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GLOBAL ECOSYSTEM MANAGEMENT PROGRAMME

# Transforming disaster risk reduction through ecosystem management in South America

## KEY MESSAGES

## Background

The adaptive capacity of human systems in Latin America is low, particularly to extreme climate events, and vulnerability is high<sup>1</sup>. “The dependency of many countries in South America on (degrading) natural resources and the agriculture, forestry and fisheries sectors for incomes and livelihoods, combined with inadequate economic and technological development, weak governance and institutions, and rapid growth, make the region particularly vulnerable to climate change”<sup>2</sup>.

In 2014 the total population in South America was estimated at 414 million inhabitants, representing approximately 18% of the world’s population<sup>2</sup>. The South American continent has important wildland and biodiversity resources such as the Tropical Andes biodiversity hot spot recognized as “the richest and most diverse region on Earth”<sup>3</sup>, and the Amazonia.

South America is exposed to diverse natural hazards that have considerable destructive potential, indeed, disasters has increased significantly over the last 15 years. For the period 2000–2015, disasters in South America caused a reported US\$ 57 billion in total economic damages, affecting almost 74 million people, and claiming an estimated total of 11,963 lives<sup>2</sup>. The gathering of statistical information<sup>5</sup> confirm that floods accounted for 50% of the total

occurrence of natural hazards in the region; followed by storms (9%), landslides (8%) and extreme temperatures (8%).

Despite the efforts of some countries within the region, it remains necessary to strengthen capacity building as well as to enhance the political, institutional and technological frameworks to reduce vulnerability. The expansion of the agricultural frontier –characterised by the conversion of native habitats to agriculture– has critical environmental impacts, including deforestation of vast areas high in biodiversity, especially in the Amazon region. Additionally, the use of agrochemicals and soil erosion caused by unsustainable farming practices has led to major negative impacts on terrestrial, aquatic and marine biodiversity<sup>2</sup>.

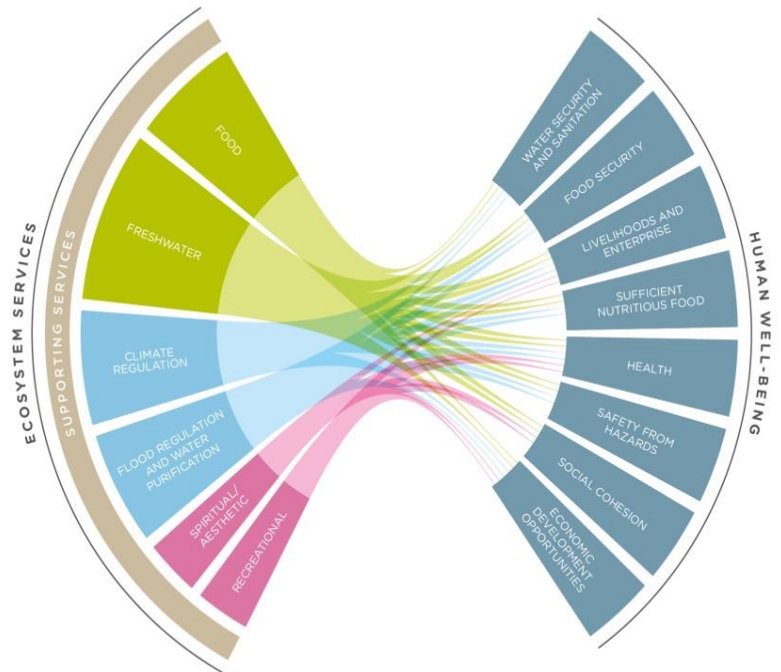
- A number of international agreements and policy processes related to the environment and sustainable development have called on countries to implement ecosystem-based approaches that contribute to their response to climate change, because this is seen as an important option for achieving their goals<sup>4</sup>.
- To address the current knowledge gaps on the scale and extent of the importance of biodiversity in Ecosystem-based Disaster Risk Management (Eco-DRR), six regional assessments have been conducted as part of IUCN’s RELIEF-Kit initiative. In South America, the assessment focused on six countries: Argentina, Bolivia, Chile, Colombia, Ecuador and Peru<sup>2</sup>.
- The experiences with Eco-DRR in the region as the mapping exercise has revealed the benefits of several environmental initiatives through climate change adaptation, mitigation and conservation. However, there is a need to reinforce the efforts for mainstreaming Eco-DRR inside the disaster risk management strategies<sup>4</sup>.
- There are a knowledge gaps in Eco-DRR approaches but Ecosystem-based Adaptation approach (EbA) has considerable potential to be integrated and up-scaled within adaptation and disaster risk reduction to deal with lacks in ecosystem management<sup>4</sup>.

“...Partly because Latin America naturally sits on a territory prone to hazards, but also because, as yet, not enough preventative measures have been embraced, nine of the world’s top 20 countries most exposed to disaster-led economic impacts are in the region. At the same time, the region’s decision makers are increasingly trying to nip disasters in the bud, with many Latin American countries have placing hazard mitigation and prevention high on their agendas, according to experts<sup>4</sup>.”  
World Bank, 2012

## 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

While we derive our basic needs for human wellbeing from nature, ecosystem degradation and associated loss of ecosystem services exacerbate social vulnerabilities and the impacts of disasters on populations. The region faces some serious threats including deforestation, alien invasive species and mining, in addition to climate change impacts which affect the biodiversity. Extreme climatic events have adverse effects not only on biodiversity but also undermine key economic activities including fisheries, forestry and agriculture. Consequences of climate change such as acidification of the oceans, rising sea levels, increased intensity and frequency of hurricanes are expected to have a severe impact on coastal livelihoods, tourism, health, and food and water security<sup>4</sup>. It is therefore very important to invest in ecosystem preservation and sustainable management to protect people and environment from impacts of the disasters.

### 2) Healthy ecosystems and sound management enhance resilience to disasters

Ecosystems such as wetlands, forests and coastal systems, if they are sustainably managed and healthy, can act as natural infrastructure, reducing physical exposure to many hazards and increasing the socio-economic resilience of people and communities by sustaining local livelihoods and providing essential natural resources such as food, water and building materials. The services provided by ecosystems contribute to building resilience, helping recovery after a disaster, and include the provision of food, fuel and clean water during emergencies. Therefore, effective ecosystem management not only offers an opportunity to strengthen natural infrastructure and human resilience against natural hazards, but also generates a range of other social, economic and environmental benefits for multiple stakeholders, which in turn feed back into reduced risk<sup>2</sup>.

## 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”<sup>6</sup>. 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 mean to translate the Sendai Framework commitment into actions

With 7 global targets and 4 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 in undertaking risk assessments (Priority Action 1), in risk governance (Priority Action 2) and investing in resilience (Priority Action 3)<sup>6</sup>. The Sendai Framework builds on what was already keys element of its 2005 - 2015 predecessors: ensuring that all players work together to reduce vulnerability and that disasters are not simply viewed as a matter of humanitarian operations after the event. The new framework also places greater emphasis on reducing the creation

of new risks – for example those associated with climate change or rapid urbanization – with the goal being to make societies more resilient to the challenges they face<sup>7</sup>.

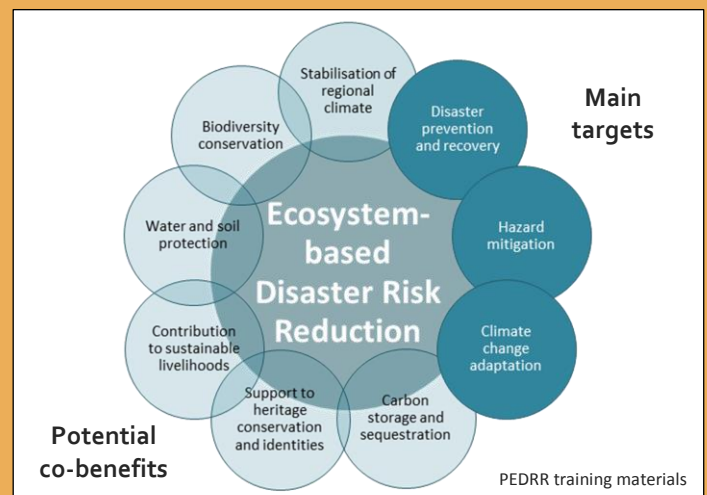
Latin American countries have etched the Sendai Framework for Disaster Risk Reduction into a regional declaration that sets out their common position ahead of a key United Nations humanitarian summit<sup>8</sup>. The Commission on Ecosystem Management (CEM)<sup>9</sup> in South America have an important role too, since it aims to promote ecosystem based approaches as a tool for biodiversity conservation and sustainable development. In addition, there are another convention, cooperation agreements and/or frameworks related to EbA and Eco-DRR in the region that to support stakeholders and contribute to build resilience through long-term and reduce vulnerability.

**Investments in Eco-DRR actions can not only form part of disaster risk reduction solutions but they can be used as indicators of countries’ progress against the Sendai Framework for Disaster Risk Reduction.**

### 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 risk reduction.

### Eco-DRR in practice

The implementation of Eco-DRR is basically based on ecosystem management approaches; however they include additionalities to ensure all the factors contributing to disaster risk are considered. One is the mapping of social vulnerabilities which provide information about such as vulnerable livelihood strategies, low income levels, degradation of natural resource<sup>4</sup>. The mapping exercise of Eco-DRR initiatives in South America revealed that there are few cases relating specifically to Eco-DRR. In practice, Eco-DRR is mostly achieved as co-benefits of several other environmental initiatives, namely climate change adaptation or mitigation and conservation. Climate change adaptation projects have been important in providing key Eco-DRR outcomes, and targeted some of the priority hazards in the region, namely floods and droughts<sup>5</sup>.

Project type	Natural hazards	Ecosystems	Activities contributing to Eco-DRR
Eco-DRR	Avalanches	Forest	Vulnerability risk assessments
	Floods	Urban	Forest management
	Drought	Agricultural	Water resource management
	Landslides		Restoration of rivers
Climate change adaptation	Floods	Freshwater	Habitat protection
	Droughts	Forest	Restoration of wetlands and forests
	Landslides	Wetlands	Creation of private nature reserves
	Avalanches	Grasslands	Integrated water management
	Drought	Mountains	Sustainable grassland management
			Vulnerability assessment and mapping
			Sustainable livestock production
			Strengthening capacities of local stakeholders
Climate change mitigation	Floods	Forests	Habitat protection and restoration
Conservation	Soil erosion	Forest	Promoting ancient soil management systems
			Protected area management
			Strengthening local governance
			Capacity building

Helping Nature help us. 2016.

### 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 be implemented without affecting the integrity of natural ecosystems.

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