

Government of Thailand

United Nations Development Programme

Food and Agriculture Organization of the United Nations

**In-depth assessment of mangroves and other coastal forests affected
by the tsunami in Southern Thailand
(TSU-REG/THAI-05/ER/104-REGION)**

(THA/05/ 001//01/12)

Brief description

After the tsunami disaster in the south, the Department of Marine and Coastal Resources conducted a quick damage assessment on mangroves without covering other coastal forests. For setting the rehabilitation programmes on an integrated coastal area ecosystem management, it has become necessary to carry out a scientific in-depth assessment on the damage to and disaster mitigation functions of mangroves and other coastal forests. The project envisages improving the livelihood security of local communities through better land use planning with buffer zones, environment conscious natural resource utilization, and a supply of public awareness information useful for the promotion of environment friendly development programmes in the agriculture, forestry, fisheries, tourism and education sectors.

SIGNATURE PAGE

Country: Thailand

Executing Agency: FAO
(designated institution/formerly executing entity)

Collaborating parties: Department of Marine and Coastal Resources
(formerly implementing entities)
Ministry of Natural Resources and Environment

Programme Period: May to November 2005
Programme Component: Natural resources and environment
Project Title: In-depth assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand
Project ID: _____
Project Duration: 7 months
Management Arrangement: Agency execution

Budget	<u>US\$196 244</u>
Support Cost (FAO)	<u>US\$12 756</u>
FAO Budget	<u>US\$209 000</u>
UNDP General Management	
Support Fee	<u>US\$11 000</u>
Total budget:	<u>US\$220 000</u>
Allocated resources:	<u>US\$220 000</u>
• Government	_____
• Regular	_____
• Other:	
○ Donor	<u>US\$220 000</u>
○ Donor	_____
○ Donor	_____
• In kind contributions	_____

Agreed by (Government): Department of Marine and Coastal resources

Agreed by (Executing Agency): Food and Agriculture Organization of the United Nations

Agreed by: United Nations Development Programme

PROJECT PROPOSAL

Country: **Thailand**

Project title: **In-depth assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand.**

Project number: **THA/05/001//01/12**

Starting date: **May 2005**

End date: **November 2005**

Government Ministry responsible for project execution: **Ministry of Natural Resources and Environment**

Donor contribution: **US\$220 000**

Section I

Background

The project “In-depth assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand” is funded by the United Nations Office for Humanitarian Affairs (OCHA) un-allocated fund to the United Nations Development Programme (UNDP) as a response to the Mid-Term Review of the Flash Appeal's project proposal “Responsive Assistance on the Rehabilitation of Natural Resources and Environmental Damages in the Affected Areas of Thailand”. OCHA channelled the contribution to UNDP, which in turn negotiated with FAO to be the executing agency of the projects. FAO signed the project documents with UNDP and UNDP managed the arrangements with OCHA and the donor. UNDP General Management Support fee (GMS) covers all administrative costs incurred by UNDP. As a consequence, UNDP is responsible for receiving, reporting and accounting the GMS directly to OCHA and the donor.

Part I. Situation Analysis

On 26 December 2004, coastal communities across South and Southeast Asia and as far away as East Africa were severely hit by a powerful tectonic earthquake and consequent tsunami attacks, leaving more than 285 000 people dead as of 17 March 2005. The countries hardest hit by the tsunami disaster in Asia are India, Indonesia, Malaysia, Maldives, Myanmar Sri Lanka, Thailand. In Thailand, Ranong, Phang-nga, Phuket, Krabi, Trang and Satun provinces have been severely affected, with more than 5 300 dead and tens of thousands of stranded or displaced persons.

The quick damage assessment conducted by the Department of Marine and Coastal Resources (DMCR), Ministry of Natural Resources and Environment (MNRE), in the beginning of January 2005 found that about 306 ha of the mangrove forests were damaged in Ranong and Phang-Nga provinces. This assessment, however, did not cover the damage to other coastal forests, such as beach forests and freshwater swamp forests.

Based on field observations, the damage to the sandy beach forests seems to have been more severe than that to mangroves. Serious sand erosion caused many trees to be uprooted and exposed the roots of standing trees. Some plant species in the freshwater swamp forests appear to have been killed by the exposure to saline water. Various animal species appear to have been affected in their habitats.

It was reported that mangrove and other coastal forests played an essential role in protecting the communities behind them from the tsunami surges, though no scientific studies have been carried out in Thailand to confirm this. It is unclear at this time how to retrieve lost sands and recover sandy beaches, which are essential components of the tourist trade, to their original conditions. Negative impacts, including long-term effects to the coastal ecosystems (e.g. biological diversity) and the socio-economic activities of local communities (e.g. tourism) have been neither assessed nor studied as yet.

In view of the above, there is an urgent need to conduct a series of scientific studies to provide the Government with more detailed information in order for them to design the rehabilitation

programmes for people's livelihood and promote an integrated coastal natural resource management system toward the future.

Part II. Strategy

1. Objectives

The overall objectives of the project are: 1) to assist the Government of Thailand's, efforts to rehabilitate the tsunami-affected coastal forests and economic tree crop plantations; and 2) establish effective buffer zones with woody species along the coastal areas for the long-term livelihood security of local communities. By carrying out an in-depth assessment of mangroves and other coastal forests affected by the tsunami the project will provide Government agencies with more detailed information. The project will work closely with the concerned provincial government authorities, local communities, universities and NGOs by providing them with scientific findings and guidelines in order to improve the coastal forest management systems. It is also essential for the project to work closely with other related projects, such as the Andaman Strategic Plan supported by UNDP, through a possible sharing of demonstration sites, information exchange, etc. The project will also prepare a set of essential information useful for public awareness programmes on the ecological and economic functions of these forests, e.g. buffer zones, biodiversity conservation, income sources, etc.

The specific project outputs will be:

- more detailed information on the damage to mangroves and other coastal forests, including long-term effects, biological diversity, etc.;
- scientifically-sound knowledge on the vulnerability and mitigation functions of these forests and other economic tree crops (e.g. coconut palm, oil palm and rubber plantations) against the violent waves, winds, and currents caused by the tropical storms, rainy season monsoons and tsunamis in the future;
- enhanced technical capacities of the local government on the application of remote sensing and geographic information systems (RS/GIS) in an integrated coastal land use planning and forest ecosystem management; and
- provision to local communities, government offices, schools and NGOs with a set of essential information useful for public awareness programmes on the ecological and economic functions of mangroves and other coastal forests.

2. Work Plan

The FAO lead consultant will prepare a plan of operation in consultation with the national, regional and provincial counterparts soon after the project start-up in order to plan and implement the project activities efficiently. The plan of operation will provide the basis for subsequent activities. It will review the proposed technical interventions and provide clear guidance on the determination of the subjects, locations, methodologies, timing, beneficiaries, and lead agencies with their counterparts.

An inception workshop, combined with a field visit, will be organized to formulate the plan of operation, which will be forwarded to FAO and UNDP for technical and managerial clearances, and to the Government of Thailand for agreement. At that time a project Steering

Committee that will consist of a small number of key agencies involved in the project will be set up, along with several technical working groups by selected subjects.

In the course of project implementation, the national working teams will coordinate the execution of project activities, with technical assistance from FAO, according to the established work plan. The members of the Steering Committee will periodically monitor the progress of the project activities. At the end of project activities, an impact assessment will be carried out by the FAO project consultant in coordination with the Steering Committee. The recommendations from the assessment will be incorporated into a follow-up programme proposal for an integrated coastal natural resources management plan for submission to potential donors.

Part III. Management Arrangements

The project will be executed jointly by FAO and DMCR and managed by the Steering Committee. The DMCR will be the owner of the project and responsible for the project management as per its mandates in the MNRE. The Department of National Park, Wildlife and Plant Conservation (DNP) will provide forest ecologists, botanists, entomologists and wildlife biologists, and the Royal Forest Department (RFD) will provide silviculturists and forest economists. Both of these departments are located within the MNRE.

Field-level project activities will be executed in coordination with the concerned departments e.g. DNP, RFD, the Land Development Department (LDD), the Department of Fishery (DOF), universities and Provincial Field Units, with assistance from the project consultants.

The Steering Committee, being established at the project start-up, will consist of the representatives of concerned government departments, FAO and UNDP professional staff and consultants. The Committee will nominate the national project coordinator and national working team members who are responsible for the project execution in both administrative and technical services.

Part IV. Inputs to be provided by FAO

1. Personnel services

International consultant – coastal resources management plan

Fourteen days to undertake an inception mission and assist in drafting action plans for in-depth assessment of mangroves and other forests in earthquake/tsunami-affected areas. Ten days for a second mission to assist in drafting of a coastal resources management plan, in addition to six days work at the home base. This mission will take place at the end of the project (see Annex 1 for TORs).

FAO forestry officer (RAPO)

Twenty-one days to provide technical backstopping services and assess the project impacts on an integrated coastal forest management (see Annex 2 for TORs).

Lead national consultant – team leader (mangrove expert)

Seven person/months, including several missions. As the team leader of the project, he/she will be responsible for the overall coordination and implementation of the project and will assist in planning, monitoring and evaluating of the project activities, including the finalization of community-level needs assessments and establishing lists of inputs with their technical specifications. At the end of the project, he/she will conduct an assessment of the project impact on the communities. This consultant will also be responsible for providing technical advice and extension to the communities as required, in order to ensure optimum use of inputs provided by the project (see Annex 3 for TORs).

National consultant – Forestry remote sensing (RS) and GIS expert

Four person/months over several missions to assist and cooperate with the team leader and the national working teams in the tasks pertaining to the establishment of a RS/GIS facility for the integral use of information, including the findings of studies. This consultant will also be responsible for providing technical trainings on the use of RS/GIS to recipient communities as required, ensuring optimum use of inputs provided by the project (see Annex 4 for TORs).

National consultant – Forest economist

Four person/months over several missions in cooperation with the team leader, other project consultants, FAO and UNDP professional staff and national counterparts. The consultant will assist the national working teams to assess the values of the mitigation functions, socio-economic, biodiversity, tourism, and cultures of mangroves and other coastal forests from the forest environment accounting point of view (see Annex 5 for TORs).

Contract

This budget will be used for employing human resources/facilities needed for the implementation of project activities in the field. The contracts involving the coastal communities will be made with the government, national institutions, NGOs, or the private sector.

2. Casual labour

This will be used for employing casual labour for field work, administrative and logistical support to the project either in the provinces or DMCR headquarters in Bangkok.

3. Travel

To cover the cost of travel and DSA for the national and international consultants, as well as the FAO and UNDP backstopping officers.

4. Expendable equipment

For the procurement of forestry inputs.

5. Non-expendable equipment

For the procurement of non-expendable equipment (including one unit of GIS facility).

6. FAO Technical Services

For the FAO technical backstopping and monitoring of project operations (three weeks).

7. General Operating Expenses

To cover locally-incurred miscellaneous expenses related to the implementation of the project.

Part V. Monitoring and Evaluation

Soon after project start-up the FAO consultants will prepare a project inception report in consultation with the Department of Marine and Coastal Resources and other related counterparts. The report will provide the basis for subsequent activities, and will review the proposed technical inventory and provide clear guidance and recommendations regarding the methodology of assessment, lists of input, and a work plan for project implementation.

In the course of project implementation, the national project team will coordinate the execution of project activities according to the established work plan with technical assistance from the project national consultants. Project progress will be periodically monitored by members of the Steering Committee.

At the end of project activities an impact assessment will be carried out by the team leader in coordination with the Steering Committee. The recommendations derived from all of the project activities will be incorporated into the follow-up project or programme proposals to be submitted to potential donors, and will address the rehabilitation and management of mangroves and other coastal forests in an integrated coastal resources management.

Part VI. Reporting

Financial reporting

FAO will provide UNDP with project financial reports on a quarterly basis (for periods ending March, June, September and December) which will correspond to the project budget as detailed in Section IX. A final project financial report will be provided as soon as project activities are completed and the corresponding project accounts are financially closed.

UNDP receives the General Management Support Fee (GMS) directly from OCHA, and is responsible for accounting and reporting the use of GMS directly to OCHA.

Inception report

Upon project inception, the lead national consultant/team leader, in close collaboration and consultation with the international expert and backstopping officer, will submit a short inception report. The report will include a list of the study sites, assessment methods, study teams, specifications of the equipment to be purchased, and a plan of operation as well as work plan. The report will be forwarded to FAO headquarters for clearance prior to follow-up action.

Mid-term report

The team leader-national consultant will submit a mid-term progress report to FAO for clearance. This report will highlight the progress made, inputs procured, status of other project activities and any difficulties encountered during project implementation.

Project concluding letter

Based on the reports prepared by national consultants and technical backstopping officers in the course of project implementation, and in accordance with established guidelines and procedures, a project concluding letter will be finalized by TCEO at FAO headquarters and submitted to the Government and UNDP.

Part VII. Government contribution and supporting arrangements

The Ministry of National Resources and Environment will be the government counterpart agency responsible for the project.

The Government will:

- nominate a national project coordinator to liaise with the international and the national consultants on all aspects of project implementation;
- make available the services of qualified staff for the duration of the project as necessary;
- provide all necessary facilities for the efficient operation of the project including access to information, data and storage space as required;
- provide administrative and technical support that may be required for the successful completion of the project; and
- facilitate the FAO Representative accredited to the country, or any other FAO official designated by him/her, to visit the project sites to follow-up on project implementation.

Part VIII. Legal Context

The project document shall be the instrument envisaged in the Agreement between UNDP and FAO regarding the execution of UNDP Development Cooperation Activities.

The following types of revisions may be made to this project document only with the signature of the UNDP Resident Representative, provided he is assured that the other signatories of the project document have no objections to proposed changes:

- revision to, or addition of, any of the annexes of the project document and the agreement, which is a precondition for UNDP assistance;
- revisions which do not involve significant changes in the immediate objectives, outputs and activities of the project, but are caused by the rearrangement of inputs already agreed to or by cost increases due to inflation;
- mandatory revisions which re-phase the delivery of agreed project inputs or increased expense of other costs which take into account agency expenditure flexibility.

IX. Project Budget (in US \$)

Country: **Thailand**

Project Title: In-depth assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand

Fund: **TSU-REG/THAI-05/ER/104-REGION**

Project number: **THA/05/001//01/12**

Accts	Input Description	ATLAS (UNDP) Codes	Sub/Child Account	Main/Parent Account
5013	Consultants			44 000
5542	Consultant – International (1 p/m)	71200	12 000	
5543	Consultants – National	71300	32 000	
5014	Contract	72100		20 000
5571	Contracts - temporary assistance services		20 000	
5020	Overtime	74500		5 000
5652	Casual labour/temporary assistance		5 000	
5021	Travel	71600		22 000
5661	Duty travel others		12 000	
5684	Consultants – International		7 000	
5692	Travel ATS		3 000	
5024	Expendable Equipment	72300		20 000
6000	Expendable equipment budget		20 000	
5025	Non Expendable Equipment	72300		40 000
6100	Non expendable equipment budget		40 000	
5027	Technical Support Services	74100		20 000
6111	Report costs (including the proceedings of workshops and seminars and the materials for public awareness and school education)		5 000	
6120	ATS (Honorarium)		15 000	
5028	General Operating Expenses	72000		25 244
6300	General operating expenses budget		25 244	
5029	Support Cost	75100		12 756
GRAND TOTAL				209 000

Section II - Results and Resources Framework

In-depth assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand				
Intended Outputs	Output Targets for	Indicative Activities	Responsible parties	<i>Inputs</i>
1. More detailed information on the damage to mangroves and other coastal forests, including long-term effects on them, biological diversity, etc.;	2 months (except for the long-term effects)	1.1 RS survey 1.2 Scientific field studies	1.1 DMCR 1.2 DMCR, DNWP and universities	
2. Scientifically sound knowledge on the vulnerability and mitigation functions of these forests and other economic tree crops (e.g. coconut palm, oil palm, rubber plantations) against the violent waves, winds, and currents caused by the tropical storms, rainy season monsoons and tsunamis in the future;	4 months	2.1 Scientific reference study 2.2 Case studies 2.3 Study tours	2.1 DMCR, DNWP and universities 2.2 – “ – 2.3 FAO/UNDP	
3. Enhanced technical capacities of the local government on the application of remote sensing and geographic information systems (RS/GIS) in an integrated coastal land use planning and forest ecosystem management; and	7 months	3.1 Setting up a RS/GIS facility 3.2 Information input and analysis 3.3 Introductory courses of RS/GIS 3.4 On-the-job training on an integrated LS planning & forest ecosystem management	3.1 - 3.4 DMCR, DNWP, DOF and universities	
4. Provide local communities, government offices, schools, NGOs with a set of essential information useful for public awareness programmes on the ecological and economic functions of mangroves and other coastal forests.	4 months	4.1 Preparation of public awareness materials 4.2 Workshops, seminars and study tours for local community leaders and managers	4.1 Universities 4.2 Universities, DMCR, DLD, and TAT	

Section III—The total work plan and budget

Annual Work Plan and Budget

United Nations Development Programme

Year: 2005

Project Title: In-depth Assessment of mangroves and other coastal forests affected by the tsunami in Southern Thailand

Project Number:

Project ID Expected Output	Key Activities	Time Frame				Respon. Party	Fund	Donor	Planned Budget			
		Q 1	Q 2	Q 3	Q 4				Acc Code ATLAS	Budget Description	Amount	
Scientific study and assessment of ecological functions of mangroves and other coastal forests against disasters	More detailed information on the damage to mangroves and other coastal forests		X			DMCR, DNWP and universities	TSU-REG/THAI-05/ER/104-REGION		72100	Contractual Services (Studies and Research Services) (FAO 5571)	4 000	
	Scientifically sound knowledge on the vulnerability and mitigation functions of these forests and other economic tree crops		X	X		DMCR, DNWP and universities			72100	Contractual Services (Studies and Research Services) (FAO 5571)	8 000	
	Enhanced technical capacities of the local government on the application of remote sensing and geographic information systems (RS/GIS)				X	X		DMCR, DNWP, DOF and universities		72100	Contractual Services (Studies and Research Services) (FAO 5571)	4 000
										72300	Material & Goods (Other material& goods: GIS equipment) (FAO 6100)	40 000

	Provide local communities, government offices, schools, NGOs with a set of essential information useful for public awareness programmes			X	X	DMCR, DNWP, DOF, TAT, universities, and NGOs	TSU-REG/THAI-05/ER/104-REGION		72100	Contractual Services (Studies and Research Services) (FAO 5571)	4 000
	Project Management and Implementation		X	X	X	FAO			71200	International Consultants (Technical) (FAO 5542)	12 000
									71300	Local Consultants (Technical) (FAO 5543)	32 000
									74500	Miscellaneous Expenses (FAO 5652)	5 000
									72300	Material & goods (across 4 activities) (FAO 6000)	20 000
									71600	Travel (FAO 5661-5684-5692)	22 000
									74100	Professional Services (FAO 6111-6120)	20 000
									72000	General Operating Expenses (FAO 6300)	25 244
	FAO Execution Fee					FAO			75100	Miscellaneous Operating Expenses (FAO 5029)	12 756
	UNDP GMS Fee					UNDP			75100	Facilities & Administration - Services	11 000
TOTAL US\$											220 000

TERMS OF REFERENCE

International consultant – Coastal resources management plan

Under the overall supervision of the Chief, Emergency Operations Service (TCEO), the direct supervision of the Deputy Regional Representative for Asia and the Pacific, FAO, and technical guidance of the relevant technical units at FAO, in coordination with the national consultants and counterpart national authorities, the consultant will carry out the following duties:

The first mission:

- participate in the inception workshop and familiarize him/herself with the damage to mangroves and other coastal forests and advise the types and methods of studies to the national project partners;
- establish an operational structure to plan, monitor and provide management support and back-up technical assistance for the coordination of in-depth assessment of mangroves and other forests; and
- provide technical assistance, as required, to MNRE and other partners engaged in the rehabilitation work of mangroves and other forests.

The second mission:

- review the project outputs and prepare a consolidated technical report, including a blue print of buffer zone planning in a framework of an integrated coastal area management, with the national consultants and DMCR officials; and
- prepare project profiles for submission to donors for the follow-up phase of the project.

In addition to the above duties, the consultant will perform other related duties and/or activities upon instructions from FAO.

Reporting: submit an end-of-mission report after the completion of the each mission detailing the activities undertaken and recommendations for follow-up action

Qualifications: university degree in forestry with at least ten years of field experience in the mangroves and other forests ecology / emergency coordination.

Duration of the assignment: 30 days

Duty Station: Bangkok (with travel to the affected regions).

Security: the consultant must be aware of the security phase of Thailand and understand the implications for his/her own security. As soon as he/she arrives at the duty station, through the FAO Representation or directly he/she must contact the designated UN security officer to be briefed on all the recommended security measures. In case this procedure is not properly applied, the consultant may not be covered under the insurance.

Vaccinations: the consultant must ensure that he/she has received any necessary medical vaccinations/ medical care before departing from home address.

TERMS OF REFERENCE

FAO Forestry Officer Forestry Department Group (RAPO)

Under the general supervision of the Chief, Emergency Operations Service (TCEO), and the direct supervision of the Deputy Regional Representative for Asia and the Pacific, FAO, the technical guidance of the relevant technical divisions at FAO, and in cooperation with the national authorities, the FAO forestry officer will provide technical backstopping services by carrying out the following duties:

- assist in the preparation of a work plan and an inception report for the timing of each activity in the project;
- advise the types and methods of assessment studies, including a review the existing related scientific information and its supply to the project counterparts;
- prepare the technical specifications for the RS/GIS equipment and supplies to be ordered by the project;
- assess overall performance of the project and its impact on the beneficiaries;
- prepare an end-of-mission report, detailing activities conducted, project results, findings, conclusions and recommendations;
- assist in formulating the follow-up project proposals for donor/government funding; and
- perform other related duties and/or activities upon instructions from the Deputy Regional Representative.

Qualifications: university degree in forestry, with good knowledge of mangroves and other coastal forests through a minimum of ten years of working experience in mangroves and other coastal forests development.

Duration: three weeks.

Duty station: Bangkok (with travel to the affected regions).

Security: the officer must be aware of the security phase of Thailand and understand the implications for his/her own security, through the FAO Representation or the designated UN security officer to be briefed on all the recommended security measures. In case this procedure is not properly applied, the officer may not be covered under the insurance.

Vaccinations: the officer must ensure that he/she has received any necessary medical vaccinations/ medical care before taking duty travels.

TERMS OF REFERENCE

Lead national consultant – Team leader (mangrove expert)

Under the overall supervision of the Chief, Emergency Operations Service (TCEO), the direct supervision of the Deputy Regional Representative of Asia and the Pacific, FAO, and under the technical guidance of the relevant technical divisions at FAO and in coordination with the project international consultant and counterpart national authorities, the consultant will act as the team leader of the project and will be responsible for the overall coordination and implementation of the project. He/she will carry out the following duties:

- establish a time-phased project work plan for project activities covering the whole duration of the project;
- identify locations for assessments by listing up priority study sites with technical inputs detailing their specifications;
- submit an inception report outlining a list of the study sites, assessment methods, study teams, specification of the equipments, and a plan of operation as well as work plan;
- lead the damage assessment work and review the technical reports on the mitigation functions of the mangroves and other costal forests with particular attention to the needs of rehabilitation activities at the local level;
- provide technical advice to local government entities and guide them in the organization of workshops and seminars to ensure the optimum use of project inputs;
- submit a mid-term report mentioning activities undertaken, problems encountered, if any, recommendations and updated work plan for project continuation, etc.;
- undertake an assessment of the project impact on the rehabilitation of mangroves and other costal forests activities. The assessment will include socio-economic impact as well as the effect of the assistance provided by the project. In particular, determine evaluation criteria of the assistance provided by the project;
- prepare and submit a final report, including all project activities, study results and recommendations for follow-up assistance;
- assist the international consultant and FAO backstopping officer in formulating the follow-up project proposals for donor/government funding;
- perform other related duties and activities upon instructions received from the Deputy Regional Representative.

Qualifications: university degree with technical specialization in mangroves and professional work experience of at least ten years in the coastal forest management field operations. Familiarity with project sites is desirable.

Duration of the assignment: seven months, including several missions.

Duty station: project areas.

TERMS OF REFERENCE

National consultant - Forestry RS and GIS expert

Under the general supervision of the Chief, Emergency Operations Service (TCEO), the direct supervision of the Deputy Regional Representative for Asia and the Pacific, and the technical guidance of the relevant FAO technical divisions, coordinated by the international consultant and the Lead National Consultant, in cooperation with the national authorities, the consultant will carry out the following duties:

- assist the in-depth assessment work by supplying and analysing the remote sensing (RS) information over the tsunami-affected mangroves and other coastal forests;
- prepare the technical specifications for the GIS equipment and software to be established either in Phang-Nga or Phuket provinces;
- establish a GIS facility in the Mangrove Research and Development Station;
- prepare thematic maps needed for and summarizing the field study findings in relation to the land use, vegetation type, geological and climatic conditions, socio-economic characteristics, etc.;
- design and conduct RS/GIS training programmes for the project field staff, local government officers, villagers, school teachers and NGO staff;
- assist the lead national consultant in the preparation of various technical reports; and
- perform other related duties and activities upon instructions from the Deputy Regional Representative.

Qualifications: university degree in forestry or equivalent and a minimum of five years of working experience in RS and GIS work. Knowledge of the English language at working level is required.

Duration: four months in several missions (on a when actually employed basis) within the seven-month project duration.

Duty station: project areas.

TERMS OF REFERENCE

National consultant – Forest economist

Under the overall supervision of the Chief, Emergency Operations Service (TCEO), the direct supervision of the Deputy Regional Representative for Asia and the Pacific, and the technical guidance of the relevant FAO technical divisions, coordinated by the international consultant and the Lead National Consultant, in cooperation with the national authorities, the consultant will carry out the following duties:

- analyse all of the potential values of damaged and undamaged mangroves and other coastal forests, including the values of their mitigation functions, socio-economic, biodiversity, tourism, and cultures from the forest environment accounting point of view;
- identify forest ecosystem units for the conservation and utilization plans at the local, provincial and national levels through a series of case studies;
- prepare a technical report, “Guidance for the forest environment accounting: concepts, approaches and applications” by using the findings from the case studies; and
- perform other related duties and activities upon instructions received from the Deputy Regional Representative

Qualifications: university degree in forest economics and a professional work experience of at least ten years in the forest environment accounting or similar subjects.

Duration of assignment: four months in several missions (on a when-actually-employed basis) within the seven-month project duration.

Duty station: project sites.