

How to mitigate the effects of climate change on the ocean

- ▶ From rise sea levels, to devastated marine and coastal ecosystems, to water acidification and warming, ocean faces a multitude of threats.
- ▶ Faced with this situation, a group of researchers assembled under the "Ocean Solutions Initiative" has suggested thirteen actions to mitigate the effects of climate change on ocean. These suggestions fall into four main areas.

Reducing the causes of climate change

- ❖ Developing offshore renewable energy (offshore wind turbines) as well as clean marine energy (tidal movement, wave power).
- ❖ Restoring coastal plant ecosystems (mangroves, salt marshes) that capture and store CO₂.
- ❖ Adding nutrients (fertilization) to improve primary ocean production.
- ❖ Adding alkaline materials (alkalinization) to neutralize ocean acidification.
- ❖ Introducing hybrid land-sea methods such as using marine plants for biomass with CO₂ capture and storage on land.

Protecting marine organisms

- ❖ Restoring hydrology by preserving river water and sediment inputs to the ocean.
- ❖ Reducing the sources of pollution from land and rivers.
- ❖ Eliminating overexploitation of living organisms and non-living resources.
- ❖ Protecting marine habitats through the establishment of marine protected areas.

Manipulating biological adaptive capacities

- ❖ Genetic modification and redistribution of marine organisms to increase resilience to stress.
- ❖ Restoring degraded reefs (coral, oysters) and creating new habitats.

Solar radiation management

- ❖ Increasing the reflectivity of clouds by vaporizing seawater in the lower atmosphere (troposphere).
- ❖ Improving solar radiation reflection of oceans by coating their surface with long-lasting artificial foam layers.

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References

- Magnan, A.K. et al., 2018. Le rôle potentiel de l'océan dans l'action climatique. IDDRI, *Propositions*, N°06/18 [[online](#)].