



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 such as coral reefs, shellfish, and crustaceans. Together with ocean warming, sea level rise, intensifying storms and deoxygenation, 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?

International  
lobbying

Protect

Adapt

Repair

- Continue lobbying to reduce global emissions to protect interests and natural resources of Pacific Islands
- Policy and economy-wide packages are able to achieve systemic change.
- Ambitious and effective mitigation requires coordination across government and society



Pacific Islanders lobbying internationally & using renewable energy

**Lobbying to Global Audiences:** Reduce CO<sub>2</sub> emissions



Healthy coral reefs, where 25% of all marine life live at some point

**Protect:** Safeguard marine systems for food security



Ocean acidification research to monitor conditions & inform aquaculture

**Adapt:** Use aquaculture technologies for species at risk



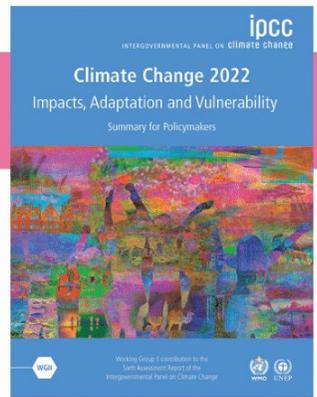
Mangrove destruction



Mangrove restoration

**Repair:** Restore damaged mangroves and coral reefs

# WE KNOW THE OCEAN IS CHANGING



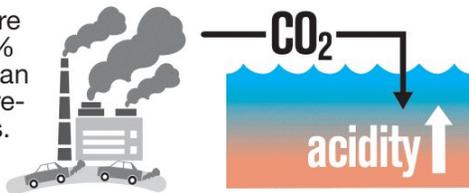
The latest Intergovernmental Panel on Climate Change (IPCC) reports, *Climate Change 2022*, compile thousands of scientific articles and show without ambiguity, from chemistry to biology, that ocean acidification is driving complex changes and threatening marine species, ecosystems, and the services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

## GLOBAL CHANGE

### 20-30% CO<sub>2</sub> ABSORBED

Burning fossil fuels is releasing excess carbon dioxide (CO<sub>2</sub>) into the atmosphere. The ocean is absorbing 20-30% of this CO<sub>2</sub>, making its chemistry more acidic.

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



## DEEP ACIDIFICATION

### >2000m CO<sub>2</sub> 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 CO<sub>2</sub> into the ocean depths.

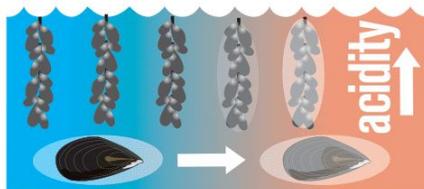


## BIOLOGICAL IMPACTS

### 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 OA locally on a long-term basis
- Conduct studies on the impact of OA on key biological resource species and ecosystems
- Convey Pacific OA knowledge to regional and global decision makers
- Raise awareness in developed countries about the impact of OA on Pacific Island communities

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