Ecosystem based Disaster Risk Reduction

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Western Indian Ocean 2004 – Sri Lanka

Yala National Park
Sri Lanka

Yala Village
5 cm in resort

Yala Safari
7 m in resort
27 dead

Credit: Mc Adoo, 2008
IWRM - tropical storms and flooding in Guatemala/Mexico following Cyclone Stan, 2005
Coastal Forests of Japan
Key DRR publications
Mandate from Members

2008

- Resolution 4.057 (2008) – Conservation of Pakistan’s coastal resources for future generations
- Resolution 4.077 (2008) – Climate change and Human Rights

2012

- WCC-2012-Res-058-EN Ecosystem Management for Disaster Risk Reduction
- WCC-2012-Res-059-EN The importance of adaptation and disaster risk reduction in coastal areas
IUCN-UNU-TNC Member Survey

Does your organization consider both environmental and disaster risk reduction objectives?

- Yes: 86.1%
- No: 13.9%
Global Policy and Advocacy

• Inputs to the 2009 and 2011 Global Assessment Reports, *ecosystems as an existing management tool for DRR*

• Collaboration with UNISDR, UNU, UNDP and UNEP on promoting risk reduction and key global discussions – Global Platform

• Promoting joint approaches for conservation, DRR and CCA at UNFCCC CoP

• Discussions with UNISDR on joint advocacy for Ecosystems, Protected Areas and Disaster Risk Reduction:
  – 2014 World Parks Congress
  – 2015 World Disasters Conference
Established Global Coordination – Partnership for Environment and Disaster Risk Reduction (PEDRR)
Training for practitioners/policy makers on Ecosystem based Disaster Risk Reduction and Ecosystem based Adaptation

- ToT (x6 Asian countries), Sri Lanka, Japan, Georgia, Armenia, Azerbaijan, Thailand, Vietnam, Cambodia, India, Switzerland (SDC)

- Vulnerability Assessment methods
- Environment Management tools for Risk Reduction
- Risk sensitive spatial planning

Developed by Partnership for Environment and Disaster Risk Reduction：
KNCF: Documentation of Perceptions and Practices on Ecosystem Based Solutions for DRR in the Affected Areas
Local Action – working with communities to reduce risks
Ecosystem based Disaster Risk Reduction?

“Sustainable management, conservation and restoration of ecosystems to provide services that reduce disaster risk by mitigating hazards and by increasing livelihood resilience.”
Disaster Risk Reduction Cycle
Entry points for Ecosystem based DRR

Source: RICS (2009)
Risk and Vulnerability Assessments

Source: RICS (2009)
Hazard and Vulnerability Assessments
Vegetation stabilises slopes
Wetlands and floodplains control floods
Mosaic landscaping for Fire Management - Lebanon
Mangroves, saltmarshes and sand dunes buffer from winds, sandstorms, storm surges
Existing Tools

- Integrated Coastal Zone Management
- Integrated Water Resource Management
- Integrated Fire Management
- Protected Area Management
- Community-based Natural Resource Management
The role of Protected Areas:

**Flooding**
- Provide space for floodwaters
- Absorb impacts of floods with natural vegetation
- Block sudden storm surges and sudden incursions of sea water (for coastal and marine ecosystems)

**Landslides and Avalanches**
- Retain natural vegetation that helps to stabilize soil
- Tree crowns reduce the build-up of snow that triggers slippage
- Slow the movement and extent of damage once slippage is underway
The role of Protected Areas:

Drought and Desertification

- Reduce pressure (especially grazing pressures) on land and thus reduce or slow down desert formation
- Maintain populations of drought resistant plants to serve as emergency food during drought

Fire

- Limit human encroachment into the most fire-prone areas
- Maintain traditional cultural management systems that apply ecologically sound and safe fire use and wildfire control
- Protect intact natural systems with associated natural fire regimes that ensure short- to long-term ecosystem stability
The role of Protected Areas:

**Earthquakes**
- Prevent or mitigate against associated hazards especially landslides and rock falls
- Provide zoning control to prevent settlement in the most earthquake prone areas

**Climate Change**
- Mitigate climate change-induced hazards and other extreme events, such as more frequent or intense flooding, droughts, wildfires, and worsening storm surges
Recovery and Reconstruction

Source: RICS (2009)
Sanriku Reconstruction National Park

(Natural Parks on the Pacific coast in Tohoku)

Sanriku Kaigan

Tanesashi Kaigan Hashikamidake
(Aomori Prefectural)

Rikuchu Kaigan
(National)

Kesennuma
(Miyagi Prefectural)

Minami-Sanriku Kinkasan
(Quasi-National)

Kenjosan Mangokuura
(Miyagi Prefectural)

Matsushima
(Miyagi Prefectural)

Matsukawaura
(Fukushima Prefectural)

Anatooshi-iso at Goishi Kaigan

Sannoh-iwa

Sunrise

(MoE, Japan 2013)
China: Wetland restoration for flood mitigation

Removing earlier works:
• Reconnecting lakes to river Yangtze
• Wetland restoration

Results:
• Flood mitigation
• Increased income from fisheries
• Biodiversity
• Water quality (now drinkable level)
• Replication in other areas

Source: WWF, 2008
Entry points for Ecosystem based DRR

Source: RICS (2009)
EPIC – Ecosystems Protecting Infrastructure and Communities

5 countries:

• Avalanche modelling – Switzerland, Chile and Nepal
• Coastal storms – Thailand
• Landslides - China
• Landslides and river bank stabilization - Nepal
• Climate Change Adaptation (drought, floods and locusts) - Burkina Faso & Senegal
Challenges OR Opportunities?

- Convening stakeholders
- Establishing the knowledge base on ecosystems for DRR
- Standard method for documenting/demonstrating links between ecosystem degradation and increased exposure to risks
- Impact assessments on ecosystems
- Economic case
Thank You