Intact nature offers best defense against climate change

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Intact forests like this one in Madagascar represent our greatest protection against floods and storms. Credit: Julie Larsen Maher/WCS

Worldwide responses to climate change could leave people worse off in the future according to a recent study conducted by CSIRO, Wildlife

Conservation Society (WCS) and the University of Queensland.

The paper, "Intact ecosystems provide the best defense against climate change," published today in *Nature Climate Change*, discusses how certain adaptation strategies may have a negative impact on nature which in turn will impact people in the long-term.

"In response to climate change, many local communities around the world are rapidly adjusting their livelihood practices to cope with climate change, sometimes with catastrophic implications for nature," according to CSIRO's principal research scientist Dr. Tara Martin.

The authors say that in Australia and Canada, conservation reserves are being used as drought relief to feed livestock, while forests in the Congo Basin in Africa are being cleared for agriculture in response to drought, and coral reefs are being destroyed to build sea walls from the low-lying islands in Melanesia.

Dr. Martin added: "These are just few of the human responses to climate change that, if left unchallenged, may leave us worse off in the future due to their impacts on nature. Functioning and intact, forests, grasslands, wetlands and coral reefs represent our greatest protection against floods and storms."

The paper states that intact native forests have been shown to reduce the frequency and severity of floods, while coral reefs can reduce wave energy by an average of 97 per cent, providing a more cost-effective defense from storm surges than engineered structures.

Likewise, coastal ecosystems such as mangroves and tidal marshes are proving to be a more cost-effective and ecologically sound alternative to buffering storms than conventional coastal engineering solutions.

Co-author Dr James Watson, a lead scientist with WCS and Principle Research Fellow at the University of Queensland, said that with more than 100 million people per year at risk from increasing floods and tropical cyclones, ill-conceived adaptation measures that destroy the ecosystems, which offer our most effective and inexpensive line of defense, must be avoided.

"The cost of adaptation to climate change could reach 100 billion per year in the coming decades but this is small change when we consider the environmental and economic fallout from not using nature to help us cope with climate change," said Dr. Watson.

Dr. Watson added: "If we consider another perverse mechanism contributing to climate change, fossil fuel subsidies, it is small change. A recent report by the International Monetary Fund estimates global energy subsidies for 2015 at $US5.3 trillion per year. Eliminating fossil fuel subsidies would slash global carbon emission by 20 percent and raise government revenue by 2.9 trillion, well over the funds needed for intelligent policy and action on climate adaptation."

"Fortunately some adaptation strategies are being developed that do not destroy nature, some of which are even ecosystem-based. The protection and restoration of mangrove forests that is actively funded by agencies such as USAID is a prime example," Dr. Watson said.

More information: Tara G. Martin et al. Intact ecosystems provide best defence against climate change, *Nature Climate Change* (2016). DOI: 10.1038/nclimate2918

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