Recommendations for Actions

Recognising the role of coastal wetlands (including coral reef, seagrass, mangroves, intertidal flats and lagoons, etc.) in protecting coastal communities and assisting in the recovery of people's livelihoods.

Noting that the tsunami is an extreme natural event of relatively low frequency, but that as a result of climate change it is predicted that there will be an increasing frequency and intensity of storms and other extreme weather events;

Further recognising that the tsunami creates an opportunity to demonstrate best practices in integrated coastal management and to make a paradigm shift from earlier unsustainable practices.

The AWS 2005 Special Session on the Tsunami and Coastal Wetlands, RECOMMENDS:

1. There is an urgent need for coordinated and harmonised assessments in priority stretches of affected coastline in order to identify areas where ecological restoration would be most effective.

2. Develop predictive guidelines on the value and appropriate positioning, structure and composition of natural greenbelts to provide protection to coastal communities from severe storms/tsunamis.

3. Integrate wetland restoration and management options with the immediate response to humanitarian needs and the short and medium term action and recovery plans in tsunami- affected countries.

4. Develop community-led approaches for protection and restoration of affected and other wetlands, drawing on traditional knowledge and practices and with provision of incentives for sustainable livelihood development.

5. Prioritise the enhancement of natural coastal defenses through greenbelt/coastal "bioshield" development and only consider hard engineering solutions in combination with natural measures and in areas where there are no alternatives to safeguard human life.

6. Establish and enforce "no construction zones" in vulnerable areas and manage them to enable sustainable use by local communities as well as ecosystem recovery.

7. Build on and strengthen the regional/international cooperation mechanisms to connect governments, agencies, institutions, communities and individuals. Combine their competencies in assessment and in developing and implementing action plans, related to the tsunami response and coastal wetlands.

The organisers of the Special session will circulate and promote the results of this meeting to appropriate fora and mechanisms.

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The Tsunami and Coastal Wetlands - Recommendations for Action

Report on Special Session on Tsunami and Coastal Wetlands,
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A **Special Session on the Tsunami and Coastal Wetlands** was organised on 9th February 2005 as part of the Asian Wetland Symposium 2005 (AWS 2005) in Bhubaneswar, Orissa. It was co-organised by the Ministry of Environment and Forests of the Government of India, Ramsar Centre Japan, Chilika Development Authority, Wetlands International, Global Environment Centre and the Ramsar Convention Secretariat. It was chaired by Ms Meena Gupta, Additional Secretary of the Ministry of Environment and Forests and attended by over 250 experts on wetlands, natural resource management and tsunami issues from many countries in the region as well as international organisations. Presentations were made by 15 experts on different aspects of impacts and response options. Key findings from the session were as follows:

Impacts of the Tsunami

Major human impacts include massive loss of life, destruction of coastal settlements and infrastructure, loss of fishing boats and facilities, loss and degradation of agricultural lands and forests and salinisation and contamination of water sources.

According to rapid assessments, the main impacts of the tsunami on coastal wetlands varied according to the location and distance from the epicenter or fault line. Impacts include:

- Loss or degradation of mangroves and seagrass beds
- Silting and degrading of coral reefs
- Sedimentation or turbidity of coastal waters leading to algal blooms
- Major changes in intertidal flats and coastal lagoons

Certain wetland types played a role in reducing the tsunami impact, especially in locations further from the epicenter, including coral reefs and mangroves which broke the impact of the waves and absorbed some of the energy and protected areas further inland. Mangroves also stopped people being washed out to sea and trapped debris, reducing further damage.

The main response to the tsunami by the affected countries in relation to coastal wetlands has been focused initially on rescue and survival of local communities, followed by rapid assessment of impacts which are leading to the development of action plans.

Future Directions





Providing new, sustainable livelihoods in affected communities linked to wetlands	• Top priority is to identify feasible options to provide sustainable livelihoods • Need to have new solutions rather than business as usual (such as over-fishing, inappropriate use of resources, etc.) • Look at incentive or grant schemes to help the villagers rebuild their livelihoods and environment • Impacted communities should play a key role in setting priorities in their areas
Role of wetlands in recovery, securing water supply, fisheries, protection of storms	• 70% of coastal fish species are dependent on mangroves or coral reefs • Restoration and protection of remaining wetlands will secure future food resources • Freshwater wetlands will be an important source of freshwater • Integrated inter-sectoral and multi-scalar approaches are needed
Protecting remaining coastal ecosystems and rezoning development	• Urgent to map remaining intact coastal systems in the region and identify areas for protection and sustainable management • Establish or enforce zoning requirements • Restrict sand mining, fishing and other activities in impacted areas according to capacity • Develop further the concept of "No construction zones" taking into consideration ecological and equity issues • Allocate adequate freshwater resources to support the maintenance of estuarine mangroves as well as development of coastal shelterbelts • Need to have effective management and enforcement systems • Communities should be empowered to take a leading role in protecting and managing the coastal ecosystems
Rehabilitation of degraded coastal wetlands	• Detailed assessments needed to guide rehabilitation • Need to support natural regeneration and supplement as necessary
Use of soft engineering versus hard structures	• It is reported that in some countries without proper assessment, 70% of hard solutions to coastal protection and erosion fail due to poor siting and design • Hard structures may transfer problems to adjacent areas • In selected circumstances (particularly where infrastructure cannot be moved back from the sea) there may be a role for hard protection structures or eco-engineering structures • Eco-engineering practices combining hard and natural structures can be cost effective and appropriate and methodologies need to be explored further
Joint assessments and sharing of information	• Avoid duplication • Establish national and regional databases and provide open access
Coastal greenbelt (mangroves and coastal forests) for tsunami and storm damage protection	• Develop guidelines (dos and don'ts) for immediate and medium-term measures for greenbelt development • Need to assess the correct balance of potential species based on ecological zones and protection requirements • Develope community-led approaches in development of greenbelts • Combine mangrove protection with beach forests and dune protection • Set up proper management of greenbelts with communities and other stakeholders to ensure long term maintenance • Communities need to be involved at an early stage
Standardising assessment methodologies	• Need to have a common methodology to enable comparison between assessments • Cautious approach - don't make conclusions on limited information • Approach needs to vary according to the situation • Assessments need to generate predictions of future recovery or constraint scenarios • Need regular monitoring to assess changes and recovery scenarios
Early warning and preparedness, communication	• Overall regional approach is needed involving all affected countries • Warning needs to be rapidly communicated and local communities need to be aware of avoidance options • Draw on indigenous warning systems and traditional knowledge • Develop options for evacuation of people in vulnerable zones - such as through storm shelters
Resources generating and sharing	• Coordination is needed to avoid wasteful duplication of work • Allocation of resources for coastal ecosystem rehabilitation and use should be part of national recovery plans
Climate change implications and coastal zone management	• Protection for tsunami can be linked to protection from climate change impacts • Climate change scenarios should advise zoning and rehabilitation plans • Tsunami as example and stimulus for measures to adapt to climate change
Partnership framework and the way forward as a group	• Support and expand the Tsunami and Wetlands Group coordinated by Wetlands International to involve all interested organisations and experts • Support other appropriate networks as necessary • Make all relevant materials openly available on linked websites • Organise meetings of stakeholders at country/regional level • Combine resources to strengthen and develop international/regional institutions/mechanisms to look at the issues of tsunami/storms etc in relation to coastal wetlands to provide advice for countries involved