Oceans and the Law of the Sea

Report of the Secretary-General

Contribution from the Intergovernmental Oceanographic Commission of UNESCO (IOC)

January 2017

Summary

The ocean is key to regulate climate and to mitigate climate change. The ocean absorbed more than 90% of excess heat, 100% of the additional water, and around 30% of the carbon released due to fossil fuel burning since the industrialization. However, its climate regulating role is endangered. A warmer atmosphere and increasing concentration of greenhouse gases resulting in ocean warming, ocean acidification, deoxygenation, pollution from land, overfishing, unsustainable coastal development and increasing population, are all degrading the health and functionality of Earth's most treasured and useful resource. For example, pollution is likely to aggravate ocean acidification, in particular in coastal areas. Climate change has already led to a 0.7oC increase in global mean sea surface temperature over the last century, with effects on [illegible] Oceanographic Commission of UNES

Key interactions between oceans and climate change

Covering 71% of the globe, the ocean provides essential services for maintaining life on Earth and is as important as forests in the supply of world oxygen. As a natural regulator of the Earth's climate and cornerstone of the global climate system, its importance can no longer be underestimated and ought to be recognized. Ocean and human health are linked globally as the ocean circulation – also known as the Ocean Conveyor Belt – connects all ocean basins (the Atlantic, Pacific, Indian, Arctic and Southern). The ocean absorbs both heat and carbon from the atmosphere, therefore alleviating the impacts of climate change in the environment. The ocean absorbed more than 90% of excess heat, 100% of the additional water, and around 30% of the carbon released due to fossil fuel burning since the industrialization.

However, its climate regulating role is endangered. A warmer atmosphere and increasing concentration of greenhouse gases resulting in ocean warming, ocean acidification, deoxygenation, pollution from land, overfishing, unsustainable coastal development and increasing population, are all degrading the health and functionality of Earth's most treasured and useful resource. From greater risk to coastal areas due to rising sea levels, strong winds, storms and cyclones, to food insecurity among island populations linked to declining marine resources, an unhealthy ocean in a changing climate can yield great environmental, economic and social imbalances.

Climate change mitigation and adaptation measures will in fact play a crucial role in slowing ocean acidification and minimizing its impacts. Therefore, the two issues of ocean acidification and climate change need to be considered in an integrated manner.

Effects of climate change on the oceans

Drawing on the work of the Intergovernmental Panel on Climate Change, the First Global Integrated Marine Assessment – the outcome of the first cycle of the United Nations Regular Process for Global Reporting and Assessment of

The impacts of climate change on the ocean –

As said observation and monitoring the changing ocean environment are fundamental to understand and project the ocean ecosystems functions and processes in the past and in the future. It has to be highlighted that in particular GOOS, coordinated and managed by IOC, provides essential information on the state of the ocean as a part of the climate system.

IOC's activities associated with marine technology transfer and capacity development, as well as with education and training, such as Ocean Teacher Global Academy, help Member States to fulfil their commitments to UNFCCC and the Paris Agreement. The IOC is committed to assist and develop the capacities of its Member States by brokering innovation and learning, facilitating the transfer of marine technology and providing science-informed policy advice for the implementation of integrated ocean governance and management.