Nature-based Solutions
to Address Flood Risks in Coastal Communities

Summary of Barriers and Opportunities

> “Uptake and implementation of NBS are limited by data gaps and barriers related to effectively identifying, valuing, and leveraging co-benefits.”

In 2021, the Commission for Environmental Cooperation (CEC) initiated a project to support the broader uptake of Nature-based Solutions (NBS) to manage flood risks in coastal communities across Canada, Mexico, and the United States.

The project was launched with a workshop series that brought together 95 experts spanning a range of academic, private sector, government, and nongovernmental organizations from across North America. During these sessions, attendees participated in generating ideas and identifying data gaps, barriers, and opportunities related to:

- Evaluating and realizing co-benefits of NBS,
- Monitoring the efficacy of NBS, and
- Retrofitting existing infrastructure with NBS.

Following the workshops, a comprehensive set of four guidance documents were developed on NBS, covering the topics of co-benefits, retrofitting existing infrastructure, and monitoring efficacy and methodology. Within the reports, barriers and opportunities were identified and broadly grouped into four interconnected categories: social, technical, environmental, and institutional.

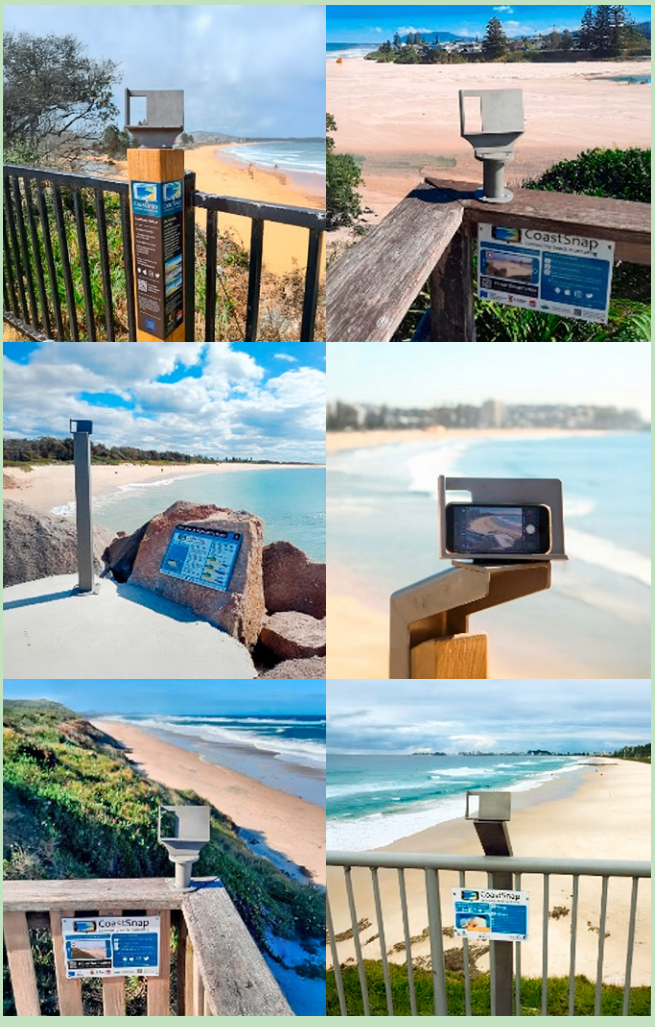
Opportunities for alleviating barriers to the uptake of Nature-based Solutions were identified in the guidance documents.

CoastSnap Community Beach Monitoring

CoastSnap uses community science to monitor coastlines and reduce monitoring data gaps. It can be incorporated into monitoring programs as a way to develop greater engagement and public buy-in, and to inform adaptive management.

Community science initiatives such as CoastSnap (and similar initiatives) can help reduce social and technical barriers.

Removing Social and Technical Barriers



Harley and Kinsela, 2022

Barriers

Multiple barriers are identified in the guidance documents for realizing co-benefits, retrofitting existing infrastructure using NBS, and monitoring the efficacy of NBS.

Social Barriers

- Lack of knowledge
- Insufficient incorporation of traditional, Indigenous, and local knowledge
- Perception that NBS does not provide sufficient protection

Environmental Barriers

- Seasonal and long-term variability
- Uncertainty about the effects of climate change
- Lag-time for natural systems to establish
- Variable level of resilience to impacts of climate change

Institutional Barriers

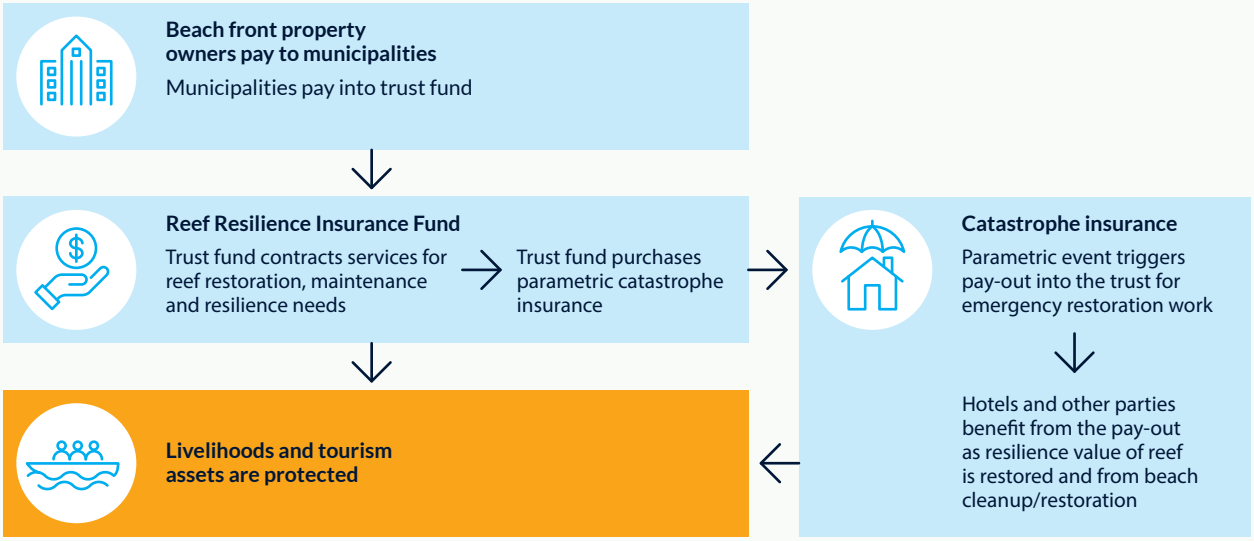
- Lack of funding
- Lack of government awareness on NBS
- Lack of policy incentives or legal obligations
- Focus on short-term horizons as part of existing programs
- Conflict between jurisdictional or agency requirements

Technical Barriers

- Lack of technical guidance and training
- Incomplete or missing data
- Uncertainty in predictive tools
- Need for expert involvement across multiple disciplines
- Design constraints due to physical space limitations

Overcoming Financial Barriers

Mesoamerican Reef: Securing Long-Term Funding through Insurance



The Quintana Roo (Mexico) state government, in collaboration with the tourism industry, the Nature Conservancy (TNC), the National Commission of Protected natural Areas (Conanp), local researchers, citizens and the insurance industry created the Coastal Management Trust insurance scheme.

The insurance scheme funds a highly trained team of community members known as the Reef Brigades, who are responsible for the assessment and repair of reef damage following storm events, and helps to overcome long-term funding challenges related to repair.

TNC, 2019

Opportunities & Future Directions

Multiple opportunities to reduce or remove barriers are identified in the guidance documents.

Social Opportunities

- Develop a community of practice with experts spanning multiple disciplines, across multiple regions.
- Develop community science initiatives to further engage the community and improve community trust and buy-in.

Environmental Opportunities

- Downscale global and national climate projections to a local level.
- Encourage and highlight case studies with long-term results.

Institutional Opportunities

- Simplify the permitting processes for NBS construction, monitoring, and adaptive management.
- Require comparison of multiple approaches (including NBS and a 'do-nothing' approach).

Technical Opportunities

- Develop and recognize specific technical standards and guidelines.
- Develop a centralized database to host and disseminate data and information.
- Develop capacities around emerging technologies such as remote monitoring.

The Key Opportunities

- ✓ Require project teams to commit to data distribution, including cases of failures.
- ✓ Develop funding streams to support long-term monitoring, adaptive management, co-benefit valuation, and retrofitting.
- ✓ Resolve conflict between jurisdictional and agency regulations.
- ✓ Provide technical training on monitoring, co-benefits, and retrofitting existing infrastructure using NBS to build capacity.

Adaptive Management in Action
Hybrid Dune Construction at Cardiff State Beach
San Diego County, California, USA

Winters et al., 2021

CEC CCA CCE cbwes DHI Saint Mary's University