



## **Expert Panel on Ocean Acidification**

**3 September 2009**

**Delegates Dining Room #6**

**UN Headquarters, New York**

### Introducing the Panel

Melinda Kimble      Senior Vice President, overseeing  
International Bioenergy Initiative,  
UN Foundation

Patricio Bernal      Executive Secretary,  
Intergovernmental Oceanographic Commission  
Coordinator, UN-Oceans

### Expert Panel

Ken Caldeira      Department of Global Ecology,  
Carnegie Institution of Washington,  
Stanford University

Harlan Cohen      Advisor on Ocean Governance and  
International Institutions,  
International Union for Conservation of Nature

H.E. Dessima Williams      Ambassador, Permanent Representative of  
Grenada to the UN

Thomas E. Lovejoy      Advisor, Tropical Biodiversity  
Heinz Center for Science, Economics and the Environment  
Moderator



## Background

The oceans are a fundamental component of the global carbon cycle and act as a long-term sink for carbon dioxide emissions. Most of the world's carbon resides in the oceans, and critical exchanges take place between the surface ocean and the atmosphere, and between the upper ocean and the deep ocean. Experts have thus long recognized the importance of the oceans in mitigating atmospheric concentrations of CO<sub>2</sub>; it is estimated that 25-30 per cent of cumulative anthropogenic CO<sub>2</sub> emissions have been absorbed by the oceans. However, recent scientific findings have pointed to adverse impacts of increasing concentrations of carbon dioxide in the oceans. Not only are the oceans and seas warming and rising, but the ocean chemistry has been changing as a result of carbon dioxide absorption, a phenomenon that has come to be known as ocean acidification. Ocean acidity<sup>1</sup> has increased by 30 per cent since the Industrial Revolution – a change that is about 100 times faster than any change in acidity during the past 50 million years or so. Surface level acidity in the oceans is expected to increase significantly during this century in the absence of substantial and effective efforts to reduce CO<sub>2</sub> emissions.

The adverse impacts of ocean acidification on marine life, and ultimately their socio-economic effects, are not yet completely understood, but scientists are alarmed by recent findings on the sensitivity of corals to higher acidity and the weakening of shell formation by shellfish. Coral reefs, economically and biologically important marine ecosystems, already threatened by increasing sea surface temperatures and associated bleaching, therefore face additional threats from ocean acidification if atmospheric CO<sub>2</sub> concentrations continue to increase at current rates. Shell weights of pteropods and foraminifera in the Southern Ocean have measurably declined during the past two decades, and corals on the Great Barrier Reef have shown a recent decline in calcification raising concerns that irreversible changes in marine ecosystems have already begun.

Entire marine ecosystems will very likely change for the worse due to ongoing ocean acidification, with entire segments of the food chain disappearing, perhaps by as early as the mid- to late century. The fishing industry, an \$80 billion dollar industry, providing food and livelihoods for many millions of people, would be significantly adversely impacted, since fish are at the end of a long food chain. The potential impacts on sustainable development, including on our economies, employment, nutritional intake, lifestyles and cultural values are difficult to predict.

## Activity

The United Nations has been working on an 'assessment of assessments'- launched as a preparatory stage towards the establishment of a regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects, as mandated by the General Assembly in resolution 57/141 of 12 December 2002 and recommended in the 2002 Johannesburg Plan of Implementation of the World Summit on Sustainable Development. The Ad Hoc Working Group of the Whole, which was established by the General Assembly in resolution 63/111 of 5 December 2008, will meet in New York from 31 August to 4 September to review the recently completed 'assessment of assessments' and recommend a course of action to the General Assembly.

Since the Johannesburg Summit, ocean acidification and its potential impacts on marine life are better understood by the scientific community, but have not yet come to the forefront in policy deliberations and are not generally well understood by the public. The General Assembly has thus encouraged States, organizations and institutions to urgently pursue further research on ocean acidification and to increase efforts to address levels of ocean acidity and the projected negative impacts on vulnerable marine ecosystems, particularly coral reefs and Southern Ocean ecosystems.

An expert panel held in the margins of the Ad Hoc Working Group of the Whole would serve to raise awareness and highlight options to avoid adverse impacts of ocean acidification on marine life and ecosystems immediately prior to the Secretary-General's High Level Event on Climate Change in September and the upcoming Copenhagen Conference of the Parties in December. The target audience would be delegates, government representatives, experts and relevant NGOs working on oceans and seas, climate change and sustainable development.

The United Nations (Department of Economic and Social Affairs and the Division for Ocean Affairs and the Law of the Sea) and the United Nations Foundation will organize an expert panel on ocean acidification on the margins of the Ad Hoc Working Group of the Whole. Short presentations by the panelists will be followed by interactive discussions with a focus on potential international cooperation, possible actions and measures by the international community and how to raise the awareness of the general public.

JLB

---

<sup>1</sup> Defined here as hydrogen ion concentration