



Ocean Acidification
International
Coordination Centre
OA-ICC

Ocean Acidification

THE EVIDENCE IS CLEAR THE TIME FOR ACTION IS NOW

The ocean is becoming more acidic, getting warmer, and losing oxygen due to the burning of fossil fuels and other human activities.

Ocean warming, deoxygenation, acidification, and cascading ocean system changes will continue for the rest of this century and into the next century. These changes are irreversible on human time scales, and their rates depend on future emissions. These changes are unprecedented in the context of human history.

We know that ocean acidification is affecting marine life, especially organisms that build calcareous shells and structures (e.g., coral reefs). Together with less oxygen in upper ocean waters and increasingly widespread oxygen minimum zones, as well as ocean warming, this poses challenges for coastal and marine ecosystems and their services, including seafood supply.

We know enough to act NOW.

AS A POLICYMAKER WHAT CAN YOU DO?

Reduce emissions

Protect

Adapt

Repair

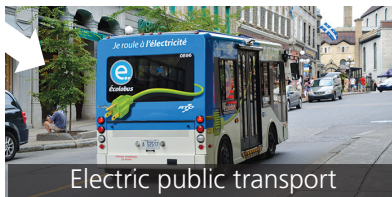
- Regulatory and economic instruments have **already proven effective** in reducing emissions.
- Policy and economy-wide packages** are able to achieve **systemic change**.
- Ambitious and effective mitigation requires **coordination across government** and society.



Coal-fired power plant



Solar energy production



Electric public transport

Reduce emissions: Cut CO2 emissions.



Healthy coral reef

Protect: Safeguard marine systems to increase resilience.



Laboratory innovations supporting sustainable fisheries



Adapt: Use aquaculture technologies for species at risk.



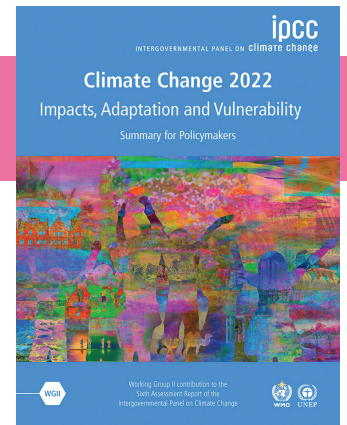
Mangrove destruction



Healthy mangroves

Repair: Restore damaged habitats.

WE KNOW THE OCEAN IS CHANGING



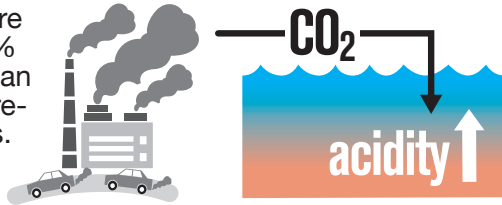
The latest Intergovernmental Panel on Climate Change (IPCC) reports, *Climate Change 2022*, compile thousands of scientific articles and show without ambiguity, from chemistry to biology, that ocean acidification is driving complex changes and threatening marine species, ecosystems, and the services they provide us.

GLOBAL CHANGE

20-30% CO₂ ABSORBED

Burning fossil fuels is releasing excess carbon dioxide (CO₂) into the atmosphere. The ocean is absorbing 20-30% of this CO₂, making its chemistry more acidic.

As a result, there has been a 26% increase in ocean acidity since pre-industrial levels.

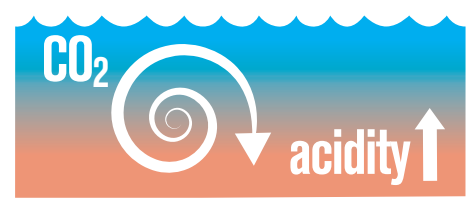


DEEP ACIDIFICATION

>2000m CO₂ PENETRATION

Acidification is spreading deeper in the ocean, surpassing 2000m depth in the North Atlantic and the Southern Ocean.

Ocean currents and mixing are moving surface CO₂ into the ocean depths.

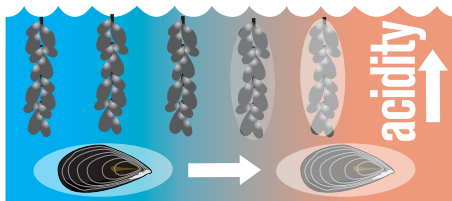


BIOLOGICAL IMPACTS

CHANGES IN MARINE LIFE

There is overwhelming evidence that acidification is having and will continue to have negative effects on marine species and ecosystem services.

Without adaptation, shellfish aquaculture will decline due to ocean acidification.



CORAL REEFS AT HIGH RISK

25% OF MARINE DIVERSITY

Warm-water coral reef ecosystems house 25% of the marine biodiversity and provide food, income, and shoreline protection to coastal communities globally.

Ocean acidification is weakening structure-forming organisms like corals and shellfish.



SOLUTIONS: REDUCE EMISSIONS, PROTECT, ADAPT, AND REPAIR

Our ability to manage marine ecosystems and minimize the negative effects of ocean acidification and other stressors will continue to improve with targeted science to:

- Monitor at the local scale
- Better understand biological impacts for key ecosystems and species
- Optimize strategies for protection and restoration
- Test technological solutions to improve water quality and species resilience

For more information on *The Intergovernmental Panel on Climate Change Working Group I, II, and III reports*, visit www.ipcc.ch

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