



IEAGHG Information Paper; 2013-IP30; New Report on Ocean Acidification

A new report has just been published entitled Ocean Acidification just in time for latest UNFCCC meeting in Warsaw, Poland. The report was sponsored by The International Geosphere-Biosphere Programme (IGBP), The Intergovernmental Oceanographic Commission (IOC-UNESCO) and the Scientific Committee on Oceanic Research (SCOR). The report is based on the results from The Third Symposium on the Ocean in a High-CO₂ World held in Monterey, California, in September 2012. This symposium was attended by 540 experts from 37 countries to discuss the results of research into ocean acidification, its impacts on ecosystems, socio-economic consequences and implications for policy. According the report research on ocean acidification is growing rapidly as evidenced by the fact that more than twice as many scientists participated in the Monterey symposium compared to the previous symposium four years earlier. The Summary for Policymakers of this report can be found at:

<http://www.igbp.net/publications/summariesforpolicymakers/summariesforpolicymakers/oceanacidificationsummaryforpolicymakers2013.html>

Some of the key points from the report are summarised below:

- Atmospheric carbon dioxide (CO₂) levels are rising as a result of human activities, such as fossil fuel burning, and are increasing the acidity of seawater. This process is known as ocean acidification.
- Historically, the ocean has absorbed approximately a quarter of all CO₂ released into the atmosphere by humans since the start of the industrial revolution, resulting in a 26% increase in the acidity of the ocean.
- Ocean acidification causes ecosystems and marine biodiversity to change. It has the potential to affect food security and it limits the capacity of the ocean to absorb CO₂ from human emissions.
- The economic impact of ocean acidification could be substantial.
- Reducing CO₂ emissions is the only way to minimise long term, large scale risks.

Key policy points to note are:

- Ocean acidification is not explicitly governed by international treaties. United Nations (UN) processes and international and regional conventions are beginning to note ocean acidification (London Convention/Protocol, UN Convention on the Law of the Sea, Convention on Biological Diversity and others).
- Negotiators to the UN Framework Convention on Climate Change (UNFCCC) have begun to receive regular reports from the scientific community on ocean acidification, and the issue is now covered in the assessment reports of the Intergovernmental Panel on Climate Change (IPCC).
- In June 2012, the UN Conference on Sustainable Development (Rio+20) recognised ocean acidification as a threat to economically and ecologically important ecosystems and human wellbeing.
- However, there are still no international mechanisms or adequate funding to deal specifically with mitigation or adaptation to ocean acidification.

On technical issues that are relevant to our Programmes activities the following points are made:

- The ocean continues to acidify at an unprecedented rate in Earth's history. Latest research indicates the rate of change may be faster than at any time in the last 300 million years.
- As ocean acidity increases, its capacity to absorb CO₂ from the atmosphere decreases. This decreases the ocean's role in moderating climate change.



- The primary cause of ocean acidification is the release of atmospheric CO₂ from human activities. The only known realistic mitigation option on a global scale is to limit future atmospheric CO₂ levels.
- Geoengineering proposals that do not reduce atmospheric CO₂ – for example, methods that focus solely on temperature (such as aerosol backscatter or reduction of greenhouse gases other than CO₂ – will not prevent ocean acidification. Adding alkaline minerals to the ocean would be effective and economically feasible only on a very small scale in coastal regions, and the unintended environmental consequences are largely unknown.
- Reducing sulphur dioxide and nitrous oxide emissions from coal-fired power plants and ship exhausts that have significant acidifying effects locally are also required.

The results are quite clear that unless we significantly reduce CO₂ emissions globally we will (probably irreversibly) acidify the oceans, which will devastate communities that rely on the world's ocean, accelerate global warming as the ocean will not continue to absorb as much CO₂.

From IEAGHG's perspective this underlines the importance of what we do. The message regarding geoengineering is one we have heard before (Latest Research on Geo-Engineering 2013-IP18).

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