The Coastal Risk Index

The [Coastal Risk Index](#) (CRI) is an innovative modelling tool designed to calculate coastal flood hazards under different climate change scenarios and quantify the potential risk reduction benefits of coral reefs and mangroves for coastal communities around the world.

This project is led by the Ocean Risk and Resilience Action Alliance (ORRAA), with financial support provided by AXA, Government of Canada, United Kingdom's Blue Planet Fund, and the United States Department of State. It advances key [Sustainable Blue Economy Finance Principles](#) objectives to quantify the benefits of marine ecosystems to inform insurance and finance decision-making processes.

Key facts:
- **Blue economy sectors targeted:** Ports, Marine and coastal tourism, Coastal infrastructure
- **Project:** The Coastal Risk Index
- **Timeline of the project:** Solution developed in 2020-23 with a new data platform in development in 2023
- **Geography:** Global
- **Key words:** Coastal and marine habitats; biodiversity; insurance; climate change resilience

Who?
ORRAA, with support from AXA, University of California Santa Cruz, IHE Delft.

What?
Coral reefs, mangroves, and other coastal ecosystems are a critical first line of defence for millions of people against mounting climate risks such as coastal flooding and storm surges. Coral reefs for example can dissipate up to 97% of wave energy, reducing the impact to coastlines. Despite their role protecting lives and coasts, their benefits are rarely accounted for in risk industry models, disaster risk reduction strategies, or development priorities.

The CRI will inform important decisions for both the public and private sector. It will enable insurers to price risk more accurately and supports financial institutions and the development sector in mapping both potential future liabilities and investment opportunities where nature-based solutions provide resilience benefits. Further, the CRI seeks to support governments and policymakers in understanding the exposure of their communities to coastal hazards while demonstrating the importance of proactive coastal ecosystem management in building resilience. This in turn could lead to more robust risk reduction strategies to protect and restore these natural assets around the world.

How?
The CRI is an open access tool that provides compelling visualisations of flood risk levels today, in 2030 and 2050, including the anticipated impacts on communities and coastal assets. It will also assess the impact of flood risk on social and economic vulnerability and how nature-based solutions can be leveraged to build resilience in the most vulnerable communities.

To maximise the CRI's potential as a tool for local resilience practitioners and risk industry stakeholders, with financial support from the U.S. Department of State, a new publicly available data platform is under development that will support its deployment. This platform will also be supported by case studies to apply CRI data in a local context. The first, led by the University of California, Santa Cruz and supported by the U.S., will assess coastal flood risk in the Dominican Republic to highlight the benefits of coral reefs and mangroves in reducing current and future hazards. The study will also examine whether flooding disproportionately impacts vulnerable people and how nature-based solutions can be leveraged to build resilience along the Dominican Republic's coastline.

Included below is a snapshot example of the CRI displaying flooding without mangroves scenario for Naga City, Philippines.