

Linking Environmental Management



and Disaster Mitigation



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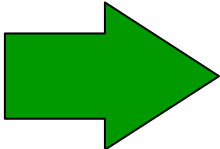
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Raising awareness and building capacity on the disaster – environment nexus

Change in the global environment may directly and indirectly trigger disasters

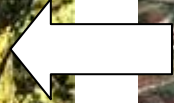
- Understanding of current state of global environment
 - Projection of global environment
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- Early warnings against disaster
 - Measures for impact mitigation

Importance of global observation and future projections

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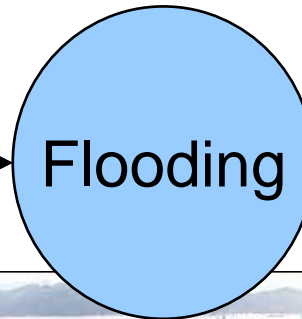
Loss of water & soil holding capacity

Environmental degradation

Shrinking of water bodies
(e.g. lakes or rivers)



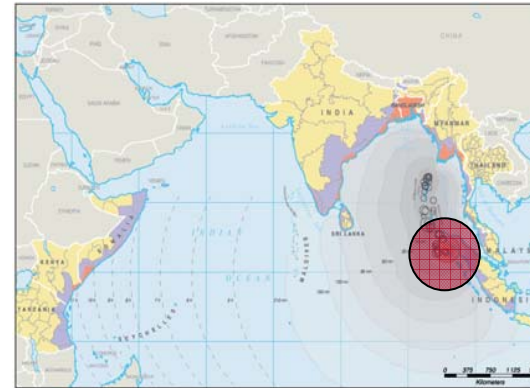
Disaster event



Indonesia: Tsunami Damage Overview

Environmental Issues:

- **Waste Management:** 7-10 billion m³ of waste in Banda Aceh.
- **Industrial Sites:** Two oil sites and cement plant. 8,000 kilolitres of oil released.
- **Drinking Water:** 60,000 wells damaged, destroyed or contaminated.
- **Coral Reefs:** 97,250 ha in zone of impact, estimated 30% damaged (low to high)
- **Sea Grass Beds:** 600 ha damaged
- **Mangroves:** 90% damage to between 300 and 750 hectares.
- **Agricultural lands:** 9,000 hectares on east coast, 27,000 hectares on west coast.
- **Local Management Capacity:** Loss of buildings, equipment, staff and records



Damage Estimates:

- Damage to Environmental Assets: US\$ 155 million
- Damage to Environmental Services: US\$ 515 million
- **TOTAL:** US\$ 670 million



Displaced
fuel storage
tank in
Kreung
Raya

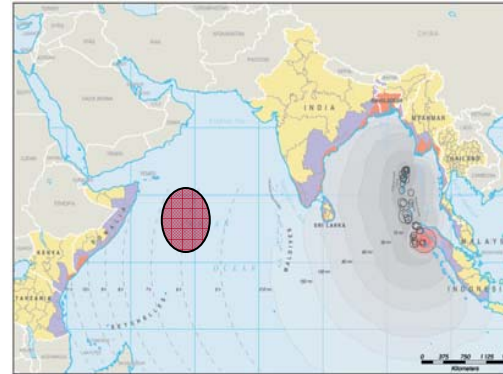


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Maldives: Tsunami Damage Overview

Environmental Issues:

- **Waste Management:** Approximately 290,000 m³ of solid waste.
- **Hazardous Waste:** Asbestos-containing waste and oil waste.
- **Drinking Water:** 36 islands may have been compromised by sewage contamination from damaged septic tanks or flood water
- **Coral Reefs/Mangroves:** Preliminary conclusion is no large scale damage
- **Agricultural lands:** 82 Islands were completely or half flooded
- **Fisheries:** Loss of 120 fishing vessels



Damage Estimates:

- **Tourism:** US\$ 100 million
- **Fisheries:** US\$ 25 million
- **Agriculture:** US\$ 11 million



Asbestos waste in Maldives

UNEP Task Force Response

- Provided environmental expertise to the UN system and deployed 30 experts to the affected countries
- Responded to requests from the national environmental authorities
- Mobilised immediate environmental assistance
- Mobilised environmental recovery
- Conducted environmental assessments
- Supported development of Tsunami Early Warning System
- Partnership with WWF and IUCN



UNEP's other response activities

- Leading the UN ISDR Working Group on Environment and Disaster Risk Reduction
- Operationalizing the Joint UNEP-OCHA Unit in Geneva
- Assist national and local governments on environmental aspects of disasters
- Monitoring and assessment of environmental hotspots for disaster risk reduction
- Early Warning and assessment



The main message for awareness raising and capacity building



Disaster
Mitigation and
Response

Environmental
Management



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There are environmental aspects, tools and strategies that can be considered at every stage of the disaster cycle



Some issues for capacity building related to environmental management

PRE-DISASTER

- **Reduction of anthropogenic causes of environmental change and mitigation of risks**
Forest destruction, greenhouse gas emissions, etc.
- **Importance of international environmental agreements**
United Nations Framework Convention on Climate Change, Kyoto Protocol, etc.
- **Importance of maintenance, management and development of the sound mitigation capability that are inherent to nature**
Nature conservation



Environmental management tools for disaster mitigation

- Environmental Risk Assessment (ERA)
- Environmental Management Systems (EMS)
- Strategic Environmental Assessment (SEA)
- Environmental Vulnerability/Hazard Mapping

These tools will have to be adopted to disaster planning and mitigation



Emergency Response upon the Occurrence of Disasters

- Appropriate environment management and quick restoration is crucial in the wake of disasters
- Proper waste management: clearing, sorting, recycling/reuse, disposal
- Assessing water contamination and pollution
- Handling hazardous and toxic materials
- Rapid Environmental Assessment (REA) of the environmental damage



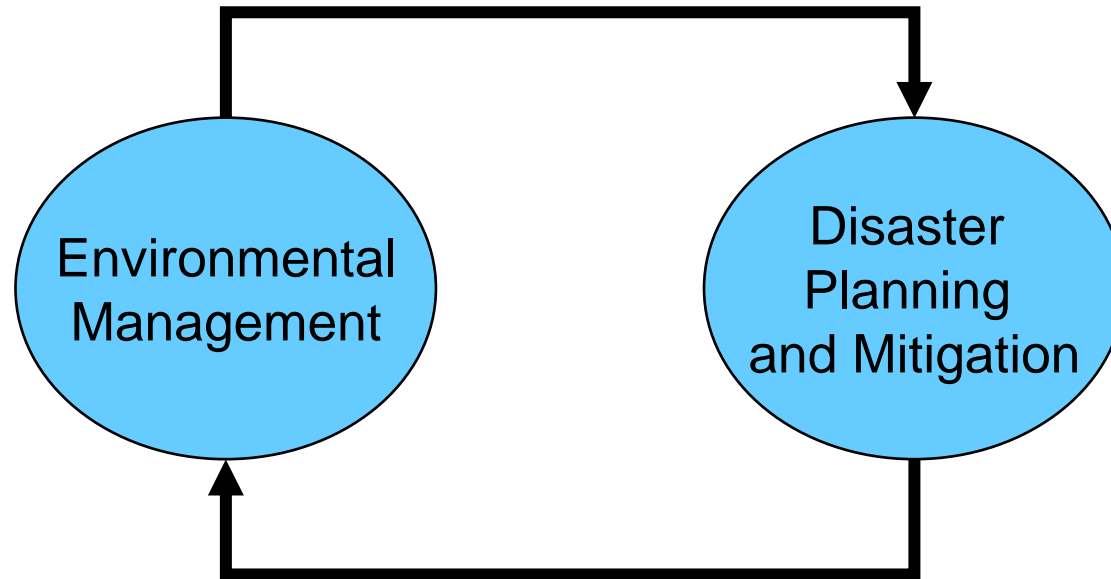
Environmental management tools for disaster management

- Rapid Environmental Assessment (REA)
- Environmental Impact Assessment (EIA)

These tools
will have to
be adopted to
disaster
planning and
mitigation



A message repeated ...



We need awareness raising and capacity building on the interlinkages and positive externalities between these two issues!!



Further information on UNEP-IETC and its activities/projects is available at:

<http://www.unep.or.jp/>

or

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