

INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PRE-PROJECT DOCUMENT

TITLE	GUIDELINES FOR THE RESTORATION OF MANGROVES AND OTHER COASTAL FORESTS DAMAGED BY TSUNAMIS AND OTHER NATURAL HAZARDS IN THE ASIA-PACIFIC REGION
SERIAL NUMBER	PPD134/07 Rev.1 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF JAPAN
ORIGINAL LANGUAGE	ENGLISH

SUMMARY

Mangroves and other coastal forests are useful resources for human communities living within and in proximity to them. These forest ecosystems not only provide a source of forest products (e.g. timber and fuelwood) and marine products, but also protect the lives and safeguard the livelihood of human communities. They act as buffers, protecting coastal areas against tsunamis and other natural hazards including cyclones, typhoons, floods, and coastal erosion. The aftermath of the December 26 Indian Ocean Tsunami was an important example. However, there are still no manuals with guidelines for the restoration of mangroves and other coastal vegetation aimed at protecting coastal areas against future hazards. This Pre-project will convene a Regional Meeting and will produce a comprehensive manual with practical guidelines for restoring mangroves and other coastal vegetation incorporating proper methodologies that are based on scientific findings and experiences. The manual will serve as an authoritative reference for countries in the Asia-Pacific region. The Regional Meeting will also re-assess the role and functions of mangroves and other coastal forests in alleviating the damaging effects of coastal hazards. A new project proposal will be prepared to implement rehabilitation measures and to adopt sustainable management practices of mangroves and other coastal forests in the Asia-Pacific region.

EXECUTING AGENCY INTERNATIONAL SOCIETY FOR MANGROVE ECOSYSTEMS (ISME)

COOPERATING GOVERNMENTS ---

DURATION 12 MONTHS

APPROXIMATE STARTING DATE TO BE DETERMINED

BUDGET AND PROPOSED SOURCES OF FINANCE	Source	Contribution in US\$	Local Currency Equivalent
	ITTO	129,038	
	ISME	10,050	
	Others	1,200	
	TOTAL	140,288	

PRE-PROJECT PROPOSAL TO THE
INTERNATIONAL TROPICAL TIMBER ORGANIZATION (ITTO)

Submitted by the Government of Japan

PRE-PROJECT ABSTRACT

Title: Guidelines for the restoration of mangroves and other coastal forests damaged by tsunamis and other natural hazards in the Asia-Pacific region

Summary: Mangroves and other coastal forests are useful resources for human communities living within and in proximity to them. These forest ecosystems not only provide a source of forest products (e.g. timber and fuelwood) and marine products, but also protect the lives and safeguard the livelihood of human communities. They act as buffers, protecting coastal areas against tsunamis and other natural hazards including cyclones, typhoons, floods, and coastal erosion. The aftermath of the December 26 Indian Ocean Tsunami was an important example. However, there are still no manuals with guidelines for the restoration of mangroves and other coastal vegetation aimed at protecting coastal areas against future hazards. This Pre-project will convene a Regional Meeting and will produce a comprehensive manual with practical guidelines for restoring mangroves and other coastal vegetation incorporating proper methodologies that are based on scientific findings and experiences. The manual will serve as an authoritative reference for countries in the Asia-Pacific region. The Regional Meeting will also re-assess the role and functions of mangroves and other coastal forests in alleviating the damaging effects of coastal hazards. A new project proposal will be prepared to implement rehabilitation measures and to adopt sustainable management practices of mangroves and other coastal forests in the Asia-Pacific region.

Field: Reforestation and Forest Management

Implementing Agency: International Society for Mangrove Ecosystems (ISME)
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Duration: 12 months

Budget: a) ITTO: US\$129,038
b) ISME: US\$10,050
c) Others: US\$ 1,200
TOTAL: US\$140,288

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PART I: CONTEXT

Origin

Mangrove forests are unique, inter-tidal, and highly productive ecosystems of the coastal zone. Human communities living in coastal areas of the tropics and sub-tropics are dependent on mangrove forests as a source of timber, fuelwood, and other forest products. A large number of people also rely on fisheries within or linked to mangrove ecosystems for their livelihood. Mangroves also serve as coastal buffers protecting the coastlines against the destructive forces of tsunamis and other natural hazards such as cyclones and typhoons, floods, and coastal erosion. In addition to mangroves are coastal forests fringing sandy beaches and rocky shores. Vegetation of sandy beaches plays an important part in the formation and stabilization of coastal sand dunes. Pioneer plants trap and hold windblown sand in the fore-dune and help create conditions, which encourage the establishment and growth of other plant communities such as scrub and heath forests. These forests play a role in the protection of sandy beaches against coastal erosion. At promontories are rocky shores with vegetation that is closely associated with coastal hill forests.

The Indian Ocean Tsunami of December 26 devastated some coastal areas of several Asian countries bordering the Indian Ocean. Countries affected included Indonesia, Thailand, Malaysia, India and Sri Lanka. Worst damaged areas were in areas with little or no natural protection from the sea and that communities living behind intact mangroves and other coastal forests were largely spared. Following the catastrophic event, a number of international organizations had held meetings and workshops to assess the loss of human lives, damage caused to properties and effects on coastal vegetation. Resolutions and recommendations had been made and a number of post-tsunami rehabilitation projects are in the pipeline. However, some local scientists in affected countries stated that the veracity of the damage from the tsunami is not only unknown but also difficult to verify scientifically. It was suggested that scientific studies on the functional, physical, and ecological processes of coastal dynamics be carried out before the implementation of rehabilitation and other mitigation projects (Ong, 2005).

Currently, there are no manuals with guidelines for the restoration of mangroves and other coastal forests following damage by natural hazards such as tsunamis, cyclones and typhoons. *Restoration of Mangrove Ecosystems* published by ITTO and ISME in 1996 is the only publication on restoration techniques adopted by various countries in the world (ITTO/ISME, 1996). The book provides the rationale and general guidelines for mangrove restoration, but does not include the restoration of other coastal forests. The production of a comprehensive manual as proposed under this Pre-project would entail practical guidelines for restoring mangroves and other coastal forests in tsunami damaged areas. The goal of restoration is to bring back the protective functions of these coastal ecosystems against future natural hazards. It aims to promote a return to the natural assemblage structure and ecosystem function that is self-sustaining. The guidelines would not advocate massive replanting programs but provide other options such as encouraging natural re-growth and recovery. In areas where the damage is beyond repair, planting guidelines would be provided. They entail site selection and preparation, choice of species, collection of planting materials, planting techniques, and monitoring and evaluation of planted sites.

Scientific evidence on the protective role of mangroves and other coastal forests in attenuating strong wind and wave actions needs to be re-evaluated. Considerations would be given to factors such as geographical location, coastal processes, coastal geomorphology, forest types, species composition, stand density, stand width and forest structure. Understanding the physics and erosive nature of wave actions, which would affect coastal vegetation, will also be important. The utilization of remote sensing and GIS techniques will also provide spatial information on the presence or absence of coastal vegetation, and on the severity of damage of the coastal zone. There is evidently a lack of information on the protective role of mangroves and other coastal forests, and the compilation of information would require inputs from a wide range of scientists involved in relevant fields of coastal zone management.

This Pre-project will convene a Regional Meeting (details in Annex C) to draw up guidelines for restoring mangroves and other coastal forests and to reassess their functions as coastal bio-shields. This Regional Meeting will be indispensable to proceed this Pre-project not only gathering an up-to-date information on re-assessment of the role and function of mangroves and other coastal forests in alleviating the damaging effects of coastal hazards but also strengthen networking among invited scientists and experts for the preparing comprehensive guidelines for restoring mangroves and other coastal vegetation. Also, this Regional Meeting represents one of the follow-up actions of the Symposium on the Importance of Mangroves and other Coastal Ecosystems in Mitigating Tsunami Disasters held in August 2005 in Kuala Lumpur, Malaysia, jointly organized by ITTO, ISME, FRIM (Forest Research Institute Malaysia), UNDP-GEF, and Wetlands International.

The Regional Meeting will also be discussing the coastal hazard of sea-level rise, which will affect low-lying countries especially small islands of the Pacific and some Asian countries. Because of their low elevation, these low-lying countries are more prone to storm surges and will be threatened by rising sea levels expected from global warming. The livelihood of people living in such countries is already at risk. There are some studies predicting that the deposition of sediments will eventually increase suggesting that mangroves may be able to mitigate damage by sea-level rise in low-lying countries.

Another recent but intriguing finding is that below ground carbon contents of mangrove forests are 4-18 times higher than that of tropical rain forests (Fujimoto, 2004). This indicates that positive actions of reforestation as well as conservation of mangrove forests would contribute to the reduction of CO₂ emission. In addition, projects on mangrove reforestation are in consonant to the Clean Development Mechanism (CDM) of Kyoto Protocol Article 12 for obtaining Certified Emission Reduction.

The International Society for Mangrove Ecosystems (ISME) has conducted several ITTO funded mangrove-related projects. They include the Global Mangrove Database and Information Systems (GLOMIS) and the World Mangrove Atlas and its revision as on-going projects. ISME has established a network of four GLOMIS Regional Centers located in Brazil, Fiji, Ghana and Malaysia. They serve as linkages for foresters, scientists, decision makers, and policy makers in mangrove occurring countries of the world. Using the GLOMIS network, this Pre-project will prepare a new project proposal, which will focus on rehabilitation, conservation and sustainable management of mangroves and other coastal forests in the Asia-Pacific region with proper methodology based on scientific findings and experiences.

The ITTO Mangrove Workplan 2002-2006 published in 2002 (ITTO, 2002), which has been guiding the work of ITTO on mangroves in the past four years, has become an important reference document for many new initiatives in mangrove management, e.g., the World Bank Mangrove Code of Conduct (World Bank/ISME/CenTER, 2004). It has been cited by several organizations such as the Ramsar Convention on Wetlands and the Convention of Biological Diversity. The period for which the ITTO Mangrove Workplan 2002-2006 was prepared will come to an end this year. Outputs of this Pre-project will invariably contribute to the review of contents and evaluation of impacts of the present Workplan, and facilitate the preparation of the Workplan for the next quadrennium.

PART II: THE PRE-PROJECT

1. Pre-project Objectives

1.1 Development Objective

The development objective of this Pre-project is to contribute to the safety of lives of people living in coastal areas of the Asia-Pacific region against natural hazards such as tsunamis, typhoons, floods, coastal erosion, and sea-level rise through rehabilitation and sustainable management of mangroves and other coastal forests. This development objective is consistent with ITTO's goal of promoting the conservation, rehabilitation, and sustainable management of mangroves to benefit the global community, particularly communities living in mangroves and their surrounding areas (ITTO, 2002).

1.2 Specific Objective

Specific objective of this Pre-project is:

To re-evaluate the role and functions of mangroves and coastal forests in mitigating natural hazards in the Asia-Pacific region and assist countries in the region to facilitate rehabilitation efforts aims at reducing damages from future hazards.

2. Justification

2.1 Problems to be addressed

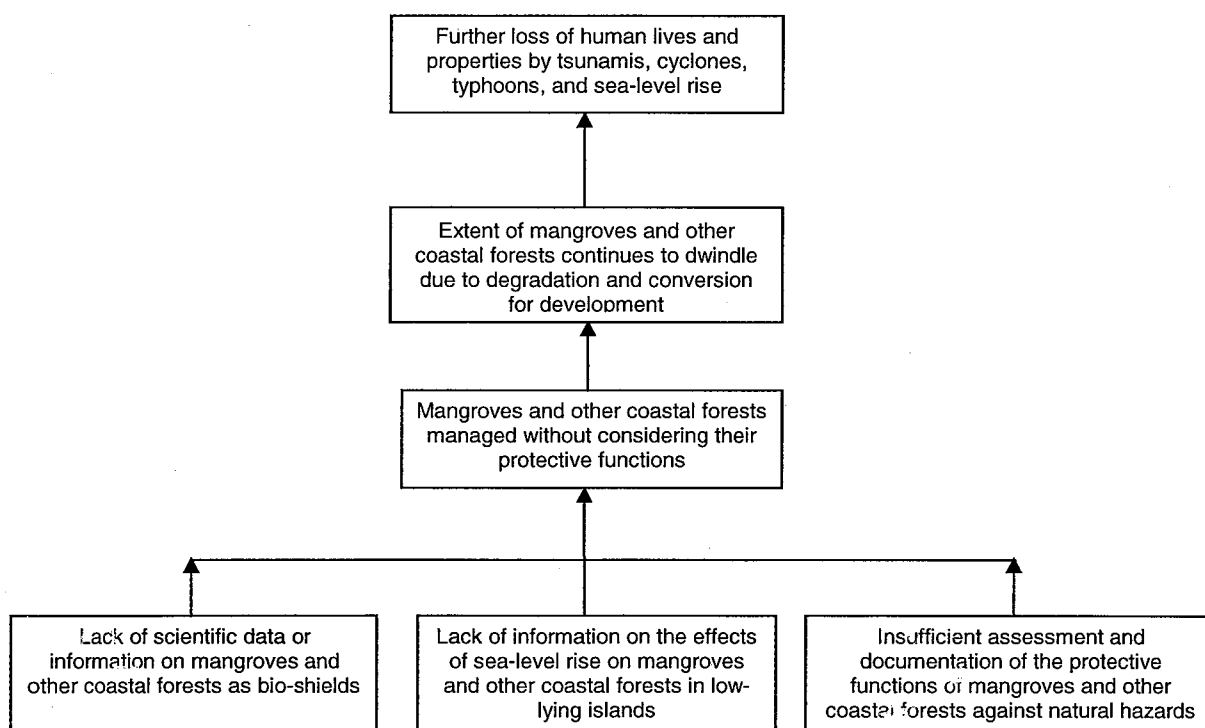
It has been documented that mangroves and other coastal forests serve as natural buffers protecting coastal areas against the destructive forces of tsunamis, typhoons and cyclones. Following the aftermath of the December 26 Indian Ocean Tsunami that affected a numbers of Asian countries including Indonesia, Thailand, Malaysia, India, and Sri Lanka, the worst damaged areas are those with no natural protection from the sea and that communities living behind intact mangrove forests and coastal forests were largely spared. Damage by these natural hazards is escalated by the fact that mangroves and other coastal forests have been degraded or cleared by coastal development projects such as agriculture, shrimp farming, industries, and tourism (Asano and Baba, 2005; Dahdouh-Guebas *et. al*, 2005; Parish and Lee, 2005; Williams, 2005).

Although these facts are generally accepted, the protective functions of mangroves and other coastal forests are not yet fully understood. After the December 26 Indian Ocean Tsunami, it has been reported that the degree of protection offered by mangroves and other coastal forests depends on a number of factors such as characteristics of the hazard types and their forces, feature of their sites, types of coastal forests, and also the width, density and height for the forest. Most countries affected by the tsunami have pledged or announced plans to initiate replanting schemes aimed at restoring coastal greenbelts as natural barriers against future tsunamis and other hazards. In Malaysia, rehabilitation efforts of mangroves and other coastal vegetation have already started in most states with some success. About 300,000 mangrove seedlings have already been planted near Banda Aceh, but according to scientists working in the region, many have already died because they were planted too soon and in the wrong places. As many of these replanting programs are expensive with a high risk of failure, there is an urgent need for a comprehensive manual with practical guidelines detailing options and techniques for rehabilitation of damaged mangroves and other coastal forests. These options and techniques should be based on scientific knowledge and past experience. They should adopt approaches of encouraging natural regeneration augmented with replanting schemes and possibly some engineering measures.

The other coastal hazard, which may be mitigated by mangroves and other coastal forests, is sea-level rise, which will affect low-lying countries especially small islands of the Pacific and some Asian countries. Over the period 1990 to 2100, the Intergovernmental Panel on Climate Change (IPCC) has predicted that the global average surface temperature will increase by 1.4-5.8°C and the global mean sea level will rise by up to 88 cm (IPCC, 2001). Sea-level rise is caused by the expansion of seawater when heated and by the melting of icebergs, ice sheets, and glaciers. As such, many low-lying countries would be prone to storm surges and sea-level rise, expected from global warming. Some studies have shown that mangrove forests of some small islands will be lost as a result of elevated sea levels. Mangroves may also suffer from other effects of global climate changes e.g. changes in precipitation and salinity, and increased air and sea-surface water temperature, which are not well understood.

This Pre-project will convene a Regional Meeting to develop guidelines on the restoration of mangroves and other coastal forests as coastal bio-shields, review their protective functions against coastal hazards including sea-level rise.

Problem tree:



2.2 Reasons for a Pre-project

Countries affected by the December 26 Indian Ocean Tsunami have pledged or started rehabilitation of mangroves and other coastal forests. Initial replanting schemes have failed in some areas and are partially successful in other areas. There is an urgent need for a regional effort to draw up practical guidelines for assisting these countries in carrying out restoration programs. This Pre-project will convene a Regional Meeting to formulate guidelines and to re-assess the protective functions of mangroves and other coastal forests as coastal bio-shields against natural coastal hazards including tsunamis, typhoons and cyclones. The Regional Meeting will also discuss the effects of sea-level rise on low-lying countries of the Pacific and some Asian countries. As mentioned in the sections above, and as shown in the problem tree, the major problem of coastal rehabilitation is the lack of scientific data and information on the role and functions of coastal vegetation. It is generally acknowledged that mangroves and other coastal forests do play an important role in providing coastal protection against natural hazards, depending on a number of environmental factors.

Implementation of this Pre-project will enable us to hold a Regional Meeting to formulate guidelines for restoration of mangroves and other coastal forests, and to re-evaluate their protective functions against natural hazards. The Regional Meeting will further strengthen networking among scientists and resource managers from the respective countries in the region. Information gathered and recommendations made during the meeting will be used to prepare a new project proposal on integrated coastal zone management with emphasis on rehabilitation and sustainable management of mangroves and the other coastal forests to mitigate future coastal hazards on human life and property. Successful implementation of the new project will also require the continuous support and involvement of local communities in the various countries.

2.3 Target beneficiaries

Tsunami-affected countries that have initiated replanting schemes in coastal areas would be the main target beneficiaries, as the comprehensive manual with practical guidelines would serve as a useful authoritative reference document. Local communities would also benefit from the practical guidelines when carrying out the replanting schemes. Decision makers, policy makers, forest managers, coastal zone managers, and national and international agencies who are planning to implement projects on rehabilitation of mangroves and other coastal forests would better understand the protective functions of coastal vegetation following reassessment by the scientists and experts. Findings of reassessment will be published through the GLOMIS website for wide distribution of the compiled information.

2.4 Other relevant aspects

The Regional Meeting would enable discussion on coastal rehabilitation efforts in the various countries, lessons learnt from their success and failure stories, and the protective functions of mangroves and other coastal forests against coastal hazards including sea-level rise. Information gathered from the Regional Meeting will be used to prepare a comprehensive manual with practical guidelines on coastal rehabilitation, which will be made available to all countries in the region and interested parties. Another activity would be to prepare, finalize and submit for funding, a new project proposal on rehabilitation and sustainable management of mangroves and other coastal forests in the Asia-Pacific region.

3. Outputs

3.1 Specific Objective 1: To re-evaluate the role and functions of mangroves and coastal forests in mitigating natural hazards in the Asia-Pacific region and assist countries in the region to facilitate rehabilitation efforts aims at reducing damages from future hazards.

- Output 1.1: Scientific report of Regional Meeting is compiled and published
- Output 1.2: Comprehensive manual with practical guidelines on the restoration of mangroves and other coastal forests in the Asia-Pacific region is compiled and published
- Output 1.3: New project proposal for the rehabilitation and sustainable management of mangroves and other coastal forests damaged by natural hazards in the Asia-Pacific region is prepared

4. Activities

- 4.1 **Output 1.1:** Scientific report of Regional Meeting compiled and published
 - Activity 1.1.1: Holding of Regional Meeting
 - Activity 1.1.2: Compilation of assessment
 - Activity 1.1.3: Publishing of scientific report of Regional Meeting

- 4.2 **Output 1.2:** Comprehensive manual with practical guidelines on the restoration of mangroves and other coastal forests in the Asia-Pacific region is compiled and published
 - Activity 1.2.1: Drafting of manual and guidelines
 - Activity 1.2.2: Review and evaluation of manual and guidelines
 - Activity 1.2.3: Publishing of manual with guidelines

- 4.3 **Output 1.3:** New project proposal for the rehabilitation and sustainable management of mangroves and other coastal forests damages by natural hazards in the Asia-Pacific region is prepared
 - Activity 1.3.1: Drafting of project proposal
 - Activity 1.3.2: Validation and review of project proposal by experts/stakeholders
 - Activity 1.3.3: Finalizing of project proposal
 - Activity 1.3.4: Submission of proposal for funding

5. **Work Plan**

<u>Output/activity</u>	<u>Responsible party</u>	Schedule (in months)											
		1 (J)	2 (J)	3 (A)	4 (S)	5 (O)	6 (N)	7 (D)	8 (J)	9 (F)	10 (M)	11 (A)	12 (M)
<u>Output 1.1:</u> Scientific report of Regional Meeting compiled and published													
- Activity 1.1.1: Holding of Regional Meeting	ISME, PPC	■											
- Activity 1.1.2: Compilation of assessment	PPC	■	■	■	■								
- Activity 1.1.3: Publishing of scientific report of Regional Meeting	ISME, PPC			■	■	■	■						
<u>Output 1.2:</u> Comprehensive manual with practical guidelines on the restoration of mangroves and other coastal forests in the Asia-Pacific region is compiled and published													
- Activity 1.2.1: Drafting	PPC		■	■	■	■	■	■					
- Activity 1.2.2: Review and evaluation	PPC						■	■	■	■	■		
- Activity 1.2.3: Publishing of manual	ISME, PPC											■	■
<u>Output 1.3:</u> New project proposal for the rehabilitation and sustainable management of mangroves and other coastal forests damages by natural hazards in the Asia-Pacific region is prepared													
Activity 1.3.1: Drafting of project proposal	PPC		■	■	■	■							
Activity 1.3.2: Validation and review of project proposal by experts/stakeholders	PPC					■	■	■	■	■			
Activity 1.3.3: Finalizing of project proposal	PPC									■	■	■	
Activity 1.3.4: Submission of proposal for funding	ISME												■

PPC: Pre-project Coordinator

6. Budget

Overall Project Budget by Activity

Output/activity	10. Project Personnel	20. Sub- contract	30. Duty travel	60. Miscellane ous	80. ITTO Monitoring	Quarter Year	GRAND TOTAL
Output 1.1: Scientific report of meeting is compiled and published							
Activity 1.1.1: Holding of Regional Meeting	7,000 (I) 1,000(E)		45,920 (I) 2,920(O)	200 (I) 1,200(O)		Q1	58,240
Activity 1.1.2: Compilation of reevaluation	5,100 (I) 600(E)					Q1, 2	5,700
Activity 1.1.3: Publishing of scientific report of the meeting	5,100 (I) 600(E)	2,500 (I)		1,200 (I) 450(E)		Q1, 2	9,850
Subtotal 1	17,200 (I) 2,200 (E)	2,500 (I)	45,920 (I) 2,920(O)	1,400 (I) 450(E) 1,200(O)			73,790
Output 1.2: Manual with guidelines is compiled and published							
Activity 1.2.1: Drafting of manual and guidelines	6,400 (I) 650(E)					Q1, 2	7,050
Activity 1.2.2: Review and evaluation of manual and guidelines	5,500 (I) 500(E)			200 (I)		Q2, 3, 4	6,200
Activity 1.2.3: Publishing of manual with guidelines	5,500 (I) 500(E)	2,000 (I)		1,120 (I) 580(E)		Q4	9,700
Subtotal 2	17,400 (I) 1,650(E)	2,000 (I)	-	1,320 (I) 580(E)			22,950
Output 3.1: A project proposal is formulated							
Activity 1.3.1: Drafting of project proposal	6,400 (I) 650(E)					Q1, 2	7,050
Activity 1.3.2: Validation and review of project proposal by experts/stakeholders	5,600 (I) 550(E)			200 (I)		Q2, 3	6,350
Activity 1.3.3: Finalizing of project proposal	5,600 (I) 550(E)		5,040 (I)	200 (I)		Q3, 4	11,390
Activity 1.3.4: Submission of proposal for funding	5,500 (I) 500(E)			200 (I)		Q4	6,200
Subtotal 3	23,100 (I) 2,250(E)		5,040 (I)	600 (I)			30,990
Non-Activity based expenses							
ITTO Monitoring					12,558(I)		12,558
Subtotal 4	-		-	-	12,558(I)		12,558
Subtotal (ITTO)	57,700	4,500	50,960	3,320	12,558		129,038
Subtotal (E. Agency)	6,100		2,920	1,030			10,050
Subtotal (Other)				1,200			1,200
TOTAL:	63,800	4,500	53,880	5,550	12,558		140,288

Consolidated Total Project Budget

Budget Components		Unit cost	Qty	Unit	Total	ITTO	ISME	Others
10. Project Personnel								
11	Pre-project coordinator	2,700	12	m/m	32,400	32,400	0	0
12	Secretarial support	1,700 1,000	12 9	m/m m/m	29,400	24,300	5,100	0
13	Part-time assistants	100	20	m/day	2,000	1,000	1,000	0
19	Component total				63,800	57,700	6,100	0
20. Sub-contract								
21	Editor	4,500	1	contract	4,500	4,500	0	0
29	Component total				4,500	4,500		
30. Duty travel								
31	Travel	2,000	21	m/trip	42,000	<u>40,000</u>	<u>2,000</u>	0
32	DSA	130	84	m/night	10,920	<u>10,000</u>	<u>920</u>	0
33	Local transportation	960		total	960	960	0	0
39	Component total				53,880	<u>50,960</u>	<u>2,920</u>	
60. Miscellaneous								
61	Printing cost	2,500		total	2,500	2,000	500	0
62	Meeting expenses (room, facilities, etc.)	1,200		total	1,200	-	0	1,200
63	Communication and postages	900		total	900	450	450	
64	Miscellaneous (including office supplies, bank charges, etc)	950		total	950	870	<u>80</u>	
69	Component total				5,550	<u>3,320</u>	<u>1,030</u>	1,200
	SUBTOTAL				127,730	<u>116,480</u>	<u>10,050</u>	1,200
80. ITTO Monitoring, Evaluation and Administration								
81	Monitoring and Evaluation costs	<u>3,000</u>		total	<u>3,000</u>	<u>3,000</u>	-	-
82	Programme support cost (8%)	<u>9,558</u>		total	<u>9,558</u>	<u>9,558</u>	-	-
89	Component total	<u>12,558</u>			<u>12,558</u>	<u>12,558</u>	-	-
100. GRAND TOTAL					<u>140,288</u>	<u>129,038</u>	<u>10,050</u>	1,200

In accordance with the specific recommendation of the Thirty-third Meeting of ITTO Expert Panel, budget lines in #80 "ITTO Monitoring, Evaluation and Administration" were increased without any additional contribution from ITTO as follows:

1) Breakdown for increase in the budget lines #80 (ITTO Monitoring, Evaluation and Administration):

- #81. Monitoring and Evaluation costs - Original US\$2,390 was increased to US\$3,000 (increased by US\$610).
- #82. Programme support cost - Original US\$7,168 (6%) was increased to US\$9,558 (8%) (increased by US\$2,390).
- Therefore, the total increase of #80 is US\$3,000.

2) However, there is no increase in the total amount of ITTO contribution, because US\$3,000 was reduced from ITTO budget lines #31, #32 and #64, and allocated to the ISME contribution as follows:

- #31. Travel – Original US\$42,000 was reduced by US\$2,000, and allocated to the ISME contribution;
- #32. DSA – Original US\$10,920 was reduced by US\$920, and allocated to the ISME contribution;
- #64. Miscellaneous – Original US\$950 was reduced by US\$80, and allocated to the ISME contribution.
- Therefore, the total reduction of US\$3,000 from ITTO is covered by ISME.

The Grand total of the projects is increased by US\$3,000 to be US\$140,288, due to the increase in the ISME contribution, without additional increase in the total amount of the ITTO contribution.

Project Budget by Source - ITTO

Budget components	ITTO
10. Project Personnel	57,700
20. Sub-contract	4,500
30. Duty travel	<u>50,960</u>
60. Miscellaneous	<u>3,320</u>
SUBTOTAL	<u>116,480</u>
80. ITTO Monitoring, Evaluation and Administration	<u>12,558</u>
TOTAL (ITTO)	129,038

Project Budget by Source - ISME

Budget components	ISME
10. Project Personnel	6,100
20. Sub-contract	-
30. Duty travel	<u>2,920</u>
60. Miscellaneous	<u>1,030</u>
TOTAL (ISME)	<u>10,050</u>

Project Budget by Source - Other

Budget components	Others
10. Project Personnel	-
20. Sub-contract	-
30. Duty travel	-
60. Miscellaneous	1,200
TOTAL (Other)	1,200

7. References

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PART III. TROPICAL TIMBER FRAMEWORK

1. Compliance with ITTA 1994 Objectives

Article 1 of ITTA 1994

Objective (c) To contribute to the process of sustainable development

Objective (f) To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests

Objective (j) To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land with due regard for the interests of local communities depended on forest resources

This Pre-project complies with Objectives (c), (f), and (j) of Article 1 of the *International Tropical Timber Agreement (ITTA) 1994*. Through consultation with experts from the Asia-Pacific region, the production of a comprehensive manual with practical guidelines on restoration of mangroves and other coastal forests represents an important output of this Pre-project. Understanding the protective functions of mangroves and other coastal forests in mitigating natural hazards of tsunamis, typhoons, cyclones, floods and coastal erosion including sea-level rise would further assist in refining the guidelines. The availability of the manual with guidelines will enable countries in the region to initiate coastal rehabilitation efforts based on sound scientific finding and past experiences.

Clearly, this output of the Pre-project is in consonant with the objectives of ITTA 1994 that promote sustainable development, support research and development with the view of improving forest management as well as increasing the capacity to conserve and enhance other forest values, and encourage rehabilitation of degraded land with due regard for the interests of local communities depended on forest resources.

2. Compliance with ITTO Action Plan

Goal 1: Support activities to secure the tropical timber resource base

3. In cooperation with relevant organizations, monitor the potential implications for the resource base of climate change and related policy developments, and the contribution of the resource base to the mitigation of the effects of climate change

4. Promote the conservation, rehabilitations and sustainable management of threatened forest ecosystems, inter alia mangroves, in collaboration with relevant organizations.

The above goal and actions, in the field of *Reforestation and Forest Management* of the *Yokohama Action Plan 2002-2006*, are specially related to this Pre-project.

The extent of mangroves and other coastal forests in the Asia-Pacific region continues to dwindle due to degradation and conversion for development, albeit at a slower rate as there is now greater awareness of their importance. The comprehensive manual with practical guidelines (the main output of this Pre-project) would serve as an authoritative reference and would undoubtedly facilitate countries in the region in their efforts towards the conservation, rehabilitation and sustainable management of mangroves and other coastal forests. Countries affected by the December 26 Indian Ocean Tsunami would definitely find the manual useful when implementing their replanting schemes. The issue of sea-level rise and its effects on mangroves and other coastal forests will be addressed during the Regional Meeting. This will be incorporated into the guidelines.

3. Compliance with ITTO Mangrove Workplan 2002-2006

This Pre-project complies with Areas 1 and 4 of *ITTO Mangrove Workplan 2002-2006*:

Area 1: Conservation and Sustainable Management

- *Implement sustainable mangrove management and establish protected mangrove areas including buffer zones surrounding and influencing such areas*
- *Rehabilitate degraded mangroves*

Area 4: Mangrove Ecosystem Functions and Health

- *Undertake studies and projects to improve understanding of mangrove forest ecosystem structure, growth and function*

This Pre-project complies with Areas 1 and 4 of *ITTO Mangrove Workplan 2002-2006*. Another important activity of this Pre-project is to prepare, finalize and submit a new research proposal to implement rehabilitation measures and to adopt sustainable management practices of mangroves and other coastal forests in the Asia-Pacific region. Information gathered and recommendations made during the Regional Meeting will be used to prepare a new project proposal on integrated coastal zone management with emphasis on rehabilitation and sustainable management of mangroves and other coastal forests to mitigate future coastal hazards on human life and property. Successful implementation of the new project will also require the continuous support and involvement of local communities in the various countries.

ANNEX A - PROFILE OF THE EXECUTING AGENCY

1.6 Expertise of the Executing Agency

The International Society for Mangrove Ecosystems (ISME) is an international non-profit, non-governmental scientific society, established in August 1990.

ISME was certified as a Foundation on 23 October 1992, by the local government of Japan and is affiliated by the Japanese Law of Foundation. In 1998, a new Japanese law (Law to Promote Specified Non-profit Activities) was enacted. Under the new law, ISME was registered as a Non-profit Organization (NPO) in 2003.

ISME is an NGO associated with the United Nations Department of Public Information. ISME has good collaboration with International Tropical Timber Organization (ITTO), United Nations University (UNU), UNESCO, FAO, and with many local NGOs and NPOs. ISME has been implementing several mangrove projects in collaboration with other national and international NGOs such as IUCN-Pakistan, WWF-Japan, and others. As of November 2006, ISME's membership includes 38 institutions and almost 950 individual members from 86 countries.

Executive Members of ISME (all positions are honorary on a voluntary basis):

President:

- Prof. E. S. Diop (Senegal), Senior Environmental Affairs Officer of the Division of Environmental Information, Assessment and Early Warning, UNEP

Vice-Presidents:

- H. E. Noboru Nakahira (Japan), Former Ambassador to United Arab Emirates, Malaysia and Canada
- Prof. François Blasco (France), Former Director of Laboratoire d'Ecologie Terrestre, France
- Dr. Chan Hung Tuck (Malaysia), Director of Research Management Division, Forest Research Institute Malaysia (FRIM)

Treasurer:

- Prof. Sanit Aksornkoe (Thailand), President of Thai Environment Institute (TEI) and Professor Emeritus of Kasetsart University

Executive Secretary:

- Prof. Shigeyuki Baba (Japan), Professor, University of the Ryukyus and Director of the Iriomote Station of the Tropical Biosphere Research Center

ISME Secretariat:

The ISME Secretariat is headed by the Executive Secretary, Prof. Shigeyuki Baba. The Secretariat comprises of four full-time staff members in Okinawa, and two overseas. The Executive Secretary is serving the Secretariat on a voluntary basis.

Aims of ISME:

To promote research and surveys with scientists and organisations for the conservation, rational management, and sustainable utilisation of mangrove and its ecosystems; and to serve as an international databank on mangrove ecosystems

Activities of ISME

- To promote the study of mangrove ecosystems
- To promote collection, evaluation and dissemination of information on mangrove ecosystems
- To promote research, training and activities for sustainable management, rational utilization, rehabilitation and conservation of mangrove ecosystems
- To develop materials to enhance public awareness of the social, economic and ecological importance of mangrove ecosystems

- To organize and co-sponsor conferences, seminars, symposia and group meetings, giving lectures and courses, publishing both scientific and popular articles
- To support and implement research projects and programs
- To promote consultation and collaboration with other organizations (public and private) having related purposes
- To carry out any other activities considered appropriate to the objectives of the Society

List of projects and pre-projects submitted to ITTO

Ref. #	Project title	Year/Budget (US\$)	Status
PD 71/89 Rev.1 (F)	The Economic and Environmental Values of Mangrove Forests and Present State of Conservation	1990-1991; Project submitted through Japan International Association for Mangroves (JIAM)	Completed
PD 114/90 (F)	Workshops on Conservation and Sustainable Utilization on Mangrove Forests in the Latin America and Africa Regions	1992-1994; \$480,000	Completed
PD 6/93 Rev.2 (F)	Manual and a World Natural Mangrove Atlas for Mangrove Ecosystem Restoration	1993-1995; \$732,984	Completed
PPD 8/95 Rev.2 (F)	Mangrove Resource Information System: Evaluation of the Scope and Content of Existing Databases	1996; \$95,970	Completed
PD 14/97 Rev.1 (F)	Global Mangrove Database and Information System (GLOMIS)	Phase-I; \$883,448 Phase-II; \$209,868	Completed
PPD 17/01 Rev.1 (F)	Action Plan on Sustainable Mangrove Management	2002-2003; \$181,485	Completed
PD 194/03 Rev.1 (M)	Expanding and Improving Global Mangrove Database and Information System (GLOMIS) and its Networking	\$484,865	On-going
PD 276/04 Rev.2 (F)	Revised World Atlas of Mangrove for Conservation and Restoration of Mangrove Ecosystems	\$430,920	On-going

4.7 Infrastructure of the Executing Agency

The headquarters of ISME is based in Okinawa, Japan, where it occupies facilities provided by the Faculty of Agriculture, the University of the Ryukyus such as LAN, and laboratories working on physical, chemical and physiological analysis of forests. From time to time, researchers of mangroves and other coastal ecosystems from different countries work in the headquarters as contributors, collaborators and supporters of ISME. These researchers represent governmental institutions, non-governmental organizations, universities and private sectors.

4.8 Budget

Unit: JPY

Budget components	Year 2003	Year 2004	Year 2005	Total
Personnel	6,668,080	6,794,110	5,756,463	19,218,653
Miscellaneous	3,877,178	3,460,452	2,236,408	9,574,038
Travel	1,081,790	1,871,030	1,975,864	4,928,684
Consumables	430,532	226,430	304,723	961,685
Project implementation	30,865,796	37,477,840	73,231,948	141,575,584
Total	42,923,376	49,829,862	83,505,406	176,258,644

4.9 Personnel

The quantitative of personnel in the forestry-related fields is:

- a) Members of Executive Committee: 6
- b) Members of Council: 20
- c) Office Full-time (voluntary) 1
Full-time (paid): 6
Part-time 4
- d) Honorable Advisors: 2
- e) Individual Members: 950
- f) Institutional Members: 38

ANNEX B - TERMS OF REFERENCE FOR KEY STAFF

1. Pre-project Coordinator

The Pre-project Coordinator will be engaged by the Executing Agency to coordinate and implement activities of the Pre-project, which include the organization of meetings, and the preparation of reports and other outputs.

Experience:

The Pre-project Coordinator will be a forestry expert on mangroves with relevant experience in research, project management, editing of publications, and communicating with experts of different fields. A minimum experience of 10 years will be required for the candidate to the post.

Duties:

- a) To coordinate the implementation of Pre-project activities in close consultation with the Executing Agency;
- b) To supervise the selection of experts participating in the Pre-project;
- c) To participate and coordinate the programs of the Regional Meeting;
- d) To ensure editing of publications;
- e) To draft and finalize, through consultation with the relevant experts, a project proposal for submission to ITTO;
- f) To monitor activities of the Pre-project and to prepare required project documents such as progress and completion reports
- g) To ensure timely achievements of Pre-project results and objectives

2. Secretary

As secretarial support is essential for the administration of the Pre-project, a secretary will be engaged by the Executing Agency to assist the Pre-project Coordinator and the Executive Secretary of ISME., Stationed at the ISME Headquarters, the secretary will work under the direct supervision of the Executive Secretary.

Duties:

The secretary will assist the Pre-project Coordinator and Executive Secretary of ISME in administrative activities of the Pre-project. Such duties include:

- a) Making day-to-day correspondence with participating members of the Pre-project,
- b) Bookkeeping of the Pre-project finance,
- c) Making logistic arrangements of meetings,
- d) Undertaking miscellaneous clericals in the preparation of project outputs;
- e) Ensuring achievements of Pre-project objective;
- f) Carrying out other duties as requested by the Pre-project Coordinator and Executive Secretary.

ANNEX C – OUTLINE OF THE REGIONAL MEETING

The proposed Regional Meeting will be held from June 13-16, 2007 to coincide with the 21st Pacific Science Congress in Okinawa, Japan. The Pacific Science Congress is organized by the Pacific Science Association (PSA), a regional, non-governmental and scholarly organization that seeks to advance science and technology in support of sustainable development in the Asia-Pacific region with a focus on key issues and problems. With the theme, “Diversity and Change: Challenges and Opportunities for Managing Natural and Social Systems in Asia-Pacific”, it is anticipated that 1500-2000 participants will be attending the Congress.

Scientists and experts from Asia-Pacific including practitioners and forest managers will gather for the two-day Regional Meeting. On Day 1, there will be presentations on coastal rehabilitation efforts in the various countries. Lessons learnt from their success and failure stories, and the protective functions of mangroves and other coastal forests against coastal hazards including sea-level rise will be highlighted. On Day 2, two concurrent sessions will be convened to draft practical guidelines on coastal rehabilitation with emphasis on lessons learnt, and the protective functions of mangroves and other coastal forests.

In the formulation of guidelines, it is pertinent that differences in socio-economic and bio-physical parameters among countries of the Asia-Pacific region be given due consideration. In this context, the guidelines would be based on five geographical zones (World Mangrove Atlas, 1997). The zones are South Asia (India, Bangladesh, Sri Lanka and Pakistan), Southeast Asia (Thailand, Myanmar, Malaysia, Indonesia, Philippines and Vietnam), East Asia (Japan and China), Australasia (Australia and New Zealand) and the Pacific Islands (Papua New Guinea, Solomon Islands, Fiji, Tonga and Tuvalu). Separate guidelines would be formulated for each of the geographical zones, which are socio-economically and bio-physically distinct. Reference would be made to the detailed country reports of the various geographical zones. The manual would also include a chapter on the importance of mangroves and other coastal forests in safeguarding against coastal erosion and sea-level rise.

Up-to-date Information gathered during the Regional Meeting will be compiled into a comprehensive manual with practical guidelines on coastal rehabilitation, which will be made available to all countries in the region. The manual will also cover integrated coastal zone management with emphasis on rehabilitation and sustainable management of mangroves and the other coastal forests to mitigate future coastal hazards on human life and property. Clearly, this Regional Meeting will be indispensable to proceed this Pre-project not only gathering up-to-date information on re-assessment of the role and function of mangroves and other coastal forests in alleviating the damaging effects of coastal hazards but also strengthen networking among invited participants for preparing comprehensive guidelines for restoring mangroves and other coastal vegetation. The selection of participants will be carried out in close consultation with the ITTO Secretariat.

Tentative timetable

Day 1 (June 13) Registration

Day2 (June 14) Presentations on coastal rehabilitation efforts in the various countries, lessons learnt from their success and failure stories, and the protective functions of mangroves and other coastal forests against coastal hazards including sea-level rise.

Day 3 (June 15) Two concurrent sessions for drafting practical guidelines for assisting these countries in carrying out restoration programs followed by plenary session to summarize the results and to formulate recommendations.

Day 4 (June 16) Departure

Criteria for selection of participants

The criteria for selection of participants of the Regional Meeting will be carried out in close consultation with the ITTO Secretariat and can be categorized as follows:

1. International expertise

- Expertise on mangroves and other coastal ecosystems of the Asia-Pacific region
- Experience in restoration of mangroves and other coastal vegetation in the Asia-Pacific region
- Knowledgeable in the protective functions of mangroves and other coastal forests against coastal hazards such as erosion and sea level rise
- Lead in the formulation of guidelines for each geographical zone

2. Country representatives

- Practitioners and managers of mangroves and other coastal forests representing countries in each of the geographical zone of the Asia-Pacific region
- Ability and willingness to prepare and present country reports on coastal rehabilitation efforts, and technical papers on the protective functions of mangroves and other coastal forests as bio-shields

Tentative participants:

Country	Name	Affiliation
Australia	Dr. Norman Duke	Centre for Marine Studies, University of Queensland
Belgium	Dr. Farid Dahdouh-Guebas	Laboratory of General Botany and Nature Management, Vrije Universiteit Brussel
China	Prof. Nora Tam Fung Yee	City University of Hong Kong
Fiji	Ms. Elizabeth Erasito	National Trust for Fiji
France	Dr. Francois Blasco	Former Director, Laboratoire d'Ecologie Terrestre, France
India	Prof. K. Kathiresan	Centre of Advanced Study in Marine Biology, Annamalai University
Indonesia	Prof. Aprilani Soegiarto	Indonesian Institute of Sciences
Japan	Prof. Shigeyuki Baba	Professor, University of the Ryukyus, Executive Secretary of ISME
Japan	Prof. Toyohiko Miyagi	Professor, Tohoku Gakuin University
Japan	Dr. Keita Furukawa	National Institute for Land and Infrastructure Management
Japan	Prof. Kiyoshi Fujimoto	Professor, Nanzan University
Japan	Prof. Yukira Mochida	Professor, Yokohama National University
Japan	Prof. Kunio Suzuki	Professor, Yokohama National University
Japan	Prof. Kunio Iwatsuki	Director, Museum of Nature and Human Activities, Hyogo
Kenya	Prof. Salif Diop	Senior Environment Officer, UNEP, Nairobi, Kenya
Kiribati	Ms. Ratita Bebe	Ministry of Environment, Lands and Agriculture Development
Malaysia	Dr. Chan Hung Tuck	Director, Research Management Division Forest Research Institute Malaysia (FRIM)
Malaysia	Prof. Ong Jin Eong	Centre for Marine and Coastal Studies, Universiti Sains Malaysia
Malaysia	Mr. Boon Kok San	Research Officer, Research Management Division Forest Research Institute Malaysia
New Zealand	Dr. Gordon Maxwell	Director, Ecosystem Research Centre, New Zealand
Palau	Ms. Alma Ridep-Morris	Marine Conservation and Protected Areas Program, Bureau of Marine Resources, Ministry of Resources and Development
Philippines	Prof. Miguel Fortes	Marine Science Institute, University of the Philippines
PNG	Dr. Monica Toto Rau	University of Papua New Guinea
Samoa	Mr. Pati Liu	Executive Officer, Division of Environment and Conservation, Ministry of Natural Resources & Environment
Sri Lanka	Dr. Lal P. Vidhana Arachchi	University of Sri Lanka
Thailand	Prof. Sanit Aksornkoae	President, Thailand Environment Institute (TEI)
Thailand	Dr. Sonjai Havanond	Department of Marine and Coastal Resources, Thailand
Tonga	Mr. Uilou Samani	Director, Department of Environment, Tonga
Tuvalu	Mr. Enate Evi	Director, Environment, Government of Tuvalu
Vietnam	Prof. Phan Nguyen Hong	Director, Mangrove Ecosystem Research Centre, Hanoi National Pedagogic University

ANNEX D – SUMMARY OF MODIFICATIONS

Response to recommendations of the Thirty-third Meeting of the Expert Panel

(Modifications in the text of the Project Document are underlined)

1. Provide information on how the different socio-economic and bio-physical among countries will be accounted for in the formulation of the guidelines;

Information on how the different socio-economic and bio-physical characteristics among countries will be accounted in the formulation of the guidelines is provided in ANNEX C – OUTLINE OF THE REGIONAL MEETING. Separate guidelines would be drawn up for each of the five geographical zones of the Asia-Pacific region, which have distinctive socio-economic and bio-physical characteristics. Included in the manual will be a chapter on the importance of mangroves and other coastal vegetation in ameliorating hazards of coastal erosion and sea-level rise.

2. Develop objective criteria for the selection of participants of the regional meeting such that attendance is not confined only to academicians and researchers but to also encourage participation of practitioners and forest managers. Selection of participants is to be carried out in close consultation with the ITTO Secretariat;

Criteria for the selection of participants of the Regional Meeting are listed in ANNEX C – OUTLINE OF THE REGIONAL MEETING. Selection of participants would be done in close consultation with the ITTO Secretariat. Generally, participants will be categorized as international experts and country representatives. International experts should have expertise in mangroves and other coastal forests of the Asia-Pacific region, experience in coastal rehabilitation in the Asia-Pacific region, sound knowledge in the protective functions of mangroves and other coastal vegetation. They will lead in the formulation of guidelines for each geographical zone. Country representative are practitioners and managers of mangroves and other coastal forests from countries in each of the geographical zones in the Asia-Pacific region. They are required to prepare and present country reports on coastal rehabilitation efforts, and technical papers on the protective functions of mangroves and other coastal vegetation as bio-shields.

3. Clarify if the pre-project requires support by a Secretary; if so, provide terms of reference.

Secretarial support is essential in the administration of the Pre-project. Terms of Reference are shown in ANNEX B – TERMS OF REFERENCE FOR KEY STAFF.

4. Without increasing the ITTO contribution, revise the budget in the following line:
 - Include US\$ 3,000 for ITTO monitoring and evaluation costs;
 - Recalculate ITTO's Programme Support costs at 8% of total pre-project costs (of budget , lines 11 through 81).

The budget has been revised accordingly, as suggested by the ITTO Expert Panel. Explanation on revisions made is given on page 11.

5. Include an annex that shows the recommendations of the 33rd Expert Panel and the respective modifications. Modifications should also be highlighted (bold and underline) in the text.

Recommendations of the 33rd Expert Panel together with respective modifications are shown in ANNEX D – SUMMARY OF MODIFICATIONS (New). Modifications in the text of the Project Document are underlined.