oceans, Coasts, and Islands

CLIMATE, OCEANS, AND SECURITY

Policy Analyses and Multistakeholder Dialogues: Global Oceans Conference 2008, Vietnam; World Ocean Conference, 2009, Indonesia; UNFCCC Climate Negotiations, 2009, Denmark; Global Oceans Conference 2010, France

Introduction

The Global Forum on Oceans, Coasts, and Islands was first mobilized in 2001 to help the world's governments place issues related to oceans, coasts, and small island developing States (SIDS) on the agenda of the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa (the ten-year review of progress achieved in the implementation of the outcomes of the 1992 Earth Summit in Rio de Janeiro), and was later formalized at the 2002 World Summit. Since 2001, the Global Forum has brought together ocean leaders from governments, non-governmental organizations, international and intergovernmental organizations, the private sector, and scientific associations from 105 countries and organized four Global Conferences (in 2001, 2003, and 2006 at UNESCO in Paris, and 2008 in Hanoi, Vietnam), among other activities.

4th Global Oceans Conference 2008, Vietnam—Putting Climate on the Oceans Agenda

With the growing recognition of climate change as a central issue facing the global community, the Global Forum chose to focus the 4th Conference on Oceans, Coasts, and Islands, held from April 7-11, 2008 in Hanoi, Vietnam, around the theme of climate change and oceans. Ocean leaders from 62 countries participating at the 4th Global Conference urged the international community to focus on the relationship between oceans and climate change and the predicted profound effects on ecosystems and coastal populations around the world, especially among the poorest people on Earth and in small island developing States.

Prior to the Conference, twelve international Working Groups involving 254 experts from 72 countries were mobilized to address the major global ocean and coastal issues. Each Working Group prepared a Policy Brief¹ outlining the major issues in the context of climate change, recommendations for policymakers, and the way forward. The Global Forum Working Group on Climate, Oceans, and Security in its Policy Brief focused on the critical role that oceans play in regulating the global climate and moderating weather systems around the world.

¹Gunnar Kullenberg, Janot-Reine Mendler de Suarez, Kateryna Wowk, Kathleen McCole, and Biliiana Cicin-Sain, Policy Brief on Climate, Oceans, and Security presented at the 4th Global Conference on Oceans, Coasts, and Islands, April 7-11, 2008, Hanoi, Vietnam. Available: <http://www.globaloceans.org/globalconferences/2008/pdf/Climate-and-Oceans-PB-April2.pdf>

The 12 Policy Briefs and other materials produced in association with the 4th Global Oceans Conference are posted on the Global Forum website (please see links list at:

http://www.globaloceans.org/gef/pdf/Materials-associated-with-4th-Global-Oceans-Conference_and-Follow-Up.pdf)

Following the Conference, the Global Forum took steps to continue the momentum achieved in Hanoi by providing input to and participating in various UN meetings (see Box 1).

Box 1. UN meetings where the Global Forum provided input based on the outcomes of the 4th Global Oceans Conference

- Ad Hoc Open-Ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, New York, 28 April – 2 May 2008 (Global Forum cosponsored Side Event Governance of Marine Ecosystems and Uses in Areas Beyond National Jurisdiction in the Context of Climate Change: Prospects and Challenges)
- 16th Session of the UN Commission on Sustainable Development (CSD-16), SIDS Day, March 14, 2008 (Global Forum participated in Side Event Sea Level Rise, Climate Change and its Impacts on Food Security in SIDS: Challenges and Opportunities)
- UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (Global Forum co-sponsored Side Event Advancing Ecosystem Management and Integrated Coastal and Ocean Management in the Context of Climate Change: Special Focus on Maritime Security and Safety)
- 9th Meeting of the Conference of the Parties of the Convention on Biological Diversity, 19-30 May 2008, Bonn, Germany (Global Forum submitted report Policy Brief on Marine Biodiversity and Networks of Marine Protected Areas)



The Critical Role of Oceans in Climate

The Global Forum Working Group on Climate, Oceans, and Security in its Policy Brief focused on the critical role that oceans play in regulating the global climate and moderating weather systems around the world. Changes in climate can have a profound impact on the functioning of ocean, coastal and island ecosystems. In particular, the following impacts are already being seen or can be anticipated:

- Anthropogenic warming and sea level rise, which would continue for centuries due to the time scales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized;
- Ocean warming, which may result in increased stratification and changed circulation patterns of ocean currents, decreased amounts of sea ice (since 1978 annual average Arctic sea ice extent has shrunk by 2.7% per decade), increased coral bleaching and mortality, pole-ward migrations of species and increased algal blooms and sea level rise (between 1961 and 2003, global average sea level rose at an annual rate of 1.8mm—the estimated global average sea level in the next century is 0.18 to 0.59 meters);²
- Increases in coastal flooding and storm intensity;
- Potentially changing current patterns; and
- Ocean acidification, which poses adverse effects on calcifying species such as corals, echinoderms, crustaceans, and mollusks as well as certain phytoplankton, and puts at risk the ecological functions of reefs in maintaining biodiversity and coastal protection.

Precise impacts cannot yet be predicted with certainty due to insufficient time series data, modeling, and analysis. When the rate of climatic change exceeds the different rates at which interdependent species can adapt to changes in habitat conditions, the integrity of the complex interrelationships, which lend resilience to ecosystems, is at a heightened risk.

Many scientists have voiced concern with the difficulty of predicting radical or rapid changes in weather and ecosystems that could be triggered by approaching thresholds, or ‘tipping points.’

²Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report Climate Change 2007: Synthesis Report. <http://www.ipcc.ch/ipccreports/ar4-syr.htm>

The security of coastal populations is at risk due to sea level rise, increased intensity and frequency of storms, increased scarcity of fresh water due to impacts of the greenhouse effect on the hydrological cycle, and the threat of large-scale climate change-induced population movements.

In its 2007 report, the Intergovernmental Panel on Climate Change (IPCC), amid growing global concern, called urgent attention to significant social impacts of climate change, and in particular the growing “climate divide” that exists between the developed and the developing world – that is to say, the brunt of the damage acting as the catalyst for global climate change has been created by the developed world but its impacts will be felt most readily by the developing world. As the chair of the IPCC panel noted “It’s the poorest of the poor in the world, and this includes poor people even in prosperous societies, who are going to be the worst hit ... [as] people who are poor are least equipped to be able to adapt to the impacts of climate change and therefore, in some sense, this does become a global responsibility”.³

Developing nations in Africa (which account for less than three percent of global carbon emissions) and Asia would be most affected and the developed wealthy nations far from the equator least affected. Asia will be particularly vulnerable to the effects of climate change, especially major population centers at low elevations including: Mumbai, India; Shanghai, China; Jakarta, Indonesia; Tokyo, Japan; and Dhaka, Bangladesh. The five most vulnerable countries with large populations are China, India, Bangladesh, Vietnam, and Indonesia. The countries most threatened when looking at largest total land area are Russia, Canada, the United States, China, and Indonesia. The impact of climate change on developing nations, especially SIDS, is significant and the implications of these potential effects range from changes in ocean chemistry and forecasted sea level rise to impacts on ecosystems, human health, and the displacement of coastal peoples. The need to address these issues in the oceans community is a vital first step in combating the potentially devastating effects of climate change with specific attention to the developing world and SIDS.

Challenges for the Global Oceans Community

Ocean and coastal leaders are at the front line of climate change effects, and are in a unique position to address these effects. They can also lend a moral voice to the climate negotiations, especially emphasizing the need to address global equity and climate divide issues, and in defining a clear vision and call to action. The climate issues that ocean and coastal leaders around the world will need to face will ineradicably change the nature of coastal and ocean management, introducing increased uncertainty, the need to incorporate climate change planning into all existing management processes, the need to

³ibid



develop and apply new tools related to vulnerability assessment, and the need to make difficult choices in what in many cases will be “no-win” situations involving significant adverse impacts to vulnerable ecosystems and communities.

An Action Agenda on Oceans and Climate

The Global Forum has developed an Action Agenda on Oceans and Climate to advance the global oceans agenda in relation to climate change and to present the oceans issues in the UNFCCC negotiations process in collaboration with other partners.

To advance this agenda, the Global Forum will:

1. Develop a series of Policy Briefs aimed at high-level policy makers on each of the major oceans/climate themes through consultation with policy experts and scientists.
2. Organize the Global Ocean Policy Day to be held during the World Ocean Conference (WOC) in Manado, Indonesia (May 11-15, 2009), in cooperation with the United Nations Environment Programme, the Indonesian Ministry of Marine Affairs and Fisheries, the Global Environment Facility, and other partners.
3. Participate in the UNFCCC process (leading up to the COP15, December 2009, Copenhagen) and articulate the central role of oceans in climate, the effects of climate change on oceans, coastal communities, and small island

States, and the need for specific mitigation, adaptation, and financing measures, together with partner organizations.

4. Organize the 2010 5th Global Conference on Oceans, Coasts, and Islands, May 2010 at UNESCO in Paris, with a focus on climate change and oceans.

Major Oceans/Climate Issues Addressed

These issues are organized according to the categories that will be addressed at the UNFCCC COP15.

Mitigation

Articulate the central role of oceans in climate and emphasize that continued levels of ocean absorption of anthropogenic CO₂ emissions to date lead to a level of ocean acidification that could produce irreversible impacts for millennia.⁴ Oceans play a major role in regulating climate conditions, and changes in atmospheric conditions can have a profound impact on the functioning of ocean ecosystems. Ocean warming and ocean acidification can severely impact marine ecosystems resulting in unprecedented, lasting change to which it may be difficult to adapt to, and in some cases impossible.

Understand and develop policy responses to global ocean changes (ocean warming, ocean acidification, changes in currents, changes in polar regions). Understanding global ocean changes will require a combination of science and policy. Efforts to improve observations, modeling, and forecasting need to continue to enable better understanding and prediction of the effects of climate change and variability, especially on a regional scale. There needs to be a discussion of possible “tipping points:” their consequences, possible policy responses, and institutional abilities to respond to such phenomena.

Properly manage mitigation efforts that use the oceans (e.g., carbon capture and storage and ocean fertilization). Mitigation strategies that rely upon or use the ocean need to be closely examined. There is a need for more research development and demonstration of mitigation technologies. Appropriate regulatory mechanisms to manage mitigation efforts are explicitly needed, and must take into consideration existing scientific and policy perspectives on potential harmful impacts.

Encourage alternative forms of energy using the oceans (wind power, tidal energy and power from waves and ocean currents). The ocean can provide for significant contributions to mitigation strategies, including alternative renewable energy sources such as wind, waves, tidal, and ocean current and thermal energy conversion. However, alternative energy sources are only gradually becoming commercially attractive. Research, technological development, and appropriate management procedures need to be put into place to help decrease dependency on fossil fuel energy sources.

Manage air pollution from ships. Air pollution from ships is one of the fastest growing emission sectors. The International Maritime Organization (IMO) is developing short

⁴German Advisory Council on Global Change. 2006. The Future Oceans – Warming Up, Rising High, Turning Sour. Special Report. Berlin. http://www.wbgu.de/wbgu_sn2006_en.pdf



and long-term approaches to reduce greenhouse gases from ships. However, these efforts need to be supplemented with a partnership of industry and government to encourage market-based policies, while developing more stringent international standards to reduce shipping emissions.

Adaptation

Encourage a wide range of adaptation efforts (soft, hard, floating) in the context of integrated ecosystem-based management. Adaptation will depend heavily upon coastal systems that can adapt naturally to changes in sea level, wind, currents, and wave patterns. Planned retreat is possible when infrastructure development is limited, while areas with intense infrastructure development will need to rely on a variety of soft and hard protection efforts, such as dikes and/or wetland restoration. Adaptation must be carried out in the context of integrated, ecosystem-based management. Coastal and ocean managers must continue to offer solutions toward building coastal community resilience, while building capacity and enhancing public education to improve adaptation efforts.

Financing Mechanisms

Address the "climate divide" and promote international commitments and funding mechanisms, including public/private partnerships, to respond to the differential effects of climate change on different regions and peoples. Understanding of the differential effects on different regions of the world, especially developing countries and SIDS, needs to be enhanced, including an estimation of

costs in terms of adaptation financing. Innovative financial instruments and funding mechanisms are urgently needed to cover the costs of adaptation for those countries contributing proportionally little to climate change and lacking the resources to cope with its impacts. Industrialized nations need to provide assistance to developing countries, which also have to be compensated for reducing and avoiding deforestation (including the conversion of mangroves to aquaculture and other uses) in order to fulfill the goal of stabilizing atmospheric CO₂ below the threshold level therefore avoiding major risks of severe climate change impacts. International law addressing climate change-induced population movements also needs to be developed.

Cross-cutting Issues

Enhance capacity building to address climate change effects. There is an urgent need for capacity building on mitigation and adaptation measures, especially on energy technology research, development, and demonstration and deployment of advanced technologies. This must be emphasized to high-level decision makers.

Develop public outreach and education strategies. Stakeholders and the public need further encouragement to deepen their awareness of the relationship between climate change and the oceans, as well as the socioeconomic and security impacts climate change will have on their lives. Furthermore, since end-use efficiency is the cleanest, safest, and most efficient approach to reducing greenhouse gas emissions, consumers have to be educated on the available options to achieve the full potential of energy efficiency.

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