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ISSUES BRIEF
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NOVEMBER 2017

NATURE-BASED SOLUTIONS TO DISASTERS

- **Climate change is increasing the frequency, intensity and magnitude of disasters**, leading to a higher number of deaths, injuries and increased economic losses.
- **Nature-based solutions, such as conserving forests, wetlands and coral reefs, can help communities prepare for, cope with, and recover from disasters**, including slow-onset events such as drought.
- **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?

According to the Emergency Events Database, in the last ten years, over 730,000 people have lost their lives, over 1.9 million have been injured, and around 15 million have been made homeless as a result of disasters.

A 2017 analysis by Munich Re revealed total economic losses from natural disaster events in 2016 reached US$ 175 billion – compared to US$ 103 billion in 2015. This was caused by natural catastrophes, such as forest fires in Canada and widespread flooding in the USA, Europe and Asia.

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, despite its value in reducing the risk of disasters and building communities' resilience to climate change, investment in 'natural infrastructure' has been underexplored in disaster risk reduction policies.

Why is this important?

Nature-based solutions, such as conserving forests, wetlands and coral reefs, can help communities prepare for, cope with, and recover from disasters, including slow-onset events such as drought. 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 and mangroves can provide protection from storm surges, strong winds and cyclones. Healthy coral reefs can 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 in 2013 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 will help prevent economic damage and loss of lives from future extreme events.

Murti, R. and Buyck, C. (ed.) (2014). *Safe Havens*.

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

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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 to address sudden onset events such as storms and landslides, including humanitarian aid relief and preparedness. However, climate change is also responsible for slow onset disasters such as drought. While emergency measures are critical in times of disasters and require continued efforts, as a global community we must move from reactive to proactive risk reduction. 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 pays off in terms of longer-term resilience to climate change.
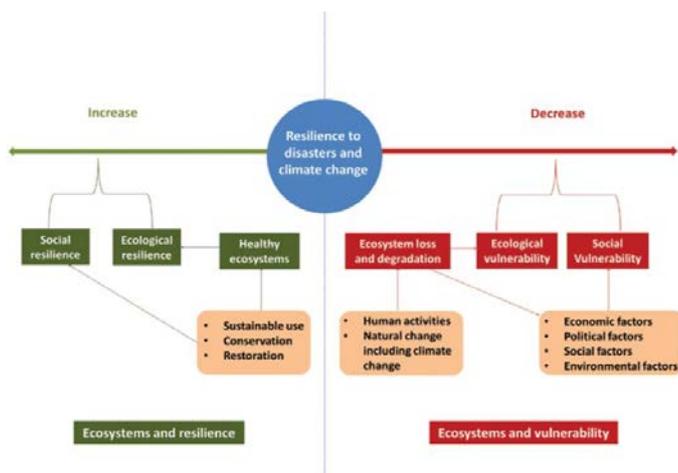
Monty, F., Murti, R. and Furuta, N. (2016). *Helping nature help us.*

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 better recognising nature as an effective 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.

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

- Following Typhoon Haiyan, the Philippine Government in 2015 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**.

Monty, F., Murti, R. and Furuta, N. (2016). *Helping nature help us.*

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 applying 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 poorest and the most marginalised, and promotes social equity from local to global levels.

Where can I get more information?

IUCN's work on disaster risk reduction: iucn.org/drr

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