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POLICY BRIEF

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Transforming disaster risk reduction through ecosystem management in Oceania

GLOBAL ECOSYSTEM MANAGEMENT PROGRAMME

Background

The Oceania region faces increasing environmental and socio-economic challenges due to disasters and climate change. It is identified as a disaster risk hotspot by the World Risk Index[1]. The region is not only highly exposed to natural hazards but it is also one of the most disaster-prone regions in the world[2].

Most of the countries in the region are Small Island Developing States (SIDS) which are particularly vulnerable to disasters and climate change impacts[3]. The World Risk Report 2016 identified the region as one of the global hotspots of disaster risks with four countries being among the top 10 countries (out of 171) with the highest disaster risks, namely Vanuatu (Rank 1), Tonga (Rank 2), Solomon Islands (Rank 6) and Papua New Guinea (Rank 10)[1]. In the region, disaster risks overlap with vulnerability to climate change. With the exception of earthquakes and associated secondary impacts, the priority hazards in the region are all climatic by nature, for example storms, floods and droughts[3]. Between 1980 and 2016, a total of 498 disasters were recorded in Oceania, resulting in more than 5,000 losses in human lives, injuring about 9,200 people, leaving more than 23 million people needing immediate assistance and leaving about 400 thousand people homeless[4].

Total economic losses for the same period were estimated to be close to US$83 billion[4]. Of these 498 events recorded in Oceania, 55% were caused by hydro-meteorological hazards[4], which are more likely to increase in frequency and magnitude due to climate change. An increase in frequency of natural hazards does not have to coincide with an increased number of disasters and increased impacts on society. If communities are resilient and more proactive investments are made towards **managing and reducing disaster risks**, not every hazard will turn into a disaster and harm people. Recent policy developments including the adoption of the Sendai Framework for Disaster Risk Reduction 2015-2030 which put the focus on managing risks versus managing disasters, present an important opportunity to re-think current and future measures for disaster risk reduction and to invest in risk-informed, proactive and innovative efforts.

KEY MESSAGES

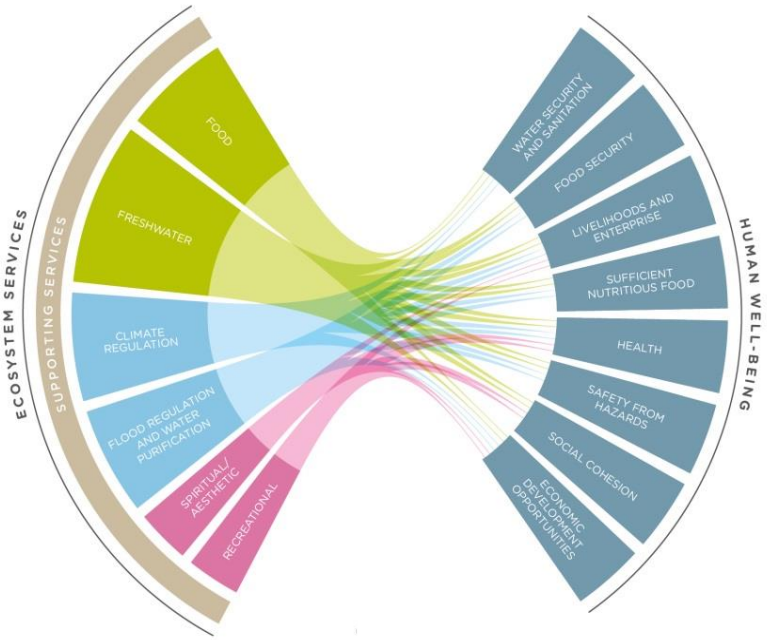
- **In Oceania, disaster risks overlap with vulnerability to climate change and in efforts to address these challenges, it is urgent to invest in the best sources of resilience.**
- **Ecosystems and the services that they provide are central to both disaster risk reduction and climate change adaptation.**
- **While ecosystem management can provide an integrated response to address both short-term and long-term risks, it is not easily identified or accepted as an approach towards disaster risk reduction and long-term resilience building.**
- **The Sendai Framework recognises the importance of ecosystem management as a risk reduction measure and calls for the protection and management of ecosystems to manage and mitigate risks.**
- **The regional Framework for Resilient Development in the Pacific (FRDP) also calls for an integrated ecosystem-based approach for both disaster risk reduction and climate change adaptation.**
- **Investment in ecosystem-based approaches as a response to disaster risks provides a concrete way for countries to demonstrate their disaster risk reduction commitments and can also support regional policy frameworks through coherent actions.**

"…Disasters are preventable through environmental protection, proper urban and rural planning, good-will from government and citizens, and investments to reduce underlying risk factors."
UNISDR, 2015

Nature as a tool for disaster risk reduction

It is now recognised that the state of the environment and the occurrence and extent of impacts of disasters are related. In an ideal situation where ecosystems are maintained in a healthy state, they are able to provide multiple benefits for human well-being, namely ecosystem services which can be harnessed to help people prepare for, cope with and recover from disasters.

However despite increasing evidence and lessons worldwide, inclusion of ecosystem management in disaster risk reduction strategies remains underdeveloped worldwide. Sadly, it also frequently takes a major disaster before countries begin to set in motion plans and actions to reduce environmental degradation and invest in ecosystem management for risk reduction.



Ecosystem Services and Human well-being (©IUCN Water)

The essential role of nature for disaster risk reduction is based on two main facts:

1) Environmental degradation exacerbates disaster risks

We derive our basic needs for human wellbeing from nature and this includes protection from the impacts of disasters. Ecosystem degradation and associated loss of ecosystem services thus exacerbates social vulnerabilities and the impacts of disasters on populations. For example, studies have shown that if 80-90% of the wetland area in a landscape is cleared, there is an increased risk of flooding[5].

2) Healthy ecosystems and sound management enhance resilience to disasters

Ecosystems such as mangroves, coral reefs and sand dunes, if they are sustainably managed and healthy, can provide physical protection from the direct impacts of natural hazards and they can also reduce underlying vulnerabilities of communities through provision of subsistence, livelihood options and safety nets[6]. Ecosystems provide key services such as flood regulation, slope stabilisation and protection from storm surges. Therefore, ecosystems play an essential role in preventing disasters and reducing risks as well as in post disaster responses (by providing important services such as food and clean water).

In efforts to address vulnerability of communities in Oceania, it is urgent to invest in the best sources of resilience, with ecosystems and the services that they provide being central to both disaster risk reduction and climate change adaptation. With more than 70% of the inhabitants of the Pacific islands living in coastal zones7, coastal ecosystems such as mangroves perform numerous functions of importance to coastal communities and for countries as a whole. Ecosystem-based disaster risk reduction (Eco-DRR) thus has a key role to play in the region by providing proactive solutions to effectively build socio-ecological resilience.

Mangroves in Oceania provide many key ecosystem services including subsistence and commercial fishery, tourism, coastal protection and carbon sequestration. Economic valuation of these ecosystem services are estimated to range from US$2,914 to $10,904 per year per hectare depending of the site[8].

What is Ecosystem-based Disaster Risk Reduction?

Ecosystem-based disaster risk reduction (Eco-DRR) can be defined as the "Sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development"[6]. It promotes the use of ecosystem management approaches in reducing risks through one or more of the following:

- Sustainably using and managing natural resources to derive services;
- Protecting and conserving intact ecosystems that can play a critical role in risk reduction;
- Restoring degraded ecosystems in order to reduce risks.

Eco-DRR: a means to translate the Sendai Framework commitment into actions

With seven global targets and four priorities for action, a key feature of the Sendai Framework is the shift in focus from managing the aftermaths of disasters to managing the causes of disasters. It also recognises and promotes the role of ecosystem management in disaster risk reduction, for example by highlighting poor land management, unsustainable use of natural resources and degrading ecosystems as underlying drivers of disaster risk. Ecosystems will now need to be taken into account when undertaking risk assessments (Priority Action 1), in risk governance (Priority Action 2) and investing in resilience (Priority Action 3)[9].

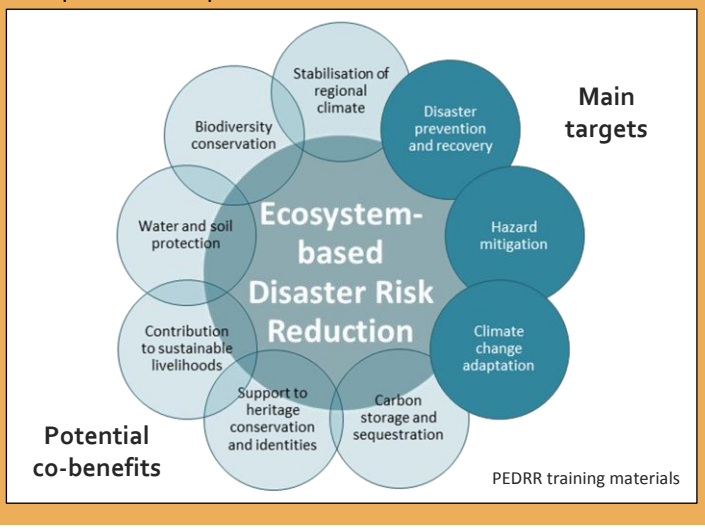
In 2016, Pacific leaders also endorsed the Framework for Resilient Development in the Pacific (FRDP) which aims to build resilience to climate change and disasters in the Pacific Islands and advocates for the adoption of integrated approaches. This plan positions the Pacific as the first region in the world to fully integrate climate change and disaster risk management into a single overarching regional policy framework. The framework has three strategic goals and recognises the importance of ecosystems for community resilience. One of its ten guiding principles for implementation is to "incorporate ecosystem-based services and functions in resilience building". The FRDP is aligned with the aims of the Sendai framework as well as the Sustainable Development Goals and the Paris Agreement on climate change. It is generally agreed that Eco-DRR can also support long-term climate change adaptation given that climate change is also a driver of disaster risk[6].

Investments in Eco-DRR actions can not only form part of disaster risk reduction solutions and be used as indicators of countries' progress against the Sendai Framework for Disaster Risk Reduction, but they also provide a clear integrated response that can address both disaster risks and climate change impacts.

DRR+: the added benefits of ecosystem-based disaster risk reduction

Some of the biggest barriers to the uptake of Eco-DRR are a lack of trust in these approaches and the need for immediate results. Eco-DRR is indeed not a solution that fits all contexts; benefits may take time to manifest and as there are multiple drivers of disaster risks, it needs to be part of a larger strategy that can consist of a combination of approaches. However ecosystem management are too easily dismissed in risk reduction strategies, even when ecosystem degradation is one of the root causes of vulnerability. It is important to value Eco-DRR investment as an approach towards DRR and one that also provide multiple benefits:

- Eco-DRR as a cross-cutting theme can provide multiple co-benefits beyond disaster risk reduction including livelihoods, food and water security and biodiversity conservation;
- Eco-DRR for disaster risk reduction can simultaneously contribute to conservation efforts, risk reduction, sustainable development, gender equity, climate change adaptation and food security. It can thus ensure the achievement of multiple goals and commitments in a more cost-effective way;
- Eco-DRR is a "no regrets" option that can provide multiple benefits, regardless of a disaster occurrence.



Transforming disaster risk reduction with ecosystem management: where do I start?

Integrating knowledge on ecosystem status in risk and vulnerability assessments: understanding risks and vulnerability assessments are the essential steps towards the implementation of effective DRR. Given that ecosystem degradation is a key driver of disaster risk, it is also important to integrate ecosystem assessments in efforts to understand risk (Priority Action 1) by identifying:

1. Which ecosystems provide important services for disaster risk reduction?
2. What is the health status of these critical ecosystems?
3. What are the current and future threats to these ecosystems?

The knowledge generated will help identify where Eco-DRR is an important investment for effective disaster.

Recommendations for Eco-DRR actions:

- Eco-DRR actions need to be mobilised and scaled-up in priority areas where disaster risks and ecosystem degradation overlap.
- Multi-sectoral engagement and collaboration need to be promoted and strengthened to enable mainstreaming of DRR and Eco-DRR in other sectors for joint and cost-effective actions.
- It is important to establish and enforce mechanisms to protect healthy ecosystems that provide regulatory ecosystem services so as to avoid the creation of new disaster risks.
- Disaster risk reduction and management efforts including engineered grey infrastructure, recovery and reconstruction processes need to be implemented without affecting the integrity of natural ecosystems.

Eco-DRR in practice

Country: Papua New Guinea.
Ecosystem-based approach: Rehabilitation and management of mangrove forests to increase coastal resilience.

Interventions:
A household use survey showed a very high dependence on mangroves. The results of the survey spurred communities to include mangrove management in their community resource plans. Over 13,000 mangrove seedlings were planted in degraded mangrove areas in 45 villages across five provinces. Mangrove and coral planting are means of biodiversity conservation whilst also providing coastal protection. Carbon accounting was also done at two mangrove sites to calculate carbon stocks at undisturbed sites thus proving their ability to sequester carbon and mitigate climate change[10].

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