
Ecosystem-based approaches to adapting to climate change



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**Convenient Solutions
to an Inconvenient Truth:
Ecosystem-based Approaches
to Climate Change**

By the World Bank Biodiversity Team



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Resilient Ecosystems = Adaptive Capacity for Biodiversity *and* People to Climate Change

- Ecosystem resilience is the key to species and habitat adaptation to climate change
- Likewise, healthy ecosystems will provide resilience to humans to adapt to climate change

Ecosystems Assist Human Adaptation to Climate Change

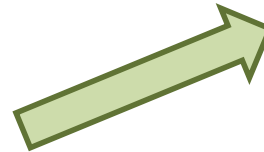
- Healthy forests, wetlands and coastal systems provide livelihood support
- Watershed protection and recharge – important as CC will lead to water scarcity
- Forests provide localised climate regulation
- Indicators of change
- Protection during extreme climate events – e.g. barriers, flood control

Example: Flooding

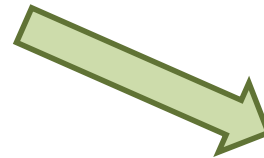
Forest cover



Infiltration of rainfall, reduces surface runoff, reduces peak flow rates



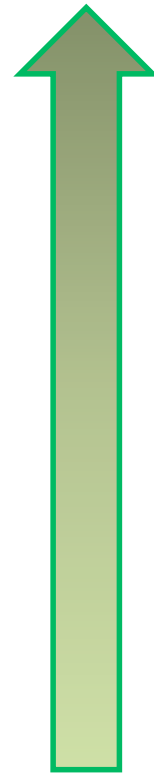
Hurricane Jeanne hit several Caribbean islands - Haiti suffered far worse due in large part to Haiti's highly degraded watersheds.



Madagascar: conversion from primary forest to swidden can increase downstream storm flow x 4.5 times.

Adaptation Requires Resilient Ecosystems

Ecosystem
resilience



Adaptation
success

Maximize Ecosystem Resilience

- Large areas of protected habitat
- Corridors for migration
- Across gradients
 - So species can adapt in-situ or track habitat niche
 - Precautionary principle
- Minimal human caused stressors
 - Healthy systems fight off infections
- Diversity and abundance
 - Stronger gene pool, plasticity → adaptive capacity
- Intact patches
 - Stop invasive species from getting a foothold

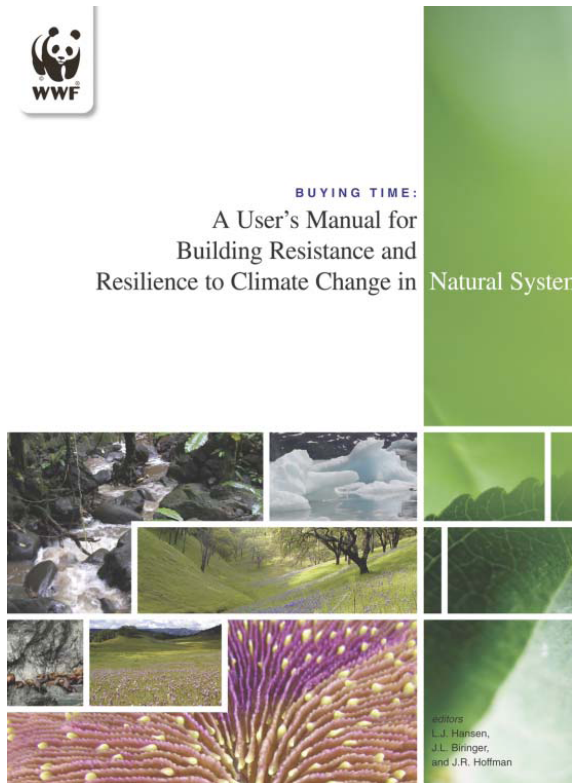
Building Ecosystem Resilience

- Through biodiversity protection and management - we're already focusing on increasing ecosystem resilience
- Emphasize value of ecosystems to adaptation to policy makers, economists, engineers
- Ensure ecosystem resilience is included in CC adaptation plans
- Continued and increased efforts in key adaptation approaches



Building Ecosystem Resilience

- Protected areas: maintain integrity, expand
- Corridors and linkages
- Rehabilitation of degrading ecosystems



Building Ecosystem Resilience

- Minimise disturbance, e.g.
 - Invasive species
 - Inappropriate fire regimes
 - Non-sustainable hunting and NTFP extraction



Win-Win

- Compared to hard infrastructure adaptation solutions - ecosystem based approaches have additional values:
 - Biodiversity protection
 - Ecosystem services
 - Societal benefits
 - Amenity
 - Often less expensive (though long term)
 - Low risk – already proven approaches
 - Complements other national and international strategies
 - It is also mitigation (carbon sequestration and storage)

Mechanisms

- Innovative financing and leverage of private sector:
 - Payment for ecosystem services, eg water supply, hydropower
 - REDD
 - Ecotourism
- World Bank activities:
 - Carbon Funds
 - Adaptation funds under CDM for reforestation
 - Bank BioCarbon Funds
 - Forest Carbon Partnership Facility
 - Strategic Climate Fund (SCF)
 - Forest Investment Program
 - Pilot Program for Climate Resilience (PPCR) includes Cambodia

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