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DISASTERS AND CLIMATE CHANGE

Reducing the risk of disasters through nature-based solutions

- Climate change is increasing the frequency, intensity and magnitude of disasters, leading to a higher number of deaths and injuries as well as increased property and economic losses.
- Nature-based solutions can help communities prepare for, cope with, and recover from disasters, including slow-onset events such as famines.
- Nature can be a cost-effective and no-regret solution to reducing risks from disasters, complementing conventional engineering measures such as sea walls and storm channels.
- However, investment in 'natural infrastructure' is underexplored in policies aimed at reducing risk.
- There is an urgent need to invest in nature-based solutions to disaster risk reduction in order to minimise our vulnerability to future events.

What is the issue?

The increasing incidence and severity of disasters such as hurricanes, floods and landslides are leaving more people vulnerable each year – particularly the poor and marginalised.

In the last 10 years, over 700,000 people have lost their lives, over 1.4 million have been injured, and around 23 million made homeless as a result of disasters.

Climate change is increasing the frequency, intensity and magnitude of disasters, leading to a higher number of deaths and injuries, as well as increased property and economic losses. In the past 20 years, 90% of major disasters have been caused by weather-related events such as heatwaves, storms, floods and droughts, according to the UN Office for Disaster Risk Reduction (UNISDR).

Nature can provide cost-effective, no-regret solutions to disasters, complementing conventional engineering measures such as sea walls and storm channels.

However, although there are many examples of the value of nature-based solutions in reducing the risk of disasters and building the resilience of communities around the world, investment in 'natural infrastructure' is underexplored in policies aimed at reducing risk.

There is a prevailing perception that a choice has to be made between ecosystem management and economic development when, in fact, the two can go hand in hand.

Why is this important?

Nature-based solutions can help communities prepare for, cope with, and recover from disasters, including slow-onset events such as famines. They can also reduce the secondary impacts from non-climate-related disasters such as landslides following an earthquake.

Forests and other vegetation help stabilise slopes and therefore reduce the risk of landslides. Wetlands can help regulate floods. Coastal vegetation and natural features such as sand dunes can provide protection from storm surges, strong winds and cyclones. Healthy coral reefs have proven to reduce wave energy during coastal storms.

In 2013, when **Typhoon Haiyan** hit the Philippine province of Leyte, 5,500 people died from storm surges along exposed coastlines. However, several communities in the same area remained relatively unaffected, and credited the presence of mangroves with saving their lives and properties.

Following **Hurricane Katrina**, the US Congress approved US\$ 500 million to restore and reconnect ecosystems around the Gulf Islands and in the Jean Lafitte National Park on the New Orleans coast. These green spaces helped reduce the economic damage and loss of lives following the disaster.

Nature-based solutions also generate local employment and economic opportunities, reducing the need to import technical expertise and labour

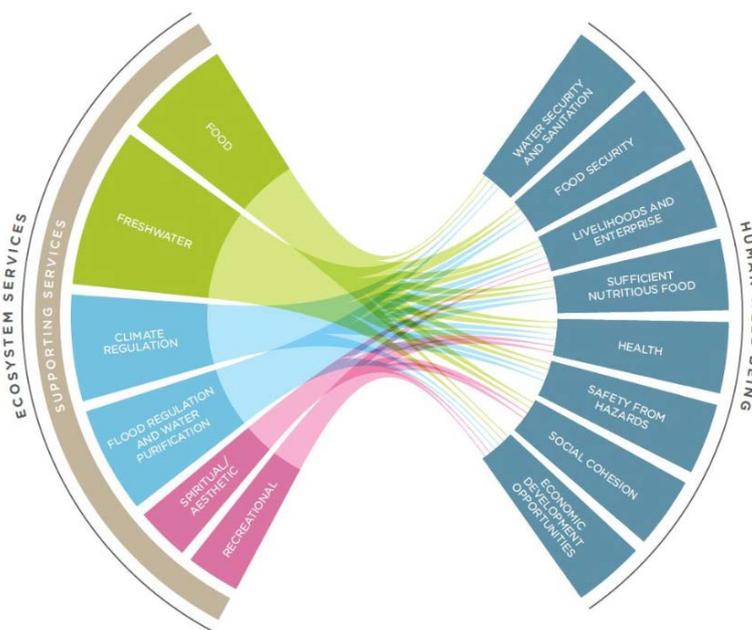
from elsewhere, as in the case of engineering and construction. Investment in these solutions to reduce risk can therefore be included in public-sector stimulus packages and social development programmes.

To date, countries have focussed more on addressing sudden-onset events such as storms and landslides in reacting to disasters. However, climate change is also bringing about slow-onset disasters such as droughts, famines and gradual temperature change. Proactive investments in risk reduction can help countries prepare for this type of disaster that may be 'invisible' until a crisis point is reached, when more resources may be required to reverse the damage.

Failing to address risk factors now means failure to secure investments in longer-term climate change mitigation and adaptation efforts. Investing in ecosystem management now pays off in terms of longer-term resilience to climate change.

What can be done?

There is an urgent need to invest in disaster risk reduction to minimise our vulnerability to future events. To date, much of the focus has been on reactive measures such as humanitarian aid relief and preparedness. While this is critical in times of disasters and requires continued efforts, as a global community we must move from reactive to proactive risk reduction.



In some countries, nature-based solutions are already established as cost-effective ways to reduce disaster risk:

- Following Typhoon Haiyan, the Philippines Government pledged about **US\$ 22 million to restore mangrove and natural beach forests.**
- Switzerland invests up to **CHF 150 million a year in forest management**, as this is **5-10 times less expensive than engineered structures** for reducing risks from landslides, rock falls and avalanches.
- Instead of increasing the height of sea walls following the 2011 Great East Japan Earthquake and Tsunami, Japan declared the expansion of its coastal forest national park in the form of Sanriku Fukko Reconstruction Park, with an **estimated saving of more than JPY 2.5 billion.**

Better information sharing amongst the humanitarian aid sector, the environmental community and climate change policy makers, and the fostering of mutually beneficial partnerships and collaborations are key to promoting nature as a solution for disaster risk reduction.

The scientific basis of nature-based solutions to disaster risk reduction also needs to be strengthened to enhance the understanding of how natural infrastructure can complement engineered infrastructure.

Improved coherence amongst disaster management, conservation and climate change policy mechanisms is also needed for nature-based solutions to be taken into account in global policy and decision-making processes.

IUCN provides technical support on integrating nature-based solutions into land-use planning for sustainable development. In promoting nature-based solutions to disasters, IUCN is helping communities to understand their vulnerabilities and seek locally relevant nature-based solutions. It also promotes gender equality, reduces vulnerabilities of the most poor and marginalised, and promotes social equity from local to global levels.

Where can I get more information?

iucn.org/ecosystems
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