Ocean Risk and Resilience

The ocean is fundamentally linked to the climate system, acting as a regulator and buffering the damaging effects of climate change. However, as a consequence, the ocean is changing faster than at any time in human history, posing threats to the lives and livelihoods of billions of people, most of them in the poorest and most vulnerable communities.

AXA XL's Ocean Risk Initiative was launched to utilise its risk management expertise and AXA Group's investment appetite to define and understand ocean risk. The initiative also aims to develop pioneering finance and insurance products that build resilience and reduce the impact of ocean risk on exposed communities.

Driving Product Innovation

Coastal flooding impacts are increasing due to coastal development, population growth, climate change, and habitat loss. Maintaining and regenerating existing coastal ecosystems that help protect people and property is a critical component of disaster risk management and climate adaptation in countries that often lack the financial resources to fund relief and post-disaster recovery efforts.

Over the next 25 years, the global benefits of mangroves in averting flooding and damages for property is calculated to be $USD 104 billion[1]. For 100-year storm events, flood damages would increase by 91% to $USD 272 billion without coral reefs[2].

These examples, alongside other marine ecosystems provide natural protection against the impacts of storms, but also provide significant socio-economic and ecological benefits including supporting local jobs, maintaining food security, sequestering carbon and promoting biodiversity.

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By Chip Cunliffe

Coastal Risk Index

Despite their role in protecting lives and property, the value of coastal ecosystems is often disregarded and not accounted for in either industry risk models or development priorities.

AXA XL is working with its scientific partners to develop a ground-breaking Coastal Risk Index (CRI) that integrates the protective benefits of coastal ecosystems into insurance risk models. The Index will calculate physical risk to coastal assets in different projected flooding scenarios up to 2050, with and without coastal ecosystems. It will then measure two further parameters: social vulnerability and the fiscal risk caused by the loss or degradation of those ecosystems.

The Index will enable insurers to price and transfer risk more accurately, allowing policymakers and investors to direct financial flows more effectively and catalyse behavioural change towards proactive coastal ecosystem management.

The CRI aims to drive a systemic shift in how the insurance industry measures coastal risk in the tropics and strengthens the case for using nature-based solutions to increase resilience and sustainably manage biodiversity.

Mangrove Insurance

In a recently published paper by Mike Beck, AXA's Research Chair in Coastal Resilience, it was calculated that flood risks along 700,000 kilometres of coastline with mangroves, exceed $USD 730 billion annually in direct impacts to property[3]. Globally, mangroves reduce risk to more than 15 million people and prevent more than $USD 65 billion in property damages every year[4]. They do this by blocking storm surge and dissipating wave energy, thus protecting people and structures along the shoreline.

Mangroves also provide socio-economic and ecological benefits including supporting local jobs, maintaining food security, sequestering carbon and promoting biodiversity.

Taking action to protect existing mangrove forests and restore those that could protect coastal communities is paramount to reducing community vulnerability to coastal flooding, which is expected to increase due to rising sea levels.

As such, AXA XL and our partners at The Nature Conservancy and the University of California Santa Cruz, have led the first study into how insurance could cost-effectively help protect and restore mangrove forests following extreme weather events in the Caribbean region. The report calculates the restoration costs and flood reduction benefits of mangroves per hectare. It identified

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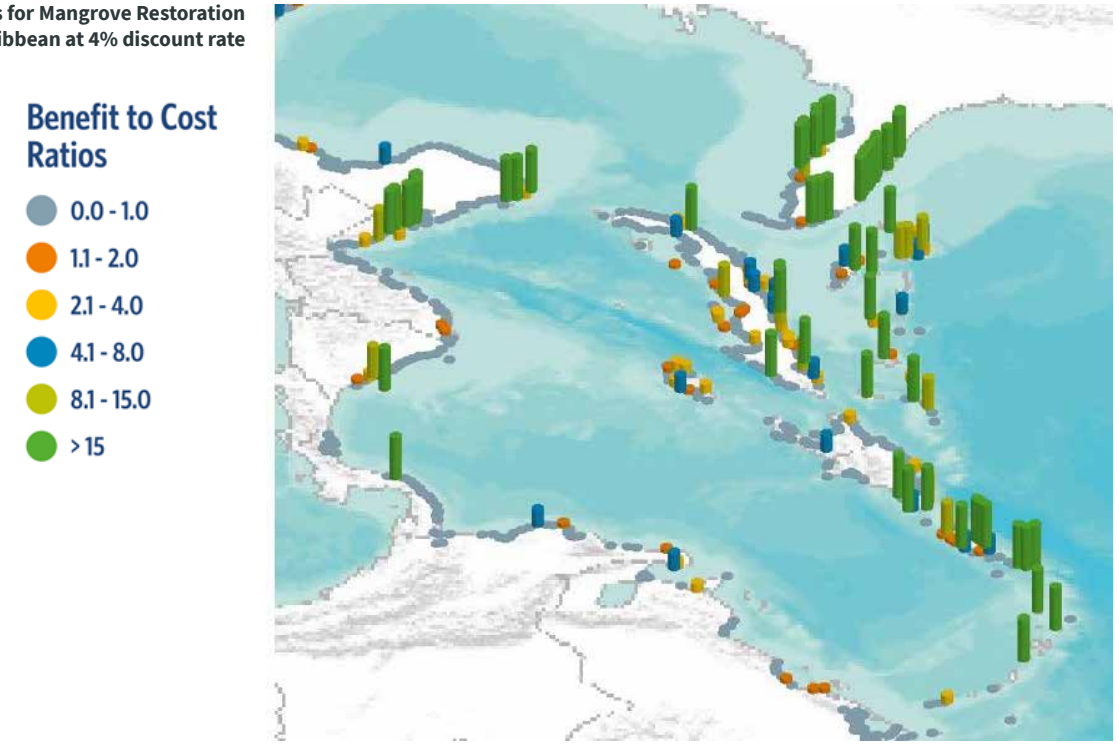
Benefit:Cost Ratios for Mangrove Restoration across the Caribbean at 4% discount rate



over 3,000 km of coastline, spanning 20 territories or countries, with cost-effective opportunities for mangrove restoration where the development of a mangrove insurance product would be a unique tool to ensure that they continue to provide coastal protection, alongside the socio-economic and ecological benefits.

A follow-up study undertaking a deeper market analysis and to identify the geographies for pilot studies has already begun. It will also construct fragility curves to determine the windspeeds at which mangroves are damaged and their protective benefits are reduced. This information will help to establish the trigger point for potential parametric insurance products.

This science led, nature-based approach, allied with risk management expertise, showcases our leadership in developing innovative products to enhance resilience and promote insurance as a key mechanism for risk reduction.

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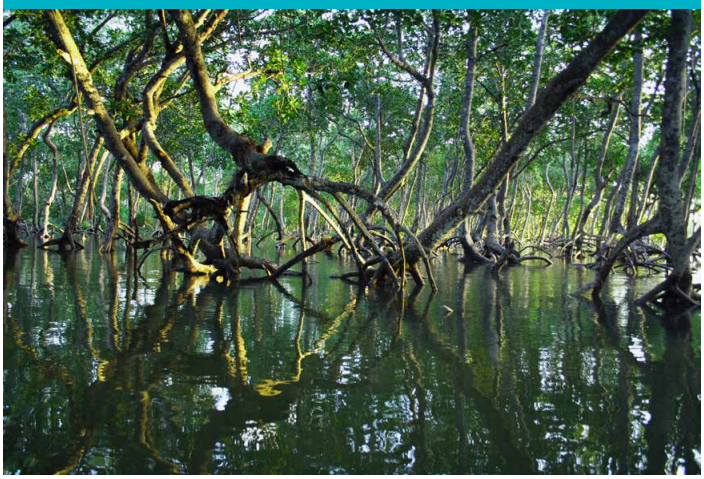

References

1 Menendez, P. et al. The Global flood protection Benefits of Mangroves, www.nature.com/scientificreports 2020
2 M.W. Beck, I.J. Losada et al. The global flood protection savings provided by coral reefs, www.nature.com/naturecommunications, 2018
3 https://theconversation.com/protecting-mangroves-can-prevent-billions-of-dollars-in-global-flooding-damage-every-year-132424 from Menéndez et al. 2020
4 Menendez, P. et al. The Global flood protection Benefits of Mangroves, www.nature.com/scientificreports 2020

About the Author

Chip Cunliffe, who has a BSc. Hons Geography, established and manages AXA's Ocean Risk Initiative which works to identify innovative insurance and finance solutions to the impacts and implications of ocean-related risk. He also co-chairs the Ocean Risk and Resilience Action Alliance, bringing together the private sector, governments, the scientific and NGO communities to incentivise investment into nature-based solutions helping to build resilience in vulnerable coastal regions. Chip is based in the UK and can be reached at chip.cunliffe@axaxl.com.