Thursday, April 25th, 2023

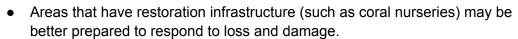Dr. Desanker and Transitional Committee Members,

Thank you for allowing me to submit a coral reef case study to the Transitional Committee. As I understand it, you are assessing existing financial mechanisms to evaluate and compensate for loss and damages due to climate change. As I am sure you are aware, coral reef ecosystems are critically important to protect the people and infrastructure living on or near tropical islands or coasts. Like other ecosystems, coral reefs have suffered from steady degradation. Repeated coral bleaching, sedimentation, over-fishing, and are the steady background on top of which sit - episodic destruction due to severe storms, which are increasing in frequency and intensity due to climate change. Even though it has been estimated that [half of coral reefs are gone or degraded](), direct evaluations of the economic effects of losses and damage to reefs have been largely unquantified. Such economic valuations in reef-dependent communities are urgently needed, and my group, the [Coral Restoration Consortium](), could facilitate a group of experts to undertake these studies.

Examples of Economic Evaluations and Funding Mechanisms
Such a group would not be starting from zero. Some economic evaluations of existing coral reefs have been undertaken. Global evaluations by [Costanza]() and [ICRI]() as well as [national evaluation]() - characterize the overall economic value of a reef using multiple ecosystem services. Regarding coastal protection value specifically, hydrologists, engineers, economists, and insurers have worked together to [estimate the loss of degraded reef's coastal protection benefits](). Reefs attenuate 97% of wave energy - a critical ecosystem service. Separate evaluations have accounted for other services that coral reefs provide - such as [fisheries production]() and [global tourism](). Regarding the existence and cultural value of coral reefs, the most detailed study has been on the [Great Barrier Reef](). Funding mechanisms have been established in [Mexico]() and [Hawaii]() wherein reefs are insured, and when wind speeds exceed a particular threshold, insurance funds are released to help repair reef damage. In Puerto Rico, [coral reef restoration]() has been evaluated as a method that an emergency management agency could use to reduce flood risk following loss and damage.

Opportunities

- Parametric insurance could be used to assess and protect tropical communities and Small Islands Developing States that are dependent on coral reefs and thus vulnerable to climate change.
- The parametric funding mechanism could be scalable, as it utilizes institutions that exist in most locations (insurance and re-insurance agencies, vested local governments, and NGOs).
- Coral reef intervention and restoration, though never a replacement for existing reefs, can help accelerate reef recovery to counteract loss and damage, along with other tools such as fisheries and water quality management.

- Areas that have restoration infrastructure (such as coral nurseries) may be better prepared to respond to loss and damage.
- The parametric insurance described above, could be modified to address the effects of coral bleaching by using cumulative heat accrued (as measured by sea surface temperature) rather than wind speed as the parameter.
- Coral bleaching is predicted to increase in frequency and severity, and is more likely during El Niño periods - such as the one that is likely to occur in a few months from now. Coral bleaching is fairly predictable on a regional scale, and thus the coming El Niño presents an opportunity to be prepared to assess loss and damage.

I hope you have a productive meeting in Bonn this weekend, and I look forward to following up with you. I have attached a few case studies.

Best,

Dr. Tali Vardi
Executive Director
Coral Restoration Consortium