PACIFIC COASTAL AND MARINE DEVELOPMENT

ECONOMIC OPPORTUNITY

KEY POINTS

- Development and conservation are not opposing aims. Rather, healthy environments underpin and sustain economies and community health and wellbeing.
- Development on islands crosses many environments and ecosystem services, from land to sea. Broad, cross-sectoral impacts require integrated management across sectors.
  1. Land-use changes on islands have broad impacts, often spreading across several types of environments with potentially multiplicative effects.
  2. Environmental impact assessment results must inform development decision-making for the EIA process to serve its purpose.
  3. Hard engineering solutions, such as seawalls, are still being offered in the Pacific islands despite their disadvantages, particularly in comparison to maintaining and protecting natural coastal defences, such as mangroves and coral reefs.
  4. Coastal and submerged cultural heritage sites are known to exist in the islands (>4,000), but an inventory is not yet complete. These sites are threatened in the absence of pre-development assessments and appropriate mitigation actions during construction.
- The most cost-effective resilience-building measures are those based on natural ecosystem solutions.

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

- SDG1, 2, 3: Poverty reduction, food security and health in the Pacific islands depend on local agriculture and fisheries, coastal tourism, and sustainable management of coastal marine resources more broadly.
- SDG6: Clean freshwater and sanitation systems are threatened by pollutant overloading or degradation of remediating environments, in addition to maintenance challenges.
- SDG5, 10: The impacts of development and coastal land-use change are uneven across gender and location, with impacts more strongly felt by Pacific island communities dependent on healthy environments to support subsistence lifestyles and livelihood opportunities.
- SDG7, 9, 11, 12, 14, 15: Resilient, sustainable infrastructure, cities and communities rely on well-planned development under integrated, ridge-to-reef management. Such cross-sectoral management incorporates best practices for sustainable consumption and production, clean energy and biodiversity protection.
- SDG13: Healthy coastal environments are a vital part of climate action for Pacific islands.

BACKGROUND

1. Globally, **land management affects the structure and health of coastal environments.** These links are highly obvious, fast, and profound on islands. Human alteration of landscapes affects the surrounding environments in many ways, *inter alia*:
   a. **Physically**: by directly modifying landscape structure or by altering patterns of wind and wave sediment transport, development changes the shape of the environment. Digging, dredging, removing vegetation, and installing hard structures (such as pavements or seawalls) increases erosion and sediment levels in adjacent or downstream water, which affects biodiversity.
   b. **Chemically**: the chemical and nutrient content of nearby soils or downstream water (including groundwater) depends on upstream conditions. Near-shore development often results in high nutrient levels, e.g. supporting algal growth and inhibiting coral growth.
   c. **Biologically**: organisms thrive in specific chemical and physical situations, and any change will therefore change the species that are present and abundant. In particular, greater disturbance often creates the conditions for introduced species to invade and out-compete native species.

d. **Aesthetically**: physical, chemical and biological changes alter the appearance of environments and the resources they contain, such as underwater cultural heritage.

e. **Socially**: development can impact public health and wellbeing; community livelihoods and gender balance; cultural heritage values; and access to public services and infrastructure. Failure to account for different impacts can result in development that benefits some groups and disadvantages others.

2. **Healthy marine and coastal resources are key to the sustainable economic development and culture of Pacific island states**. The best development takes into account the multiple uses and values of a given site and seeks to ensure the conservation and wise use of a variety of ecosystems while reducing the impacts of construction and use. Such consultation, joint decision-making and development oversight requires time and coordination—a challenge for small Pacific government agencies with limited resources.

3. **Environmental impact assessments (EIA) should inform action.** EIA is used to equip decision-makers with the information needed to balance negative and positive impacts from development. However, EIA alone does not imply incorporation of EIA results into development approval decisions, and EIA should therefore be supported by political will and should not be subject to political interference, for it to be effective. EIA done site by site cannot adequately reflect the impacts of multiple, often concurrent developments.[1] Spatial planning for coastal zones can help decision-makers identify and manage multiple uses, often as part of strategic environmental assessment (SEA).

4. **There is no "impact-free zone",** and the complexity of balancing development needs with the needs of ecosystems requires careful, informed, integrated planning. There is a risk of valuing structurally complex environments, such as mangroves, over environments that appear "simple", such as tidal sandflats, despite the greater diversity and biomass of organisms on tidal flats.[2] The Pacific region requires assistance in creating knowledge and Pacific capacity for Pacific-led management.

5. **Coastal sites are sensitive and may contain valuable heritage.** The Pacific contains a yet unknown number (over 4,000) of underwater heritage resources—e.g. shipwrecks, submerged villages, and traditional infrastructure—mostly unstudied and with minimal tourism development.[3] These sites bear important historical and cultural knowledge. Pacific material heritage degrades quickly, making physical sites particularly valuable. No Pacific island countries to date are party to the UNESCO UCH Convention.

6. **Development often produces a need for protection.** Coastal infrastructure is at risk from sea level rise, storm damage, and natural and human-induced coastline shifts. Hard engineering solutions have disadvantages that may increase the already high costs of installation and maintenance. For example, seawalls support 23% lower biodiversity and 45% fewer organisms than natural shorelines.[4] Ecosystem-based solutions are the most cost-effective measures for increased resilience.[5]

1 SPREP 2016. Strengthening environmental impact assessment: Guidelines for Pacific island countries and territories. Secretariat of the Pacific Regional Environment Programme, Apia

2 Sheaves et al. 2016. Biotic hotspots in mangrove-dominated estuaries: macro-invertebrate aggregation in unvegetated lower intertidal flats. Marine Ecology Progress Series 556:31–43

3 UNESCO 2010. Underwater Cultural Heritage in Oceania. UNESCO, Apia

4 Gittman et al. 2016. Ecological consequences of shoreline hardening: a meta-analysis. BioScience 66:763–773

5 Lo V. 2016. Synthesis report on experiences with ecosystem-based approaches to climate change adaptation and disaster risk reduction. Technical Series No.85. Secretariat of the Convention on Biological Diversity, Montreal.106 p.