



# **Ecosystem based Disaster Risk Reduction**

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# Western Indian Ocean 2004 – Sri Lanka



# IWRM - tropical storms and flooding in Guatemala/Mexico following Cyclone Stan, 2005

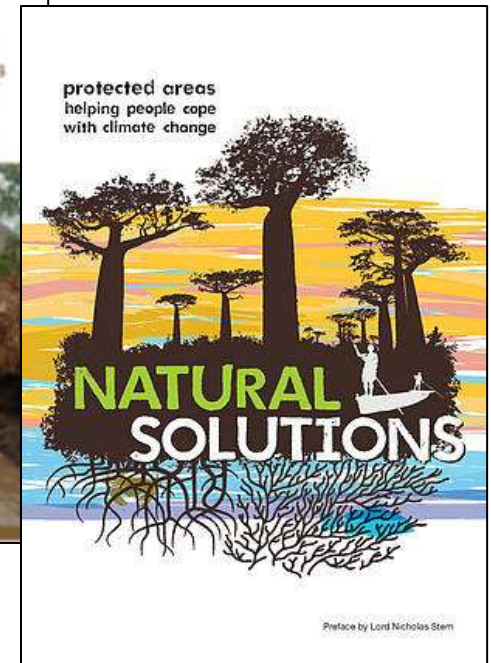




# Coastal Forests of Japan



# Key DRR publications



# Mandate from Members

## 2008

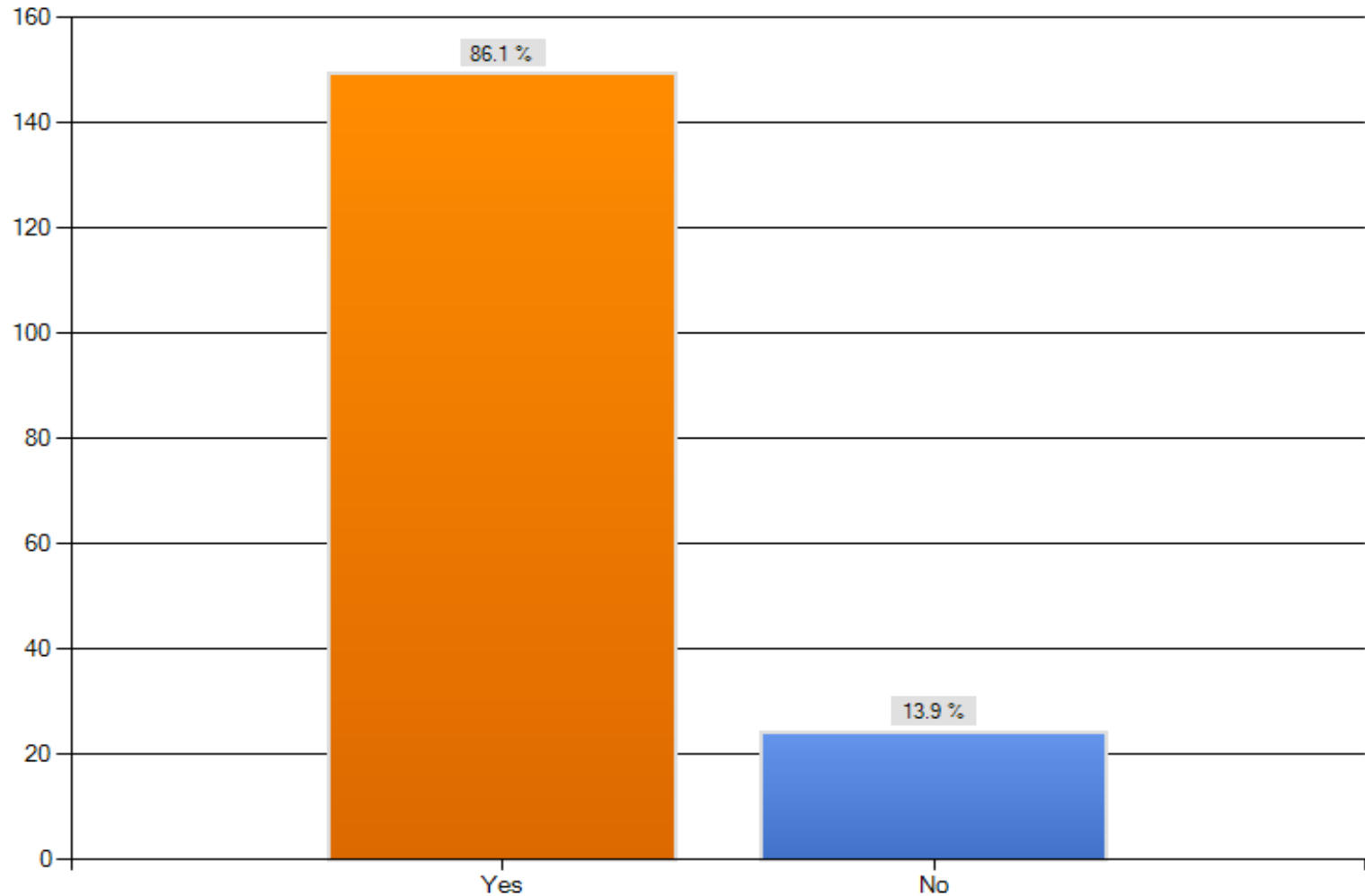
- Resolution 4.056 (2008) - *Conservation and Poverty Reduction*
- Resolution 4.057 (2008) – *Conservation of Pakistan's coastal resources for future generations*
- Resolution 4.064 (2008) – *Integrated coastal management in the Mediterranean – the Barcelona Convention*
- Resolution 4.077 (2008) – *Climate 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?





## 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)



UNITED NATIONS  
UNIVERSITY

UNU-EHS

Institute for Environment  
and Human Security



United Nations  
Educational, Scientific and  
Cultural Organization

ProAct  
network



environmental partnerships  
for community resilience



HELVETAS  
Swiss Incooperation



EUROPA  
EUROPEAN UNION ENVIRONMENTAL  
AGENCY



The Nature  
Conservancy



Protecting nature. Preserving life.



SEI

STOCKHOLM  
ENVIRONMENT  
INSTITUTE





# 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)
- Request for training (12 countries pending)

Ecosystem based  
DRR

Global – National  
policies

Ecosystem based  
Adaptation

Vulnerability  
Assessment  
Methods

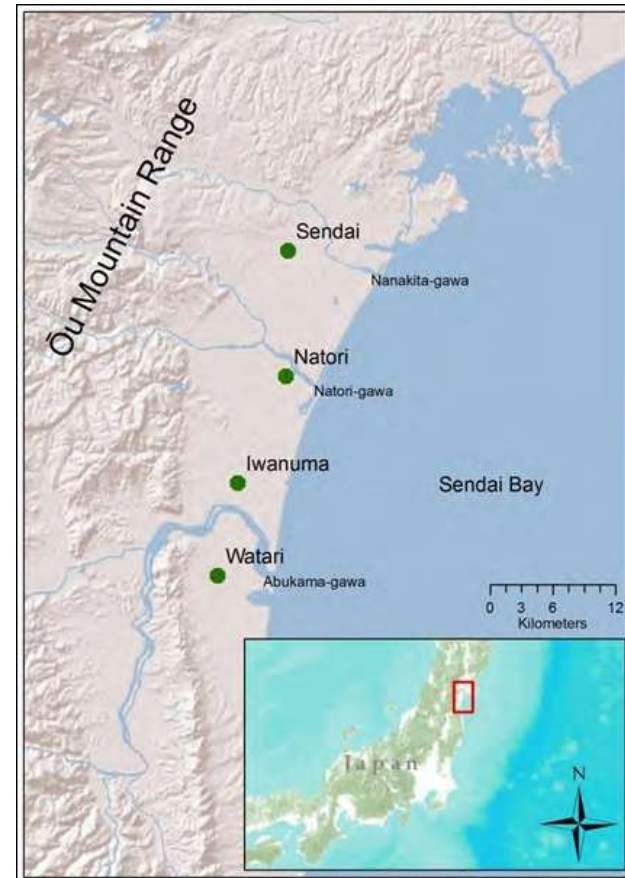
Environment  
Management tools  
for Risk Reduction

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

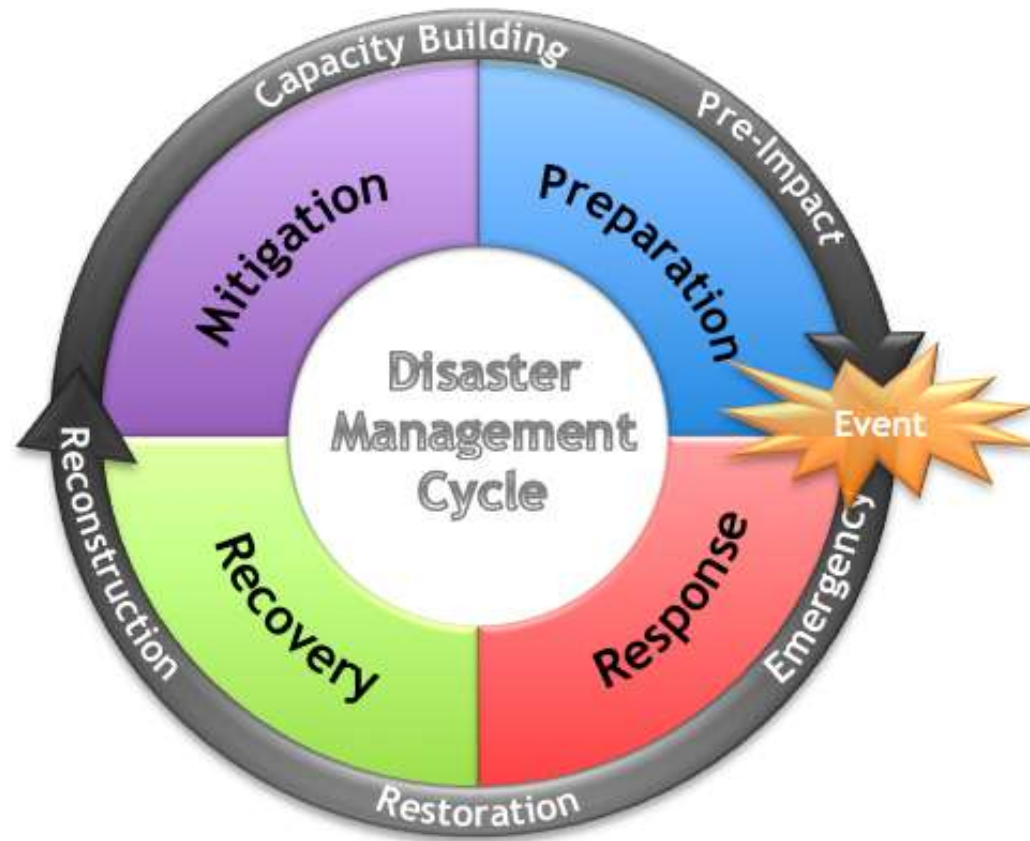




# Ecosystem based Disaster Risk Reduction?

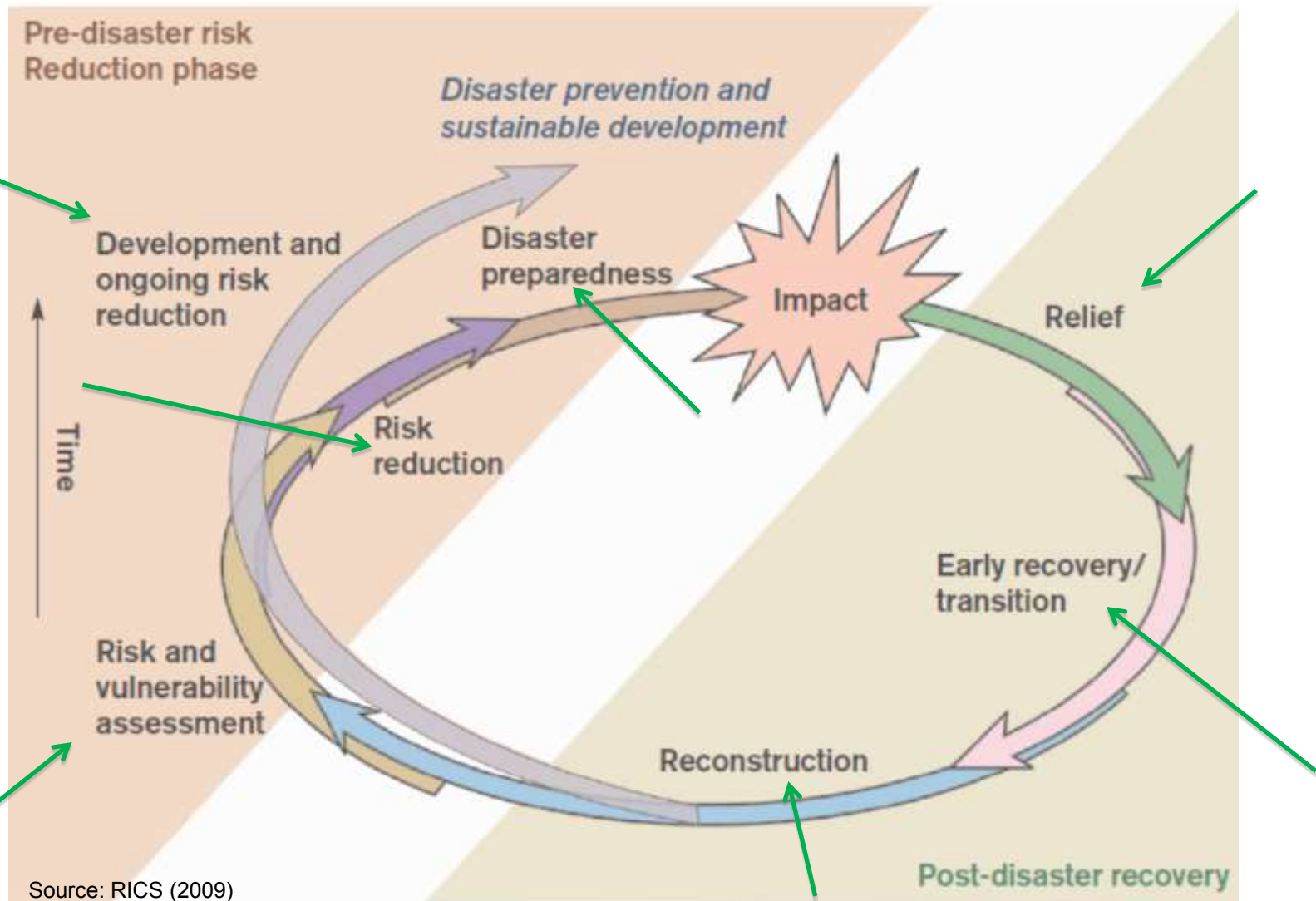
**“Sustainable management, conservation and restoration of ecosystems to provide services that reduce disaster risk by mitigating hazards and by increasing livelihood resilience.”**

# Disaster Risk Reduction Cycle

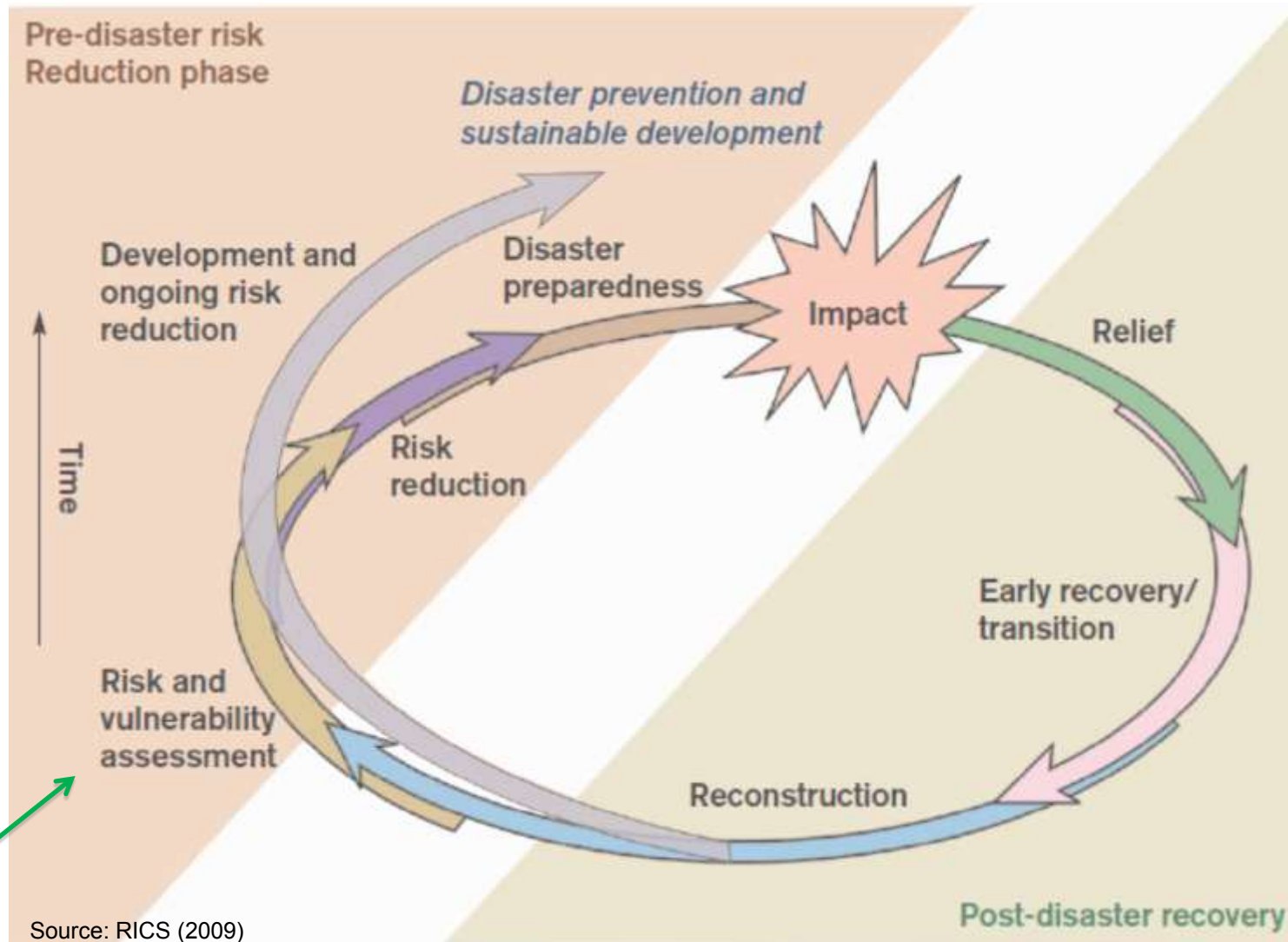




# Entry points for Ecosystem based DRR



# Risk and Vulnerability Assessments

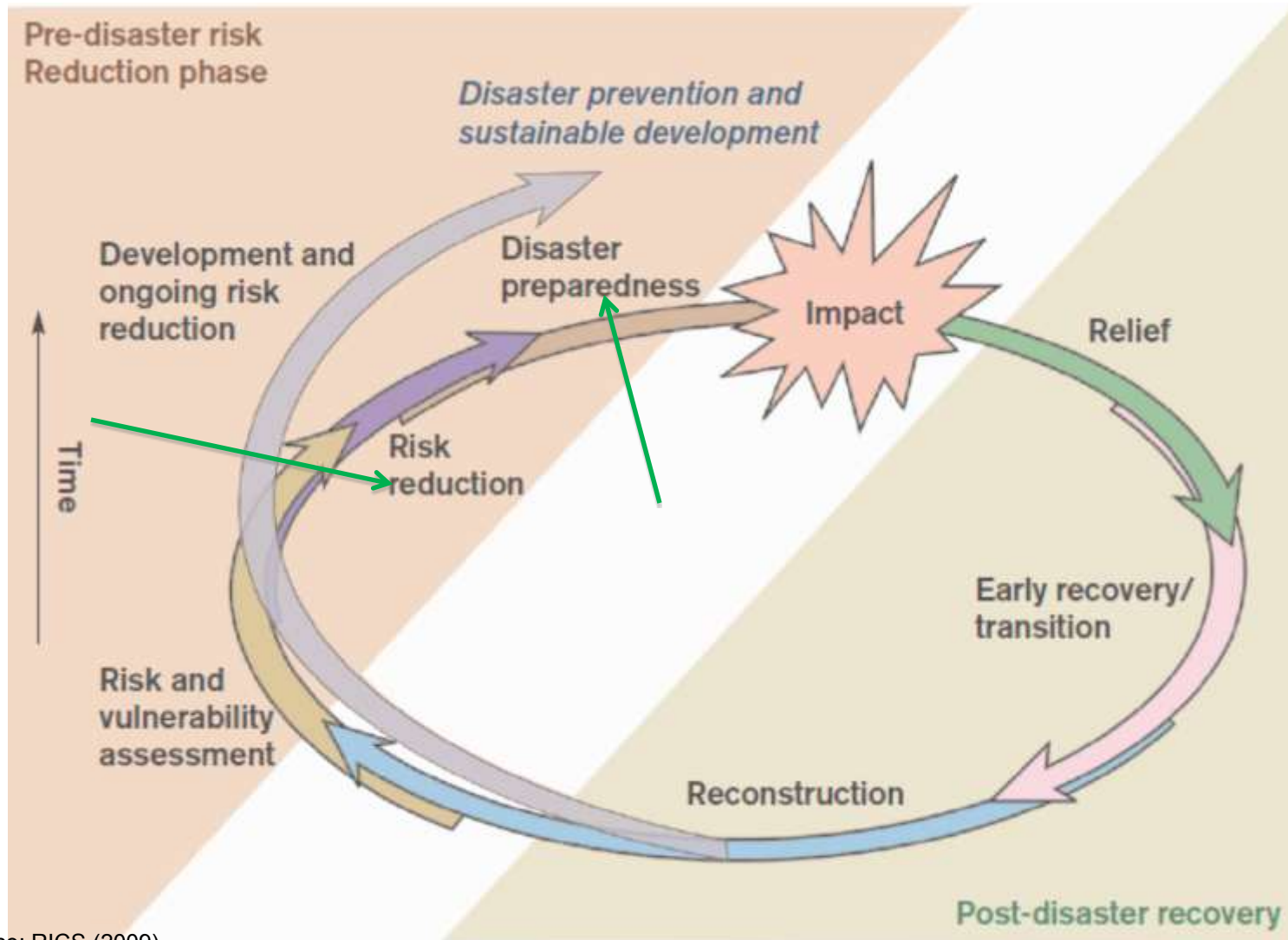


# Hazard and Vulnerability Assessments





# Risk Reduction and Preparedness



Source: RICS (2009)

# Vegetation stabilises slopes



©N. Saalismaa



# Wetlands and floodplains control floods



©Michel Gunther / WWF-Canon



# Mosaic landscaping for Fire Management - Lebanon





Mangroves, saltmarshes and sand dunes buffer from winds, sandstorms, storm surges



© M.Rautkari/WWF-Canon



## 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

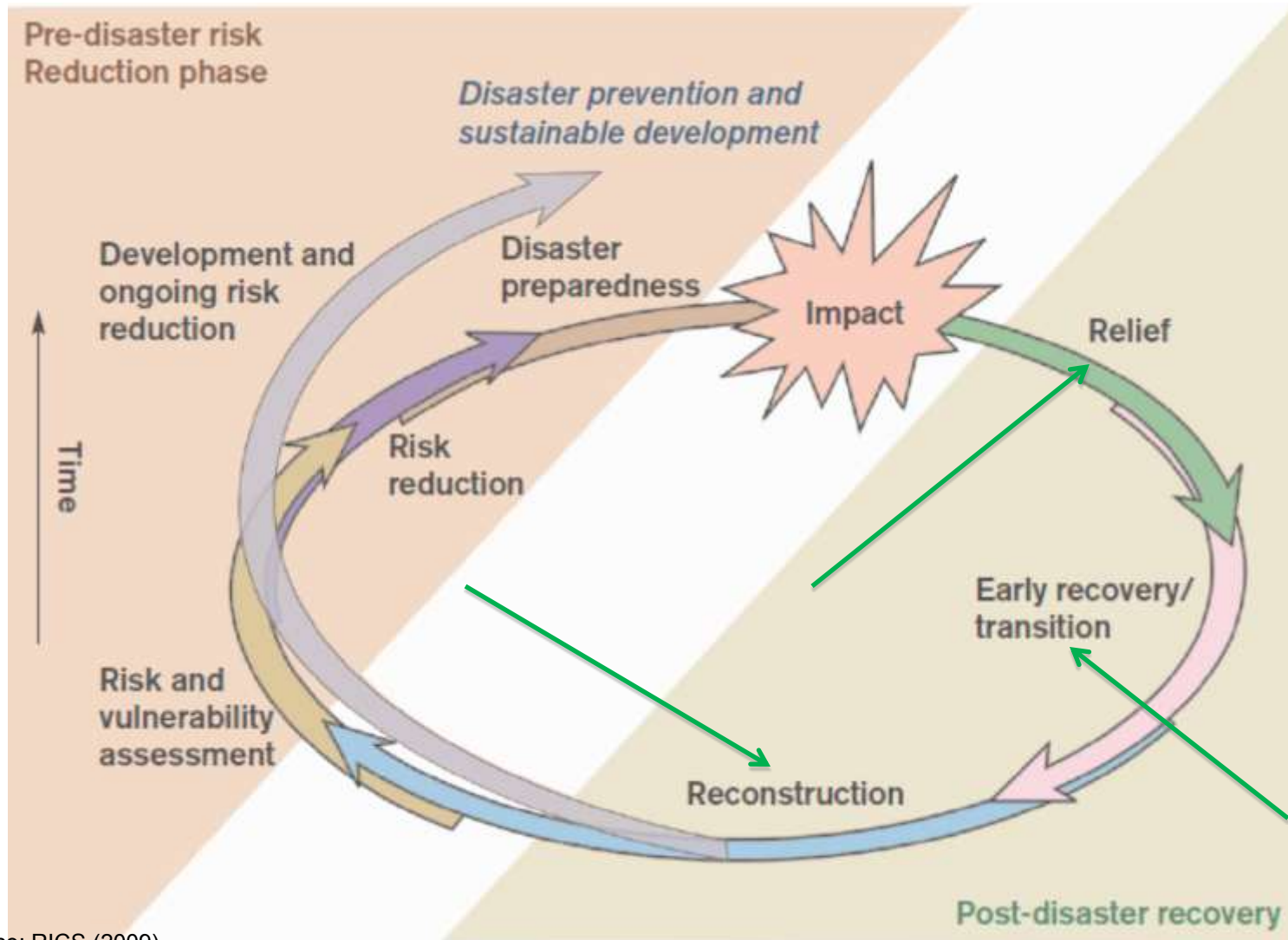
### Climate Change

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



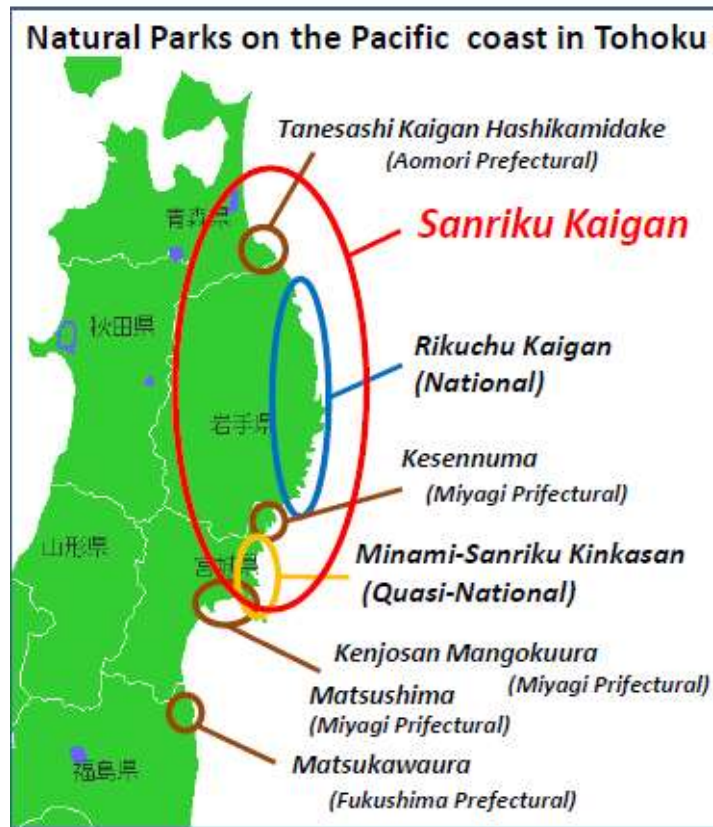


# Recovery and Reconstruction



Source: RICS (2009)

# Sanriku Reconstruction National Park



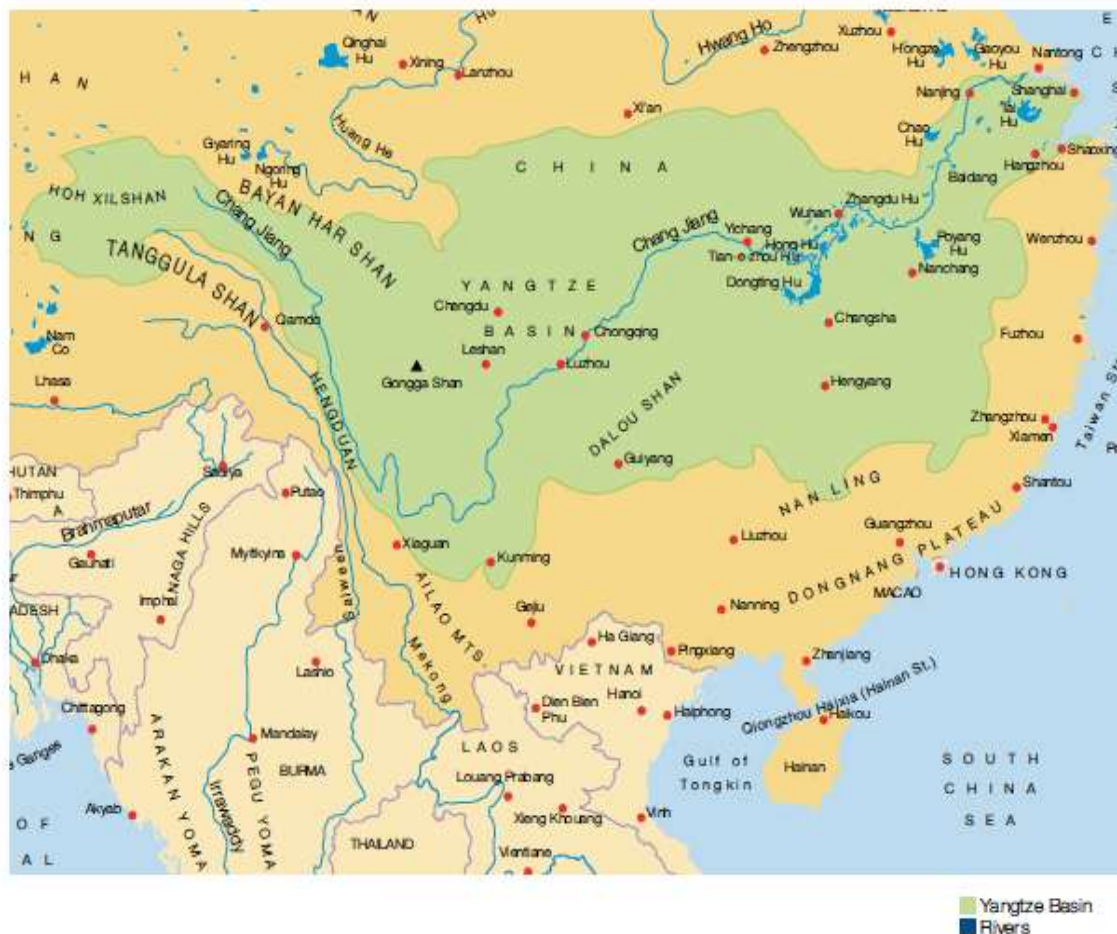
# China: Wetland restoration for flood mitigation

Removing earlier works:

- Reconnecting lakes to river Yangtze
- Wetland restoration

Results:

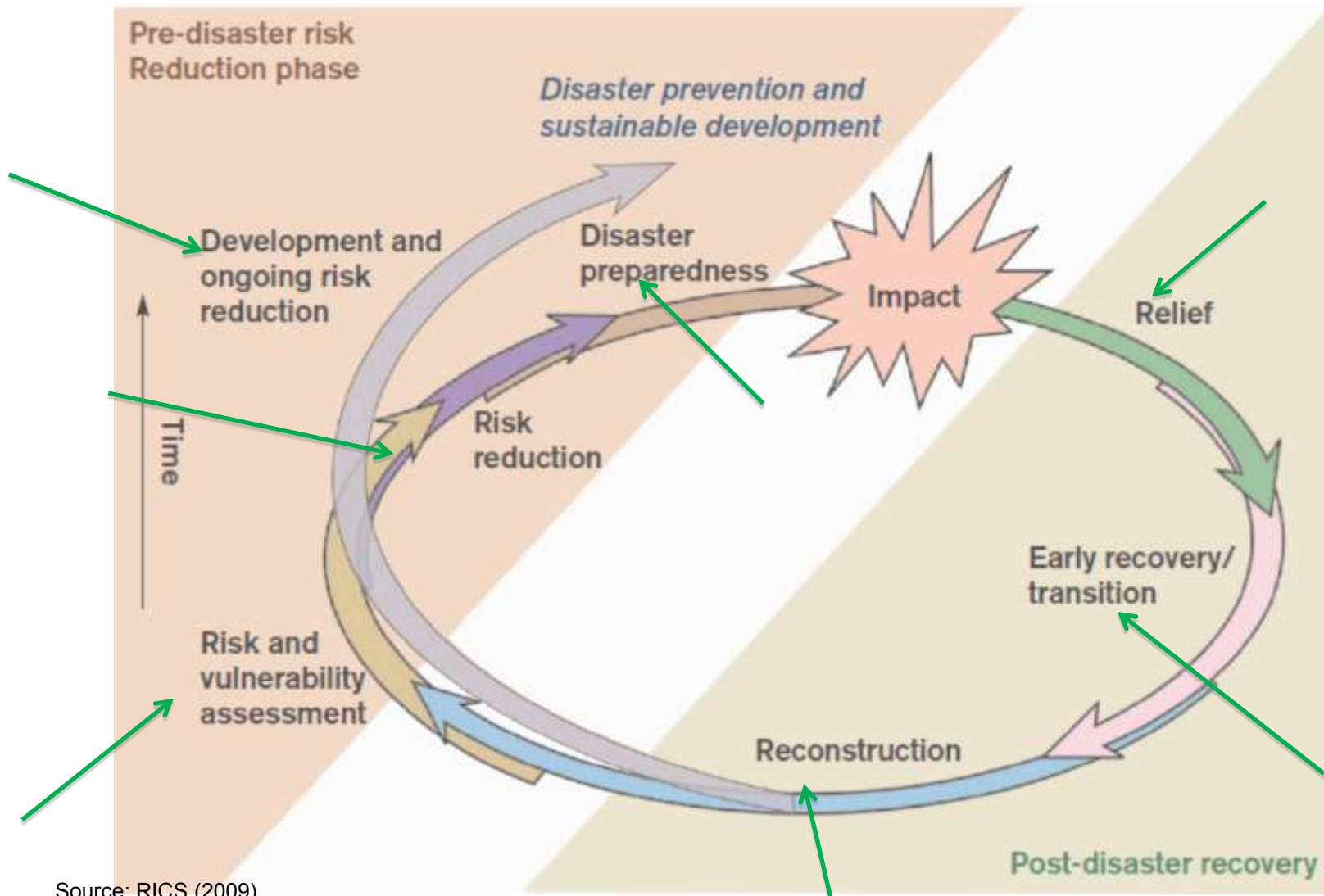
- Flood mitigation
- Increased income from fisheries
- Biodiversity
- Water quality (now drinkable level)
- Replication in other areas



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