

resilient

nature resilient people





preparing for climate change through nature-based adaptation

Preventing the most catastrophic effects of climate change requires significant reductions in emissions from every sector of the world economy, starting today. But even if these reductions are achieved, changes to our climate have already started and very serious effects to people, economies and nature are inevitable.

Protecting and maintaining the health of the natural world will help reduce the negative impacts of climate change on human communities, and support sustainable development efforts. Nature-based adaptation strategies should be an integral part of climate change adaptation and development assistance and a key component of a comprehensive international framework on climate change.

The Nature Conservancy is a leader in building the resilience of natural areas in response to climate change. We work with governments, scientists and communities to develop strategies that help people and nature cope with the inevitable impacts of a warming planet.



resilient nature, resilient people

Undermined by Climate Change

The health of communities and economies is directly linked to the health of the natural world, as billions of people depend on natural systems for their livelihoods. The benefits provided by nature—from food and fiber to protection against extreme weather events—are the foundation for sustainable and economic development, and the lifeline for impoverished communities around the world.

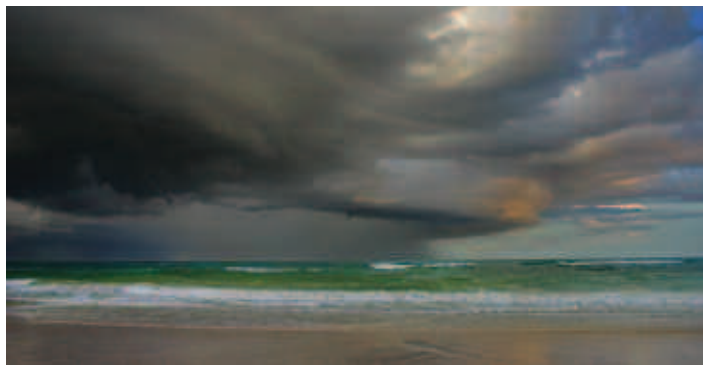
“Everyone in the world depends on nature and ecosystem services to provide the conditions for a decent, healthy and secure life.”

Living Beyond Our Means: Natural Assets and Human Well-being, Statement of the Board, Millennium Ecosystem Assessment, 2005



However, many natural systems are already degraded from disturbances such as pollution and over-harvesting. The increasing impacts of climate change—more frequent and intense storms, sea level rise, increased floods or droughts—will exacerbate existing stresses to ecosystems and further undermine nature’s ability to provide the vital services on which we all depend.

At greatest risk are the communities that are most dependent on natural resources for their security and livelihoods, and in many cases least dependent on the fossil fuels that are leading to these detrimental impacts.



a new choice for climate change adaptation



Nature-based Adaptation Strategies

Strengthening the resilience of natural systems to climate change—through conservation and sustainable resource management—is an important and cost-effective solution as we plan for a future with climate change. Nature-based adaptation strategies not only strengthen the ability of people and communities to deal with climate change impacts, they contribute to the long-term viability of sustainable development efforts.



- Designing networks of marine protected areas to protect coral reefs that are most likely to survive in warmer seas can protect against storm and wave surges while ensuring critical habitat for fish and other seafood



- Protecting and restoring forests can reduce flood damages and mudslides from more frequent and severe storms while maintaining access to clean water, food and non-timber forest products



- Securing land inland from mangroves and coastal wetlands allows them to migrate as sea levels rise so they can continue to protect coastal communities and provide habitat for fish, crab and shrimp

Adaptation efforts to date have focused primarily on infrastructural changes, such as strengthening seawalls, relocating communities or roads, and building river dams or channels to control flooding.

Infrastructural changes to address climate change, while necessary in some instances, can be extremely costly, can fail under the extreme impacts of climate change, and can unintentionally put communities at risk by undermining the services that nature provides. In addition, recovery efforts from natural disasters often lead to increased infrastructure development that further degrades natural systems.

Poorly sited or designed infrastructure projects can directly impact natural systems and dramatically reduce the ecological integrity of landscapes or watersheds. Building seawalls or dikes may actually destroy or erode healthy wetlands or mangroves that provide a natural buffer to storm surges and nurseries for important fisheries.

The cost of infrastructure development and maintenance can far outpace the cost of conservation and management of natural areas that provide a similar service. According to the International Red Cross, planting 12,000 hectares of mangroves in Vietnam cost US\$1.1 million, but reduced dike maintenance costs by US\$7.3 million each year, helped minimize impacts from typhoons and improved livelihoods for local families involved in planting or harvesting shellfish from the restored mangroves.

Ensuring the health and resilience of natural systems is an important and cost-effective alternative for adapting to climate change. Nature-based adaptation strategies can bring multiple benefits to people and nature, including protection from extreme events, reduced loss of life and decreased economic losses from climate change.



“Investment in measures to conserve the original function of these natural spaces is generally a far cheaper and highly effective option.”

Living Beyond Our Means: Natural Assets and Human Well-being, Statement of the Board, Millennium Ecosystem Assessment, 2005

Building Resilience through Nature-based Adaptation Strategies: Examples from Around the World

Ecosystem	Benefit Provided	Impacts of Climate Change	Nature-based Adaptation Strategy	Highlights of Conservancy Work
Forested watersheds	<ul style="list-style-type: none"> Food, medicine and fresh water Traditional building materials Fuel wood Erosion control Flood regulation Carbon storage 	<ul style="list-style-type: none"> Die-off from increased diseases, pests and fires Dam failures from increased flooding and water flows Mudslides and erosion 	<ul style="list-style-type: none"> Protect and restore forests that are most likely to reduce flood damages and mudslides 	<ul style="list-style-type: none"> Upper Yangtze River Basin conservation blueprint that includes climate change impacts on various ecosystems and natural services Reforestation of steep hillsides in Guatemala prone to mudslides
Coral reefs	<ul style="list-style-type: none"> Food and medicines Fish spawning, nursery and feeding areas Storm and wave protection Tourism and recreation 	<ul style="list-style-type: none"> Bleaching and die-off from warmer waters Acidification leading to slowed growth and weakening of coral skeletons Loss of reef fish populations Loss of coastal defenses 	<ul style="list-style-type: none"> Create marine protected area (MPA) networks that protect most resilient reefs 	<ul style="list-style-type: none"> First MPA network designed with resilience principles in Kimbe Bay, Papua New Guinea
Coastal wetlands, mangroves and marshes	<ul style="list-style-type: none"> Food Habitat for fish, crab and shrimp Storm and wave protection Traditional building materials 	<ul style="list-style-type: none"> Inundation from sea-level rise Loss of fish nursery habitat Increased storm damage and flooding Salt water intrusion into groundwater supplies 	<ul style="list-style-type: none"> Secure inland conservation areas to allow for migration Restore or “prestore” species to aid system migration Use “soft armoring” techniques to buffer eroding shorelines without hardening them 	<ul style="list-style-type: none"> Coastal ecosystem restoration in North Carolina’s Albemarle-Pamlico Estuary to increase resilience and give natural systems and local communities the chance to adapt to rising seas

keeping nature on the job

Integrating Nature-based Strategies into Adaptation Efforts

To maintain the many benefits that healthy natural systems can provide, developing countries need assistance to significantly increase efforts to ensure the resilience of ecosystems in the face of climate change. Developed countries should also implement adaptation strategies that will minimize climate impacts on plants, animals and people.

National policy makers and international institutions should consider the following guidelines to lessen the impacts of climate change through nature-based adaptation strategies:

- Integrate strategies to safeguard ecosystem services into adaptation assistance provided by industrialized country governments, the Global Environment Facility, the Special Adaptation Fund and multilateral development banks;
- Gain high-level political and financial commitment across government ministries in industrialized and developing countries to support the role of healthy, resilient natural areas in reducing climate change impacts on people;
- Prioritize and pursue adaptation strategies that minimize climate change impacts on people, increase the resilience of natural systems and enhance sustainable development;
- Give priority to countries whose people and ecosystems are the most vulnerable to climate change;
- Incorporate ecosystem resilience principles and nature-based adaptation strategies into conservation, development and adaptation planning;
- Ensure that other development activities don't unintentionally decrease ecosystem health and weaken the protective services they provide to communities; and
- Fund programs and efforts to address scientific gaps in regards to climate change impacts on ecosystems and people.

These guidelines can strengthen adaptation and development assistance by including cost-effective nature-based strategies that will lessen the impacts of climate change on people and promote ecosystem health over the longer term.



the nature conservancy



Innovation in the Face of Climate Change

Climate change is the greatest environmental challenge that our society faces today. To address this challenge, we support development of a comprehensive global climate change strategy that addresses all major sources of greenhouse gas emissions, recognizes emissions reductions from deforestation, includes market-oriented solutions, and incorporates nature-based strategies and funding to help people, plants and animals adapt.

The Nature Conservancy is a leader in researching and developing innovative solutions that build resilience to climate change through conservation and restoration.

- Our on-the-ground work in more than 30 countries and our private reserve system across the United States provide a testing lab for understanding and adapting to climate change impacts.
- We conduct climate impacts modeling and vulnerability assessments, test and evaluate innovative management solutions and share best practices through learning opportunities and networks for practitioners around the world.
- Using these tools, we are helping to increase resilience to climate change by protecting or restoring coral reefs in Kimbe Bay, forests and watersheds in the Upper Yangtze River Basin, forests in Guatemala's Sierra Madre and estuaries on the eastern United States.

Working with policy makers, scientists and communities we can implement forward-thinking solutions to address the challenge of climate change and reduce its impacts on people and nature.

adapting to climate change by strengthening nature



the conservancy at work

- 1 million individual members
- Works in more than 30 countries and all 50 United States
- Has protected more than 47 million hectares (117 million acres) of land around the world
- Owns and manages the largest private system of nature preserves in the world
- Currently addressing climate change at more than 20 sites in 10 countries
- Has kept 175 million tons of carbon dioxide out of the atmosphere through reforestation and forest conservation projects (equivalent to emissions of 3.1 million cars in one year)

The Nature
Conservancy 

Protecting nature. Preserving life.™

FOR MORE INFORMATION:

Cathleen Kelly

ckelly@tnc.org

The Nature Conservancy

4245 North Fairfax Avenue, Suite 100

Arlington, Virginia 22203 USA

+1 (703) 841-5300

nature.org

The mission of The Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

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