



Waves of hope

**Report of the regional coordination workshop on
rehabilitation of tsunami-affected forest ecosystems:
strategies and new directions**



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Cover design: Miyuki Ishikawa

For copies of the report, write to:

Patrick B. Durst
Senior Forestry Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road
Bangkok 10200
Thailand
Tel: (66-2) 697 4000
Fax: (66-2) 697 4445
Email: Patrick.Durst@fao.org

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rehabilitation of tsunami-affected forest ecosystems:
strategies and new directions**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
REGIONAL OFFICE FOR ASIA AND THE PACIFIC
Bangkok, 2005**

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FOREWORD

In an instant the 26 December 2004 earthquake and tsunami devastated the lives of millions living in the coastal communities of 12 countries around the Indian Ocean. We are still grappling with the magnitude of the losses and the enormity of issues underlying the reconstruction needs. With considerable determination, local communities have joined national and international organizations and governments to bring relief and start the recovery work. We are now gradually moving past immediate relief efforts to focus on sustainable reconstruction.

FAO has taken up the task, together with several other international and national organizations, in fielding experts in several sectors, including fisheries, agriculture and forestry, to assess the damage, identify critical needs, and bring them to the urgent attention of the international community. In the process, it has become apparent that there are many organizations in the forefront, with good intentions and doing high-quality work, but often without the benefit of exchanging information and lessons learned, collaborating fully, or coordinating effectively. To help remedy these gaps, FAO organized a regional coordination workshop on *Rehabilitation of tsunami-affected forest ecosystems: strategies and new directions*.

The overall goal of the workshop was to strengthen and enhance forest-related rehabilitation efforts in the tsunami-affected areas. Work can clearly be strengthened through better exchange of information and knowledge related to the impacts of the tsunami on forest ecosystems, strengthening coordination and collaboration among the various agencies involved in environmental rehabilitation, and developing a regional framework for coordination and action.

I am very pleased to note that, despite the short notice and preparation time, almost all the major organizations involved in forest and ecosystem rehabilitation efforts were able to attend the coordination workshop. Several very useful recommendations emerged from the workshop, including a proposal to form a regional partnership to foster further collaboration and coordination in undertaking forest-related rehabilitation efforts. Such a partnership would help support responses in a cost-effective and comprehensive manner, with sound and proven technical interventions. This is particularly critical – under the circumstances, poor planning, misguided approaches, and inappropriate measures are simply unacceptable.

Emerging from the tragedy of the earthquake and tsunami is an opportunity to once again take a look at the way we are handling our environment – especially the coastal ecosystems – and to reintroduce sustainable practices that will ensure environmental stability and sustainable livelihoods. FAO, working together with other international agencies and affected countries, will continue to respond to the challenges of reconstruction that lie ahead. The regional coordination workshop, and the resulting report which comprises this publication, provide an important foundation for working together effectively on these important tasks.

He Changchui
Assistant Director-General and
Regional Representative for Asia and the Pacific
Food and Agriculture Organization of the United Nations

EXECUTIVE SUMMARY

The Regional Coordination Workshop on *Rehabilitation of tsunami-affected forest ecosystems: strategies and new directions* was organized by the Food and Agriculture Organization of the United Nations (FAO) and held from 07 to 08 March 2005 in Bangkok, Thailand. The overall goal of the workshop was to enhance rehabilitation efforts in the tsunami-affected areas through better coordination of national, regional and international agencies involved in forest rehabilitation and management of tsunami-affected areas.

The workshop brought together 15 national representatives from seven tsunami-affected countries (India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand) and about 30 representatives from international and regional organizations. The workshop served as a forum to share information, collectively assess initial findings related to rehabilitation needs and opportunities, share plans and proposals for future rehabilitation work and develop mechanisms for collaboration and joint activities.

Participants expressed their support of a regional coordination mechanism suggested by FAO. Three working groups discussed the possible scope, the structure of the proposed coordination mechanism and the products and services to be provided. Based on the presentations, discussions and ideas expressed, participants:

- identified critical issues to be addressed;
- elaborated a common vision and principles that should guide forest-related rehabilitation and reconstruction efforts in the region; and
- formulated recommendations for strengthening coordination efforts in the region.

The participants recommended that a regional partnership be established, to foster collaboration and coordination of forest-related initiatives in rehabilitation efforts in the tsunami affected countries. The participants recognized that such regional partnerships for information sharing, technical support and capacity building are consistent with existing FAO-supported networks and other partnership mechanisms in which its member countries are actively participating.

The partnership should include affected countries, international and regional organizations, NGOs, research organizations and other stakeholders, as well as donors supporting the partnership. The objective would be to support a forestry response to the tsunami that is cost effective, comprehensive, technically sound and developed within the context of integrated coastal area management and sustainable livelihoods.

The participants further recommended that FAO, in collaboration with other potential partners, continue to work to develop and establish the partnership and, as an interim measure, formulate a programme of action related to the critical issues identified in this document.

FAO and other UN organizations together with affected countries and other partners should quickly work together to make specific requests for support through the mid-term review of the flash appeal, and other sources, for regional cooperation and work on other priority issues related to forests and tsunami.

The participants proposed that the summary report be made available at the Ministerial Meeting on Forests and the Committee on Forestry to be held at FAO, Rome on 14 and 15-19 March, respectively.

1. INTRODUCTION

The Regional Coordination Workshop on *Rehabilitation of tsunami-affected forest ecosystems: strategies and new directions* was organized by the Food and Agriculture Organization of the United Nations (FAO) and held from 07 to 08 March 2005 in Bangkok, Thailand. The overall goal of the workshop was to strengthen and enhance rehabilitation efforts in the tsunami-affected areas to provide for a better future for people living in coastal areas.

The objectives of the workshop were to:

- exchange information and knowledge related to the impacts on forest ecosystems and the effective rehabilitation of forest ecosystems in tsunami-affected areas;
- strengthen coordination and collaboration of national, regional and international agencies involved in forest rehabilitation and management of tsunami-affected areas; and
- develop a mechanism for coordination and action to be taken at the regional level to support the rehabilitation of tsunami-affected forest ecosystems and to address other forest-related issues in the rehabilitation and reconstruction phase.

The workshop brought together 15 national representatives from seven countries¹ (India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand) affected by the 26 December 2004 tsunami in Asia. They were joined by about 30 representatives from international and regional organizations. The workshop provided participants the opportunity to share information, collectively assess initial findings related to rehabilitation needs and opportunities, share plans and proposals for future rehabilitation work and develop mechanisms for collaboration and joint activities.

Mr He Changchui, Assistant Director-General and Regional Representative of the FAO Regional Office for Asia and the Pacific made a welcoming speech. He emphasized the importance of effectively pooling resources, information and technology for rehabilitating the forest and tree ecosystems along the tsunami-affected coastal areas, and called for a coordinated effort by all parties concerned. After an introduction to the workshop by Mr Patrick Durst, Senior Forestry Officer, FAO Regional Office for Asia and the Pacific, five invited speakers set the scene with the following presentations:

- the role of mangroves and other vegetation in protecting against tsunamis and tidal surges;
- integrated coastal zone management;
- the assessment of the impacts of the tsunami on coastal vegetation; and
- the assessment of wood use and needs in the region for reconstruction.

During an open forum, participants from seven of the affected countries described rehabilitation and reconstruction activities. In particular, they highlighted the role of forests and trees in the overall rehabilitation approaches taken in their respective countries, ongoing and planned activities, key challenges to be addressed and the potential role of, and expectations from, strengthened regional coordination from a national perspective.

The representatives from international and regional organizations had the opportunity to outline ongoing and planned activities. In addition, several speakers presented ideas for better coordination at national and regional levels.

Based on the presentations, discussions and ideas expressed, participants were divided into three topical working groups to:

- discuss the development of a coordination mechanism;

¹ The participant of Bangladesh was unable to attend.

- elaborate a common vision and principles that should guide forest-related rehabilitation and reconstruction efforts in the region; and
- formulate recommendations for strengthening coordination efforts in the region (elaborated further below).

2. CRITICAL ISSUES RAISED AT THE WORKSHOP

Recognizing that the situation varies from country to country, participants raised the following issues:

- 1) The protective role of mangroves and other coastal forests (natural and planted) against tsunamis, typhoons, and other natural disasters depends on various factors, including: the type and characteristics of the event itself; vegetation characteristics such as species, stand density, height and width of the vegetation zone; and the characteristics of the adjacent sea bottom. There is a need to further assess the effectiveness of mangroves and other coastal vegetation in protecting coastal areas from major natural disasters.
- 2) There is a lack of clear, accurate and comprehensive information about the impact of the tsunami on coastal areas, including forests and trees. Where coastal vegetation was severely affected, more precise impact assessments are needed, which also consider the characteristics of the sea bottom close to the coastline.
- 3) Although the tsunami caused significant damage to coastal vegetation in some countries, many organizations are planning to restore and rehabilitate coastal forests as a protective measure against future tsunamis, tidal surges, typhoons and cyclones. A rigorous analysis of the factors influencing the protective function of coastal forests is needed and guidelines developed to assist countries that plan to establish greenbelts and other forests for (mainly) protective purposes.
- 4) Rehabilitation/reforestation efforts must be carefully planned and implemented and the forests subsequently managed properly. Full stakeholder (from different levels and sectors) involvement is necessary in this process to ensure success. In particular, local communities need to be fully involved in the decision-making.
- 5) Problems preventing cost-effective methods of rehabilitation of coastal forests include insufficient technical knowledge, limited human resources and capacities for implementing rehabilitation activities and ambiguous land tenure and clear demarcation of land.
- 6) Initiatives aimed at the rehabilitation and management of coastal forests for protection purposes must be linked to the socio-cultural and economic needs and aspirations of local people. Protection forests also require management and many production forests, if properly managed, can also fulfill protection functions.
- 7) There is a critical need for sound technical information on workable practices for rehabilitating coastal forests, suitable sites for planting, and proven approaches for involving local people in decision-making, planning and implementation. Similarly, policy makers and the donor community require solid advice to avoid quick fixes, with potentially negative consequences, to ensure that their decisions and assistance enhance sustainable development.
- 8) Integrated coastal zone management is particularly challenging because of the tremendous diversity of livelihoods that depend on fisheries, aquaculture, tourism, forestry and agriculture. Long-term rehabilitation should focus on creating sustainable livelihoods and restoring the productive use of coastal resources. Integrated approaches to coastal zone management need to balance ecological, social, cultural, economic considerations and the importance of community participation and adequate governance. Inter-sectoral cooperation and coordination are needed, as

well as appropriate policy formulation and strategic planning mechanisms to balance trade-offs among different, and often conflicting, interests.

- 9) Detailed calculations of the wood needs for reconstructing infrastructure have yet to be carried out in most places. In some countries, wood demand may be met from domestic sources. However, there is a risk of over-exploitation of local forests (some of them protected areas) to meet the wood demand for reconstruction. In some cases, large quantities of wood will have to be imported.
- 10) Some donor countries are offering to export wood to affected countries. Care must be taken to ensure that wood used for reconstruction has the necessary characteristics to meet specific needs and is adequately treated to ensure durability. Some species may also not be acceptable for socio-cultural reasons. The potential of using salvage wood and alternative construction materials, such as bamboos, needs to be further explored.
- 11) Conflicting demands for the use of the affected lands (green belts, aquaculture, agriculture, tourism, residential and industrial sites) are causing controversies and tensions in a number of locations, especially where land titles and tenure arrangements are ambiguous. In some cases, “land grabbing” has particularly affected poorer sections of society.
- 12) Although several countries have passed zoning laws, prohibiting development of coastal areas within a certain distance of high-water marks and beachfronts, in general, law enforcement requires strengthening.
- 13) The international community has helped countries with emergency relief and early response assistance, impact assessments, development of rehabilitation plans and wood needs assessments. NGOs have raised substantial funds to assist in tsunami rehabilitation efforts and are moving quickly with delivering assistance. There is a tremendous need and opportunity to improve the effectiveness of efforts through improved coordination and the provision of relevant information in a timely manner.

The following issues and topics could be addressed through regional collaboration:

- Natural disaster management strategies, including exchange of information on vulnerability and risk analysis and rapid damage assessments.
- Exchange of technical information on the rehabilitation, establishment and management of coastal forests (natural and planted).
- Sharing of experiences and lessons learned related to restoration and rehabilitation of coastal areas and integrated coastal zone management.
- Practical application of the livelihoods approach and a means to strengthen inter-sectoral collaboration.
- Governance issues, including coordination between national and local level planning, approaches for strengthened stakeholder participation, and the development of institutional frameworks and legislation to support integrated coastal zone management and coastal forest rehabilitation.
- Scientific analyses of factors influencing the degree of protection provided by coastal forests and guidelines for the establishment and management of protection forests and shelterbelts in order to make them more effective.
- Assistance in organizing joint research activities and exchange of research results.

3. VISION AND GUIDING PRINCIPLES

The participants of the workshop identified a common vision and underlying principles to guide forest-related rehabilitation efforts in the affected areas of the region. These would provide a basis for country, regional and international-level action.

The participants agreed on the following vision of the outcome of forest-related initiatives in rehabilitation and reconstruction efforts in tsunami-affected area:

Vision: a better future than existed before the tsunami, which is based on forests' and trees' contributions to poverty alleviation, food security, human capacity building, environmental sustainability and reduced vulnerability to natural disasters in the short and long-term.

Guiding principles for rehabilitation efforts in the forest sector:

- 1) Rehabilitation and reconstruction efforts should recognize the sovereign rights of each affected country and the cultural and economic contexts of the affected coastal communities, and respect traditional uses, access and rights to resources.
- 2) Interventions should be based upon a livelihoods approach that addresses poverty alleviation, food security, human capacity building, environmental sustainability and minimizes vulnerability and risks from future natural disasters.
- 3) Action should be based on participatory principles involving all stakeholders, but in particular the affected populations, in policy formulation, planning and decision-making.
- 4) Forestry interventions should be compatible with sustainable forest management practices, and carried out within the context of integrated coastal area management and spatial planning that recognizes the multiple uses of the natural resource base.
- 5) Planning of rehabilitation activities should take into consideration the anticipated impacts of climate changes on coastal areas as well as national strategies for climate change adaptation, as appropriate.
- 6) Flexible and adaptive methods should be adopted to respond to the complexity of the situation and particular conditions in the affected areas.
- 7) Emphasis is needed on strengthening institutional capacity at all levels and of various actors (government and non-governmental), ensuring good governance and law compliance and securing equitable distribution of costs and benefit.
- 8) Rehabilitation processes should be carefully planned, implemented and evaluated, including the following elements:
 - detailed impact and damage assessments and needs analyses as the basis of all rehabilitation activities;
 - assessments of the institutional capacity of different organizations at all levels and all economic sectors in order to ensure efficient delivery of suitable technical and material inputs and effective use thereof;
 - application of scientifically-based, proven technologies that are environmentally sustainable, socially acceptable and economically sound;
 - action taken with clear indication of measurable outcomes;
 - emphasis on accountability and transparency; and
 - effective communication and coordinated partnership between government, NGOs, international agencies and bilateral donors.

4. RECOMMENDATIONS

The participants recommended that a regional partnership to foster collaboration and coordination of forest-related initiatives in rehabilitation efforts in the tsunami affected countries should be established. The participants recognized that such regional partnerships for information sharing, technical support and capacity building are consistent with existing FAO-supported networks and other partnership mechanisms in which its member countries are actively participating. The proposed partnership would address the current needs and challenges presented by the tsunami disaster.

The partnership would include affected countries, international and regional organizations, NGOs, research organizations and other stakeholders, as well as donors supporting the partnership. The objective would be to support a forestry response to the tsunami that is cost effective, comprehensive, technically sound and developed within the context of integrated coastal area management and sustainable livelihoods.

The immediate benefits of the activities of the partnership would be targeted at the tsunami-affected areas in Asia, but would also be relevant to other affected areas and to mitigation and rehabilitation efforts in future coastal disasters.

The functions of the partnership would be the following:

- provide access to information;
- furnish technical knowledge, expertise, guidelines and tools;
- support capacity building; and
- strengthen partnerships, coordination arrangement and access to financial resources.

The structure would consist of the following: affected countries, a wide network of partners, a support group (steering committee/coordination committee) made up of the countries and a small, representative group of partners, and a secretariat at FAO. An emphasis would be put on making it flexible, streamlined and able to evolve to accommodate emerging needs.

It further recommended that FAO, in collaboration with other potential partners, continue to work to develop and establish the partnership and, as an interim measure, formulate a programme of action related to the critical issues identified in this document.

FAO and other UN organizations together with affected countries and other partners should quickly work together to make specific requests for support through the mid-term review of the Flash Appeal, and other sources, for regional cooperation and other priority issues related to forests and tsunamis.

The participants proposed that the summary report be made available at the Ministerial Meeting on Forests and the Committee on Forestry to be held at FAO, Rome on 14 and 15-19 March, respectively.

SUMMARIES OF TECHNICAL PRESENTATIONS AND DISCUSSIONS

The role of mangroves and other vegetation in protecting against tsunamis and tidal surges

Mr Ong Jin Eong, Malaysia

Mr Ong explained the role of coastal vegetation in protecting against tsunamis and tidal surges with a specific focus on mangroves. He emphasized that the idea that mangroves protect coastal areas from tsunamis and erosion is a myth! Mangroves are usually found on low-impact coastlines with limited rates of erosion (mangrove propagules can not root in high-impact areas or areas with high erosion rates). The ability of mangroves to reduce the impact of a wave is determined by the Manning roughness coefficient of the forest as a whole – in general, this effect is negligible with the kind of forces involved with a tsunami. With regards to rehabilitation, he indicated that mangroves are fully capable of regenerating themselves in most cases. The only reason that this would not occur is if there is not a sufficient supply of propagules in the area that needs to be rehabilitated or there is too much (human) disturbance of the area. The best way of (naturally) rehabilitating degraded areas is to restore the hydrodynamics of the area to be rehabilitated (i.e. remove barriers to tidal movements). If human intervention is necessary for rehabilitation, then the following elements need to be considered:

- determine extent and nature of damage;
- understand the hydrodynamics;
- plant the correct species; and
- identify appropriate areas (mud-flats are not suitable for planting).

Mr Ong indicated that he was all for the preservation of mangrove ecosystems but for the right reasons, not the wrong ones.

Discussions

A question was raised concerning the role of mangroves in protecting mud-flats. Mr Ong replied that mud-flats are not suitable for planting mangroves.

Another question was asked about an effective way to rehabilitate the areas that had been converted for development activities (e.g. shrimp ponds) by restoring mangroves or recovering hydrodynamics. Mr Ong mentioned that a relatively easy and effective way would be to re-establish the free flow of water and normal tidal flows.

Integrated approaches to coastal zone management

Mr Simon Funge-Smith, FAO Regional Office for Asia and the Pacific

Mr Funge-Smith described integrated approaches to coastal zone management with a specific emphasis on the complexities of coastal livelihoods that depend on fisheries, aquaculture, tourism and forestry. He mentioned that longer term rehabilitation work should focus on creating sustainable livelihoods and restoring productive use of coastal resources. He highlighted the need to balance ecological, social, cultural, governance and economic considerations and the importance of community participation. He also emphasized the need for inter-sectoral cooperation (forestry, fisheries, aquaculture, agriculture, tourism, and infrastructure) and for appropriate policy and strategic planning mechanisms to balance trade-offs between different interests. He concluded by outlining the challenges in integrated coastal area management, which included land title, equitable recovery and collaboration among organizations and between different sectors.

Discussions

A clarification was requested regarding the reason land titles are an issue in fisheries. Mr Funge-Smith replied that it is an issue of critical importance in fisheries-related rehabilitation, as fishing communities live on coastal areas where land titles have not been clearly defined and conflicts are already occurring over land ownership in coastal areas.

A comment was made with regard to the difficulties in establishing an inter-sectoral mechanism to collectively manage coastal zones. Mr Funge-Smith mentioned that bringing all the stakeholders from different sectors around the table would be difficult at the national level but that it would be possible at the local level.

Assessment of the impacts of the tsunami on coastal vegetation in the region

Ms Sundari Ramakrishna, Wetlands International and Mr Faizal Parish, Global Environmental Centre

Ms Ramakrishna gave an overview of the assessment of impacts of the tsunami on coastal vegetation in the region. By referring to assessments conducted by M. S. Swaminathan Research Foundation (MSSRF) as well as Wetlands International, she introduced the findings pertaining to the magnitude of damage to coastal areas and the role of mangroves and other coastal vegetation in mitigating damage. She mentioned that the buffering effect depended on the width and strength of mangrove belts. Mr Parish explained how and to what extent mangroves and other coastal vegetation mitigated the impacts of the tsunami on the coastal zones in the region. He referred to the analysis that concluded that coastal forests provided significant protection where there was a sufficient width of intact forest, while degraded forest or widely spaced trees provided little protection. This provides strong justification for rehabilitating and protecting remaining coastal forests. He also introduced recommendations for rehabilitation, which include the enhancement of natural coastal defenses through greenbelts, the exploration of eco-engineering techniques, and the development of modalities for community-based rehabilitation and management of coastal forests.

Discussions

A clarification was sought concerning where the figure of the mangrove area affected by the tsunami in Indonesia came from. Ms Ramakrishna mentioned that the figure was taken from the report produced by the National Planning Agency of Indonesia (BAPPENAS).

A comment was made that the extent greenbelts can protect coastal areas depends on various factors. Mr Parish made a clarification that it depends on various factors including the nature, size, width, and range of greenbelts.

Assessment of wood use and needs in the region for reconstruction: a case study from Aceh

Mr Nazamuddin Basyah Said, Greenomics

Mr Said mentioned that the aims of the assessment were to estimate the volume of logs needed in the emergency response and rehabilitation phases in Aceh and to identify their sources. He gave the estimates of wood needed for the construction of houses (1.2 – 3.4 million m³ of sawn timber depending on the type of housing), offices and houses of worship (101 756 to 135 675 m³ of sawn timber), and fishing fleet (14 774 to 18 468 m³ of sawn timber), totaling 1.6 – 3.2 m³ of sawn timber or 4 – 8 million m³ of logs. He highlighted the need for importing timber for the reconstruction in Aceh and presented the proposal of establishing a timber importation mechanism.

Discussions

A clarification was sought about whether the imports are from other provinces of Indonesia or other countries. Mr Said replied that the proposal for a timber importation mechanism is for overseas sources, while transporting wood from other provinces is ongoing.

A question was asked about the durability of wood imported from other countries if used for house construction in a tropical country like Indonesia. The chairman acknowledged the importance of this issue and suggested it requires further investigation.

A question was raised about local alternatives for house construction such as bamboo. Greenomics mentioned that around 55 percent of those surveyed by Greenomics had replied that they use other woods for house construction. Mangrove Action Project referred to the findings from a meeting in India on earthquake-resistant bamboo housing and mentioned that bamboo is a feasible alternative to regular wood for building houses as they are durable and can be managed sustainably by local communities.

Mr Heruela asked a question regarding demand for wood fuels in tsunami-affected areas in Aceh. Mr Said replied that the demands for woods for fuel purposes are not significant in Aceh.

Plenary discussion

A question was raised concerning approaches for promoting the establishment of greenbelts. Mr Parish (Global Environment Centre) emphasized the importance of creating greenbelts without excluding local communities, and highlighted the need for instituting laws/regulations and guidelines for promoting greenbelts. Mr Kashio (FAO) mentioned that the current greenbelts are not designed to protect against tsunamis, although they happened to perform such a role in the recent tsunami incidence, and thus highlighted the need for renewed efforts in establishing greenbelts for specifically protecting against tidal surges.

A question was asked regarding the effectiveness of coastal plantations, especially that of *Casuarina*. Response was given by a Malaysian representative that plantations are useful to the extent they reduce the energy of tidal surges but such effects depend on the width, range and nature of plantations. A representative from India added that involving local communities in planting and management (such as under the Joint Forest Management scheme in India) is important for success. A Malaysian representative referred to the difficulties Malaysia had experienced in involving communities in planting large areas and suggested private-community partnerships as a potential solution.

Mr Parish mentioned that the Global Environment Centre, in collaboration with various partners such as the Port and Airport Research Institute and Disaster Reduction Research Institute from Japan, has started assembling models to assess the effectiveness of greenbelts in protecting against tsunamis, and developing guidelines for establishing or strengthening greenbelts.

UNESCO raised a concern about timeliness of assistance for reconstruction and rehabilitation as there is a possibility that people would start using wood from nearby areas before timber is imported from outside.

M. S. Swaminathan Research Foundation highlighted the need for disseminating reliable data on the contribution of coastal vegetation to livelihoods and integrated coastal management, especially in local languages.

Mangrove Action Project emphasized the importance of hydrological assessments in planning mangrove rehabilitation efforts.

An Indonesian representative made a comment that demand for wood can be reduced because the Government plans to build about 120 000 houses, instead of 500 000 as estimated by Greenomics, and also because houses are designed to use less wood and more of alternative materials.

SUMMARIES OF COUNTRY DELIBERATIONS AND OPEN DISCUSSION FORUM*Country approaches for rehabilitation, current activities and needs*

Mr Appanah (FAO) introduced the members of the panel, composed of national representatives from seven tsunami-affected countries. This was followed by a brief introduction by national representatives of the first reactions to the tsunami in each country.

Recognizing the importance of integrated, multidisciplinary approaches to coastal area management, the panel discussed the role played by communities in managing coastal vegetation in an integrated manner. Various schemes of community-based forest and coastal area management were introduced by national representatives. Some countries shared their experiences in working with institutions in different sectors, in some cases with the support from international assistance agencies.

Most countries expressed their appreciation for the assistance provided by donors and international and regional agencies. However, some countries suggested that more assistance should be allocated to such areas as eco-engineering and other forestry-related rehabilitation activities (e.g. Sri Lanka needs US\$500 000 for forestry-related rehabilitation activities). A request was made specifically for FAO to provide information on species as well as technical guidelines for planting and managing greenbelts.

The panel discussed how natural resource legislation relating to coastal ecosystems is designed to empower local participation in natural resource management. Land titling, relocation of coastal communities and conflicting uses of coastal areas by different stakeholders were noted as challenges encountered in rehabilitation efforts. An effective way to reconcile the needs for sustainable livelihoods and coastal area management was also discussed.

Suggestions were made to efficiently channel financial resources to rehabilitation efforts by governments. In India, a joint rehabilitation effort has been made by the Government and NGOs. In Indonesia, Conservation International and other NGOs have provided financial assistance for reconstruction of Sumatra and Aceh.

Important technical problems preventing effective rehabilitation of coastal areas were discussed. Thailand emphasized the importance of choosing appropriate species for planting coastal areas. Indonesia referred to the problem of limited human resources and capacities for implementing planned rehabilitation activities, while Sri Lanka mentioned problems of water scarcity, animal grazing and species selection, especially for arid areas. Malaysia highlighted issues of land security and demarcation.

The panel reiterated the importance of community involvement in forest and coastal management to integrate cultural and livelihood aspects in rehabilitation efforts. Ways of sharing benefits of forest management with communities was discussed. Thailand raised a concern about communities traditionally living in coastal areas who are vulnerable to tidal surges.

A question was raised about appropriate models of integrated coastal area management. Thailand described mangrove management in Southern Thailand, which has adopted an integrated approach. India also introduced an example of integrated coastal management in Chennai.

Open discussion forum

Mr Appanah and Ms Braatz opened the forum by encouraging participants to discuss any issues of importance in the rehabilitation of tsunami-affected forest ecosystems, including the suggested coordination mechanism for rehabilitation in the region.

Many organizations, as well as some national representatives, expressed their support to the idea of establishing a regional coordination mechanism. Various suggestions were made with regard to the structure (e.g. open-ended networks; a formal mechanism with a secretariat and a steering committee) and functions (e.g. a neutral forum; exchange of information and technical expertise; scientific research) of such a coordination mechanism.

It was proposed that interested parties identify key issues for regional cooperation (e.g. scientific guidelines for selecting suitable species for planting in coastal zones) and establish an appropriate cooperation mechanism that can produce products and services needed to address such issues. A possibility of extending the scope of the mechanism to look beyond tsunami to include cooperation in other areas (e.g. disaster management) was also suggested. Representatives from Sri Lanka and Indonesia pointed out the importance of bringing national-level coordination down to local levels within countries. The role of national focal points in bringing about coordination at local levels was highlighted.

Ms Braatz reviewed the discussions on a proposed coordination mechanism and outlined the following five areas as issues of regional importance:

- disaster management strategies;
- governance (e.g. interactions between national and local levels; legal issues; local stakeholder involvement; institutional arrangements to support community involvement);
- inputs from scientific research;
- livelihood approach (e.g. how can it be adopted to coastal management); and
- integrated coastal zone management.

The exchange of ideas about a proposed coordination mechanism was followed by general discussion on tsunami rehabilitation efforts. Ramsar Convention Center suggested that tsunami-affected countries make the best use of Japan's technical expertise in rehabilitation of tsunami-affected areas as well as financial assistance. ITTO suggested countries utilize the Global Mangrove Database and Information System (GLOMIS), an information database developed by the International Society for Mangrove and Environment (ISME) and ITTO.

WWF Thailand proposed that the workshop discuss and share examples of policy frameworks, institutional arrangements, and research for effective management of mangroves and other coastal vegetation.

SUMMARIES OF PRESENTATIONS OF INTERNATIONAL AND REGIONAL ORGANIZATIONS AND PLENARY DISCUSSION

Rehabilitation initiatives and activities by international and regional organizations

Ashoka Trust for Research in Ecology and the Environment (ATREE)

Mr Shanker introduced the legal review of India's principal coastal legislation that ATREE had conducted in Tamil Nadu. The report of the review, entitled "The Coastal Regulation Zone Notification and Post-Tsunami Rehabilitation in Tamil Nadu, India", aimed to provide government and non-government rehabilitation agencies with a clear understanding of the role and position of the Coastal Regulation Zone Notification in rehabilitation efforts that may take place in areas under the jurisdiction of this law. Mr Shanker also introduced other ATREE reports on fisheries-related issues in Tamil Nadu, which are in preparation.

ASEAN-Korea Environmental Cooperation Unit (AKECU)

Mr Yong-Kwon Lee introduced the AKECU project on the restoration of degraded forest ecosystems in Southeast Asia through support to research, capacity building and information sharing. He highlighted the Korean Government's plan for rehabilitation of tsunami-affected areas with a specific focus on mangrove rehabilitation and training. He mentioned that the plan places a special emphasis on human livelihoods.

Charles Darwin University

Mr Boggs introduced the "Guidelines for Coastal Restoration Following the Indian Ocean Tsunami" that Charles Darwin University has developed in collaboration with the Australian Institute of Marine Science and National University of Singapore. He described the objectives of the guidelines as follows:

- to map land cover, with an emphasis on coastal vegetation communities, before and after the Indian Ocean tsunami;
- to analyze coastal vegetation damage and its relationship to environmental factors;
- to develop a model for assessing the role of coastal vegetation in mitigating tsunami impact; and
- to develop a rehabilitation plan for the restoration of coastal vegetation communities.

He highlighted the outcomes of recent scientific research on the role of mangroves in dissipating wave energy from tidal surges.

Food and Agriculture Organization of the United Nations/Regional Office for the Asia and the Pacific (FAO/RAP)

Mr Kashio introduced FAO/RAP's responses to the tsunami with a specific emphasis on the areas where FAO has comparative advantages including agriculture, fisheries and forestry sectors. Referring to information dissemination tools FAO has set up as a response to the tsunami, such as the "Tsunami Atlas", he encouraged participants to make use of the data and information available. He highlighted a plan to submit forestry-related proposals for the revised UN Flash Appeal and encouraged countries to seek funds for forestry-related rehabilitation through this channel.

Global Environmental Centre (GEC)

Mr Parish mentioned that the GEC had conducted preliminary assessments of the impacts of the Indian Ocean tsunami on coastal ecosystems and initiated media activities to promote mangrove rehabilitation and greenbelts. GEC, in collaboration with other international organizations, organized a special session on tsunami and coastal wetlands at the Asian Wetland symposium in February 2005. Follow-up actions include further assessments of the effectiveness of greenbelts, development of a regional initiative to link together different groups working on greenbelt issues, and establishment of exchange mechanisms. He encouraged participants to work together through a proposed coordination mechanism for greenbelts, which could be linked with or integrated with an overall forest and tsunami partnership.

GTZ Malaysian-German Forestry Education Project (MGFEP)

Mr Kollert introduced GTZ-supported rehabilitation activities in Aceh, which aim to support livelihoods and to protect ecosystems. He mentioned that GTZ plans to conduct long-term activities in the near future such as rehabilitation of damaged ecosystems as well as livelihood support. He mentioned that there is a possibility of obtaining funding from GTZ if a program is backed by a regional collaboration mechanism and if a focus is on integrated coastal management.

International Tropical Timber Organization (ITTO)

Mr Hiras mentioned that ITTO supports rehabilitation of mangrove forests for the following three reasons: ecological and economic importance, sources of timber and timber-related products, and sustainability of ecosystems. The Global Mangrove Database and Information System (GLOMIS) and the World Atlas of Mangrove (published by ISME) were introduced as ITTO's mangrove-related programs of regional scope. ITTO expressed its willingness to provide financial assistance to tsunami-affected countries based on well-focused proposals with itemized budgets.

The World Conservation Union (IUCN)

Mr Singh mentioned that IUCN had conducted rapid assessments in Sri Lanka and Thailand, the reports of which are available on the IUCN website. A plan for medium- and long-term livelihood-ecosystem rehabilitation activities has been prepared. A global partnership has been established with the UNEP as a coordination mechanism. He expressed IUCN's keen interest in assessing options for having a regional mangrove rehabilitation project. He also welcomed FAO's idea of establishing partnerships for forest ecosystem rehabilitation through integrated approaches.

Mangrove Action Project (MAP)

Mr Brown introduced MAP's Mangrove Rehabilitation Methodology (site prioritization, community organizing, village ordinance, ecological mangrove rehabilitation, sustainable livelihood development, monitoring and maintenance, and documentation of lessons learned). He also highlighted the ecological restoration of mangroves using hydrologic restoration as the preferred method. He introduced ideas for regional cooperation on coastal forest restoration:

- establish a clearing house for linking local restoration needs with technical restoration agencies and donors;
- establish successful restoration models as demonstration sites;

- insure community participation in restoration processes (protection and monitoring) for sustainability; and
- coordinate among donors to prevent duplication and ensure complete coverage.

M. S. Swaminathan Research Foundation (MSSRF)

Mr Ravishankar introduced MSSRF's rehabilitation-related efforts at the national level:

- tool kit for coastal bioshield (e.g. technical assistance for mangrove restoration and afforestation);
- coastal biovillages (enhancing livelihood conditions of coastal communities by linking ecological security and livelihood security);
- village knowledge centers (wireless information system in local languages)

He explained MSSRF's regional coordination mechanism in the Bay of Bengal region and presented ideas for further cooperation with a specific emphasis on the need for integrated and sustainable livelihoods approaches.

Organization for Industrial, Spiritual and Cultural Advancement (OISCA), Thailand

Mr Chen described OISCA's four main programmes promoted through three pillars: development, environment and learning. He mentioned that OISCA has extensive experiences in promoting mangrove reforestation through environmental education, particularly for children and the youth. He expressed OISCA's continued support for mangrove rehabilitation efforts in the tsunami-affected areas through various environmental education programs and the International Tree Planting Volunteer Program.

Ramsar Center Japan (RCJ)

After a short introduction to the RCJ, Mr Nakamura introduced one of the outcomes from the Asian Wetland Symposium 2005: the Chilika Statement, which highlights the need for rehabilitating wetlands and coastal areas in tsunami-affected countries. She suggested that the possibility of strengthening regional networks and partnerships should be considered to adopt a holistic approach to integrated coastal ecosystem. She also introduced potential funding mechanisms available in Japan for NGOs.

United Nations Development Programme (UNDP) Malaysia

Ms Norzilla Mohamed introduced rehabilitation activities of UNDP Malaysia in various areas, ranging from health care services to livelihood support for fisheries communities. She also described the outcomes from three rapid assessment missions that UNDP Malaysia had conducted with UNICEF. She mentioned that UNDP Malaysia promotes South-South Cooperation and a holistic approach in tsunami-related rehabilitation activities.

United Nations Environment Programme (UNEP)

Ms Tunnie mentioned that UNEP has provided technical and coordination assistance to affected countries in partnerships with WWF, IUCN and other agencies. She explained UNEP's coordination mechanism with the government sector, environmental society, and partners and Collaborative Assessment Networks. She mentioned that UNEP plans to develop proposals based on current assessment efforts.

United Nations Educational, Scientific, and Cultural Organization (UNESCO) Indonesia

Mr Han Qunli introduced UNESCO's response in the fields of education, science, culture and communication. He mentioned that UNESCO Indonesia currently provides support for various activities in the fields of science and the environment: the establishment of early warning systems; a multi-sectoral assessment of tsunami effects on coastal ecosystems and resources in Aceh and Northern Sumatra; development of a plan for mangrove rehabilitation; and a monitoring mission to assess the magnitude of logging and the use of wood in a World Heritage area in Banda Aceh. He expressed UNESCO's keen interest in establishing regional partnerships to capitalize on the resources of various agencies.

University of Malaysia Sabah

Mr Aminuddin Mohamad highlighted the forestry programmes recently developed by the University, and expressed his willingness to collaborate with other agencies in the future.

Wetlands International (WI)

Ms Ramakrishna introduced the Ramsar Tsunami Reference Group, which had been established in collaboration with the Ramsar International Organisation Partners and other relevant research, environmental and aid organisations to bring together scientifically sound advice on wetlands in the region to assist governments in establishing the most effective response measures. She referred to WI's plan for socio-economic assessments in tsunami-affected wetlands in partnership with IUCN and other Dutch-based organizations.

World Agroforestry Centre (ICRAF)

Mr Rudebjer spoke on behalf of ICRAF and CIFOR. He introduced the collective action on restoring tsunami-affected livelihoods, a 3-5 year program led by World Fish Center and supported by other international agencies including ICRAF, CIFOR and IRRI. He also highlighted the CIFOR/ICRAF collaboration with the Ministry of Forestry of Indonesia in mangrove rehabilitation and sustainable livelihoods. He mentioned that CIFOR/ICRAF is developing a proposal for building capacities of Indonesian universities and students in Aceh.

World Wide Fund for Nature (WWF) Thailand

Mr Parr described WWF's emergency responses in Aceh, India and Thailand as follows:

- Aceh: "Green Reconstruction Guidelines"; Timber for Aceh Program; and Coastal Zone Management, Rehabilitation and Livelihood Program
- India: NGO forum; advocacy for green reconstruction; and partnership with UNDP-GEF
- Thailand: Green Reconstruction zoning; community-based mangrove forests management; best practices in marine tourism.

He introduced the Mai Khao Marine Turtle Foundation as an innovative way to generate financial resources for marine resource conservation through an NGO-private sector partnership.

SUMMARIES OF WORKING GROUP DISCUSSIONS

Based on the presentations, discussions and ideas expressed, participants were divided into three topical working groups to discuss structure, issues and scopes, products and services to be provided by the proposed coordination mechanism.

Presentation by Working Group 1: key issues and scope

WG 1's rationale

- Forestry issues have been inadequately addressed
- Integrating forestry issues into tsunami response – a regional approach
- Mobilizing human and financial resources

Purpose of the regional initiative

- Bringing issues to the forefront
- Getting people together
- Technical solutions to problems

Scope

- To look beyond tsunami and focus on natural coastal catastrophe
- Preparedness for the long term
- First phase focus on tsunami-affected countries
- Later phases will include other countries in the Asia–Pacific region

Issues

i) Integrated coastal zone management

- Land-based forest ecosystem + sea-based (seagrass, coral reef)
- People's need: forestry, fisheries and agriculture
- Sustainable livelihoods
- Legal mechanisms (legislation and enforcement, land tenure)
- Synergy (avoid duplication, share best practices)
- Standardizing technical methodologies (assessment, zonation and rehabilitation)

ii) Human capacity

- Local community training (including study tours)
- Revising universities' curricula
- Developing modules on tsunami recovery
- Promoting traditional and local knowledge
- Communication and information dissemination – including cultural and traditional means of communication
- Provision of regional expertise

iii) Wood needs for reconstruction

- Studies on long-term impact on ecosystems
- Urgent studies on timber quality and durability (including alternative materials, such as bamboo)
- Related issues of long-term policy directions

Discussions

Clarification was sought regarding whether sea-based ecosystems should be dealt with by the proposed mechanism. FAO replied that it does not have a comparative advantage in dealing with sea-based ecosystems and that these aspects should be addressed through other mechanisms.

Presentation by Working Group 2: structure of the mechanism

Why do we want to set up a mechanism?

- Develop an effective response to tsunami (cost effective and technically sound)
- Avoid duplication
- Identify gaps
- Build on existing mechanisms
- Stimulate information sharing
- Engage stakeholders currently not working together
- Is there a need for a new mechanism or are existing ones adequate?
- Up to 25 December, did people feel there were adequate mechanisms within the region?

Scope

i) Information sharing

- Web page (links, analyzed/synthesized info)
- List server
- Hard copy/translated documentation
- Databases/geographic info
- Workshops – seminars, media

ii) Capacity building

- Workshops
- Sharing resource persons for training
- Study visits
- Training materials

iii) Technical support

- Technical guidelines
- Technical consulting/advising services
- South-South collaboration, sharing experiences/lessons learned
- Demonstration sites/pilot sites

iv) Resources

- Coordination of similar activities (facilitate national-level coordination)
- Generate resource and resource assistance to achieve objectives
- Matching action and needs

Options for mechanisms

- Business as usual (FAO, national, research, NGO, private sector)
- Business as usual - but with need more resources (money); no need to change mechanism.
- Integrate existing partnerships. Expanded partnership. Not totally changing underlying structure. (coordinate existing groups/networks)
- New totally independent mechanism

Elements of the structure

- Targets/beneficiaries – affected communities, NGO, governments
- Countries – tsunami-affected, or tsunami-prone countries
- Partners – organizations from different sectors (government, NGO, research, etc.) – if you're going to be a partner, you have to contribute something
- Coordination committee/steering group/support group
- Function – guide whatever framework is developed, support operation of mechanism, contribute to development, oversee/support
- Secretariat
- Support activities, some tasks could be distributed to appropriate partners
- Need to link to existing coordination structures

Possible structures

i) *Traditional structure consisting of:*

- Steering committee
- Secretariat
- Countries
- Country stakeholders

This is a beneficiary approach, similar to existing structures. It may however, constrain cross-cutting or regional approaches and could be difficult to fit in a regional and international organization.

ii) *Functional model consisting of:*

- Secretariat (to run the day to day operations)
- Functional teams or sub-networks such as:
 - Mangrove/greenbelt
 - Research
 - Governance
 - Community involvement
 - Others

Each functional team could/should be led by a different partner with specific expertise.

iii) *Hybrid model*

A hybrid model would integrate the best features of both the traditional and functional model structures.

iv) *Other Models*

- Consortium to Restore Shattered Livelihoods in Tsunami-affected Regions (CONSRN). This consortium is composed of five international organizations or regional organizations/networks.
- Global Water partnership facilitates dialogue on water, food and nature. It is a broad, open-ended partnership with a steering committee drawn from different stakeholder groups.
- Umbrella network based partnership. This would be composed of a secretariat plus lead supporters for different functions.

Other issues

- Packaging – The name should be a reflection of the partnership and should distinguish it from a business-as-usual approach. Initially it should be linked to tsunami rehabilitation, but it should have the option to evolve. If its objectives are too general to begin with, it will not stimulate resources or partnership.
- Preamble – add that all of this is in line with what has already been established and agreed to by governments in various other international fora. So we are not creating a new thing, rather,

improving the efficiency and effectiveness of existing mechanisms and ensuring the involvement of other stakeholders.

Discussions

A comment was made that the functional model proposed by the WG 2 seems to be suitable for medium-term response to the tsunami as participating organizations focus on where they have competencies. Another comment was that the former Forestry Research Support Programme for Asia and the Pacific (FORSPA) can be a good model for a hybrid type of organizational structure proposed by the WG.

Presentation by Working Group 3: the products and services to be provided by the mechanism

i) Access to information

- Information on tools and methods to deal with governance issues: particularly land tenure (including people's aspiration for land), law enforcement pertaining to coastal zone management
- mapping who is doing what and where
- free remote sensing imageries for emergency areas
- multi-media, user-friendly documentation on mangrove/coastal rehabilitation methodologies and technologies
- information on appropriate technologies for more effective resource use
- making relevant research results available
- information clearing house (e.g. data from impacts assessments) with quality control mechanism
- web services

ii) Technical knowledge/expertise and guidelines

- assessments of legal and policy frameworks for coastal resources management (e.g. a compilation of existing laws/regulations on mangroves and coastal greenbelts)
- case studies/good practice on governance (law enforcement), sustainable livelihoods from coastal forests, utilization of species useful for local livelihoods, spatial plans for integrated coastal management
- review of collaborative coastal zone management practices
- practical policy guidelines for coastal vegetative rehabilitation
- timber needs, including bamboos and other appropriate materials; cultural issues (e.g. right wood species for reconstructing houses)

iii) Capacity building

- training for practitioners and implementers on coastal rehabilitation (TOT and financing)
- training of builders in use of appropriate local materials, linked to livelihoods
- capacity building (cross-sectoral issues, field assessments, policy formulation)
- model of inter-agency, multi-sectoral collaboration
- advice on scaling up field-level initiatives

iv) Other coordination arrangements

- arrangements for linking donors and implementers
- coordination for obtaining heavy equipment (to facilitate mangrove rehabilitation)

Discussions

A question was raised regarding the sequencing and timing of the delivery of products and services. The need for prioritizing the proposed products and services and sequencing the delivery was highlighted.

PROGRAMME

Regional Coordination Workshop

“Rehabilitation of Tsunami-Affected Forest Ecosystems: Strategies and New Directions”

7-8 March 2005

Bangkok, Thailand

DAY 1

Time	Activity
8.30-9.00	Registration of participants
9.00-9.15	Welcome address – <i>Mr He Changchui, Assistant Director-General and Regional Representative for Asia and the Pacific</i>
9.15-9.30	Introduction to the workshop – <i>Mr Patrick Durst, FAO Regional Office for Asia and the Pacific</i>
	Session 1: Setting the scene Moderator: Mr Tejpal Singh
9.30-10.00	The role of mangroves and other vegetation in protecting against tsunamis and tidal surges – <i>Mr Ong Jin Eong, Malaysia</i>
10.00-10.30	Coffee/tea
10.30-11.00	Integrated approaches to coastal zone management – <i>Mr Simon Funge-Smith, FAO Regional Office for Asia and the Pacific</i>
11.00-11.30	Assessment of the impacts of the tsunami on coastal vegetation in the region – <i>Ms Sundari Ramakrishna, Wetlands International and Mr Faizal Parish, Global Environmental Centre</i>
11.30-12.00	Assessment of wood use and needs in the region for reconstruction: a case study from Aceh – <i>Mr Nazamuddin Basyah Said, Greenomics</i>
12.00-12.30	Plenary discussion
12.30-13.30	Lunch break
	Session 2: Country approaches for rehabilitation, current activities and needs Moderator: Mr Simmathri Appanah
13.30-15.00	During this session, representatives from India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, Thailand, will form a discussion panel in which the following issues will be discussed from the perspective of their own country and focus on forest issues: <ol style="list-style-type: none"> 1. Priorities, overall rehabilitation approach taken and the role of forest issues in the overall plan 2. Current and planned rehabilitation activities 3. Key issues being confronted by and needs for increasing the effectiveness of rehabilitation efforts 4. Expectations from and elements of a coordination / collaboration mechanism at the regional level

15.00-15.30	Coffee/tea
15.30-17.30	Open discussion forum Focus of the discussion is on how increased coordination and collaboration at the regional level can help, and what can be specifically done to assist countries and organizations involved in rehabilitation activities
18.00	Leave FAO for Phra Atit Pier for welcome dinner cruise

DAY 2

Time	Activity
	Session 3: Rehabilitation initiatives and activities by international and regional organizations Moderator: Ms Susan Braatz
8.00-10.00	International and regional organizations will be provided with a 5 minute presentation slot during which speakers will focus on the following issues: <ol style="list-style-type: none"> 1. The organization's rehabilitation-related efforts 2. Current and planned activities 3. Ideas/areas for co-operation 4. Other recommendations, including coordination mechanisms at a regional level.
10.00-10.30	Coffee/tea
10.30-13.00	Working groups
13.00-14.00	Lunch
	Session 4: Development of a coordination mechanism – recommendations and proposals Moderator: Mr Thomas Enters
14.00-15.00	Working group presentations and discussion
15.00-15.30	Coffee/tea
15.30-17.00	Adoption of the recommendations and closing the meeting

LIST OF PARTICIPANTS

REPRESENTATIVES OF TSUNAMI-AFFECTED COUNTRIES

INDIA

J.C. Kala

Forest Department, Tamil Nadu
PCCF
Panagel Bld., Saidarpetl
Chennai 600015
Tel: 91-44-24348059
Fax: 91-44-24337307
Email: jckala@yahoo.com

Promode Kant

Additional Principal Chief Conservator of
Forest
Indian Forest Service, Tamil Nadu
Indian Centers for Forestry Research and
Education (ICFRE)
Dehradun 248006
Tel: 91-135-2755288
Fax: 91-135-2750298
Email: promode.kant@gmail.com

INDONESIA

Iman Santoso

Director
Centre of Forestry Planning Coordination for
Sumatra Region
Ministry of Forestry
Manggala Wanabakti Building Block VII,
12th Fl., Jl. Gatot Subroto, Jakarta 10270
Tel: 62-21-5731783, 5731791
Fax: 62-21-5738732
Email: iman_sansoed@hotmail.com

Harry Santoso

Director
Watershed Management and Land
Rehabilitation
Ministry of Forestry
Manggala Wanabakti Building Block I, 13th
Fl., Jl. Gatot Subroto, Jakarta 10270
Tel: 62-21- 5730129, 5730130
Fax: 62-21-5738732
Email: dirrlkt.rlps@dephut.cbn.net.id

Ir. Edi Effendi Tedjakusuma

Director
Forestry and Water Resources Conservation
National Development Planning Agency
(Bappenas)
Jl.Taman Suropati No.2 Jakarta 10310
Tel/Fax: 62-21-3926254
Email: edieffendi@yahoo.com

Mustafa Hasybullah

Head
Aceh Forestry Service
Jl. Sudirman No.21, Banda Aceh
Tel: 62-651-42311
Fax: 62-651-43628

Husaini Syamaun

Assistant Manager
Aceh Forestry Service
Jl. Sudirman No.21, Banda Aceh
Tel: 62-651-42277
Fax: 62-651-43628

MALAYSIA

Mohd Yunus bin Zakaria

State Forestry Director of Pulau Pinang
Forest Department Peninsular Malaysia
Tkt. 20, KOMTAR, 10000
Pulau Pinang
Tel/Fax: 60-3-6505250, 60-3-2636335
Email: yunus@penang.gov.my

Suhaili bin Hj. Rosli

Assistant Director of Silviculture and Forest
Protection
Forest Department Peninsular Malaysia
Jl. Sultan Salahuddin
Kuala Lumpur 50660
Tel: 60-3-26164488
Mobile: 017-6352290
Fax: 60-3-26925657
Email: suhaili@forestry.gov.my

MALDIVES

Ibrahim Shareef

Project Manager
Ministry of Fisheries Agriculture and Marine
Resources
Gaazee Building, Male
Tel: 960-322 754
Mobile: 960-777321
Fax: 960-326558
Email: ibrahim.shareef@fishagri.gov.mv

MYANMAR

U Aye Maung
Director of Taninthayi Division
c/o Office of the Director-General
Forest Department
Bayintnaung Road, West Gyogone
Insein, Yangon
Tel: 951-681754
Fax: 951-664336
Email: dg.fd@mptmail.net.mm

SRI LANKA

Jayalath Edmond Munasinghe

Deputy Conservator of Forests
Forest Department
Sampathpaya, Rajamalwatta Road
Battaramulla
Tel: 94-11-2877222
Fax: 94-11-2866633
Email: pmdiv@slt.net.lk; forlib@slt.net.lk

THAILAND

Rungnapar Pattanavibool

Forest Biologist
Forest and Conservation Research Office
National Park, Wildlife and Plant
Conservation Department
61 Phaholyothin Rd.
Chatuchak, Bangkok 10900
Tel: 66-2-5614292 ext 403 or 66-1-2553989
Email: rungnapar47@hotmail.com;
rungnapar@forest.go.th

Suchat Kalyawongsa

Forest Technical Officer
Forest Management and Forest Products
Research Office
Royal Forest Department
61 Phaholyothin Rd
Chatuchak, Bangkok 19000
Tel: 66-2-5797711
Mobile: 66-9-1035114
Fax: 66-2-5797711
Email: suchat_forester@yahoo.com

Sonjai Havanond

Coastal and Mangrove Resources
Management Expert
Department of Marine and Coastal Resources
92 Phaholyothin 7 Rd.
Samsen Nai, Bangkok 10400
Tel: 66-2-2982166
Fax: 66-2-2982091
Email: sonjai_h@hotmail.com

REPRESENTATIVES OF INTERNATIONAL AND REGIONAL ORGANIZATIONS

Kartik Shanker

Ashoka Trust for Research in Ecology
and the Environment (ATREE)
659, 5th A Main Road
Hebbal, Bangalore 560024, India
Tel: 91-080-23533942
Fax: 91-80-23530070
Email: kartik@atree.org

Yong-Kwon Lee

Assistant
ASEAN-Korea Environmental Cooperation
Unit, NICEM
College of Agriculture and Life Sciences
Seoul National University
Seoul, 151-921
Republic of Korea
Tel: 82-2-880-4760
Mobile: 82-17-374-0862
Fax: 82-2-874-4706
Email: leeyk72@snu.ac.kr

Faizal Parish

Director
Global Environment Centre
2nd Floor, Wisma Hing, 78, Jalan SS2/72,
47300 Petaling Jaya, Selangor
Malaysia
Tel: 60 3 7957 2007;
Mobile: 60 12 322 7350
Fax: 60 3 7957 7003
Email: fparish@genet.po.my

Nazamuddin Said Basyah

Senior Advisor
Greenomics Indonesia
Jl. Gandaria Tengah VI. No. 2,
Kebayoran Baru, Jakarta 12130
Indonesia
Tel: 62-21-7279 7226
Mobile: 62-811-68-5051
Fax: 62-21-7280 1148
Email: secretariat@greenomics.org

Walter Kollert

Chief Technical Advisor
GTZ Malaysian-German Forestry Education
Project (MGFEP)
School of International Tropical Forestry
University Malaysia Sabah
Locked Bag 2073, 88999, Kota Kinabalu
Malaysia
Tel: 60-88-320660
Fax: 60-88-448448
Email: gtzko@ums.edu.my

Per G Rudebjer

Capacity Building Specialist
World Agroforestry Center (ICRAF)
P.O. Box 267, CMU Post Office
Chiangmai 50202
Thailand
Tel: 66-53-357906/7
Fax: 66-53-357908
Email: p.rudebjer@cgiar.org

Hiras Paimatua Sidabutar

Projects Manager (Reforestation & Forest
Management)
International Tropical Timber Organization
International Organizations Center 5th Fl.
Pacifico-Yokohama, 1-1-1 Minato Mirai,
Nishi-ku, Yokohama 220-0012
Japan
Tel: 81-45-223 1110
Fax: 81-45-223 1111
Email: sidabutar@itto.or.jp

Charas Mayura

Finance/Administrative Officer
International Tropical Timber Organization
International Organizations Center 5th Fl.
Pacifico-Yokohama, 1-1-1 Minato Mirai,
Nishi-ku, Yokohama 220-0012
Japan
Tel: 81-45-223 1110
Fax: 81-45-223 1111
Email: mayura@itto.or.jp

Tejpal Singh

Programme Coordinator
Ecosystem and Livelihoods Group
The World Conservation Union (IUCN) Asia
Regional Office
63 Sukhumvit 39
Sukhumvit Road, Wattana
Bangkok 10110
Thailand
Tel: 66-2-6624029 ext. 104
Fax: 66-2-6624387
Email: tpsingh@iucnt.org

Suree Bhumibhaman

Faculty of Forestry
Kasetsart University (KUFF)
Bangkok 10900, Thailand
Tel: 662-5790171
Email: fforsrb@ku.ac.th

Benjamin Brown

Indonesia Program Coordinator
Mangrove Action Project-Indonesia
Jl. Adhyaksa IV/77
Perumahan Banteng Baru, Sleman
Yogyakarta, 55581
Indonesia
Tel: 62-274-885310
Email: map-indo@dps.centrin.net.id

James Enright

Southeast Asian Coordinator
Mangrove Action Project
Yaotak building B-206, 31 Vienkapang rd.
Amphur muang, Trang 92000
Thailand
Tel: 66-75-226-258
Email: mapasia@loxinfo.co.th

T. Ravishankar

Associate Director and Principal Scientist
M. S. Swaminathan Research Foundation
Field Research Centre, 7- 5A-2/1
Gopalakrishna Street, Ramaraopet, Kakinada
533004, Andhra Pradesh
India
Tel: 91-884-2365604; 2377177
Fax: 91-944-0314604
Email: raviethnobotanist@rediffmail.com;
rthupalli@hotmail.com

Aisa Mihara

Secretary-General
Organization for Industrial, Spiritual and
Cultural Advancement (OISCA) Thailand
81 Ta Dindaeng Soi 13, Klongsarn
Bangkok 10600
Thailand
Tel: 02-437-7271
Mobile: 01 8389112
Fax: 02-437-7274
Email: tanogyver@hotmail.com

Tomoyuki Tanoy

OISCA Volunteer
OISCA Thailand
81 Ta Dindaeng Soi 13, Klongsarn
Bangkok 10600
Thailand
Tel: 02-437-7271
Fax: 02-437-7274
Mobile: 01-1740641
Email: tanogyver@hotmail.com

Krit Chinn

OISCA Volunteer
OISCA Thailand
81 Ta Dindaeng Soi 13, Klongsarn
Bangkok 10600
Thailand
Tel: 02-437-7271
Fax: 02-437-7274

Reiko Nakamura

Secretary General
Ramsar Center Japan
2-10-3, Minamikugahara, Ota-ku
Tokyo 146-0084
Japan
Tel: 81-3-3758-7926
Fax: 81-3-3758-7927
Email: reiko.nakamura@nifty.com

Guy Boggs

Lecturer
Tropical Spatial Science Group
Charles Darwin University
Building 18, Charles Darwin University,
Casuarina, NT, 0909
Australia
Tel: 61-8-8946-7138
Fax: 61-8-8946-7088
Email: guy.boggs@cdu.edu.au

Joana Merlin-Scholtes

UN Resident Coordinator and UNDP Resident Representative in Thailand
Office of the UN Resident Coordinator and UNDP Resident Representative in Thailand
UN Building Rajdamnern Nok Avenue,
Bangkok 10501
Thailand
Tel: 66-2-2881823
Fax: 66-2-280556
Email: joana.merlin.scholtes@undp.org

Ferdinand Strobel**UNDP**

UN Building Rajdamnern Nok Avenue,
Bangkok 10501
Thailand
Tel: 66-2-2881240
Fax: 66-2-2800556
Email: Ferdinand.strobel@undp.or.th

Phansiri Winichagon

Manager, Environment Unit
UNDP
UN Building Rajdamnern Nok Avenue,
Bangkok 10501
Thailand
Tel: 66-2-2881847
Fax: 66-2-2800556
Email: phansiri.winichagoon@undp.org

Norzilla Mohamed

Programme Associate
UNDP Malaysia
Block C, Wisma UN
Jl. Dungun, Damansar Heights
Kuala Lumpur 20490
Malaysia
Tel: 60-3-20959122 ext.3311
Mobile: 60-19-2517856
Fax: 60-3-20952870
Email: norzilla.mohamed@undp.org

Tunnie Srisakulchairak

Programme Officer
UNEP Regional Resource Centre for Asia and the Pacific (RRC.AP)
3rd Floor Outreach Building
AIT PO Box 4, Klongluang
Pathumthani 12120
Thailand
Tel: 66-2-5246220
Mobile: 66-1-334286
Fax: 66-2-524-6233
Email: tunnie.srisakulchairak@rrcap.unep.org

Han Qunli

Senior Programme Specialist for Environmental Sciences,
Regional Science Bureau for Asia and the Pacific, UNESCO Office Jakarta
Jl. Galuh (II) No. 5, Jakarta, 12110
Indonesia
Tel: 021-7399818 ext 808
Mobile: 0816-1912202
Fax: 021-7297648-9
Email: q.han@unesco.org

Hans Dencker Thulstrup

Science Programme Specialist
UNESCO Office of the Pacific States
PO Box 615, Adia
Samoa
Tel: 685-24276
Mobile: 685-26593
Fax: 685-777-2271
Email: h.thulstrup@unesco.org

Berhaman Ahmad

Lecturer
School of International Tropical Forestry
University of Malaysia Sabah,
Locked Bag 2073,
Kota Kinabalu, 88999 Sabah
Malaysia.
Tel: 88-320000 ext. 5654
Fax: 88-435214
Email: qbahaman@ums.edu.my

Aminuddin Mohamad

Professor
University of Malaysia Sabah,
Locked Bag 2073,
Kota Kinabalu, 88999 Sabah
Malaysia.
Tel: 88-320819
Fax: 88-435214
Email: aminmohd@ums.edu.my

Ong Jin Eong

4 Green Crescent
11600 Penang
Malaysia
Email: mangroves@yahoo.com

Ian Renshaw

Wetlands International, Thailand
PO. Box 95, Kor Hong Post Office
Had Yai, 90112
Thailand
Tel/Fax: 66-74-429307

Sundari Ramakrishna

Head of office
Wetlands International, Malaysia
3A39, Block A, Kelana Centre Point,
Jl. SS7/19, 47301 Petaling Jaya,
Selangor
Malaysia
Tel: 60-3-7804 6770
Mobile: 012-6974872
Fax: 60-3-7804 6772
Email: sundari.wiap@nasionet.net

Nat Pinnoi

Environmental Economics
Environment and Social Development Unit
World Bank
14th Floor, Tower A
Diethelm Towers
93/1 Wireless Road
Bangkok 10330
Thailand
Tel: 66-2-2567792/ext 362
Fax: 66-2-2567794
Email: npinnoi@worldbank.org

Robert Mather

WWF Thailand
104 Outreach Building, AIT,
Klong Luang, Pathumtani,
Thailand.
Tel. 66-2-5246168-9
Fax. 66-2-5246134
Email: mather@wwfthai.org

Chavalit Vidthayanon

Head
Freshwater and Marine Unit
WWF Thailand
104 Outreach Building, AIT,
Klong Luang, Pathumtani,
Thailand.
Tel. 66-2-5246168-9
Fax. 66-2-5246134
Email: chavaliv@wwfthai.org

John Parr

Director of Conservation
WWF Thailand
104 Outreach Building, AIT,
Klong Luang, Pathumtani,
Thailand.
Tel. 66-2-5246168-9 ext.101
Fax. 66-2-5246134
Email: johnparr@loxinfo.co.th

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONAL (FAO)

Susan Braatz

Senior Forestry Officer (Sector Analysis)
Forestry Department
Viale delle Terme di Caracalla
00100 Rome
Italy
Tel: 39-06-5705 6610
Fax: 39-06-5705 2151
Email: susan.braatz@fao.org

Patrick B. Durst

Senior Forestry Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974139
Fax: 66-2-6974445
Email: patrick.durst@fao.org

Masakazu Kashio

Regional Forest Resources Officer
FAO Regional Office for Asia and the Pacific
Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974141
Fax: 66-2-6974445
Email: masakazu.kashio@fao.org

Simmathiri Appanah

National Forest Programme Advisor
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974136
Fax: 66-2-6974445
Email: simmathiri.appanah@fao.org

Thomas Enters

National Forest Programme Facilitator
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974328
Fax: 66-2-6974445
Email: thomas.enters@fao.org

Simon Funge-Smith

Aquaculture and Inland Fisheries
FAO Regional Office for Asia and the Pacific
3939 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974149
Fax: 66-2-6974445
Email: simon.fungesmith@fao.org

Philip McKenzie

APO (Forest Policy)
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974130
Fax: 66-2-6974445
Email: philip.mckenzie@fao.org

Miyuki Ishikawa

APO (Forest Economics and Policy)
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974254
Fax: 66-2-6974445
Email: miyuki.ishikawa@fao.org

Zishan Karim

Implementation Coordinator
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974220
Fax: 66-2-6974445
Email: zishan.karim@fao.org

Revathi Balakrishnan

Senior Officer (Gender and Development)
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-697-4148
Fax: 66-2-6974445
Email: revathi.balakrishnan@fao.org

Wim Polman

Rural Development Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-697-4316
Fax: 66-2-6974445
Email: wim.polman@fao.org

Malcolm Hazelman

Senior Extension, Education and
Communications Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974145
Fax: 66-2-6974445
Email: malcolm.hazelman@fao.org

Kei Kimpara

Programming and Planning Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974224
Fax: 66-2-6974445
Email: kei.kimpara@fao.org

Gamini Keerthisinghe

Senior Plant Production Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2-6974165
Fax: 66-2-6974445
Email: gaminin.keerthisinghe@fao.org

Diderik DeVleeschauwer

Regional Information Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2- 6974126
Fax: 66-2-6974445
Email: diderik.devleeschauwer@fao.org

Francis Mangila

Policy Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road, Bangkok, 10200
Thailand
Tel: 66-2- 6974280
Fax: 66-2-6974445
Email: francis.mangila@fao.org

