PACIFIC CORAL REEFS

OCEAN BIODIVERSITY CONSERVATION

KEY POINTS

- Coral reefs are iconic Pacific habitats. Reefs are living structures that form the base of local economies, contribute to food security, coastal security and cultural identity. Reefs also shape many of the islands themselves through sand creation and wave protection.
- Reefs are naturally resilient ecosystems but are under threat from human activities.
  1. Globally, higher temperatures and ocean acidification reduce reef growth and increase coral disease and mortality.[1]
  2. Locally, development, destructive fishing practices, overfishing, agriculture and watershed/wetland changes increase the levels of nutrients and sediments flushing into lagoons, reducing coral health, productivity, and ability to compete with other species.
  3. Integrated, ridge-to-reef management across sectors and within communities is needed to support coral reef health, service provision and resilience to climate change.
- Rising sea surface temperature and ocean acidification are progressively reducing the biological and structural complexity of coral reefs and the biodiversity within the ocean. This could lead to the collapse of entire reef ecosystems, limiting or even eliminating access to critical food sources and endangering biodiversity. The region has already lost some hard coral, affecting many species of fish relying on coral for existence.
- Healthy wetlands, including coral reefs, are our most cost-effective option for shoreline protection and coastal fishery restoration.

HOW ISSUE LINKS TO/IMPACTS SDGs BEYOND SDG14 LIFE BELOW WATER

- SDG1, 2: Sustainable management of our marine resources is vital to achieve food security reduce poverty in the Pacific and to maintain the important role of reefs in local economies.
- SDG8: Reef-associated tourism is a key component of Pacific economies and decent work.
- SDG12, 13, 15: Responsible consumption and production with integrated terrestrial to marine management can help maintain reef ecosystem function and climate resilience.

BACKGROUND

1. **Coral reefs are under pressure from local and global factors**, including nutrient loading (eutrophication), sedimentation, disease, invasive species, predator outbreaks, overfishing, destructive fishing, ocean acidification, and climate change with the impacts of higher temperatures, sea level rise, and increased risk of storm damage. The goods and services provided by almost a fifth of the world's reefs have been lost due to reef degradation. A further 15% of reefs are under imminent threat of being lost within the next decade unless effective management actions are implemented.[2]
2. **The value of reefs is extensive and crosses many sectors.** Healthy reefs are an important source of resources today and in the future, including from bioprospecting. Many medicines have been derived from coral reef organisms.[3] Half of international tourists come to coastal areas. Tourism forms over 25% of GDP in most Pacific SIDS.
3. **Reefs feed us**. About 70% of the protein in the diet of Pacific islanders is from near-shore pelagic and inshore reef and lagoon fisheries.[4] Reefs are structurally complex habitats that support many species. Threats to reefs also threaten nutrition and food security, livelihoods, and incomes from reef fisheries and tourism. Reef-dependent communities will need adaptive capacity, including access to alternative livelihoods.
4. **Reefs protect our islands.** Reefs reduce the wave energy that reaches shores by >95%. Maintaining healthy wetlands is the most cost-effective method of preventing shoreline erosion.[5] At least 50% of Pacific islanders live within 1.5 km of the coast, and sustainable, integrated shoreline development that maintains reef ecosystems is vital.

UN environment

SPREP PROE

5. **Stressed corals are less resilient to climate change.** The resilience of coral reefs to climate change can be strengthened by removing local pressures from overfishing or destructive fishing, eutrophication, sedimentation, and unwise use, and protecting reefs that are predicted to face frequent bleaching conditions later than others[6].
6. **Coastal development must consider the need for clear, low-nutrient waters for corals.** Corals need light to make energy. Sedimentation and nutrient loads from dredging or run-off can make the water murky and can support algae overgrowing coral. Other healthy wetlands also capture sediments, protecting reefs and buffering sea level rise.
7. **Coral reefs already face severe climate stress.** High temperature anomalies increase bleaching and coral disease prevalence. The longest global coral bleaching event on record was observed in 2014–2016, resulting in wide-spread coral mortality. Ocean acidification affects corals as well as calcareous (hard, 'calcium-forming') algae that bind reefs together. Seagrasses can locally buffer ocean acidification, but are threatened.
8. **Corals are remarkably resilient.** As global changes proceed, the community structure of reefs will look different, but there is still a chance to protect reefs. Creating spaces for reefs to recover, by reducing external pressures, can support healthier, more diverse reef ecosystems and therefore support Pacific communities that depend on reefs.

1 Pendleton et al. 2016. Coral reefs and people in a high-CO_2 world: Where can science[…]? PLOS ONE 11:e0164699

2 Global coral reef partnership. http://coral.unep.ch/Coral_Reefs.html

3 The Nature Conservancy, Reef Resilience. http://www.reefresilience.org/coral-reefs/reefs-and-resilience/value-of-reefs/

4 PACCSAP 2014. Ocean acidification in the western tropical Pacific. CSIRO, Australian Aid, Australian DOE and BoM

5 Ferrario et al. 2014. The effectiveness of coral reefs for coastal hazard risk reduction and adaptation. Nature Comm 5:3794

6 van Hooidonk et al. 2016. Local-scale projections of coral reef futures and implications of the Paris Agreement. Nature Scientific Reports 6:39666