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சுற்றாடல் அமைச்சு

MINISTRY OF ENVIRONMENT

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"சம்பத்பாய", இல: 82, ரஜமல்வத்த வீதி, பத்தரமுல்லை, இலங்கை.
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உமது இல
Your No.

දිනය 20.02.2006
திகதி
Date

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Dear Mr. Tito,

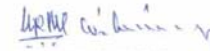
Submission of the full scale proposal on Participatory Coastal Zone Restoration in the Eastern Province of Post-Tsunami Sri Lanka (IFAD/GEF PDF B)

On behalf of the Government of the Democratic Socialist Republic of Sri Lanka, the Ministry of Environment is pleased to endorse the project document titled "Participatory Coastal Zone Restoration in the Eastern Province of Post-Tsunami Sri Lanka" prepared under IFAD/GEF PDF B project assistance for review and approval of the GEF Council.

We would like to express our sincere gratitude for your cooperation and assistance during the preparatory process.

Thanking you,

Sincerely,


W.R.M.S. Wickramasinghe,
Addl. Secretary,
for Secretary,
Ministry of Environment,
GEF National Focal Point – Sri Lanka

Cc: Country Representative, IUCN Sri Lanka

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Annex 2: Site Description and Maps

Preamble

The project is designed for the restoration and rehabilitation of coastal ecosystems. The initial emphasis of this five-year project will be on developing a scientifically based, low-cost, community-based approach to rehabilitating key coastal ecosystems at specific sites in the East Coast and facilitating replication of these techniques all along the East Coast (and in due course other tsunami-affected coasts). Three sites representing three major ecosystems – mangroves, coastal lagoons, and sand dunes – have been identified for piloting these themes. The selection was based on outputs from the Threats Analysis and the following criteria.

1. Hotspot analysis: sites where the tsunami effect was severe on the ecosystems and post tsunami reconstructions are in progress, global/national biodiversity importance exist, concentration of various resource users and their high dependency over the available resources exist and user conflicts exist.
2. Accessibility: accessibility by road was a criterion for selecting pilot sites
3. Absence of ongoing management and monitoring projects: sites at which on-going projects have not being considered for selection
4. Vulnerability to climate Change: Level of vulnerability to climate change and potential for testing adaptation with community participation was also used as a criterion for site selection
5. Consensus of the stakeholders: demonstration sites were finalized with the consensus of local people, local, district, provincial and national level stakeholders through a consultative process

1. Pigeon Islands

Location and status

Pigeon Islands, located 1km off the coast of Nilaveli along the NE coast of Sri Lanka consists of two small islands (known as Large and Small Pigeon Islands) and several rocky outcrops including Coral Island and 'Salabalas Rock' (locally known) 300-500m north, south and southeast of Large Pigeon Island. The two small islands were declared a sanctuary in 1963 to protect the Blue Rock Pigeon (*Columba livia*), a nationally threatened bird species inhabiting the Islands and other sea birds. In the year 2003, it was upgraded to the status of a National Park, with the surrounding waters within a one-mile radius including coral reefs declared as a buffer zone. However, no management measures of a National Park have been implemented so far thus activities around the island environs, particularly, fishing for food fish, ornamental fish collection, boat riding to view corals etc. are being carried out uninterrupted over the years.

To date, over hundred species of corals and more than three hundred species of reef fish have been identified in Trincomalee and surrounding area and many of these species are found around Pigeon Islands. Large Pigeon Island (N 8° 43.198' E 81° 12.101') has a linear extent of 2-3 km and is surrounded by a fringing coral reef of about 10,000 square meters with a live hard coral cover of 74%. Coral cover is dominated by *Acropora* spp. with some *Montipora* spp., large colonies of *Porites* and *Goniastrea* are found in the seaward margin. Scattered coral communities interspaced by rocky habitats are found around the island up to a depth of 15m. There are no large coral patches around Small Pigeon Island and 'Salabalas Rock'. Some corals occur on rocky substrate, which are interspersed with old limestone and sandy patches. Live hard coral cover is about 25% and dominated by families Faviidae, Mussidae and Poritidae. Extensive areas of soft corals (mainly *Sinularia*, *Lobophyton* and *Sarcophyton*) are found among the rocky habitats. Fringing coral reefs and small coral patches occur around Coral Island (N 8° 44.200' E 81° 10.590') to a distance of about 200m and a depth of 4-6m. Live coral cover is about 71% dominated by *Acropora* spp. while colonies of *Montipora* spp., *Porites*, *Galaxea*, *Favia*, *Favites*, *Platygyra* and *Leptoria* are common.

Global and regional significance

Coral reefs around Trincomalee and Pigeon Islands were the only reefs known to have escaped coral bleaching by 1998 *El Nino* ocean warming phenomenon in Sri Lanka and one of the few in the entire Indian Ocean, therefore are a good representative indicator of reef status prior to coral bleaching. The coral reefs in the Pigeon Islands was also largely unaffected by the 2004 Indian Ocean Tsunami and one of the few remaining coral reefs in the country with a healthy live coral cover (over 70%) which is far above the global average of 32%.

Major threats to the coral reef biodiversity

Crown of Thorns starfish (*Acanthaster planci*) has seriously damaged the reefs in 1970s. The two small islands and their satellite rocky islets, just 500m offshore, was snorkeller's paradise until hundreds of the voracious coral polyp feeding starfish completely destroyed the corals. Now they are largely re-established. However they are still commonly found in the area and

continue to have an effect on corals. It is also have been reported that a population explosion by Sea anemone sp. of Order Corallimorpharians was a threat to the corals. They have been growing on newly dead corals and were actively expanding and smothering live corals, particularly, stag-horn coral (*Acropora*). The reef also sustained minor damage during a cyclone that affected the northeastern coastal area in 2000.

The awakening tourist industry in the area is the major threat to the coral reefs. Trampling the coral, extraction of corals as souvenirs, operation of high-speed boats causing physical damage to shallow branching corals, solid waste pollution is some tourism related adverse impacts on the reefs. Blast fishing in the reef area, use of bottom set nets, collection of marine organisms for the aquarium trade, are other identified threats. Agricultural run-off which carries heavy loads of insecticides and excess fertilizer also pose a potential threat to the corals in the area.

Increased climate changes resulting in the increased sea surface temperature (SST) makes the reefs vulnerable to mass coral bleaching in the future. Elevated SST and minor coral bleaching has been recorded in the Trincomalee area in 2004 and 2005 and several reefs in the Batticaloa District along the east coast had extensive bleaching up to depths of 20m.

Impacts of tsunami

Although the Pigeon Island ecosystem escaped significant damage from tsunami, the people who were depending on the reef for their livelihood were badly affected. Many are still unable to return to their livelihoods such as fishing and tourism related activities. Ad hoc response to the tsunami has resulted in an oversupply of fishing boats to communities in the area. Therefore, there is a potential for severe overexploitation of resources in the future. This could also lead to an increase in the use of destructive fishing methods due to increased competition for resources, which in turn would have negative impacts on coral reefs and the associated biota.

2. Vakarai mangroves

Location and status

The Vakarai mangrove ecosystem which associates the Upaar (Panichchankerni) lagoon is located 8°03' - 8°12'N, 81°20' - 81° 7' E, 5 km SE of Trincomalee and 50 km NW of Batticaloa District in the Eastern Province. The total area of the lagoon is about 2590ha. There are extensive mangrove swamps around the edges of the lagoons. The area that has been selected for the pilot project is at Mankerny in the Vakarai Divisional Secretary's Division. Inhabitants in the area are said to be descendants of an indigenous tribe. Facilities such as electricity and telephone services are almost unknown to them. Majority live in poverty and over 70% earn a monthly income of less than Rs. 3750/= (37.50 US\$). Subsistence fishing is one of the main activities and people also depend on agricultural activities. Cottage industries such as handloom and handicraft, goat and cattle keeping are carried out in a small way. Vakarai is within the area controlled by LTTE, therefore a similar site was identified in the Government controlled area in Valachchanai in case if there is a difficulty in working in Vakarai due to unexpected war situation.

Global and regional significance

The lagoon, especially the southern part, is known to be important for large waterbirds and migratory shorebirds, but no details are available. However, the lagoon system can be of global importance since they comprise the Eastern Flyway for migratory waterfowl, which annually visit Sri Lanka from the foothills of the Himalayas and from Siberia.

Major threats to the mangrove/ lagoon biodiversity

Deforestation of mangrove forest due to security reasons associated with civil unrest poses a major threat to the mangrove biodiversity and the problem is further aggravated as people in the area exploit them for their domestic use (house construction, firewood etc.). Siltation of lagoon bed due to various upstream irrigation and other development activities also have affecting the mangroves. The lagoon fish resources are affected by pollution from land based activities, use of prohibited fishing methods and gear and overexploitation of targeted species.

Impacts of tsunami

Natural threats such as cyclones and severe flood have always taken a heavy toll. Almost 100% of the 507 families living in the area were affected by the tsunami. 15 deaths have been reported and houses were completely destroyed. 400 families still live in tents and the rest in immediate shelter.

3. Panama/Pottuvil Sand Dunes

Panama Dunes are described as less tall but more extensive, consisting of a first coastal dune ridge rising about 8 meters and a second row further inland rising up to about 12 -15 meters. Total dune area before Tsunami was about 357ha, while total Dune area Damage has been estimated at 134.05 ha.

The study site occupies 1400-1500 families. Natural resources play an important part on shaping the livelihood of the people in the area. The sea, the lagoons, tanks, agricultural land and forests are used by the villagers. Fishing and agriculture are the main livelihoods in the area.

Global and regional significance

Panama/Pottuvil sand Dunes which stretches from Ambalantota (Godawaya) in the Hambantota District to Sangamankanda Point in the Ampara District is identified as the longest stretch of dunes in the world close to the equator.

The Panama Dunes together with Panama Lagoon, Helawe Lagoon, and the Kumana wetlands as well as the forests and scrubland falls within the Yala East National Park, which has a great importance to biodiversity. A total of 57 species of birds have been recorded for the area. Eight bird species (i.e. *Anhinga melanogaster* - Oriental Darter; *Ephippiorhynchus asiaticus* - Black-necked Stork; *Ichthyophaga ichthyaetus* - Grey-headed Fish Eagle; *Leptoptilos javanicus* - Lesser Adjutant; *Mycteria leucocephala* - Painted Stork; *Pelecanus philippensis* - Spot-billed Pelican; *Threskiornis melanocephalus* - Black-headed Ibis; *Eurynorhynchus pygmeus* - Spoon-billed Sandpiper) recorded are listed in the Red Data Book 2000 by the IUCN/World Conservation Union as nationally threatened or vulnerable. Two species namely, *Leptoptilos javanicus* - Lesser Adjutant and *Pelecanus philippensis* - Spot-billed Pelican are of particular importance as they are globally threatened, vulnerable species.

Nine terrestrial mammal species recorded are listed in the Red data Book, namely, the Asian Elephant (*Elephas maximus*), Eurasian Otter (*Lutra lutra*), Fishing Cat (*Felis viverrina*), Grizzled Giant Squirrel (*Ratufa macroura*), Hanuman Langur (*Semnopithecus entellus*), Pangolin (*Manis crassicaudata*), Rusty Spotted Cat (*Felis rubiginosa*), Sloth Bear (*Melursus ursinus*) and Toque Macaque (*Macaca sinica*). Of these, the Asian Elephant, Fishing Cat, Rusty Spotted Cat and Sloth Bear are identified as globally threatened species. The Asian elephant population in the region is about 200-300 individuals. The Mugger or Marsh Crocodile (*Crocodylus palustris*) has been observed near Bagura Lagoon earlier on are now reported to have invaded the Panama area since the tsunami. A recent survey reveals that the small lakes previously used by domesticated buffalos are now infested with crocodiles that swim into the sea and then settle down on beaches, lagoons, lakes and streams in the area. It is considered as globally threatened vulnerable species as well as a nationally threatened species. Reports indicate the eastern sandy shores provide nesting habitats for two globally threatened turtle species, Green Turtle (*Chelonia mydas*) and Olive Ridley Turtle (*Lepidochelys olivacea*).

In addition to these threatened species, a host of other species is common throughout the area. Spotted Deer (*Axis axis*), Sambar Deer (*Cervus unicolor*) and wild boar (*Sus scrofa*) are common in most areas having remaining patches of scrub or forest. Leopard (*Panthera pardus*) and bear reportedly still occur in the remaining forests along the entire east coast, but especially in Yala East National Park. Peacock have reportedly become more common during the past two decades, and can readily be seen along any rural roadside today throughout the entire province.

Major threats to the biodiversity of the area

Illegal poaching of the wildlife is reported. Felling of trees for timber is also reported within the sanctuary area and in other places. Unauthorized constructions can be seen on the dune area and sand mining from the dune also causes adverse impacts on the dunes. Lagoons located in the study sites are affected due to species oriented fishing practices. Even the coastal seas of the sites are heavily exploited for targeted species. Mangroves in the area are also heavily exploited for domestic uses.

Impacts of tsunami

The tsunami effect at Panama was minimized as the dune acted as a barrier against the waves. Loss of life was only one. However, the fishing boats and gear got destroyed and salt water intrusion to areas where dunes were naturally low or were tampered by people by sand mining was observed. As a result of this, some paddy fields got affected.

Figure M1: Province map indicating demonstration sites

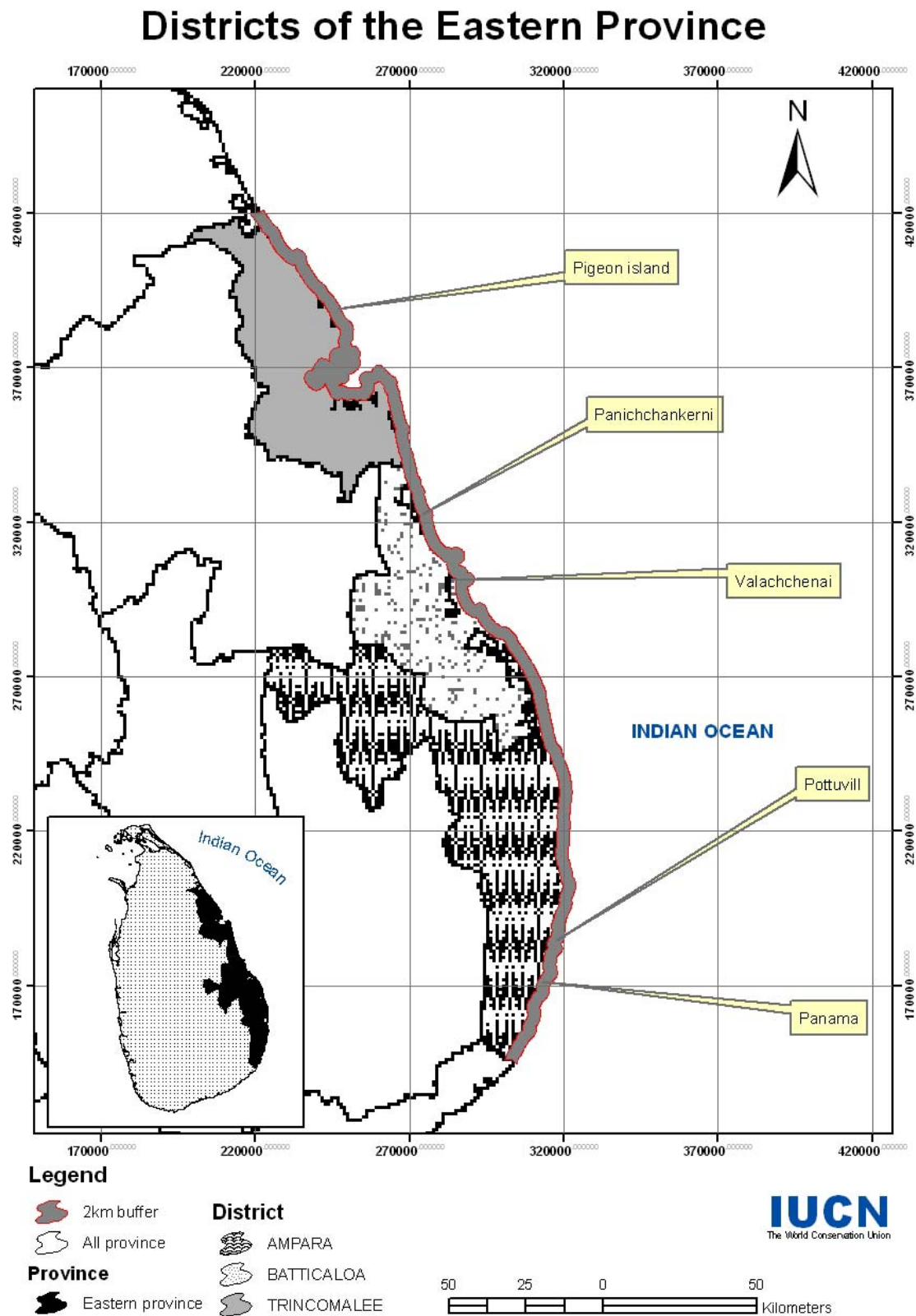


Figure M2: Ampara District. Administrative Map

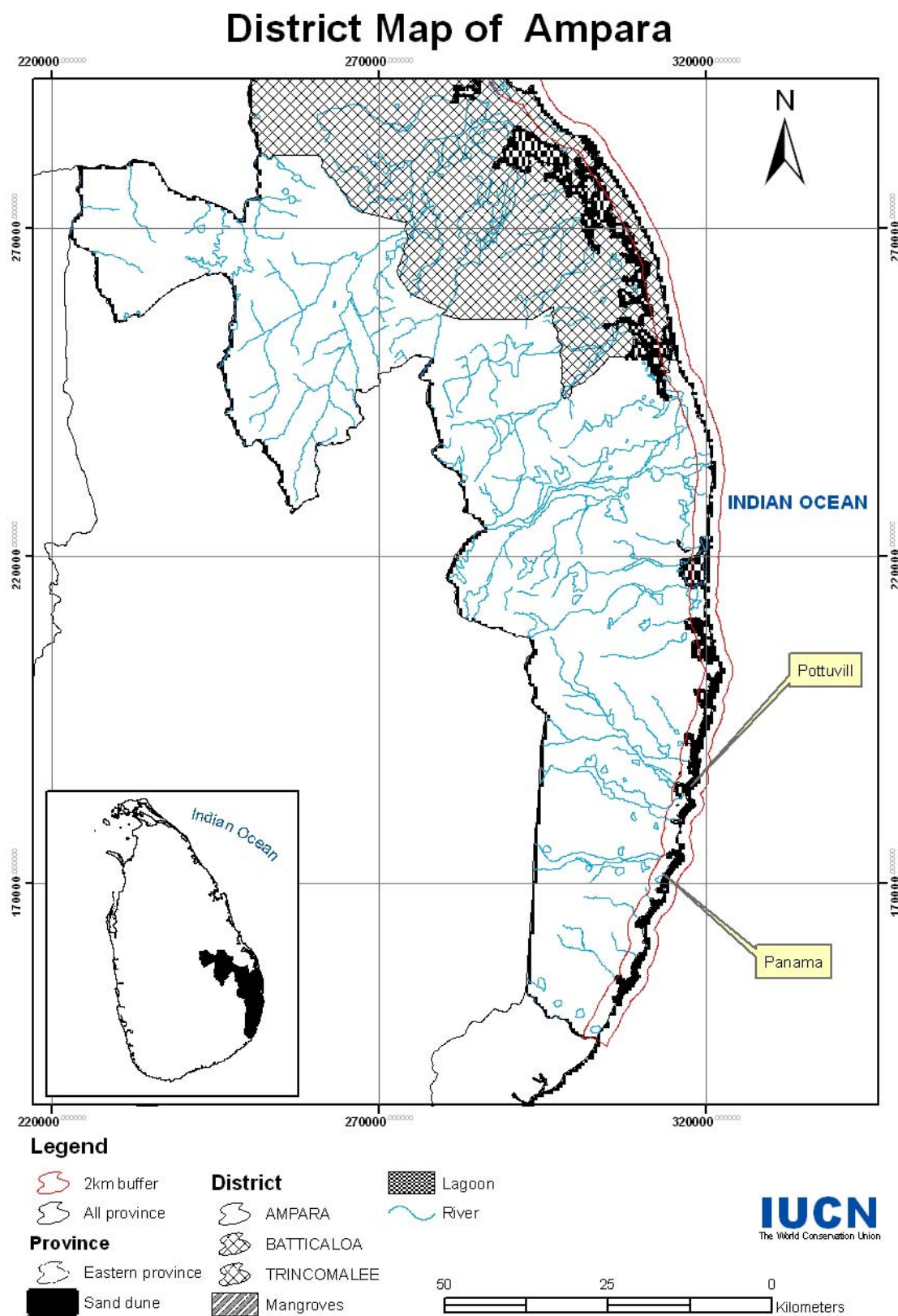


Figure M3: Batticaloa District. Administrative Map

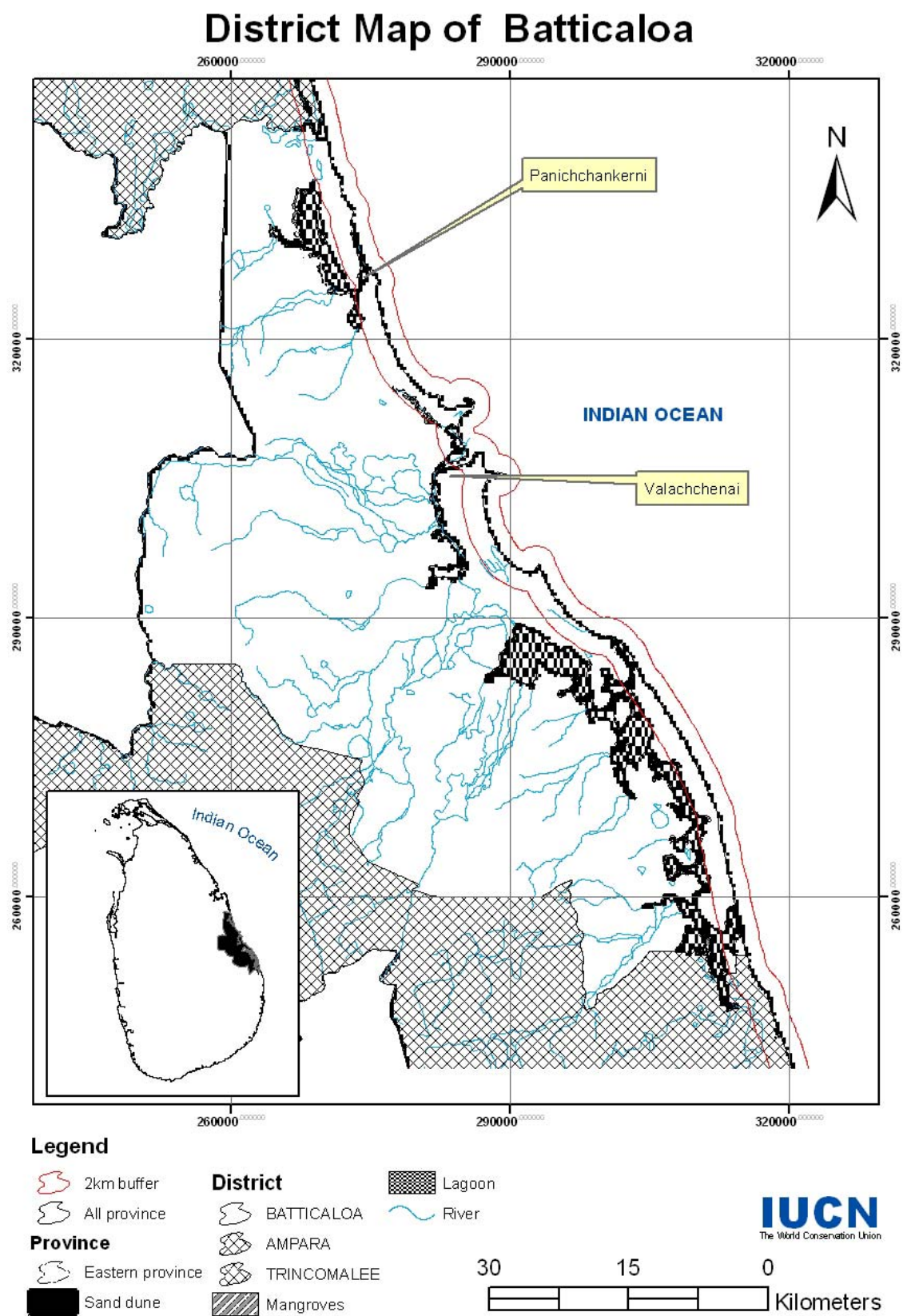


Figure M4: Trincomalee District. Administrative Map

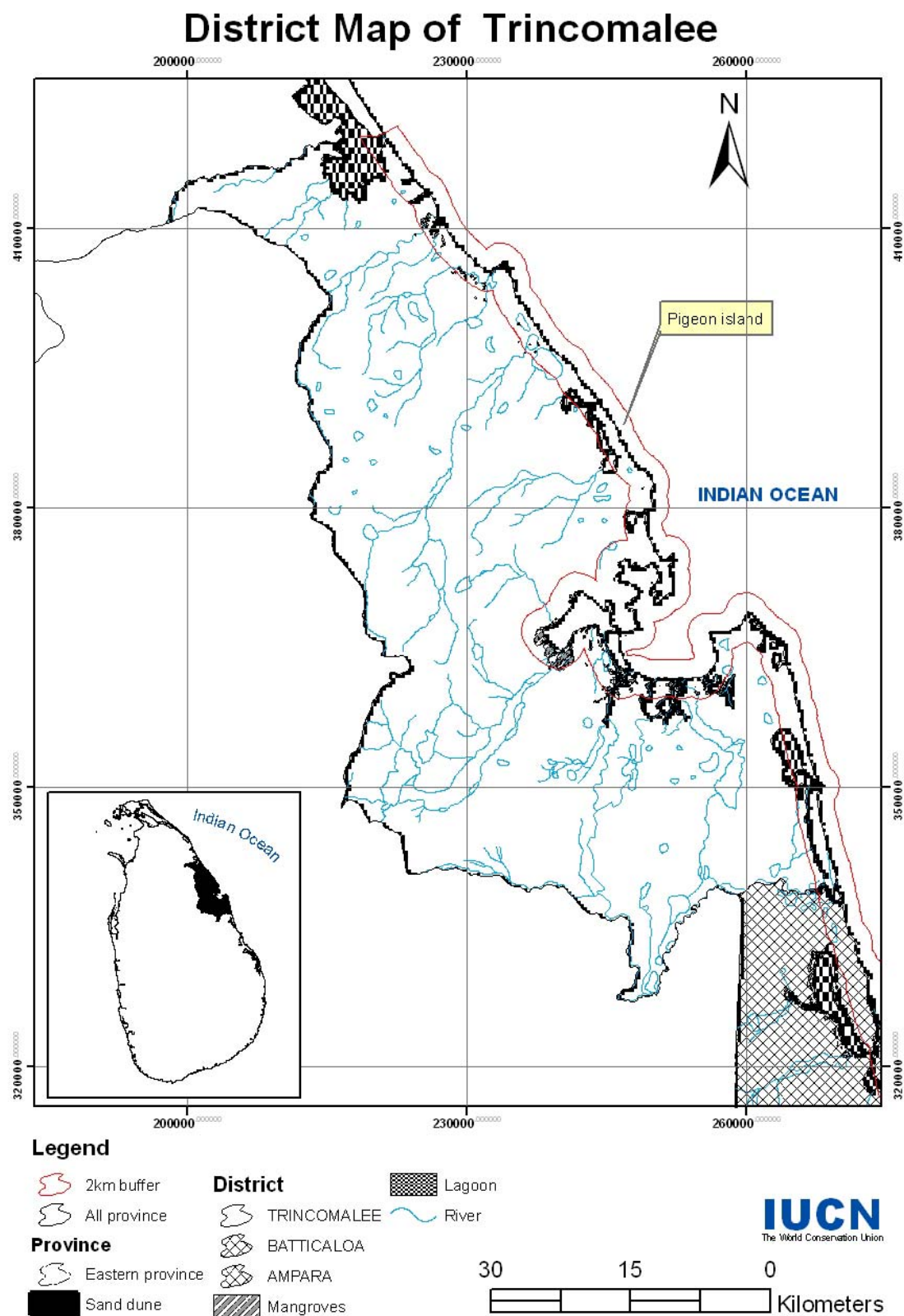


Figure M5: Panama Geographical Location



Sand dunes at Panama



Figure M6: Pigeon Island Geographical Location



Coral reefs at Pigeon Island

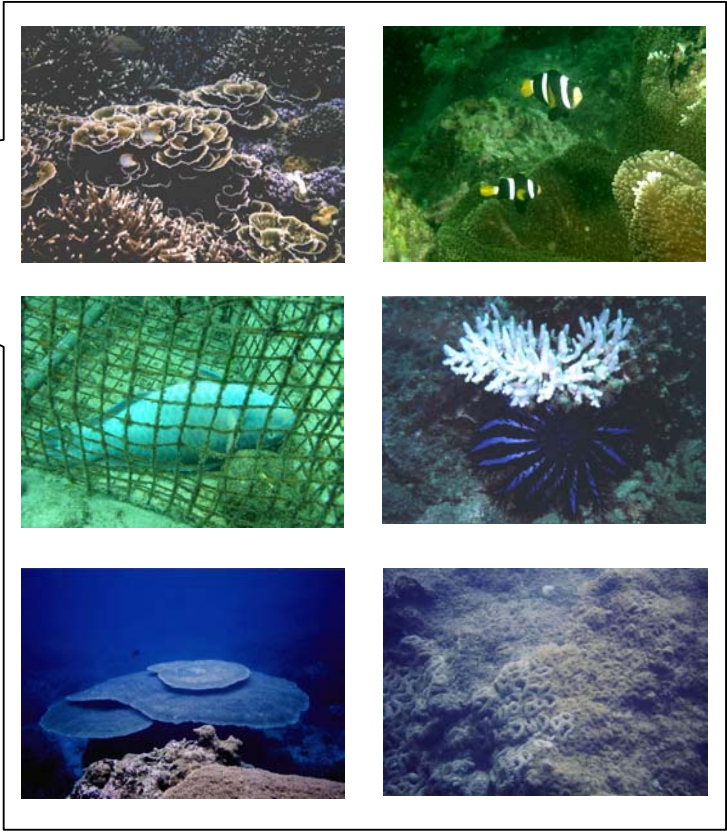


Figure M7: Vakarai Geographical Location



Mangroves at Vakarai



Figure M8: Panama

Map of the Project site- Panama

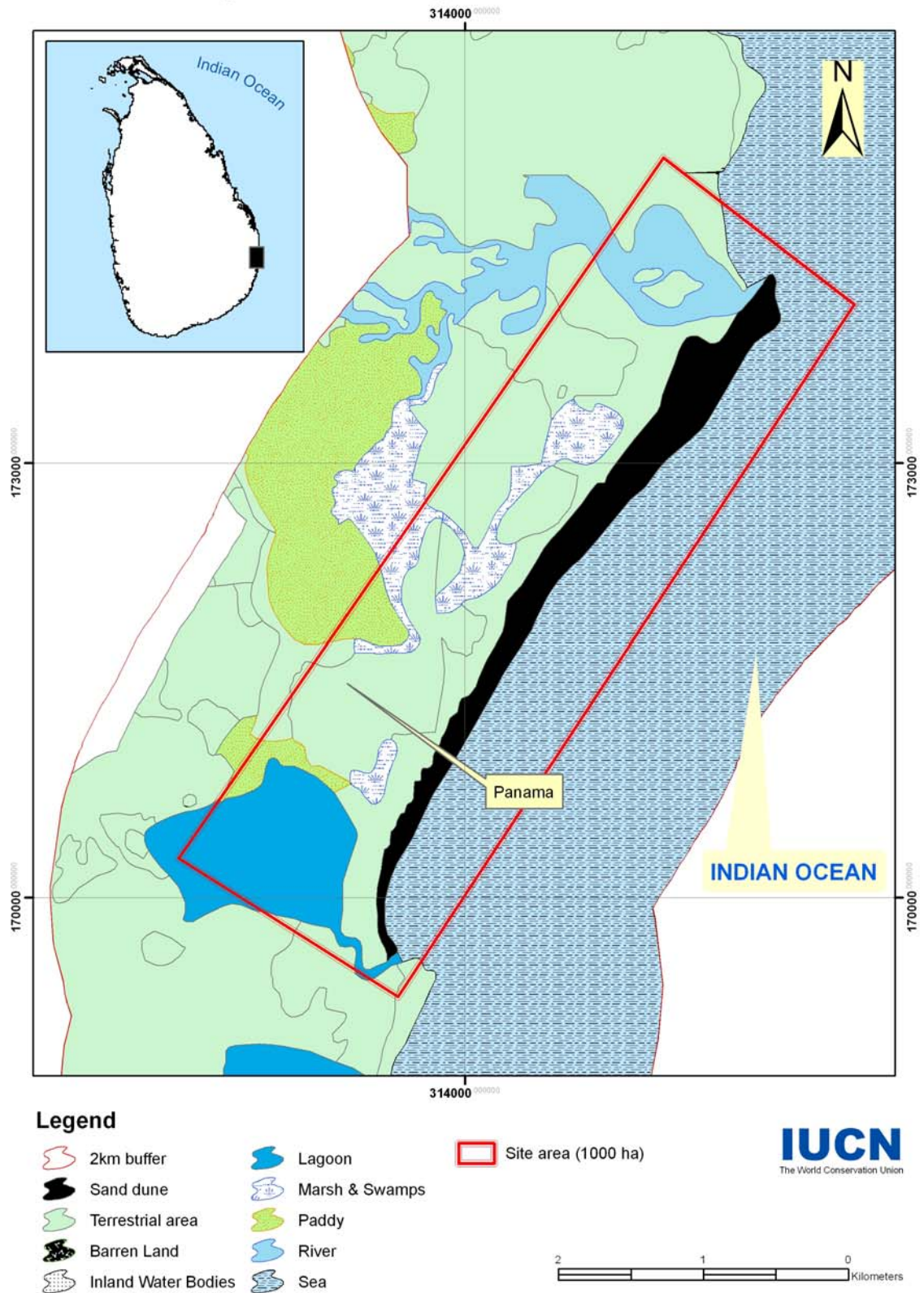


Figure M9. Vakarai

Map of the Project site- Panichchankerni lagoon

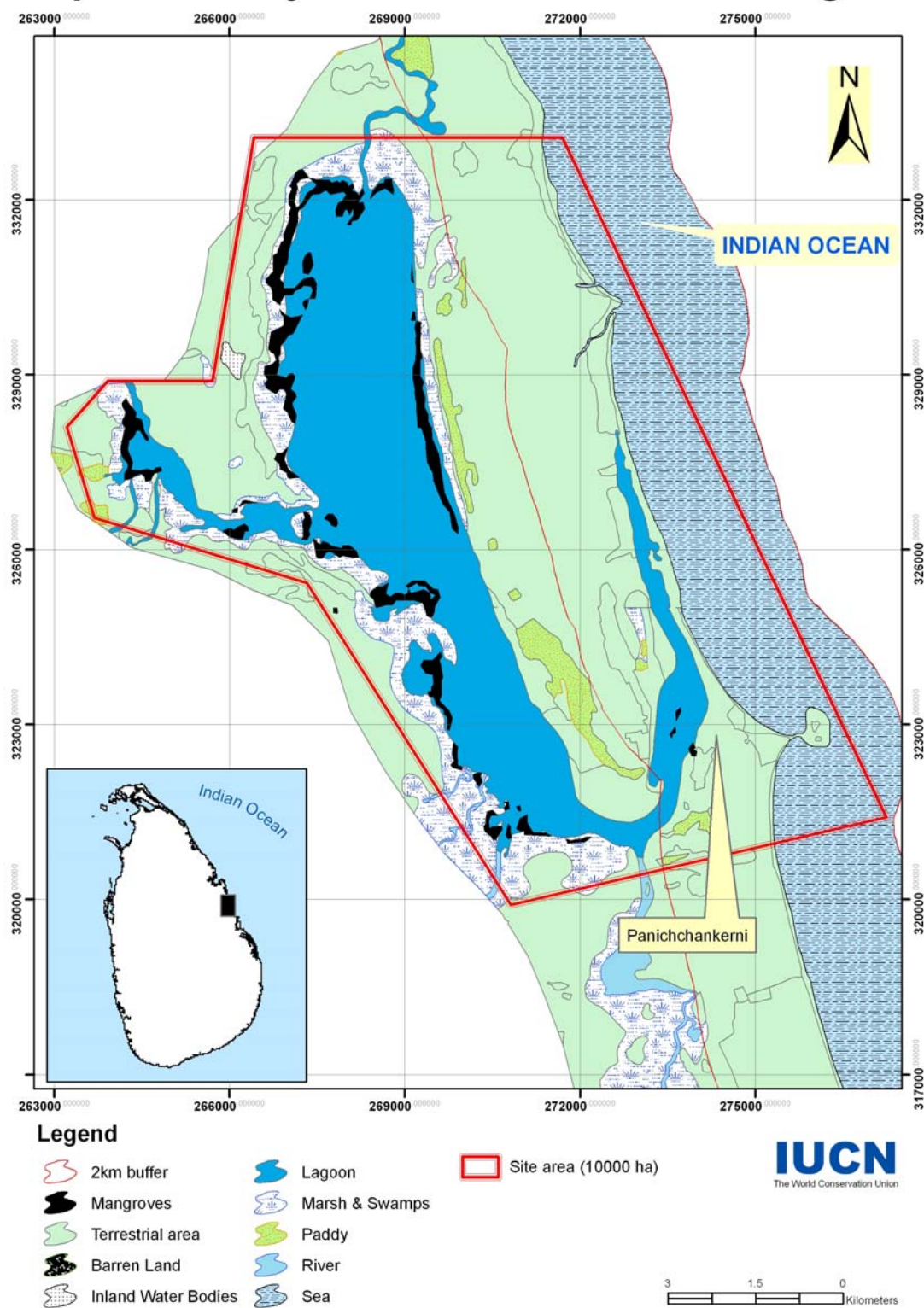
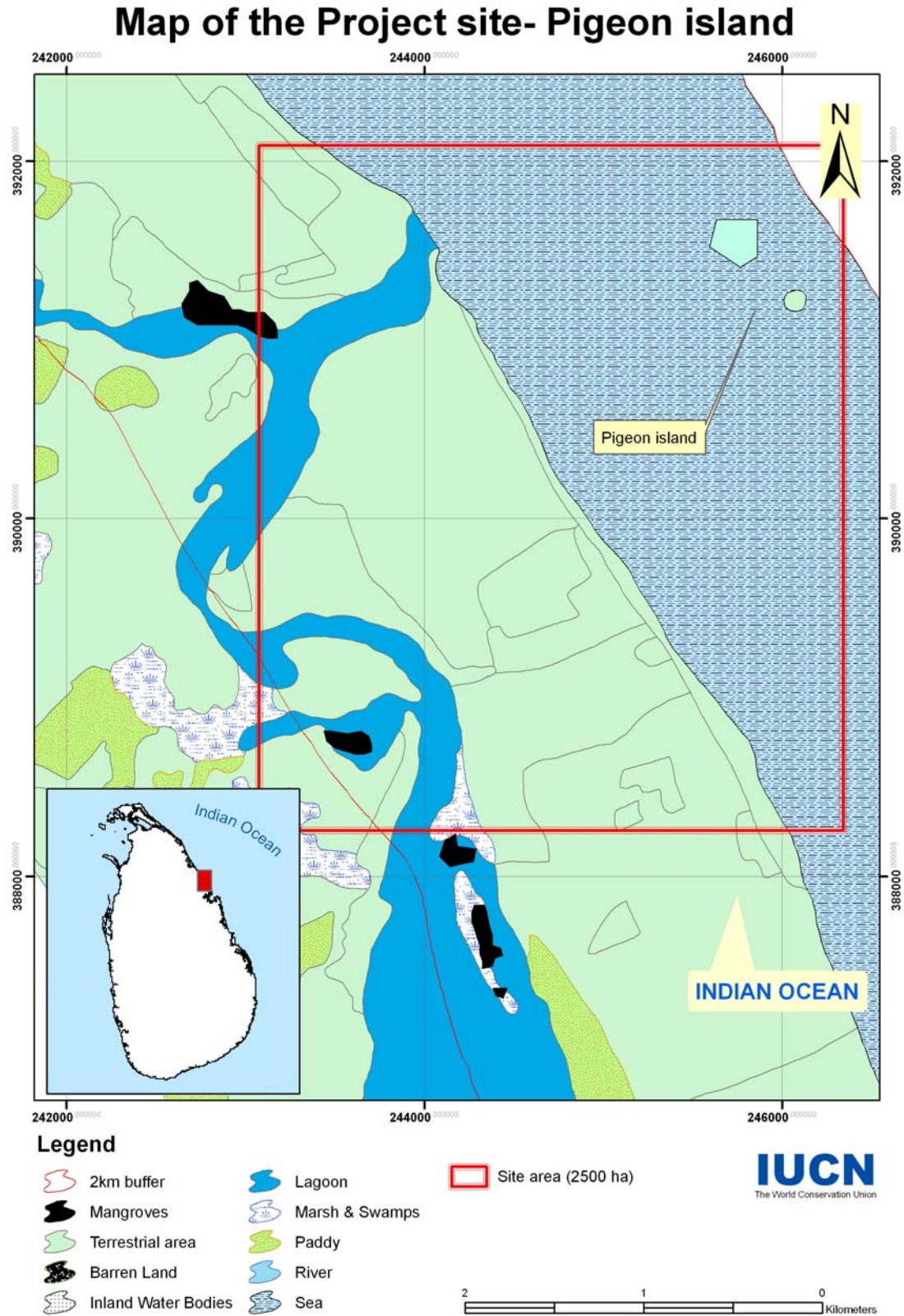


Figure M10: Pigeon Island



Annex 3: Climate Change Vulnerability and Adaptation Summary

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National Significance of Climate Change

Sri Lanka, being a tropical island state, has a daytime temperature in coastal and low elevations exceeding 30 °C during most parts of the year ¹. The temperature observations made by the Meteorology Department over the last 100 years have shown an increasing trend in the annual mean surface temperature with an average of 0.16 °C per decade during 1961-90 period ². This is slightly more than the increase in the global mean surface temperature of 0.12 °C per decade observed during the same period ³.

The Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) projects increases in the global mean surface temperature of 1.5-5.8 °C by 2100 under different greenhouse gas emission scenarios and different computation models, and a corresponding rise in the sea level of 0.1-0.85 m ³. According to the regional assessments, the model grid enclosing Sri Lanka gives corresponding values for temperature rise in the range 1.0–3.0 °C ⁴. These values downscaled for Sri Lanka using an interpolation technique also gives similar range ⁵.

The rise in the mean temperature and sea level will have an adverse impact in almost all socio-economic sectors in Sri Lanka, including agriculture, forestry, energy, health, water resources, fisheries, coastal zones, and wetlands ^{6,7}. Most crops have an optimum temperature for maximum yield which is around mid-twenties. Hence, an increase in the ambient temperature would mean that the yield of low elevation crops would reduce. The increase in evapo-transpiration and soil salinity which would follow rise in temperature could also bring about loss of yield. The changes in the pattern of rainfall and elevated temperatures would affect directly inland water resources and hydropower supplies. All these would mean economic losses to the country.

Sri Lanka has been experiencing frequent extreme events such as heavy rains followed by floods and land slides, draughts and cyclonic storms over the past years. With the anticipated rise in the surface temperature, it is expected that these events too will occur more frequently with greater intensity, causing much damage to life and property ⁸.

Institutional Context – Global

With mounting evidence that greenhouse gases (GHG) accumulating in the atmosphere could cause enhanced global warming with adverse impacts on people and the environment, the World Meteorological Organization (WMO) and the United Nations Environmental Programme (UNEP) took the initiative to establish two bodies, an Intergovernmental Panel on Climate Change (IPCC) and an Intergovernmental Negotiating Committee (INC) to address this issue. The mandate of the IPCC was to collect scientific evidence pertaining to a possible climate change, make projections for the future, study the impacts and recommend adaptation measures both physical and at policy level. The INC conducted a series of negotiating meetings commencing in 1991 for a multi-lateral treaty to limit the emission of GHGs, particularly from developed countries, with a view to arrest the situation. These negotiations resulted in the UN General Assembly adopting in May 1992, the Framework Convention on Climate Change (FCCC), which set out a target for the developed countries to return their GHG emissions to 1990 levels by 2000 ⁹.

Realising the inadequacy of a Convention alone to achieve the main objective of the FCCC to stabilise the GHG levels in the atmosphere, particularly with the inability of the responsible Parties to comply with the targets set forth in the FCCC to limit their emissions by 2000, the small island states located mostly in the Pacific Ocean and who are threatened by rising sea level, pressed for a legally binding protocol that would spell out the commitments of the developed countries to reduce their emissions beyond 2000. As a result, the Kyoto Protocol (KP) was adopted in 1997 specifying GHG quantities permitted to be emitted by developed countries within the 5 year period 2008-12, which were less than their 1990 levels by about 5% on an average ¹⁰. However, the actual reductions relative to the projected uncontrolled emission levels during mid-obligatory period of 2010 would be in the range 25-30%. In order to facilitate the developed countries in achieving these commitments, the KP established a Clean Development Mechanism (CDM) whereby developing countries could participate in the GHG reduction process along with developed countries provided such association would result in their sustainable development.

The Convention on Biodiversity (CBD) was also adopted in 1992 with a view to arrest the loss of biodiversity at all levels. The World Summit on Sustainable Development (WSSD) held in 2002, resolved to adopt a biodiversity target to be realised by 2010 whereby a significant reduction of the current rate of biodiversity loss at global, regional and national levels as a contribution to poverty alleviation and to the benefit of all life on earth would be achieved. Under the Convention, a Protocol has also been adopted to control the trans-boundary movement of genetically modified organisms which would have an adverse impact on biodiversity.

The Global Environmental Facility provides financial assistance to developing countries to enable them to comply with the provisions in the UNFCCC and CBD, and their protocols.

Institutional Context – National

In Sri Lanka, the Ministry in charge of the subject of Environment is the National Focal Point for the UNFCCC. It has established a National Steering Committee on Climate Change, comprising members from other stakeholder Ministries, Departments, Statutory Boards and Universities to advise and give directions to the Ministry and monitor its activities related to these two conventions and their protocols. They meet once a month generally, chaired by the Secretary to the Ministry. The present membership comprises of representatives from:

- Ministry of Environment
- Ministry of Forestry
- Ministry of Agriculture
- Ministry of Irrigation
- Ministry of Energy
- Ministry of Industries
- Ministry of Plantations
- Department of Agriculture
- Department of Forest Conservation
- Department of Meteorology
- Department of Coast Conservation
- Central Environmental Authority
- Ceylon Electricity Board
- University of Moratuwa (nominated by person)
- University of Peradeniya (nominated by person).

among others¹¹.

The Ministry has established a Climate Change Secretariat (CCS) under its Environmental Economics and Global Affairs Division, with a view to¹¹

- Serve as the National Focal Point for UNFCCC activities,
- Provide a one-stop facility to disseminate information relating to the implementation of the decisions taken at the Parties' meetings,
- Promote research studies on mitigation, impacts, and adaptation to be undertaken by researchers,
- Initiate measures to be undertaken by different line ministries and authorities to comply with the provisions in the UNFCCC and its KP,
- Promote the private sector to invest in CDM projects, by conducting awareness programmes and assisting in the identification of projects and
- Serve as the Designated National Authority (DNA) for the approval of Clean Development Mechanism (CDM) Projects.

The CCS has provided grants under the Climate Change Enabling Activity (Phase II) project from GEF to a large number of researchers in Universities and Research Institutes to undertake short-term studies numbering 58. The primary objective of undertaking these studies is for preparing the Second National Communication on Climate Change. The CCS plans to publish the findings of these studies in a single volume under the title "Climate Change in Sri Lanka – Vulnerability, Mitigation and Adaptation"¹¹.

The Meteorology Department is the National Focal point for the IPCC. Its main function is the gathering of island-wide meteorological data and forecast the weather. The Department has also established a Centre for Climate Change Studies (CCCS) in 1999 with a mandate to¹²

- Undertaking research into Climate Change,
- Monitoring of Climate Change,
- Creating an awareness on Climate Change and related issues
- Gathering of information and dissemination
- Execution of Models of Climate Change
- Assisting scientists to undertake climate change studies
- Establishing links with relevant International Agencies.

Among the obligations of the developing countries set forth in the UNFCCC are the submission of a National Communication periodically to the UNFCCC Secretariat including an Inventory of GHG emissions and sinks, and taking climate change

concerns into account in formulating socio-economic policies. Among the stakeholders to climate change concerns in respect of emissions, sinks, mitigation, impacts and adaptation are the Ministries/Departments and statutory boards established to handle the subjects of agriculture and livestock, forestry, plantations, land-use, industries, energy, transport and waste disposal.

It has therefore been recommended that branch units of the CCS be established in each of the following establishments with a mandate to collect from the relevant sector activity data necessary for the preparation of the GHG Inventory, undertake assessment studies on impacts of and adaptation to climate change, promote and supervise research, and assist private sector parties in formulating and implementing projects for the CDM process⁷.

- The Natural Resources Management Centre established within the Department of Agriculture having a mandate to address environmental issues in the agricultural sector, conduct agro-meteorological research and maintain an agro-meteorological observation network. It also maintains a database on agro-meteorology data.
- The Forest Department having a mandate to maintain and develop forests and regulate all forestry activities. The Department gathers information regarding deforestation, reforestation, and aforestation activities and conducts research on forestry and silviculture.
- The Institute of Plantation Management of the Ministry of Plantations which has a mandate to conduct training programmes leading to diplomas, hold workshops, seminars and conferences, undertake research and provide advice to the Minister. It operates closely with the three plantation research institutes.
- The Land Use Policy Planning Division established within the Ministry of Lands. It maintains database of all information on land use in the country and plans for future allocations. It operates closely with the Survey Department, Forest Department, Timber Corporation and other related bodies.
- The Industrial Technology Institute having a mandate to undertake industrial research and development activities, provide consultancies, training facilities and analytical services for the industry. The Division on Chemical and Environment Technology works closely with the industry in addressing issues pertaining to industrial pollution and cleaner technologies.
- The Energy Conservation Fund established under the Ministry of Power and Energy has the mandate to prepare the Annual National Energy Balance Statement which contains most of the energy-related information required for preparing the GHG Inventory. It also has the mandate to conduct awareness programmes on energy conservation, promote the use of renewable energy sources and conduct training programmes.
- The Transport Studies and Planning Centre of the Ministry of Transport, which has a mandate to gather data on traffic movement and undertake policy studies in the transport sector. The transport sector is a significant consumer of fossil fuel and hence has high potential to introduce mitigatory measures to reduce GHG emissions.
- The Central Environmental Authority which has been collecting information on waste generation and taking measures regarding disposal of solid waste. Work in this sector requires gathering of information on solid waste collected from different local bodies and their disposal systems.

Country Policy on Climate Change

The Ministry of Environment, being the Focal Point to the UNFCCC, has set up a separate Climate Change Secretariat in 2004 as referred to earlier. As required in the UNFCCC, Sri Lanka has submitted its First National Communication to the FCCC Secretariat in October 2000⁶. It has outlined in Chapter 6, the policies and measures committed by the Government towards implementation of the provisions in the FCCC in Sri Lanka.

Being a developing country not listed in the Annex I to the Convention document or non-Annex I Party, Sri Lanka has no commitment to reduce its current or future emission levels. However, in keeping with the spirit of the Convention, Sri Lanka has decided to focus on two aspects; reduction of emissions and mechanisms to mitigate impacts, particularly those falling under the category of “no regret” options. These measures will also be consistent with the general policy of following a path of sustainable development.

Among the general recommendations made were:

- Protect arable soil

- Improve water management
- Enhance agro-technology
- Formulate land-use policies
- Maintain food reserves
- Provide emergency disaster relief.

In addition, the report has made several specific recommendations in the areas of agriculture, energy, transport, industry, coastal and marine zone, forestry, water resources, health and settlements.

The Ministry of Environment also has formulated a policy on the Clean Development Mechanism (CDM) enabling rapid processing of proposals for projects to be undertaken under CDM. Some of the key policy elements, among other options are¹³:

- The project will contribute to national sustainable development.
- The project will lead to improvement of the environment and welfare of the society.
- The project will contribute to poverty alleviation.
- The project will lead to transfer of new, proven, affordable environmental-friendly technologies.
- The project will meet local needs and priorities and satisfy a detailed assessment of their economic, social and environmental benefits.
- The project will recognize the rights of the people in relation to all emissions.

Legislation

The Government of Sri Lanka has ratified the UNFCCC by a decision of the Cabinet of Ministers in November 1993, and acceded to the Kyoto Protocol in September 2002.

As a party to the FCCC, Sri Lanka is required to submit to the Conference of the Parties through the Secretariat, a National Communication containing the following information, within 3 years after entry into force of the Convention or after availability of financial resources.

- I. A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases
- II. General description of steps taken to implement the Convention
- III. Any other information

2)The non-Annex I Parties are not required to control their emissions, but only take climate change concerns into account in formulating socio-economic policies.

As such, Sri Lanka is not bound by any legal requirements in the implementation of the FCCC.

Impact of Climate Change on the Coastal Zone

The most significant impact of climate change in the coastal zone is that caused by rising sea level. An increase in the sea level by about a half a meter could result in many adverse impacts including inundation of low lying areas displacing settlements, migration of fishery habitats, loss of sandy beaches affecting tourism, intrusion of salinity to ground water aquifers and to low lying paddies affecting their growth. Several adaptation measures will need to be planned in order to cushion the economical hardships that would be encountered by the people living in the coastal zone

While the global mean of sea level rise is expected to be within 85 cm by 2100, the sea level rise around India is expected to be in the range 15 - 38 cm by the middle of this century and 46 - 59 cm by the end of the century, according to the India's National Communication on Climate Change ¹⁴. No estimate of sea level rise in Sri Lanka's coastal waters has been carried out, nor reliable estimates made on the possible inundation of land due to sea level rise. The ADB sponsored study on Climate Change in Asia has qualitatively assessed the possible impacts in the South West coastal zone, identifying low lying areas that are likely to get inundated¹⁵. In another study carried out under the US Country Studies Program, quantitative estimates were made of the possible extents of land loss in the SW coast and land adjacent to marshes and lagoons to get inundated, corresponding to a 0.3 m and 1.0 m rise in sea level ¹⁶. It is noteworthy that both these studies were limited only to the South Western coast in the country, as rest of the coastal areas were not freely accessible due to the armed conflict.

In view of the severe implications to the economy of low lying countries due to sea level rise, many studies have been carried out world over to assess their vulnerability. A few common methodologies have been developed for this purpose^{17,18}. In order to ensure reliability of such studies and that they follow the common methodologies, a project on **Synthesis and Up-scaling** of

sea-level Rise Vulnerability Assessment Studies (SURVAS) has been launched by a global network of coastal researchers¹⁹. It has synthesised the findings of 22 studies undertaken by both developed and developing countries, and has reported that altogether 180 million people would be affected, 332 million would be at risk, capital worth over US \$ 1000 billion lost, 146,000 sq. km land inundated and 58,000 sq. km wetlands lost, corresponding to a 1m sea level rise²⁰.

In another global analysis of sea level rise impact, it was found that, corresponding to a median sea level rise²¹:

- the number of people flooded by storm surges in a typical year would be more than five times higher than at present due to sea-level rise by the 2080s;
- South and South-East Asia, the southern Mediterranean and Africa would be the areas most vulnerable to flooding (in absolute terms),
- the largest relative increase in flood risk could be experienced in the Caribbean, the Indian Ocean islands and the Pacific small islands;
- 22% of the world's coastal wetlands could be lost by the 2080s due to sea-level rise. This percentage could rise to 70% by the 2080s, if sea-level rise impacts were combined with other losses due to direct human action;
- wetland loss would primarily affect the Mediterranean and Baltic coastline.

Threats to Sri Lanka's East Coast from Climate Change

The East Coast will be subject to the impacts due to increased ambient temperature, changes in precipitation and accelerated sea level rise arising from climate change. The temperature rise would be in the range 1-3 °C, as described earlier. In the case of precipitation there is no general trend expected as the projections are model specific. The Eastern Province is in the dry zone of the country receiving annual rainfall below 1750 mm and falling into two agro-ecology zone classifications of DL1 and DL2²². The Trincomalee District falls mostly within DL1 zone and the other two districts Ampara and Batticaloa fall within DL2 zone. Apart from the different soil characteristics, the two zones are distinguished by the fact that the 75% expectancy of annual rainfall within DL1 zone is a minimum of 775 mm while that of DL2 zone is 900 mm. The average monthly temperature in the northern half of the Eastern coast exceeds 30 °C during the months of May and June while during rest of the year and in the southern part it exceeds 27.5 °C²². Hence, a temperature rise of 3 °C as expected towards the end of the century would make the agriculture and water resources vulnerable to adverse impacts. The two principal crops, rice and coconut, grown in the area would produce reduced yields under such enhanced temperatures^{5,23}.

The East Coast, being open to the Bay of Bengal, is exposed to cyclones and storms that originate in the Bay. Most cyclones originating in the Northern part of the Bay of Bengal move Westwards and North Westwards, and pass through the Indian Ocean to the East of Sri Lanka. Though Sri Lanka is not directly in the path of most cyclones originating in the Bay of Bengal, almost all of them pass very close to Sri Lanka, close enough to make their presence felt. Some of them deviate from the generally predicted path and enter Sri Lankan territory through the Eastern coast, and pass through the Northern and North-Central parts of the island. There have been four severe cyclones during the last 100 years as well as a large number of severe and moderate storms²⁴. Cyclone incidence shows a strong seasonality, and 80% of all cyclones and storms occur in November and December in the North-East monsoon period.

Among the criteria that need to be satisfied for the formation of a tropical cyclone is that the sea surface temperature should exceed 26.5 °C²⁵. With increasing temperatures, it is presumed that this condition would be satisfied more frequently, resulting in a corresponding increase in the frequency of these events. A recent study on the incidence of past tropical cyclones world over has concluded that global data indicate a 30-year trend toward more frequent and intense hurricanes, corroborated by the results of the recent regional assessment, which is consistent with recent climate model simulations that a doubling of CO₂ may increase the frequency of the most intense cyclones²⁶. Thus, an increase in the frequency and the intensity of cyclones and storms crossing the East Coast could be expected in the coming decades, which would result in much damage to life and property.

Vulnerability Assessment and Indicators

The impacts of climate change induced temperature and sea level rise are site specific, though general trends could be forecasted from model calculations. Hence, it is necessary to undertake a detailed vulnerability assessment (VA) before developing any response strategies. For the coastal zone in Asia the most important climate change variables include²⁷:

- Increase in air and sea surface temperatures,
- Sea level rise, and

- Changes in the magnitudes, frequency and distribution of inter-decadal, inter-annual and seasonal extreme events such as cyclones and droughts.

A common methodology that has been agreed by the international community for undertaking VA studies includes the following tasks ¹⁷:

- Delineate the affected area specifying the climate change scenario.
- Inventorise study area characteristics
- Identify relevant development factors
- Assess physical changes and natural system responses
- Formulate response strategies identifying potential costs and benefits
- Assess the vulnerability profile and interpret results
- Identify the future needs and develop a plan of action.

Following the definitions developed by the above methodology and applied in the series of national and regional syntheses and global assessments referred to earlier ^{20,21}, the following vulnerability indicators have been developed for evaluating VA studies ²⁸:

- People in the hazard zone (PHZ) (Units: thousands);
- People at risk (PaR) (Units: thousands);
- People to respond to flooding (PtRF) (Units: thousands);
- People to respond to erosion (PtRE) (Units: thousands);
- Land at risk and loss (LaR, LaL) (Units: km²);
- Wetlands at loss (WaL) (Units: km²);
- Capital at risk and loss (CaR, CaL) (Units: millions of US dollars); and
- Adaptation costs (capital and maintenance) (Units: millions of US dollars).

These vulnerability indicators are defined as follows:

PHZ the number of people living in the area that, in the absence of any existing sea defense, will be subject to inundation or flooding at least once per 100 years, i.e. the population that is potentially exposed to flooding.

PaR the number of people living in the hazard zone, multiplied by the probability of flooding (this has also been termed 'average annual people flooded'). This gives an estimate of the number of people who might actually be affected by flooding in an average year under the scenarios considered. Note $PaR \leq PHZ$.

PtRF the number of people living in the hazard zone where the probability of annual flooding is 100% (this has also been termed 'people to be moved'). This gives an estimate of the number of people who might be affected by flooding so often under the scenarios considered that some response (retreat, accommodate or protect) is necessary. Note $PtRF \leq PaR$.

PtRE the number of people displaced due to erosion induced by sea-level rise.

LaR the area of land at risk of flooding calculated as the probability of annual flooding times the land area. (relates to PaR above)

LaL the area of land where the probability of annual flooding is 100% (relates to PtR above) and also the land lost due to erosion.

WaL the coastal wetlands that will be lost due to the sea-level rise scenario. It should be noted that most assessments ignore any wetland response to sea-level rise and hence will overestimate actual losses

CaR the capital value of the dry land and infrastructure at risk of flooding, multiplied by the probability of flooding, as described in LaR.

CaL the capital value of the dry land and infrastructure where the probability of annual flooding is 100%, and the land lost due to erosion.

It is now possible to quantify vulnerability by assigning vulnerability class to each of the impact categories, as described in Table 1 ²⁹.

Table 1. Classification of vulnerable classes

IMPACT CATEGORIES	VULNERABILITY CLASSES			
	LOW	MEDIUM	HIGH	CRITICAL
People Affected (#people / total population) * 100%	<1%	1-10%	10-50%	>50%
People at Risk (#people * flood probability) / 1000	<10	10-100	100-500	>500
Capital Value at Loss (total loss / 1990 GNP) * 100%	<1%	1-3%	3-10%	>10%
Dry Land at Loss (area / total area) * 100%	<3%	3-10%	10-30%	>30%
Protection Costs (annual cost / 1990 GNP) * 100%	<0.05%	0.05-0.25%	0.25-1%	>1%
Wetland at Loss (area / total area) * 100%	<3%	3-10%	10-30%	>30%

Adaptation Measures and Indicators

Among the adaptation measures generally recommended for coastal zone in respect of rise in temperature and sea level rise are retreat, accommodate and protect ²⁹. However, before deciding on the most cost-effective measures that need to be adopted, it is essential to undertake a detailed vulnerability assessment programme as outlined above.

In undertaking such a programme, it is essential to consider socio-economic and human dimension aspects. The local knowledge and the prevailing land ownership and tenure systems need to be recognized. The desire of the people dependent on the sea and the coastal zone to live close to the sea cannot be ignored, in formulating resettlement schemes. This also applies to the recreation industry who need to locate their premises as close to the beaches as possible for the convenience of their clients. On the other hand, development of infrastructure facilities such as roadways, urban water intake schemes and power plants could include in their designs the need for retreat.

While the impact of the accelerated sea level rise may not be as destructive as that of the tsunami already experienced by people in Sri Lanka, unlike the tsunami which came most unexpectedly lasting only momentarily, the impact of sea level rise will be slow but permanent. Though it is in the long term, it is necessary to accommodate a possible rise when designing new development work within the coastal zone. For this purpose the first task would be to identify the land area that is likely to get inundated under different scenarios. Low cost and fast track techniques are available for contour mapping along the shoreline using aerial video-graphing by low flying air crafts and also using remote sensing techniques ³⁰.

In describing adaptation, the following potential costs of adaptation need to be included:

- Capital cost of adaptation
- Annual maintenance cost of adaptation
- Adaptation cost method and comments

The SURVAS study team has suggested the adaptation options as given in Table 2 ¹⁹, which need to be used along with the indicators given in Table 3, which are based on IPCC Coastal Zone Management Subgroup recommendations ³¹.

Table 2. The adaptation options considered within SURVAS.

Adaptation Options	Definition
Do nothing	No adaptation -- impacts are maximised, and adaptation costs are zero.
Adaptation for densely-populated areas	Adaptation in urban areas and densely-populated rural areas. [i.e. urban areas are protected (or have some other form of adaptation), while rural and undeveloped areas are allowed to evolve to naturally]]
Adaptation in all populated areas.	Adaptation in all areas with a population exceeding 10 persons/km ² – impacts are minimised, but adaptation costs are maximised.
User-defined adaptation option 1 to n	User to provide.

Table 3. Adaptation Indicators

Adaptation Option	Adaptation Action	Adaptation Indicator
Protection	<ul style="list-style-type: none"> • Hard defence structures • Flood control works • Beach nourishment • Land reclamation 	<ul style="list-style-type: none"> • Extent in km • Annual floods prevented • Extent in km • Extent in sq. km.
Accommodation	<ul style="list-style-type: none"> • Changes in land use • Tighter building regulations • Encourage reproduction of natural coastal buffers 	<ul style="list-style-type: none"> • Extent in sq. km • Number enforced • Extent in km
Planned Retreat	<ul style="list-style-type: none"> • Planned Retreat (Abandonment & Relocation) • Building setbacks 	<ul style="list-style-type: none"> • Number retreated • Number affected
Do nothing (Unplanned Retreat?)	<ul style="list-style-type: none"> • Share Losses • Bear Losses 	<ul style="list-style-type: none"> • Amount lost • People affected

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Annex 4: Incremental Cost Analysis

1. Conservation of coastal biodiversity, ecosystems, action to combat land degradation and climate change adaptation and mitigation, including within the context of post-tsunami rehabilitation, is highlighted in the various national policy documents of both development and environment sectors. The project is thus consistent with, and based on, stated national priorities, plans and programmes in Sri Lanka.

1 National development goals

2. Sri Lanka lays particular emphasis on aligning national development plans more closely with the Millennium Development Goals. The National Council for Economic Development has established a separate MDG cluster to ensure that the MDGs are mainstreamed in the national development framework. In the pursuit of sustained and equitable development, and a focus on providing continued support to the agricultural sector which forms the basis of the livelihoods of a predominantly rural population, development policies and plans state an intention to improve basic infrastructure, to invest in human and social capital and to attempt to diversify their economic production base. Particular emphasis is given to investment in agro-enterprises, and to developing industrial, manufacturing and service sectors as a source of future economic growth. Continuing market and price liberalisation, opening up of trade and investment opportunities, and a reduction in public spending and devolution of the role of the public sector at the same time as the promotion of private sector participation, and are also stressed as macroeconomic management strategies.

3. The Government of Sri Lanka has identified the tsunami recovery and reconstruction strategy as an urgent national development priority. A *Post-Tsunami Recovery and Reconstruction Strategy* was prepared and adopted in 2005 to deal with reconstruction of and the restoration of those areas affected by the tsunami. This has a description of the damages and guidelines for recovery plans. The recovery and reconstruction efforts have been dealt under nine different sector strategies. These include water supply and sanitation, tourism, health, livelihood, fisheries and environment. The report *Post Tsunami Recovery and Reconstruction* aims at providing an objective joint assessment of post tsunami relief recovery and reconstruction intervention and way forward. Regarding environmental concerns the document notes that where sand dunes, mangroves and coral were maintained, the impact was limited and underlines that coastal protection should be treated as a medium to long term issue.

2 National conservation goals

4. The importance of ensuring that the environment is managed sustainably is articulated in the document *Caring for the Environment 2003-2007*, which lays out the Government's current strategy and targets for environmental conservation. These goals are strongly reinforced by the provisions of the *1995 Forestry Policy*, and the *National Wildlife Policy* of 2000. Sri Lanka's commitment to biodiversity conservation is underlined by the country's Protected Area (PA) network. There are more than 100 Protected Areas in Sri Lanka, covering just under 10,000 km² or some 14% of the country's total land area.

5. Sri Lanka is also in the process of adopting integrated approaches to the management of coastal resources, which lay a strong emphasis on conservation and sustainable management. Since the early 1980s there has been a government commitment demonstrated towards improving the management of coastal and marine resources. Initially this targeted coastal erosion management, but over the course of time shifted gradually towards a more comprehensive approach, including issues such as regulatory frameworks and permits; habitat management and EIA and Special Area Management. All National Coastal Zone Management Policies are provided through the national *Coastal Zone Management Plan* prepared under the provisions of the *Coast Conservation Act No. 57 of 1981*

6. The CZMP deals with the coastal problems, erosion, loss and degradation of natural coastal habitats and loss and degradation of archaeological, historical and cultural monuments and sites and recreational and scenic areas. The CZMP presents a framework for the Coast Conservation Department's programme of work for management of the coastal zone during the next five years, which lays a strong emphasis on environmental aspects. It also mentions a range of actions after analysis the gaps in interventions adopted in the past as well as current management requirements in order to address future requirements for coastal habitat conservation.

7. Conservation of coastal and marine habitats and their biodiversity are addressed in the *National Biodiversity Action Plan*. Provision in the *Coast Conservation Act* and its *Amendment No: 64 of 1988* also promote conservation of coastal habitats through regulatory actions. The Cabinet has approved and given directives to all government departments to ban the use of coral based-lime in government construction projects. The *Fisheries and Aquatic Resources Act (1996)* also addresses the management, regulation, conservation and development of fisheries and aquatic resources in Sri Lanka. Sri

Lanka's First Communication to the UNFCCC Secretariat, made in 2000, outlines national policies and measures towards implementation of the provisions in the UNFCCC in Sri Lanka. These focus on reduction of emissions and mechanisms to mitigate impacts, particularly those falling under the category of "no regret" options. The Ministry of Environment has also formulated a Policy on the Clean Development Mechanism, enabling rapid processing of proposals for projects to be undertaken under CDM. Some of the key policy elements pertaining to projects are that a proposed project will: contribute to national sustainable development; lead to improvement of the environment and welfare of the society; contribute to poverty alleviation; meet local needs and priorities and satisfy a detailed assessment of their economic, social and environmental benefits; lead to transfer of new, proven, affordable environmental-friendly technologies; and recognize the rights of the people in relation to all emissions.

3 International agreements and conventions

8. Sri Lanka participates in regional cooperative efforts to conserve biodiversity in South Asia. The subject of the environment has received special attention from the inception of the South Asian Association for Regional Cooperation (SAARC), of which Sri Lanka is a member, and several initiatives have been taken to strengthen cooperation among Member Countries in the protection of environment. Key actions include the establishment of an expert group on the environment during the Third SAARC Summit (Kathmandu, 1987), the publication of a study on the state of the environment in 1991 and the endorsement of its recommendations by the Heads of State at the Sixth SAARC Summit (Colombo, 1991). Five Ministerial Conferences on Environment have taken place since the First SAARC Environment Ministers' Conference was held in New Delhi (1992). The Third Meeting of Environment Ministers (Male, 1997) adopted the *SAARC Plan of Action on Environment*.

9. Sri Lanka has ratified the Convention on Biological Diversity (March 1994), the United Nations Convention to Combat Desertification (March 1999), and the United Nations Framework Convention on Climate Change (November 1993), and acceded to the Kyoto Protocol in 2002 as a non-Annex I party. Sri Lanka is also a member of a number of other international conventions relating to biodiversity conservation and climate change, which lend support to the project. These include Ramsar Convention (15/10/90), World Cultural and Natural Heritage Convention (6/6/80), Convention on International Trade in Endangered Species of Wild Flora and Fauna (4/5/79), and Convention on Migratory Species of Wild Animals (1/9/90). Sri Lanka has also signed the South Asian Seas Action Plan of 1995, adopted 1998.

4 Baseline

10. Within the context of the national policy goals and development plans specified above, the Government of Sri Lanka has earmarked significant baseline funding for coastal conservation and post-tsunami reconstruction in Eastern Province over the coming years. Yet, despite a recognised need and stated intention to do so, there has to date been only minor progress in ensuring that ecosystems are successfully rehabilitated as part of the post-tsunami reconstruction process, reversing ongoing trends of ecosystem degradation in coastal areas, or ensuring that the necessary steps are taken to ensure that coastal ecosystems are managed sustainably in the future. Under the baseline it is likely that there will be continuing, and intensifying, threats to coastal ecosystems, which will impact negatively both on the post-tsunami reconstruction process and on future coastal zone development and sustainable livelihoods. Continuing pressures on coastal ecosystems will also lead to the loss of biodiversity of global significance. In particular the following threats and impacts of the baseline course of action should be noted:

- Decline in species' populations, habitat degradation and fragmentation of coastal ecosystems along the East Coast of Sri Lanka;
- Destabilisation of key ecosystem functions in coastal lagoons and estuaries;
- Increase in area affected by invasive alien species;
- Increased human pressure on natural resources of globally important coastal ecosystems;
- Coastal ecosystem degradation and species loss due to human mismanagement.
- Increased erosion and potential for increased flooding and storm damage caused by global warming and sea level rise.

Decline in species' populations, habitat degradation and fragmentation of coastal ecosystems along the East Coast of Sri Lanka

11. This has been caused by physical destruction as a direct result of the tsunami itself, and has arisen as a result of post-tsunami reconstruction efforts. In particular, conservation and ecosystem rehabilitation concerns have been largely omitted from the tsunami response, which have also bypassed existing environmental legislation. At the same time, livelihood restoration activities have in some cases focused on activities or technologies which are damaging to the environment (such as the over-provision of inshore boats and fishing gear, or the use of environmentally unsound practices in infrastructure and housing construction).

12. Continuing barriers to overcoming these threats and root causes include a lack of experience in Sri Lanka in dealing with natural disasters of such a magnitude as the recent tsunami, in particular insufficient know-how on rehabilitating ecosystems.

13. To date, humanitarian considerations have been given priority over all other aspects of post-tsunami reconstruction, including environmental issues. Insufficient consideration has been given to long-term needs for sustainable resource management, and there is little coordination in environmental matters among the many agencies involved in post-tsunami reconstruction. The longer-term repercussions of bypassing environmental legislation, even before the tsunami, are still being felt. Certain actions have already been undertaken, with negative environmental impacts, and cannot be reversed, including actions before the tsunami as well as those carried out in support of post-tsunami reconstruction (for example distribution of fishing boats and gear, inappropriate siting of settlements). To date, there has been no technological support for habitat rehabilitation in post-tsunami reconstruction.

14. *Under the baseline, recovery of globally important ecosystems would be slow, and in some cases important habitats would not be restored. Continuing, and intensifying, human pressures (especially those arising in the context of the post-tsunami reconstruction process) would hasten ecosystem degradation and intensifying pressures on already stressed and damaged ecosystems. Existing policy and institutional frameworks would remain unable to deal with ecosystem conservation in a coordinated manner, and unsustainable development patterns would persist.*

Destabilisation of key ecosystem functions in coastal lagoons and estuaries

15. This has been arisen as a result of the large amount of waste and debris which were generated by the tsunami, and which remain trapped in coastal lagoons. These effects have been exacerbated because coastal lagoons which were previously open to the sea only seasonally are now permanently connected, as sand barriers were breached by the waves associated with the tsunami.

16. Continuing barriers to overcoming these threats and root causes include inadequate technical knowledge and Institutional mechanisms to remedy ecosystem damage.

17. *Under the baseline, this situation would worsen, as the amount and type of debris obstructing lagoons and estuary mouths is too great for natural flushing processes to clear. This would be reflected in worsening fisheries, as well as a change in the biophysical conditions of lagoon waters.*

Increase in area affected by invasive alien species

18. This has been caused by prime conditions for growth having been created in areas which have been cleared of vegetation by the tsunami.

19. Continuing barriers to overcoming these threats and root causes include low awareness of the threat posed by invasive alien species, and insufficient institutional capacity to address the problem of controlling them.

20. *Under the baseline, invasive alien species will spread further into coastal sites where they did not previously exist, affecting both livelihoods and biodiversity status.*

Increased human pressure on natural resources of globally important coastal ecosystems

21. This has been caused by the pollution of agricultural lands and groundwater as a result of saline intrusion.

22. Continuing barriers to overcoming these threats and root causes include the slow progress of existing projects to remediate the problem of salinised soils, and the fact that recovery depends on the intensity of the monsoonal rains over the coming years.

23. *Under the baseline, salinisation of land and water would persist, affecting farm incomes and food production, and leading to increased pressures on natural resources as farmers search for alternative means to supplement their livelihoods.*

Coastal ecosystem degradation and species loss due to human mismanagement

24. This has occurred as a result of issues and conditions which were in existence even before the tsunami event. Locally open access to coastal natural resources, the fact that key habitats (such as mangroves and coral reefs) fall outside the jurisdiction of any single government agency, combined with a low awareness and understanding among planners and resource users of the importance of ecosystem values and functions, have all contributed to coastal ecosystem degradation and species loss.

25. Continuing barriers to overcoming these threats and root causes include a historical over-dependence on command and control measures for natural resource management, which largely exclude local communities. The politicisation of community-based organisations, where they exist, has also hindered collaboration in sustainable resource management. High investment costs deter the development of alternative livelihood sources (specifically the development of offshore fisheries). The links between ecosystems and economic production is poorly understood, and there is weak integration of conservation and development planning and policy. Overlapping, or even contradictory, management and legal jurisdiction leads to confusion and conflict in ecosystem management, and there has been little effort to improve awareness of the need for coordinated and sustainable resource management between different agencies and stakeholder groups.

26. *Under the baseline, legislation and regulations would remain partial and incomplete, and institutional capacity to enforce them would continue to be weak. Resource users, particularly local communities, will remain dependent on a fragile and limited natural resource base, and will continue to be unaware of the need for sustainable management. Few incentives or opportunities will be provided to engage in sustainable livelihood activities. Community-based organisations will remain un-empowered and with weak capacity to mobilise or organise themselves. At the same time mangroves and coral reefs, especially, will face growing threats and destruction, with few legal or management structures in place to protect them. Ecosystem and biodiversity concerns will continue to be weakly represented, if at all, in provincial and national development planning systems.*

Increased Erosion And Potential For Increased Flooding And Storm Damage Caused By Global Warming And Sea Level Rise

27. This has been caused by increased levels of greenhouse gases in the atmosphere. Continuing barriers to overcoming these threats include the absence of technical know-how to develop the natural barriers over large areas in order to provide protection against storms and reduce erosion.

28. *Under the baseline, the natural ecosystems which provide erosion control and storm protection functions, already weakened by the impacts of the tsunami and by past degradation, would continue to be degraded.*

5 Global Environmental Objective

29. If existing baseline activities are not modified or supplemented as specified in the proposed project, it is clear that biodiversity of global significance will continue to be degraded, local livelihoods and development opportunities will be eroded, and there will be a real risk that post-tsunami reconstruction efforts will fail to reach their long-term goals and targets.

30. In line with the focus of GEF's Operational Programmes on Sustainable Land Management and of the focal area on Climate Change, this project is based on strengthening biodiversity conservation and sustainable livelihoods in coastal areas through integrating ecosystem concerns into the post-tsunami reconstruction process.

31. The **global environmental objective of the project** is that Tsunami affected habitats in Sri Lanka are rehabilitated including adaptation against extreme climatic events to provide full ecosystem services, including adaptation against extreme climatic events.

32. The **GEF project objective** is the rehabilitation and conservation management of globally important ecosystems affected by the tsunami is demonstrated for, and mainstreamed effectively into, the reconstruction process to support sustainable livelihoods and reduce vulnerability to climate change along the east coast of Sri Lanka.

33. These objectives, and the activities and outcomes they involve, complement existing national and regional activities by strengthening ongoing efforts to achieve integrated coastal zone management and post-tsunami reconstruction. They aim to address the threats to globally significant biodiversity arising from an unmodified baseline course of action.

34. Global benefits resulting from the proposed project's implementation include the maintenance of protected area biodiversity of global significance, including the share of functional benefits that accrue to global communities. By conserving natural species and areas, the project will preserve the flow of global benefits accruing from their consumptive and non-consumptive utilisation, such as those generated through international trade and tourism. It will also maintain ecosystem integrity, yielding global services such as the regulation of climate. By averting the risk of extinction of globally threatened, endangered and endemic species and habitats, and maintaining a diverse pool of genes and resources, the project will make a significant contribution to the global option values associated with the possible future use and development of protected area biodiversity. It will also maintain a stream of global non-use benefits, including aesthetic, heritage and bequest values, for current and future generations.

6 GEF Alternative

35. In the light of this global environmental objective and baseline, three possible courses of action have been identified:

36. The first option is to continue, without taking any additional action, existing baseline activities. Although implying no additional financial cost, this option is not considered sufficient to address current threats to globally important biodiversity that have arisen as a result of the tsunami and associated reconstruction processes, or are likely to occur in the context of future human pressures and unsustainable development patterns.

37. A second option is to enforce strict preservation and policing regimes on coastal ecosystems so as to disallow any human use of, or threats to, biodiversity. Although, if successful, this alternative strategy could secure significant global biodiversity benefits, it is not considered a desirable course of action. As well as being costly and difficult to implement, it is unlikely to be sustainable after the project period given existing financial, human resource and institutional capacity, or in socio-economic terms. It also has the potential to conflict with national economic development and social equity goals, particularly those relating to poverty reduction, and is therefore unacceptable. The high opportunity costs associated with the strict protection of biodiversity, including high budgetary costs, losses to local livelihoods and to national economic development, are untenable in practice.

38. The third strategy, as outlined in the proposed project, is to complement baseline activities by building capacity and awareness of ecosystem concerns, and integrating them into the post-tsunami reconstruction process, in a way which is supportive both of conservation goals and of socio-economic development needs. This alternative is considered to be the most desirable and effective option, in social, economic, financial, development and conservation terms. As well as securing global environmental benefits it can simultaneously meet baseline development goals in Sri Lanka.

39. Due to limited existing financial and human resources and capacity, and because the maintenance of global benefits is not a priority goal at the national level, it is unlikely that this course of action would be followed without GEF funding through the proposed project. It is however important to emphasise that the project will complement, or add to, existing attempts to achieve sustainable and equitable post-tsunami reconstruction in Sri Lanka. It does not aim to replace baseline activities or to diminish any existing economic benefits, but rather to strengthen coastal zone management and ecosystem conservation, in order to secure global biodiversity benefits.

40. The proposed project is cost-effective in terms of the expenditures required to achieve its anticipated results, in comparison to the high direct and opportunity costs of strict biodiversity preservation, and relative to the high global economic costs arising from biodiversity degradation and loss implied in the baseline. It has been designed in such a way as to strengthen existing capacity and activities and thus to be sustainable within the context of present and planned financial and institutional arrangements in Sri Lanka.

41. Specifically, the proposed project will build on baseline activities so as to generate the following outcomes:

- Outcome 1:** Best practice for effective rehabilitation of key coastal habitats developed and demonstrated.
- Outcome 2:** Effective habitat rehabilitation and conservation management are mainstreamed into post-tsunami reconstruction planning and implementation by relevant authorities and donors.
- Outcome 3:** Coastal communities empowered to manage local natural resources to enhance sustainable livelihoods.
- Outcome 4:** Learning, evaluation and adaptive management increased.

7 Scope of Analysis

42. The scope of analysis and system boundaries are defined by the project's overall objective: Tsunami affected habitats in Sri Lanka are rehabilitated to provide full ecosystem services. The system boundary is taken to include:

- **Geography and ecology.** The project focuses on coastal ecosystems, and site level activities will be carried in mangrove and coastal lagoon ecosystems in Vakara, sandy beach ecosystems in Pottuvil, and coral reef ecosystems in Pigeon Island.
- **Political and administrative boundaries.** The project focuses on the North-Eastern Province of Sri Lanka.
- **Socio-economy.** The project's main beneficiaries and stakeholder groups will be the primary users and managers of coastal biodiversity and ecosystem services and those engaged in the post-tsunami reconstruction process, including government conservation and development agencies at both central and local levels, national and international NGOs, CBOs and community members, and the private sector. Particular attention will be given to targeting the more vulnerable and marginal sections of the rural population who depend on coastal resources, such as women, the landless, indigenous communities and the poor.
- **Institutions.** The project will work through the government agencies responsible for coastal zone management and post-tsunami reconstruction. The Coast Conservation Department will be the primary partner in implementation, and strong involvement will also be sought from RADA, NEPC, MOENR, DWC, CEA, and NARA at central and provincial levels.

8 Costs

43. The cost of baseline activities is approximately \$30,393,769 million for the full project period, 2007-2011. This comprises activities that are already underway or planned in Sri Lanka, are designed to conserve coastal ecosystems and undertake post-tsunami reconstruction in the project area so as to secure national sustainable development benefits, and would have been carried out even in the absence of the proposed project. It includes government, donor and NGO-funded activities.

44. In order to achieve global environmental benefits, additional interventions are needed. This project proposes an alternative strategic intervention. The incremental cost of the new activities required by this alternative strategy is \$14,569,005 million (excluding project development costs). Of this amount, GEF is requested to contribute funding of \$6,999,555 million (48.04%) and co-financing of \$7,569,450 million (51.96 %) will be obtained from other sources, including national governments in participating countries. In addition to the costs associated with carrying out these activities, GEF has already provided a PDF Block B grant of \$350,000 for the preparation of this project, and administrative and support costs are estimated at \$1,324,455 (approximately 18.92% of total GEF financing).

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
Global environmental objective: Tsunami-affected ecosystems in Sri Lanka are rehabilitated and managed sustainably to provide full ecosystem services including adaptation against extreme climatic events				
GEF project objective: Restoration and sustainable management of globally important ecosystems affected by the tsunami is demonstrated for, and mainstreamed effectively into, the reconstruction process to support sustainable livelihoods and reduce vulnerability to climate change along the east coast of Sri Lanka				
Global benefits	Environmental concerns and coordination remain weakly integrated into post-tsunami reconstruction activities, leading to the loss of coastal biodiversity of global importance	Coastal zone management and ecosystem conservation are strengthened as part of post-tsunami reconstruction activities, in order to secure global biodiversity benefits.	Maintenance of global biodiversity values, including the share of functional benefits that accrue to the global community. Reduced threats to coastal biodiversity and protection of ecosystem services. Lessons learned of wider international relevance are identified and disseminated.	
Domestic benefits	Coastal biodiversity and ecosystem services of national and local importance continue to be degraded and lost, undermining sustainable development and livelihoods in tsunami-affected areas	Coastal biodiversity and ecosystems are more equitably and sustainably managed, yielding benefits to tsunami-affected communities and to the country as a whole.	Loss of coastal biodiversity reduced, maintenance or improvement in on and off-site biodiversity and ecosystem values. Improved and more sustainable livelihoods and long-term reconstruction in tsunami-affected areas.	
Outcome 1 : Best practices for effective restoration of key coastal ecosystems developed and demonstrated				
Output 1.1 : Best practices developed and demonstrated for community-led restoration of globally important ecosystems				
Activity 1.1.1: Establish baseline inventories of flora and fauna in the key ecosystems and compare to pre-tsunami status	Continuing weak knowledge of biodiversity in project area, and of the impacts of the tsunami on it	Floral and faunal diversity in the project area identified and documented, and changes arising as a result of the tsunami identified	Increment	\$179,300
			<i>Of which:</i>	
			GEF	\$177,050
			IUCN	\$0
			Governments	\$2,250
			IFAD	\$0
	\$0	\$179,300		
Activity 1.1.2: Establish socio-economic baseline data for communities involved with restoration demonstration sites	Continuing weak knowledge of human communities affected by the tsunami	Socio-economic characteristics and profile in the project area identified and documented	Increment	\$183,050
			<i>Of which:</i>	
			GEF	\$101,000
			IUCN	\$0
			Governments	\$2,250
			IFAD	\$79,800
	\$0	\$183,050		
Activity 1.1.3: Undertake vulnerability mapping of East Coast to prioritise areas for adaptation	Continuing weak knowledge of human vulnerability to climate change	Vulnerability to climate change in the project area identified, documented and used to prioritise areas for adaptation	Increment	\$415,000
			<i>Of which:</i>	
			GEF	\$415,000
			IUCN	\$0
			Governments	\$0
			IFAD	\$0
	\$0	\$415,000		
Activity 1.1.4: Pilot test methods identified in the PDF-B study using participatory planning and community-led	None	Methods to promote participatory planning and community-led implementation in habitat restoration are used	Increment	\$395,300

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
implementation to ascertain most effective means of restoration of key ecosystems		and sustained		
			<i>Of which:</i>	
			GEF	\$190,800
			IUCN	\$0
			Governments	\$4,500
	\$0	\$395,300	IFAD	\$200,000
Activity 1.1.5: Undertake community-led restoration of mangroves and coastal lagoon at Vakara	Mangroves in Vakara remain degraded, and communities are uninvolved in their management	Mangroves in Vakara restored and managed sustainably, with the involvement of local communities	Increment	\$386,450
			<i>Of which:</i>	
			GEF	\$134,200
			IUCN	\$0
			Governments	\$2,250
	\$0	\$386,450	IFAD	\$250,000
Activity 1.1.6: Undertake community-led restoration of sand dunes at Panama /Pottuvil	Sand dunes in Panama remain degraded, and communities are uninvolved in their management	Sand dunes in Panama restored and managed sustainably, with the involvement of local communities	Increment	\$386,300
			<i>Of which:</i>	
			GEF	\$184,050
			IUCN	\$0
			Governments	\$2,250
	\$9,750	\$396,050	IFAD	\$200,000
Output 1.2 : Best practices and policy guidelines published on practical restoration and conservation management of globally important ecosystems				
Activity 1.2.1: Prepare and disseminate best practice guidelines in three languages on the restoration of mangrove, lagoons, and sand dunes	Weak information and low awareness of methods by which to restore degraded habitats	Practical and policy relevant information available and used on methods for habitat restoration	Increment	\$38,150
			<i>Of which:</i>	
			GEF	\$38,150
			IUCN	\$0
			Governments	\$0
	\$327,263	\$365,413	IFAD	\$0
Activity 1.2.2: Prepare and disseminate management guidelines on community natural resource management systems, buffer zone greening, solid waste management, sustainable tourism, land use planning, and harvesting of ornamental fish	Weak information and low awareness on natural resource management, buffer zone greening, solid waste management, sustainable tourism, land use planning and harvesting of ornamental fish	Practical and policy relevant information available and used on natural resource management, buffer zone greening, solid waste management, sustainable tourism, land use planning and harvesting of ornamental fish	Increment	\$249,400
			<i>Of which:</i>	
			GEF	\$249,400
			IUCN	\$0
			Governments	\$0
	\$412,369	\$661,769	IFAD	\$0
Activity 1.2.3: Prepare and disseminate policy guidelines for the efficient restoration of	Weak information and low awareness on ecosystem rehabilitation and community	Practical and policy relevant information available and used on ecosystem rehabilitation	Increment	\$23,600

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
key ecosystems and on the effective involvement of communities in the process to ensure that lessons learned are incorporated in to post-tsunami reconstruction projects	involvement	and community involvement		
			Of which:	
			GEF	\$23,600
			IUCN	\$0
			Governments	\$0
	\$278,438	\$302,038	IFAD	\$0
Output 1.3: Central information base established at CCD as repository for all work on ecosystem restoration and coastal adaptation to climate change				
Activity 1.3.1: Collate and document in appropriate formats, all data on ecosystem restoration arising from baseline studies, pilot study trials, scaling-up processes, monitoring and evaluation measurements	None	Strengthened information base on ecosystem restoration and rehabilitation available and used for post-tsunami reconstruction and coastal zone planning	Increment	\$84,000
			Of which:	
			GEF	\$25,000
			IUCN	\$5,000
			Governments	\$54,000
	\$0	\$84,000	IFAD	\$0
Activity 1.3.2: In collaboration with MOE and the UNFCCC focal point, collate and document all information relating to coastal adaptive measures and vulnerability to climate change	None	Strengthened information base on coastal adaptation and climate change vulnerability available and used for post-tsunami reconstruction and coastal zone planning	Increment	\$482,200
			Of which:	
			GEF	\$337,400
			IUCN	\$5,000
			Governments	\$39,800
	\$0	\$482,200	IFAD	\$100,000
Activity 1.3.3: Through newly formed Ecosystem restoration and Adaptation Unit within the CCD, maintain information base and make available to the Disaster Management Centre, other Ministries and agencies, and civil society, and link it with other relevant data bases, e.g. at NARA	None	Strengthened information base on ecosystem restoration and rehabilitation available and used for post-tsunami reconstruction and coastal zone planning	Increment	\$32,050
			Of which:	
			GEF	\$27,550
			IUCN	\$4,500
			Governments	\$0
	\$0	\$32,050	IFAD	\$0
Sub-Total Outcome 1	\$1,027,819	\$3,882,619		\$2,854,800
Outcome 2 : Effective ecosystem restoration and conservation management are mainstreamed into post-tsunami reconstruction planning and implementation by relevant authorities and donors				
Output 2.1 : Policy Framework Reviewed and restructured to support the restoration and sustainable use of coastal natural				

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
resources				
Activity 2.1.1: Undertake review of relevant policy, legislation, and investment guidelines to identify gaps, requirements, and perverse incentives	Weak information and low awareness of policy, legislative and investment aspects of sustainable coastal resource use, and continuing perverse incentives	Gaps in existing policy, legislative and investment instruments identified and overcome, and positive incentives for conservation in place	Increment	\$12,500
			<i>Of which:</i>	
			GEF	\$0
			IUCN	\$0
			Governments	\$1,000
	\$1,204,712	\$1,217,212	IFAD	\$11,500
Activity 2.1.2: Develop a pro-poor enabling policy environment for natural resource planning, sustainable land management, and adaptation to climate change within which local interventions are recognized and rewarded	Policy environment continues to lack consideration of the poor, and constraints against natural resource planning and sustainable land management persist	Policy environment supportive of pro-poor and participatory natural resource planning and sustainable land management	Increment	\$128,550
			<i>Of which:</i>	
			GEF	\$125,000
			IUCN	\$0
			Governments	\$1,000
	\$660,568	\$789,118	IFAD	\$2,550
Output 2.2 : Central national planning system introduces requirement to incorporate restoration of coastal ecosystems into all tsunami-reconstruction projects				
Activity 2.2.1: Facilitate a process to establish national policy that requires ecosystem restoration to be incorporated into all post-tsunami reconstruction projects	National policy framework for post-tsunami reconstruction continues to omit consideration of environmental concerns	Environmental concerns incorporated into policies guiding post-tsunami reconstruction	Increment	\$4,400
			<i>Of which:</i>	
			GEF	\$0
			IUCN	\$0
			Governments	\$1,000
	\$3,245,125	\$3,249,525	IFAD	\$3,400
Activity 2.2.2: Provide assistance to RADA to strengthen environmental coordination between RADA, the CCD/MOE/CEA, other Ministries, and other agencies through regular meetings to support ecosystem restoration	Environmental coordination remains weak between RADA, CCD, MOENR and other agencies	Enhanced environmental coordination between RADA, CCD, MOENR and other agencies	Increment	\$21,000
			<i>Of which:</i>	
			GEF	\$0
			IUCN	\$0
			Governments	\$12,000
	\$1,079,388	\$1,100,388	IFAD	\$9,000
Activity 2.2.3: Hold half-yearly briefings on key environmental issues and techniques for policy-makers, planners and managers of the different sectors and agencies involved in post-tsunami reconstruction, at national and local levels	Planners and managers of agencies involved in post-tsunami reconstruction remain unaware of environmental issues and techniques	Planners and managers of agencies involved in post-tsunami reconstruction gain awareness of environmental issues and techniques, and incorporate them into their work	Increment	\$15,500

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
			Of which:	
			GEF	\$0
			IUCN	\$0
			Governments	\$0
	\$74,156	\$89,656	IFAD	\$15,500
Output 2.3 : Restoration of coastal ecosystems incorporated into Eastern Province planning system				
Activity 2.3.1: Promote and support the inclusion of community-based ecosystem restoration in the CZM Action Plan for the Eastern Province	ICZM Action Plan for Eastern Province omits consideration of community-based ecosystem rehabilitation	ICZM in Eastern Province carried out with community-based ecosystem rehabilitation	Increment	\$141,500
			Of which:	
			GEF	\$137,000
			IUCN	\$0
			Governments	\$4,500
	\$2,876,897	\$3,018,397	IFAD	\$0
Activity 2.3.2: Mainstream climate change adaptability into the CZMAP for the Eastern Province	Climate change adaptation weakly represented into Eastern province CZMAP	Easter Province CZMAP strengthened through incorporating climate change adaptation aspects	Increment	\$441,300
			Of which:	
			GEF	\$435,300
			IUCN	\$6,000
			Governments	\$0
	\$0	\$441,300	IFAD	\$0
Activity 2.3.3: Support the NEPC to update the CZMAP for the Eastern Province to incorporate lessons learned from ecosystem restoration, community co-management, and coastal vulnerability and adaptation	Eastern Province CZMAP does not reflect community co-management approaches to coastal natural resource management and ecosystem rehabilitation	CZMAP for Eastern Province strengthened through incorporation of community co-management approaches to coastal natural resource management and ecosystem rehabilitation	Increment	\$41,500
			Of which:	
			GEF	\$37,500
			IUCN	\$0
			Governments	\$4,000
	\$663,570	\$705,070	IFAD	\$0
Activity 2.3.4: Support District Secretaries to strengthen District-level environmental coordinating mechanisms	Environmental coordination remains weak at the DS level	Enhanced environmental coordination at the DS level	Increment	\$33,100
			Of which:	
			GEF	\$24,100
			IUCN	\$5,000
			Governments	\$4,000
	\$2,285,026	\$2,318,126	IFAD	\$0
Output 2.4 : Specialist Ecosystem restoration and Adaptation Unit created within Coast Conservation Department to provide facilitation and supervision services to tsunami-reconstruction projects				
Activity 2.4.1: Establish scope of operations and undertake capacity needs assessment of Ecosystem restoration and Adaptation Unit	None	Needs and opportunities for ERAU are identified and understood	Increment	\$56,000
			Of which:	
			GEF	\$17,500
			IUCN	\$5,000

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
			Governments	\$3,000
	\$4,750	\$60,750	IFAD	\$30,500
Activity 2.4.2: Recruit staff and build institutional and technical capacity of the Unit and facilitate working with project team at demonstration sites	None	ERAU operational and working	Increment	\$370,600
			Of which:	
			GEF	\$114,400
			IUCN	\$0
			Governments	\$63,000
	\$0	\$370,600	IFAD	\$193,200
Activity 2.4.3: Build capacity of the Unit to train other implementing agencies and participating CBOs in ecosystem restoration and monitoring, and coastal vulnerability and adaptation	None	Capacity of other agencies to undertake ecosystem rehabilitation and monitoring is enhanced	Increment	\$87,500
			Of which:	
			GEF	\$20,000
			IUCN	\$5,000
			Governments	\$0
	\$2,822,773	\$2,910,273	IFAD	\$62,500
Output 2.5 : Demonstration of replication of ecosystem restoration and community based co-management of coastal ecosystems promoted by North Eastern Provincial Council				
Activity 2.5.1: Undertake ecosystems and socio-economic status surveys of tsunami-affected areas to prioritise potential sites for replication of ecosystem restoration	None	Ecosystem rehabilitation needs identified for several sites across the coastal zone	Increment	\$155,850
			Of which:	
			GEF	\$78,600
			IUCN	\$0
			Governments	\$2,250
	\$388,205	\$544,055	IFAD	\$75,000
Activity 2.5.2: Undertake consultations with local communities and other stakeholders to identify and agree participatory implementation mechanisms	Local communities remain excluded from resource management approaches	Local communities participate in, and benefit from, resource management approaches	Increment	\$454,500
			Of which:	
			GEF	\$0
			IUCN	\$0
			Governments	\$4,500
	\$37,406	\$491,906	IFAD	\$450,000
Activity 2.5.3: Initiate ecosystem restoration and monitoring using best practice guidelines, knowledge transfer from visits to demonstration sites, and training from CCD's Ecosystem restoration and Adaptation Unit	None	Ecosystem rehabilitation carried out in several sites across the coastal zone	Increment	\$471,000

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
			<i>Of which:</i>	
			GEF	\$19,500
			IUCN	\$0
			Governments	\$1,500
	\$548,839	\$1,019,839	IFAD	\$450,000
Sub-Total Outcome 2	\$15,891,416	\$18,326,216		\$2,434,800
Outcome 3 : Coastal communities empowered to manage local natural resources to enhance sustainable livelihoods				
Output 3.1 : Sympathetic enabling environment for community co-management of natural resources established				
Activity 3.1.1: Expedite the Amendment to the Coast Conservation Act to provide a legal framework for CCD to establish co-management agreements within SAM sites	CCD continues to lack a legal framework, and co-management agreements within SAM sites remain un-enshrined in law	Legal framework for CCD and for co-management agreements within SAM sites established within an amended Coast Conservation Act	Increment	\$15,100
			<i>Of which:</i>	
			GEF	\$5,000
			IUCN	\$0
			Governments	\$9,500
	\$0	\$15,100	IFAD	\$600
Activity 3.1.2: Assist the Tsunami Environment Response Platform to conduct strategic environmental assessment (SEA) of the existing and proposed reconstruction programmes	Capacity to undertake SEAs of existing and proposed post-tsunami reconstruction programmes remains weak	TERP provided with capacity to undertake SEAs of existing and proposed post-tsunami reconstruction programmes	Increment	\$22,200
			<i>Of which:</i>	
			GEF	\$5,000
			IUCN	\$5,000
			Governments	\$6,000
	\$409,307	\$431,507	IFAD	\$6,200
Activity 3.1.3: Design and implement an awareness/education campaign on restoration, sustainable use of coastal natural resources, and coastal vulnerability and adaptation, targeted at local communities	Local communities remain unaware on rehabilitation and sustainable use of coastal natural resources	Awareness of local communities on rehabilitation and sustainable use of coastal natural resources is strengthened	Increment	\$69,550
			<i>Of which:</i>	
			GEF	\$3,000
			IUCN	\$2,000
			Governments	\$12,000
	\$3,251,029	\$3,320,579	IFAD	\$52,550
Activity 3.1.4: Build capacity of CCD to introduce participatory natural resource management approaches among the relevant local communities and other stakeholders	Capacity of CCD to introduce participatory natural resource management approaches remains weak	CCD provided with capacity to introduce and use participatory natural resource management approaches	Increment	\$63,700
			<i>Of which:</i>	
			GEF	\$42,500
			IUCN	\$5,000
			Governments	\$1,000
	\$2,087,505	\$2,151,205	IFAD	\$15,200
Activity 3.1.5: Develop and	Continuing weak knowledge	Ecosystem functions and their	Increment	\$32,600

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
disseminate an information base on ecosystem functions and economic values	of ecosystem functions and their economic values	economic values identified and documented		
		<i>Of which:</i>		
		GEF		\$20,750
		IUCN		\$7,000
		Governments		\$0
	\$0	\$32,600	IFAD	\$4,850
Activity 3.1.6: Identify potential market-based incentive mechanisms for ecosystem management, and produce clear and practical "How to adopt these" guides for local stakeholders	Market-based incentives for ecosystem management remain lacking	Market-based incentives in place which encourage sustainable ecosystem management	Increment	\$52,050
		<i>Of which:</i>		
		GEF		\$0
		IUCN		\$0
		Governments		\$0
	\$0	\$52,050	IFAD	\$52,050
Output 3.2 : Co-management of mangroves and coastal lagoon promoted at Vakarai to improve local livelihoods and foster sustainable land management				
Activity 3.2.1: Identify the boundaries of the co-management area in consultation with local communities including displaced farmers and other key stakeholders	Co-management area remains undefined	Co-management area clearly defined, and endorsed at the community level	Increment	\$4,950
		<i>Of which:</i>		
		GEF		\$0
		IUCN		\$0
		Governments		\$750
	\$586,086	\$591,036	IFAD	\$4,200
Activity 3.2.2: Develop community co-management plan and institutional mechanism for conservation management of mangroves and coastal lagoon in Vakarai in conjunction with demonstration of ecosystem restoration and control of invasive alien species	Institutional and participatory management mechanisms for the management of mangroves and coastal lagoons at Vakarai remain lacking	Resource management planning and implementation carried out in participatory manner for mangroves and coastal lagoons at Vakarai	Increment	\$453,950
		<i>Of which:</i>		
		GEF		\$0
		IUCN		\$0
		Governments		\$750
	\$26,250	\$480,200	IFAD	\$453,200
Activity 3.2.3: Incorporate replanting of species such as Palmyra palms and Pandanus, and other species as appropriate into co-management plan to provide resources to communities and promote sustainable land management	Communities lack tree-based resources and sustainable development options	Sustainably managed tree resources provide opportunities to strengthen sustainable livelihoods among local communities	Increment	\$1,373,900
		<i>Of which:</i>		

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
			GEF	\$23,900
			IUCN	\$0
			Governments	\$0
	\$0	\$1,373,900	IFAD	\$1,350,000
Activity 3.2.4: Facilitate effective implementation of community co-management plan to improve incomes with emphasis on pro-poor activities and support to households headed by women	Mangroves and coastal lagoons at Vakarai continue to be degraded	Mangroves and coastal lagoons at Vakarai managed sustainably, with the participation of and to the benefit of local communities	Increment	\$897,000
			<i>Of which:</i>	
			GEF	\$702,000
			IUCN	\$0
			Governments	\$45,000
	\$147,656	\$1,044,656	IFAD	\$150,000
Activity 3.2.5: Undertake periodic monitoring and evaluation to assess the effectiveness of the management plan and to make changes where necessary	None	Lessons learned are incorporated to improve project reach, impact and benefit at the local level	Increment	\$126,200
			<i>Of which:</i>	
			GEF	\$101,200
			IUCN	\$0
			Governments	\$0
	\$0	\$126,200	IFAD	\$25,000
Output 3.3 : Co-management of sand resources promoted at Panama\Pottuvil to improve local livelihoods and foster sustainable land management				
Activity 3.3.1: Identify the boundaries of the co-management area in consultation with local communities including displaced farmers and other key stakeholders	Co-management area remains undefined	Co-management area clearly defined, and endorsed at the community level	Increment	\$4,950
			<i>Of which:</i>	
			GEF	\$0
			IUCN	\$0
			Governments	\$750
	\$701,094	\$706,044	IFAD	\$4,200
Activity 3.3.2: Develop community co-management plan and institutional mechanism for conservation management of coastal sand dunes at Panama\Pottuvil in conjunction with demonstration of ecosystem restoration and control of invasive alien species	Sand resources at Panama\Pottuvil continue to be degraded	Sand resources at Panama\Pottuvil managed sustainably, with the participation of and to the benefit of local communities	Increment	\$453,950
			<i>Of which:</i>	
			GEF	\$0
			IUCN	\$0
			Governments	\$750
	\$26,250	\$480,200	IFAD	\$453,200
Activity 3.3.3: Incorporate			Increment	\$927,200

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
replanting of species such as Casurina and other species as appropriate into co-management plan to provide resources to communities and promote sustainable land management			<i>Of which:</i> GEF \$27,200 IUCN \$0 Governments \$0 IFAD \$900,000	
	\$0	\$927,200		
Activity 3.3.4: Facilitate effective implementation of community co-management plan to improve incomes with emphasis on pro-poor activities and support to households headed by women	Information to support the enforcement of 1997 regulations remains lacking	Technical database in place to support enforcement of 1997 regulations	Increment	\$250,750
			<i>Of which:</i> GEF \$125,000 IUCN \$0 Governments \$750 IFAD \$125,000	
	\$0	\$250,750		
Activity 3.3.5: Undertake periodic monitoring and evaluation to assess the effectiveness of the programme and to make changes where necessary	None	Lessons learned are incorporated to improve project reach, impact and benefit at the local level	Increment	\$25,000
			<i>Of which:</i> GEF \$0 IUCN \$0 Governments \$0 IFAD \$25,000	
	\$0	\$25,000		
Output 3.4: Co-management of coral resources promoted at Pigeon Island				
Activity 3.4.1: Identify the boundaries of the co-management area adjacent to the National Park, in consultation with key stakeholders	Co-management area remains undefined	Co-management area clearly defined, and endorsed at the community level	Increment	\$32,100
			<i>Of which:</i> GEF \$0 IUCN \$0 Governments \$1,500 IFAD \$30,600	
	\$26,250	\$58,350		
Activity 3.4.2: Develop and facilitate effective implementation of community co-management plan and institutional mechanism for conservation management of Pigeon Island Coral Reef promoting sustainable livelihoods for local communities and user groups dependant on the natural resources of the reef to	Pigeon Island coral reef continues to be degraded, and local livelihoods remain unsustainable	Pigeon Island coral reef managed sustainably, with the participation of and to the benefit of local communities	Increment	\$953,950

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
improve incomes with emphasis on pro-poor activities and support to households headed by women			<i>Of which:</i> GEF \$0 IUCN \$0 Governments \$750 IFAD \$953,200	
	\$26,250	\$980,200		
Activity 3.4.3: Strengthen the capacity of the Department of Fisheries and Aquatic Resources to work with the community to implement fisheries regulations effectively	Capacity of DFAR to work with communities and to implement fisheries regulations remains weak	DFAR provided with capacity to work with communities and to implement fisheries regulations	Increment	\$54,600
			<i>Of which:</i> GEF \$0 IUCN \$0 Governments \$10,000 IFAD \$44,600	
	\$3,135,727	\$3,190,327		
Activity 3.4.4: Strengthen the capacity of the Department of Wildlife Conservation (DWC) to manage Pigeon Island National Park effectively including establishment of a park office at Nilaveli and provision of a patrol boat	DWC capacity and infrastructure to manage Pigeon Island National Park remains weak	DWC provided with capacity to manage Pigeon Island National Park effectively	Increment	\$55,750
			<i>Of which:</i> GEF \$53,500 IUCN \$0 Governments \$2,250 IFAD \$0	
	\$615,859	\$671,609		
Activity 3.4.5: Support DWC to develop a management plan for Pigeon Island and its vicinity, that meshes with the community co-management plan with the aim of establishing a Sanctuary to act as a strict conservation area for the coral reef and limited resource extraction beyond	Management plan for Pigeon Island National Park remains lacking	Management plan for Pigeon Island National Park in place and being implemented	Increment	\$77,550
			<i>Of which:</i> GEF \$76,800 IUCN \$0 Governments \$750 IFAD \$0	
	\$0	\$77,550		
Activity 3.4.6: Support the extension of biophysical monitoring conducted by the National Aquatic Resources Research and Development Agency to monitor reef health, and assess effectiveness of the project and make changes as appropriate	Continuing weak knowledge on health and status of coral reefs	Improved knowledge on health and status of coral reefs used to inform management	Increment	\$109,150
			<i>Of which:</i> GEF \$109,150	

	BASELINE	ALTERNATIVE STRATEGY	INCREMENT	
			IUCN	\$0
			Governments	\$0
	\$2,308,518	\$2,417,668	IFAD	\$0
Activity 3.4.7: Facilitate decision amongst enforcement agencies to identify and agree one agency to take the lead for the conservation and management of coral reefs outside of the Protected Areas	Lead for conservation and management of coral reefs outside Protected Areas remains unclear	Improved management of coral reefs outside Protected Areas, through clearer and more coordinated institutional arrangements	Increment	\$24,950
			<i>Of which:</i>	
			GEF	\$5,000
			IUCN	\$0
			Governments	\$2,250
	\$126,752	\$151,702	IFAD	\$17,700
Sub-Total Outcome 3	\$13,474,534	\$19,555,634		\$6,081,100
Outcome 4: Learning, evaluation and adaptive management increased				
Output 4.1: Project management structure established and operational	None	Project managed and operating successfully	Increment	\$1,038,450
			<i>Of which:</i>	
			GEF	\$812,950
			IUCN	\$0
			Governments	\$121,500
	\$0	\$1,038,450	IFAD	\$104,000
Output 4.2: Project monitoring, evaluation, reporting and dissemination systems and structures established and operational	None	Lessons learned are incorporated to improve project reach, impact and benefit	Increment	\$579,350
			<i>Of which:</i>	
			GEF	\$427,750
			IUCN	\$1,000
			Governments	\$5,000
	\$0	\$579,350	IFAD	\$145,600
Output 4.3 : Establishment of appropriate monitoring schemes at selected sites to assess progress and impact of restoration interventions and policy and planning changes	None	Lessons learned are incorporated to improve project reach, impact and benefit at the local level	Increment	\$183,650
			<i>Of which:</i>	
			GEF	\$149,900
			IUCN	\$0
			Governments	\$0
	\$0	\$183,650	IFAD	\$33,750
Sub-Total Outcome 4	\$0	\$1,801,450		\$1,801,450

TOTAL	TOTAL BASELINE	TOTAL ALTERNATIVE STRATEGY	TOTAL INCREMENTAL COST
	\$30,393,769	\$45,438,134	\$15,044,365
			Project costs \$13,172,150 Admin & support \$1,317,215 Development \$555,000 Total \$15,044,365 <i>Of which:</i> GEF project costs \$5,602,700 GEF admin & support \$1,317,215 GEF development \$350,000 GEF total \$7,269,915 Government co-finance \$430,300 IUCN co-finance \$55,500 IFAD co-finance \$7,083,650 Co-financed development \$205,000 Co-finance total \$7,774,450

Annex 5: Stakeholder Involvement Plan

The primary stakeholders in this Project are the local communities and local authorities in the east coast of Sri Lanka. The Ministry of Fisheries and Aquatic Resources with the support of the International Fund for Agriculture (IFAD) – the GEF implementing agency is executing the project. Policy guidance will be obtained through the National Steering Committee set up under the chairmanship of the Secretary of the Ministry of Fisheries and Aquatic Resources. Close ties will be maintained throughout with the IFAD *Post Tsunami Coastal Restoration and Coastal Communities Resource Management Programme* by both projects sharing the same Project Steering Committee. Implementation arrangements of the project will be vested with the Coast Conservation Department. A Project Co-ordination Unit will be established in Colombo under a Project Co-ordinator within the Coast Conservation Department to take charge of co-ordination aspects of the Project at the national level. The main Project Management Unit will be set up in Trincomalee in the office of the Chief Secretary of the North-eastern Provincial Council, from where local level implementation will be managed. The Project Director will head this Unit, supported by an international Chief Technical Adviser, working in close collaboration with the Co-ordination Unit set up at the CCD. The World Conservation Union (IUCN), Sri Lanka Office will provide operational support inclusive of technical assistance to the project. Three Field Offices will be established, one at each of the demonstration sites, to initially manage the field activities there. As the Project expands to include more replication sites, these arrangements may suffice, or new offices may have to be established.

The project management will also build on the strong links developed with, and support promised by, the *North-East Coastal Community Development Project* (NECCDP) (see paragraph 121) during the PDF-B. The two projects are highly complementary working in part working in similar fields and in similar areas, although the ADB-funded project has a greater focus on infrastructure. Overlap and duplication has been minimised by ensuring that site-based restoration and community development work will take place in different geographic areas. Furthermore, the proposed project can make several technical contributions to NECCDP, e.g. incorporating ecosystem restoration into the CZMAP for the North-east and providing best practice guidance for the mangrove restoration proposed by NECCDP. The proposed GEF Project will make full use of the Inter-agency Committee already established by NECCDP as well as the Provincial and District coordination mechanisms set up by NECCDP to facilitate the implementation of Project activities.

Stakeholder Involvement Matrix

Stakeholder	Mandate and Current role in Biodiversity Conservation	Project Involvement
National Institutions		
1. Ministry of Fisheries and Aquatic Resources (MOFAR)	Government's principal administrative and policy-making organization for the fisheries sector, responsible for providing the basic infrastructure and services to support the fishing industry. MFAR has under its purview the following to assist it in the execution of its functions and responsibilities; (i) Dept of Fisheries and Aquatic Resources (DFAR) (ii) Coast Conservation Dept (CCD) (iii) National Aquatic Resources Research and Development Agency (NARA) (iv) National Aquaculture Development Authority (NAQDA) (v) National Institute of Fisheries and Nautical Engineering (NIFNE) (vi) Ceylon Fisheries Corporation (CFC) (vii) Ceylon Fisheries Harbours Corporation (CFHC) (viii) Marine Pollution Prevention Authority (MPPA) (ix) Cey-Nor Foundation Ltd.	Executing Agency of the project Secretary to the Ministry will be the Chairman of the National Steering Committee (NSC) during the project implementation phase Major portion of the livelihoods components of the project will be covered by the IFAD Loan component implemented by the Ministry of Fisheries
1.1 Coast Conservation Department (CCD)	Defined role of the CCD; (i) To undertake surveys and research to describe the existing condition of the coastal zone (ii) To prepare and periodically update the Coastal Zone Management Plan (iii) To regulate and control the development activities within the coastal zone and (iv) To formulate and execute the work for coast protection and conservation primarily charged with the responsibility of coast protection and coastal zone management	Lead implementing Agency of the project and a member of the NSC Director of the CCD was the Chairman of the National steering Committee during the

		<p>PDF B preparations</p> <p>Data management and information dissemination</p>
1.2 Department of Fisheries & Aquatic resources (DFAR)	<p>Ministry's principal arm for providing extension and welfare services to the fishing community. It has also the responsibility to manage and regulate the island's coastal and offshore fisheries resources.</p> <p>Main functions:</p> <ul style="list-style-type: none"> To manage, regulate, conserve and develop fisheries activities in a sustainable manner in conformity with national and international laws and conventions To promote local and foreign investment in the fishing sector To introduce new technology for the exploitation of fishery resources in national and international waters To uplift the socio-economic status of the fishing communities To ensure quality and safety of fish and fishery product exports in conformity with international standards To minimize post-harvest losses and improve the quality of local fish products 	<p>Member of the NSC</p> <p>District and site level key member of the planning and implementation of the site level activities</p> <p>Responsible in fisheries related activities in the sites</p>
1.3 National Aquatic Resources Research and Development Agency (NARA)	<p>Ministry's principal arm for conducting scientific research and to provide services for the development and sustainable utilization of living and non living aquatic resources.</p> <p>Main functions:</p> <ol style="list-style-type: none"> Ensure the application and utilization of scientific and technological expertise for the implementation of the national development program on the subject of living and non-living aquatic resources Promote and conduct research activities directed towards the identification, assessment, management, conservation and development of aquatic resources. 	<p>Member of the NSC</p> <p>Responsible for research activities in the sites that will help in formulation of management plans</p> <p>Key partner in the ecosystems monitoring aspects</p>
2. Ministry of Environment	<p>Provide leadership to manage the environment and natural resources in order to ensure national commitment for sustainable development for the benefit of the present and future generations.</p> <p>Main functions include;</p> <ul style="list-style-type: none"> Ensure management of land, water and air resources to maintain and enhance their quality and productivity Conservation of fauna and flora Ensure conservation and sustainable use of bio-diversity and natural resources Ensure the management of waste streams to improve the environmental quality and minimize public health risks Monitor meteorological parameters and take steps to minimize the risks of climate change Promote cleaner production Ensure conservation of marine ecosystems, catchments of rivers and major reservoirs <p>The following Agencies are under the purview of the Ministry:</p> <ol style="list-style-type: none"> Department of Wildlife Conservation Forest Department Central Environmental Authority Department of National Zoological Gardens Department of Meteorology State Timber Corporation Geological Survey and Mines Bureau Wildlife Trust of Sri Lanka 	<p>One of the key member of the NSC</p> <p>Policy review and facilitation of mainstreaming ecosystem restoration into tsunami reconstruction process</p> <p>Policy guidance to implement the project activities</p> <p>Facilitate the implementation of adaptation to climate change vulnerability in the eastern coast</p>
2.1 Department of Wildlife Conservation (DWC)	<p>The mission of the Dept is to conserve wildlife and their habitats in Sri Lanka, by making their management socio-politically acceptable, economically viable and ecologically sustainable. It is a participatory management that involves research, education and law enforcement in order to ensure the maintenance of as much bio-diversity and forest cover as is feasible.</p>	<p>Member of the NSC</p> <p>Key partner in implementing activities in Pigeon's Island</p> <p>The supervisory control to be exercised by the DWC over boundary area of Yala National Park</p>
2.2 Forest Department	<p>The mission is to conserve and develop forest resources in Sri Lanka to ensure the prosperity of the nation.</p>	<p>Member of the NSC</p>

(FD)	<p>Main functions are:</p> <ul style="list-style-type: none"> (i) To ensure sustainable production of products and services (ii) To allocate and carry out appropriate zoning of forest lands for efficient forest management (iii) To contribute to the increase of tree cover 	The supervisory control to be exercised by the FD over all mangrove areas in the project
2.3 Central Environmental Authority (CEA)	<p>The mission is to protect and enhance the quality of the environment for the people of Sri Lanka through pollution control, natural resource management and environmental education based on our technical expertise and commitment.</p> <p>Objectives include</p> <ul style="list-style-type: none"> • Protection, management and enhancement of the environment • Regulation, maintenance and control of the quality of environment • Prevention, abatement and control of pollution 	<p>Member of the NSC and PCC</p> <p>Environmental management advisory inputs at site level implementation</p>
3. Urban Development Authority (UDA)	<p>A multi-disciplinary organization engaged in Urban Planning and Sustainable Urban Development in Sri Lanka. The main activities of the UDA are</p> <ul style="list-style-type: none"> ▪ Carrying out integrated planning and physical development of declared urban areas. ▪ Formulating and submitting development plans, including capital investment plans. ▪ Undertaking the execution of development projects and schemes. ▪ Formulating and implementing urban land use policy. ▪ Developing environmental standards and preparing schemes for the environmental improvement of urban areas. ▪ Providing technical planning services 	Advisory role at all sites for development activities
4. Coastal Resources Management Project (CRMP)	<p>Project carried out under ADB which includes five components:</p> <ul style="list-style-type: none"> (i) Coastline Stabilization to address the problem of coastal erosion (ii) Coastal Environmental Resource Management to tackle the problem of coastal resource degradation (iii) Fisheries Resource Management and Quality Improvement to solve the problems related to fisheries harbours (iv) Institutional Strengthening seeks to enhance the capabilities of MFAR and the sector agencies (v) Post-Tsunami Rehabilitation Work 	Some project components will be replicated by the CRMP in their project areas
5. The World Conservation Union (IUCN) Sri Lanka Office	<p>Promote sustainable management of natural resources and conservation of biodiversity in Sri Lanka based on equitable distribution of and access to natural resources</p> <p>Supports participatory and community led natural resources management</p>	<p>Lead project designing agency</p> <p>Member of the NSC</p> <p>Lead technical and operational support agency to the Project implementing agency</p>
Provincial Institutions		
1. The Northern and Eastern Provincial Council (NEPC)	<p>The Northern and Eastern Provinces have been temporarily merged into one administrative unit and is now generally identified as the North-East Provincial Council.</p> <p>The NEPC can only exercise coordination roles directed by Provincial Planning Secretariat, which is directly responsible for overall guidance, planning initiatives, coordination of planned development activities, monitoring and evaluation</p>	<p>Member of the NSC</p> <p>Key Project implementation partner at the Province level</p> <p>Chief secretary will be the Chairman of the Provincial Coordinating Committee (PCC) of the project</p>
3. NECCDP (North-East Coastal Community Development Project)	<p>The main objective of this Project is to reduce poverty and meet the basic needs in coastal communities in the project area. The purpose is sustainable livelihood improvement and sound management of natural resources.</p> <p>The main project components are;</p> <ol style="list-style-type: none"> 1. Sustainable Livelihood Improvement 2. Resource Management in 3 SMA s (Trincomalee Bay, Batticaloa Lagoon and Southern Ampara Bio-Diversity Zone) 3. Coastal Resource Planning 4. Fisheries Development 	<p>Key member of the NSC and PCC</p> <p>The coordinating mechanisms evolved under the NECCD Project will be used in the implementation of the Project</p>

	5. Project Implementation Support	Learning and sharing feed back between two projects through a common coordination mechanism
District Institutions		
1.District Secretariats	The District Secretariats are responsible for backstopping and coordinating implementation of planned development activities	Ampara, Batticaloa and Trincomalee District Secretaries will be key member of the NSC and PCC They will chair District level Coordinating Meetings Facilitate the project implementation at the District Level
Divisional Institutions		
1.Divisional Secretariats	Handle supervisory, coordinating and planning functions. Provides a one-stop centre at the divisional level to cater to all the needs of the people. The Divisional Secretariats have separate Planning Units functioning under Assistant Directors and Coordinating Committees to handle specialized subjects like agriculture, fisheries, environment etc.	Facilitate and participate at the local level project implementation
2.Pradeshiya Sabhas	3 types of Local Authorities namely, Municipal Councils for the cities and large towns, Urban Councils for the less urbanized centres and Pradeshiyas for the rural areas. In addition to the normal local government functions, the PSs have been given powers which could be considered as "developmental" and cultural in nature. There are also various other laws, like the National Environmental Act which confer additional powers on local bodies.	Facilitate and participate at the local level project implementation
Village Institutions		
1.Grama Niladharis	The GNs are at the bottom of the administrative structure and are tasked with multifarious functions and duties, which include, police duties, election work, emergency relief, notification of births and deaths, issue of NICs, issuing permits for felling of trees, timber transport etc.	Direct involvements in identification of local communities for project activities
2. Community-Based Organizations (CBOs)	CBOs are generally voluntary organizations that operate at the grass root level (ie.village level) Typical CBO s would be the Rural Development Society (RDS), Fisheries Cooperative Societies, Community Development Centres and the Thrift and Credit Cooperatives which have rendered valuable service to channel credit to the rural sector.	Direct involvements in the community led restoration of ecosystems in selected sites
Special Secretariats		
Secretariat for Coordinating the Peace Process (SCOPP)	The SCOPP Mandate is to <ul style="list-style-type: none"> Coordinate the implementation of decisions of the Government of Sri Lanka (GOSL) on the Peace Process by liaising with the Sri Lanka Monitoring Mission (SLMM) and the Norwegian facilitators, monitor the Ceasefire Agreement (CFA) between the GOSL and the Liberation Tigers of Tamil Eelam (LTTE), Provide logistical and technical support to the National Advisory Council on Peace and Reconciliation (NACPR) 	As the project area is in a conflict area, coordination processes will have to go through SCOPP
Tsunami related organizations		
The Reconstruction and Development Agency (RADA)	The Reconstruction and Development Agency (RADA) involved in post-Tsunami and post-conflict reconstruction combines TAFREN and other projects and institutions into one Agency, and will become an Authority mandated by Parliament in 2006	Facilitation of mainstreaming ecosystem restoration into reconstruction process
Tsunami Housing Reconstruction Unit (THRU)	Functions of Tsunami Housing Reconstruction Unit (THRU) are the Coordination and Facilitation of all activities relevant to housing reconstruction for tsunami victims	Participate in capacity building programmes
Tsunami Environmental Response Platform (TERP)	Main objectives are to ; <ul style="list-style-type: none"> Restore damaged eco system /natural environment, and to, Maintain sustainability of reconstruction programme of built environment Key functions include; <ol style="list-style-type: none"> Review of main environmental issues and priorities as at present with regard to the on-going post-tsunami reconstruction. Accordingly, define 	Facilitate implementation of capacity building programmes

	<p>framework for action</p> <p>2. Facilitate Strategic Environment Assessments (SEA) on the proposed reconstruction programme through the environmental help desk of the CEA, evaluate recommendations of policy changes/reformulations and make final recommendations/proposals to relevant state agencies</p>	
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Annex 6: Lists of contacts

Institutional

Ampara District

1. Mr. Abeyawardena, A., Additional District Secretary (Tsunami & Adm.)
2. Mr. Athula, G.M., Purchasing Officer, Seva Lanka Foundation
3. Mr. Azmi, A.L.M., Asst Divisional Secretary, Pottuvil
4. Mr. Basnayake, S., Programme Manager, Seva Lanka Foundation
5. Mr. Bawa, A.A., Director/ Planning, District Secretariat
6. Mr. Imbuldeniya, S.V.S., Coordinator, CCF-Sri Lanka
7. Mr. Jivajiganeshan, N., Authorised Officer, Pottuvil Pradeshiya Sabha
8. Mr. Samarakoan, G.V., Asst Director, Wild Life Conservation, EP
9. Mr. Uthuman Lebbe, M.I., Acting Asst Director/ Fisheries, Kalmunai

Batticaloa District

1. Dr. Thevarajah, D.M., Director, Teaching Hospital
2. Mr. Amirthalingam, S., Assistant Director, Planning
3. Mr. Giridaran, S., Divisional Secretary, Vaharai
4. Mr. Loganayagam, M., Dy Chairman, Manpower Agency
5. Mr. Mohanaraj, S., Planner, NECCDEP
6. Mr. Punniyamoorthy, C., District Secretary
7. Mr. Pushpalingam, S., People's Bank, Ariyampathy
8. Mr. Rathana, S., Administrative Assistant, LTTE Political Office, Vaharai
9. Mr. Sarvanantha, T., Acting District Project Director, NECCDEP
10. Mr. Suthaharan, S., Regional Aquaculture Extension Officer
11. Mr. Vimalraj, V., OIC/ Education, LTTE District Secretariat, Kokkadachcholai
12. Mrs. Ketheeswaran, R., Asst. District Secretary

Colombo District

1. Dr. Samaranayake, R.A.D.B., Director-General, CCD
2. Mr. Agalawatta, M., Project Coordinator, CRMP
3. Mr. Angammana, D.K., Dy Project Director, CABREP, CEA
4. Mr. Bandara, S., Director Planning, MFAR
5. Mr. Dissanayake, S.R., Ecologist, DWLC
6. Mr. Fernando, C., Consultant, FAO Emergency Project
7. Mr. Fernando, H.T.S., Dy Director, Law Enforcement & Operations, DWLC
8. Mr. Hettiaratchi, A., Director-General (Development), MFAR
9. Mr. Hewage, A.H.G., Asst. Director Planning, CCD
10. Mr. Kodagoda, G.B., Director, Human Resources Division, CEA
11. Mr. Kulatunga, G.A., Director Policy Planning, MENR
12. Mr. Piyasena, G., Director-General, DFAR
13. Mr. Premaratne, A., Deputy Director Planning, CCD
14. Mr. Ranasinghe, I., Project Manager(Resources Management), CRMP
15. Mr. Rodrigo, A., Dy Director, Research & Special Projects, CEA
16. Mr. Wijewardane, K.D.D., Chief Engineer, R&D, CCD
17. Mrs. Premarathne, S., Director Administration, DWLC
18. Ms. Nazeema, A.L.S., Asst Director Policy Planning, MENR
19. Ms. Shanmugaratnam, G., Asst. Director, O & M Div., CEA

Trincomalee District

1. Mr. Rangarajah, S., Chief Secretary, NEPC
2. Mr. Amaratunga, W.A.S.B., Additional District Secretary(Administration)
3. Mr. Balasingam, V.P., Secretary, NEP Public Service Commission
4. Mr. Croos, S.M., Dy Chief Secretary(Planning)
5. Mr. Dissanayake, D.N.K., Senior Environmental Officer, CEA Regional Office

6. Mr. Kunanathan, K., R/ACLG, Trincomalee
7. Mr. Lankaneson, T., Project Director, NECORD
8. Mr. Manikkavasaham, T., District Forest Officer, Trincomalee
9. Mr. Nadarajah, A., Additional District Secretary(Tsunami)
10. Mr. Paramalingam, K., Provincial Additional Secretary(Lands)
11. Mr. Pathmanathan, A.K., Provincial Secretary, M/Public Adm. & Cooperatives
12. Mr. Sarma, R.S., SAS, M/Public Adm & Cooperatives
13. Mr. Selvanayagam, N., Divisional Secretary, Kuchchaveli
14. Mr. Siriwardene, L.S.C., Provincial Secretary, M/Health
15. Mr. Sivakumar, M., Natural Resources Planner, NECCDEP District Office
16. Mr. Suntharalingam, P., Dy Director Planning, District Secretariat
17. Mr. Swaminathan, V.S., Provincial Secretary, M/Rehabilitation & Social Welfare
18. Mr. Tamilchelvan, N., Dy Project Director, NECCDEP District Office
19. Mr. Thavasalingam, T., Chairman, NGO Consortium
20. Mr. Viswalingam, R., Director of Industries, NEP

NGO / CBO list

1. Dr. Barman, T.K., Adviser, Post-Tsunami Recovery Program, Sewa Lanka Foundation (SLF) Head Office, No. 432A, Colombo Road, Borlesgamuwa. 077-3230968. (District Offices operate in Ampara and Trincomalee)
2. Mr. Balendra, K., Senior Consultant, Tamils Rehabilitation Organization (TRO) Colombo Office, No. 410/112, Bullers Road, Colombo 07. 011-2693254. (District Offices operate in Trincomalee and Batticaloa)
3. Mr. Dhayalan, A.T., Programme Coordinator, Zoa Refugee Care-Netherlands (ZOA) District Office, No. 138/5 Warehouse Road, Trincomalee. 026-2221938. (District Offices operate in Ampara and Batticaloa)
4. Mr. Goetz, R., Programme Manager, Eastern Human Economic Development (EHED) District Office, No. 295, Dockyard Road, Trincomalee. 026-2222204. (District Office in Batticaloa)
5. Mr. Mathusothan, S., Administration Officer, CARE International, District Office, No. 221, Bar Road, Batticaloa. 065-2224779. (CARE has a District Office in Trincomalee and Head Office in Colombo)
6. Mr. Ponnambalam, S.K., Chief Director, Sareeram Sri Lanka National Foundation, Head Office, Kalmunai Road, Thalankudah, Batticaloa. 065-2246677
7. Mr. Premalathan, K., Programme Manager, Social Welfare Organization of Ampara District (SWOAD), Head Office, Sagama Road, Akkaraipattu-8. 067-2277276
8. Mr. Ramanan, A., President, Lions Club (Trincomalee Chapter). District Office, No. 244, Dockyard Road, Trincomalee. 026-2220329
9. Mr. Singarayer, A.Z.J., President, Rotary Club, (Trincomalee Chapter). District Office, No. 115, Dyke Street, Trincomalee. 026-2222841
10. Mr. Smith, J., Tsunami Rehabilitation Coordinator, German Development Cooperation (GTZ) – (Donor) Project Office, Secretariat Complex, Inner Harbour Road, Trincomalee. 026-4596342
11. Mrs. Wijeyaratnam, D., Senior Adm. Assistant, World University Service of Canada (WUSC) District Office, No. 17A, Lavender Lane, Trincomalee. 026-2222178. (District Offices operate in Ampara and Batticaloa)
12. Ms. Kaileswari, S.N., Coordinator, Sarvodaya, District Office Rest House Road, Kalmunai. 0776-096916. (District Offices operate in Batticaloa and Trincomalee)
13. Ms. Luxmi, R., Secretary, Action Contre La Faim (ACF) District Office, No. 17- A/3, Centre Road Orr's Hill, Trincomalee. 026-2224047. (District Offices operate in Ampara and Batticaloa)

Socio-economic

Ampara District

1. Dr. Priyankara, A., Central Dispensary, Lahugala, Ampara
2. Mr. Abey Thilaka, B., Grama Seveka, Panama South, Pottuvil
3. Mr. Ahamed, I., Programme Coordinator, Oxfam Australia, 285/1 East Road, Akkaraipattu. 071-4845258
4. Mr. Ahamed, M.M.Z., Tsunami Disaster Management Council, Jumma Grand Mosque, Sainthamaruthu
5. Mr. Alim, Programme Assistant, MOVIMONDO, Pothuvil, Ampara
6. Mr. Alimudeen, M.A.L., Movimondo, NGO, Main Street, Pottuvil
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Annex 7: Socioeconomic Status Report

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SOCIOECONOMIC CONTEXT - SUMMARY

Sri Lanka is a relatively small tropical island, located in the Indian Ocean off the southern tip of India between 79° 39' - 81° 53' E and 5° 54' - 9° 52' N. Its area is approximately 65,610 km², and the coastline measures about 1,760 km (National Science Foundation, 2000). Sri Lanka's "Exclusive Economic Zone" extends to a distance of 200 nautical miles forming the coastline and is about 6.7 times the country's land area occupying 437,400 sq. km. (UNDP, 2001). The "territorial sea" and the "Contiguous zone" extend to a distance of 12 and 24 nautical miles from the coast respectively. As a consequence of being an island nation, the coastal areas comprise a rather noteworthy part of Sri Lanka's territory and coastal resources are of high ecological and economic significance to the country. The ecological significance is demonstrated by high biodiversity in the marine and brackish waters. Blessed with a warm tropical climate and high rainfall, enriched with nutrients from the land, the coastal waters, estuaries and lagoons of Sri Lanka show some of the world's richest ecosystems, characterized by extensive coral reefs, sandy beaches, mangroves forests, and saline marshes.

Sri Lanka is one of the potential developing countries with a per capita GDP of US \$ 979 in 2003/04. Its per capita GDP growth rate of 5.4 percent per annum (2003-2004) is higher compared to 4.1 percent for India. Growth rate in Sri Lanka has fallen from 6.0% in 2003 to 5.4% in 2004. Non-agricultural GDP has shown a significant increase in the recent past. Industry growth rate, which was 6.0% in 2003, has fallen to 5.4% in 2004. Service sector growth during the same period was higher than industry but showed a similar falling in trend. It was 7.9% in 2003 and 7.6% in 2004. Agricultural GDP growth rate was 5.4% in 2003 and has fallen to 2.5% in 2004. The agriculture sector in Sri Lanka contributes about 19% to the GDP. Sector wise, crop production contributes 13.8 percent (Tea 1.3%, Rubber 0.3%, Coconut 1.2%, Paddy 2.6% other crops 8.4%, Forestry 1.7 % and Fishing 2.3%) of GDP (Central Bank Report 2004). Agriculture generates more than 40 percent of household income, provides employment to about 40% percent of the population, and has a significant influence on the manufacturing and export sectors of the economy. The state's massive involvement in production can be gauged from the fact that in 1975 the public sector in Sri Lanka accounted for 63% of the ownership of tea acreage and for 54% of the total value of production in manufacturing (Human Development Centre, 1999). In 1977 the government initiated economic liberalization. Successive governments have supported liberal economic policies, which have seen Sri Lanka's transition from a plantation economy to one where production and exports are largely industrial based (IPS, 1998).

The three pillars of the Sri Lankan economy are the garment industry, tea and labour migration. Sri Lanka was one of the first developing countries to liberalize the economy and introduce structural adjustment policies. In 1988 the new government that came into power took economic liberalization more seriously and a conventional stabilization-cum-liberalization programme was implemented. Liberalization has had mixed impacts. It has led to improved macro economic performance and produced an average growth rate of 5.2% between 1994 and 1997. The state continues to play a major role in the economy and the private sector is relatively underdeveloped. In rural areas, liberalization has again had mixed effects. It has wiped out protected industries like handloom production, which provided employment for rural women. At the same time it has also meant a greater degree of dynamism in the local economy, shown by the emergence of local construction industries and the emergence of the service sector (Lindahl, 1991). The liberalization has increased the access of the rural population to safe drinking water and sanitation.

Agriculture accounts for roughly 36% of the work force. Lower productivity in agriculture is a major contributor to persistent rural poverty. Raising the rate of growth in agriculture (including crops, livestock, fishery and forestry) can make an important contribution to rural poverty reduction. However, Sri Lanka has a strong resource base and significant natural resources and has potential for substantial economic growth and for achieving significant reduction in poverty. That the potential has not been realized can be attributed to a history of ethnic conflict, which has diverted economic resources and political energy from national development efforts. Crop yields have either stagnated or declined during the 1990s. In the paddy sub-sector, the increase in production has resulted mainly from an expansion of the cultivated area under the Mahaweli Development Programme. The single most important impediment to agricultural prosperity is an overly restrictive policy regime. State ownership of some 80% of the lands, restrictions on technology imports and land use, pervasive input and credit subsidies, and frequent changes in agricultural trade policies combine to promote inefficient use of resources and restrict access to improved technologies. Other factors that reinforce agriculture under development include a weak research and development base, a lack of adequate infrastructure (access roads, market centers, etc.), poor soil and water management practices, limited post-harvest processing and value-addition. Net return from other field crops is considerably higher than net return from paddy. Sri Lanka is about 90% self sufficient in rice production. A shift from low-value to high-value agriculture is one of the keys to poverty reduction within the agriculture sector. Government's strategy in agriculture is based on the need to be competitive in production and marketing by increasing productivity, lowering production costs and adding value to raw materials (Ministry of Agriculture 2001).

In Sri Lanka the poverty reduction has been slow while income inequality has risen in recent years. At 22.7 percent, the national poverty headcount ratio remains high for a country with US\$ 997 per capita GDP (Sri Lanka; Development Policy Review 2004). Furthermore, the rate of decline in this ratio has been modest despite sustained per capita annual GDP growth of over 3 percent per year over the last two decades. Between 1990-91 and 2002 the national poverty headcount ratio fell by only 3 percentage points. This modest decline underlies sharply unequal poverty trends across sectors and regions. Sri Lanka's poverty also has a rural bias – 90% of the poor live in rural areas. Poverty incidence in urban areas was halved while rural poverty ratios declined by less than 5 percentage points and poverty in the eastern sector actually increased by 50 percent. Similarly, difference in poverty ratios across provinces has been pronounced: the poverty headcount ratio was 11 percent in the Western Province and around 35 percent in Sabragamuwa and Uva. Sri Lanka's uneven poverty record over the period reflects several factors, including a stagnant agriculture and uneven development across the region. Rising inequity, together with limited income-earning opportunities, low profitability of smallholder rice production and exposure to shocks are major causes of persistent rural poverty.

Compared to other South Asian Countries, Sri Lanka has the higher Human Development Index (HDI) and Gender Related Development Index. In several dimensions such as universal primary enrolment, gender equality, infant and maternal mortality, the country is well positioned to meet the Millennium Development Goals (MDGs). The life expectancy rate is 73 years for male and 76 years for female. Infant mortality rate at 12.2 per 1000 live births (2002) is lower than India and Bangladesh.

Access to hydropower electricity has increased dramatically since the early 1980s (from 16% percent to 74 percent of households), while 83.1 percent of total energy comes from traditional fuel wood for cooking. Electricity consumption is 300 kWh/m pay 16 US cents per kw compared to about 10US cents per kw charged to Filipino and Malaysian consumers

Coastal resources are of major economic significance in developing countries. In Sri Lanka the economic significance of the coastal stretch may be seen from the fact that the area occupies as much as 24% of the country's land area, and accommodates about a third of the human population of Sri Lanka. Sixty five per cent (65%) of the urbanized settlements and 90% of the industrial units are located within the coastal area (HICZMP, 2000a), and 40% of the gross domestic product of the country is derived from the activities concentrated here. The current fisheries policy and strategy are contained in the national Fisheries Development Programme and the Coastal Zone Management Programme.

Mid year population of Sri Lanka in 2004 was 19,462 persons of which 80% is rural. The annual population growth was 1.2% and the population density was 304 persons per square km in 2002. With the present increase in population density and the accelerated pace of development, the risk of overexploitation of coastal resources beyond sustainable limits has become more and more realistic. Coastal habitats and their valuable physical and biological resources have increasingly come under pressure as human activities have become more intense. Hence, conflicts between human resource users and environment are on the rise.

The tsunami that hit the coast of Sri Lanka on 26th December 2004 was of devastating intensity. More than 50% of the national damage was sustained in Eastern Sri Lanka. Sri Lanka's economy was becoming more and more stable before the tsunami struck, buoyed by optimum surrounding the peace after 20 years civil war. The damage caused by tsunami to Sri Lanka in the Eastern Province is more severe than that of Southern Sri Lanka. After the tsunami struck Sri Lanka, officials predict that growth will be inhibited by the disaster. Preliminary estimate of direct assets damages place losses in Sri Lanka around 1 US \$ billion (4.5 percent of GDP). The most affected sectors (fishing and tourism) total around 1.5 – 2.0 percent of GDP, but these sectors do not make up a significant portion of the national GDP. Together, tourism (4 percent of GDP) and fishing (2.2 percent of GDP) industries make up about 6.2 percent of national GDP. Increased activity in the construction sector, which makes up a larger portion of GDP (7.2 percent of GDP) will mitigate part of the contribution in the fishing and tourism industries. Therefore, the tsunami may only result in slowing down economic growth by one percent point in 2005 (from 6 to 5 percent) and less in subsequent years.

Rehabilitation of the affected people, reconstruction of required infrastructure and construction of permanent houses for displaced people are a huge unexpected task for the government; hence many local and international NGOs as well as private sector organizations are involved in relief aid and rehabilitation activities. Most of such assistances are for immediate relief and short sighted with regard to the environment. Lack of coordination among the organizations and the government and planning without consulting the affected parties have led to several disputes in the overall relief aid and rehabilitation programmes. Given these circumstances, the Government of the Democratic Socialist Republic of Sri Lanka has obtained a grant from the Global Environment Facility (GEF) to embark on a project that promotes the concept of effective long-term restoration of the natural and human ecosystem by implementing a participatory coastal zone restoration project in the East of the post tsunami Sri Lanka. The project will focus on the reduction of poverty and the promotion of effective natural resource planning and the promotion of sustainable land management of the affected coastal Divisional Secretariat (DS)

Divisions of Ampara, Batticaloa and Trincomalee Districts. The IUCN and the Ministry of Fisheries and Aquatic Resources are the executive agencies for the implementation of the project.

An important part of the participatory coastal zone restoration in the East of post-tsunami Sri Lanka is the preparation of a socio-economic profile of Eastern Sri Lanka. The socio-economic profile with other baseline data on physical, biological, institutional and legal issues is considered as one fundamental step towards the development of the area. The Profile serves as a source of background information and baseline data on the area. Without this information, the formulation of a sustainable resource management programme would not be possible. Hence this study was undertaken to collect data on the socio-economic status of Eastern Sri Lanka. The secondary data collection was carried out in Ampara, Batticaloa and Trincomalee Districts during one and half months starting from September 2005. Secondary data were gathered from the reports published by the different organizations and government, web site information and press releases. Dependence on environment and livelihood data were also collected for further assessment where appropriate. The collected information is analyzed, summarized and presented in this report.

Eastern Sri Lanka covers a land area of 9,790 km², has a coastline of approximately 360 km in length, and supported a population of approximately 1.540 million people in 2004 (about 8% of the national level). Traditionally, most of the coastal ecosystems in the area are being used by coastal fisher folk for gathering of food resources, and for other income-generating activities. Coastal communities are totally dependent upon the resources of the lagoons and the open coastal waters for their livelihood. They are amongst the poorest of all those in the rural sector. Pressure on the coastal resources has intensified both as a consequence of the conflict, and in the absence of effective coastal resources management and planning. There is an important link between preserving these habitats and maintaining the economic viability and productivity of fisheries in the area. Due to massive IDP movements (past and anticipated) population figures cannot be precise. The population distribution among the three districts is as follows; Ampara: 613,000; Batticaloa 544,000 and Trincomalee: 383,000 persons, with a growth rate of 1.3%, 1.5% and 1.6% respectively. A significant proportion of the population lives in the townships of Ampara, Batticaloa and Trincomalee. Livelihood in all three districts is largely rural (80%), with around 75% of the residents being engaged in agriculture and 10-15% percent in the fisheries. The coastal divisions have coastal communities of about 28% of the total population in Eastern Sri Lanka. The population is multi-ethnic, with about 25% Sinhalese, 40% Tamil, and 34% Muslim within the province. The coastal divisions are the most populated divisions in Eastern Sri Lanka. The ethnic composition of the coastal area is markedly different from that of Eastern Sri Lanka as a whole. Only 3% of the population in coastal GN Divisions is Sinhalese, while 64% are Tamil and 33% are Muslim. The population density in urban and more safer divisions have increased remarkably in Eastern Sri Lanka over the past decades while population density in unsettled areas has declined or remain without much change over the past years in the East. Main reason for higher population in coastal urban divisions is increased rate of migration of rural people and increased demand for land and other properties in the urban areas mainly because of safety and relatively good social facilities compared to other war affected districts. However the coastal districts still have a large number of rural populations dispersed in less developed Divisional Secretariat divisions. According to available data more than 70% of the coastal populations are rural and it has almost doubled during the past two decades. One of the salient features of the demography of the three districts in Eastern Sri Lanka is the internally displaced population (IDP), which constitutes approximately 8%, 20% and 12% in Ampara, Batticaloa and Trincomalee respectively.

The sex ratio in Eastern Sri Lanka is 0.49 male and 0.51 female, indicating females being slightly more than males. The urban population is about 18% of the total population. A significant proportion of the population lives in the townships of Ampara, Batticaloa and Trincomalee. The age group below 18 years is 60 percent. According to the current data available regarding the composition of the population in Eastern Sri Lanka, the age and gender composition of the population have been changing considerably during the past two decades of war. The economically active population in Eastern Sri Lanka is about 36% (those who are between 18 years and 60 years). The largest number of the population falls in the age group of 18 years and 45 years, which comprises the most energetic and active population. It is therefore apparent that a fairly high percentage of the people can actively contribute to the rehabilitation and development of the area.

According to the 2004 survey the literacy rate of the females in Eastern Sri Lanka is 83.5% as against the national average of 90.6%. The literacy rate of males is 90.0% as against of the national average of 94.5%. Over all literacy rate in Eastern Sri Lanka is 85.6% as against the national average of 90.5%. Literacy rate by age shows that the age group between 15 years and 24 years is 97.6% as against the national average of 98.3%. School avoidance in Eastern Sri Lanka is almost double (4.1%) that of the national average (2.1%). The above statistics indicate that the educational attainment of the population in the Eastern province is below the average standard of the country. The education level was affected by the past twenty years of civil war.

Eastern Sri Lanka is one of the provinces in the country with paddy as its main crop. In 2004, according to Central Bank statistics, Eastern Sri Lanka contributed 22.84% of the national annual rice production. The district contribution by Ampara, Batticaloa and Trincomalee is 11.94%, 6.78% and 4.16% respectively. The contribution of Eastern Sri Lanka to national fish production was 18.87% and the district wise contribution to national production by Ampara, Batticaloa and Trincomalee was

6.5%, 5.5% and 6.9% respectively. About 55% of the population in Eastern Sri Lanka are engaged in agriculture (crop production, livestock farming and fisheries). Taking into account all the related sub sectors i.e. input supply, processing, marketing, etc, about 80% of the population relies on the agriculture sector as the main source of income. Eastern Sri Lanka has few industries of national importance.

An important foreign exchange source of Eastern province is tourism. Private sector and state sector are actively engaged in tourism. The tourism sector in Sri Lanka is estimated to contribute 2 percent to 4 percent of GDP including direct and indirect employment for additional 65,000 and over US \$ 350 million in foreign exchange earnings. The tourism sector started to pick up following the cease-fire and peace negotiations in 2002 reaching a historical record of 565,000 arrivals in 2004. More than 60 hotels are closed and 2,000 persons have lost their employment due to damage caused by the tsunami. The country's tourism industries are based maintaining the scenic beauty and maintaining the physical and cultural resources. In this context the Ministry of Environment and Natural Resources is currently advancing a model for environmentally friendly fishing villages, which incorporate an eco-tourism capability.

Prior to the tsunami, the east coast districts of Trincomalee, Batticaloa, and Ampara already had significant problems. The area has comparatively low rainfall (1,000-1,500mm/yr) making it less productive, and is identified as a high intensity area for severe cyclonic storms with about 13 experienced between 1906-1992. The internal conflict of the past 20 years has taken a significant toll of lives and increased levels of poverty between 25% and 70%. Primary factors responsible for poverty and vulnerability include loss of life leading to a high percentage of households headed by widows, disintegration of social networks, multiple displacements, insecurity, insufficiency of food, low-income levels, lack of assets, lack of income opportunity, and debt. A majority of people earns their living from farming and fishing, and it is these who have been most vulnerable to the effects of the conflict. These led to heavy dependence on natural resources and the threat of environmental degradation.

The proportion of female-headed household in the region has substantially increased and a large number of young widows with children are forced to depend on the state or NGOs for assistance. It is estimated that there are about 18%, 24% and 20% female-headed household in Ampara, Batticaloa and Trincomalee respectively. More than 50% of the households receive poverty relief (Samurdhi) in the three districts in Eastern Sri Lanka. However, poor households in these districts are above 60% of total population. According to the vulnerability and poverty ranking of coastal Grama Niladari divisions are concentrated in northern Trincomalee, Kinniya/ Muthur, West Batticaloa and Southern Ampara. Trincomalee town, east Batticaloa and the villages from Kalmunai to the south (up to Potuvil) appear to be least vulnerable. The tsunami disaster increased the vulnerability of this already poor and vulnerable segment of the population.

Poverty is also closely related to population growth and degradation of fragile natural resources. Population density is already high in the coastal areas, while population growth is forecasted to grow at 1.3% in Eastern Sri Lanka. A significant portion of Eastern Province's lands are under shifting cultivation, and problems of soil erosion, fertility depletion, deforestation, water scarcity, coastal degradation, urban pollution and congestion take a heavy toll on the poor. The unemployment rate is 15.9% (male 9.3% and 38.0% female) in the Eastern Sri Lanka. This is above the national average of 9%. A mismatch between skills, knowledge and experience provided in post-secondary institutions and that required in the labour market contributes to high, (educated) youth unemployment. A mismatch between aspiration and employment opportunities available to youth in certain communities also need to be addressed. The unemployed are exposed to the risk of poverty and serve as a potent source of social discontent.

It has been found that 116 GN divisions (in 9 DSD) in Ampara, 56 (in 8 DSD) in Batticaloa and 35 (in 6 DSD) in Trincomalee districts had been affected by the Tsunami. It is estimated that 220,135 were displaced in the East and about 2,500 people have been injured in this natural calamity. In addition the people lost are estimated at over 2,000. It has to be noted that about 34% (10,670) of the deaths that occurred in Sri Lanka was in Ampara district, which has the highest toll in any of the affected districts by Tsunami in this country. Total deaths in the three districts amount to 14,345, which is 46% of the deaths in Sri Lanka.

More deaths and property damages were reported when the affected stayed closer to the seashore. Of the displaced people, 26% had been living within 0-50 m distance and 53% had been within 0-100 m from the shoreline in the East. Of the displaced people, 24% had been living within 0-50 m distance and 38% had been within 0-100 m from the shoreline in Ampara district. Children and women were more victimized in the disaster. Almost all the deaths and damages (90%) have been reported within the 500 m range of the shoreline.

The fisheries sector in the East had just begun to recover after the ceasefire when the tsunami struck. It killed about 1920 fishermen (Ampara 47.3%, Batticaloa 35.6% and Trincomalee 17.1%) and affected 22 multi-day boats, 550 day boats, 3371

FRP, boats and 7395 traditional crafts. Anchorages as well as 303 fisheries services were damaged. A more direct effect for many fishing households is the loss of nets that were stored on or near the beach or were being used at the time the tsunami struck. It is essential that the entire sector be rehabilitated, as it would be inefficient if the supply structures were not in place. Tourism is also one of the badly affected industries in the East. Many small hotels, vendors, three wheeler operators and around 40 tourist hotels also have been directly and indirectly affected by the tsunami.

One of the important aspects for consideration is the 'Mental Trauma' suffered by a significant section of the population in the affected area, many of whom were poor. It is suspected that this status would affect their ability to resume normal lives and get back to their original livelihood and be productive members of the work force. The majority of displaced families depend on government relief aid programs for food while a significant fraction of the camps still relying on other sources. Special care needed for children and women were inadequate in general.

The effective long-term restoration of natural and human ecosystems can be achieved only within the context of a reduction in rural poverty, and only concerted and coordinated actions from all levels of stakeholders to achieve effective natural resource planning and sustainable land management. Incorporating existing CBOs or revitalizing non-functional CBOs is vital, as the approach will make people feel that they are the owners of the process of rehabilitating, conservation and sustainable use of mangrove, lagoon, and sand dune habitats for sustainable livelihood of their own communities.

Threat Analysis

The major threats that affect coastal ecosystem in the Eastern Sri Lanka area can be categorized as a) habitat destruction and damage; b) loss of ecosystem integrity; and c) depletion of species abundance and diversity

In Sri Lanka, fishermen are the "poorest of the poor". This is due to many factors, including depletion of fisheries, lack of adequate training and technology, social prejudices, and exploitation by middlemen. Traditionally, most of the coastal ecosystems in the area have been used by coastal fisher folk for gathering of food resources, and for other income-generating activities. Geographic inaccessibility, paucity of resources, two decades of war and an unsettled situation, have hindered economic development in Eastern Sri Lanka. This coupled with a high population growth rate of 1.3 percent, particularly in the coastal areas, and migration of conflict affected people towards safer coastal divisions in East, have radically increased the pressure on the coastal ecosystem and associated biodiversity. Internally displaced persons relocate and occupy unplanned, overcrowded settlements. Greater demands are placed on a variety of limited resources, including land, fisheries, basic infrastructure, and water.

Removing of mangroves for poles and firewood and indiscriminate land reclamation for housing development have led to the reduction of the mangrove forest area. Mangroves are also cleared for security reason by the government forces particularly in the Vakarai Panichcankerni area. Mangroves are required in East to maintain the lagoon function, fishing resources and human needs. There are many indicators (reduction of fishery, stock unavailability of mangroves twigs etc.) that prove the existing mangrove extent is insufficient to maintain the ecological balance of the lagoons in the East. People living in and around the mangrove areas depend on the products and environment of these mangroves. More than 30% of the households are dependent on the mangroves. The recent tsunami damaged a number houses in the area too and added to this problem because the affected parties used mangroves stakes and rafters to rebuild their houses.

Batticaloa lagoon extends for a distance of about 50 kilometers and occupies an area of approximately 130 square kilometers. It supports the livelihood of some 5,000 fisher families, provides drainage and flood protection for the associated urban areas and paddy fields, and serves as a nursery for the coastal fishery. Pressure on Trincomalee Bay and Batticaloa lagoon have intensified both as a consequence of the conflict, and in the absence of effective coastal resources management and planning. The population in both Trincomalee and Batticaloa towns has grown with influx of refugees and internally displaced persons (IDPs). These increased the population, especially in the Batticaloa lagoon area. People displaced from their usual activities (e.g., farming) due to the conflict and tsunami are now turning to fishing to supplement or replace their former sources of income. This is putting additional pressure onto finite fisheries resources.

Fishermen in Batticaloa are poaching eggs of sea turtle from beach nesting areas, and kill turtle for meat. Illegal extractive activities such as coral mining and sand mining are occurring in Nilaweli and Passikudah, Trincomalee. This is attributed to a lack of enforcement and lack of awareness, as well as economic hardships caused by the conflict, forcing people to take up illegal activities.

Illegal use of fine-mesh fishing nets is reported from Batticaloa. Also there is a belief that selected target species (e.g., chank shells, sea cucumbers, spiny lobsters and sea weeds at Kalmunai, Ampara) are being over collected or over harvested. There is a general feeling that regulations are lacking, and not effectively enforced. Information reveals that part-

time fishermen whose dependency on lagoon resources for their livelihood is less generally use destructive gear. Reduced offshore fishing due to loss of boats and supply of small boats to many puts greater pressure on the near shore coastal resources. This is especially problematic in the East because of the narrow continental shelf, which can support only a limited biomass. Dynamite fishing is reported in the area of Pigeon Island. This practice destroys the coral reefs which are needed to support fish stocks. It is believed that outsiders who too compete for the same resources harvested by East fishers practice dynamiting. Loopholes in the law prohibiting the use of dynamite and high degree of political interventions are difficulties in taking action against such acts. Traditional beach seine fishing involves dragging nets along the sea floor, which can destroy sea grasses. Lack of suitable boat landing or moorings results in boat hulls dragging across sea grasses beds and corals. Lack of a proper landing center in the East is causing several hardships to the resource users. During rough weather, crafts cannot be manoeuvred, which causes loss of fishing days. A number of incidences of craft damage have also been reported. Lack of access to cold storage facilities means that fresh fish must be sold immediately. This limits marketing options. Due to lack of post harvest infrastructure, middlemen control the transport of fish to market. This impact is greater in Vakaraï, Batticaloa.

Intensification of agriculture in some areas, Nilaweli in Trincomalee and Kaluthawalai in Batticaloa, is increasing over time, leading to increase in the pollution loads in the lagoons. These pollutants degrade habitats, contaminate fisheries resources, and pose public health risks. Tourists break and remove coral for souvenirs at Nilaveli in Trincomalee.

Once the civil situation improves in the East, there is a danger that fishing effort will intensify dramatically. Similarly, it is expected that tourism activity will increase. Without proper planning and controls in place, this intensification could lead to severe depletion of resources, destruction of important ecological elements, and economic losses. Tourism development needs to be planned in a manner that is sensitive to the needs and desires of the local community, thus avoiding adverse social impacts.

It is reported that several unlicensed prawn culture operations have begun in Batticaloa, Valichchenai, and Arugam Bay. These shrimp farms discharge effluents without treating and increase the pollution loads in the lagoons.

Root Causes

- There are some weaknesses and contradictions in the Provincial Council System. These are the root causes for the inability to implement the sustainable natural resource management policies. Some of the main root causes are:
- The Government has excess powers to interfere in the Provincial administration.
- Provincial governments have faced difficulties in implementing their projects
- Difficulties are experienced in passing statutes for taking control of subjects assigned to provincial council.
- Difficulties exist in obtaining required staff, vehicles and equipments.

It appears that more concessions will have to be given to complete the devolution process.

- There is no integrated approach to planning at the national, provincial and district levels, and a coherent, coordinated institutional framework for coastal zone management is lacking. There are no clear rights, and responsibilities between involved public bodies at national, provincial council, and local levels. There is poor coordination of Coastal Zone Management Plan between Coastal Community Development and the North-Eastern Provincial Council.
- There is a lack of an information base on coastal zones, their values and ecosystem functions. Human and institutional resources are low in biodiversity and natural resource protection and management sectors, particularly for coastal zone conservation in Eastern Sri Lanka.
- Due to poverty and restricted alternative opportunities, the majority of the people depend on natural resources for their livelihood. It was found that environmental income (food, fuel, fodder etc.) constitutes a major share of total household income in the coastal areas. It is important to design and implement policies to secure and enhance the resource base on which these income are drawn. Improved systems for poor people's access to and control of the resource base are needed. Poor people work with short time horizons, whereas environmental conservation brings in long-term benefits. When poverty makes securing subsistence requirements a strenuous task, people's energy and time cannot be diverted to environmental conservation.
- Over fishing practices were identified as among the most important threat to coastal resources. Illegal fishing methods and over fishing are practiced due to various socio economic pressures such as poverty and competition. Over fishing of certain species such as lobsters, crabs and prawns have occurred in the coastal water bodies. Maximum sustainable yields are not precisely known.

- Excessive collection of exotic species is also feared to be causing the near extinction of certain rare species. Declaring certain areas as marine reserves is essential to maintain diversity of stocks.
- The destructive commercial fishing is mainly carried out by outsiders. Several detections have been made in Trincomalee and other areas in recent times. The use of such destructive methods unless checked could lay waste vast areas of once productive water. Coastal villages cannot generally handle this. Thus these communities need external help. Too much of fishing effort has been applied to coastal resources in Eastern Sri Lanka and the focus is now on resources further away from the coast. It is possible to shift effort from coastal to offshore / deep-sea sectors by providing harbor facilities to anchor large multi-day crafts. This requires channeling of state help through fisheries cooperatives or other forms of fisher organizations, where group guarantees could be offered as collateral.
- There has been a decrease in fish and crustacean catches over the past decade. Loss of mangrove refuge could be one of the reasons for this decrease in fishery. Felling of mangroves to prepare stakes for agriculture, fuel wood, rafters, shell burning and other uses such as medicinal plants. However, this has been curtailed to a greater extent now. Yet, a few incidence of large scale of felling of mangroves for security reasons have been reported. The recent tsunami, which damaged a number of houses in the East, too added to this problem because the affected parties used mangroves stakes and rafters to re-build their houses. Mangroves on state lands may be protected by their declaration a Forest Reserve or Conservation Forest. Conservation Forest are areas where extractive activities are strictly protected, and thus may not accommodate access for local needs. Mangroves would also technically come under the purview of the CCD. Extractive activities would thus require a permit from the CCD. One of the problems is the difficulty of enforcing the law for lack of any clear demarcation of the mangroves area that fall under the different lagoon and coastal boundaries.
- During heavy monsoon periods of the year when no marine fishing can take place some of the fishermen move to lagoon fishing. This causes underemployment, which is a major social problem.
- Although illegal, coral and shell mining is still being practiced in the East coast of Sri Lanka. This practice has led to the degradation of habitat in the coastal zone in the East. Implementation of a mining plan in collaboration with the stakeholders to control haphazard mining is required.
- Siltation has become a serious problem affecting the productivity of most of Sri Lanka's lagoons. Clearing peripheral areas of vegetation, closure of outlets, erosion of watersheds and deposits by increased run-off have been the root causes. Siltation alters the physical and chemical characteristics of lagoons. Siltation problems have affected economically important lagoons such as Valachchanai and Negombo.
- Discharge of sewage and wastewater is perhaps the largest source of pollution in the coastal waters as well as in estuaries and lagoons. A major hazard is the contamination of prawns, rice mills and small textile industries. These pollutants degrade habitats, contaminate fisheries resource, and pose public health risks.

Economic Sustainability

The purpose of participatory coastal zone restoration in the Eastern province is to formulate an investment project that will improve the management of coastal resources and help to preserve unique coastal ecosystems in the Trincomalee, Batticaloa, and Ampara districts. The overarching objectives of the investment project will be to alleviate poverty among the rural poor living in coastal fishing communities in the three districts, while strengthening measures aimed at environmental preservation and rehabilitation. The project strategy for economic sustainability involves the creation of participatory coastal ecosystem conservation and sustainable use activities that are economically appealing. The conservation of three ecosystems needs to be well integrated into livelihood systems to serve as an incentive for community to be coastal ecosystem conservation stewards. This will be achieved by strengthening existing local institutions (especially resource user groups, community based organizations, local beneficiaries), government, non government (local support and central resource institutions), outside local beneficiaries (exporters) and external stake-holders (urban population) so they have the institutional, technical, management and economic capacities to conserve, sustainable use and monitor the coastal resources. The community may or may not receive value from the resources. The local support institutions' (NGOs, government officials, or other organizations) objective is to improve management of the resource and improve the livelihood of the primary stakeholders. The emphasis on supporting community action plan is the main mechanism for linking sustainable livelihood and conservation. The management role of the CCD is to ensure that development activities in the coastal zone are consistent within the principles of sustained resource yields. This will be achieved primarily through co-ordination of the activities of several agencies and also by means of investment, research and direct regulation. The income generating activities and change to resource use (such as coral reef, mangroves, sand dune management and sustainable

fishing through adopting non destructive fishing methods) will be based on low-cost intervention. Small-scale shell collectors and prawn farmers, who depend on reef resources for their survival, may have more common interest with local tourism. The existing practices will be assessed and strengthened as necessary to ensure equitable access to both the savings and credit, and to the environmentally friendly technology and knowledge for sustainable income and livelihoods opportunities.

In order to safeguard the sustainability of their economic activities, tourism operators, fishers and other resource users have a potential interest in coral reef management. Involving them in conservation projects and eco tourism area management is likely to raise their awareness in this respect. Outside support would still be required in certain cases, particularly where threats to coral reefs originate from distant areas, such as logging, siltation and large-scale infrastructure development. The project will be based on low-cost intervention in order to ensure they will be used and can be replicated without significant external intervention. Further the project will support the use of locally managed savings and credit programmes as a means to provide accessible capital for community income generating and conservation activities. The benefits and cost of coral reef and coastal zone management will be compared to show the relatively high returns from small investments in management of coastal resources for the area. The existing mechanisms will be assessed and strengthened as necessary to ensure equitable access to both the savings and credit and to the technology and knowledge for income generation and sustainable livelihood opportunities.

Social Sustainability

The three different coastal ecosystems identified in the East Sri Lanka presents complex environmental, socio-economic institutional situations with many stakeholders involved in its management. It is such a situation, where each involved party views the resource it manages from a compartmentalized perspective that leads to much conflict leading to most conservation initiatives not realizing their full potential benefits. In this regard the participatory coastal zone management allows for better integration of all resources and decision makers and provides for a compromise in order to achieve the objectives of most stakeholders. Incorporating the local community into the decision making process is more likely to result in a more applicable and realistic management plan. The community-based organizations have an important role to play in mobilizing the community towards conservation activities and promoting the sustainable and wise use of natural resources. It is imperative that these agencies work closely with all other agencies to ensure that the mandates of the various institutions do not infringe upon each other. Effective communication mechanisms will also be developed to ensure regular information dissemination and feedback channels between stakeholder representatives in project related structures and their broader stakeholder communities. Further, recognizing the heterogeneity within communities and the variable power dynamics, the project organized consultation with women and disadvantaged groups to specifically seek their ideas. The project design reflects targeted activities geared to further identify and overcome existing inequalities.

Community based organizations could play an important role in shifting some stakeholders from environmentally destructive practices the introduction of eco-friendly technology, mangrove conservation and management etc.. The viability of community-based organizations will depend on how fast the project could provide alternative livelihoods for those who are willing to withdraw from non-sustainable practices. The fact that the members of these societies will be able to identify resource abusers and will able to organize them to participate sustainable practices.

Stakeholder Involvement

There is a high realization that unless ecological restoration and conservation is addressed in a separate long-term programme, many restoration efforts will be in vain, and the goals and objectives of other social and economic development efforts development efforts under other development projects may not be able to accomplished in the long-term thereby severely hampering the development goals of the Eastern Sri Lanka. As such, the proposed GEF project will establish linkages, collective actions and partnerships with, and build on the dynamics of other projects to enhance the sustainability of all.

The major stakeholders in the project are the fishers and farmers of the rural communities along the east coast, most of whom are poor and remain marginalized. This particularly includes the number of women headed households arising from the internal conflict and improve the participation of women in social and economic activities. The project will illustrate the importance of implementing a bottom-up resource planning approach through engaging and mobilizing local communities in the management of coastal resources, and in the control of land degradation over-exploitation of resources.

Other stakeholders include government agencies, such as the District authorities, Eastern and South Eastern Universities and Coast Conservation department, who will receive support and capacity building on issues related to ecosystem restoration. Also, it is envisaged that NGOs and Civil Society Organizations will play a crucial role in community mobilization and awareness rising. There are 17, 19 and about 56 NGOs currently registered with the District Secretariat in Trincomalee, Batticaloa and Ampara Districts respectively.

Urban Development Authority, Land Use Policy Planning of the Ministry of Agriculture, the Ministry of Environment and Natural Resources, the Coastal Conservation Department, Fisheries Department, the Ministry of Fisheries and Aquatic Resources and the North Eastern Provincial Council. will have roles in the resettlement, protection and enforcement of the no building zone along the coastal belt and livelihood enhancement.

The project is proposing multiple strategies to maximize stakeholders' participation and partnership at the national, provincial and local level. The District Secretariats perform the important functions in formulation of projects and monitoring, especially in relation to major government programmes. There is a Planning Secretariat in each District Secretariat to service these activities. Out of the three proposed demonstration sites the Vaharai Demonstration Site in Batticaloa is in LTTE controlled area. The project will work in close harmony and supportive of the government's district and divisional administration and development programmes. Priority will be given to programmes for poverty reduction and reconstruction in order to strengthen the peace process on the ground.

Abbreviations

ADB	Asian Development Bank
BD	Biodiversity
CBO	Community Based Organizations
CCD	Coast Conservation Department
CZMP	Coastal Zone Management Plan
CNO	Center for National Operations
DDMC	District Disaster Management Committee
DOC	Department of Census and Statistics (Sri Lanka)
DS	Divisional Secretary
FO	Farmer Organization
GEF	Global Environment Facility
GN	Grama Niladhari (village officer)
GOSL	Government of Sri Lanka
INGO	International Non Governmental Organizations
MFAR	Ministry of Fisheries and Aquatic Resources
NARA	National Aquatic Resources Agency
NA	National Action Plan
NECCDEP	North-East Coastal Community Development Project
NEPC	North-East Provincial Council
NGO	Non Governmental Organizations
OP	Operational Programme
PDF-B	Project Development Fund B
PMU	Project Management Unit
SLM	Sustainable Land Management
RRA	Rapid Rural Appraisal
SLA	Sustainable Livelihoods Approach
TAFREN	Task Force for Rebuilding the Nations
UN	United States
UNCCD	United Nations Convention for Combating Desertification
UNDP	United Nations' Development Program
US\$	United States Dollar
WB	The World Bank

Annex 7: Socioeconomic Status Report – Part II

1.0 INTRODUCTION

On 26th December 2004, a tsunami, triggered by earthquakes in the Indian Ocean, reached Sri Lanka, claiming 30,196 lives, 3,792 missing persons and injuring a further 15,683 people. Of the 25 Districts in Sri Lanka, 12 districts have been severely affected and the disaster has so far displaced 850,201 people. A total of 789 camps are in operation, with the majority of them living in camps or in public buildings.

Sri Lanka has a coastline of about 1900 km, of which more than 1000 km are in the North East. The impact was greatest in the Northeast affecting more than 800 km of its coastline. The effect was predominant in the six districts of the Northeast, Jaffna, Mullaitivu, Trincomalee, Batticaloa and Ampara. Extensive damage has been caused to life and property in the coastal communities with houses being destroyed, and bridges and roads washed out. The majority of the coastal inhabitants subsist on small-scale fishing activities and 80% of the fishing boats in Jaffna, Killinochchi, Mullaitivu, Trincomalee, Batticaloa, and Ampara being destroyed and severely damaged. These are mainly small, non-motorized traditional boats operated by the poorest sections of the fishing community. Also, 10 out of the 12 main fishery harbours in Sri Lanka have been destroyed, with loss of essential infrastructure.

More than 80% in the Northeast are engaged in agriculture, fisheries and livestock related activities. More than 60% of the population in the affected areas lives on the coast. The Coastline consists of 41 DS divisions. The coastal community in the east is made up of 58% Tamils, 39% Muslims 3% Sinhala. The coastal community in the North is predominantly Tamils in the affected districts. The two decades of war in the country had put the Northeast coastal community, especially the fishermen at a disadvantage. The agriculture along the coast is of two types in principally; plantations of coconut, palmyrah and cashew in many parts of the Northeast and vegetable cultivation. The coastal community in general and the fishing community in particular have been on the poorer edge of the scale in society. They had also faced many displacements during the war and even lost their houses. However this is not a uniform scenario for the entire coast. The Eastern Coast especially was composed of a variety of non-fisher communities. Damages to agriculture include destruction of water reservoirs, bunds and dykes, irrigation and drainage facilities, and destruction of water streams / linkages to the sea and of protecting infrastructure against sea / salt intrusion. There has been loss of farming capital, including buffaloes, chickens, hand tools and other farming implements. According to IUCN rapid environmental and socio-economic assessment report of March 2005, the damage caused by the tsunami in the Eastern Sri Lanka particularly in the Ampara and Batticaloa districts, both to human, infrastructure and property as well as to the natural ecosystem, was more severe than that in the southern coast of Sri Lanka. Prior to the tsunami, the east coast districts of Trincomalee, Batticaloa, and Ampara already had significant problems. Therefore, to protect natural resources of the eastern coast while improving the livelihoods of the rural poor in Eastern Sri Lanka the following project was initiated by the Government of Sri Lanka, funded through an International Fund for Agricultural Development (IFAD) negotiated loan, of which this GEF project is a component part.

2.0 Participatory Coastal Zonal Restoration in the Eastern Province of post – Tsunami Sri Lanka- IFAD/GEF PDF B

The IUCN has been identified by the IFAD for the formulation of a full-scale project called 'Participatory Coastal Restoration in the Eastern Province of Post-Tsunami Sri Lanka. The project aims to contribute towards restoration and sustainable utilization of affected coastal ecosystems in selected locations in the three districts of Eastern Sri Lanka. One demonstration site will be selected from each district. Coral reefs in Pigeon Island in Trincomalee district, Mangroves in Vakara in Batticaloa district, Sand Dunes in Pottuvil/Panama in Ampara district were identified as tentative demonstration sites and will be reviewed in the consultative process of project designing. Furthermore, the lessons learned in demonstration sites will be replicated in other areas to be selected in the project designing process

Post-Tsunami assessment in early 2005 provides the basic information on assistance to develop and implement appropriate national resources management project strategies. This forms the basis of the international consensus to achieve national, regional and global coastal zone management project. The ultimate objective of the participatory coastal management is to ensure that all people at all times have both physical and economic access to the basic food which they need to lead an active and healthy life, in an environmentally sustainable manner. This implies that the livelihood of the poor people will be harmonious with nature within the given culture. Ensuring that natural disaster will not harm them again and ensuring stability through cooperative management.

In this context, the IFAD with IUCN will conduct the above assessment of cooperative management of the natural resources in three important areas suitable to the districts. There is slow progress in the rehabilitation of the Tsunami affected people; their problems in the EP over the past nine months have not yet been totally attended. Priority was given to their livelihood;

however there were no or little concern paid to the sustainable resources use on which their livelihood depends for the rest of their life. The database on socio economic aspects in Eastern Sri Lanka is necessary to formulate a plan for participatory natural resource management which if successful will be replicated in other parts in the Northeastern Province.

This socioeconomic information generated will help the IUCN to carryout and evaluate the sustainable participatory management of the coastal areas in EP. The preliminary information available from these areas indicates that the sustainability of livelihood has been badly affected. Outcomes of this project will serve as a signal to the Northeast Provincial Council and the Government of Sri Lanka to pay more attention and improve the coastal zone management with IUCN assistance. Thus the IUCN developed the following TOR to be carried out by the socio economist. This section on socio economic assessment aims to draw upon experiences and knowledge in Eastern Sri Lanka from government agencies, academia, and the NGO community (national and international) on socio-economic issues pertaining to participation in the restoration and conservation of the coastal zone ecosystems and biodiversity in the study area. It will also provide baseline economic parameters relevant for development of incremental cost analysis.

The Socio-economic assessment listed in the TOR

1. Contribute to the preparation of the implementation strategy, work plan and the designing of the full-scale PDF-B project
2. Review of existing published secondary information on the eastern province that can be drawn from the national, provincial and divisional sources.
3. Review any published information relevant to the project area collected through similar studies undertaken by various other agencies. In this regard, it is recommended to review socio economic surveys carried out by the North East Coastal Community Development Project (NECCDP) funded by the ADB and other projects implemented in the area.
4. Provide a baseline report on the socio-economic status of the eastern province. based on above reviews. The baseline should cover the following main areas:
 - Population and demography, land use and tenure, main economic activities, livelihood systems, coastal and marine resource user groups and beneficiaries, access to infrastructure and services, incidence of poverty, immigration, socio-economic change, government and other agency commitment on coastal zone restoration and management, etc)
5. Assist the project designing team to develop a selection criteria for demonstration sites and involve in selection of 3 demonstration sites
6. Review and analyze the existing socio-economic information on the candidate project sites and develop a framework to undertake detailed studies in selected demonstration sites
7. Based on the framework of study, conduct a detailed survey using PRA techniques, preferably focused group discussions through structured and semi-structured questionnaires.
8. Provide socio-economic information necessary for designing the full-scale GEF project including role of natural resources on livelihoods, socio-economic threats to the globally significant biodiversity of selected demonstration sites, root causes for those socio-economic threats.
9. Integrate technical inputs provided by the project designing team into the final full-scale GEF proposal, working closely with the Project Design Specialist, Resource Economist and the Project Team Leader

3.0 METHODOLOGY

Data

The study is being carried out simultaneously by three teams of Research Assistants in the three districts of Eastern Sri Lanka, namely Ampara, Batticaloa, and Trincomalee. The main variables collected are information on the baseline socio-economic status and the dependency on natural resources, forest and other natural resources. Therefore the socio-economic assessment will also focus on the livelihood, resource uses pattern and the potential for cooperative management.

Data Collection

The data collection was carried out mainly with the cooperation and support of the North East Coastal Community Development Project (NECCDP), the Department of Agriculture (DOA) and the Department of Fishery (DOF). The following methods and procedures were adopted to collect information:

Secondary Data Collection

Many documents, specially project reports prepared by various organizations with reference to the east have been perused and their recommendations and concepts analyzed in context. Special references is made to the Eastern Province Coastal Community Development Project, Coastal Zone Management Plan and the Statistical Reports of the East, NECCDAP, Department of Agriculture (DOA), Department of Agrarian Services (DAS), Department of Census and Statistics (DCS), Agricultural Research Stations (ARS), farmers, fishermen and related organizations in the respective districts. Resource Profiles prepared by Divisional Secretaries, and Newspapers and Internet materials have been referred.

The team made field visits. Meetings were held with Divisional Secretaries, Assistant Director of Planning, Directors of NECCDAP, and NGOs involved in relief operation in the three districts, general public and other stakeholders etc. Special meetings were held with the Eastern University of Sri Lanka and South Eastern University of Sri Lanka in relation to their work done in this situation and data sharing etc discussed.

Participatory Rural Appraisal (PRA)

A PRA team including the Researcher, Research Assistants (RAs), Agricultural Officers (AO), Divisional Officers (DO), Farmer Fishery Leaders etc., will investigate the quantitative and qualitative information on socio economic aspects pertaining to the sustainable use of the ecosystems. Focus group discussions and informal meetings with the randomly selected key personnel, government and other agency commitment on coastal zone restoration and management, etc will be carried out to find out the local and out side influence in their resettlement programme.

Analysis

The EXCEL software will be used to document the database on socio economic aspects, by districts. This database from EXCEL will be transferred to the Statistical Package for Social Sciences (SPSS) for the appropriate statistical analysis. Mainly tabular analysis and descriptive statistics will be employed in analyzing the data.

Expected Outputs

According to the given TOR for the Participatory Coastal Zone in the Eastern Province of Post-Tsunami Sri Lanka Project the following key tasks are expected in the socioeconomic investigation: Provide a baseline report on the socio-economic status for the Eastern Sri Lanka and specific information on the selected demonstration sites. Provide economic parameters relevant to the incremental cost calculation.

Scope of the Study

The study covers the three districts in Eastern Sri Lanka. Scope of the study depends on the availability of area studies to identify the district variations. The resumption of livelihoods take priority over others that enhance or facilitates further development. Regaining peoples' livelihood is the driving force. It is important to minimize the adverse impacts that any plan may have on the environment, while making positive steps to ensure that these values are enhanced or appreciated.

The Post disaster relief and reconstruction has different phases; the first being the emergency relief to the affected which would include refuge, shelter and clothing; the second phase includes a transit arrangement with independent living but with assistance as far as possible; the third would be to assist them to have their own livelihood and independent lives in the community. This GEF intervention, at this third stage, if implemented quickly enough, has the potential to provide models for use by numerous relief agencies and coastal communities that will maximize the benefits accruing from government initiatives for restoration of both the local people and global biodiversity.

Expected Problems

The following problems may be expected during the data collection in the areas -

The availability of secondary information and the intellectual property rights matters. Data collected by several institutions may be partial or incomplete and due to incomplete data there will be reliability problems. Therefore data cannot be compared accurately against past conditions. Discrepancies of data between Department of Census and Statistics and District Planning Divisions cause problems. Depending on current and temporary situation, the information given by some sources sometimes will not reflect the actual situation.

The conflict situation in the east is still continuing and this may affect the transport and meeting of people for data collection.

Secondary information may have to be checked with the help of follow-up further investigations.

4.0 RESULTS AND DISCUSSIONS

I. Socio-Economic Profile of the Population in Eastern Sri Lanka

4.1 Population and Demography

Eastern Sri Lanka comprises of three administrative districts, Ampara, Batticaloa and Trincomalee, and it belongs to the Low Country Dry Zone agro ecological region of Sri Lanka. Geographically these three districts cover the Eastern Sri Lanka along the coastal belt of the east part of Sri Lanka. The total land area of Eastern Sri Lanka is 9,790 km² and it is about 14.92 percent of the country. The population of Eastern Sri Lanka is estimated as 1.54 million people with annual growth rate of 1.3 percent in 2004. The East population is about 8% of the national population. However, due to massive IDP movements (past and anticipated) population figures cannot be precise. The population distribution among the three districts is as follows: Ampara: 613,000; Batticaloa 544,000 and Trincomalee: 383,000 persons, with a growth rate of 1.3%, 1.0% and 1.3% respectively (Table 1.1). Ampara District is the largest District in the Eastern province. It covers an area of 46.36% (4,539 sq. km) of the Eastern Sri Lanka. The population density of Eastern Sri Lanka ranges from 206.59 persons/sq. km in Batticaloa district to 135.04 persons/sq km in Ampara district.

Table 1.1: Population, Population Density and Land Area in Eastern Sri Lanka

District	Area (Sq.km)		DS Division	GN Division	Population ('000) (Census 2004) (Growth rate)	Population density (persons/ Sq. km)
	Land area (%)	Inland waters				
Ampara	4,539.30 (46.36)	64.49	19	504	613,000 (1.3)	135.04
Batticaloa	2,633.11 (26.9)	4633.1	14	345	544,000 (1.0)	206.59
Trincomalee	2,618.20 (26.74)	96.19	11	148	383,000 (1.3)	146.28
Total	9,790.61 (100)	4793.8	33	1079	1,540,000 (1.3)	157.29
Sri Lanka						299.00*

Source: Statistical Unit of the Ministry of Fisheries & Ocean Resources - 2004

* Census and Statistics, 2001

Note: Annual reports provided by the Fisheries Inspectors / Extension officers were used to prepare the national estimates

The population in the Eastern Sri Lanka is multi-ethnic, with about 25% Sinhalese, 40% Tamil, and 34% Muslim. A small, but extremely poor, community of indigenous Coast Veddhas resides in the project area at Koralai pattu North Division (Batticaloa). Other Coast Vadda communities are reportedly scattered between Trincomalee and Batticaloa. The coastal divisions are the most populated divisions in Eastern Sri Lanka (Table 1.2). The ethnic composition of the coastal area is markedly different from that of the Eastern Sri Lanka as a whole. Only 3% of the population in coastal GN Divisions is Sinhalese, 64% are Tamil and 33% are Muslim. The population in the Ampara district is predominantly Muslim (42%) while Sinhalese Buddhist (39%) and, Tamil Hindu religious groups (17%) scattered. One of the salient features of the demography of the three districts in Eastern Sri Lanka is the internally displaced population (IDP) which constitutes approximately 8%, 20% and 12% in Ampara, Batticaloa and Trincomalee respectively.

Table 1.2: Population in Coastal DS Divisions in Eastern Sri Lanka

District	Population ('000)		Coastal DS Divisions		Population ('000)	Population Density(Persons/S q.km)
	Urban	Rural	Land Area (Sq. km)	No. (GND)		
Ampara	112.4	676.9	1561.4	10 (126)	288.26	184.61
Batticaloa	113.2	200.9	1849.61	9 (88)	356.98	193.00
Trincomalee	6.5	186.3	1262.6	6 (52)	247.99	196.41
Total EP	232.1 (17.9)	1064.1 (82.1)	4673.61	25 (166)	893.23	574.02

Source: Statistical Branch, Kachcheri, Ampara,2003, Survey Department, Batticaloa,2003,

The sex ratio in the Eastern province is 0.49 male and 0.51 female, indicating females being slightly more than males. The urban population is about 18% of the total population. A significant proportion of the population lives in the townships of

Ampara, Batticaloa and Trincomalee. The age group below 18 years is 60 percent. According to the current data available regarding the composition of the population, in the Eastern Sri Lanka the age and gender composition of the population have been changing considerably during the past two decades of war. The economically active population in Eastern Sri Lanka is about 55% (those who are between 18 years and 60 years). The largest number of the population falls in the age group of 18 years and 45 years, which comprises of the most energetic and active population. It is therefore apparent that a fairly high percentage of the people can actively contribute to the rehabilitation and development of the area. The population of the three districts disaggregated by gender, age, ethnicity and religion are given in Tables 1.3 and 1.4 respectively.

Table 1.3: Sex and Age Distribution in Eastern Sri Lanka

District	Sex ('000) (2001)		Age (Persons) ('000)	
	Male	Female	< 18 Years	> 18 Years
Ampara	295.3	294.0	354.8	234.5
Batticaloa	152.4	161.6	189.3	124.7
Trincomalee	100.0	92.8	112.5	80.3
Total	547.7 (49.9%)	548.4 (50.1%)	656.6 (60%)	439.5 (40%)

Source: Department of Census & Statistics, Preliminary Database 2001

Table 1.4: Ethnicity and Religion Distribution in Eastern Sri Lanka

District	Ethnicity ('000)					Religion ('000)				
	Sinhalese	Tamil	Muslim	Others	Total*	Buddhist	Hindu	Christian	Islam	Total*
Ampara	231.7	110.5	245.1		589.3	231.1	101.6	111.2	245.1	
Batticaloa	.5	399.1	142.6	3.1	545.3	0.4	168.8	34.2	142.6	
Trincomalee	37.5	130.5	151	6	182.9	34.4	117.1	16.1	151.1	
Total	28.6%	30.1%	40.7%		100%	48.2%	44.9%	6.8%		

Source: Kachcheri Ampara, Batticaloa and Trincomalee 2003

Note: Annual reports that provided by the fisheries inspectors / Extension officers were based to prepare the national estimates

* Include other Ethnicity and Religion groups that not mentioned.

According to the 2004 survey (Table 1.5) the literacy rate of the females in the Eastern Sri Lanka is 83.5% as against the national average of 90.6%. The literacy rate of males is 90.0% as against of the national average of 94.5%. Over all literacy rate of the Eastern Sri Lanka is 85.6% as against the national average of 90.5%. Literacy rate by age shows that the age group between 15 years and 24 years is 97.6% as against the national average of 98.3%. School avoidance of the Eastern Sri Lanka is almost double (4.1%) that of the national average (2.1%). The above statistics indicate the educational attainment of the population in the Eastern province is below the average standard of the country. The education level was affected by the past twenty years of civil war. The percentage of people attaining a level of education above the GCE O/L is quite low in the Eastern Sri Lanka.

Table 1.5: Total Number of Schools, Literacy Rate & School Avoidance in East Sri Lanka

District	Total No. of Schools	Literacy Rate			Literacy Rate by Age (Years)			School avoidance		
		Male	Female	Both	5-14	15-24	25-34	Male	Female	Both
Ampara	388									
Batticaloa	314									
Trincomalee	259									
Eastern Sri Lanka	961	90.0	83.5	85.6	95.0	97.6	90.0	3.6	4.5	4.1
All Province		94.5	90.6	90.5	94.2	98.3	95.6	2.1	2.1	2.1

Source: Central Bank of SL, 2005, The consumer Finances & Socio Economic Survey Report

Figure 1. Map of Sri Lanka Tsunami Disaster

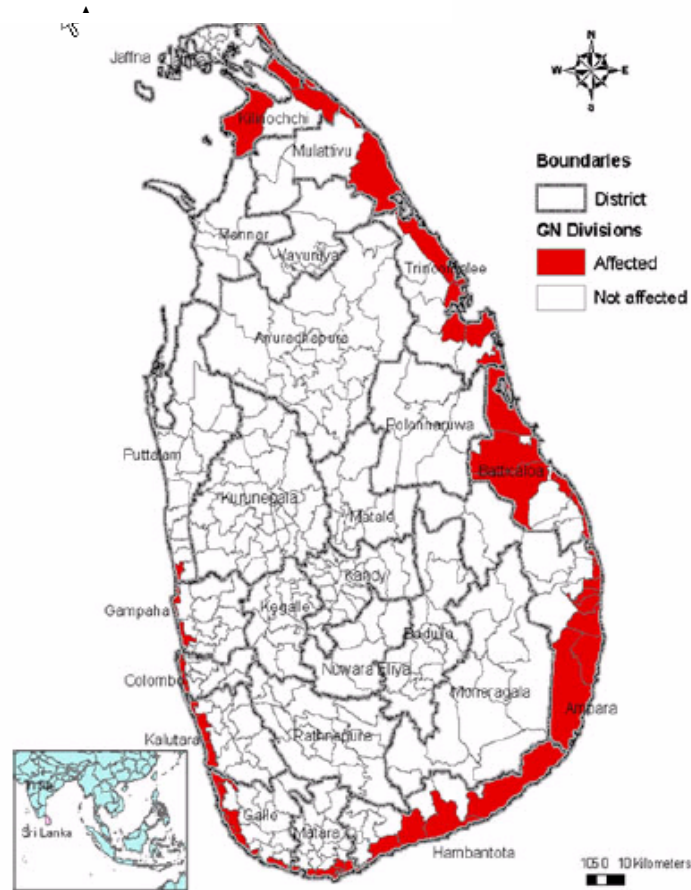


Figure 1. Sri Lanka Tsunami Disaster Areas

Source : Department of Census and Statistics, Colombo

Economic Indicators

Sri Lanka's economy was becoming more and more stable before the tsunami struck, buoyed by optimism surrounding the peace after 20 years civil war. The damage caused by tsunami to Sri Lanka in the Eastern Province is more severe than that of Southern Sri Lanka; Figure 1 shows the tsunami disaster area in Sri Lanka. After the tsunami struck Sri Lanka official predict that the growth will be inhibited by the disaster. Preliminary estimate of direct assets damages place losses in Sri Lanka around 1 US \$ billion (4.5 percent of GDP). The most affected sectors (fishing and tourism) total around 1.5 – 2.0 percent of GDP, but these sectors do not make up a significant portion of the national GDP. Together, tourism (4 percent of GDP) and fishing (2.2 percent of GDP) industries make up about 6.2 percent of national GDP. Increased activity in the construction sector, which makes up a larger portion of GDP (7.2 percent of GDP) will mitigate part of the contribution in the fishing and tourism industries. Therefore, the tsunami may only result in slowing down economic growth by one percent point in 2005 (from 6 to 5 percent) and less in subsequent years (See Tables 1.6 and 1.7).

Table 1.6: Selected Economic Indicators of Sri Lanka, 2002-2005

	Actual		Estimate	Pre Tsunami	Post Tsunami
	2002	2005	2004	2004	2005
Real GDP growth	4.0	5.9	5.2	6.0	5.0
Nominal GDP	1583	1760	1985	2297	2997
Fish production	302,890	284,960	300,000	300,000	200,000
Tourist Arrivals	393,171	500,642	565,000	600,000	425,000
Construction sector growth	-0.8	5.5	5.0	6.0	9.0
Inflation	9.6	6.3	7.6	10.0-11.0	12.0
	Actual		Estimate	Pre Tsunami	Post Tsunami
	2002	2005	2004	2004	2005
Real GDP growth	4.0	5.9	5.2	6.0	5.0
Nominal GDP	1583	1760	1985	2297	2997
Fish production	302,890	284,960	300,000	300,000	200,000
Tourist Arrivals	393,171	500,642	565,000	600,000	425,000
Construction sector growth	-0.8	5.5	5.0	6.0	9.0
Inflation	9.6	6.3	7.6	10.0-11.0	12.0

Source: Central Bank of Sri Lanka, 2004, *Department of Census and Statistics, Census of Industries, 2003, Sri Lanka Fisheries, Year Book, 2002

Eastern Sri Lanka is one of the provinces in the country with paddy as its main crop. In 2004, according to Central Bank statistics, Eastern Sri Lanka contributed 22.84% of the national annual rice production. The district contribution by Ampara, Batticaloa and Trincomalee is 11.94%, 6.78% and 4.16% respectively. The contribution of the Eastern Sri Lanka to national fish production was 18.87% and the district wise contribution to national production by Ampara, Batticaloa and Trincomalee was 6.5%, 5.5% and 6.9% respectively. About 55% of the populations of the Eastern Sri Lanka are engaged in agriculture (crop production, livestock farming and fisheries). Taking into account all the related sub sectors i.e. input supply, processing, marketing, etc, about 80% of the population relies on the agriculture sector as the main source of income. The Eastern Sri Lanka has few industries of national importance. An important foreign exchange source of the Eastern province was tourism. Private sector and state sector were actively engaged in tourism.

Table 1.7: Economic Activities of Eastern Sri Lanka: A Comparison with Sri Lanka

Sector	Sri Lanka	Eastern Sri Lanka (% of ESL)	Ampara District (% of Ampara)	Batticaloa District (% of Batticaloa)	Trincomalee District (% share of Trincomalee)
Land Area (km ²)	65,610	9790.61 (14.92)	4539.30 (6.91)	2633.11 (4.01)	2618.20 (3.99)
Agriculture					
Annual rice production (tons) (2003)	982,216	224,807 (22.84)	117,286 (11.94)	66,652 (6.78)	40,869 (4.16)
Marine fishing					
Fish production (MT)	274,760	51,870 (18.87)	17,750 (6.46)	15,140 (5.51)	18,980 (6.90)
Fishing families (number)	98,157	44,161 (45)	16,188 (16.49)	16,300 (16.6)	11,673 (11.9)
Sector	Sri Lanka	Eastern Sri Lanka (% of ESL)	Ampara District (% of Ampara)	Batticaloa District (% of Batticaloa)	Trincomalee District (% share of Trincomalee)

Fishermen (number)	115,014	50,760 (44.13)	15,490 (13.46)	21,040 (18.29)	14,230 (12.37)
Fishing crafts (number)	28,135	6,281 (22.32)	1,335 (4.24)	2,036 (7.23)	2,910 (10.34)
Industry*					
Number of establishments	131,387	7399 (5.63)	3856 (2.93)	2018 (1.53)	1525 (1.16)
Number of people employed	1,03345 1	27692 (2.67)	13924 (1.35)	7516 (0.73)	6252 (0.60)

Source: Central Bank of Sri Lanka, 2004, * Census of Industries, 2003/2004

4.2. Land Use Pattern

Table 2.1 shows the important types of land use in the Eastern Sri Lanka. Out of the land area of Eastern Sri Lanka, 4.8% is classified as urban land and agriculture land covers 36% and forest covers about 31% of the total land area. Highest extent of forest cover is reported in Ampara (37.4%) and Trincomalee (30%). This forest includes natural dense forest, open forest and forest plantations. Water bodies and wetlands cover 11.5% of the total land. Forestry is a sector that has both direct and indirect impact on the daily life of the rural community. Fuel wood and timber are two main products from which the villages benefit. Employment in the forestry sector, agriculture derived from agro-forestry activities, and raw materials for industries also play an important role while adequate tree cover is essential for a sustainable natural environment.

The most important agriculture land use types of the Eastern Sri Lanka are shown in Table 2.2. Agriculture lands account for about 388,973 ha. The land use pattern in Eastern Sri Lanka reveals the following salient features. Paddy land accounts for 43% (166,766ha) of the total agricultural land, followed by subsidiary field crops (4%) and vegetables (2%).

Table 2.1 The Important Types of Land Use in Eastern Sri Lanka

District	Extent (ha.) Under Different Types of land							
	Urban Land (%)	Agriculture Land (%)	Forest Land (%)	Range Land (%)	Wet land (%)	Water bodies (%)	Barren land (%)	Total Area (%)
Ampara	40,847 (8.3)	139,997 (28.4)	184,257 (37.4)	70,444 (14.3)	5,959 (1.2)	51,698 (10.4)	0 (0)	493,188 (100)
Batticaloa	3,447 (1.9)	81,976 (44.7)	31,040 (16.9)	34,947 (19.1)	986 (0.5)	14,935 (8.1)	15,895 (8.7)	183,226 (100)
Trincomalee	1,280 (0.5)	119,200 (43.7)	81,710 (30.0)	33,490 (12.3)	15,570 (5.7)	19,760 (7.2)	1,690 (0.6)	272,700 (100)
Total	45,574 (4.8)	341,173 (36)	297,007 (31.3)	138,881 (14.6)	22,515 (2.4)	86,393 (9.1)	17,585 (1.8)	949,114 (100)

Source: District Land use Planner Branch, Kachcheri, Ampara, Batticaloa and Trincomalee, 2004

Table 2.2: Agriculture Land Use Pattern by Districts in Eastern Sri Lanka

District	Agricultural land (Total ha)	Paddy (ha) (%)	Other Field Crops (OFC/ Pulses ha)	Subsidiary food crops (ha)	Vegetables (ha)
Ampara	139,983 (100)	61,250 (44)	3,662 (3)	13,860 (10)	4,310 (3)
Batticaloa	132,210 (100)	60,291 (49)	831 (1)	985 (3)	1,407 (1)
Trincomalee	116,780 (100)	45,235 (32)	713 (1)	1,924 (2)	1,094 (1)
Total	388,973 (100)	166,776 (43)	5,206 (1)	16,769 (4)	6,811 (2)

Source: www.nepc.lk

Majority of the rural households in the East had holding size of less than 2 acres. Most of the holdings are of sub economical size, which cannot give a sufficient opportunity to make an adequate income. Approximately 16% of the households were reported as landless or semi landowners. Both high land and paddy land are small in size and there is high incidence of joint ownership seen in several DS divisions in Eastern Sri Lanka. It is also observed that families lacking high land are equal to the number who is completely land less. There is considerable number of farmers lacking paddy land.

The livelihood of the people living in East Sri Lanka mainly depends on crops, livestock production and fishery, which positively and significantly contributes to sustain the regional and national economy. In the East, the contribution of cropland and livestock production has amounted to around 40% where as for the entire country its contribution accounts for 20%.. Around half of the population of men and women is directly engaged in crop and livestock production. About 80% of the population relies on this sector as their main source of income. Eastern Sri Lanka is reasonably well endowed with various bio-physical natural resources for making it an agricultural region and suitable to grow a wide range of crops. Rainfall is relatively light (1,000-1,500 mm per year) falling mostly during the northeast monsoon (October to February), and average temperature is relatively high (~35° C May – July) too high for optimal plant growth. As most of the crops cultivated in the Eastern Province are rain fed, the rainy seasons dictate the cropping patterns. Soils are sandy Regosols and recent beach and dune sands with reddish brown earths and the intrinsic productivity of the land is low. The crops grown in Ampara, Batticaloa and Trincomalee are widely grouped into field crops and permanent crops. Main field crops are paddy (167,000 ha), other field crops (OFC), which include primarily pulses, chillie, onion, vegetables etc., (12,017 ha.) (Table 2.2). Permanent crops found in these districts are coconut, mangoes and banana, widely spread in all three districts. Coconut is the first and foremost permanent crop of high economic value. Cashew and betel are crops specific to Batticaloa district, which contribute significantly to the economy of this district. The cyclone destroyed a large extent of coconut trees in the eastern coast. Palmyra, a drought tolerant palm occupies an extent of 16,440 ha in the East. During the two decades of war destruction to homes, standing crops and those around homesteads, loss of farming equipment and damages to agricultural infrastructure was substantial in the East. This resulted in the decline in production and yield levels of field and other crops, including homestead cultivation of coconut, palmyrah, and other fruit trees.

Land Tenure

The government legally recognizes two categories of land ownership: privately owned and crown land. Broadly speaking, agricultural lands are owned and cultivated under four different conditions: land cultivated by the owner, land cultivated by a tenant, crown land cultivated under permit (mostly been irrigation schemes) and land cultivated by encroachers without any legal status to their claim. Privately owned land is held with a legal title and the land could have been obtained by inheritance, purchase, or allocation under an established settlement scheme. Land held by tenants is not owned by them but tenants have recognized, through precarious, rights to work on the land. Land held with a permit is encroached crown land in the process of being regularized. Historically, privately held land has primarily been paddy land, while chena cultivation was operated on encroached crown land. In the three districts of Eastern Sri Lanka between 35% and 50% of the households depend primarily on rainfed upland farming for their livelihood. Further, the traditional system of inheritance has resulted both in land fragmentation and the dispersal of parcels with the result that people may own lands in a number of villages other than the one in which they live.

Livestock Sector

Livestock is an integral component of the rural economy of Eastern Sri Lanka. Three districts in the East provide a strong resource base for the livestock industry. Unlike crop agriculture, livestock sector generates a steady income throughout the year. In addition livestock is considered as insurance and cash reserve to get quick money under emergency conditions. Emphasis need to be placed on the development of the livestock industry in view of promoting income, employment, nutrition and maximum utilization of local resources. East accounted for 18% of total livestock population in the country. Before the war conflict, East accounted for about 60% of the cattle population of NEP and poultry was 80%. The three districts are estimated in 2003 to have had a total of 1379,470 cattle, 137,937 goats and 1,002,418 poultry (Table 2.3). Among the three districts, Ampara has 40% and 36% of the cattle population and goat population of Eastern Sri Lanka respectively. Trincomalee has 39% of the poultry population in the eastern province. The poor performance of the livestock sub-sector is primarily linked to the direct consequence of war such as the unavailability of quality breeding stock, the lack of credit etc. The limited milk collection and marketing activities collapsed due to damages/ loss of equipment and lack of transport facilities.

Table 2.3: Cattle, Poultry and Goats Population in the Districts of Eastern Sri Lanka 2003

District	Cattle Population (%)	Poultry Population (%)	Goats Population (%)
Ampara	150,900 (40)	268,330 (27)	49,632 (36)
Batticaloa	121,181 (32)	341,274 (34)	44,942 (33)
Trincomalee	107,533 (28)	392,814 (39)	43,363 (31)
Total	379,470 (100)	1,002,418 (100)	137,937 (100)

Source: www.nepc.lk

4.3. Fishery Sector

Lagoon and coastal, marine fish resources in Sri Lanka are classified as coastal (up to 40 km), off shore (40-100 km) and deep sea (beyond 100 km). Fishing is a crucially important livelihood in the coastal regions. In 2004, the fisheries sector contributed 9.3% of the country's GDP. This sector is a key component of the rural livelihoods in the coastal regions. It is commercially very significant in Eastern Sri Lanka, consisting of subsistence based pole and line fisheries as well as commercial fisheries and small processing units. Larger multi-day boats (semi industrial) operate only in Trincomalee in the Eastern Sri Lanka. The number of boats, including the traditional non-mechanized ones, currently operating in the East is estimated at 8,000. The total fishing households in the Eastern Sri Lanka is 41,540 of which 43% is in Batticaloa district, followed by Ampara (37%) and Trincomalee (20%). It is estimated that more than 75% of the IDPs originating from the coastal communities have already returned to their villages. The active number of fishermen and total fishermen population in Eastern Sri Lanka are 50,760 and 187,350 respectively. The peak season for fishing is from February to October. Fish production in the Eastern Sri Lanka averaged 51,870 metric ton per year. This include 4,180 ton per year in inland and aquatic fish production. The highest share of inland and aquatic production (42%) comes from Batticaloa, followed by Ampara (21%) and Trincomalee (28%). Out of 550 fishing villages in the Eastern Sri Lanka 47% (258), 32% (172) and 22% (120) are shared by Ampara, Batticaloa and Trincomalee respectively. There are 223 fish landing sites in the Eastern Sri Lanka of which 52% (116), 24% (54) and 24 % (53) are found in Batticaloa, Ampara and Trincomalee districts respectively.

Coastal community in the North East Province in general and the fishing community in particular have been on the poorer edge of the scale in society. They had also faced many displacements during the war and even lost their houses. However this is not a uniform scenario for the entire coast. The Eastern Coast specially was composed of a variety of non-fisher communities. The two decades of war in the country had put the coastal community, specially the fishermen, at a disadvantage. The restrictions on the fishing duration and fishing area (ground) have limited their development to a level far inferior to that of the fellow fishermen in the south. Though the number of fishermen, families and the percentage of the coast are higher in the North East, the fisheries infrastructure in terms of number of fish landing sites and the number of fishing harbors are significantly lower (25-50%) than the other parts of the country. Given the above handicap, the east fishermen also lost a large number of their fleet and gear during the war as much as 90% in certain areas. A portion of the lost gear and boats were replaced under various programmes; fisheries committees and cooperative societies became active in gathering capital to the society and various other activities took place during the late and early part of the decade. Distribution of fishing crafts by district (Table 3.2) shows that Trincomalee has more crafts (46%) followed by Batticaloa (33%) and Ampara (21%). Batticaloa has more multiday boats (54%) and traditional boats (41%). This was enhanced following the CFA (Ceasefire agreement) of 22nd February 2004 the fishing activities increased and had reached mentionable levels at the time of destruction on 26th December 2004.

Table 3.1: Fishing Household Population and Fish Production

District	Fishing Household (%)	Fishermen	Fishing Household Population	Fish Production – Inland & Aquatic (MT)	Number of Fishing Villages	Fish Landings
Ampara	15,150 (37)	15,490 (31)	70,180 (37)	1280 (31)	258 (47)	54 (24)
Batticaloa	18,270 (43)	21040 (41)	74,310(40)	1740(42)	172(31)	116(52)
Trincomalee	8,120 (20)	14230 (28)	42,860 (23)	1160(28)	120(22)	53(24)
Total	41,540 (100)	50,760 (100)	187,350 (100)	4180(100)	550 (100)	223 (100)

Source: National Aquatic Resources Research and Development Agency (NARA), 2002

Table 3.2: Distribution of Fishing Crafts by District

Fisheries District	Inboard Engines		Outboard Engines		Non Motorized Traditional crafts (%)	Total Crafts (%)
	Multi day Boats (%)	Day Boats (%)	FRP Boats (%)	Traditional Crafts (%)		
Ampara	26 (16)	236 (44)	132 (6)	71 (83)	870 (25)	1335 (21)
Batticaloa	86 (54)	165 (31)	352 (18)	3 (3)	1430 (41)	2036 (33)
Trincomalee	48 (30)	131 (25)	1509 (76)	12 (14)	1210 (34)	2910 (46)
Total	160 (100)	532 (100)	1993 (100)	86(100)	3510(100)	6281(100)

Source: Sri Lanka Fisheries Year Book, 2002.

4. 4. Livelihood and Employment

Distribution of Employment and Unemployment

Livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. The livelihoods of the population of the three eastern districts have been seriously affected by the conflict at all levels. Capabilities have been reduced due to declining standards of education and by lack of continuous employment and concomitant skill development.

Destruction or non-use of assets due to conflict is another issue affecting livelihoods of Eastern Sri Lanka. Because of prevailing uncertainty and distress, the population in the east is concentrating on short-term survival rather than on any form of sustainable management of natural resources. Under these conditions, long-term investments have been very limited. Because Eastern Sri Lanka is predominantly a rural society, land is one of the most important assets. Tenure is likely to become a major point of contention in future in view of the large numbers of displaced persons and migrants who still hold title over lands in their place of origin that may be occupied or claimed by encroachers or other displaced persons.

The labour force statistics of Eastern Sri Lanka in 2002 (Table 4.1) shows that the unemployment rate is 15.9% (male 9.3% and 38.0% female). This is above the national average of 9%. The female unemployment rate is more than 4 times that of the rate of males. The highest labour force participation is reported in the age groups 25 –29. It is nearly 55% for both sexes. The highest unemployment rate is reported in the age group 15 – 19 and it is nearly 42%. Nearly 75% of the employed persons in the Eastern Sri Lanka have a level of education below G.C.E (O/L) only. Capabilities in the East have been reduced due to declining standards of education and by the lack of continuous employment and concomitant skills development. School attendances are alarmingly low in un-cleared areas.

Table 4.1: Labour Force Status of the Household Population 10 years of Age and Over by Sex in Eastern Sri Lanka

Sex	Labour force participation rate (%)	Employment rate (%)	Unemployment rate (%)
Male	63.6	90.7	9.3
Female	18.0	62.0	38.0
Total	40.3	84.1	15.9
Age			
15-19	24.6	57.7	42.3
20-24	53.1	60.2	39.8
25-29	55.3	78.0	22.0
30 & above	49.9	95.1	4.90

Source: Bulletin of labour force Statistics of Northern & Eastern Province, 2002.

Further, the report reveals that the proportion of employed females with G.C.E.(A/L) and above is higher than that of males. 'Skilled agricultural and fishery worker' groups are reported to be the most prominent in the three districts, followed by 'Elementary Occupations'. The highest proportion of unemployed persons is recorded under the level of education group, below grade 10 in Eastern Sri Lanka. Employed population by industrial origin by District (Table 4.2) shows that agriculture has the larger share compared to industry and service sectors. Among the three districts, Ampara has greater share among all the three sectors. Employed population by sex and its percentage distribution by Districts (Table 4.3) indicates that male share in employment is more than 80% in all the districts while female share in employment is very low. Cultural barriers may have restricted female participation in the labour market. Further, Trincomalee has the highest labour share of 21%. The female labour force participation was less in Eastern Sri Lanka, compared to the other provinces in 2003/04. This may have reflected the impact of the unsettled labour market condition in the Eastern Sri Lanka following 20 years of civil conflict as well as related obstacles. In general, women receive only three-quarters of the wages that men receive for similar work. Women also do not have access to many higher-wage activities.

The majority of the population in eastern coastal communities continues to earn their income in the largely traditional sectors of farming and fishing. According study by ADB in 2002, 28% of households in coastal GNs are engaged in fisheries against 10-15% for Eastern Sri Lanka as a whole. Owning no or very few assets the very poor and poor survive primarily on their labour and often combine various sources of income. People survive through an enormously wide range of activities. Some of their activities, such as coral mining and illicit alcohol brewing, are illegal but provide a substantial income. A

substantial number of families depend partly or wholly on welfare assistance from the government through the Samurdhi programme.

Table 4.2: Employed Population by Industrial Origin by District

District	Total	Agriculture	Industry	Services
	Number (% Share)	Number (% Share)	Number (% Share)	Number (% Share)
Ampara	153,900 (2.4)	81,259 (3.3)	14,058 (1.1)	58,583 (2.3)
Batticaloa	127,133 (2.0)	72,212 (2.9)	12,348 (1.0)	42,573 (1.7)
Trincomalee	74,884 (1.2)	32,649 (1.3)	3,265 (0.3)	38,970 (1.5)
Total*	355,917 (5.7)	186,120 (7.5)	29,671 (2.3)	140,126 (6.0)

* Estimates, Source: Provincial Profile of Labour force.

Table 4.3 : Employed Population by Employment Sex and Distribution by Districts

District	Total	% Share	Male	% Share	Female	% Share
Ampara	120831	100	100324	83	20507	17
Batticaloa	100060	100	84585	84.5	15475	15.5
Trincomalee	72717	100	57396	78.9	15320	21.1
Total*	293608	100	242305	82.5	51302	17.5

* Estimates, Source: Provincial Profile of Labour force.

4. 5. Incidence of Poverty

Table 5.1 shows that mean household income for the eastern province is Rs. 7640 per month for the year 2002, and 50 percent of households received less than Rs. 5500 per month. Households in the urban sector received relatively higher income per month.

Table 5.1: Mean & Median Household Income by Sector in the Eastern Sri Lanka 2002

Sector	Mean Income Rs.	Median Income Rs.
Urban	10292	7560
Rural	6992	5108
Total	7640	5500

Source: Department of Census & Statistics, Results of the Household income & Expenditure survey, 2002.

Table 5.2 shows that the poorest 20 percent of the households in Eastern Sri Lanka received less than Rs. 2890 and their mean income was Rs. 1799 per month. And also the poorest 20 percent of households in the Eastern Province received 4.7 percent of the total household income and the richest 20 percent of the households received 50.2 percent of the total household income. When we consider the source of income, household income consists of both monetary and non-monetary (in-kind) income received by all members of the household, which can be earned or received through donations. Table 5.2 shows the mean household income by source of income. In the eastern province 49.6 percent of household income is received from wages and salaries, and the proportion of non-monetary income is 13.9 percent.

Depending on how poverty line is defined, a large segment 25 – 34 percent of the population is still classified as poor. Sri Lanka's poverty also has a rural bias – 90% of the poor live in rural areas. The incidence of poverty in rural areas is estimated to be almost double that of poverty in the urban areas. Rising inequity, together with limited income-earning opportunities, low profitability of smallholder rice production and exposure to shocks are major causes of persistent rural poverty. The combination of the two decades of civil conflict and an array of structural impediments to equitable socio-economic development have frustrated efforts to reduce poverty levels in Eastern Sri Lanka. Over the past decade, little progress has been made in reducing either the extent or intensity of poverty in Eastern Sri Lanka. The internal conflict of the past two decades has taken a significant toll of lives and increased levels of poverty. It is obvious that the level of poverty is much worse and more severe in this region than that in the rest of the country. The estimates suggest that between 25% and 70% of people in these districts fall below the poverty line (Rs 860 / person/month = US\$ 9). The inability to efficiently resume farming and fishing activities and then simultaneous unavailability of alternative economic options for most of the rural population is greatly responsible for widespread poverty in the Eastern province. The proportion of female-headed household in the region has substantially increased and a large number of young widows with children are forced to depend on the state or NGOs for assistance. It is estimated that there are about 18%, 24% and 20% female-headed household in

Ampara, Batticaloa and Trincomalee respectively. More than 50% of the household receive poverty relief (Samurdhi) in the three districts in Eastern Sri Lanka.. However, poor households in these districts are above 60% of total population.

Table 5.2 Mean income and share of income by household income quintile and source of income in Eastern Sri Lanka

Sector	Mean Income Rs.	Share of Income%
Income Quintile		
< 2890	1799	4.7
2891-4560	3743	9.9
4561-6407	5506	14.4
6408-10000	7984	20.9
10001& Above	19212	50.2
Total	7640	100
Source of Income		
Monetary Income		
Wages & Salaries	3790	49.6
Other cash Income	1240	16.2
Income from non-agricultural activities	927	12.1
Income from agricultural activities	620	8.1
Non Monetary Income		
Agricultural activities	215	2.8
Other non-monetary income	848	11.1
Total household Income	7640	100

Source: Department of Census & Statistics, Results of the Household income & Expenditure survey, 2002.

In the absence of reliable poverty headcount the vulnerability and poverty profiles was used to identify support for conflict affected, improvised villages and communities. Accordingly the vulnerability and poverty ranking of coastal Grama Niladari divisions are concentrated in northern Trincomalee, Kinniya/ Muthur, West Batticaloa and Southern Ampara. Trincomalee town, east Batticaloa and the villages from Kalmunai to the south (up to Potuvil) appear to be least vulnerable. The tsunami disaster increased the vulnerability of this already poor and vulnerable segment of the population.

Poverty is also closely related to population growth and degradation of fragile natural resources. Population density is already high in the coastal areas, while population growth is forecasted to grow at 1.3% in Eastern Sri Lanka. A significant portion of the Eastern Province's lands are under shifting cultivation, and problems of soil erosion, fertility depletion, deforestation, water scarcity, coastal degradation, urban pollution and congestion take a heavy toll on the poor. Unemployment is also a severe problem, particularly of educated youth. A mismatch between skills, knowledge and experience provided in post-secondary institutions and that required in the labour market contributes to high, (educated) youth unemployment. A mismatch between aspiration and employment opportunities available to youth in certain communities also need to be addressed. The unemployed are exposed to the risk of poverty and serve as a potent source of social discontent.

II. Impact of Tsunami

4.6. Population and Demography

It has been found that 126 GN divisions (in 9 DSD) in Ampara, 88 GN divisions (in 8 DSD) in Batticaloa and 52 GN divisions (in 6 DSD) in Trincomalee districts had been affected by the tsunami (Table 6.1). Before the disaster about 279, 842 people lived in the affected 24 DS divisions and after disaster about 34% of the people are living outside DS Divisions. More than 50% of the people are living outside the DS divisions in Batticaloa district, followed by Ampara (28%) and Trincomalee (32%). The tsunami forced the seawater intruding inland and caused death of human beings, devastation of crops, loss of livestock and partially or completely destroyed the livelihood of the coastal belt of these three districts.

It is estimated that 2, 20,135 were in the East and about 2,500 people have been injured in this natural calamity (Table 6.2). In addition the people lost are estimated over 2,000. It has to be noted that about 34% (10,670) of the deaths that occurred in Sri Lanka was in Ampara district, which had the highest toll in any of the districts affected by Tsunami in this country. Total deaths in the three districts amount to 14,345, which is 46% of deaths in Sri Lanka. About 73% of the total deaths occurred in Ampara followed by Batticaloa (20%) and Trincomalee (7.5%) in the eastern province. Out of the displaced people, 39%

and 34% had been living close to shoreline in Trincomalee and Ampara respectively (Table 6.2). Two third of the deaths were children and women and this will in turn affect the demography.

Table 6.1: Population in the Affected Census Blocks by Tsunami by District in the East

District	No of GN Divisions (DS Divisions)		Number of census blocks in the affected GN Divisions (DS Divisions)		Number of persons in the affected GN Divisions		
	Total GN Divisions (DSD)	Affected GN Divisions (DSD)	Total	Affected	Before the disaster	Presently living within the DS Division	Presently living outside the DS Division (%)
Ampara	260 (19)	126 (9)	719	471	114,834	66,840	43,229 (37.64)
Batticaloa	223 (14)	88 (8)	604	422	106,320	72,086	36,987 (50.89)
Trincomalee	165 (43)	52 (6)	453	228	58,688	39,192	18,993 (32.36)
Total	648 (100)	266 (24)	1776	1121	279,842	178,018	99,209 (35.45)

Source: Ministry of Women Employment and Welfare, January 2005.

Table 6.2: Number of Deaths, Displaced Lost & Injured in Eastern Sri Lanka

District	Deaths (%)	Displaced (%)	Lost	Injured
Ampara	10,436 (72.7)	75,492 (34.3)	876	120
Batticaloa	2,840 (19.8)	59,000 (26.8)	1,033	2,375
Trincomalee	1,078 (07.5)	85,643 (38.9)	337	0
Total for Eastern SL	14,345 (100)	220,135 (100)	2,246	2,495

Source: District Secretariat, Ampara, Batticaloa, Trincomalee, 2005

4.7. Damages to Houses, Schools and Buildings

Damages to houses, schools and buildings other than houses are given in tables 7.1, 7.2 and 7.3 respectively. More of houses were damaged (42%) in Ampara, followed by Batticaloa (38%) and Trincomalee (20%). More deaths and property damages occurred where the affected stayed closer to the seashore. The affected poor in many areas have no property rights for their original residential or agricultural land. This makes it difficult for people to claim for their losses, as well as to appeal for alternative housing locations.

Table 7.1: Damages to Houses (As at 26th January 2005)

District	Houses fully damaged (%)	Houses partially damaged and cannot be used (%)	Houses partially damaged & can be used (%)
Ampara	8,139 (41.8)	2,427 (43)	8,244 (44.3)
Batticaloa	7,445 (38.2)	2,460 (43.7)	7,500 (40.2)
Trincomalee	3,893 (20)	750 (13.3)	2,888 (15.5)
Total	19,477 (100)	5,637 (100)	18,632 (100)

Source: Department of Census & Statistics, Statistical News Bulletin, 2005.

Damages to Schools

Out of 182 schools hit in the coastal belt of Sri Lanka, 132 schools have been damaged in the East. Table 7.2 on situation of schools in the eastern Province on 1st February 2005 shows that a total of 80 schools were damaged significantly, of which 28 and 52 schools were fully and partially damaged respectively. Large number of schools (42%) was damaged in Batticaloa followed by Trincomalee (34%) and Ampara (25%). Out of damages to buildings other than houses and schools (Table 7.3), Ampara district suffered the most (57%) followed by Batticaloa (28%) and Trincomalee (15%). The total number of children killed by the tsunami is around 4,500 in the Eastern Sri Lanka. Out of this more than half of them are in the school going age.

Table 7.2: Situation of Schools (1st Feb 2005)

District	Total No. of Schools	Damaged schools		
		Fully Destroyed	Partially destroyed	Total (%)
Ampara	388	6	14	20 (25)
Batticaloa	314	15	18	33 (41)
Trincomalee	259	7	20	27 (34)
Total	961	28	52	80 (100)

Source: Ministry of Education, Education for all and MDG Monitoring Unit

Table 7.3: Damages to buildings other than Houses and Schools

District	Buildings fully damaged	Buildings Partially damaged and cannot be used	Total (%)	Buildings partially damaged and can be used
Ampara	1,173	243	1,416 (57)	683
Batticaloa	525	167	692 (28)	506
Trincomalee	328	58	386 (15)	232
Total	2,026	468	2,494 (100)	1,421

Source: Department of Census & Statistics, Statistical News Bulletin, 2005.

4.8. Damages to Agriculture Sector

The tsunami of 26th December 2004 destroyed standing crops, cultivable lands and other filed crops and home gardens in Eastern Sri Lanka. A total of about 2,126 ha of paddy, 180 ha of other filed crops, 168 ha of vegetables and 178 ha of fruit crops were completely damaged (Tables 8.1 and 8.2). In addition a large number of home gardens were washed away. Intrusion of seawater into productive fields has induced a high level of soil salinity in the Eastern Province. Agricultural infrastructure including buildings, irrigation canals and farm machinery were also damaged. The total damage to the crop sector is estimated to be around Rs. 311.39 million. The greater number of farmers (2053) who got affected by the tsunami is in the Batticaloa district. The larger extent of the coastal belt and the land area in between sea and lagoon suffered greater damage by the tsunami. The damage to agriculture sector was mainly confined to the destruction to standing crops in paddy and other field crops, and home gardens along the entire coastal belt and washing away of part of the cashew plantations and greater proportion of betel plantations (more than 90%). A total of 2061 hectare of paddy land, 168 hectare of field crops and 92 hectare of vegetable cultivations were completely destroyed in Ampara, Batticaloa and Trincomalee districts. As far as permanent crops are concerned, the number of damaged coconut trees in Ampara, Batticaloa and Trincomalee were 2371, 18627 and 2914 respectively. About 13430 fruit trees were damaged in the Batticaloa district. Beetle and cashew are special and specific to Batticaloa district and 6447 ha of cashew trees and 11 ha of betel vines were destroyed.

The post tsunami cleaning and reconstruction activities have created a very high demand for labour in the East. There is a high demand for labour for paddy cultivation in the tsunami-affected sites. Under the cash for work programme implemented by INGOs, there is a higher payment for labour. Due to high cost of labour local NGOs, farmers and fishermen are affected and are facing crucial labour shortages. They cannot afford to pay the hiked up labour wages activities. Their harvesting cost is Rs 8000/ ac, which was Rs 3000/ac prior to the tsunami. Further, people who were engaged in fishing and other skilled activities are reluctant to work as labourers for several reasons including the lack of required skills, and perceived lowering of social status.

Table 8.1: Assessment of Damages to Crops Sector Caused by Tsunami in the East

District	No. of affected farmers (%)	Extent of Crop Damage (Ha.)					Cultivation Expenditure Rs. Million	Total assessment of damage Rs. Million
		Paddy	Other field crops	Vege-tables	Fruits	Others		
Ampara	1914 (37.6)	2061.4	0	0	0	0	0	108.6
Batticaloa	2053 (40.3)	44.58	12.59	92.32	118.5	105.44	52.67	151.46
Trincomalee	1123 (32.1)	80	168	76	60	40	30.57	51.33
Total	5090 (100)	2,126	180.6	168.3	178.5	145.44	83.24	311.39

Source: An assessment of damage caused to crop sector in the Tsunami affected areas in Sri Lanka, Department of Agriculture, Peradeniya, 2004.

Table 8.2 Extent of Damage to Permanent Crops in Eastern Sri Lanka

District	Permanent Crops			
	Coconut (Number)	Cashew (Number)	Betel (ha)	Fruit crops (Number)
Ampara	2,371	-	-	-
Batticaloa	18,629	6,447	10.53	13,430
Trincomalee	2,914	-	-	-

Source: Eastern University of Sri Lanka 2005.

The tsunami tragedy has caused considerable damage to the food crop sector affecting the livelihood of the coastal farmers in Eastern Sri Lanka. Although the financial losses incurred are not significant when considered at the national level taking into account the damages to other sectors, an adverse impact on the income and food security of the affected farmers is clearly evident. The revival of farming activities in the affected districts is vital for the elimination of poverty and the improvement of livelihood of the farming community in Eastern Sri Lanka.

Livestock Losses

The livestock sector plays an important role in the rural economy of the Eastern Sri Lanka. Many poor families have lost domestic animals, which served as a safety net against vulnerability to crop failures, provided supplementary incomes and added health and nutritional benefits. About 167,860 birds, 4,130 cattle and 5,320 goats were reported to be killed in the three districts. The highest numbers of birds (91,396) lost were in Ampara district, the maximum number of cattle killed (2,449) was in Batticaloa district and that for goats (3,034) again in Batticaloa district.

Table 8.3 Number of Livestock Losses in Eastern Sri Lanka

District	Livestock (Number)		
	Cattle	Goat	Poultry
Ampara	1,208	1,192	91,398
Batticaloa	2,449	3,034	68,441
Trincomalee	472	1,092	8,022
Total	4,129	5,318	167,861

Source: Eastern University of Sri Lanka 2005.

4.9. Damages to Fishery Sector

The fisheries sector in the East had just begun to recover after the ceasefire when the tsunami struck killing about 1920 fishermen (Ampara 47.3%, Batticaloa 35.6% and Trincomalee 17.1% Table 9.1) and affecting 22 multi-day boats, 550 day boats, 3371 FRP boats and 7395 traditional crafts. Table 9.2 highlights the damaged and destroyed fishing boats/crafts due to Tsunami in the East. Supplying of the lost crafts is urgent. However in the process the replacement must meet with the demand of the day and not a mere replacing of the lost item. The rationale being, if not for the restriction and the conflict, the sector would have developed on par with the rest of the country. It is essential that the entire sector is rehabilitated as it would be ineffective if the supporting structures are not in place. This would include supply of nets and gear at the start. It would include establishment of ice factories and landing sites, construction of fishing harbours, sales centers and training centers anchorages as well as 303 fisheries services were damaged. A more direct effect for many fishing households is the loss of nets that were stored on or near the beach or were being used at the time the tsunami struck. It is essential that the entire sector be rehabilitated as it would be inefficient if the supply structures are not in place. Fisheries and fishing related persons affected by tsunami are given in Table 9.3. There were about 26,622 directly depend and on the fishery sector in Eastern Sri Lanka. In Batticaloa more people are dependent on fishery for their livelihood.

Table 9.1: Humanitarian Damages to Fishing Communities

District	No of Active Fisherman (2003)**	No of Fisher People Reported Dead	No of Displaced Fisher People	No of Fisher Houses Destroyed	No of Houses Damaged
Ampara*	15,500	908	11,285	2,148	1,378
Batticaloa*	21,600	684	18,274	3,705	2,830
Trincomalee*	16,100	328	13,338	2,156	1,751
Total	53,200	1,920	42,897	8,009	5,959

* Districts with most Tsunami damaged available

** Source: MFOR Statistics Department

Table 9.4 shows the fishermen's houses by type of damage and location. It highlights that people who lived up to 1 km from the seashore have been subjected to various losses including deaths of family members, destruction of houses, and household items and displacement. Almost all the deaths and damages (90%) have been reported within the 500 m range of the shoreline. The fishermen want to be assured that their lands are available for their operations even if they move from the coast for housing at a distance. This is important to be considered during the housing programme and relocation. Table 9.5 shows the different types of crafts recommended for each fisheries district in Eastern Sri Lanka. Though prior to tsunami the number of boats was less than the recommended level, after tsunami due to un-coordinated issue of boats by number of agencies, it has exceed the capacity of lagoon fishing. In some cases when the real needy could not receive the boats, some receive more boats through malpractices. Those who received boats are not supplied with gears and nets it appears. Since many still live in the camps the fishermen cannot take care of their boats and equipment that they received. Due to the 100-meter barrier fishermen are unable to put their temporary huts for fishing purposes. Over harvesting of lagoon fish with influx of boats and gear and removal of mussels/bivalves and coral for lime at higher rates have been reported in the coastal areas. Further, spread of prawn farms in areas like Valachchenni and destruction of mangroves have also been reported. Pressure on lagoons and other inland eco systems have increased after tsunami. Temporary alternative livelihoods need to be identified to prevent this natural ecosystem from being exploited further. It is reported that three fisheries harbours in the East coast have been completely destroyed. And fishing industry is now in a regaining phase but required lot of external support to revive the industry.

Table 9.2: Fishing Boats/Crafts Damaged and Destroyed due to Tsunami (adjusted as at end of July 2005)

District	Multi day			In Board – One Day			Out Board FRP			Traditional Crafts			National Total			Beach seines		
	Damaged	Destroyed	Total	Damaged	Destroyed	Total	Damaged	Destroyed	Total	Damaged	Destroyed	Total	Damaged	Destroyed	Total	Damaged	Destroyed	Total
Ampara	1	1	2	196	43	239	94	358	452	256	1,479	1,735	547	1,881	2,428	54	110	164
Batticaloa	0	0	0	278	4	282	189	494	683	264	2,107	2,371	731	2,605	3,336	0	119	119
Trincomalee	18	2	20	27	2	29	1,139	1,097	2,236	255	3,034	3,289	1,439	4,135	5,574	0	20	20
Total	19	3	22	501	49	550	1422	1949	3371	775	6620	7395	2717	8621	11338	54	249	303

Note: Data revised as at end of July 2005, after the discussion had with District Officers and FAO coordinator Mr. Lesley Joseph

Source: National Aquatic Resources Research and Development Agency (NARA), 2005.

Table 9.3 Fisheries and Fishing Related persons Affected by Tsunami in Eastern Sri Lanka

District	Boat Owners	Skippers	Crew members	Divers	Orna-mental Fish Collectors	Individual Fishermen	Fish Venders	Net Menders	Dry Fish Makers	Others	Total
Ampara	2,067	256	3,021	17	81	717	469	16	196	62	6,902
Batticaloa	4,125	1,190	3,856	6	1	792	394	136	287	128	10,915
Trincomalee	3,341	419	2,863	95	41	1,293	339	14	69	331	8,805
Total	9,533	1,865	9,740	118	123	2,802	1,202	166	552	521	26,622

Source: National Aquatic Resources Research and Development Agency (NARA), 2005.

Table 9.4: Fishermen's Houses by Type of Damage and Location (Distance from the vegetation line)

District	Up to 100m limit			100 to 300m limit			Beyond 300m			Total houses		
	Total houses	Damaged	Destroyed	Total houses	Damaged	Destroyed	Total houses	Damaged	Destroyed	Total houses	Damaged	Destroyed
Ampara	1,242	125	1,117	1,456	637	819	828	616	212	3,526	1,378	2,148
Batticaloa	801	5	796	2,440	874	1,566	3,294	1,951	1,343	6,535	2,830	3,705
Trincomalee	2,302	706	1,596	855	634	221	750	411	339	3,907	1,751	2,156
Total	4,345	836	3,509	4,751	2,145	2,606	4,872	2,978	1,894	13,968	5,959	8,009

Note: as at 26th December 2004, Count of housing units were taken, considering the distance from the vegetation line.

Source: National Aquatic Resources Research and Development Agency (NARA), 2005.

Table 9.5: Fishing Household Population, Fishers and Pension Scheme Contributors Affected by Tsunami

District	Population – Male	Population - Female	Total Population	Fishermen by Fishing Sectors				Pension Scheme - Contributors
				Offshore	Coastal	Lagoon	Total	
Ampara	14,495	12,311	26,806	2,261	2,581	1,428	6,270	1,264
Batticaloa	19,018	18,172	37,190	1,541	5,701	2,714	9,956	1,741
Trincomalee	17,407	16,022	33,429	2,985	3,599	953	7,537	541
Total	50,920	46,505	97,425	6,787	11,881	5,095	23,763	3,546

Source: National Aquatic Resources Research and Development Agency (NARA), 2005.

Table 9.6: Different Types of Crafts Recommended for Each Fisheries District in Eastern Sri Lanka

District		Type of craft				
		Multi-day boats	3.5 ton one day boats	17-18' FRP boats	Motorized traditional crafts	Non-motorized traditional crafts
Ampara (Kalmunai)	Number before Tsunami	6	236	132	71	1145
	Recommended number	*20	300	150	100	1145
Batticaloa	Number before Tsunami	86	165	352	300	4586
	Recommended number	100	165	352	300	4000
Trincomalee	Number before Tsunami	131	33	1509	12	1224
	Recommended number	175	33	1509	50	1200

* Assuming infrastructure facilities development in the district

Source: National Aquatic Resources Research and Development Agency (NARA), 2005.

4.10. Damages to Tourism

There exists a high potential for tourism in the East. There had been a flourishing tourism trade in the past in this region. East has been famous for its white sand beaches and the north for its culture and values. Tourism is also a key source of employment for approximately between 10,000 and 15,000 of Eastern Sri Lanka's economically active population. Tourism provides knock on economic benefit to agriculture, fishery, transport, import, handicraft and skill labour sector. The tsunami had a profound impact on the tourism sector in the Eastern Province. The destruction of tourist sites such as Pasikudah, Nilaweli, Arugam bay have damaged the livelihood of many families dependent on tourism. Tourism had flourished in these areas even during the conflict. It is emphasized that tourism does not necessarily mean foreigners; the hundreds who go to Pasikudah for bathing are also tourists. In Trincomalee one three star hotel suffered heavy damage and ten resorts eventually closed. Many (120) tourist hotels sustained significant damage and number of small hotels, vendors and three wheeler operators also have been directly and indirectly affected by the tsunami.

4.11. Social Impact

Women and Children Issues

Women, children and disabled are often the most vulnerable because of their lower economic standing in terms of limited access to necessary resources. There are an estimated 30,000 war widows and 300, 000 displaced children in the North Eastern Province (NEP). The percentage share of these to the Eastern Sri Lanka is high. More women were killed by the tsunami than men. About 707 children in NEP lost both parents and 2089 lost one parent in the tsunami. Child protection and physical and mental health needs have increased as a result. Tsunami displaced women and children are suffering from increased anxiety, insecurity, and trauma, especially women from recently resettled areas. The unplanned nature of some of the camps unnecessarily compromises women's privacy and security and exacerbates their anxiety. Several reports discuss the lack of security for women and children in camps, referring to cases of sexual harassment, rape, violence and kidnapping of children. The concerns regarding the protection of all vulnerable people in the camps should be urgently addressed. Strategies are needed to train widows in income generating skills and support them with soft credit and marketing facilities. Lessons learned in natural disaster and armed conflict reveal that interventions to save lives and secure livelihood are more efficient and effective when gender issues are properly understood and addressed.

One of the important aspects for consideration is the 'Mental Trauma' suffered by a significant section of the population in the affected area, many of whom are poor. It is suspected that this status would affect their ability to resume normal lives and get back to their original livelihood and be productive members of the work force.

During the war, fishing was banned for security reasons in the Eastern province with direct negative impact on livelihoods. Fishing grounds encroached by outsiders. Fishermen were displaced by the conflict and resettled after the MOU, many to their original villages. People in these resettled coastal fishing communities are the most affected because of the double hit.

Resettling displaced fishing communities with land and house allocations in safe areas and planned community infrastructure is the first step to reactivating fishing industries.

Resettlement Issues

Whether state or private owned, the government is imposing a 200 m construction free coastline zone and this strip will be evacuated, no new housing built here, and alternative land found. However, many shoreline communities have no alternative but to build their houses within the 200 m strip, due to geography and livelihood needs. In addition the restriction adversely affects the existing housing programme. Resettlement of fishing communities poses issues of its own. Their particular social structure makes integration into non-fishing communities problematic. More importantly, for security sake, they need immediate access to their boats, motors, nets and equipment. If they are resettled inland, in a very few months they will have moved back to the coast in order to look after their gear.

Identifying new land and carrying out relocation assessment with a view to the social development, livelihood, environment, land rights, governance, gender, conflict and security dimensions especially in regard to ethnic and administrative divisions as well as the technical aspects are the major task here.

4.12. Access to Infrastructure and Services

The access to agricultural lands is much reduced to the conflict. Many farmers have been displaced from their lands. The conflict has caused a substantial disruption of essential agricultural support services as well as the functioning of public, private and community based rural development organization. With respect to input supply, the most conflict-affected areas are facing severe problems with respect to seasonal labour availability (males, in particular) and the lack of quality inputs, such as seeds, fertilizers, agrochemicals, and farm equipment. The supply of seed has suffered a complete break down, while the availability of agricultural machinery and support from farmer servicing institutions is also badly affected-credit facilities as well as technical extension services are non functional.

Access to markets is insignificant. Market infrastructure in Eastern Sri Lanka has been damaged. This has included the destruction of storage facilities, processing units, and transportation infrastructure. Many marketing outlets are inoperative and marketing activities have been curtailed. The serious shortage of milk collection centers, storage facilities and the absence of an efficient processing industry represent severe constraints with respect to marketing of milk. Similarly, the marine fisheries sector is facing the fundamental problem of unavailability of equipment and essential services, poorly functioning cold storage facilities and ice plants, as well as insufficient marketing opportunities. Moreover, feeder and access roads in the East have been damaged and are poorly maintained. Due to this there are severe transport problems, which increase the already high cost of essential agricultural inputs. In addition, quantitative restriction on the transport of fuel and fertilizer to the North east severely affect all related productive activities. Due to these difficulties, middlemen exploit the sector and control 80 –90% of the input supply, credit and marketing of agricultural produce.

The tsunami has caused stagnation and deterioration in the development of infrastructures, with highways lagging behind the national standard. Only 10-15% of the road surface is estimated to be intact. The damages to the road system have been considerably high during the tsunami. Most of the coastal roads have been washed out completely. The poor condition of the roads is among the main constraints preventing people from gaining access to economic opportunities and good quality services. In particular, category C and D class roads serve communities located away from the centers of economic activity, who suffer from high poverty levels due to the conflict and tsunami effect, a lack of available economic opportunities and poor education. Road improvements will therefore contribute to access for farmers to urban markets, access to value-added agricultural or fish processing industries, provide incentives to produce higher value products, increase employment opportunities, improve access to education, health and social services and facilitate resettlement and restoring other services.

4.13. Coastal Zone Restoration and Management

Attention is urgently needed to address the following key issues in Eastern Sri Lankan coastal resources sector: (i) serious erosion of the coastline, especially in areas with concentrated economic activity; (ii) unmanaged fishing in coastal and offshore areas; and (iii) pollution and uncontrolled exploitation of lagoons and estuaries, coral reefs, mangroves swamps, sea grass beds, other wetlands, and dune systems. Failure to accord priority to these issues in post tsunami coastal zone restoration and management would put the rehabilitation programme at risk. Sustainable management of the coastal resources will require an integrated approach and will provide a balance between conservation and development.

In 2002 Eastern coastal community development project funded by ADB, proposed strategy for the sustainable development of the eastern coastal community. The project proposed strategies to improve livelihoods through equitable socio-economic development and enhanced management of natural resource in the three project districts.

Years of conflict have severely depleted natural resources found in marine, lagoon and land environment in Eastern Sri Lanka and the livelihoods depend on them. Denial of access to many coastal ecosystems and over exploitation of others, environmentally destructive practices (e.g. sand mining, removal of corals, dynamite fishing) and pollutions have resulted due to this. Environmental pressures have intensified since the cease-fire: lack of environmental laws has increased degradation of the natural resources base with reference to solid waste dumping, sand and coral mining, mangroves destruction.

Population density of the coastal DS Divisions of the Eastern Sri Lanka (191.12 per./sq km) is higher than inland divisions. Dependency on coastal resources is significantly higher in coastal communities than in neighboring inland divisions: fishing communities tend to be concentrated in habitations immediately bordering on beaches and lagoon shores. The people of the eastern coastal communities have traditionally depended directly upon the resources that are found in the marine, lagoon, and terrestrial environments for their sustenance and survival. The conflict has traditionally altered patterns of access to coastal ecosystems and their resources and has caused inefficiencies and direct damage that have resulted in waste or loss of valuable natural assets. The population in the east is concentrating on short-term survival rather than on any form of sustainable management of economically important resources. Depleting livelihood activities caused by the poverty among the population dependent on natural resources, pose a serious threat to the diverse natural ecosystems in the East coastal belt, and have severely damaged marine sanctuaries and wetlands which provide valuable habitat for fish and other living aquatic resources.

North Eastern Province Council has limited powers to protect the environment or manage the natural resource base. There was a direct link between tsunami damage and location where there was coastal erosion (e.g. Kinniya and Muthur), dune encroachment and destruction of reef and coastal plantations (mangroves, casurina, pandanus). Up to 3 km inland was affected by the tsunami with significant loss to biodiversity, extensive soil erosion, and flora dieback from sea water intrusion, and saline contamination of fresh water bodies and fishery breeding grounds. Even though environmental degradation takes place due to human tragedy, environmental issues are inherently linked to post tsunami decision about livelihood.

There is massive post tsunami rebuilding initiatives UNHCR along with other agencies are providing shelter in the resettled camps. WFP's the focal point for food, UNICEF for water and sanitation, many other INGOs and NGOs are also operating. Government and private sector are involved in this process. However, there is a slow progress in the rehabilitation of the tsunami-affected people; their problems in Eastern Sri Lanka over the past nine months have not yet totally been attended. Priority was given to their livelihood; however, there were no or little concern paid to the sustainable resources use on which their livelihood depends for their rest of their life. Large numbers of unsustainable resource utilization practices are going on in the coastal areas and have been identified in the stakeholder meetings. District reports reveal that environmental issues are not being considered a priority in the reconstruction efforts. Environmental officers of the Central Environmental Authority (CEA) attached to the Divisional Secretary's offices and the Municipal Council is not included in planning or decision making process or in any of the communities that meet regularly. In all three districts there is no district level environmental coordination mechanism available.

North East Coastal Community Development Project (NECCDP) has clear understanding of environmental issues in their projects in the Eastern Province. NECCDP need capacity building and support from other stakeholders to implement their project activities. To protect the natural resources of the Eastern coast and to improve the livelihoods of the poor in the eastern Province the GEF project initiated by the Government of Sri Lanka should be well utilized. Strengthening capacity of the NEPC and local authorities to enforce coastal preservation and natural resource management laws and regulations through appropriate authority delegated from the central government to local law enforcement authority is required. Poor people who depend on natural resources may again exploit these natural resources. Increasing capacity of coastal communities to sustain natural

assets with participatory management is important. For this improved awareness and education of coastal population in coastal conservation issues, which includes issues relating to sand mining, dynamite fishing, removal of coral reefs etc. is essential.

In 2003, Coastal Conservation Department (CCD) revised their management plan to address the integrated coastal zone management with a buffer zone and has been reviewed and is currently providing resettlement guideline for the coastal zone guidelines to government/local authorities to implement it. The CEA has set up a disaster management task force to coordinate activities and they are another potential contributor to the coastal redevelopment/ rehabilitation programmes along with the UDA. Through CEA and UDA, IWMI and IUCN can be involved in the resettlement areas bringing in the environmental perspective in the resettlement areas. It will be important to identify very rapidly the areas that should not be resettled.

There appears to be a lack of proper coordination or planning to deal with organization and planning the resettlement programme. The first is the apparent lack of an EIA. The second concern is that a fishing community is being resettled so far inland making access to their livelihood somewhat difficult and may lead to construction of temporary shelter on the beach. Once again there has been a problem of encroachers in the past in settlement programme of coastal communities.

Further, the resettlement programmes permanent residences are under construction has just limited to plans and projections. Based on the distance from the shoreline to the original locations of displaced families, death victims and damaged properties, the proposed buffer zone with sufficient barricades can be easily justified as an inevitable measure to safe-guard the coastal population against possible sea water damages in the future.

In agriculture sector, irrigated lowlands, irrigated high lands and home gardens experienced damage leading to loss of income and reduced food security. Experts expect that the salinity of high lands areas will be reduced after the rains. However, some parts suffer from high salt levels in water bodies and in agricultural soils. Tolerant plant species should be recommended under the rehabilitation programme. All agricultural areas should be monitored for change in salinity levels.

The records of development of livelihood aid were found to be vague. A few developments could be found in term of the fisheries sector. Rehabilitation of fisheries sector will require considerable physical inputs, including replacement of boats, fishing gears and larger infrastructure such as harbours. Secondary information drawn through top level planning and coordinating bodies of the state reveal that a few initiatives have already been taken and the rest are on the way to improve the fisheries sector (TAFREN, 2005). Lack of proposals on alternative livelihoods or alternative arrangements for the out-going fisher flock (from the buffer zone) who will face parking and security problems can be considered as a major deficiency in the rehabilitation programme.

According to the same sources, rehabilitation of the business and industries has not received much attention yet. This opportunity could be effectively utilized to upgrade the level of the people through proper training and providing resources. No systematic approach has been implemented to improve the livelihood of widows.

5.0 Summary Conclusions

Major purpose of this study was to collect information on the prevailing socio economic situation of the Eastern Province. Although the main data provided in this report cannot be treated as entirely accurate a number of general conclusions can be drawn.

The population of Eastern Sri Lanka is estimated as 1.54 million people with annual growth rate of 1.3 percent in 2004. The population distribution among the three districts is as follows; Ampara: 613,000; Batticaloa 544,000 and Trincomalee: 383,000 persons. the urban population is about 18% of the total population. The population density of the Eastern Province ranges from 206.59 persons/ sq. km in Batticaloa district to 135.04-persons/ sq km in Ampara district. Population density is relatively low compared to the national average and is highest in the coastal areas. Eastern Sri Lanka has a long stretch of rich coastal area as well as inland waters of 360 sq. kms. Around 80% of the population lives in rural areas. Trincomalee is marginally better off in terms of Physical Quality Life Index (PQLI) while the two other districts are below the national average.

The ethnic composition for Eastern Sri Lanka as whole is that Sri Lankan Tamils represent two fifth, Moors one third and Sinhalese a quarter of the total population. But the composition is quite different for the three districts. Ampara, Sinhalese represent two-fifths while Tamils in Batticaloa account for over 70%. In Trincomalee all three groups represents similar proportion ranging from 30 to 34%. The coastal divisions are the most populated divisions in the Eastern province. The ethnic composition of the coastal area is markedly different from that of Eastern Sri Lanka as a whole. Only 3% of the population in coastal GN Divisions is Sinhalese, 64% are Tamil and 33% are Muslim. Multi ethnic composition of the country, which is fairly distributed, has created mutual suspicions among these communities which have serious implications for development activities.

The economically active population in Eastern Sri Lanka is about 55%. Over all literacy rate of Eastern Sri Lanka is 85.6% as against the national average of 90.5%. The education level was affected by the past twenty years of civil war. The East has the lowest female economically active population in the country. 17.5% compared to 33.25%, which is the national average. The situation of women has deteriorated further as a consequence of ethnic violence and warfare. Amongst those seriously affected, the proportion of women headed household is reported to be very high.

The livelihood of the people living in Eastern Sri Lanka mainly depends on crops, livestock production and fishery. About 55% of the population of Eastern Sri Lanka is engaged in agriculture. It contributes 22.84% of the national annual rice production, 18.87 % of the national fish production and 18% of total livestock number in the country. Dependency on coastal resources is significantly higher in coastal communities than in neighboring inland divisions. An important foreign exchange source of Eastern Sri Lanka was tourism. Majority of the rural households in the East had holding size of less than 2 acres. Approximately 16% of the households were reported as landless or semi landowners.

The social and economic effects of the armed conflict of the past twenty years have been major factors contributing to the widespread poverty and vulnerability of persons living in the area. Inadequate social and physical infrastructure facilities and security limitations had led to a substantial reduction in crop, livestock and fisheries productions. Around two third of the population is reported to be under poverty line, and majority of it belongs to the farming and fishing communities. The unemployment rate is 15.9% (male 9.3% and 38.0% female) in the Eastern Province. This is above the national average of 9%. It is estimated that there are about 18%, 24% and 20% female-headed household in Ampara, Batticaloa and Trincomalee respectively.

The tsunami that hit the coast of Sri Lanka on 26th December 2004 was of devastating intensity. More than 50% of the national damage was sustained in Eastern Sri Lanka. Tsunami damage has crippled supply, production, services and marketing in the crop, livestock and fisheries. Loss of domestic livestock from homesteads impacts directly on poor coastal families. Overall tsunami damage to agriculture was less than that done to fisheries sectors. The tsunami had a profound impact on the tourism sector in the Eastern Province. The destruction of tourist sites such as Pasikudah, Nilaweli, Arugam bay have damaged the livelihood of many families dependent on tourism.

Key problems and constraints affecting coastal community in Eastern Sri Lanka are:

Widespread poverty, lack of community cohesiveness, displacement, loss of livelihood and traditional skills, gender issues, limited extension support, damage to plantations, damage to fishing crafts, inadequate supplies of essential inputs, damage to market infrastructure, land tenure, limited availability of credit.

Main issues arising in the tsunami recovery process are:

Top down planning, absence of integration and communication between the center and the periphery, absence of consultation with affected communities, inadequate focus on social impacts of tsunami, issues related to long term displacement, lack of commitment to link recovery with sustainable development, issues of tsunami and non tsunami development.

According to the secondary information, the central rehabilitation planning on housing and infrastructure developments have been almost completed. However, the planning on promotion of livelihood development has been limited to area-wise allocation of money (TAFREN, 2005; Indian Ocean Tsunami, 2005). According to the collected information, the need and aspirations of the victims were not adequately addressed in the planning process. Moreover, the grass root level people or organizations were unaware of the rehabilitation planning process.

Years of conflict have severely depleted natural resources found in marine, lagoon and land environment in the Eastern Province and the livelihoods depend on them. North Eastern Province Council has limited powers to protect the environment or manage the natural resource base. There is massive post tsunami rebuilding initiatives by number of GOs and INGOs. However, the environmental issues are not being considered a priority in the reconstruction efforts. North East Coastal Community Development Project (NECCDP) has clear understanding of environmental issues in their projects in the Eastern Province. NECCDP need capacity building and support from other stakeholders to implement their project activities. To protect the natural resources of the Eastern coast and to improve the livelihoods of the poor in the eastern Province the GEF project initiated by the Government of Sri Lanka should be well utilized

A more people-centered participatory approach in rehabilitation is recommended. Active participation of community members in decision making and activities through incorporating existing CBOs or revitalizing non-functional CBOs is vital, as the approach will make people feel that they are the owners of the process of rehabilitating and modernizing their own communities.

Selection of sites for the project in the three districts

Develop a framework to conduct a detail survey using PRA techniques / focus group discussions on the selected Divisional Secretariat Divisions in the three districts.

The site selection criteria include the following:

- (i) Presence of sensitive habitat: Mangroves, Coastal wet lands, Sand dun and Coral Reef / endangered species; Importance of natural resource on livelihoods.
- (ii) Degree of socio economic threat to environment or resource and need for protection or rehabilitation. Dependence of coastal community on the natural resources, Root causes for those socio-economic threats.
- (iii) Poverty and vulnerability, Opportunity for community participation, level of political will, and opportunities for building on past efforts on CBOs or for synergies with other programmes, and
- (iv) Beneficiary population, potential creation of livelihood opportunities improvement and environment.

The main problems affecting the sites selection for consideration under the project are investigated thorough focus group discussions. Through discussion the economic parameters relevant to the incremental cost calculation of the coastal protection was investigated.

Incremental Benefits Calculation of Coastal Protection

Mangroves and other wetlands, as well as coral reefs contribute to coastal protection; as such ecosystems are able to dissipate wave energy. Destruction of coastal ecosystem lowers the value of the coastal protection. Based on literature survey and applying the benefit transfer approach, it was assumed following Pet-Soede et al in Indonesia (1999) that 1% in coastal ecosystem leads to 1% loss in the coastal protection function, and this in turn to a loss in 1% value of the coastline. With a 1% mangrove decline in the absence of participatory management, the benefits of the coastal protection could be estimated. Coral reefs are continuously mined for lime in several near shore areas along the southern, southwestern and eastern coasts of Sri Lanka. The most likely explanation for the ongoing coral mining is that the income from coral mining is much higher than, small-scale fishing and agriculture. However, the fishermen are often aware that these activities are entirely dependent on the status of the natural environments. At present coastal areas sheltered by fringing reefs are valuable but limited resources. Only about 2% of the coastline in Sri Lanka has fringing coral reefs (Rajasooriya et al 1995). The value of Sri Lanka's remaining reefs is high and this value will probably increase with time, as they will become even more scarce in the future. In tourism areas the land value is assumed to be 1000 times higher compared to rural land (Hakan Berg et al 1998). The loss of income from tourism, due to the decreased tourism value of degraded reef and sand dune could be estimated. Quality of reefs is a decisive factor in site selection for coastal tourism development. Cost and benefit analysis will show that there is a very strong justification for the investment in the participatory approach.

6.0 Socio Economic Profile of Ampara District

The Ampara District is the largest District situated in the North-Eastern Province in Sri Lanka. This district covers an area of 4431 square km. This is roughly 23.75% of the total area in the North-Eastern Province and 6.8% of the total area of the country. The Ampara District comprises 20 Divisional Secretariat Divisions, 525 Grama Niladaries Divisions and 828 Villages. Tables relevant to Ampara district are given in the annexure.

6.1.1 Population and Demography

Population of Ampara district was reported as: 613,000 showing an increase of nearly 1.3% per annum since 2001. Ampara District is the largest District in the Eastern province. It covers an area of 46.36% (4,539 sq. km) of the Eastern Sri Lanka. One of the salient features of the demography of the district is the internally displaced population (IDP), which constitutes approximately 8% of the total population. Another aspect of the population is the increased number of female headed

households in the district. Due to two-decade-old civil conflict many women have lost their male counterparts or guardians and became chief householders. It is estimated that there is about 18% female-headed households in Ampara district. The average population density is 135.04-persons/ sq km. The population in the Ampara district is predominantly Muslim (42%) while Sinhalese Buddhist (39%) and, Tamil Hindu religious groups (17%). The rural population is about 85.6% of the total population. Urban population is mainly confined to townships of Ampara, Nindavur. Over all literacy rate of the Eastern Sri Lanka is 85.6% as against the national average of 90.5%. The statistics indicate the educational attainment of the population in Ampara district is below the average standard of the country. The education level was affected by the past twenty years of civil war. The percentage of people attaining a level of education above the GCE O/L is quite low in Ampara district. . There are 382 schools with student population of 152,382 and the average student teacher ratio is 25.1

6.1.2 Land Use Pattern

A considerable proportion of the district's land area (44%) is state owned, an equal amount of state land (43.8%) appears to have been encouraged by farmers for purpose of cultivation and settlement with only a small proportion of land (11.4%) under private ownership.

The land use pattern of Ampara district shows that 37.4% of the total land area is covered by forest and agriculture occupies 28.4% of the total land. Agriculture, livestock and fisheries have been the principal activity in the district. Over 50% of the total work force in the district depends on agriculture for their livelihood. Ampara district is a prominent paddy growing area of the country, which contributes nearly 18% of the national paddy production. Apart from paddy, other field crops such as chillie, green gram, black gram, kurakkan, maize are cultivated in the highland area such as Koralaipattu, Manmunai, Samanthurai areas. Ampara District has two distinct group of cultivating areas, where most of the cultivation practices differ between them. First contains the divisional secretariat divisions of Ampara, Uhana, Maha-oya, Padaviatalawa, Damana, Lahula, and Dihiyattakandiya. Second is the coastal area of the Ampara district which includes divisional secretariat divisions of Samanthurai, Kalmunai, Karaitivu, Ninthuvur, Addalai chenai, Akkaraipattu, Alayadivenpu, Pottuvil and Thirukkivil. The coastal region of the districts contains 69% areas of paddy land area and produces 77% of the total Ampara district paddy production. Further the coastal region is 4900 kg per ha. In the coastal region, paddy cultivation is practiced intensively with high cost of production and highest yield compared to other areas. Total cultivated area under paddy is 55,000 ha and the average production is 250,000 mt a season.

6.1.3 Fishery Sector

Fishing inland and marine is the next most livelihoods in which nearly about 17,000 families are involved. This is a prime livelihood of 15,000 families and nearly 10,000 MT of fishes are annually caught and 80% of which are transported and marketed outside of the district. Fishing in Ampara district is concentrated in few DS Divisions along the coastal belt. Fishing is the main income source for majority of the people in Thirukkivil, Addalachenai, Aalayadiwembu, Ninthavur and Kalmunai DS divisions.

6.1.4 Livelihood and Employment

Although the district is mainly an agricultural there is potential for industrial development. There are nearly 250 rice mills, garments, service centers etc. Sugar cane is also cultivated in 6,000 ha to supply to the sugar factory in the district, which is not functioning presently due to past conflict situation in the district. Employed population by employment sex and its percentage indicates that male share in employment is more than 80% in the district while female share in employment is very low. Cultural barriers might restrict the female participation in the labour market. There is a wide array of employment opportunity prevalent among the communities in Ampara district. Some livelihoods are based on the natural resources whereas there are a significant number of wage earners engaged in off farm activities. Certain amount of people are engaged in brick making, shell mining, coral mining, metal crushing, carpentry, masonry and other categories of cottage industries. The unemployment rate in Ampara district is 15.9%.

Tourism is another area, which has begun to boom in the district following the MOU signed between government and the LTTE in 2001. The world famous Arugambay is in the Ampara district.

6.1.5 Incidence of Poverty

Among the total population, more than half the families live below poverty line or earn less than Rs. 1500/= per month. Children below five years suffer from chronic malnutrition is about 28% in Ampara. In terms of quality of life indicators are concerned the

situation the situation in Ampara is far below than the national situation. Ampara is one of the most underdeveloped and poverty stricken district in the country. Main reason for such underdevelopment is lack of basic infrastructure including adequate and improved roads, transport system, access to market, and education and health facilities by the majority of the people. More than two third of population in Ampara district received various relief and support services form the government and non-government organizations. Majority of poor families live mainly on fishing or agriculture. Majority of poor families in Ampara concentrated in Samanthurai, Addalacheni, Kalmunai, Uhana and Thirukkivil DS divisions.

GN Divisions of the Ampara district affected by the Tsunami: 9.0/2004

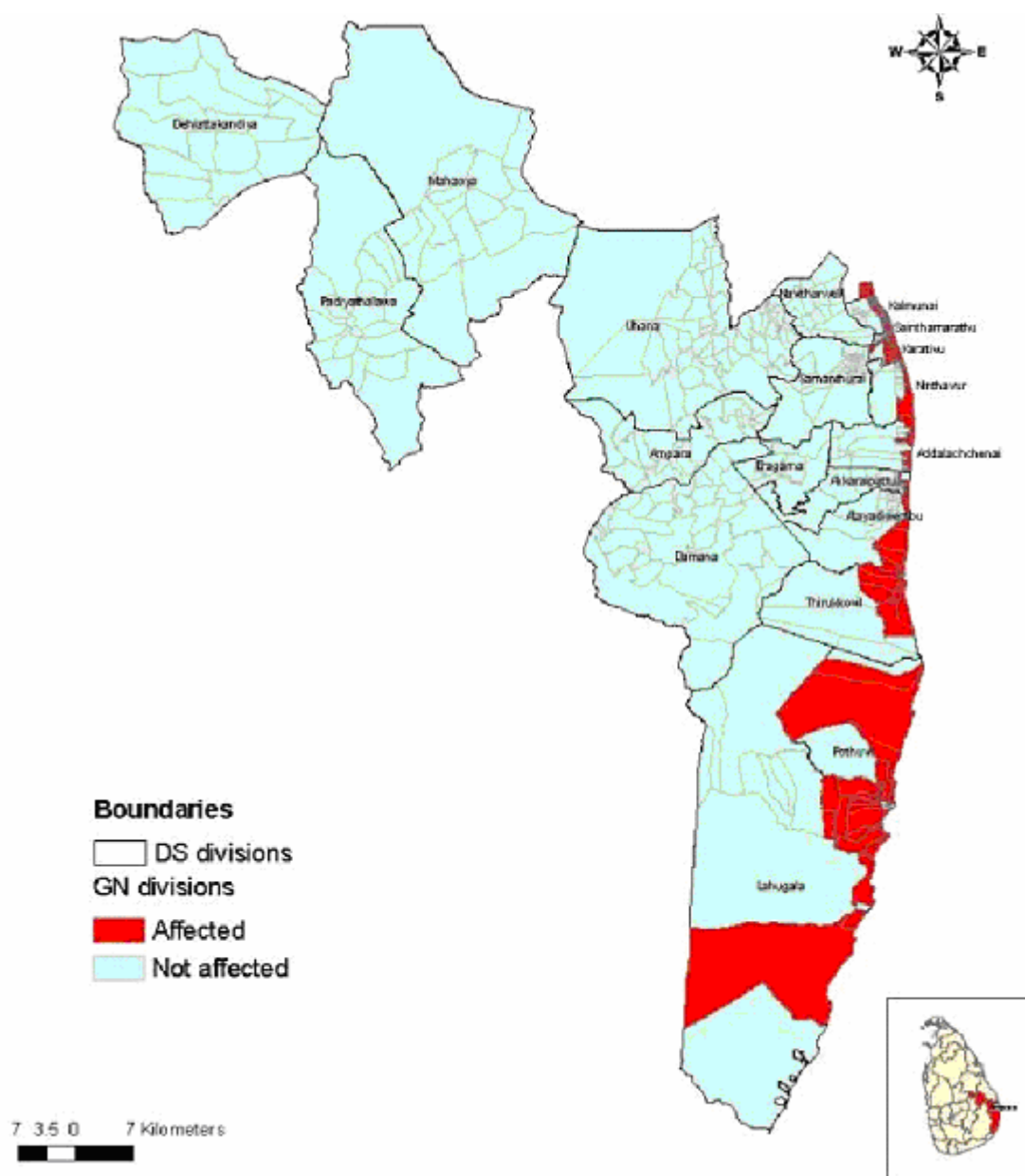


Figure 2: Tsunami affected GN Divisions in Ampara District

6.1.6 Impact of Tsunami on Economic and Social Structure

Ampara district is the worst hit district in Sri Lanka. All basic facilities including lives, houses, small industries, fishing, education, health, electricity, roads, water supply etc. were largely damaged. Out of 260 GN divisions 162 GN divisions in Ampara district have been affected. The worst affected area of Ampara district includes Kalmunai, Addalachenai, Pothuvil and Thirukkivil DS divisions. As far as impact of tsunami on different ethnic groups is concerned, majority affected people are Muslims. Especially the worst affected areas such as Kalmunai, Saithamaruthu, Maruthamunai, Eravur are predominantly Muslim areas. Vulnerable groups among the affected people are children, women and elderly people. About 10,436 died, 75,492 persons displaced and 8,139 houses were destroyed. Of the displaced people, 24% had been living within 0-50 m distance and 38% had been within 0-100 m from the shoreline in Ampara district. Almost all the deaths and damages (90%) have been reported within the 500 m range of shoreline. Forty schools were damaged due to tsunami.

Fisheries, agriculture and tourism dependent livelihoods have been badly affected by the tsunami in Ampara district. About 1914 farmers were affected. Ampara district had the largest extent (2061 ha) of paddy damaged by tsunami. Damage to coconut in Ampara was 2,371 trees. In Ampara district loss of poultry was maximum, which is 54% of the total loss in this region. The worst affected occupational group is fishermen and their families. Two multi-day boats, 491 motorized boats, and about 1,735 traditional boats were destroyed in Ampara. Fishing implements such as outboard motors, ice storages, fishing gear and net also have been destroyed.

6.1.7 Demonstration Site Selection

11 DS Divisions affected out of 20 DS Divisions in Ampara District

Length in Ampara belt affected 120 km.

Total population of the district	-	605,563 (2003)
Percentage displaced	-	15.1%
Percentage affected	-	33.3%
Total population affected Divisions	-	297,105 (2003)
Percentage Displaced	-	30.8%
Percentage affected	-	67.8%

Mostly affected DS Divisions

	Deaths & Missing	Displaced	Affected	Houses	Fishing crafts
1. Kalmunai Muslim	1,591	7,289	11,342	3,847	324
2. Kalmunai Tamil	1,364	5,595	6,367	3,689	78
3. Karaithivu	824	2,993	4,317	2,706	273
4. Saindamaruthu	768	3,586	6,787	1,927	194
5. Thirukkivil	491	5,243	5,388	2,950	204
6. Pothuvil	211	4,432	6,676	2,206	531
7. Alayadyvembu	150	1,350	4,642	291	27
8. Ninthavur	124	2,297	3,850	1,725	173
9. Akkaraipattu	19	2,002	2,341	943	23
10. Attalichenai	15	2,287	5,176	591	187
11. Lahugala	01	18	4,510	33	124
Total	5,558	37,092		20,908	2,188

Fisheries, agriculture and tourism dependent livelihoods have been badly affected by the tsunami in Ampara district. Livelihood impact of the tsunami has been severe. The overall damage to palms plantations in settlements was severe. Overall damage to home garden was high.

Kalmunai Muslim DSD highest number of people died, and highest number of houses damaged and the second largest fishing crafts damaged.

Pottuvil DSD less death, 2nd largest affected people, houses & the highest crafts damaged
Kalppudaddu population 3,500, women 55%, IDP 60%, Poverty 95%, Fishermen 2500

Karaitivu DSD third highest fishing crafts damaged

Total number of INGOs working in the District in June 2005 : 81

(Agriculture 72; Fisheries 87 Economics 81)

Total number of NGOs working in the District in June 2005 : 24

	Village	FI Div.	GN Division	Tsunami damage	No of Fishermen	Agency
Kalmunai Muslim DSD						
Kalmunai Muslim	Kal. Muslim	Kal. Kudy	02	100%	265	GOAL
		Kal Kudy	04	100%	207	ZOA
		Kal Kudy	05	100%	232	SOLO
Maruthamunai	Kal Muslim	Mar.munai	02	100%	119	
Maruthamunai	Kal Muslim	Manmunai	04	100%	125	

In Maruthamunai 48 women lost their husbands, 38 carpentry 80 masonry families lost their equipments, 86 females depend on cattle lost their livelihood.

Kalmunai Tamil DSD - Sandy beach, Palm plantations, Human settlements, Home garden, Coral Reefs

Kalmunai Tamil	Periya Neela	Kal Tamil	01	100%	52/210	SAMA
	Periya Neela	Kal Tamil	1A	100%	48/169	
	Periya Neela	Kal Tamil	1B	100%	73/249	
	Periya Neela	Kal Tamil	02	100%	48/189	

Only 10% of the villagers were engaged in fishing

Pothuvil DSD - Sandy beach, Human settlement

Sinna Ullai	Pothuvil	Pothuvil	05	100%	251/1023	CORD
Sinna Puthu	Pothuvil	Pothuvil	06	100%	184/422	MERC
Kalapu Katu	Pothuvil	Pothuvil	15	100%	197/800	MOOV
Jaladeen Square	Pothuvil	Pothuvil	04	100%	237/972	

The main income generating activity of the villagers prior to the tsunami was lagoon and near shore fishing, while a few families were engaged in agriculture, carpentry, masonry and other daily paid labour activities.

Karaitivu DSD

Karaitivu	Karaitivu	Karaitivu	04	100%	98	CORD
Karaitivu	Karaitivu	Karaitivu	08	100%	128	CORD
Karaitivu	Karaitivu	Karaitivu	09	100%	110	ZOA

People affected professionally in Karaitivu - Fishing (31%), Agriculture (8%), Vendors (8%), Cottage industries (15%), Carpentry (14%), Masonry (11%), Mechanical works (3%) and tailoring and others (10%)

Lahugala DSD

Panama	Panama	PN		100%	133/532	SEVA
Ullai	Ullai	Pothuvil	18	100%	114/406	ZOA

Thirukovi DSD

Plakadu	Thirukovil	Plakadu		100%	149/1747	
Vinayagarpuram 04	Thirukovil	Vinaga.	04	100%	139/2023	ZOA

Tmabuluvil	Thirukovil	T.Tahmbati	100%	166/2528	WVIS
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NGOs and INGOs are providing fishing and gears and crafts

About 40% of the population is economically active, large proportion of the district population (44%) rely on welfare assistance such as Samurthy. High concentration in the DS of Kalmunai, Dehiattakandiya, and Sammanturai. Age group 18 – 55 years 13% unemployed.

6.1.8 Demonstration Site Panama

The village selected for the participatory costal zone management livelihood study in the Ampara District is Panama.

Panama is a village along the East coast of Sri Lanka. Its population numbers about 4800/6000 people in 1400 - 1500 families. It has the sea on one side and the jungle on the other.

Its economy is twofold: sea and lagoon fishing and agriculture, with peanut and paddy as the main crops. Paddy, grains and pulses are cultivated in the monsoon period, while paddy and vegetables during the dry season. Panama is located in the Sri Lankan dry zone, making irrigation necessary.

Natural resources are timber, firewood and stones for construction. In previous times, hunting was also practised. The Government, through the Forest and Wildlife Departments strictly controls natural resources and has now banned any activity in the forests. Panama belongs to the Lahugala Division, with the Divisional Secretary covering both the Lahugala and Panama offices. Its territory borders the Hambantota and Monaragala Districts to the West, the Potuvil Division to the North and the Kumana national park to the South. This means that for Panama there is no way to the South, only to the North towards Potuvil.

Panama is served only by the Panama - Potuvil road, 2m. wide and in very bad state, sometimes inaccessible during the rainy season. Bus services are problematic. It is linked to the rest of the country by the Potuvil-Monaragala road to the West and to the Potuvil-Batticaloa road along the East Coast. Potuvil is the most important center, market and service provider for Panama. The Panama economic and social life is strictly intertwined with that of Potuvil.

Its population is composed of a large Bhuddist majority and of a Tamil-Hindu minority, the main language spoken is Sinhala (whereas Potuvil is a Muslim town and the main language is Tamil). Economically speaking, Panama is a poor village, and it is considered undeveloped in comparison with other villages. Culturally, Panama is a rather special place: there have been marriages between Bhuddist – Sinhala speaking and Hindu – Tamil speaking people. It is a multi-cultural, peaceful village with a long standing tradition of acceptance of people who are “different”.

The Panama wildlife is very rich: elephants, wild buffaloes, deer, crocodiles, bears, leopards, wild boars, jackals, swamp and jungle birds. The Wildlife and Forestry Departments exercise a strict control over wildlife and natural resources.

Some historical determinants

The history of this village goes back to the pre-colonial and colonial times: people from the Kandyan Kingdom settled in the present Panama location to avoid the approaching Dutch and British armies. Kandyan and Low Country traditional laws – bhuddist influenced laws -regulated social and economic life. One consequence is the attitude of self-sufficiency of Panama which continues to this day and the strong influence of Bhuddist culture. According to the old people of the village, the name Panama is a corruption of the Sinhalese name “Pahana Namayai”, which means “Nine Lamps”. According to the legend, in the village there have been nine lamps which were eternally burning.

The period before 1985 is recalled as a sort of golden age where people could live without fear, collecting fruits, firewood, honey, hunting and fishing in the jungle. There were no problems with “chena”(itinerant agriculture) or with paddy cultivation. They had enough land and they could occupy State land, if necessary.

In the following years Panama was greatly affected by the LTTE insurgency, which tried to control this village in order to obtain a secluded landing place for military equipment (years 1988-90). 25 people were killed, 20 boats were burned during this period, the artificial insemination center was closed down (destroyed?), the grain storage was destroyed, water tanks for irrigation got destroyed or were not repaired when necessary and were ultimately abandoned. The Kumana Park was abandoned and fell into disrepair. The Government took steps since 1990 and security was improved. Fishermen had to fish within the security area of

three miles from shore. By now, such problems have been overcome, the Kumana Park is again accessible and there are no more major security problems. The fishing security area has been eliminated. Migrant fishermen arrive from Hambantota and from Wannappure. There is no Police station (people refer to Potuvil for Police matters) but there is still a Special Task Force camp in the village. In the last years, the village got some attention from the Government and the relationship of the Administration with local people seems to be fair. At the same time, water tanks are still waiting to be repaired, the Wildlife and Forestry Departments have marked the areas under their control and a number of activities have been prohibited, affecting people's livelihood negatively.

The **tsunami** did affect Panama: only one person died, thanks to the sand dunes which protected the houses, but all boats and fishing equipment were lost, some paddy fields were inundated by sea water and canals were destroyed by the waves. Only good rains will gradually wash away the sea-salt in the ground. Farmers did not get compensation for their losses. Fishermen got back their equipment from NGOs, from big traders and banks (Hatton National Bank) who supported them in restarting their activities. In connection with tsunami, Panama people report a real **crocodile** invasion. The survey team could observe that ponds previously used by buffaloes were infested by crocodiles, which swim into the sea and then settle on beaches, ponds and streams. Crocodiles pass from Kudakalli to Panama kalappu and viceversa, and from Panama kalappu to Halava and vice versa. Nowadays, crocodiles are found on Potuvil beaches. One person lost his leg and calves have also been lost to the crocodiles. Crocodiles compound the problems already created by elephants and wild buffaloes. People have problems with their land titles because the Land office in Potuvil was washed away.

The Results of the livelihood Analysis

Wealth Ranking

The available statistical – from whatever source - are not very reliable.

In the wealth ranking exercise people divided population of Panama into 4 groups:

Wealth	Families Number	%
Rich	10 families	7 %
Medium	440	30 %
Poor	800	53 %
Very poor	250	16 %

Rich families own over 10 acres of paddy land over 10 heads of cattle, 4-wheel tractors, motorcycles, motor boats,

Medium families own paddy land, average 2 acres, 2 heads of cattle, motorcycles, bicycles, three-wheelers, 2-wheel tractors.

Some are Government Servants and boutique keepers.

Poor families have no paddy land or animals. They might receive Samurdhi allowances. Some of them are masons, carpenters, barbers, seasonal wage workers.

Very poor people own no land or animals. They are mostly disabled people and receive Samurdhi and charity allowances.

By using a "crude" indicator, such as the "1 US \$/ day " standard for absolute poverty, it is found that that in Panama South 176 families out of 246 do not get the 1US \$/day income. In Panama North, 283 families are poor out of 348, with 245 families having an income from 5 to 10 US \$/month. Out of 348 families in Panama North, 65 families have a monthly income higher than 30 US \$ in Panama South 70 out of 246 families have a income of 30 US\$ per month. . The poorest in Panama North are 245, those earning more than 1 \$/day are 65. In Panama South the poorest are 166 and the better-off are 70. About 277 people in Panama North and 226 in Panama South (the very, very poor) rely on public assistance for their survival.

About 126 families have water of their own (in the garden), while 266 do not have water at home, in the garden, and rely on somebody else's well. Panama North :126 families (32,1%) have water at home, 266 (44,4%) do not have water Panama South : 80 families have water at home, 100 do not have water. The lack of wells is a major problem. There are five major irrigation tanks (Ragam Veli, Ulpasse, Udahalawa, Panama, Ballamaldigana) and secondary ones (Myngoda Wewa, Kongaswela Wewa, Wedagama Wewa, Udd Helawe Wewa, Helawe Wewa, Halawa) constructed by the Irrigation Dept. and by the Agrarian Services Dept.

In general, villagers are skilled in farming and produce such crops as monsoon paddy, grains and pulses. During the dry season they produce paddy, vegetables, secondary crops and engage in fishing. They can also engage in small industries, such as making cajans. The village is led and organized by monks, village and community leaders. These people are actively engaged in

developing the village. The village has traditional midwives and ayurvedic physicians (vilhamaltraya) who takes care of the health of the villagers. The relations between the Sinhala and Tamil communities are good.

Panama has between 1400 and 1500 families, possibly 1475, and a population of about 4800 people. According to data provided by the Grama Sevekas, in the South division there is an overwhelming majority of Bhuddist -Sinhala speaking people, while in the North division there are 3 Bhuddists to one Hindu - Tamil speaking person.

Natural resources play an important part in shaping the livelihood of the villagers. A wide range of natural resources is available in Panama. These are sea, lagoons and tanks, agricultural land and the forest. The lagoon water is also used in agriculture. Natural resources are mainly used for agriculture, cattle raising, fishing and small industries.

Transport of products and social mobility are limited by the bad conditions of the only road which becomes very difficult or impassable during the rainy season. The natural resources of the village are being degraded by exploitation, especially the forest. The most type of exploitation is illegal fishing with explosives. Then there is fishing with illegal gear (use of inappropriate nets), fishing at reproduction periods, wildlife poaching in the National Park, and illegal cutting of trees. At the same time, the growing population need space for new agricultural fields, cattle has no enough grazing land. The Forestry and Wildlife Departments have marked out their reservations, forests are unapproachable and people have lost all revenues coming from the forest (wood, timber, stones, honey, hunting, fishing) and they have difficulties to increase production. There cannot increasing the extent of cultivations, the only major option available to them is to intensify production using both modern and traditional practices.

Therefore it is important to give early attention to:

- 1) rehabilitate irrigation (tanks, canals) and main and secondary roads
- 2) provide agricultural training and extension,
- 3) improve local cattle breeds, through artificial insemination and management
- 4) diversify income sources of livelihoods, starting from milk cooling and yogurt
- 5) investigate the catching and marketing of sea lobsters and lagoon crabs, prawns, (and good quality sea fish) to study possible marketing improvements for foreign markets
- 6) improve soil fertility also with organic methods. Currently, fertilizer is used exclusively and farmers burn the paddy straw in the
- 7) ensure resumption of women's traditional activities, like fish drying/salting and chicken farming as such activities were limited or wiped out by tsunami
- 8) provide rural financial services, through of co-op organizations. The farmers' and fishermen's revenues are greatly reduced by middlemen, traders/money lenders, transporters.
- 9) replant of mangroves. Natural resources have been destroyed by tsunami: 98% of mangroves (breeding grounds and cover for fish, crabs and prawns!) disappeared.
- 10) control crocodiles. After Tsunami, crocodiles have invaded agriculture and livestock areas and constitute a danger to social life (a men lost his leg) and to production (calves have been eaten, people fear to take cattle near lagoons). Destructions by wild animals do not bring compensation to farmers.
- 11) provide drinking water to villagers.
- 12) Manage sand dunes with vegetation.

National Park and wildlife resources.

So far, wildlife and forests have not been "assets" to villagers because of the limits and prohibitions imposed on the exploitation of the jungle by the Wildlife and Forestry Departments. The Kumana National Park and Yala (East and West) National Park could actually become great assets for the future Panama development. It should be remembered that Arugam Bay is probably the most important tourist place on the East Coast and Potuvil is its "service" center. Potuvil, Arugam Bay, Panama and Kumana Park are connected by the same road, attached to each other like a string and these localities should be seen as part of the same economic and tourist development programme. Inevitably surfing should be completed by visiting wildlife sanctuaries. Agriculture and the other activities should be functional to tourism and to economic development, in general.

Financial Resources

There are some businessmen investing and doing business with villagers: money lenders and middlemen who come to buy agriculture and fishing products. People would like to create co-operatives to overcome their dependence on traders / money lenders. In general, villagers generate monetary income trough selling agricultural products, being their main productions peanuts, rice, milk and fresh or dried fish, livestock.

Some families make cajans, others operate retail shops and three wheelers. Poor people work as labourers for the wealthier families. The very poor receive Government assistance through Samurdhi stamps and charity allowances.

Finance & Marketing – Rice, peanuts and fish prices are totally controlled by traders. People cannot buy fish from the fishermen but only from the trader. People sell their agriculture produces because they have no space where to keep the harvested rice. There is no storage space in houses in Panama. Selling fish involve caste and generational problems. A market is one way of overcoming the trader's control on producers. The trader controls producers by providing credit to buy inputs and equipment. Rural banks provide credits which are too small to change their situation. Prices are strongly influenced by transport because in Panama there are no lorries, because of the road Panama – Potuvil and the Arugam Bay bridge, which allows light lorries only. Among cases of negative influences on prices induced by transport, see Credit –Farmers, fishermen buy inputs with credit provided by traders and if the harvest fails, the farmer loses his land or house or boat. People need to credit through co-op and a market as solutions to these problems. They realize that traders cannot be easily put aside and want a trader in the co-op. There seems to be strong competition among traders.

Farming and seasonality

Agriculture. The total agriculture land of the village is about 7734 acres, irrigated agriculture is practised over 800 acres and rain-fed agriculture over 1000 acres.

The majority of people are farmers and they also own cattle and buffaloes. Both men and women are responsible for Maha season cultivations, favoured by the monsoon lasting from October to January. Yala season cultivations last from April to July. The main production during the rain season are peanuts and during the dry season is paddy. Coconut production gives low yield. People seek for agricultural extension and think of fertilizing the coconut trees. Farmers complaint that inputs are not available when needed

“Quasi – sharecropping” contract: the land owner provides inputs, land preparation, seeds and seeding, irrigation, harvest the sharecropper does the cleaning of bunds, controls; (information is not enough). The land owner receives 2/3 of production, the sharecropper 1/3. Inputs are normally bought on credit.

Land renting practices: during the rainy season, 20% of land owners rent land, Rs 2000 /acre in the dry season, there is a very strong competition for irrigated land, Rs. 4.200 to Rs.4.500 Rs/acre

Vulnerability is associated with a season without rain; having land ready for cultivation but inputs are not available; elephants raiding fields; the harvest is completed but no transport is available to carry and sell it in town, The post-tsunami salinity make people request for salt - resistant seeds and plants.

Cattle raising Farmers keep cattle and buffaloes, counting around 3000 heads.

Fishing: Lagoon fishing: As indicated in the seasonal calendars, lagoon fishing continue the year around.

Sea fishing Deep sea fishing is practiced from September to March.

70-80 fishermen do not own boats and they work for boat owners as workers or they rent boats and equipment. They get paid with a share of the catch, after subtracting fuel costs: the boat owner gets 1 share and fishermen get three shares, customarily.

Fish market prices are fixed by traders. Panama fishermen built a beacon light, but it never worked. This is a most necessary facility for saving lives in though weather. They need a harbour, a protected landing place. In the last 10 years, 5/6 fishermen died in the sea. Transport of fish catch is done on bicycles or bulls carts. Ice is in great demand. People need a secondary road to approach their boats and to transport fish to the markets.

Aquaculture – Differently from other areas, in Panama people are not interested in aquaculture because they have lagoons. In lagoons they catch prawns, crabs and fish, gaining good money, between January and March. They think aquaculture will eventually destroy lagoons and their natural resources, like in Puttalam, even if they never had direct experiences of it.

The Kumana National Park and Yala (East and West) National Park could actually become great assets for the future Panama development. Arugam Bay is the most important tourist place on the East Coast and Potuvil is its “service” center. Potuvil, Arugam Bay, Panama and Kumana Park are connected by the same road, attached to each other like a string and these localities should be seen as part of the same economic and tourist development programme. Inevitably surfing should be completed by visiting wildlife sanctuaries. Agriculture and the other activities should be functional to tourism and to economic development, in general.

Data on Panama Fisheries

Population: males: 427 – females 408 – total 835

Boat owners: 114 individual fishermen: 80 (total: 194) fish vendors: 13 fishermen, offshore: 0; coastal: 127; lagoon: 58 (total: 185) pension scheme contributors: 63; non contributors: 132 (total: 195)

People living in own home: 208; in welfare centers: 0; with relatives: 0 houses affected by tsunami: 0 dead and missing because of tsunami: 1

Problems and constraints facing the fishing village of Panama, Ampara.

The fishing village of Panama is situated in the south of Ampara district. There are 325 fishing families with 343 fishermen engaged in coastal and lagoon fishing, most of them in low income families.

No of GN Division	04
No of fish landing centers	02
No of fishermen co-operative societies	02
No of houses constructed at the Fishermen Model Housing	103
No of houses constructed at the Fishermen Self Help Model Housing	54

Fish production in m.tons: Source: JICA – Coastal Fisheries Management Report, 2005.

2002	45.72
2003	52.32
2004	70.12 – minimum: January; maximum: November
2005	April : 4.435, May – June: 1.45, July : 10.8

According to 2004 data the catch is 1 Kg/day/fisherman if we consider a fishing season of 1 year or 1.5 Kg/day/fisherman in a fishing season of 8 months

Data from the Grama Seveka, Panama North, Dec.. 2005:

Pre-tsunami fish production: 80 Kg/day/boat for 25 boats = 26.6 Kg/day/fisherman

Post-tsunami fish production: 70 Kg/day/boat (reduced catch because loss of motors and reduced lagoon catch because of debris and silting)

Fishing crafts destroyed by tsunami:

FRP boats fitted with OBM	20
Sea canoes	12
Lagoon canoes	25
Total boats	54
Nets	445 pcs

Fishing crafts issued to fishermen affected by tsunami:

FRP boats (with crew of 3)	27
Sea canoes (with crew of 2)	47
Lagoon canoes (with crew of 1-2)	40
Total boats 74 with capacity for 175 sea fishermen and 60 lagoon fishermen Nets 915 pcs	

Fishermen, Panama North, total 95; sea fishermen 175 lagoon fishermen 60
South, total 60; sea fishermen 44 lagoon fishermen 16

Panama Livestock: 3050 heads (source: Veterinarian, Potuvil)

Buffaloes:	1200
Cattle:	1850
Value 1 buffalo: 10.000,00 R	
Buffaloes lost with tsunami: 50 heads	

Milk: 16 ounces bottle/day by one cow, total production: 120 l./dia (?)
 Curd 500 ml bottles: 100 bottles/dia
 Goats: -
 Poultry: 750 among 120 families
 150 between 2 families

Extent of agriculture land (source: Mr Bawa, Extension, Min. Agriculture, Potuvil)

Irrigable 800 acres

Rain fed 1000 acres

Monthly income

Panama	North 2004	South 2005
500 - 1000 Rs	245 Families	166 Families
1001 - 2500	22	05
2501 - 3000	16	05
*3001 - 5000	16	10
+ 5000	49	60

Note: *3001 Rs, corresponding to 30 US dol/month is above the poverty line

Poverty line

Panama North	Total families: 348	Panama South: 246
Above poverty line	65 = 18.6 %	70 = 28.4 %
Below poverty line	283 = 81.3 %	176 = 71.5 %

School attendance

Panama North	School population: 337	Absent to school : 7
Panama South	185	6

Employment Panama North and Panama South

Employment	Males	Females	No distinction
Government	8	17	63
Home Guard	25		40
Farmers	373	75	40
Fishermen	95		60; sea16 lagoon 44
Business	10		5
Foreign employment		14	1

Families and activities, Panama South

Fishing families	60
Farming families	190
Land owners	40 – average 2 acres/family
Irrigated land owners	5
Families without land	150
Families with buffaloes	5 – buffaloes 140

Land Use (acres) Panama South

1.Up-land	107	1+2 = 242
2.Paddy	135	
3.Irrigable	85	3+4 = 145
4.Rainy season	60	
5.Both seasons	10	
6.Debris, Fallow, Archaeology	200	
7.Cultivable land affected by salt	80	(tsunami)

Land Use (acres) Panama North

Cultivated	600
Fallow	400, upland; 5 year rest 50% near beach; 50% bush
Available	1330
Archaeology	6

Land ownership South North

Families own agricultural land	308	40
irrigated land	20	----
Average irrigated land x family	2	
Average non irrigated land x family	2	
Without land	40	80

Crops cultivated in Panama North and South

1.coconut	120 acres	80 acres
2.paddy	35	
3.fruit	---	
4.greengram	2	
5.vegetables	15	
6.peanut	300	
7.cowpea	270	Total 2 – 7 = 107

Rice yield and production

Rain fed: 1000 kg/acre (very low yield)	Panama production: 36.000 (66Kg) bags
Irrigated: 3500 kg/acre (fair)	= 2.376 tons

Prices of milk

Panama: 15 Rs/litre – Potuvil: 25 RS/litre
Difference of 10 Rs/l because cost of transport

Table 29 – Production & prices of rice

Harvest time:	Before next harvest:
Panama market Rs 13.5/Kg	Rs18.2/Kg
Potuvil market Rs 14-14.5/Kg	Maha season: 1800 acres x 20 bags/ acre: 36.000 bags
Government Rs 15.5 Kg	Yala season: 700 acres x 30 bags/acre: 21.000 bags

Livestock in Panama North - South

Milking cows		11
Cattle	20	28
Buffaloes	45	154
Bulls for carts		30
Poultry	45	25
Cattle-buffaloes lost because of tsunami	50	20

Socio-Economic and Resource-Use Conflict Issues

According to the focus group discussions, the most critical area is the social problems affecting the community. The following are the highlighted social problems:

1. Low education level and high rate of school dropouts and low literacy rate
In general, Ampara lagoon fishermen's education level is very low nearly 30% of them have not gone to school. In term they do not give high priority for the education of their children.
2. An increase in the numbers of widows, orphans and disabled people. Around 15,000 women

headed families

3. Underutilization of land, and human resources with reduced female participation in production activities.
4. High proportion of poor and dependents. Malnutrition and under nourishment of fishermen and children.
5. Psychological trauma, mutual misunderstanding among communities insecurity.
6. Lack of proper housing, ambiguous land ownership
7. Excess use of liquor and the use of illegal liquor. The habit of drinking consumes most of their earnings and savings of the fisher families are very small. This in turn affects their children's education and stability.
8. Lack of infrastructure facilities.

There are several economic problems also in the Ampara area:

9. Loss of income and employment sources due to tsunami
10. Lack of proper marketing facilities and fluctuations of price of fish
Most of the fishermen's daily catch have to be taken to common auction place where fishermen cannot sell their catch according to their wish. Therefore on most occasions they only receive very minimal price for their catch. One of the main factors for coastal fishermen's low income is unstable prices for their daily catch
11. Inadequate suitable sea vessels, gears and landing facilities
The fisheries landing sites cannot accommodate all the boats in the area due to silation, which has decreased its capacity. Coral reef obstruct entrance into landing sites.
12. Lack of alternative forms of income generation
Some forms of income generation, such as coral mining and the collection of coral fish, are not dependent on tourism, but are having a negative impact on the tourist industry.
12. There is a tendency to use illegal fishing methods in order to increase the catch without taking into consideration the disturbance to the habitats. This has led to decrease in daily catch for many fishermen and created many problems to the fishermen.
13. High unemployment and underemployment
Unemployment has created many problems like encouragement, over fishing, illegal fishing practices in the coastal area. During heavy monsoon periods of the year when no marine fishing can take place some fishermen move to lagoon fishing

Panama/ Pottuvil sand dunes are one of the most prominent and unique dune systems in the country. It has been identified as potential special area management site in Eastern Sri Lanka. Before tsunami natural environment of this villages was highly affected by the human intervention and most of the people livelihood directly depends on the environment. Users participation in coastal zone management has a high priority. Empowerment of the weakest part society is the interest of this development process.

7.0 Socio-Economic Profile of Batticaloa District

Batticaloa district occupies the central part of the eastern Province. It has the landmass of approximately 240,391 ha and internal waterway of about 23,000 ha. The district covers 3.8%. The Batticaloa District comprises 14 Divisional Secretariat Divisions, 345 Grama Niladaries Divisions and Villages. This district is a conflict-affected area and civil administration of certain areas comes under the LTTE control. With the exception of Vakarai the coastal areas in Batticaloa are government controlled, while large portions of the agricultural hinterland are under the control of the LTTE. Tables relevant to Batticaloa district are given in the annexure.

7.1.1 Population and Demography

Batticaloa is predominantly a Tamil (73.2%) populated district. Population of Batticaloa district was reported as: 0.51 million with growth rate of 1%. The internally displaced population in the district is about 20% of the total population. It is estimated that there are about 24% female-headed households in Batticaloa district. The population is largely rural (72%). Muslims comprise 25% of the total population. Predominantly Muslim areas are Kattankudy and Eravur. Kattankudy DS division has the very high population density of about 5631 persons per sq. km. This figure is higher than even that of the greater Colombo area reported to be the highest population density area of the country.

7.1.2 Land Use Pattern

The land use pattern of Batticaloa shows that 16.9% of the total land area is covered by forest and agriculture occupies 44.7% of the total land. Land available for agricultural activities is 121,500-hectare amounts to half the landmass of the district. Because of the considerable length of coastal line (135km) and large inland water bodies (230 sq. km.) such as lagoons, irrigation tanks and basin estuaries, it is also endowed with a strong resource base for fishing. Intensive and substantial utilization of these under utilized resources can bring about considerable advancement in the socio-economic status of the district. Batticaloa has been a surplus rice and fish-producing district. In recent times there has been a drop in production of these two commodities in the district. Agriculture, livestock and fisheries have been the principal activity in the district. With around 24% being engaged in crop and livestock agriculture and 14% in fishing The district has about 29,000 agriculture families.

7.1.3 Fishery Sector

Fisheries constitute the second largest sector in the district economy. There are nearly 19,000 depending on fishing and around 21,000 active fishermen engaged in this industry. Majority of fishermen are in Kalawanchikudi, Manmunai North, Valachcheni, Chenkalady and Vahari area. The conditions of existing infrastructure of the district directly affect most activities. Significant damage to infrastructure has occurred as a result of the conflict; thus roads have been damaged and are poorly maintained. The major harbour facility at Valaichchenai was destroyed shortly after construction and is presently not usable. Access to essential services and facilities for handling of the catch, and maintenance of boats, is lacking. Cold storage facilities are generally deficient throughout most of the Eastern Sri Lanka. Lack of access to cold storage facilities mean that fresh fish must be sold immediately, limiting marketing options, and resulting in greater waste. Roads from landing areas to markets are often in poor condition or require frequent stops at military check points. The additional restrictions and heightened difficulty in transporting goods create a climate more favourable for middlemen to more easily control the transport of fish to market. A few small-scale shrimp farms are operating in Batticaloa and Valachcheni lagoons. Shrimp ponds are dug out along the shorelines of lagoons. The majorities are on Crown land. And there is no zoning system in place to regulate the use of this land for shrimp ponds or any other purposes. There is also a need to regularize shrimp farming activity through environmental regulations and zoning laws, as well as to set up lagoon management systems. The National Aquaculture Development Authority is required to inspect shrimp ponds to see if they meet design requirements. For ponds below 4 hectares in size, the farmers must produce an initial environmental examination. For large ponds, a full environmental impact assessment is required, including analysis of social impacts. However, it is unclear which agency is responsible for reviewing and approving the environmental report.

7.1.4 Livelihood and Employment

The population relies primarily on fishing and agriculture for their livelihood. There is a wide array of employment opportunity prevalent among the communities in Batticaloa district. Agriculture production and investment in the fishing industry were severely hampered by the war. Displacement has often resulted in destruction or loss of assets, including housing, farm equipment, and fishing gears. Restrictions on mobility have clearly affected the people's capacity for earning a living. Unemployment and under employment continue to disturb the productive life of the people. Over 30,000 persons (unconfirmed) between 15 – 35 ages in the rural areas are unemployed. While productivity and earning power have been severely affected by the conflict, the majority of the population in Batticaloa district continues to earn their income in the largely traditional sectors of farming, fishing and employment in other commercial services. Some livelihoods are based on the natural resources whereas there are a significant number of wage earners engaged in off farm activities. Certain amount of people are engaged in brick making, shell mining, coral mining, metal crushing, carpentry, masonry and other categories of cottage industries. The unemployment rate in Batticaloa district is 15.9%.

7.1.5 Incidence of Poverty

Batticaloa is the poorest district in the Eastern Sri Lanka, which nearly 77% of the households are considered as poor. Among them more than 50% of the households get poverty relief (Samurdhi). Chronic malnutrition in children below 5 years is about 35% in Batticaloa. In terms of quality of life indicators are concerned the situation the situation in Batticaloa is far below than the national situation. Main reason for such underdevelopment is lack of basic infrastructure including adequate and improved roads, transport system, access to market, and education and health facilities by the majority of the people. . Majority of poor families live mainly on fishing or agriculture. In Batticaloa the poorest DS areas include Poraithivu, Manmunai North, Kattankudi, Nawakkadu, and Kalavanchikudi DS divisions. It is estimated nearly 75% of families in these areas earn less than Rs. 1500/=

per month and live temporary or semi permanent houses. Among these poor households, half of them live in coastal villages and they have severely affected by the recent tsunami tidal waves as well.

GN Divisions of the Batticaloa district affected by the Tsunami: 9.0/2004

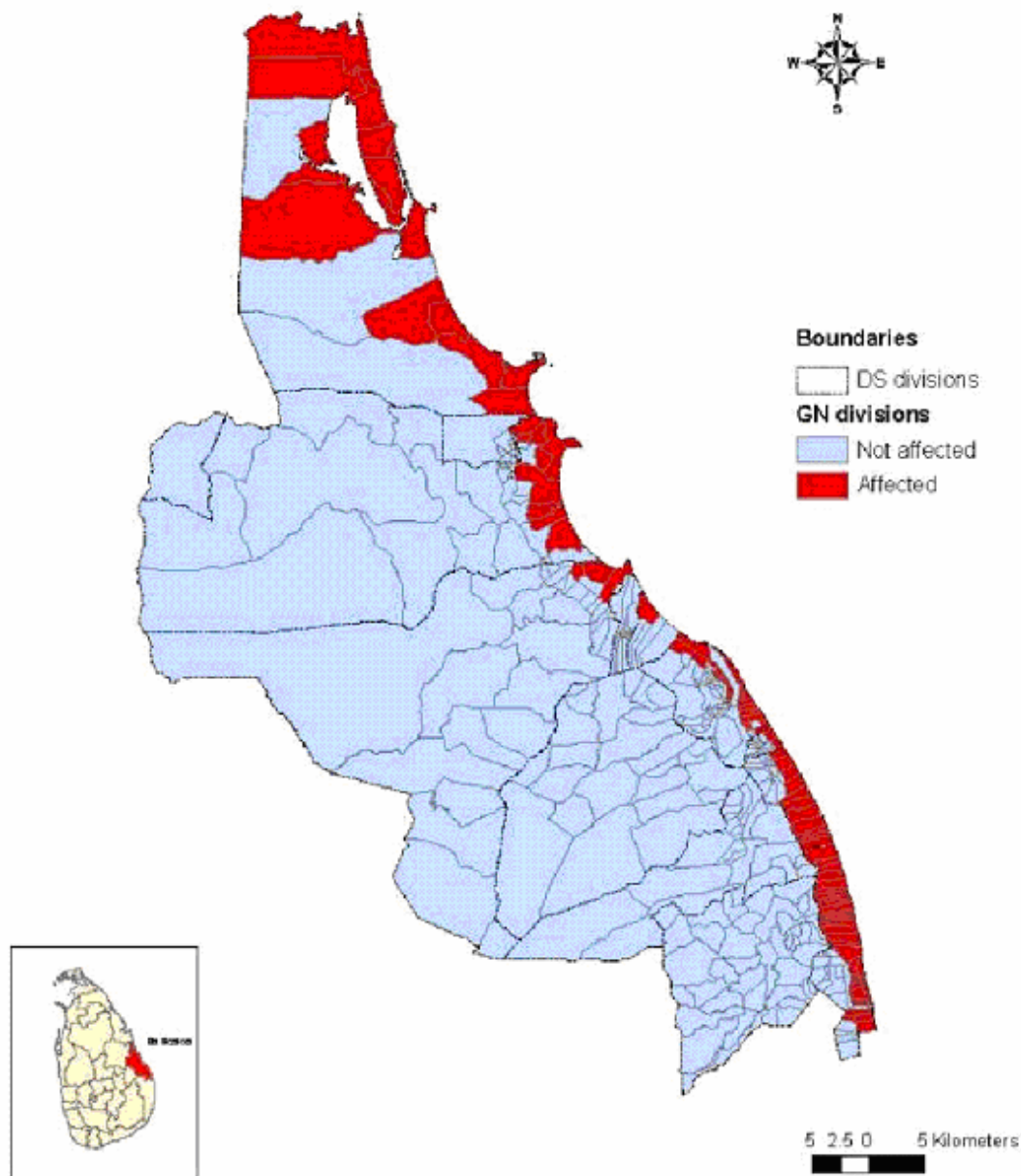


Figure 3: Tsunami affected GN Divisions in Batticaloa District

7.1.6 Impact of Tsunami on Economic and Social Structure

Out of 14 D S Divisions 13 divisions in the district are directly affected due to the tsunami. One division is indirectly affected. 2,840 died and 952 are missing. About 2417 agricultural families owning 347 ha of land devoted to paddy, vegetables, fruit and beetle were affected, particularly by salinization. The agriculture sector also suffered the loss of 453 water pumps, 369 sprayers

and 9 rice mills. 254,868 people in 63,717 families were affected. Prior to the tsunami there were 21,040 active fishermen in Batticaloa; 3,627 non-mechanized craft, 26 traditional boats, 654 FRP boats and 278 day boats were reported damaged by the tsunami. Anchorages as well as one ice plant and a Fisheries Trading Center in Navalady were destroyed. Unless fishermen can be relocated in very close proximity to their original village and to the sea, they are reluctant to move. This is a cause for concern among Navalady fishermen, where the proposed resettlement site is 5 km from their original land. With the exception of multi-day boats pledges have been made by private organizations, INGOs and bilateral agencies to replace all totally damaged boats. Outstanding issues include cleaning of the lagoons in Batticaloa, Vakarai and Valachcheni, as well as some beach areas and the repair of boats.

Many craftsmen lost their tools and capital, and traders lost their businesses. Out of 14 D S Divisions a total number of 15,477 houses are destroyed fully and 5,541 houses are partly damaged in 08 D S Divisions. Thus a total a total number of 21,018 houses are damaged in the district as per information from the Kachcheri. Livelihoods of craftsmen, traders and workers engaged in cottage industries too have been affected as many have lost their tools and equipment. Some others have been indirectly affected such as traders who deliver to, or buy from, the fisheries sector. The worst affected area of Batticaloa district includes Kalmunai, Addalacheni, Pottuvil and Thirukkivil DS divisions. Affected people prefer grants or equipment to restart their livelihoods. They are unable to provide security collateral and / or deeds and as a result banks are hesitant to provide loans. Although the government has made available a credit line at 6% interest, banks are reluctant to administer these loans due to high administrative costs and because the clients are without a banking history. Borrowing from micro-credit institutions has decreased, which was attributed to a preference among people for grants due to concerns about their own ability to repay. The post-tsunami period saw significant collaboration between the Muslim and Tamil communities. Muslims who fled to the coast during the war now wanted to reclaim their land in the interior. Tensions are also build between tsunami affected and conflict affected people, as well as with those affected by previous floods and poverty affected people, as each group feels they are not receiving an equitable share of the overall assistance available.

The tsunami has had a sever impact on the local environment, through the destruction of coastal vegetation, pollution of the lagoon, generation of large quantities of solid waste, contamination of groundwater wells, and increased salinity in groundwater and soil. However, environmental issues are not being considered a priority in the reconstruction efforts. One of the main concerns is how the government will enforce the new introduced buffer zone. As the Government was unable to enforce existing regulations under the Coast Conservation Act, there is no guarantee that this new law will be enforced. District officials are unclear as to who will be responsible for enforcing this policy, as the Coast Conservation Department (CCD) does not have representation in the district. In the absence of a CCD representative in the district, the Government will have to delegate authority to another line agency to ensure effective long-term implementation of the policy. In planning and implementation of green belt on the coastal extensive involvement of the community is important to make it sustainable.

7.1.7 Batticalo District Demonstration Site Selection

11 DS Divisions were affected out of 14 DS Divisions in Batticaloa District

The lagoon, which traverses through the district, extends 73.5 km from Verugal (in the North) to Batticaloa town and also extends further from Batticaloa town 32.2 km to Truaineelavanai (in the South).

Total population of the district	- 545,477
Population density	- 226 persons/sq.km
30, 000 agriculture families and 16,300 fishing families	
Percentage displaced	- 39.2%
Percentage affected	- 47.6%
Total population affected Divisions	- 255,000
Fishing area length 56 km.	

As most part of the district is covered with sea and lagoons the people habituating in coastal line are prone to hazards. The economy of the district is depending mostly on agriculture and fishing. The district has about 30,000 farm families and 16,300 fishing families.

Major part of the population is concentrated in the narrow strip between the sea and the lagoon. As coastal fishing the lagoon is famous for its crabs and prawns.

Livelihood of farmers, fishermen, craftsmen, traders, and workers engaged in cottage industries have been affected. Tourism is also an important sector in the area. Many small hotels, vendors, three wheeler operators and around 40 hotels have also

indirect been affected by the tsunami due to decrease in tourist arrivals in the region.. It is also observed that increase in hotel prices due to high number of international aid workers.

The post tsunami cleaning and reconstruction activities have created a very high demand for labour in the area. INGOs pay Rs 1000 per day against local payment of Rs 300.

Mostly affected DS Divisions

	Deaths & Missing	Displaced	Affected	Houses	Fishing crafts
Manmunai north	1,088		53,400	4,447	
Kalavanchikkudy	447		52,608	2,453	
Vahari	478		17,595	2,825	
Arayampathy	163		52,608	1,221	
Kantankudy	447		26,732	1,390	
Valaichenai	613		20,475	964	
Chenkalady	212		42,708	137	

According to the focus group discussions, the most critical area is the social problems affecting the community. The committees in the mostly affected DS Divisions highlighted following social problems. Damaged boats 55%, No of fishermen 261, Aquaculture feasibility yes.

Vaharai DS Division

This is one of the mostly affected and very poor DS division in Batticaloa district. About 395 people were killed by tsunami of which 157 female and 157 male and 81 children and about 10 were missing. Out of 13n GN Divisions in Vaharai DS D Vaddavan, Vaharai North, Panichchankeny , Palchchanai, Katjeravery and Puchchackeny villages were mostly affected.

Education, health, houses , income and employment were also severely affected. About 10,000 people were directly engaged in fishing and agriculture and most of them were affected by the tsunami. About 75% of the people are living below poverty level.

Vaharai north and Pannichchankeny GN divisions suffered most houses damages of 422 and 445 respectively. Kathiravelly, Vaddavan and Kayankeny are other GN divisions suffered significantly.

G.N Divisions	Deaths	Houses Damaged	Farming families	Fishing families	Boats Destroyed
Kathiravelly	48	274	274	250	165
Puchchackeny	40	139	227	225	35
Palchchenai	56	256	183	207	67
Uriyankadu	06	196	304	325	61
Vaharai North	57	422	144	95	37
Paninchcchankeny	74	445	69	330	26
Vaddavan	71	262	44		

Source: Statistical report of Vaharai Division 2004

A total of 2918 houses were damaged fully within 200 meters in the 13 GN divisions in Vaharai North. About 2582 families affected by tsunami in Vaharai DS division. More fishermen and farmers in Kathiravelly, Puchchackeny and Palchchenai GN divisions were affected in Vaharai north. In Vaharai north DS division about 2/3 of the affected people depend on fishery. About 2363 families depend on fishery and they lost a total of 567 boats due to tsunami.

Korali Pattu North, Korali Pattu, Korali Pattu South, Eravur Pattu DSD in the North of Batticaloa. Beach seine fishing is granted to about 440 yards in extent in the coastal area. This is different method depend on cooperation of the fishermen. This offers employment opportunity to large number of people, also there is no risk, and it has collective responsibilities and fulfils the requirements of fish in the district to a great extent. This fishing method faces many challenges in the past three decades.

In 47 beach seine areas about 2800 families directly and 500 families indirectly affected by tsunami. About 16,500 people depending on Karawalai fishing have lost their

7.1.8 Demonstration Site Vakarai

The village selected for the participatory coastal zone management livelihood study in the Batticaloa District is **Mankerny in the Vakarai Divisional Secretary's Division**.

Koralaipattu North (Vakarai Divisional Secretary's Division)

The area known as Koralaipattu North (Vakarai Divisional Secretary's Division) is one of the most backward areas in the island. Inhabitants are said to be descendents of an indigenous tribe. Facilities such as electricity and telephone services are almost unknown to them. Majority of the people live in poverty. Over 70% of the population is receiving a monthly income of less than Rs. 3,750.

Natural and man-made disasters such as the tsunami, cyclones, severe floods and the ethnic war have taken a heavy toll. Children are the worst affected by the disasters and the resultant displacements. It has been found that there is only one school functioning in the area. About 29% of the children in the school going age are not attending school. The literacy rate of the community, is at a low of 87% at present.

Koralaipattu North is located in the Administrative Division of Vakarai. his area is situated bordering the LTTE controlled territory, within the cleared area. The coastal Villages lying from Kurukkalmadam at Manmunai South & Eruvil Pattu DS Division are popular for onion, chilies, betel and vegetable cultivation. Three tsunami-affected villages in the Vakarai Divisional Secretary's Division in the district of Batticaloa. The total land extent of the area is 27.3 square kilometers, made up as follows:

Land extend of Mankerny

Village	Land area in Sq.kM
Palm Colony village in Grama Niladhari division 211 F- Kirimichai	11.5
Mankerny Central village in Grama Niladhari division 211 - Mankerny Central	5.3
Pirappaimadu village in Grama Niladhari division 211G – Mankerny South	10.5
Total	27.3 Sq. kM

Source: Divisional Secretariat, Vakarai

Livelihoods pursued by the villagers

There have been many livelihoods including poaching, which is an illegal activity prior to tsunami hit them. Namely handicrafts, raising of country fowl, dairy cattle keeping and cottage industries, Small businesses, Selling of food items, Sewing of clothes, Poultry farming, Relief work, seem to have disappeared. Working for NGOs has emerged. Relief work is directly related to the aftermath of the tsunami. However they are faced with quite a number of problems in pursuing the livelihoods and in day-to-day living in general.

Sangilivil tank is the largest inland fresh water body in the area. It is mainly being used for irrigating the paddy lands. Some fishing is also done in the tank. There is a major tank named Periya Palayadiodai Kulam which is in ruins now. In addition, there is another tank, which is also in ruins known as Sinna Palayadiodai Kulam. North East Irrigated Agricultural Programme (NEIAP) has already made preparations to renovate the Periya Palayadiodai Kulam. Then there are three minor irrigation tanks in the area Periya Wammykeny Kulam, (Thamarai Kulam), Sinna Wammykeny Kulam and Odda Wammykeny Kulam.

Agricultural activities in Markeny

The people in this area are mainly dependent on agricultural activities consisting of crop and animal production. They are engaged in paddy cultivation, vegetable growing, chena cultivation, home-gardening and animal husbandry.

Pre-tsunami situation:

Before tsunami there were about 160 families involved in paddy cultivation. Paddy cultivation was limited to rain-fed agriculture during the Maha season as there were no irrigation facilities.

Almost all the villagers in the area had home-gardens prior to tsunami, where they grew annual crops such as vegetables and other field crops. In addition they had perennial crops such as fruit trees, coconuts, flowering plants and medicinal plants. The average extent of home gardens was ½ an acre. About 40 families were involved in vegetable cultivation outside their home gardens. They cultivated crops such as maize, ground nuts, yams and chilies. The average extent of the lands

Post-tsunami situation:

The farmers are not receiving any subsidies extended by the government or other parties (such as NGOs) to paddy farmers.

Most of the families are engaged in home gardening. The produce is used mainly for consumption and perennial crops mainly coconuts and cashew and flowering plants and also palmyra and mangos.

About 25 families are engaged in chena cultivation. The average extent of land under chena cultivation is about 1 acre per family. Chena farmers are constrained by the unsettled security situation in the area.

This area has extensive pasturelands containing water, grass and fodder in abundance plus suitable climatic conditions for rearing animals. Plenty of straw and vegetable residues is also available, which can be used as animal feed. This area is very suitable for rearing goats also. It has fodder and grass and crop residues in plenty, plus a good supply of water and good climatic conditions. Most people prefer to rear goats due to the high rate of reproduction. The ability of the goat to resist adverse conditions such as droughts and feed scarcities is a plus point. Furthermore goats can be reared as free range animals. Some NGOs functioning in the area also prefer to provide goats to people to enhance their incomes.

Effects of the Tsunami

Almost 100% of the 507 families in the area were severely affected by the tsunami. They lost 15 of their family members, and all their houses were completely destroyed. 400 families are still living in tents and 107 in immediate shelters. There is no plan to build permanent houses. TRO has promised to build houses but now they are faced with financial problems. The Government will give Rs. 250,000 per family to build a house. There were 266 fisher families and 179 paddy farmer families among the severely affected. 23 Families engaged in vegetable cultivation were also affected. The other affected families were depending on various other livelihoods. The livelihoods of most of these families had also been completely destroyed.

Population

15% of the population is a child. Absence of medical services and there is widespread malnutrition among children. This is one issue, which needs to be urgently addressed.

22.6% of the population is in the school going age. There is only one school (Mankerny Roman Catholic Mixed School) operating in the area, and the total student population is 318. Accordingly there are 130 children (or 29% of the age group) who are not attending school. This aspect also deserves urgent attention.

About of 479 families out of the total number of 507 families or an overwhelming percentage of 94.47 families are dependent on Samruddhi. This reflects that this is predominantly a poor area, possibly the poorest area in the island. Therefore the communities living in this area deserve special attention in order to help them to reduce their poverty.

Socio-Economic Status of the Mankerny Village

Level of well being of the community:

The Wealth Ranking exercises carried out by the participants in two groups to assess the level of well-being of the people have yielded the following results:

1. Over 70% of the population is living in poverty, receiving a monthly income of less than Rs 3,750/=.
2. With heavy families to sustain, there is bound to be widespread malnutrition.
3. A sizeable portion of the population is illiterate. **Resources of Mankerny-Pre tsunami** indicates that 200 persons (10% of the population) are illiterate. One can argue that a 90% literacy rate is satisfactory by South East Asian standards. However, there is the danger of the illiteracy figure rapidly increasing in the area due to the prevailing situation.
4. Heavy consumption of liquor and uncontrolled births are parts of the vicious cycle of poverty. Teenage marriages, which are observed as another prevailing phenomenon in the area, seem to be worsening the situation. Provide counseling could arrest these trends.

Resources of Mankerny: Pre -Tsunami

Human Resources

Prior to tsunami there had been 279 fishermen, 170 goat keepers, 440 home-garden cultivators, 80 mat weavers, 10 handloom weavers, 176 paddy farmers, 22 tailors, 144 persons involved in handicrafts, 30 firewood collectors, 125 local poultry keepers, 3 indigenous doctors, 2 NGO workers, 02 Samruddhi workers, 14 government servants, 69 persons involved in poaching and 15 dairy keepers.

Only few There are 5 persons who have passed GCE Advanced Level (which, incidentally, is the highest educational qualification found in the area) and 50 GCE O/L qualified youth. Some of them may already be employed and may be included in the 14 Government servants. However it may be possible to obtain their services to strengthen the organizations in the area, which could prove to be the key to the development of the local community.

There are 250 (12.6% of the population) illiterate. The area has attracted new human resources such as masons and carpenters possibly as a result of tsunami.

The Situation of Human resources

Human resource	Pre tsunami	Post tsunami	Comments
Fishermen	279	226	53 livelihoods lost
Carpenters & Masons	16	24	
Goat Raring	170	70	100 livelihoods lost
Home garden	440	329	111 livelihoods lost
Mat weavers	80	13	67 livelihoods lost
Handloom Weavers	10		10 livelihoods lost
Firewood collectors	30	30	

Natural resources

There are trees such as palmyra, coconut, mango, Indian almond, tamarind and neem growing naturally in this area. They have been partly damaged. Shoals of fish near the beach have dwindled, and prawns and crabs also are in short supply. Sea beach is polluted with debris brought over by tsunami. The land is partly eroded by tsunami waters. Some areas are affected due to salinity. The forest and wildlife were not affected to any appreciable degree.

Social Resources

There are 9 organizations functioning in the area. The most important organizations from an economic point of view are the Farmers' Organization and the Fisheries Co-operative Society. These organizations have the potential to usher in a new era of development to the area. However if that is to be realized they need to work in co-ordination according to a common plan.

Financial Resources/Economic Resources

There are no banks operating in the area. The only lending institute is Samruddhi. People are compelled to approach private money lenders, very often large scale fish *mudalalis* (businessmen) for their credit requirements, which they give at exorbitant rates of interest.

Livelihoods of community members

According to the findings, 588 people out of a total of 1554, or 37.8% of the working population have lost livelihoods due to tsunami. This means that approximately 37.8% of the families have no means of living, which is a very bleak prospect. This situation calls for urgent action to rehabilitate these affected families by assisting them to engage in new livelihood activities.

Livelihoods of Mankerny – the current situation

The list of livelihoods contained in the above table contains activities such as poaching and firewood collection. Both these activities are harmful to the environment and particularly to wildlife. People have to be made aware of the long term consequences of such activities.

According to the information 588 people in the area have lost their livelihoods due to tsunami. However, About 624 persons have lost their livelihoods, which figure is made up as follows:

Fisheries	53;	Goat keeping	100 ;	Home gardening	111;	Mat weaving	67
Handlooms	10;	Paddy cultivation	69 ;	Handicraft	134;	Country fowls	80
Total :	624						

Birth control is very rare specially among families belonging to the lower economic stratum in the area. In addition to that teenage marriages are commonplace. This state of affairs would lead to a population explosion in the near future, which would result in very serious repercussions, resulting in fierce competition for the few employment opportunities and lands available. Land fragmentation would be an inevitable adverse result if the present trend is allowed to continue.

Violence was something with which most of the communities in the North and East of Batticaloa were compelled to live with. Fortunately the area under review has not been subjected violence of any significant scale up to now. However that does not mean that the possibility of violence erupting in the area at any time is not there.

Current Livelihood Strategies

Agriculture is the main livelihood in the area and next comes fishing. However people are not normally engaged full time in a single livelihood activity. Since paddy is cultivated during one season only, farmers are left with almost 8 months to pursue other occupations such as fishing, home gardening and poaching.

Agriculture:

One of the new strategies introduced to the area is Community Farming. Normally 25 farmers, both youths and elderly are taken in to be members of the community farm. Under this system the members work together contributing their labour and share the profits after harvesting and marketing. System seems to be progressing well.

At present the paddy farmers are using chemical fertilizer and agro chemicals in their cultivations. As there are no recognized lending institutes in the area they obtain credit at exorbitant interest rates (96% per annum) for production purposes. Usually the money is lent by a paddy purchaser. No sooner the paddy is harvested and threshed, the money lender comes in his tractor to the threshing floor itself and collects the paddy at a very low price.

Marketing strategies are totally absent in the area. Most of the paddy farmers manage to sell their produce to outsiders (in Oddamawadi etc) to escape the exploitation of middlemen and obtain better prices. Middlemen usually pay prices much lower than the prevailing prices. As proper transport facilities are absent, marketing of fish and other products has to be done through middlemen. They usually visit the area to buy local products at cheap rates.

Fishing:

Prior to tsunami the fishermen in the area used to employ several strategies for catching fish, namely beach-in fishing, night fishing in shallow seas, angling and hooking, lagoon fishing and river fishing. In addition they harvested prawns and crabs at night.

The tsunami deprived them of all the 6 beach-in fishing points, destroyed 6 canoes used for lagoon fishing, 15 sea going boats (18'x6') with outboard motors, 52 seagoing canoes and 4 beach-in fishing boats. They have received only 13 lagoon canoes, 6 outboard motors and 9 seagoing canoes.

At present, most of the fishermen are compelled to engage in angling and hook fishing as they are without boats and proper fishing gear. The others, who were fortunate enough to receive boats and fishing gear from well wishers are engaged in the activities as usual. Tsunami has caused a decline in the fish population in shallow seas. Therefore deep sea fishing is a far better strategy for these people to earn a good living. They need equipment and training for that purpose.

Problem Analysis

A perusal of the problems analyzed reveals that there are 4 types of problems in the area namely:

- Problems affecting the whole community
 - Poor health services and medical facilities due to the absence of doctors and the damages to the hospital resulting from tsunami
 - Lack of drinking water and toilet facilities resulting from tsunami damages
 - Damage to roads resulting from tsunami
 - Lack of facilities to commence a livelihood
 - No electricity
 - Problems in distribution of (tsunami) relief
 - Damage to houses resulting from tsunami.
 - Poor transport facilities
- Problems affecting youth
 - Unemployment , Lack of vocational training, Addiction to drugs and alcohol
- Problems affecting fishermen
 - Loss of fishing gear due to tsunami, Lack of cold room facilities
 - Lack of production credit facilities, Negligence of duties by the Fisheries Inspector
- Problems affecting farmers
 - High cost of agricultural inputs. Marketing problems
 - Damages from wild animals, Lack of agricultural advisory services.

Needs to improve agriculture sector

1. Renovate Sinnapalayadiodaikulam and Periyapalayadiodaikulam tanks.
2. Increase the capacity of Sangilivikulam tank
3. Erect electrical fence to repel elephants
4. Establish mechanism to provide credit to farmers at low interest rates.
5. Provide training to farmers in improved cropping systems
6. Establish marketing linkages for paddy and other agricultural produce
7. Introduce solutions to the problem of salinity - introduction of salinity resistant crops.
8. Provide a rice processing facility to the Farmers' Organization.
9. Construct storage facilities for the Farmers Organization
10. Organize the livestock farmers
11. Provide credit to commence livestock activities
12. Train farmers in improved cost effective livestock practices

Needs to improve the fisheries sector

- 1 Construct a cold room facility
- 2 Provide boats and fishing gear to fishermen affected by tsunami
- 3 Arrange credit and marketing linkages
- 4 Provide training and equip fishermen (specially youth) to engage in deep sea fishing.
- 5 Provide refrigerated vans to transport fish

Needs to promote small business

1. Construct a vocational training centre to youth such as masonry, carpentry, electrical wiring and outboard motor mechanics
2. Provide training to women on handicraft products from coconut and palmyra
3. Provide training to men and women on reed products such as mats and bags.
4. Reopen handloom weaving centers and provide training to women.
5. Provide training on milk products such as yoghurt and ghee and give credit facilities.
6. Provide training on dry fish production and the manufacture of nets as a cottage industry.

Present scenario of mangroves ecosystem

- Deforestation of mangroves forests due to security reasons and civil unrest
- Woodcutting of mangroves by rural poor and outside traders.
- Reclamation of virgin mangroves forests for the excavation of ponds for prawn farming,
- Consequent siltation of lagoon beds due to opening of upstream water bodies into lagoons affect mangroves species and flooding human settlement areas.
- Use of fine mesh fishing nets by rural fishermen and damages of prawn and fish juveniles causing acute problems in the fish farms of mangroves ecosystem.
- Discharge of pollutants into the lagoon and mangroves forest polluting the natural environment of mangroves ecosystem.
- Large scale damage of seeds/seedlings or propagation of these important mangroves due to over exploitation of the mother plants and damage in their natural habitats have also alarming for natural regeneration.

Threats to mangroves

Habitat destruction and distortion, Over exploitation and Unplanned aquaculture

Several species of mangroves, fishes and birds of the mangroves ecosystem have been enlisted as extinct and endangered.

Needs of fisher folk

The tsunami affected 3,627 non-mechanized craft, 26 traditional boats, 654 FRP boats and 278 day boats. Anchorages as well as one ice plant and a Fishery Training Center in Navalady were destroyed. With the exception of multi-day boats pledges have been made by private organizations, international NGOs and bilateral agencies to replace all totally damaged boats.

A coordinated effort to channel funds for fishery infrastructure development in the area would improve the livelihoods of the fishermen while releasing the pressure on the marine ecosystem. Due to adequate sea going boats and fishing gears, the pressure on lagoons and other inland ecosystems have increased after tsunami. Temporary alternative livelihood need to be identified to prevent these

Recommendations

- Estimation of annual woodcutting, deforestation, afforestation recovery and total biomass from the mangrove forest.
- Alternative income generation programme like social forestry, for landless, and poor people. - Exploit the possibilities of crab culture and conservation of mud crab (*Scylla serrata*).
- Stop prawn farming in the mangroves ecosystem. Investigate brackish prawn farming potential.
- Stop fine mesh fishing, investigate the problem of algal bloom and fish disease.

Vakarai sand spits and lagoon are included as important scenic and recreational sites. It is declared as one of the protected national reserve. There is a potential for eco-tourism in this site with bird watching as a main attraction and sight seeing. Vakarai still possess large mangroves as it did before had been removed, then the tsunami may have done far less damage. Users participation in coastal zone management has a high priority. Empowerment of the weakest part society is the interest of this development process.

8.0 Trincomalee District

Trincomalee district is situated in coast of Sri Lanka covers total area of 2738.2 Sq.km. Out of total area land area is 2630.8 km and inland water is 98 Sq.km. It has strength of coastal area along east up to Mullaitivu district toward North and Batticaloa district towards south. Trincomalee district has a coastal area of 210 km. Tables relevant to Trincomalee district are given in the annexure.

8.1.1 Population and Demography

Total population of the district is about 375,000 with a population growth rate (2001 – 2004) of 1.3%. Of the 11 divisions, one is wholly controlled by the LTTE and one is partially controlled by them, while the Government controls the balance. One of the distinct characteristics of the population structure is that district has almost ethnic composition with Sinhalese 33.6%, Tamils 36.4% and Moors 28.9% and others 0.9%. Majority of the population concentrated in the DS divisions of Town & Gravets, Kinnya and Muthur. Main reason for higher population density in urban divisions is increased rate of migration of rural people and an increased safety and relatively good social infrastructure facilities compared to other war affected districts. However the district still has a large (60%) number of rural population dispersed in less developed DS divisions. Although there is a general tendency of increase in the population of all ethnic groups, the growth rate of Muslim population in the district is very significant over the past two decades. Economically active population is about 60%. Main economic activities in the district include agriculture and fishing. As this district has attractive place in the east coast for tourism and earn a fairly good income to business group.

8.1.2 Land Use Pattern

Out of the total land area of the Trincomalee district, 047% is classified as built up areas. This includes 4 town centers viz, Trincomalee UC, Kantalai, Muthur and Kinniya. Rural settlements cover 6.91% of the total area i.e. classified as homesteads.

The land use for agriculture activities amounts to 36.86% of the total area of the district.

The agriculture land use can be divided into three broad categories in terms of crops, i.e. coconut, paddy and sugarcane and chena cultivation. Paddy is one of the most important crops in the district, which covers about 16.75% (45,680ha) of the total land area. These paddy lands are distributed throughout the district with rural settlements. Out of the total paddy lands only 61.6% is cultivated and the rest remain unutilized. This indicates the high degree of subsistence and undeveloped level of the agriculture sector in the district. The majority of the plots under paddy cultivation (79.9%) are less than 2 ha and 2.3% of plots exceed 6-ha. The subsistence level of production was found in the majority group mainly due to the practice of poor technology and inadequate and fragmented market. As most of the crops cultivated in the district are rain fed, rainy seasons dictate the cropping pattern. During Maha season the land use pattern adopted in the farms were paddy cultivation (48.7%) and home

garden crops, high land crops and chena crops planted in other lands. About 60% of the paddy tract comes under (26 major tanks) irrigated condition. Coconut and palmyrah have suffered because of cyclones and the conflict. Out of the total land 29.96% is covered by forest. About 48% of the total population (40383 farm families) is directly engaged in agriculture and for their livelihood. Agriculture is the major occupation for their livelihood.

For over two decades, the North East Province has been stricken by a war that has resulted in significant losses in human lives and physical assets, as well as in development deprivation. The conflict rendered thousands of men, women and children in the district vulnerable, with the tsunami further aggravating the already impoverished.

Farmers in Trincomalee district traditionally rear livestock in addition to their cropping.

A large number of farm families integrate crop production with live stock production; cattle, buffaloes, goats and poultry. Shrub land and grassland consists of 33,490 ha (12.2% of the total land area) is an under utilized area at present, as it has not been properly integrated to planned livestock development. . Trincomalee accounted for 39%, 31% and 28% of the poultry, goat and cattle population in the Eastern Sri Lanka. The poor performance of the livestock sub-sector is primarily linked to the direct consequence of war such as the unavailability of quality breeding stock, the lack of credit etc. The limited milk collection and marketing activities collapsed due to damages/ loss of equipment and lack of transport facilities.

The conflict has caused displacement and relocation of large number of people. In many cases, original landowners have been forced to abandon their lands and other property. At the same time, other groups of people may be encroaching on lands that do not belong to them. With an end to the armed conflict many legal battles concerning land tenure issues may be expected.

8.1.3 Fishery Sector

About 9.7% of the total population (8123 families) is engaged in fishing. In 2004 Marine fish production in the Trincomalee was 18,980 MT which is 6.9% of the national production. Major fishing season in Trincomalee is the January – April period. Heavy fish landings are also noted in September – October period as well. Majority of fishermen are Town and Gravest, Kinniya, Muthur, Verugal and Seruwila.. The two decades of war in the country had put the coastal community, specially the fishermen at a disadvantage. The restrictions on the fishing duration and fishing area (ground) have limited their development at a level far inferior to that of the fellow fishermen in the south.

8.1.4 Livelihood and Employment

The main economic activities are fishing, agriculture and livestock (small scale farmers), daily labour, trading (self employed) and tourism and the public sector. Most of the people are employed in the paddy sector, as it is the main agricultural activity in the district. Share of Eastern Sri Lanka to the national GDP is 4.5%. Although the agriculture provides the highest employment in the district, it offers very limited regular employment, as most of the work related to paddy is limited to land preparation, planting and harvesting. During the rest of the year most of the people are likely to be unemployed. Given the relatively weak economic base, Trincomalee district is very likely to be one of the districts in the country with high unemployment and under employed. The unemployment rate before the tsunami was 15.9%. Unemployment and under employment continue to disturb the productive life of the people. There are a significant number of wage earners engaged in off farm activities. Certain amount of people are engaged in brick making, shell mining, coral mining, metal crushing, carpentry, masonry and other categories of cottage industries. As this district has attractive place in the east coast for tourism and earn a fairly good income to business group. Tourism attractive areas of the district include natural harbour, sanctuaries – novel heads works, Kokilai bay and sanctuary, Rock Trincomalee bay, Pigeon Island and Nilabeach, Kinniya hot wells. Important historical places are Thirukoneswaram kovil, Mariaman Pulleiyar kovil, Sittandi Mandur kovil, Seruvila area.

In Trincomalee district the important industries are linked to shipment of products through the port facilities. Apart from the Prima Mills, Flourmill and Mitsui Cement factory these include six garment factories. In addition, Trincomalee town is the main service center and retail center for a wide variety of goods sold to residents of the rural hinterland, and has a substantial number of shops, markets and other businesses.

8.1.5 Incidence of Poverty

In the district currently about 60% of the total families in the district are receiving welfare assistance such as Samurdhi and Janasaviaya. It is also likely that most of the people classified as employed are also among the welfare recipients, as they are

not employed permanently or in regular employment. Many factors contribute to the widespread in the area, including low educational attainment, lack of access to proper health care and nutrition, and lack of access to credit that could support better returns on livelihood. In the Eastern Sri Lanka, the condition of fishermen as the “poorest of the poor” is perpetuated due to the depletion of fisheries resource, lack of adequate training and technology, limited access to resource, social prejudices, and exploitation by middlemen. Majority of poor families are in north Trincomalee, Kinniya, Muthur and Trincomalee town.

Poverty among the coastal community was in part ascribed to the difficulties of accessing credit. The conflicts has increased the risk of lending to the poor and placed significant restrictions on the availability of institutional credit, especially from banks. As a result, local middleman, or mudalalis mainly provides credit. There is a marked ethnic imbalance in boat ownership in Trincomalee district. This has deprived Tamils from access to ocean resources, especially in the deep sea, and has forced Tamil fishers rely heavily upon boats and other services provided by Sinhalees and Muslim middlemen to buy and transport their products. The tsunami has made this situation worse. Communities in coastal areas have the need for both small consumption loans as well as for larger loans to improve and repair equipment or invest in small business activities.

GN Divisions of the Trincomalee district affected by the Tsunami: 9.0/2004

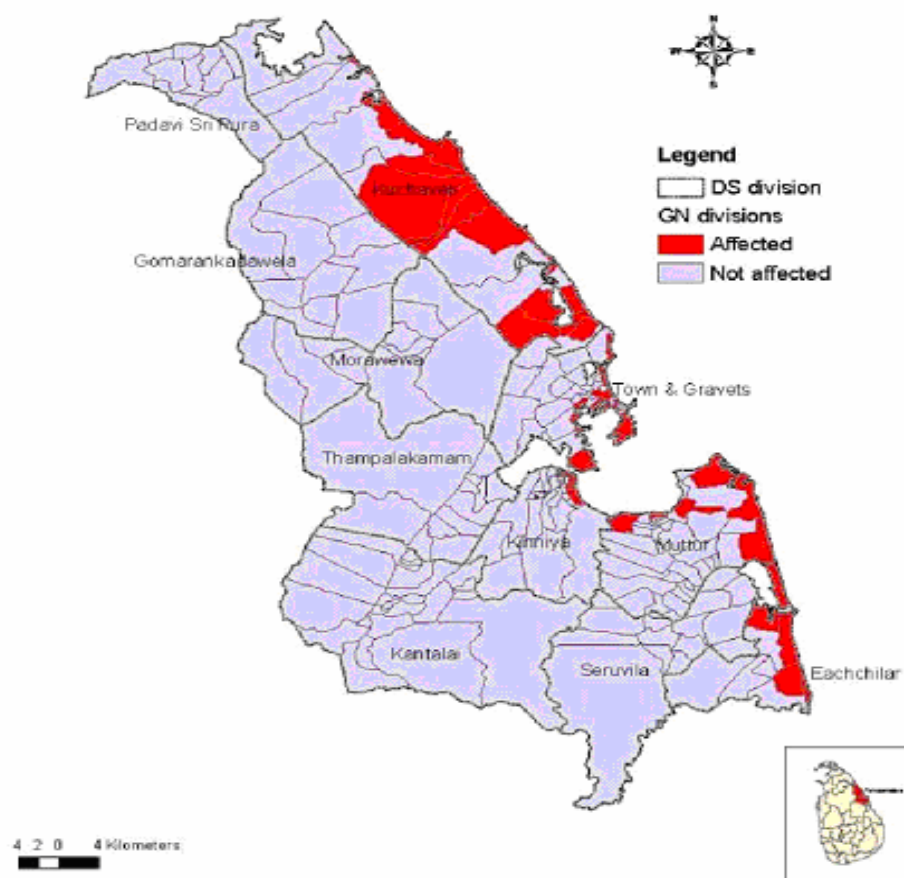


Figure 4: Tsunami affected GN divisions in Trincomalee District

8.1.6 Impact of Tsunami on Economic and Social Structure

Trincomalee district was severely affected by the tsunami. Of the 11 divisions, six have been affected (Kuchchewli, Town and Gravets, Kinniya, Seruwila, Muthur and Echchilampattai). According to an assessment of the UDA, 32 GN Divisions were severely affected, 39 low affected and 77 not affected. Trincomalee town due to the geography of the harbour escaped relatively unscathed. According to the District Secretariat, almost 1,078 persons died in the tsunami, 1328 were wounded and 45 remained. A total of 72,986 persons are displaced. About 60% of the 28,067 economically affected by the tsunami were fisher folk, while 7,538 were daily labourers, 1,884 were farmers. Others included businessmen, masons and carpenters. The ministry of Fisheries and Aquatic Resources report that 5,261 fishing vessels in the destroyed by the tsunami, although only 2707 were registered. The difference is explained by new vessels and migrating fishermen. It is estimated that 5,974 houses were completely and 10, 404 partially damaged.

The overall damage to educational facilities in the Trincomalee district amounted to 27 schools (7 schools belonging to the Muthur education zone have been completely damaged and 20 partially damaged).

The tsunami caused extensive damage to transport system in the Trincomalee district. Bridges and culverts were seriously damaged.

Most of the coastal protection measures, including man-made breakwaters, natural vegetations and coral reefs were destroyed in Trincomalee district.

8.1.7 Demonstration Site Selection

Total land area 24 sq. km. 4% of Sri Lanka. DS Divisions 11 and 148 GN Divisions

Length of the coastal area 210 km. Population 375,212 average growth rate 1.93%

Main economic activities:

Agriculture and livestock, Trading and tourism, Fishing, Industries and Transportation.

Unemployment rate 13.8%.

Important Historical Places: Thruknoeswaram kovil, Mariaman Pulliar Kovil, Sittandi Mandur Kovil, Seruvila Secret area.

Affected number of DS Divisions by tsunami tidal waves 05 divisions out of 11 divisions.

Kuchchaveli, Town and Gravets, Kinniya, Muthur, and Verugal

Affected families 31,896 Displaced families 28,588, Deaths 1079, Missing 337

Damaged houses 5,974 Partly damages 10, 404.

DS Divisions Highly Affected GN Divisions

Kinniya GND 04./ 31 Deaths (missing) 451 (150) Houses damage 1550

Rahumaniya Nagar,
Manchalachchnai,
Anal Nagar
Fizal nagar

Kuchcheveli	GND 08/ 24	Deaths (missing) 151	Houses damage 985
	Damaged houses	Families Affected (Farming)	Families Affected (Fishing)
Nilaweli	13	59	09
Veerancholai	165	20	14
Jaya Nagar	266	110	331
Kasim Nagar	143	122	72
Senthoor Nagar	25	12	264

About 54% of the people engaged in fishing. Many areas are affected by the two decades of war. Agriculture is affected by the war. Kuchchaweli DS division has 47 km of sea line. Of the total affected by tsunami 38% Fishing, 31% Farming, 12% Business and 19% other activities were affected. Tourism has an important place in the economy of this DS division. Tourism was affected very badly by the tsunami in Gopalapuram and, Nilaweli, areas. Affected tourist hotels are Nilaweli coastal resort, Moonlight lodge, Sea bathing lodge, Ceyat Lodge, Gardian Lodge, Sea viewing lodge, Zahira lodge. Many tourist lodges are in the Gopalapuram area. Three star Nilaweli Hotel was damaged by the tsunami.

8.1.8 Demonstration Site Pigeon Island

The site selected for the participatory coastal zone management livelihood study in the Trincomalee District is **Pigeon Island** in the Kuchchaweli **Divisional Secretary's Division**.

Pigeon Island is a small island, 2 km from the coast, consisting of pink granite out cropping that rise to highest points: 20 meters in the southwest and 12 meters in the northeast. It is 5 ha in extent. The area between these two points is covered with marine sands, while the beach consists almost entirely of coral rubble. There is a fringing reef around the entire island. Nilaweli beach hotel is near to this Island. It benefits from tourist visit this island. The vegetation is typical of beaches: dominated by *Tespesia populnea*. Status of this Pigeon Island is Terrestrial Wildlife Sanctuary. Surrounding reef is not included in sanctuary. Existing situation is that coral reef is damaged by tourist. Unprotected boat dries cause the damage to coral reef habitat. Outsiders do coral mining. Disposal of solid waste, oil pollution from the boat, over harvesting reef fish, extensive ornamental fish collection, hunting of marine turtle and extinct species.

Conservation importance are breeding colony of scarerock Pigeon *Columba livia*. Other birds on island include House Crow and Fish eagle. Economical importance is ecotourism mainly from visitors to Nilaweli Beach hotel, which is the closest resort.

Problems and Constraints Affecting Coastal Community Development in Nilaweli in Trincomalee District

Social

Widespread poverty, Lack of community cohesiveness, Restricted access to resources, Displacement, Loss of livelihood and traditional skills, Gender issues, destruction of social infrastructure, Lack of public awareness on environmental issues. Conflict situation has affected the livelihood also the natural environment.

Economic

Fisheries and Aquaculture: Security restrictions, Deterioration of infrastructure and facilities affecting fisheries, Dynamite fishing, limited fishery infrastructure, Lack of storing, cooling and transport facilities for fish.

Agriculture: Damage to lands and crops, Water quality particularly salinity level. High cost of production, high cost of labour, low price for products and lack of market facilities.

Tourism Development: Impact of tsunami, Land tenure, Solid waste dumping.

Environmental Issues

Coral mining is one of the most serious environmental problems within the coastal zone, Sand mining, unauthorized land filling, and Solid waste dumping by hotels are also issues of concern.

Agriculture run off containing fertilizers and pesticides effects on coastal ecosystem. Lagoon fishing, human encroachments, solid waste disposal are threatening the mangroves vegetation.

The reefs in Pigeon Island in Nilaweli GN in Kuchchaweli DS division are designated for protection marine sanctuary. Before tsunami natural environment of this villages was highly affected by the human intervention and most of the people livelihood directly depends on the environment. Especially Nilaweli is famous for tourism and issues in this area are associated with uncontrolled tourism, fishery and agriculture. Users participation in coastal zone management has a high priority. Empowerment of the weakest part society is the interest of this development process.

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Annex 7 : Socioeconomic Status Report – Part III

ANNEX 1

AMPARA DISTRICT

6.1.1. Population and Demography

Table 6.1.1: Divisional wise Population and Population Density in Ampara District

Name of the Division	Land Area (Sq.km)	Total Population	Population Density (Persons/Sq.km)
Karativu	31.3	16235	518.69
Ninthavur	55.6	25166	452.62
Lahugala	586.1	7703	13.14
Akkaraipattu	99.1	35538	358.6
Alayadiwembu	124.2	22786	183.46
Addalachchenai	51.3	36530	712.01
Pothuvil	356.3	29508	82.81
Thirukkovil	190.6	24440	128.22
Kalmunai Muslim, Tamil, Sainthamaruthu	66.9	99199	1049.38
Ampara	216.0	41640	192.77
Damana	462.2	34845	75.38
Dehiatthakandiya	429.5	63303	147.38
Mahaoya	600.0	18409	30.68
Padiyathalawa	464.4	15997	34.44
Samanthurai, Navithanveli, Irakkanam	243.0	82055	3376.78
Uhana	415.6	52199	125.59
Total	4392.1	605553	137.87

Source: Statistical Branch, Kachcheri, Ampara, 2003

Table 6.1.1.1: Sex and Age Distribution of DS Divisions in Ampara District

Name of the Division	Sex (Persons)		Age (Persons)	
	Male	Female	< 18 Years	> 18 Years
Karativu	7953	8257	9780	6430
Ninthavur	11966	12707	15911	8762
Sainthamaruthu	11936	12082	14302	9716
Lahugala	3838	3749	4461	3126
Akkaraipattu	17991	16970	21923	13038
Alayadiwembu	11478	10976	13785	8669
Addalachchenai	17882	17897	20850	14929
Pothuvil	13973	14431	15488	12916
Thirukkovil	11733	12006	14291	9448
Kalmunai Muslim, Tamil	34231	36208	43398	27041
Ampara	19295	18697	14351	23641
Damana	17629	17125	12741	22013
Dehiatthakandiya	32264	30348	24980	37632
Mahaoya	9388	8635	7700	10323
Padiyathalawa	7800	7848	6808	8840
Navithanveli	8779	8551	7533	9797
Irakkanam	NA	NA	NA	NA
Samanthurai	25259	25883	22448	28694
Uhana	26104	26033	18636	33501
Total	289499	288403	289386	288516

*Source: Department of Census & Statistics, Preliminary Database, 2001

Table 6.1.1.2: Ethnicity Distribution of DS Divisions in Ampara District

Name of the Division	Ethnicity (Persons)				
	Sinhalese	Tamil	Muslim	Others	Total
Karativu	179	10030	5953	48	16210
Ninthavur	5	1347	23320	1	24673
Sainthamaruthu	26	8	23982	2	24018
Lahugala	6910	642	33	2	7587
Akkaraipattu	239	1043	33679	0	34961
Alayadiwembu	351	21803	111	189	22454
Addalachchenai	1857	603	33318	1	35779
Pothuvil	952	5668	21669	115	28404
Thirukkovil	241	23449	24	25	23739
Kalmunai Muslim, Tamil	318	26663	42924	534	70439
Ampara	37251	185	334	222	37992
Damana	34497	52	182	22	34754
Dehiatthakandiya	61840	70	122	66	62612
Mahaoya	17926	16	80	1	18023
Padiyathalawa	15539	21	88	1	15648
Navithanveli	501	11500	5327	2	17330
Irakkanam	NA	NA	NA	NA	NA
Samanthurai	281	7062	43700	91	51142
Uhana	52059	32	37	9	52137
Total	231771	110590	245089	1245	589344

Source: Department of Census & Statistics, Preliminary Database, 2001

Table 6.1.1.3: Religion Distribution of DS Divisions in Ampara District

Name of the Division	Religion (Persons)				
	Buddhist	Hindu	Christian	Islam	Total
Karativu	179	9954	124	5953	0
Ninthavur	4	1328	21	23320	0
Sainthamaruthu	26	8	2	23982	0
Lahugala	6934	588	32	33	0
Akkaraipattu	238	1039	4	33680	0
Alayadiwembu	339	19929	2078	108	0
Addalachchenai	1856	600	5	33318	0
Pothuvil	921	4763	904	21669	147
Thirukkovil	239	21895	1522	25	58
Kalmunai					
Muslim, Tamil	296	24138	3066	42931	0
Ampara	36735	150	526	480	37992
Damana	34263	29	206	255	34754
Dehiatthakandiya	62154	40	285	133	62612
Mahaoya	17904	8	30	81	18023
Padiyathalawa	15507	15	38	88	15648
Navithanveli	499	9854	1650	5327	17330
Irakkanam	NA	NA	NA	NA	NA
Samanthurai	278	6852	293	43712	51142
Uhana	51931	24	146	33	52137
Total	231101	101609	11124	245285	589344

Source: Department of Census & Statistics, Preliminary Database, 2001

6.1.2. Land Use Pattern

Table 6.1.2: Land Use Patterns in 2003

Category			Extent (ha)	Percentage (%)
Urban Land	Built up land		40847	8.30
	Associated			
	Non Agriculture Land			
Agricultural Land	Homesteads			
	Tree and Other		65973	13.40
	Potential crops			
	Crop Land	Paddy	58984	12.00
		Sparsely-Chena	10026	2.02
		Crop-Land		
		Sugar Cane	5000	1.01
Forest Land	Natural Forest	Dense Forest	99116	20.10
		Open Forest	75630	15.30
	Forest Plantations		8371	1.70
	Nellikelee		1140	0.22
Range land	Scrub Land		43839	8.90
	Grass Land		26605	5.39
Wet Land	Forested	Mangroves	292	0.04
	Non forested	Marshy	5667	1.12
Water Bodies			51698	10.50
Barren Land				
Total Area			493188	100.00

Source: District Land Use Planner Branch. Kachcheri. Ampara, 2004

6.1.3. Fisheries Sector in Ampara District (Pre-Tsunami)

Table 6.1.3: General Information on Fisheries Sector in Ampara District

01	No of Divisional Secretariats Divisions	19
02	No of Coastal Divisional Secretariats Divisions	11
03	No of Inspector's Divisions	12
04	Total No of Fishing Families	16188
05	Fishing Population	75135
06	Fishermen Marine - 12983 Lagoon - 2295 Inland - 1051	16329
07	No of Fish Landing Centres	46
08	No of Fishing Villages	246
09	No of Village level Fishermen Co-op Society	73
10	Total Fishing Fleet	1804
11	Deep Sea Mechanized Boat Owners Co-op Society (District)	01
12	Fishermen Co-op Union (District)	02
13	Fisheries Co-operative Banks	16
14	No of Mathal Padus (Beach Seine)	84
15	Contribution to the National Production of Fish	11%
16	No of Fishery Anchorage - Sainthamaruthu	01

Source: Statistical Unit of the Ministry of fisheries & Ocean Resources, 2004

Table 6.1.4: Livelihood and Employment

Industrial Origin	Number	Share
Agriculture	81,259	3.3
Industry	14,058	1.1
Services	58,583	2.3
Total*	153,900	2.4

Source: Provincial Profile of labour Force

* Estimates

6.1.5. Incidence of Poverty

Table 6.1.5: Number of Families Receive Samurdhi Relief in Ampara District

Divisional Secretariat	No. of Families
Ampara	3,204
Addalachchenai	5,828
Akkaraipattu	4,278
Damana	4,435
Dehiattakandiya	3,261
Lahugala	1,623
Aladiyawembu	4,203
Nindaur	3,872
Karathivu	2,878
Kalmunai	6,568
Kalmunai tamil	4,553
Mahaoya	2,651
Pathiyathalawa	2,430
Pothuwil	5,838
Uhana	7,327
Samanthurai	8,806
Thirukkivil	4,818
Eraikamam	1,860
Sainthamaruthu	3,161
Navithanwely	4,302
Total	85,886

Source: Samurdhi Ministry Statistics, 2004

6.1.6. Impact of Tsunami

Affected Population

Table 6.1.6.1: Population in the Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Ampara District (Provisional)

DS Division	No of GN Divisions		Number of Census Blocks in the Affected GN Divisions		Number of Persons in the Affected GN Divisions		
	Total GN Divisions	Affected GN Divisions	Total	Affected	Before the disaster	Presently living within the GN division	Presently living outside the GN
Karativu	17	11	44	44	10741	5516	4494
Ninthavur	25	11	58	34	9180	6352	2709
Sainthamaruthu	17	9	69	68	14217	9062	4346
Lahugala	12	3	14	8	1327	1316	11
Akkaraipattu	28	6	34	26	7777	6639	1111
Alayadiwembu	22	2	8	5	1333	145	1029
Addalachchenai	32	13	66	26	7461	7018	438
Pothuvil	27	15	77	47	12816	8422	4248
Thirukkovil	22	13	74	52	12809	4735	7676
Kalmunai Muslim	29	22	175	89	20842	10516	8456
Kalmunai Tamil	29	21	100	72	16831	7119	8711
Total	260	126	719	471	114834	66840	43229

* Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged Housing Units

Table 6.1.6.2: Number of Housing Units in Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Ampara District (Provisional)

DS Division	No of GN Divisions		Number of Census Blocks in the Affected GN Divisions		Number of Housing Units in Affected Census Blocks				
	Total GN Divisions	Affected GN Divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged & cannot be used	Partially damaged & can be used	Not damaged
Karativu	17	11	44	44	2619	862	289	605	863
Ninthavur	25	11	58	34	2349	526	233	751	839
Sainthamaruthu	17	9	69	68	3276	764	332	1447	733
Lahugala	12	3	14	8	382	5	2	44	331
Akkaraipattu	28	6	34	26	1788	163	85	627	913
Alayadiwembu	22	2	8	5	326	191	46	53	36
Addalachchenai	32	13	66	26	1637	64	27	482	1064
Pothuvil	27	15	77	47	3089	925	168	658	1338
Thirukkivil	22	13	74	52	3299	1388	460	583	868
Kalmunai Muslim	29	22	175	89	4606	1488	441	1837	840
Kalmunai Tamil	29	21	100	72	3968	1763	344	1157	704
Total	260	126	719	471	24339	8139	2427	8244	8529

* Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged buildings Other than Housing Units

Table 6.1.6.3: Number of Buildings Other than Housing Units of Affected Census Blocks, Before and After Tsunami 2004 by DS Divisions* : Trincomalee District

DS Division	No. of GN Divisions		No. of Census Blocks in the Affected GN Divisions		Number of Housing Units in Affected Census Blocks				
	Total GN divisions	Affected GN divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used	Not damaged
Karativu	17	11	44	44	357	161	26	24	146
Ninthavur	25	11	58	34	344	116	22	70	136
Sainthamaruthu	17	9	69	68	430	139	46	147	98
Lahugala	12	3	14	8	21	2	0	2	17
Akkaraipattu	28	6	34	26	201	26	11	50	114
Alayadiwembu	22	2	8	5	45	6	6	11	22
Addalachchenai	32	13	66	26	353	153	3	70	127
Pothuvil	27	15	77	47	285	92	21	69	103
Thirukkivil	22	13	74	52	260	66	30	43	121
Kalmunai Muslim	29	22	175	89	610	300	62	135	113
Kalmunai Tamil	29	21	100	72	294	112	16	62	104
Total	260	126	719	471	3200	1173	243	683	1101

*Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged Housing Units by Distance from the Beach

Table 6.1.6.4: Number of Damaged Housing Units in Affected DS Divisions* by Distance from the Beach**

Affected DS Division	Total no. of Damaged** Housing Units	Distance from the Beach			
		Within or on the 200m boundary	Outside the 200m Boundary line	Not identified	Not available
Sainthamaruthu	2719	1182	1537	0	-
Addalachchenai	592	330	261	1	-
Kalmunai (Tamil)	3678	1115	2563	0	-
Thirukkovil	2953	680	1185	0	-
Kalmunai (MD)	3882*	1546	2336	0	255
Pothuvil	1646*	645	1001	0	560
Akkaraipattu	950	333	617	0	-
Lahugala	33	6	27	0	-
Karathivu	1931	970	961	0	-
Aladiyawembu	328	309	19	0	-
Ninthavur	1674	814	860	0	-
Total	20386	8435	11950	1	815

* Total only for covered areas (excluding not available count)

** Damaged – Fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged

Source: Department of Census and Statistics

Damaged Housing Units by Ownership of the Land

Table 6.1.6.5: Number of Damaged ** Housing Units in Affected GN divisions* by Ownership of the Land (To be filled)

Affected DS Division	Total No. of Damaged Housing Units	Ownership of the Land				
		Belongs to the family	Rent /Lease	Coast reservation	Other	Not reported
Karativu						
Ninthavur						
Sainthamaruthu						
Lahugala						
Akkaraipattu						
Alayadiwembu						
Addalachchenai						
Pothuvil						
Thirukkivil						
Kalmunai Muslim						
Kalmunai Tamil						
Total						

* Statistics are given here only for the affected GN divisions.

** Damaged – Fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged

Source: Department of Census and Statistics

Damages to the Agriculture Sector

Table 6.1.6.6: Damages Caused to the Agricultural Sector Due to the Tsunami Disaster on 26-12-2004

ASC. Division	Paddy	OFC& Vegetables			Lost (Rs.)
	AC	Farmers	AC	Farmers	
Ninthavur	551.1	234			16,281,000.00
Akp (East)	355.75	115			2,880,625.00
Addalachchenai	129.5	37			1,013,000.00
P . Neelavanai	521.1	199	34.25	58	645,640.00
Komari	28.25	39	64.5	68	1064,700.00
Chenakuderippu	317.00	134			3623336.00
Thambiluvil	188.5	187	44.25	84	649,500.00
Kartivu	98.25	33			726,900.00
Panama	289.00	128	60.00	41	7894,175.00
Pottuvil	2262.00	479	57.00	51	61883,485.00
Total	4750.85	1585	260	302	96,662,361.00

Source: Department of Agriculture, Head Office, Peradeniya, 2005

Particulars of Fishing Crafts, Engines & Gears Damaged / Destroyed by Tsunami Tidal Waves in Ampara District

Table 6.1.6.7: Damaged fishing crafts, engines and gears damaged due to tsunami

Name of the Division	No of crafts fully damaged									No of crafts partly damaged								
	INBOAR D		OUTBOAR D		NM		BS	OB M	IB E	INBOAR D		OUTBO ARD		NM		BS	OB M	IBE
	M	DB	FRB	TR	S	L				M	DB	FR B	TR	S	L			
Kalmunai (TD)	-	-	14	-	54	-	10	15	-	-	-	-	-	-	-	-	-	-
Kalmunai (MD)	-	27	31	140	40	-	20	225	19	-	64	-	12	-	-	-	-	64
Sainthamaruthu	01	16	36	26	191	-	09	-	-	-	93	08	-	36	-	-	-	-
Karaithivu	-	-	42	08	172	-	24	48	-	01	39	-	-	-	-	06	-	40
Nintavur	-	-	04	26	37	-	18	30	-	-	-	09	49	01	-	16	49	-
Addalaichenai	-	-	06	18	44	-	03	31	-	-	-	36	116	25	-	25	144	-
Akkaraipattu	-	-	02	01	02	-	02	12	-	-	-	-	09	01	-	03	01	-
Alayadiweambu	-	-	-	-	04	49	-	-	-	-	-	-	-	-	-	-	-	-
Thirukovil	-	-	19	26	24	151	-	47	-	-	-	-	-	-	-	-	-	-
Pottuvil	-	-	95	61	51	222	18	232	-	-	-	20	-	-	-	04	03	-
Ullai	-	-	41	-	41	-	06	-	-	-	-	15	-	02	-	-	54	-
Panama	-	-	18	-	91	-	-	-	-	-	-	06	-	05	-	-	20	-
Total	01	43	308	306	751	422	110	640	19	01	196	94	186	70	-	54	271	104

Source: Statistical Unit of the Ministry of fisheries & Ocean Resources, 2004

M – Multi Day Boat

DB – Day Boat

FRP – Fiberglass Reinforce

TR – Traditional Craft

NM – Non Mechanized Craft

L – Lagoon Canoes

S – Sea Canoes

BS – Beach Seine

OBM – Out Board Motors

IBE – In Board Engines

ANNEX 2

BATTICALOA DISTRICT

7.1.1. Population and Demography

Table 7.1.1: Divisional Wise Population and Population Density in Batticaloa District

Name of the Division	Land Area (Sq.km)*	Total Population	Population Density (Persons/Sq.km)
Manmunai North	64.26	78963	1228.80
Koralai Pattu South	NA	34479	NA
Manmunai Pattu	20.89	29448	1409.67
Koralai Pattu North	506.10	21424	42.33
Koralai Pattu	460.59	24894	54.04
Eravur Pattu	591.51	70703	119.52
Kattankudy	2.56	40248	15721.55
Manmunai South & Eruvil Pattu	36.40	56823	1561.07
Koralai pattu Central	NA	27737	NA
Koralai Pattu West	167.31	26411	157.86
Eravur Town	3.49	34260	9816.69
Manmunai West	275.4	28787	104.52
Manmunai South, West	125.10	24656	197.09
Porativu Pattu	150.3	46644	310.33
Total	2403.91	575477	239.39

Source: Department of Census & Statistics, 2001.

* Survey Department, Batticaloa, 2003.

Table 7.1.1.2: Sex and Age Distribution of DS Divisions in Batticaloa District

Name of the Division	Sex (Persons)		Age (Persons)	
	Male	Female	< 18 Years	> 18 Years
Manmunai North	38241	40722	50255	28225
Koralai Pattu South	17190	17289	13390	8408
Manmunai Pattu	14321	15127	15636	10028
Koralai Pattu North	10480	10944	1032	752
Koralai Pattu	11569	13325	12482	7911
Eravur Pattu	34746	35957	31212	24337
Kattankudy	20007	20241	20693	17356
Manmunai South & Eruvil Pattu	27741	29082	32088	21502
Koralai pattu Central				
Koralai Pattu West	11397	10401	8408	13390
Eravur Town	10406	11278	9411	12333
Manmunai West	NA	NA	NA	NA
Manmunai South, West	86	74	81	79
Porativu Pattu	88	89	58	119
Total	196272	204529	194746	144440

Source: Department of Census & Statistics, Preliminary Database 2001

Table 7.1.1.3: Ethnicity Distribution of DS Divisions in Batticaloa District

Name of the Division	Ethnicity (Persons)				
	Sinhalese	Tamil	Muslim	Others	Total
Manmunai North	170	56053	18695	4045	78963
Koralai Pattu South	4	32815	944	716	34479
Manmunai Pattu	2	20958	1314	7165	29439
Koralai Pattu North	16	19310	1230	868	21424
Koralai Pattu	77	22083	2713	17	24890
Eravur Pattu	80	62733	5611	2278	70702
Kattankudy	-	-	-	40248	40248
Manmunai South & Eruvil Pattu	42	54098	2671	2	56813
Koralai pattu Central	NA	NA	NA	NA	NA
Koralai Pattu West	35	876	20839	48	21798
Eravur Town	15	3252	18406	71	21744
Manmunai West	NA	NA	NA	NA	NA
Manmunai South, West	160	0	0	0	160
Porativu Pattu	177	0	0	0	177
Total	2439	195689	113473	22487	314088

Source: Department of Census & Statistics, 2001

Table 7.1.1.4: Religion Distribution of DS Divisions in Batticaloa District

Name of the Division	Religion (Persons)				
	Buddhist	Hindu	Christian	Islam	Total
Manmunai North	170	56053	18695	4045	78963
Koralai Pattu South	4	32815	944	716	34479
Manmunai Pattu	2	20958	1314	7165	29439
Koralai Pattu North	16	19310	1230	868	21424
Koralai Pattu	77	22083	2713	17	24890
Eravur Pattu	80	62733	5611	2278	70702
Kattankudy	-	-	-	40248	40248
Manmunai South & Eruvil Pattu	42	54098	2671	2	56813
Koralai pattu Central	NA	NA	NA	NA	NA
Koralai Pattu West	35	855	53	20839	21798
Eravur Town	15	3079	223	18409	21744
Manmunai West	NA	NA	NA	NA	NA
Manmunai South, West	160	0	0	0	160
Porativu Pattu	177	0	0	0	177
Total	2289	168843	208828	113535	314088

Source: Department of Census & Statistics, 2001

Education-

Table 7.1.1.5: No. of Schools and Student Population in Batticaloa District

DS Division	Student Population	Ethnicity by Schools			Type of Schools				Total Schools
		Tamil	Muslim	Sinhala	AB	1C	11	111	
Manmunai South & Eruvil Pattu	14587	34	-	-	3	8	11	12	34
Porathievu Pattu	8760	32	-	-	-	5	10	17	32
Manmunai South West	5519	16	-	-		2	6	7	16
Manmunai North	21428	39	3	2	7	6	15	16	44
Kattankudy	8873	-	17	-	1	2	5	9	17
Manmunai Pattu	6018	15	7	-	-	5	3	14	22
Manmunai West	5109	25		1	-	3	4	19	26
Eravur Town	8084	3	7	-	1	4	3	2	10
Eravur Pattu (Part)	5507	16	7	3	-	2	9	15	26
Eravur Pattu (Part)	8583	24	-	-	2	1	1	20	24
Koralai Pattu	11235	36	-	-	1	2	6	27	36
Koralai Pattu West	9090	-	19	-	2	3	2	12	19
Koralai Pattu North	5001	15	-	-	-	2	3	10	15
Total	117794	255	60	6	18	45	78	69	321

Source: Statistical Hand Book 2003, Batticaloa District

7.1.2. Land Use Pattern

Table 7.1.2: Land Use Pattern

Category			Extent (ha)	Percentage (%)
Urban Land	Built up land		3447	1.88
	Non Agriculture Land			
Agricultural Land	Homesteads		14677	8.01
	Crop Land	Coconut	6655	3.63
		Paddy	29028	15.85
		Cashew	5360	2.93
		Sugar Cane		
	Perennial crops		622	0.34
Forest Land	Natural Forest	Dense Forest	31040	16.94
		Sparsely used lands	14697	8.02
	Forest Plantations			
Range land	Scrub Land		18837	10.28
	Grass Land		16110	8.79
Wet Land	Forested	Mangroves	14935	8.15
	Non forested	Marsh		
Water Bodies			14935	8.15
Barren Land			15895	8.68
Total Area			183186	

Source: District land use Planner Branch, Kachcheri, Batticaloa

7.1.3. Fisheries Sector In Batticaloa District (Pre-Tsunami)

Table 7.1.3:General Information

01	No. of Divisional Secretariats Divisions	14
02	No of Coastal Divisional Secretariats Divisions	8
03	No of Inspector's Divisions	13
04	Total No of Fishing Families	19190
05	Fishing Population	77393
06	Fishermen Marine - 10959 Lagoon - 11718 Active - 22677	
07	No of Fish Landing Centers	110
08	No of Fishing Villages	172
09	No of Village level Fishermen Co-op Society	111

Source: Department of Fisheries, Batticaloa, 2005

7.1.4. Livelihood and Employment

Table 7.1.4: Number of persons? Engaged in fishing⁺, Fishery related industries[^], government employment^{\$} and other employments~ before and after Tsunami in affected DS divisions

Affected DS Divisions	No. of Persons Engaged in Fishing ('000s)		No. of Persons Engaged in Fishery Related Industries		No. of Persons Engaged in Government ('000s)		No. of Persons Engaged in Other Employment	
	Before	After	Before	After	Before	After	Before	After
Eravur Pattu	113	43	106	70	2	2	183	81
Kattankudy	82	25	29	9	83	63	1719	1408
Koralai Pattu South	28	26	11	8	0	0	40	34
Koralai Pattu	449	99	201	114	45	42	557	343
Koralai Pattu North	2370	243	178	0	91	87	1580	431
Manmunai North	728	213	118	39	1289	1244	3837	2877
Manmunai South & Eruvilpattu	464	237	169	61	916	836	4153	3203
Manmunai Pattu	179	63	46	14	189	123	2056	1614
Total	4413	949	858	315	2615	2397	14125	9991

* Statistics are given here only for the affected GN divisions.

+ Fishing – Persons engaged in fishing for selling (not only for home consumption) as employers, employees & own account workers are included here.

? Persons engaged in the activity in the damaged housing units.

^ Fishery related industries – Persons engaged in preparing dry fish, repairing of fishing nets & other implements etc are included

\$ Persons employed in public sector, provincial public sector and semi government are included here.

~ Which includes all other employments

7.1.5. Incidence of Poverty

Table 7.1.5: Incidence of Poverty

D.S. Divisions	Pre Tsunami (2003)	
	No of Families	No of Families Received Income Below Rs1000/-
Manmunai North	19334	10437
Koralai Pattu South	8084	7290
Manmunai Pattu	7963	4424
Koralai Pattu North	5227	3122
Koralai Pattu	6027	2848
Eravur Pattu	17390	12119
Kattankudy	10631	5994
Manmunai South & Eruvil Pattu	14787	9146

Source: Statistical Hand Book 2003, Batticaloa District

Table 7.1.5.1: Number of Families Receiving Government Poverty Relief (Samurdhi) Batticaloa

Divisional Secretariat	No. of families
Chengalady (EP)	11,279
Eravur Town (ET)	5,592
Valachchenai (KP)	3,844
Ottamavadi (KPW)	4,485
Kaththankudi (KK)	5,640
Vakarai (KK)	3,773
Kokatichchulai (MSW)	4,609
Nawarkadu (MW)	5,352
Kaluwanchikudi (MS & EP)	9,332
Manmunai north (MN)	9,706
Arayampathi (MP)	5,203
Porathivu pattu (PP)	8,248
Kiran (KPS)	3,630
Koralai Pattu Central (KPC)	4,360
Total	85,053

Source: Samurdhi Ministry statistics, 2004

7.1.6. Impact of Tsunami

Affected Population

Table 7.1.6.1: Population in the Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Batticaloa District (Provisional)

DS Division	No of GN Divisions		Number of Census Blocks in the Affected GN Divisions		Number of Persons in the Affected GN Divisions		
	Total GN Divisions	Affected GN Divisions	Total	Affected	Before the disaster	Presently living within the DS division	Presently living outside the DS Division
Manmunai North	48	18	112	71	24340	15878	8579
Koralai Pattu South	18	3	31	6	324	0	322
Manmunai Pattu	27	11	83	53	12350	9236	3530
Koralai pattu North	16	13	91	76	16158	5614	10221
Koralai Pattu	12	6	70	39	7019	4891	1914
Eravur Pattu	39	4	30	16	3367	3004	376
Kattankudy	18	3	43	40	10673	8152	2638
Manmunai South & Eravur Pattu	45	30	144	121	32089	25311	9407
Total	223	88	604	422	106320	72086	36987

*Statistics are given only for the affected DS division

Source: Department of Census and Statistics

Damaged Housing Units

Table 7.1.6.2: Number of Housing Units of Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Batticaloa District (Provisional)

DS Division	No of GN Divisions		Number of Census Blocks in the Affected GN Divisions		Number of Persons in the Affected GN Divisions				
	Total GN Divisions	Affected GN Divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged & cannot be used	Partially damaged & can be used	Not reported
Manmunai North	48	18	112	71	5764	1543	633	1659	1929
Koralai Pattu South	18	3	31	6	68	39	20	7	2
Manmunai Pattu	27	11	83	53	3124	555	391	1012	1166
Koralai pattu North	16	13	91	76	4154	2398	489	836	431
Koralai Pattu	12	6	70	39	1868	564	146	478	680
Eravur Pattu	39	4	30	16	781	75	3	256	447
Kattankudy	18	3	43	40	2742	489	145	918	1190
Manmunai South & Eravur pattu	45	30	144	121	7773	1782	633	2334	3024
Total	223	88	604	422	26274	7445	2460	7500	8869

* *Statistics are given here only for the affected census blocks

Source: Department of Census and Statistics

Damaged Buildings Other Than Housing Units

Table 7.1.6.3: Number of Buildings Other than Housing Units of Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Batticaloa District (Provisional)

DS division	No. of GN Divisions		No. of Census Blocks in the Affected GN Divisions		Number of Housing Units in Affected Census Blocks				
	Total GN divisions	Affected GN divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged and cannot be used	Partially damaged & can be used	Not damaged
Manmunai North	48	18	112	71	657	96	34	152	375
Koralai Pattu South	18	3	31	6	23	19	1	3	0
Manmunai Pattu	27	11	83	53	226	41	19	45	121
Koralai pattu North	16	13	91	76	252	126	31	54	41
Koralai Pattu	12	6	70	39	150	38	13	30	69
Eravur Pattu	39	4	30	16	113	46	1	28	38
Kattankudy	18	3	43	40	243	61	19	38	125
Manmunai South & Eravur pattu	45	30	144	121	669	98	49	156	366
Total	223	88	604	422	2333	525	167	506	1135

*Statistics are given only for the affected census blocks.

Source: Department of Census and Statistics

Damaged Housing Units by Distance from the Beach

Table 7.1.6.4: Distribution of Damaged Housing Units in Affected DS Divisions* by Distance from the Beach**

Affected DS Division	Total no. of Damaged** Housing Units	Distance from the Beach				
		Less than or equal to 100	101m-200m	201-300m	301m or more	Not reported
Eravur Pattu	329	35	0	51	242	1
Kattankudy	1480	43	176	349	912	0
Koralai Pattu South	58	23	35	0	0	0
Koralai Pattu	1041	252	112	166	508	3
Koralai Pattu North	3702	1164	1049	611	877	1
Manmunai North	4260	798	632	1015	1812	3
Manmunai South & Eruvilpattu	4694	504	497	699	2594	1
Manmunai Pattu	1987	16	59	342	1568	2
Total	17551	2835	2560	3233	8513	11

** Damaged- fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged.

*Statistics are given here only for the affected DS divisions.

Source: Department of Census and Statistics

Damaged Housing Units by Ownership of the Land

Table 7.1.6.5: Distribution of Damaged Housing Units in Affected DS Divisions* by Ownership of the Land**

Affected DS Division	Total no. of Damaged** Housing Units	Ownership of the land				
		Belongs to the Family	Rent/Lease	Coast Reservation	Other	Not Reported
Eravur Pattu	329	286	0	11	32	0
Kattankudy	1480	1289	12	0	174	5
Koralai Pattu South	58	43	0	0	15	0
Koralai Pattu	1041	252	112	166	508	3
Koralai Pattu North	3702	3376	0	0	316	10
Manmunai North	4260	3582	145	0	522	11
Manmunai South & Eruvilpattu	4694	4247	33	16	381	17
Manmunai Pattu	1987	1864	1	0	115	7
Total	17551	14939	303	193	2063	53

** Damaged- fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged.

*Statistics are given here only for the affected DS divisions.

Source: Department of Census and Statistics

Damages to the Agriculture Sector

Table 7.1.6.6: Assessment of Damages to Food Crops Sector Caused by Tsunami in Sri Lanka- Batticaloa District

DS Division	No. of Affected Farmers	Extent of Crop Damage (Ha.)					Cultivation Expenditure Rs. Million	Assessment of damage Rs. Million	Total assessment of damage Rs. Million
		Paddy	Other field crops	Vegetables	Fruits	Others			
Kattankudy	139		2.57	3.89	59.26		0.9	8.71	9.61
Kalawanchikudy	1393	4.05	1.62	70.1	15.78	105.44	37.31	72.69	110
Koralaipathu	50	1.82	2.18	4.63	2.75		1.23	1.7	2.93
Manmunai pattu	175		3.76	5.23	18.15		7.02	6.54	13.56
Manmunai North	296	38.71	2.46	8.47	22.56		6.21	9.15	15.36
Total	2053	44.58	12.59	92.32	118.5	105.44	52.67	98.79	151.46

Source: Department of Agriculture, Head Office, Peradeniya, 2005

ANNEX 3

TRINCOMALEE DISTRICT

8.1.1. Population and Demography

Table 8.1.1: Divisional Wise Population and Population Density in Trincomalee District

Name of the division	Land Area (Sq.km)*	Total Population	Population Density (Persons/Sq.km)
Muthur	179.4	53,585	298.69
Kinniya	146.9	49,657	338.03
Etchchalampattu	98.0	5,702	58.18
Kuchcheweli	313.3	29,874	95.35
Town & Gravets	148.0	108,526	733.28
Seruwila	377.0	649	1.72
Pathavisiripura	217.1	10915	50.27
Gomarankadawala	285.0	5106	17.91
Morawewe	322.4	4324	13.41
Thambalagamuwa	244.4	24808	101.50
Kanthalai	397.3	40815	102.73
Total	2728.8	333,961	122.38

Source: Department of Census & Statistics, 2001 *

Table 8.1.1.2: Sex and Age Distribution of DS Divisions in Trincomalee District

Name of the Division	Sex (Persons)		Age (Persons)	
	Male	Female	< 18 Years	> 18 Years
Muthur	25,520	28,065	-	-
Kinniya	25,521	24,136	29350	26278
Etchchalampattu	2,839	2,863	-	-
Kuchcheweli	7,967	14,527	13527	9613
Town & Gravets	52,567	55,959	13197	7973
Seruwila	297	352	4402	2594
Pathavisiripura	5409	5506	4176	6739
Gomarankadawala	2615	2491	1859	3247
Morawewe	2264	2060	1698	2626
Thambalagamuwa	12576	12232	10711	14097
Kanthalai	20563	20252	15442	25373
Total	158,138	168,443	94,362	98,540

* Department of Census & Statistics, Preliminary Database, 2001.

Table 8.1.1.3: Ethnicity Distribution of DS Divisions in Trincomalee District

Name of the Division	Ethnicity (Persons)				
	Sinhalese	Tamil	Muslim	Others	Total
Muthur	NA	NA	NA	NA	NA
Kinniya	6	2155	53467	0	55628
Etchchalampattu	NA	NA	NA	NA	NA
Kuchcheweli	1151	6597	15366	26	23140
Town & Gravets	11821	4116	4473	670	21170
Seruwila	6798	157	41	0	6996
Pathavisiripura	10915	0	0	0	10915
Gomarankadawala	5082	18	5	1	5106
Morawewe	3581	743	0	0	4324
Thambalagamuwa	5829	4909	4092	6	24808
Kanthalai	32129	1747	6905	34	40815
Total	77312	20442	84349	737	192902

Source: Department of Census & Statistics, Preliminary Database, 2001.

Table 8.1.1.4: Religion Distribution of DS Divisions in Trincomalee District

Name of the Division	Religion (Persons)				
	Buddhist	Hindu	Christian	Islam	Total
Muthur	NA	NA	NA	NA	NA
Kinniya	6	2141	19	53462	55628
Etchchalampattu	NA	NA	NA	NA	NA
Kuchcheweli	435	5723	1625	15348	23140
Town & Gravets	11406	3430	1247	5073	21170
Seruwila	6735	153	65	43	6996
Pathavisiripura	10786	0	129	0	10915
Gomarankadawala	5077	14	11	4	5106
Morawewe	3568	36	28	692	4324
Thambalagamuwa	5798	4488	417	14101	24808
Kanthalai	31899	1527	346	7037	40815
Total	75710	17512	3887	95760	192902

Source: Department of Census & Statistics, Preliminary Database, 2001

8.1.2. Land Use Pattern

Table 8.1.2: Land Use Pattern

Category			Extent (ha)	Percentage (%)
Urban Land	Built up land		1280	0.48
	Non Agriculture Land			
Agricultural Land	Homesteads		18830	6.91
	Crop Land	Coconut	100370	6.91
		Paddy		
		Crop-Land		
		Sugar Cane		
Forest Land	Natural Forest	Dense Forest	81710	29.96
		Open Forest		
	Forest Plantations			
Range land	Scrub Land		33490	12.28
	Grass Land			
Wet Land	Forested	Mangroves	15570	5.71
	Non forested	Marsh		
Water Bodies			19760	7.25
Barren Land			1690	0.62
Total Area			272,700	100.00

Source: District land use Planner Branch.Kachcheri. Tricomalee

8.1.3. Fisheries Sector in Trincomalee District (Pre-Tsunami)

Table 8.1.3: General Information on Fisheries Sector

01	No of Divisional Secretariats Divisions	10*
02	Fisheries Divisions	09
03	Fish landing Centers	53
04	Total No of Fishing Families	12450
05	Fishing Population	55000
06	<div> <div>Fishermen</div> <div> <div>Marine</div> <div>Lagoon</div> <div>Active</div> </div> <div> <div>-</div> <div>-</div> <div>-</div> </div> <div> <div>6584</div> <div>953</div> <div>22152*</div> </div> </div>	
07	No of Fish Landing Centers	53
08	No of Fishing Villages	116
09	No of Village level Fishermen Co-op Society	76
10	Total Fishing Fleet	
11	Deep Sea Mechanized Boat Owners Co-op Society (District)	
12	Fishermen Co-op Union (District)	01
13	Fisheries Co-operative Banks	
14	No of Mathal Padus (Beach Seine)	
15	Contribution to the National Production of Fish	
16	No of Fishery Anchorage -	

Source: Statistical Unit of the Ministry of fisheries & Ocean Resources, 2004

*There is considerable discrepancy in the figures provided.

8.1.4. Livelihood and Employment

Table 8.1.4: Number of Persons[?] Engaged in Fishing⁺, Fishery Related Industries[^], Government Employment^s and Other Employments[~] Before and After Tsunami in Affected DS Divisions*

Affected DS Divisions	No. of Persons Engaged in Fishing		No. of Persons Engaged in Fishery Related Industries		No. of Persons Engaged in Government		No. of Persons Engaged in Other Employment	
	Before	After	Before	After	Before	After	Before	After
Muthur	550	146	167	80	37	35	507	305
Kinniya	699	186	254	84	283	273	1554	1097
Etchchalampattu	556	37	21	5	29	26	669	201
Kuchcheweli	557	33	222	14	93	91	1198	392
Town & Gravets	777	346	357	221	305	280	891	573
Seruwila	75	1	23	1	0	0	51	7
Total	3214	449	1044	405	464	432	3316	1478

* Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics, 2005

8.1.5. Incidence of Poverty

8.1.5.1 Distribution of Samurdhi Relief

Divisional Secretariat	Total No. of Families Receiving Samurdhi Allowances
Echchalampattu	1576
Gomarankadawala	1227
Kanthale	4416
Kinniya	8803
Kuchchaweli	1469
Morawewa	700
Muthur	10300
Padavi-sripura	1399
Seruwila	2122
Thambalagamam	4228
Town and Gravets	12931
Total	49171

Source: Samurdhi Ministry Statistics, 2004

Vulnerability – Poverty Profile Village Data Sheet 2003 Trincomalee District

Table 8.1.5.2: Summary of Poverty Indicators

DS Division Eachchilampattai

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Anaithivu (5)	5 ; 85.9%	3 ; 55.9%	5 ; 91.8%	60%	25 (30)
Iilankaithurai (4)	4 ; 65.3%	4 ; 61.8%	4 ; 70.0%	0	25 (0)
Iilankaithurai (5) Mugathuwaram	5 ; 67.1%	5 ; 3.5%	3 ; 48.8%	0	25 (30)
Verugal (5) Mugathuwaram	5 ; 81.8%	3 ; 53.5%	4 ; 69.4%	28.3%	30 (30)

DS Division Kinniya

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Fizal Nagar (3)	2 ; 36.5%	5 ; 96.5%	2 ; 27.1%	61.2%	2 (117)
Kurinchchakerny(5)	4 ; 71.8%	4 ; 65.3%	5 ; 87.7%	38.5%	0 (100)
Mancholi (1)	1 ; 15.9%	4 ; 68.2%	1 ; 7.1%	40%	0 (158)

DS Division Kuchchaveli

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Cassim Nagar (5)	4 ; 76.5%	4 ; 77.7%	4 ; 77.7%	0%	16 (20)
Kuchchaveli	1 ; 12.4%	4 ; 75.0%	3 ; 40.6%	0	5 (25)
Pulmoddai H-2 Arafa Nagar (3)	3 ; 44.7%	3 ; 50.6%	3 ; 57.1%	46.7%	9 (66)
Tahqwa Nagar (3)	2 ; 28.2%	3 ; 59.4%	4 ; 72.4%	43.6%	13 (55)
Jinnapuram (2)	3 ; 52.9%	1 ; 20.0%	2 ; 32.9%	13.2%	9 (36)
Veerancholai (5)	5 ; 88.8%	5 ; 81.2%	3 ; 58.2%	0	6 (75)
Veloor (3)	4 ; 77.1%	4 ; 75.0%	1 ; 5.9%	50%	10 (250)

DS Division Muthur

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Alim Nagar (3)	2 ; 35.9%	4 ; 77.1%	1 ; 12.9%	80%	2 (6)
Kadatharaichchenai(3)	3 ; 58.2%	4 ; 73.5%	1 ; 12.9%	40%	24(91)
Nadutheevu (4)	4 ; 80.0%	5 ; 85.3%	2 ; 30.0%	0%	11 (60)
Tahqwa Nagar (4)	2 ; 28.2%	3 ; 59.4%	4 ; 72.4%	43.6%	13 (55)
Nalloor (4)	4 ; 62.9%	5 ; 90.0%	3 ; 46.5%	100%	0 (92)
Palathoppur (2)	3 ; 42.9%	1 ; 14.1%	3 ; 53.5%	0%	5 (10)
Ralkuly (5)	5 ; 91.8%	5 ; 94.7%	4 ; 68.8%	50%	10 (25)

Sampoor (2)	2 ; 30.6%	1 ; 9.4%	5 ; 89.4%	39%	9 (12)
Shafinagar (1)	1; 3.5%	3 ; 48.8%	1 ; 6.5%	36.4%	3 (0)
Thaha Nagar (3)	3 ; 47.1%	5 ; 84.1%	1 ; 11.2%	0	7 (13)
Thaqwa Nagar Vattam (4)	4 ; 64.7%	5; 98.2%	2 ; 22.4%	0	59 (110)
Thaqwa Nagar (4)	3 ; 60%	5; 97.1%	3; 44.1%	0	246 (96)

DS Division Seruvilla

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Uppurai (5)	5 ; 94.1%	5 ; 94.1%	4 ; 80%	0%	10 (63)

DS Division Town and Gravets

GN Division (Poverty code)	Conflict Affectedness	Food Insecurity	Inadequate Social Services	Land Tenure	Fishermen Owned boats
Linganagar (3)	3 ; 45.9%	5 ; 85.9%	2 ; 27.7%	0%	10 (20)
Salli (5)	4 ; 66.5%	5 ; 84.7%	4 ; 60.6%	0%	130(332)
Thirukadaloor (4)	4 ; 74.7%	4 ; 79.4%	1 ; 8.2%	0%	11 (60)
Triukadaloor Kerniyadi (4)	5 : 90.6%	4 ; 75.9%	1 ; 15.9%	0%	0 (55)

Poverty code: 5. Extreme poverty 4. Very high prevalence of poverty

3. High prevalence of poverty 2. Poverty is prevailing 1. Lower prevalence of poverty.

Figure in parentheses is fishermen labourers

Source: Village Data Sheets 2003 Integrated Food Security Programme Trincomalee

IFSP support for 170 villages 1998 to 2003, Village Data Sheets 2003

Trincomalee District Vulnerability – Poverty Profile

German Technical Cooperation (GTZ)

8.1.6. Impact of Tsunami

Table 8.1.6.1: Affected Level by DS Divisions

DS Division	High affected GN Div.	Low Affected GN Div.	No Affected GN Div.	Total GN Div.
Kinniya	04	12	15	31
Kuchchaweli	08	12	04	24
Town & Gravets	07	11	24	42
Muthur	10	02	30	42
Verugal	03	02	04	09
Total	32	39	77	148

Table 8.1.6.2: Affected Areas by GN Division – Trincomalee District

DS Division	Highly Affected
Kinniya	Rahumaniya Nagar
	Macholachchenai
	Anal Nagar
	Fizal nagar
Verugal	Verugal Mugathuram
	Anaithivu
	Illankaithrai Mugatheruwaram
Town & Gravets	Murugapurai
	Thurukkudappor
	Paddanathivu
	Perumthivu
	Arasadi
	Linga Nagar
	Abayapura
	Ralkuli
	Muttur west
Muthur	Thaha Nagar
	Nadutheevu
	Thagawa Nagar
	Muttur East
	Kaddaiparithchan North
	Kadathuriecheneai
	Sampoor West
	Nalloor
	Nilaweli
Kuchchaveli	Verancholeai
	Kuchchaveli
	Kasim Nagar
	Jaya Nagar
	Senthoor Nagar

Source: Divisional Secretaries and their officers

Affected Population

Table 8.1.6.3: Population in the Affected Census Blocks Before and After Tsunami 2004 by DS Divisions*: Trincomalee District (Provisional)

DS Division	No of GN Divisions		Number of Census Blocks in the Affected GN Divisions		Number of Persons in the Affected		
	Total GN Divisions	Affected GN Divisions	Total	Affected	Before the disaster	Presently living within the GN	Presently living outside the GN
Muthur	42	8	52	24	6785	3137	3442
Kinniya	31	10	89	55	15387	10838	4366
Etchalampattu	9	4	21	16	4812	805	3976
Kuchcheweli	24	14	94	44	9065	4699	4221
Town & Gravets	42	15	194	86	21983	19467	2584
Seruwilla	17	1	3	3	656	246	404
Total	165	52	453	228	58688	39192	18993

* Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged Housing Units

Table 8.1.6.4: Number of Housing Units in Affected Census Blocks, Before and After Tsunami 2004 by DS divisions* : Trincomalee District

DS Division	No. of GN Divisions		No. of Census Blocks in the Affected GN Divisions		Number of Housing Units in Affected Census Blocks				
	Total GN divisions	Affected GN divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used	Not damaged
Muthur	42	8	52	24	1612	638	204	285	485
Kinniya	31	10	89	55	3532	847	252	1065	1368
Etchalampattu	9	4	21	16	1201	807	11	191	192
Kuchcheweli	24	14	94	44	2304	1005	153	321	825
Town and Gravets	42	15	194	86	4999	518	114	1011	3356
Seruwila	17	1	3	3	164	78	16	15	55
Total	165	52	453	228	13812	3893	750	2888	6281

* Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged Buildings Other than Housing Units

Table 8.1.6.5: Number of Buildings Other than Housing Units of Affected Census Blocks, Before and After Tsunami 2004 by DS Divisions* : Trincomalee District

DS Division	No. of GN Divisions		No. of Census Blocks in the Affected GN Divisions		Number of Housing units in Affected Census Blocks				
	Total GN divisions	Affected GN divisions	Total	Affected	Before the disaster	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used	Not damaged
Muthur	42	8	52	24	132	58	8	25	41
Kinniya	31	10	89	55	265	86	23	51	105
Etchalampattu	9	4	21	16	65	29	2	12	22
Kuchcheweli	24	14	94	44	227	104	9	17	97
Town and Gravets	42	15	194	86	677	47	15	127	488
Seruwila	17	1	3	3	10	4	1	0	5
Total	165	52	453	228	1376	328	58	232	758

*Statistics are given here only for the affected GN divisions.

Source: Department of Census and Statistics

Damaged Housing Units by Distance from the Beach

Table 8.1.6.6: Number of Damaged Housing Units in affected DS Divisions* by Distance from the Beach**

Affected DS Division	Total no. of Damaged** Housing Units	Distance from the Beach				Distance from the River	
		Less than or equal to 100m	101m-200m	201m-300m	301m or more	Less than or equal to 100m	More than 100m
Muthur	1230	902	277	36	4	11	0
Kinniya	2512	921	617	415	499	59	0
Etchchalampattu	1150	706	377	57	10	0	0
Kuchcheweli	1772	929	408	3036	99	0	0
Town & Gravets	1663	1156	238	165	104	0	0
Seruwila	131	91	25	15	0	0	0
Total	8458	4705	1942	3724	716	70	0

* Statistics are given here only for the affected GN divisions.

** Damaged – Fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged

Source: Department of Census and Statistics

Damaged Housing Units by Ownership of the Land

Table 8.1.6.7: Number of Damaged ** Housing Units in Affected GN Divisions* by Ownership of the Land

Affected DS Division	Total No. of Damaged Housing Units	Ownership of the Land				
		Belongs to the family	Rent/ Lease	Coast reservation	Other	Not reported
Muthur	1230	1016	7	72	120	15
Kinniya	2512	1655	15	6	817	19
Etchalampattu	1150	1116	1	0	28	5
Kuchcheweli	1772	1657	21	6	80	8
Town & Gravets	1663	745	113	157	625	23
Seruwila	131	125	0	0	6	0
Total	8458	6314	157	241	1676	70

* Statistics are given here only for the affected GN divisions.

** Damaged – Fully damaged, partially damaged (unusable) and partially damaged (usable) housing units only were considered damaged

Source: Department of Census and Statistics

Damages to Food Crops

Table 8.1.6.8: Assessment of Damages to Food Crops Sector Caused by Tsunami in Sri Lanka

GN Division	No. of Affected Farmers	Extent of Crop Damage (Ha)					Cultivation expenditure Rs. Million	Assessment of damage Rs. Million	Total Assessment of damage Rs. Million
		Paddy	Other field	Vegetables	Fruits	Others			
Muthur	258	18.38	38.60	17.46	13.78	9.19	7.02	4.77	11.79
Kinniya	7	0.50	1.05	0.47	0.37	0.25	0.19	0.13	0.32
Echchalampatu	288	20.52	43.08	19.49	15.39	10.26	7.84	5.32	13.16
Kuchcheveli	449	32.00	67.17	30.39	24.00	16.00	12.22	8.30	20.52
Town & Gravets	85	6.06	12.72	5.75	4.54	3.03	2.31	1.57	3.89
Seruwilla	36	2.56	5.39	2.44	1.92	1.28	0.98	0.67	1.65
Sub Total	1123	80	168	76	60	40	30.57	20.76	51.33

Source: Department of Agriculture, Head Office, Peradeniya, 2005

ANNEX 4

LIST OF PERSONS MET/ CONTACTED

Trincomalee

Mr.S.Rangarajah	Chief Secretary North –East Provincial Council of Sri Lanka
S.M.Croos	PD/NECCDEP, Trincomalee
M.Ramamoorthy	DOD/NECCDEP, Trincomalee
N.Tamilchelvam	DPD/NECCDEP, Trincomalee
M.Sivakumar	Natural Resources Planner, Trincomalee
Dr.S.Gnanachandran	Provincial Director of Agriculture, North East
Mr.T.Pathmanathan	Assistant Director of Agriculture Extension Trincomalee
Mr.S.Pathmarajah	Statistical Programmer, Center for Coastal Management (GTZ)
Mr.Thavasalingam	Chairman, Consortium of NGOs, Trincomalee
S.Selvaratnam	DPD NEIAP – Trincomalee
Anil Premaratne	Add Director – CCD Colombo
A.J.K.P.Athukorala	Fisheries Inspector, Dept. of Fisheries District Office Trincomalee
M.F.Mohamed Rafeek	DEO Regional Office, CEA, Regional Office, Trincomalee.

Ampara

A.A.Bawa	Director, Planning, District Planning Office, Ampara
Lathief	Assistant Director of Agriculture Extension Ampara (DOA)
Kalees	Agriculture Officer, Ampara
Nissanka	FAO Ampara.
Ahamed Lebee	South Eastern University of Sri Lanka, Ampara
A.Irshad Ahmed	Programme Coordinator, Oxfarm Australia
I.G.Thowfeek	DRD, NECCDEP, District Office Adalaichcheni
M.A.C.Najeeb	AD/CEA/SRO, Ampara
T.K.J.Bandara	Natural Resource Planner, NECCDEP, Ampara
S.L.Abdul Karim	DPD, NECCDEP, District, Ampara

Batticaloa

Poonyamoorthy	Add. GA Batticaloa
V.Thavarajah	Divisional Secretary, Kiran
Mrs.K.Pathmarajah	Divisional Secretary, Valachcheni
S.Giritharan	Divisional Secretary, Vaharai
Mrs.T.Dinesh	Divisional Secretary, Katankudy
S.Amalanathan	Divisional Secretary, Manmunai Pattu
T.Saravanapavan	Development Coordinator, D.S Office, Chenkalady
A.Suthakaran	Development Coordinator, D.S Office, Manmunai North

K.Selvarajah	Asst. Director Fisheries, District Fisheries Office, Batticaloa
L.Alphonse	Economic Development Officer, TAFREN, Batticaloa
Ms.K.Sriskandarajah	Div. Env. Officer, Kachcheri, Batticaloa
S.Udayarajah	Senior Environmental Officer, CEA, NECCDP
N.Jeyachandiran	Range Forest Officer, Forest Department, Batticaloa
T.Sarvanantha	Project Management, Specialist, NECCDEP
S.Alaguthurai	SMS (Paddy) ADA's Office Batticaloa
Prof.S.Ravvendranath	Vice Chancellor, Eastern University of Sri Lanka, Vathrumoolai
Dr.Premaratne	Dean, faculty of Agriculture, Eastern University of Sri Lanka
K.Thadhanamoorthy	Head Dept. of Economics, Eastern University of Sri Lanka

Annex 8: Monitoring and Evaluation Plan

INTRODUCTION

Monitoring and evaluation (M&E) is particularly vital to GEF's effectiveness for three reasons: GEF's projects are often innovative or experimental, GEF is pioneering coordination among many parties, and its development of successful operational programs requires continuous learning.

The Monitoring and evaluation system is the set of planning, information gathering and synthesis, reflection and reporting processes along with the necessary supporting conditions and capacities required for the outputs of M&E to make a valuable contribution to decision making and learning. Past experience in Sri Lanka has shown that M&E is the least important for the project stakeholders until they realise that the intended objectives were not achieved at the end. Very often it has been seen that the M&E functions were confined to tracking the activities, tracking financial progress and reporting to the donor. But it is essential that all elements of M&E is attended from the very inception of the project.

M&E functions of the proposed project will have several challenges.

- Firstly this project is the first of its kind in the east for a considerable period of time in view of the civil conflict that was prevalent in the North and east for the last twenty years. The information base has not been updated with scientific surveys (bio diversity assessments, resource inventories etc.) for reasons such as poor accessibility, lack of coordination and poor institutional support for such scientific work. The recently implemented North East Coastal Community Development Project (NECCDEP) has attempted to collect required information but observing the quality of information that was made available to the project design, it transpires that a strong scientific baseline should be established if the M& E function of the project is to be a reality.
- Secondly, there is always a tendency for project managers to lie low on the M&E plan when the project is under implementation. Therefore the M&E plan should be considered an important project management tool and that project managers should be able to execute this plan with commitment if they desire to accomplish success.
- Thirdly, the project seeks to restore the ecosystem through pilot sites mostly using participatory approaches. According to GEF M&E guidelines too *"Participatory mechanisms, to the degree possible, should be incorporated into monitoring and evaluation activities in order to involve stakeholders and beneficiaries in the collective examination and assessment of their programmes or projects"*. The information collection methods for M&E should be based on both conventional data collection methods and participatory M&E methods. Given the fact that the communities in the eastern province were least exposed to development programmes (until recently), which demand, among other skills, participatory techniques, it is challenging for the M&E system to be community centered and participatory. Therefore community training, design of participatory techniques for information collection etc. will be a pre cursor to successful implementation of the M&E system.
- Fourthly, the project intends to mainstream the lessons learned from the pilot sites and replicate it in order to restore the tsunami affected eco systems along the eastern coast in particular and along other coastal areas is general. This requires speedy process through which the lessons learned be documented and same is disseminated efficiently. According to GEF *"The dissemination of lessons, in particular those that have the potential for broader application, is a key element of monitoring and evaluation."* This is a challenging process given the fact that the capacity, the institutional structures and literacy of the communities involved are considered.

According to IFAD “A guide for project M&E” *monitoring and evaluation is not-and cannot be – a substitute for good project management. For M&E to succeed it needs to be driven by managers’ needs for information, their use of information and their desire to create a learning environment. M&E in any project will therefore only ever be as good as the quality of overall management”.*

It further says” *Yet M&E is indispensable for good management. Inadequate M&E , according to IFAD , has two consequences;*

- *Limited learning by implementers about the project progress, opportunities and problems, consequently the limited ability of those involved to correct operations and strategy , leading to sub optimal impact on poverty reduction;*
- *Unclear impact performances, so limited accountability to funding agencies and to primary stakeholders of projects in terms of their stated goals. As one consultant put it” if there is no method for tracking activities or problems or the impact of activities, how can projects justify their existence?”*

M&E Approach

Establish baseline information:

Baseline information is important element in measuring and monitoring project performances. There should be sufficient baseline data collected as against the key issues that will be addressed in the project as stated in the log frame, so that the project performances can be prudently measured to ensure that the objectives were achieved in terms of stated indicators. The logical framework has stated a hierarchy of objective, distinct outcomes and outputs with clear indications for demonstrating impact in terms of Sustainable Land Management, Adaptation, Ecosystem functions, institutional processes and community empowerment.

Restoration of coastal habitats is the principal theme on which the project developed its development interventions. Using three pilot sites, the project intends to develop community led best practices in the restoration of mangrove ecosystem, coral ecosystem and an eco system, which is characterised by sand dunes.

The project document provides a baseline description and introduction to each of the pilot site with information on the extent of habitat, habitat type, habitat functions and ecological values together with basic structural, functional and socio economic characteristics. Whilst much of the information was drawn from the secondary sources, during the PDF “B” an attempt was also made to collect primary information pertaining to the habitat characteristics of the three pilot sites, though inadequate anthropogenic impacts are described in general. Comprehensive data and information for purpose of future comparisons are yet a need, for which project has already made required provisions. Consideration should also be made to account for the large scale Tsunami response development interventions which are on going together with other environmental development interventions such as North East Coastal Community Development Project.

Taking into consideration the gaps in the information base, it is essential that the baseline information is updated at the time of the commencement of project proper. Possibly data analysed in the form of digitised maps can be prepared and will be used for comparisons at the time of project impact evaluations. Collection of baseline information and data will be completed at least within 06 months of the projects commencement.

Management Information system for Impact Monitoring:

This will constitute a multi disciplinary team working further to fine tune the :

- The project technical monitoring plan
- The project impact monitoring plan which may include a Participatory Monitoring and Evaluation Plan based on the logical framework matrix.

The project technical monitoring plan (for restoration)

The project intends to restore the environmental health of the three important eco systems and therefore monitoring of biological impacts of restoration efforts will be the key for M&E Plan. The project is intended for a period of seven years and therefore monitoring of project for its biological indicators will be feasible and achievable. However in the preparation of the technical monitoring plan (at the project objective level and outcome levels) consideration has to be given to designing appropriate scientific tools for monitoring the pilot sites.

Expert advice will be required in order to establish monitoring components (metrics, hypotheses, reference sites, pre-restoration sampling plans, plans for sampling during and after restoration, statistical analysis, data handling, report preparation, and review plans), habitat characteristics, commonly used measures, scientifically proven techniques for data collection (bio physical measurements), tabulation and data analysis, selection of and the use of sampling (non destructive), identification of reference sites (for comparisons) and mechanisms for feed back..

Major components of such a technical monitoring plan will consist of :

- Collection of information on similar restoration monitoring projects,
- Identify and describe the habitats within the pilot sites
- Define basic structural and functional characteristics for those habitat types
- Consult experts,
- Determine the hypotheses,
- Collect historical data,
- Identify reference sites,
- Identify monitoring time span,
- Identify monitoring techniques,
- Design a monitoring review and revision process,

Further guidance can be obtained in various eco system monitoring examples designing in projects elsewhere and particularly following site is interesting:

(ref: http://coastalscience.noaa.gov/documents/restorationmntg_execsum.pdf)

The technical monitoring plan once developed will be used by the project management to track the agreed indicators of structural and functional characteristics of the habitat in question as per the logical framework matrix. A manual can be prepared by the consultant to be used as guidance which will provide the tools formats that can be used for technical monitoring.

Project impact monitoring plan

The mid term evaluation proposed as part of the M&E plan will form the basis for thorough evaluation of the impact-monitoring plan. However, the information system will be established along with a MIS in order to ensure that all necessary information and data is collected on regular intervals according to the M&E Plan.

Community led restoration emphasis the need for community led monitoring and evaluation. Participation of the community members in data collection and analysing, negotiations to reach agreements about what will be monitored, learning which is the basis for improvement and corrective action the flexibility are key ingredients in PM&E system. In preparation of the participator monitoring and evaluation plan, consideration will be given to designing a community led mechanism for tracking progress of the project at the field level (at outcome and output levels) using the participatory rural appraisal techniques (PRA Tools). There is a lacuna of trainers in tamil language who could undertake such training. But it is imperative to address such skills related issues if the community should be engaged to lead restoration process. Community members will be provided with skills to develop monitoring indicators and to report on the same using appropriate participatory techniques. At least two workshops will be held with the community at the each site for the finalisation of PM&E plans (06 workshops altogether within 06 months of project commencement)

Management information system (MIS)

Management information system based on both technical monitoring and participatory impact monitoring will be designed with expert advice. The information system will involve repository of base line information in an appropriate computerised system, regular information feed back from the field, their tabulation and analysis before the results are disseminated as impact statements.

MIS will be used for project management from the projects commencement till the end of project and will be ensured the continuity of the data base management by ensuring that it nests with an appropriate organisation. The Coast Conservation Department, North East Provincial Council or any suitable organisation that ensure the continuity of the project activities beyond IFAD assistance can be considered as a potential organisation which can host the data management system.

Project inception phase.

There will be at least three months as project inception period in order to fully understand the project and to install necessary project management structure on ground. During the inception period following monitoring objectives will be accomplished

- The project is fully staffed and that the staff understands the project goals, objectives, the management structures and the monitoring mechanisms.
- Ensure the project team (the executing agency, the project staff understands IFAD/GEF financial and administrative rules and requirements and the project has the necessary systems financial and reporting in place
- Ensure the project team fully understands the GEF measures of success and reporting requirements
- Detail and agree the project's work plan, adaptive management framework and monitoring indicators
- Finalize the project's implementation arrangements including the composition of the National Steering Committee, other technical committees and the other project partners

A Project Inception Workshop (IW) will be conducted within the three months of projects commencement with the relevant government counterparts, co-financing partners, representation from the IFAD/GEF and other key stakeholders. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms.

A fundamental objective of the IW will be to assist the project team in the preparation of the project's annual workplan on the basis of the project's logframe. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise developing the Annual Workplan with precise and measurable performance indicators, and in a manner consistent with the expected outcomes detailed in the project's logframe..

The Project Coordinator will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team during the Inception Phase with support from GEF/IFAD Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. The Terms of Reference (TORs) for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase

Inception Report (IR)

A Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year Annual Work Plan (AWP) divided in quarterly time frames detailing the activities

and progress indicators that will guide implementation during the first year of the project. This Annual Work Plan would include the dates of specific field visits, support missions from IFAD/GEF. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries.

Project Progress Monitoring

Project Progress Review Meetings

There will be regular project progress review meetings. The project staff led by the Chief Technical Advisor (CTA) or the Project Coordinator will review the physical and financial performances of the project through monthly meetings held at the Project Management Unit (PMU). All the direct project staff will attend this meeting and the performances of the project implementation will be reviewed as against the annual work Plan, and the quarterly work plans and the annual budgets and quarterly budgets. All field level performance related issues will be discussed and alternatives agreed upon at the Project Progress Review meetings. The minutes of the meetings will be documented and will be made available to subsequent evaluations and reviews. The CTA or the PC will follow up all decisions.

Periodic monitoring of implementation progress will be undertaken by the IFAD and GEF technical representatives through meetings with the project management as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities. Further they will conduct yearly visits to projects that have field sites, or more often based on an agreed upon scheduled to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the National Steering Committee or National Committees may also accompany. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and IFAD-GEF.

Project Tripartite Reviews (PTRs)

Annual monitoring of the project performances will be through project tripartite meetings at least once a year with the IFAD representative and the GOSL representatives. The tripartite reviews will be the basis for important policy decisions pertaining to physical and financial performances, reallocations of funds etc. The reviews will involve parties meeting at the field level (the community members), field inspections, consultations and policy reviews. The Ministry of Fisheries and Aquatic Resources being the project executive agency will be responsible for arranging tripartite reviews.

On completion of each tripartite meeting, the findings will be conveyed to the Government of Sri Lanka through an aide memoir, which will constitute a basis for mid course correction. The CTA or the PC is responsible for taking appropriate steps to address issues raised in the aide memoir.

The Project Implementing Agency (PIA) will prepare an Annual Project Report (APR) and submit it to the IFAD GEF at least two weeks prior to the TPR for review and comments. The APR will be used as one of the basic documents for discussions in the TPR meeting. The PIA will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The PIA also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each

project component may also be conducted if necessary. Efforts will be made to schedule subsequent TPRs so that the PIR format can also be used for the APR.

A final tripartite meeting will be held three months before the projects termination, and will decide over the phase out of the project, any follow up and final evaluation.

Project Implementation Report (PIR)

A major tool for monitoring the GEF portfolio and extracting lessons is the annual GEF Project Implementation Review (PIR). The PIR has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects.

The PIR is an annual monitoring process mandated by the GEF. Every project that has been under implementation for at least for a year by the end of June of that year must submit a PIR report. PIR reports are completed by the IFAD/GEF together with the project. Scope and content of the PIR is provided by the GEF M&E Unit. The format of the PIR will be provided by IFAD/GEF.

Preparation of the annual work plan

With assistance of the Project M&E expert the PMU will develop for each year of the project a detailed 12-month work plan and schedule that will assure, to the maximum extent possible, the necessary performance and input from all parties to complete the annual program on time and within budget. The 12-month work plan shall incorporate scope, budget, schedule, approvals, relationships, control, and resource allocation. Elements will include the breakdown of activities in the annual program; identification of responsibilities; identification of critical completion milestones and project interfaces; inventory controls; financial, budget and administrative procedures; and subcontract language and technical standards for the design, procurement, construction and project documentation/close-out activities.. The work plan will be submitted at the first inception meeting for approval and thereafter a 12-month Work Plan will be updated and revised on an annual basis. The Work Plan will allow IFAD/GEF and the PMU to monitor performance as at appropriate intervals.

Physical and Financial Progress reporting

The Chief Technical advisor or the Project Coordinator in conjunction with the IFAD/GEF extended team will be responsible for the preparation and submission of progress reports to cover both the financial and physical progress. Progress reporting will be in accordance with the information needs of IFAD/GEF and will be on quarterly basis. The reporting requirements, which will be stipulated in the contractual agreement with IFAD, will be strictly adhered and report formats will be used for such quarterly reporting purposes. The reports will among other things highlight: information on progress towards objectives as well as outcomes and activities. Systems to gather information that goes with reports will be established in consultation with the project staff.

Quarterly Progress Reports

Short reports outlining main updates in project progress will be provided quarterly to the IFAD GEF or Sri Lanka Representative by the project team.

Periodic Thematic and Technical Reports

The project team supported by the technical advisor will prepare Specific Thematic Reports, focusing on specific issues or areas of activity as part of mainstreaming the lessons learned and replication. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. There will be other Technical Reports based on the Reports List provided at the IW that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework

of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Project Impact Evaluation

Project impact evaluation will be a significant component of the M&E system. The following criteria evaluation will be carried out to appraise project's implementation:

- **Impact:** measures both the positive and negative, foreseen and unforeseen, changes to and effects on society caused by the project(s) or program(s) under evaluation.
- **Effectiveness:** measures the extent to which the objective has been achieved or the likelihood that it will be achieved.
- **Efficiency:** assesses the outputs in relation to inputs, looking at costs, implementing time, and economic and financial results.
- **Relevance:** gauges the degree to which the project or program at a given time is justified within the global and national/local environment and development priorities.
- **Sustainability:** measures the extent to which benefits continue from a particular project or program after GEF assistance/external assistance has come to an end.

This will be done on the basis of the information collected based on the Impact monitoring plan, participatory monitoring and evaluation Plan.

Mid-Term evaluation

The project will have its first independent Mid-Term evaluation after four years of project implementation. This is necessary in view of the pilot sites involved. The Mid-Term Evaluation will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document

Necessary TOR will be provided well in advance for such a mid term evaluation and will be discussed at the National Steering Committee and at the Tri partite meeting immediately before the planned evaluations. Wherever possible, lessons learned will be documented during the evaluation for dissemination.

Project Terminal Report

During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

Final Evaluation

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting. The requirements of the Final Evaluation are set out in guidance provided by the independent GEF M&E Unit and also from IFAD-GEF. The final evaluation will focus on impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities.

Sharing best practices

Site specific Community involvement planning

A well articulated community involvement plan will be developed in consultation with the respective community groups in order to accomplish the above tasks. The community involvement plan will include a better and widely acceptable definition for “Community led rehabilitation” and the hypothesis that will be tested in determining the impact will be agreed upon before the monitoring techniques will be developed. Provision will be made in the plan to track gender disaggregated differences, accomplishments and impacts.

Co-management of coastal resources will provide a new facet for the development in the eastern province as such development interventions have not been tested for a long time though pilot interventions have been frequently undertaken in the south. Monitoring of the co-management approaches tested in the project is vital in order to mainstream such approaches into the development of other coastal habitat in the east and north. Monitoring will involve, case studies, technical reports which can be used into a web site as part of communication.

Technical reports will be generated from the feed back received from the progress reports, other reviews and evaluations and will be published as lessons learned.

Capacity development of the M&E Staff

This is significantly important in view of limited expertise available especially in the eastern province for project monitoring and evaluation. The need for this is further emphasised due to the technical nature of the project and that the project staff need bio diversity monitoring skills based on the indicators developed in the log frame.

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1. 1 : 50000 maps of Survey Department
2. Satellite images ICONOS (2005)
3. Satellite images Digital Globe (2005)
4. Project document for the North East Coastal Community Development Project. (Final report – June 2003, Vol. 01)

Project Design

1. Rapid Environmental and Socio-Economic Assessment of Tsunami-Damage in Terrestrial and Marine Coastal Ecosystems of Ampara and Batticaloa Districts of Eastern Sri Lanka – IUCN. March 2005
2. Rapid Assessment of Damage to Natural Ecosystems in the Coastal and Terrestrial Environments (Green Report) – Ministry of Environment / UNEP
3. Environmental Impact Assessment / Green Movement of Sri Lanka, 10th March 2005
4. Rapid Assessment of Tsunami Damage to Coral Reefs in Sri Lanka, Interim report No. 01, NARA / CORDIO / IUCN / GCRMN / SLSAC, 20 January 2005
5. Post Tsunami Assessment for Recovery of Agriculture and Livestock sectors in Sri Lanka, Green Movement of Sri Lanka, February 2005
6. Post Tsunami Recovery and Reconstruction Strategy, GoSL, December 2005

PART 6 : LOGICAL FRAMEWORK ANALYSIS

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
Goal	Tsunami-affected ecosystems in Sri Lanka are rehabilitated and managed sustainably to provide full ecosystem services including adaptation against extreme climatic events				
GEF Project Objective: Restoration and sustainable management of globally important ecosystems affected by the tsunami is demonstrated for, and mainstreamed effectively into, the reconstruction process to support sustainable livelihoods and reduce vulnerability to climate change along the east coast of Sri Lanka	Institutional Government requirement to incorporate ecosystem restoration and adaptation to climate change into all post-tsunami reconstruction and coastal zone management projects Number of tsunami-reconstruction projects, and public and private sector developments running contrary to Special Area Management (SAM) plans	Ecosystem restoration is currently low priority with no such activities active, and no requirement for its integration into other projects Adaptation to climate change vulnerability in coastal areas is currently a low priority To be determined at the start of implementation of the project since the numbers are changing rapidly	By the end the Year 2, a Cabinet Decision passed requiring ecosystem restoration to be integrated into all reconstruction and coastal zone management projects under the aegis of the Reconstruction and Development Authority (RADA) By the end of year 2, adaptation to the climate change in coastal areas is integrated into the next revision of the Coastal Zone Management Plan (CZMP) No further contradictory developments by 2010	Cabinet Decision Post-tsunami reconstruction project proposals (Government and donors) Field visits to project sites CZMP	<u>Risk:</u> Development efforts are not constrained by war or war related security activities Assumes Government's commitment to environmental restoration to provide a basis for protection of communities and the development of sustainable livelihoods as well as adaptation to climate change in coastal areas remains strong

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Number of community co-management agreements including ecosystem restoration negotiated by Coast Conservation Department (CCD) and other relevant agencies	Co management efforts have been tested in the south but not yet in the east Two community co-management schemes are under preparation at present under North East Coastal Community Development Project (NECCDP)	By end of Year 7, at least nine new community co-management agreements have been signed under this project for the East Coast	Signed agreements Project reports	Assumes community co-management efforts are a successful vehicle for ecosystem restoration
	<u>Land Management and Biodiversity</u> Area of globally significant natural coastal ecosystems restored and rehabilitated along the eastern coast of Sri Lanka – coastal lagoons and sand dunes	Area of pre-tsunami coastal lagoons and sand dunes along the east coast estimated to cover 33,600ha and 350ha respectively Area of coastal lagoons and sand dunes damaged by tsunami along the east coast estimated to be 9,000ha and 50ha respectively	1000 ha of coastal lagoons and 75 ha of sand dunes rehabilitated by 2011 to the pre-tsunami	Field verifications Field surveys in areas where post-tsunami reconstruction is taking place Periodic monitoring reports of the IFAD/GEF Project Implementing Agency	Assumes commitment of all parties including Central, Provincial and Local Government partners and local communities for project approach and concepts <u>Risk:</u> tsunami reactive and responsive development priorities may lead to unsustainable coastal planning and restoration.
	Area of nationally important natural coastal ecosystems along the eastern coast of Sri Lanka - mangroves	Area of pre-tsunami mangroves along the east coast estimated to cover 3,200ha Area of mangrove damaged by tsunami along the east coast estimated to be 1300 ha	250 ha of mangroves rehabilitated by 2011	Field verifications Field surveys in areas where post-tsunami reconstruction is taking place Periodic monitoring reports of the IFAD/GEF Project Implementing Agency	

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Number of globally threatened species present along the east coast	Prior to the tsunami, 23 globally threatened species and seven near-threatened species were present	By 2011 no net loss of globally threatened species attributable to impact of tsunami on coastal ecosystems and its recovery process or other anthropogenic impacts	Field surveys and monitoring	Assumes that habitat restoration can provide high quality habitat again within the Project timeframe
	Number of endemic species along the east coast	Three plants and six marine species were present prior to the tsunami	Pre-tsunami conditions of endemism in the eastern coast is maintained or enhanced by 2011	Field surveys IUCN Sri Lanka Red List	Marine species are assumed not to have been affected by the tsunami – focus will be on plants
Outcome 1 Best practices for effective restoration and sustainable management of key coastal ecosystems developed and demonstrated	Community led, cost-effective and practical pilot testing of key ecosystem restoration methodologies	No pilot tests underway	By middle of Year 3, pilot tests for restoration of mangroves, sand dunes and coastal lagoons complete	Technical reports field and trip reports Participatory monitoring reports Progress reports	Assumes that pilot tests provide adequate basis for developing replicable models
	Availability of best practice guidelines for restoration of tsunami affected coastal ecosystems including adaptation issues	No best practice guidelines for ecosystem restoration as well as adaptation to climate change in coastal areas are available currently	By end of Year 3 best practice guidelines for ecosystem restoration and adaptation to climate change in coastal areas developed for mangroves, sand dunes, and coral reefs	Best practice guidelines for three ecosystem types	

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Area of globally important ecosystems along the east coast rehabilitated through community-based actions	None at the start of the project	By end of Year 7 the following tsunami-affected, globally important ecosystems are under full restoration using best practice guidelines: <ul style="list-style-type: none"> • at least 75ha of sand dunes in the east coast including Panama/Pottuvil • at least 250 ha of mangroves in the east coast including Vakarai; and • at least 1000ha of coastal lagoons the east coast including Vakarai 	Fixed transects Best practice guidelines for three ecosystem types Physical verification Biological indicators for ecological health are recruited into the restored ecosystems % income increase from sustainable use of resources from restored ecosystems	
Output 1.1: Best practices developed and demonstrated for community-led restoration of globally important ecosystems <u>Activities:</u> <ul style="list-style-type: none"> 1.1.1 Establish baseline inventories of flora and fauna in the key ecosystems and compare to pre-tsunami status 1.1.2 Establish socio-economic baseline data for communities involved with restoration demonstration sites 1.1.3 Undertake vulnerability mapping of East Coast to prioritise areas for adaptation 1.1.4 Pilot test methods identified in the PDF-B study using participatory planning and community-led implementation to ascertain most effective means of restoration of key ecosystems 1.1.5 Undertake community-led restoration of mangroves and coastal lagoon at Vakarai 1.1.6 Undertake community-led restoration of sand dunes at Panama/Pottuvil 					
Output 1.2: Best practices and policy guidelines published on practical restoration and conservation management of globally important ecosystems <u>Activities:</u> <ul style="list-style-type: none"> 1.2.1 Prepare and disseminate best practice guidelines in three languages on the restoration of mangroves, lagoons, and sand dunes 1.2.2 Prepare and disseminate management guidelines on community natural resource management systems, buffer zone greening, solid waste management, sustainable tourism, land use planning, and harvesting of ornamental fish 1.2.3: Prepare and disseminate policy guidelines for the efficient restoration of key ecosystems and on the effective involvement of communities in the process to ensure that lessons learned are incorporated into post-tsunami reconstruction projects 					

Project strategy		OBJECTIVELY VERIFIABLE INDICATORS				
		Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
Output 1.3: Central information base established at CCD as repository for all work on ecosystem restoration and coastal adaptation to climate change						
<u>Activities:</u>						
1.3.1	Collate and document in appropriate formats, all data on ecosystem restoration arising from baseline studies, pilot study trials, scaling-up processes, monitoring and evaluation measurements					
1.3.2	In collaboration with MOE and the UNFCCC focal point, collate and document all information relating to coastal adaptive measures and vulnerability to climate change					
1.3.3	Through newly formed Ecosystem Restoration and Adaptation Unit within the CCD, maintain information base and make available to the Disaster Management Centre, other Ministries and agencies, and civil society, and link it with other relevant databases, e.g. at NARA					
<u>Outcome 2</u> Effective ecosystem restoration and sustainable management are mainstreamed into post-tsunami reconstruction planning and implementation by relevant authorities and donors	<u>National</u>	Government requirement to incorporate ecosystem restoration into all post-tsunami reconstruction and coastal zone management projects – see Development Objective.	–	–	–	–
	<u>Provincial</u>	Coastal Zone Management Action Plan (CZMAP) for the Eastern Province includes restoration of tsunami-affected ecosystems and adaptation to climate change as a priority	CZMAP for the Eastern Province initiated recently by NECCDP, but technical expertise to incorporate ecosystem restoration and adaptation to climate change in coastal areas into the CZMP is inadequate	By end of Year 1, CZMAP is completed for the Eastern Province and includes ecosystem restoration and adaptation to climate change as an integral part of the plan	Coastal Zone Management Action Plan for the Eastern Province	Timetable assumes scheduled progress by NECCDP in other areas of the plan is achieved
	Environmental coordination amongst Government agencies; amongst international and local humanitarian	Government: Until January 2006, no environmental coordination meetings occurred. In January	By middle of Year 2, monthly environmental coordination meetings held between relevant	Minutes of meetings	Assumes meetings improve coordination on the ground	

¹ Prior to the tsunami, according to the National Environmental Act 56/1988 and amendments, housing projects over a certain size had to be referred to the Central Environmental Authority for environmental clearance. Immediately after the tsunami, this requirement was not observed in the light of the emergency. However, in 2005 the Tsunami Housing Reconstruction Unit was formed to coordinate the housing reconstruction programme, and in August 2005 an Environmental Director was recruited to THRU to facilitate the legal environmental approvals of housing projects on green sites.

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	agencies and donors; and between Government and non-government tsunami-related agencies	<p>2006, Tsunami Environment Response Platform initiated to resolve environmental problems.</p> <p><u>Humanitarian agencies</u>: No coordination to date. Meetings of the Consortium of Humanitarian Agencies (CHA) are held weekly, but only for information sharing; not empowered to make decisions</p> <p><u>Govt/NGOs</u>: Occasional presentations by Government agencies requested at CHA meetings.</p> <p>Nominal environmental coordination for housing projects¹</p>	Government agencies and international and local humanitarian agencies and donors to facilitate effective ecosystem restoration as an integral part of post-tsunami reconstruction.	Number of coordination meetings held	
	Proportion of tsunami-related and coastal zone management projects including ecosystem restoration and climate change components	In 2005, no tsunami-related project included an ecosystem restoration component	<p>By end of Year 3, 50% of projects included an ecosystem restoration component.</p> <p>By end of Year 4, 100% of projects included an ecosystem restoration component.</p>		
	Bye-laws supporting requirement for ecosystem restoration on coastal projects	No bye-laws active at start of project	Bye-laws passed by end of Year 3	Bye-laws.	

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	District Environmental Law Enforcement Committee (DELEC)	DELECs were established as part of national policy in 1995 but operate with varying degrees of success (becoming inactive in Batticaloa in the late 1990s) according to the priority and capacity accorded to environmental issues	DELEC re-activated and capacity built in Batticaloa District by end of Year 1 DELECs strengthened in Trincomalee and Ampara Districts by end of Year 3 Effective enforcement of environmental regulation in the three districts by Year 2	Minutes of DELEC meetings Capacity assessment score reports before and after capacity building Number of cases brought to the courts	Assumes law enforcement with regard to biodiversity conservation is adequately delegated to the committee
	Specialist Ecosystem Restoration and Adaptation Unit within CCD	No Unit in existence at start of project	Specialist Ecosystem Restoration and Adaptation Unit fully trained and operational by end of Year 3 Capacity building of local implementing agencies and participating CBOs in ecosystem restoration, adaptation and monitoring undertaken from Year 3 onwards	Management records, accounts, plans, reports, training records. Capacity assessments and evaluation scores, training records, reports	Assumes Treasury and Public Administration Departments provide funds and the necessary positions approved to establish the Unit
	Best practice at the demonstration sites replicated at other sites along the East Coast.	None at the beginning of the project	Restoration of the three ecosystems underway at six or more sites by end of Year 5 – sites to include at least one of each ecosystem and at least one site in each of the three Districts	Field verifications Periodic monitoring reports of the Project Management Unit and IFAD/GEF Project Implementing Agency	
Output 2.1: Policy framework reviewed and restructured to support the restoration and sustainable use of coastal natural resources <u>Activities:</u> <ul style="list-style-type: none"> 2.1.1 Undertake review of relevant policy, legislation, and investment guidelines to identify gaps, requirements, and perverse incentives 2.1.2 Develop a pro-poor enabling policy environment for natural resource planning, sustainable land management, and adaptation to climate change within which local interventions are recognized and rewarded 					

Project strategy		OBJECTIVELY VERIFIABLE INDICATORS				
		Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
Output 2.2:	Central national planning system introduces requirement to incorporate restoration of coastal ecosystems into all tsunami-reconstruction projects					
<u>Activities:</u>						
2.2.1	Facilitate a process to establish national policy that requires ecosystem restoration to be incorporated into all post-tsunami reconstruction projects					
2.2.2	Provide assistance to RADA to strengthen environmental coordination between RADA, the CCD/MOE/CEA, other Ministries, and other agencies through regular meetings to support ecosystem restoration					
2.2.3	Hold half-yearly briefings on key environmental issues and techniques for policy-makers, planners and managers of the different sectors and agencies involved in post-tsunami reconstruction, at national and local levels					
Output 2.3:	Restoration of coastal ecosystems incorporated into the Eastern Province planning system					
<u>Activities:</u>						
2.3.1	Promote and support the inclusion of community-based ecosystem restoration in the CZM Action Plan for the Eastern Province					
2.3.2	Mainstream climate change adaptability into the CZMAP for the Eastern Province					
2.3.3	Support the NEPC to update the CZMAP for the Eastern Province to incorporate lessons learned from ecosystem restoration, community co-management, and coastal vulnerability and adaptation to climate change					
2.3.4	Support District Secretaries to strengthen District-level environmental coordinating mechanisms					
Output 2.4:	Specialist Ecosystem Restoration and Adaptation Unit created within Coast Conservation Department to provide facilitation and supervision services to tsunami-reconstruction projects					
<u>Activities:</u>						
2.4.1	Establish scope of operations and undertake capacity needs assessment of Ecosystem Restoration and Adaptation Unit					
2.4.2	Recruit staff and build institutional and technical capacity of the Unit and facilitate working with project team at demonstration sites					
2.4.3	Build capacity of the Unit to train other implementing agencies and participating CBOs in ecosystem restoration and monitoring, and coastal vulnerability and adaptation					
Output 2.5:	Demonstration of replication of ecosystem restoration and community-based co-management of coastal ecosystems promoted by North Eastern Provincial Council					
<u>Activities:</u>						
2.5.1	Undertake ecosystem and socio-economic status surveys of tsunami-affected areas to prioritise potential sites for replication of ecosystem restoration					
2.5.2	Undertake consultations with local communities and other stakeholders to identify and agree participatory implementation mechanisms					
2.5.3	Initiate ecosystem restoration and monitoring using best practice guidelines, knowledge transfer from visits to demonstration sites, and training from CCD's Ecosystem Restoration and Adaptation Unit.					

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
Outcome 3 Coastal communities empowered to manage local natural resources to enhance sustainable livelihoods	Framework for enabling legal designation of community co-management areas	CCD's legal framework not comprehensive ² to cover areas beyond the coastal zone leading to unregulated use of resources by communities No co-management plans at present	Amendment to Coastal Conservation Act enabling co-management agreements to be made with CCD passed by end of Year 2 30% of the communities mobilized are participating in co-management by the end of 2 nd Year 60% of the communities mobilized are participating in co-management by the end of 4 th Year	Amendment to Coast Conservation Act. Participation records of the CBOs and community mobilisation reports	Assumes that process already initiated by CCD does not meet hurdles from other government agencies
	Percentage of community members participating in the designing and implementation of co-management of selected ecosystems for sustainable land use				

² Coastal Conservation Act (CCA) 1981 enables co-management areas to be established only within the Coastal Zone as defined by the Act (300m from High Water Line but see paragraph 46 for full definition). However, Special Area Management sites extend landwards beyond the Coastal Zone and require an amendment to the CCA to allow establishment of community co-management agreements covering these ecologically significant sites

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	An information base on functions of, and services provided by, different coastal ecosystems of the east coast and their economic values	<i>Ad hoc</i> and scattered information is available for some ecosystems but not related to their economic values	<p>Comprehensive information base available to stakeholders on functions and economic values of key coastal ecosystems of the eastern coast of Sri Lanka by end of the Year 1</p> <p>30% of the targeted communities are aware of the economic value of the coastal ecosystems and contribute towards its conservation and sustainable use by end of the year 2</p> <p>60% of the targeted communities are aware of the economic value of the coastal ecosystems and contribute towards its conservation and sustainable use by end of the year 4</p>	<p>Information base</p> <p>Guides in Sinhala and Tamil languages</p>	
	Provide market-based incentives for ecosystems and sustainable land management targeting the local communities	Insufficient incentives available at the start of project	<p>30% of the targeted communities income is increased and dependence on un sustainable natural resources use is decreased the end of Year 2</p> <p>60% of the targeted communities income is increased and dependence on un sustainable natural resources use is decreased the end of Year 4</p>		

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Percentage cover of live hard coral at Pigeon Island reef**	Currently healthy reef with over 70% live hard coral cover	Maintain or increase present level by end of project High percentage or healthy live coral cover indicating the reefs ability to recover from a bleaching event due to climate change and preventing coastal erosion	Field surveys	Assumes El Nino effect or climate change does not lead to coral bleaching or mortality Assumes: live coral cover helps in adaptation to climate change and supports in coastal protection function and preventing coastal erosion
	Number of Butterflyfish (best fish group for indicating reef health and ornamental fishing pressure)	Currently 10* adult individuals per transect	Current numbers increased or maintained by end of project	Field Surveys	Variations in natural recruitment may result in short-term population fluctuations
	Management plan for the Pigeon Island and its vicinity	No Management plan is available for the Pigeon Island and its vicinity	Management plan is completed by the end of Year 2	Detailed management plan for the Pigeon Island and its vicinity	
	Creation of a Sanctuary for Pigeon Island Reef ensure conservation and sustainable use	Currently no marine areas under Protected Area Status nor community co-management A 1km area around Pigeon Island is currently a buffer zone to the National Park	Sanctuary/conservation area created to include X ha of marine coral reef by end of Year 2 Marine area under community co-management is X* ha by end of Year 3	Gazettement of new Sanctuary boundaries Community co-management agreements signed by CCD and DWC	Assumes the process does not meet hurdles from the government agencies

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Fishing pressure	Indiscriminate collection of ornamental species and destructive fishing using explosives ³	Sustainable collection of ornamental fishing according to the Co-management plan by year 3 Cessation of blast fishing in the sanctuary by year 2	Physical verification of number of dives for ornamental fish collection Reported number of explosions	Assumes willingness of DWC to implement a user fee system to the Marine National Park
	Number of boats and visitors to Pigeon Island National Park and Sanctuary holding access permits	No regulation of visitors or boats and no access permits are issued at start of project ²	Regulatory mechanisms in place and at least 50% of visitors hold access permits by end of Year 3 and 80% by Year 6	Physical verification by on site DWC/CCD officers	

³ Number of Crown of Thorns Starfish, destructive fishing practices, and visitors will be determined by appropriate surveys to be undertaken as part of the PDF-B in the calm season March-August 2006. Since the period of the PDF-B has been reduced in order to speed initiation of a response to the tsunami, and because it commenced in August 2005, such surveys have not yet been possible.

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Area of co-managed mangrove, coastal lagoons, and sand dunes along the east coast of Sri Lanka	<p>None at the beginning of the project</p> <p>About 9000 ha of coastal lagoons are directly affected by tsunami</p> <p>About 350 ha of coastal sand dunes affected by tsunami</p> <p>About 1300 ha of mangroves affected by tsunami</p>	<p>Three community co-management areas underway at the end of the Year 3</p> <p>Six additional community co-management areas (at least one of each ecosystem) initiated by the end of the Year 5</p> <p>Adaptation to climate change vulnerability is increased as a result of ecosystem restoration by the co-management of coastal ecosystems by Year 6</p> <p>500 ha of coastal lagoon restored by the end of Year 4</p> <p>1,000 ha of coastal lagoon restored by end of Year 6</p> <p>20 ha sand dune restored by end of Year 4</p> <p>50 ha sand dune restored by end of Year 6</p> <p>150 ha mangrove restored by end of Year 4</p> <p>250 ha mangrove restored by end of Year 6</p>	<p>Community co-management agreements signed by CCD and DWC for the east coast of Sri Lanka</p> <p>Progress reports and monitoring of the impact of the co-management</p>	<p>Assume the community and local stakeholders and authorities ownership of the co-management agreements</p>
	Lagoon fish catch per unit effort (daily catch/traditional non-mechanized craft)	Fish catch is in a declining trend due to deposition of tsunami debris in lagoons, and present average is about 5-6kg/boat/day	Sustainable fish catch shows gradual increase and average catch increases by at least 1kg/boat/day within 3 years of implementation of co-management	Catch data from the lagoon fishers of Vakara	

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
	Natural colonization of <i>Spinifex littoreus</i> on the rehabilitated sand dunes	None at start of project since no attempt made to rehabilitate sand dunes along the East Coast	At least 10% of the rehabilitated sand dunes are coverage with <i>Spinifex littoreus</i> by the end of the Year 4	Field observations Project progress reports	Assumes that IAS are present in co-management areas having being spread by tsunami
	Presence of invasive alien species within co-management areas	Presence and abundance of IAS in co-management areas is currently unknown. It will be established in baseline surveys undertaken in year 1 since IAS spread extremely quickly	IAS eradicated from co-management areas of original demonstration sites by end of Year 5 and from replicated co-management sites by end of Year 7	Field surveys	
	Household incomes in co-management areas: a) average incomes b) percentage of income derived from co-managed area	Baseline to be established at commencement of co-management of ecosystems	25% increase in average household income within 3 years of commencement of implementation of co-management 20% increase in income derived from co-managed area within 3 years of commencement of implementation of co-management	Field surveys Project progress reports	
Output 3.1: Sympathetic enabling environment for community co-management of natural resources established					
<u>Activities:</u>					
3.1.1	Expedite the Amendment to the Coast Conservation Act to provide a legal framework for CCD to establish co-management agreements within SAM sites				
3.1.2	Assist the Tsunami Environment Response Platform to conduct strategic environmental assessment (SEA) of the existing and proposed reconstruction programmes				
3.1.3	Design and implement an awareness/education campaign on restoration, sustainable use of coastal natural resources, and coastal vulnerability and adaptation, targeted at local communities				
3.1.4	Build capacity of CCD to introduce participatory natural resource management approaches among the relevant local communities and other stakeholders				
3.1.5	Develop and disseminate an information base on ecosystem functions and economic values				
3.1.6	Identify potential market-based incentive mechanisms for ecosystem management, and produce clear and practical “How to adopt these” guides for local stakeholders				
Output 3.2: Co-management of mangroves and coastal lagoon promoted at Vakarai to improve local livelihoods and foster sustainable land management					

Project strategy	OBJECTIVELY VERIFIABLE INDICATORS				
	Indicators	Baseline	Target	Means of Verification	Risks/Assumptions
<p><u>Activities:</u></p> <p>3.3.1 Identify the boundaries of the co-management area in consultation with local communities including displaced farmers and other key stakeholders</p> <p>3.3.2 Develop community co-management plan and institutional mechanism for conservation management of mangroves and coastal lagoon in Vakarai in conjunction with demonstration of ecosystem restoration and control of invasive alien species</p> <p>3.3.3 Incorporate replanting of species such as Palmyra palms, Pandanus, and other species as appropriate into co-management plan to provide resources to communities and promote sustainable land management</p> <p>3.3.4 Facilitate effective implementation of community co-management plan to improve incomes with emphasis on pro-poor activities and support to households headed by women</p> <p>3.3.5 Undertake periodic monitoring and evaluation to assess the effectiveness of the management plan and to make changes where necessary</p>					
<p>Output 3.3: Co-management of sand resources promoted at Panama/Pottuvil to improve local livelihoods and foster sustainable land management</p> <p><u>Activities:</u></p> <p>3.4.2 Identify the boundaries of the co-management area in consultation with local communities including displaced farmers and other key stakeholders</p> <p>3.4.3 Develop community co-management plan and institutional mechanism for conservation management of coastal sand dunes at Panama/Pottuvil in conjunction with demonstration of ecosystem restoration and control of invasive alien species</p> <p>3.4.4 Incorporate replanting of species such as Casurina and other species as appropriate into co-management plan to provide resources to communities and promote sustainable land management</p> <p>3.4.5 Facilitate effective implementation of community co-management plan to improve incomes with emphasis on pro-poor activities and support to households headed by women</p> <p>3.4.6 Undertake periodic monitoring and evaluation to assess the effectiveness of the management plan and to make changes where necessary</p>					
<p>Output 3.4: Co-management of coral resources promoted at Pigeon Island</p> <p><u>Activities:</u></p> <p>3.2.1 Identify the boundaries of the co-management area adjacent to the National Park, in consultation with key stakeholders</p> <p>3.2.2 Develop and facilitate effective implementation of community co-management plan and institutional mechanism for conservation management of Pigeon Island Coral Reef promoting sustainable livelihoods for local communities and user groups dependant on the natural resources of the reef to improve incomes with emphasis on pro-poor activities and support to households headed by women</p> <p>3.2.3 Strengthen the capacity of the Department of Fisheries and Aquatic Resources to work with the community to implement fisheries regulations effectively</p> <p>3.2.4 Strengthen the capacity of the Department of Wildlife Conservation (DWC) to manage Pigeon Island National Park effectively including establishment of a park office at Nilaveli and provision of a patrol boat</p> <p>3.2.5 Support DWC to develop a management plan for Pigeon Island and its vicinity, that meshes with the community co-management plan with the aim of establishing a Sanctuary to act as a strict conservation area for the core reef and limited resource extraction beyond</p> <p>3.2.6 Support the extension of existing biophysical monitoring conducted by the National Aquatic Resources Research and Development Agency to monitor reef health, and assess effectiveness of the project and make changes as appropriate</p>					

Project Title: PARTICIPATORY COASTAL ZONE RESTORATION AND SUSTAINABLE MANAGEMENT IN THE EASTERN PROVINCE OF POST-TSUNAMI SRI LANKA

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The Project Team appreciates the STAP Reviewer's constructive comments which have improved the proposal, and they have reviewed these carefully and responded to each. Answers/clarifications are provided in a box in italic text just below the STAP comment. Corresponding changes are made to the text of the Executive Summary, Project Brief and Annexes as appropriate.

A. KEY ISSUES:

1. Assessment of scientific and technical soundness of the project.

- a) General assessment: **i)** The Project should have a clear focus on the GEF Land Degradation focal area, and the proponent needs to either weed out the existing emphasis (still evident here and there in the document) on significance to global biodiversity, or make a convincing case for the latter. **ii)** The Project is too focused on ecosystem restoration, and should be much more on sustainable management of these natural resources, as that is where the threats lie, and long-term emphasis should be. Restoration is also too much a technical solution, the need for which is questioned by the Reviewer, certainly in the case of mangroves (see points i) & o), below). **lii)** There should be letters of agreement or support for the Project innovations mentioned under 12) (see below), as without these there are significant risks. **iv)** The Project document is very lengthy: currently 87 pages, small font. Project documents by World Bank, UNDP, UNEP and Asian Development Bank are generally about half this size or less; the average of a dozen PDs is 26700 words, while the present one is >50,000.

Response by the Project Team:

Points i) and ii) are addressed and now reflected in the revised Project Brief mainly in following places: Project title; cover page line 3 of the of para 2 of the Brief Description; sub title of the 1A.2 in page 2, added para 10 on the page 3; last section of the para 11, removal of paras 11 and 12 of the previous version on biodiversity; line 1 of para 12; last line of para 61; sub heading of the para 69; 1st three and 8th lines of the para 82; title of outcomes 1 and 2 in each and every place they appear; and last sentence of para 86 of page 29. In addition minor changes were made in many other places.

iii) Two letters of commitment have been received from the Coast Conservation Department and the Ministry of Environment on these project innovations – the letters are annexed to the Project Brief as Annex 12 and 13.

iv) The length of the document has been reduced substantially by removal of several paragraphs on biodiversity and by placing the Incremental Cost Analysis and the Project Logical Framework in annexes.

- b) PD cover page, brief summary. This states that “100% of coastal lagoons, 43% of mangroves, and 38% of sand dunes were damaged or destroyed”. PD p. 4, para. 13 also states that most of these habitats have been ‘severely impacted’. PD p. 17, para 62 refers to significant physical damage to these habitats, as does p. 18, para. 63. However, these statements require explanation and should be supported by concrete data. What does “43% of mangroves damaged or destroyed” mean, for

example? In para. 63 (p.19) it is stated that 1376 ha out of 3200 ha of mangrove was damaged or destroyed. Does this really mean that 43% of all mangroves (say, 1500 ha out of 3500 ha) were either badly damaged or destroyed, or does it mean that at X out of Y mangrove locations (which add up to 43% of the mangrove area), there was extensive damage or destruction? This is not simply a matter of semantics. In rapid surveys carried out along Sri Lanka's east coast between Kalmunai and Panama early in March 2005 <unrelated to the present Project>, I noticed that the effect of the tsunami on many mangroves was limited to immediate wave impact zones, usually not wider than about 50 metres, and that by-and-large most mangroves were relatively unaffected. All mangrove sites showed damage, but the relative amount of mangrove lost per site amounted only to a few per cent. In order to support claims about extensive damage (which may well be possible, as I visited only a limited number of sites) the proposal should back this up with reference to (detailed) environmental assessments and hard data. Similarly, while *Palmyra* palms (*Borassus flabellifer*) were largely killed (by salt, not mechanical damage), most coastal 'vegetation' (coconut, fruit trees) in seaside villages, for example, escaped significant damage, even in areas where all buildings had been destroyed by the waves. The proposal seems to have missed some of the most important post-tsunami environmental assessments carried out in affected coastal areas, including:

- Green-REA: Rapid Assessment of Damage to Natural Ecosystems in the Coastal, Marine and Associated Terrestrial Environments. The Green Rapid Environmental Assessment (Green-REA) was initiated by the Ministry of Environment and Natural Resources on the 16th of January 2005, with several field teams carrying out detailed assessments along the coast in February-April 2005. Green-REA was headed by Dr. J. Samarakoon.
- UNDAC's Draft Field Report: Rapid Environmental Assessment – Sri Lanka Tsunami, dated 22 February 2005.
- Rapid Environmental Assessment on Post-Tsunami Brown Environment, by the University of Moratuwa. <a draft outline was prepared in February 2005, and the "Brown-REA" report was due in April 2005>

In fact, the references listed in Annex 9 of the proposal do not include any post-tsunami environmental assessments, which is surprising. P. 13, para 43 does refer to the two REAs, but only in terms of relevance to post-tsunami reconstruction planning, and does not refer to environmental damage.

Response by the Project Team:

The GIS studies undertaken during the PDF-B have taken account of the three studies cited by the STAP Reviewer, but it is agreed that this was not made clear. The three studies, together with the Brown Assessment Report, have been included in the Bibliography (annex 9). In addition, changes have been made in the following places to make it clear that the figures appearing with regard to mangrove degradation refer to the extent (area / ha) of pre- and post-Tsunami mangrove vegetation cover, not to the number of locations of mangrove vegetation in the Eastern Province – Cover page, 1st para of "Brief Description"; para 12; and paras 61 and 62.

- c) PD p.1, para.1: "Sri Lanka has the highest biodiversity per unit area of land among all Asian countries...". While true, this does not say much, as this figure is primarily an artefact of country size, and not by inherent biological diversity. The anomaly of such an approach becomes apparent when one realises that along the same lines, relative to size, biologically impoverished Bangladesh is one of the most diverse countries in Asia, as is the Netherlands in Europe. Doubling the size of an area under scrutiny normally does not double its biodiversity (it is usually much less); what is valid at survey plot level also holds for larger tracts of land, including countries. Nevertheless, Sri Lanka *does* have a rich biodiversity and *does* have a lot of unique, endemic species.

Response by the Project Team:

The team thanks the Reviewer and makes note of his points re Bangladesh and the Netherlands, and agrees, but makes no changes – the information comes from the WWF Ecoregions Project and draws attention to the fact that there is very rich biodiversity in a very small island in Sri Lanka. The Reviewer's last sentence is the pertinent one – Bangladesh and the Netherlands do not have such rich biodiversity.

- d) PD p.2, para. 8. an average temperature increase in Sri Lanka from 1961-1990 of 0.16°C per decade, being 25% more than the global trend of 0.12°C: how significant is this? Why is the analysis not carried out up to 2000 (or 2005)? Note that if the 1.6°C per decade were to continue over the coming century, the result is still at the low end of the IPCC prediction of 1.5-5.8°C increase in global temperature up to 2100.

Response by the Project Team:

The reason for using 1961-1990 for the analysis is that this is the standard used all over the world to establish the baseline. Even though the baseline trend suggests that the expected temperature rise during the century is within the lower end of the global prediction, resulting sea level rise impacts would be substantial due to the fact that Sri Lanka is an island nation. The Meteorological Department of Sri Lanka has done another analysis for the period of 1931-2000 which has shown an average temperature rise as 0.17°C per decade.

- e) PD p. 3-4 Global Significance of Biodiversity. While a lot of globally significant species are listed as occurring in the coastal and terrestrial ecosystems of Sri Lanka's Eastern Province, it is not clear how important the coastal area is from the point of global biodiversity? Which globally significant species are supported in an important way by the coastal systems (e.g. significant populations, breeding areas)? Also, while three endemic plants occur in the coastal ecosystems, it is not clear from the text if these are exclusive to coastal ecosystems. Which of the coastal ecosystems listed are of global significance, and why? Related to this: para. 87-88 refers to 'globally important ecosystems' – a strong case need to be made for this, otherwise it would be better to use the term already used in Outcome 1: 'key coastal ecosystems'.

Response by the Project Team:

The project team agree with Reviewer and have used "key coastal ecosystems" in place of "globally important ecosystems" related to paras 85 and 86.

- f) PD. P.9, para 24: "... none of the NGOs currently working in the Eastern Region has shown any special interest in environmental and biodiversity issues." This sweeping statement is not entirely true, as CARE International organised the collecting and disposing of debris in (at least some) coastal towns. A careful assessment would probably identify other initiatives.

Response by the Project Team:

We are aware of the initiatives by CARE, Oxfam and other International and local NGOs on debris clearance but these were undertaken without any special interest on biodiversity issues. The text has been changed to reflect that – para 23.

- g) PD p.13, para. 45: green belt initiative by CCD. Green belts to ensure scenic value of the coast and protect the shoreline from erosion are a good idea, but can never be a blanket solution along Sri Lanka's east coast. The main reason is that much of the coast is characterised by high energy coastlines: beaches are fairly steep, soon merging into a low dune (which is where many coastal communities reside, close to their boats, and surrounded by coconut and fruit gardens), which then

gives way to a lagoon (which is where mangroves are usually found). Where would one envisage a green belt? In the low dunes where many people live? Where would they move to? As most of the mangroves form a fringe along lagoons, they offer little direct protection to coastal communities against storms and waves, although people swept into the lagoons by the tsunami were able to cling to mangrove trees and avoided being dragged out to sea. Villages protected by mangroves were usually located further away from the sea.

Response by the Project Team:

There were numerous agencies which started planting mangroves and other plants in tsunami-affected coastal areas without sufficient technical background to select species and locations. Therefore this initiative was taken by CCD to provide appropriate guidelines. While agreeing with the views of the Reviewer, no changes will be made to the text since it refers only to an initiative by the CCD.

- h) PD p. 18, figure 1 Threats analysis: from the threats analysis the Project seems to be a biodiversity (focal area) project, as the overall threat is to 'globally significant biodiversity'. This is also reflected in the Project Rationale (p. 27, para. 80), which begins with "Sri Lanka has demonstrated an increasing commitment to biodiversity conservation..". If the Project is to be submitted under OP 15 Sustainable Land Management under the Land Degradation focal area, such sections should be rewritten to reflect this. Of course, there will be overlap with, and support to other focal areas, and these should be mentioned, but not as the main goal or rationale.

Response by the Project Team:

Reviewer's comments are highly appreciated and the necessary changes were made to the threats analysis and rest of the text to reflect the OP 15 focal area of the proposal.

- i) PD p.18, figure 1. Threats analysis lists 'insufficient technical know-how to rehabilitate ecosystems' as a barrier. Other than removal of debris from lagoons, what kind of technical solutions are required? Mangroves should recover fairly rapidly, provided that nearby stands of healthy mangrove exist as a source of propagules, and normally do not require active replanting (see point o), below). Seagrass beds and coral reefs have not been subjected to much smothering, and although it would be technically feasible to replenish depleted dunes, it would be very expensive, and where would one obtain material for replenishment? Replanting of dunes for stabilisation might be an option.

Response by the Project Team:

The team agree with the STAP Reviewer, but the Project is trying to find low-cost means of speeding up the natural recovery process to ensure that further pressure does not accrue on undamaged or partially-damaged ecosystems from people who had previously obtained a living from the damaged areas. Non availability of restoration methods to the communities concerned is considered to be a barrier, and the Project is attempting to determine those technical options which are best suited for ecosystem restoration and sustainable management with the participation of communities.

- j) PD p.18, figure 1. Threats analysis lists 'current projects to assist with remediation of salinised soils have not yet produced tangible results'. The general consensus among agronomists following the tsunami was that while standing crops were severely affected by salt, these generally sandy coastal soils would be naturally cleansed of excess salt after several wet seasons. The main problem facing farmers would be what to do in the intermediate period – they could speed up the desalination process by restoring irrigation and drainage systems, using irrigation water to flush out salts.

Response by the Project Team:

The Project team agrees – a couple of wet seasons would solve the problem. Again, the key here is to speed up the system since until such time as the soils recover, the farming communities would engage in unsustainable practices exacerbating the problem of land degradation (see para 68). There were some inappropriate attempts made by agencies including international NGOs to correct the problem of salinity, e.g. over pumping of water to remediate the saline affected wells in Batticaloa. Unfortunately there is no major irrigation systems providing irrigation water to the coastal areas to flush out excess salt.

- k) PD p. 19 Post-tsunami response (para. 65-69): Many coastal bridges were damaged, and as a result new roads were hastily constructed around lagoons, often through environmentally sensitive areas (e.g. through forests at Pottuvil). Such roads provide new and easy access to timber, sand and other resources, with 'entrepreneurs' exploiting the lack of control following the tsunami.

Response by the Project Team:

This is something the Team missed completely in compiling the brief and thank the Reviewer for drawing attention to. It is now incorporated under the post-tsunami response related threats in the Project brief – para 65.

- l) PD p.22, para. 73: "45-55% of the coastline is eroding, and any acceleration .. will increase the rate of loss of land." Erosion is a common, natural feature along most coastlines in the world, and under normal circumstances, sites of erosion are interspersed with sites where accretion is occurring, and in many cases there will be a balance. Increase in sea dynamics (e.g. more storms), tectonics, or changes in sea level may alter this balance, tipping it more in the direction of erosion and resulting in a net loss of land. The occurrence of many lagoons around the Sri Lankan coast is an indication that sea level has been rising around the island for some time, probably due to tectonic movement.

Response by the Project Team:

Agreed on the comment made by the reviewer.

- m) PD. P26 pt. 1B.3 Stakeholder analysis. Para. 76 and 77 are not part of a stakeholder analysis (only 78 and 79), but are part of the strategy for stakeholder involvement.

Response by the Project Team:

Agreed with the Reviewer and necessary amendments made – sub title 1B.3

- n) PD p.27, para 82. The tsunami may have vastly increased awareness of the importance of coastal ecosystems for protection against storms, but this awareness unfortunately has not (always) translated into actions. For example, the high dunes at Pottuvil protected most of the town from destruction, but in the aftermath of the tsunami, the dunes were being mined for sand for reconstruction of affected areas!

Response by the Project Team:

The Project Team agrees with the comment that the awareness raised among coastal communities has not translated into action. The existing situation is that these resources are considered as open access resources so that the individuals do not see any incentives for their sustainable management. Instead individuals try to maximise their benefits by exploiting the resource – the Tragedy of the Commons. The project will try to pilot test and demonstrate the co-management of selected coastal resources giving local people some kind of ownership to the resource by inculcating long-term sustainability concepts.

- o) PD p.28, para. 87-89, Outcome 1, restoration of coastal ecosystems. The proponent should make a case that restoration is: a) necessary, and b) feasible. As stated above under point i), mangroves

usually recover naturally and do not require technical solutions. Restoration or rehabilitation of mangroves is often recommended when the ecosystem has been altered to such an extent that it cannot regenerate naturally. Often, those managing mangrove restoration emphasize planting of mangroves as the primary tool in restoration. Mangrove habitat can regenerate naturally in 15-30 years if: i) the normal tidal hydrology is not disrupted, and ii) the availability of waterborne seeds or seedlings (propagules) of mangroves from adjacent stands is not disrupted or blocked. If hydrology is still (near-)normal, but influx of seeds or seedlings is disrupted, then mangroves may be successfully established by planting. All important is that one removes what lead to mangrove destruction in the first place: in SL this means establishing a clear jurisdiction over who manages the resource, increasing awareness, and providing alternatives (e.g. for fuel & construction). For dunes, replenishment seems out of the question, although replanting may be useful. However, as with mangroves, removal of barriers seems more important, including increasing awareness, enforcement of regulations banning construction in dunes, and curbing sand mining.

Response by the Project Team:

Again, the emphasis of the Project is on speeding up the natural recovery time. If the affected ecosystems such as mangroves could be left for 15-30 years as suggested by the Reviewer, the Team agrees that they will recover. However the reality is that the affected communities will keep on using these already degraded ecosystems making it impossible for natural recovery to occur. Therefore, the project is designed to assist the natural recovery process. Improved ownership to these resources through co-management initiatives the local communities will get a sense of ownership and benefits of sustainable use. Hence, illegal activities would gradually be reduced. Awareness raising is a key component of the project – no changes are made to the text.

- p) PD p.28 Outcome 1 restoration of ecosystems. This should not only focus on restoration, but also include “best practice for sustainable management of key coastal ecosystems” developed and demonstrated. Sustainable management of these resources is the key, not restoration. Adding sustainable management would also bring outcome 1 more in line with outcome 2. Note that OP15 guidelines list as various forms of sustainable management as eligible activities, along with capacity building and targeted research, while restoration activities get only a minor mention. The title of the Project should perhaps also be changed to participatory coastal zone sustainable management and restoration, rather than just restoration.

Response by the Project Team:

The Team agrees and the document has been adjusted accordingly- para 82 and elsewhere throughout the log frame and ICA.

- q) PD p. 31-32, para. 90-94, Outcome 2: ecosystem restoration & conservation mainstreamed in planning and implementation. Shouldn't the focus be on establishing institutional clarity on who manages which resource? The threats analysis lists confusion over jurisdiction over mangroves and coral reefs as being some of the main problems. Outcome 2 heavily emphasizes “restoration”, while promotion of sustainable use is certainly of equal importance, as unsustainable practices are what lead to much of the destruction in the first place.

Response by the Project Team:

The team agrees and the document has been adjusted accordingly – para 90 et seq. and elsewhere throughout the log frame and ICA.

- r) PD. P.32, para 95: while it is important to support legislative changes and the CCD, the Project can not guarantee that the changes will happen, and should have an alternative handy in case the process

remains stalled. Note that co-management at Vakarai (para. 96) and Panama/Pottuvil (para. 97) also hinges on passage of the amendment.

Response by the Project Team:

This is a very good point and the Team recognises that they had not drawn out the implications thoroughly. Changes have been made to the text and risk assessment to stress that if there is an undue delay in passage of amendments to the Coast Conservation Act, existing provisions in the Forest Ordinance and the Fisheries and Aquatic Resources Act will be explored for co-management – see para 93.

- s) PD p. 34-35, Outcome 4. This is currently titled “Learning, evaluation and adaptive management increased”, but this is misleading, as it simply means project management and M&E, and is not related to capacity building as the title suggests. Also, the total budget of US\$ 3 million of GEF funds for project management appears hefty. This is certainly the case if one sees that this does not include US\$ 1.3 million of GEF funds for project admin and support (p.49). As admin and support are also part of project management, this means that more than 60% of GEF funds are going towards project management. This is much more than is usual on GEF projects, and should be (significantly) decreased.

Response by the Project Team:

Agree with the Reviewer and now the Outcome 4 title is Project Management, Monitoring and Evaluation. Costs have also been substantially reduced to \$2.7 million – \$1.4 million under Outcome 4, and further 1.3 million for project Admin and Support (see also response to “ee” below).

- t) PD p.35 Project indicators, risks & assumptions. Add the risk that supportive legislative changes are not made during the life of the Project (see above, point r). An alternative approach should be given under mitigation proposed. Similarly, if the requirement for mainstreaming ecosystem restoration requirements into reconstruction projects is not adopted (see Outcome 2.2), then the financing of the Ecosystem Restoration and Adaptation Unit (ERAU) within the Coast Conservation Department (CCD) becomes an issue. This (L) risk needs to be listed and a mitigation measure proposed.

Response by the Project Team:

This is a very important point not drawn out properly by the Project Team. It is now addressed in the Project Brief in relevant places e.g. para 93, and included in the risks and assumptions matrix. The alternative to this is the use of existing provisions of the Forest Ordinance and Fisheries and Aquatic Resources Act. In addition a commitment letter is obtained from the Department of Coast Conservation on following up with the proposed amendments to support co-management of coastal resources.

- u) PD p.36, para. 101: expected global benefits. Increased carbon sequestration can be seen as a modest secondary benefit, and not as a main one, as coastal scrub, dune vegetation and lagoons do not have a high sequestration rates per unit area. There will be benefits to global biodiversity, but the level of which needs to be elaborated, as the mere (e.g. one off) occurrence of globally significant species does not automatically make protection of an area of global significance. Also, restoration to ‘once again support these species’ (para. 102) will not appeal to the GEF, except as a secondary benefit.

Response by the Project Team:

The point is taken and the document has been adjusted accordingly – para 99.

- v) PD p. 48, organigramme of Project Management structure: the Ecosystem Restoration and Adaptation Unit (ERAU) is erroneously called Ecosystem Rehabilitation Unit of CCD. In this organigramme it is not clear where the ERAU will be based – is this to be within CCD Colombo, or in the region?

Response by the Project Team:

Necessary changes are made to the organisation diagram, the ERAU is going to be housed in CCD Colombo Office

- w) PD p. 49 Project budget. As stated under point s), too much of the GEF funding is targeted towards project management, admin and support. Also, the budget suggests that GEF is to fund 91% of costs associated with project management, admin and support of the full project. This seems an unfair distribution of the burden, maximising the effect of the IFAD loan, by minimising management costs.

Response by the Project Team:

Project Management, Monitoring and Evaluation and Project Admin and Support cost is now reduced to a total of \$ 2.7 million which is around 37% of the total investment

- x) PD p.52, para 158: “.. and in some cases important habitats would not be restored.” It is important to note that many habitats, if left alone, would regenerate by themselves and not require active human intervention in the form of restoration.

Response by the Project Team:

Coastal Sri Lanka is highly populated and they may make increased threats to remaining pockets of habitats /ecosystems. Therefore things need to be speed up before it is too late. Relevant para is now in the ICA annex.

- y) PD, p. 54, para. 175: “The global environmental objective of the Project is that Tsunami affected habitats in Sri Lanka are rehabilitated to provide full ecosystem services, including adaptation against extreme climatic events.” To this should be added: preserve globally significant biodiversity. Also, “rehabilitated” should be replaced with “restored or allowed to regenerate”.

Response by the Project Team:

Necessary changes are made to the text – para 31 of the page 4 of the Incremental Cost Analysis - Annex 4

- z) PD p. 56, ICA matrix, Activity 1.1.3 Vulnerability mapping. This is now regarded as being entirely incremental, but shouldn't part of this be baseline funded? Haven't activities already been initiated by GoSL to identify vulnerable sections of coastline and vulnerable human populations?

Response by the Project Team:

This has been identified as a priority by the government but is yet to be implemented, hence no baseline cost.

- aa) PD p.72, Logframe. Targets for restoration of sand dunes and mangroves (5 and 10 ha, respectively) are very modest given the funds allocated (US\$ 0.75 million). This should be much more significant in terms of area. Mangrove restoration of areas not requiring hydrological restoration is usually in the order of US \$100-200 per ha, but it is recognised that methods, cooperation with local communities, and so on will have to be developed first. What is a restored mangrove or dune? Replanting of an area of mangrove may result in 80% mortality of seedlings by year 3, for instance. You may replant 1000 ha, but find that by the end of the project you have actually only restored 100 ha. Is this specified in the best practice guidelines?

Response by the Project Team:

This is a mistake left over from an earlier draft. It is now corrected as 75 ha of sand dunes and 250 ha of mangroves to be rehabilitated and sustainably managed. Thank you.

- bb) PD p. 72 Logframe, target for restoration of coastal lagoon = 25 ha. This seems a bit strange, as either you restore an entire lagoon and regard it as 'restored', or it remains unrestored. You cannot restore 25 ha of a lagoon, but can restore an entire, small lagoon, in the range of, say, 25-100 ha.

Response by the Project Team:

Again, this is a mistake left over from an earlier draft. It is now corrected as about 1,000 ha of coastal lagoons to be rehabilitated and sustainably managed.

- cc) Annex 2 site descriptions. The description of the Panama and Pottuvil dunes lists an incredible and highly unlikely biodiversity (including elephant, sloth bear, langurs) – which may hold for areas nearby such as Yala, but surely not for this dune area.

Response by the Project Team:

Elephants and sloth bear can be found in the adjoining forest patches connecting with sand dunes even outside of Yala National Park. During PDF B preparation, the Project Team received the first hand evidence of roaming elephants in the Pottuvil sand dunes.

- dd) Annex 4 – Incremental cost analysis – why is this included twice (in main text and in annex4), albeit in different formats? Note that ERU is referred to instead of ERAU.

Response by the Project Team:

This was following a model from another proposal that had been successfully funded. The summary ICA was included in the Brief and a full version added as an Annex. Given the Reviewer's comment and those made about the length of the brief, the ICA has been given as a full version only and placed in an Annex.. The typographical error has been corrected.

- ee) Annex 8, Monitoring and Evaluation Plan. The plan itself seems fine, but the budget total of US\$ 763,000 seems way too much for project M&E. I have checked with half a dozen UNDP and WB projects, the average is just under US\$ 200,000. <four of these projects were smaller in terms of overall GEF funding, but they are of similar duration and geographic coverage>.

Response by the Project Team:

This is around 10% of the total budget (7 million), since the project is being implemented in an area of conflict where monitoring costs substantially increase,

- ff) Minor points:

- PD p.1, para. 1&3. Rainfall ranges from 1200-1800mm in para. 1, but from 1000-1500mm in para. 3.
- PD p.2, para 5. 'casurina' is not the correct name: common English names include Horsetail, Coast She-oak, Australian oak and Whistling pine. The scientific name of the species common along the Sri Lanka coast is *Casuarina equisetifolia*.
- PD. P.3 para. 12 Lagoons/estuaries extend over 40,000 ha in EP. Note that this figure includes Trincomalee Bay, without which the area would be about 10,000 ha lower.
- PD.p.3, para. 12. "with 17 true mangrove species... 40-60% of the world's specialised mangrove species". Saenger et al. (1983) record a world wide total of 60 plant species exclusive to the mangrove habitat. <Saenger, P., E.J. Hegerl & J.D.S. Davie (1983) Global status of mangrove ecosystems. IUCN

Commission on Ecology Papers No. 3, 88 pp.> The 17 true mangrove species therefore represent about 28% of the world's total.

- *PD.p.3 para. 12. The mangrove area appears inflated. A study by AsDB in 2001-2002 concluded that "The figure for the total area of mangrove in the three Project districts varies from 3274-3446 hectares. However, this data is anywhere between 15-20 years old, and during the past decade there have been significant decreases, reducing the total to less than 3000 hectares."*
- *PD.p.16, para 55 – what is the national Gini coefficient?*
- *PD p.23, para 74, bullet on tourist industry: the policy of "rereat" should read "retreat".*
- *PD p.28, para 83, 'two prong strategy' should read 'two pronged strategy'.*
- *PD p. 53, para 174: "In line with the GEF's Operational Programmes on Climate Change and Land Degradation...". These OPs do not exist; the GEF has a Climate Change focal area, and a Sustainable Land Management OP.*
- *PD p. 60, ERU (2x) – this abbreviation should be ERAU.*

Response by the Project Team:

All minor comments under ff) have been addressed in the relevant places of the Project Brief.

2. Evaluation of the identification of global environmental benefits and/or drawbacks and risks of the project.

The Project is envisaged to have significant environmental benefits for Sri Lanka in general, and the coastal region of the eastern districts in particular. As mentioned in the PD: "Global benefits resulting from the proposed project's implementation include the maintenance of protected area biodiversity of global significance, including the share of functional benefits that accrue to global communities. By conserving natural species and areas, the Project will preserve the flow of global benefits accruing from their consumptive and non-consumptive utilisation, such as those generated through international trade and tourism. It will also maintain ecosystem integrity, yielding global services such as the regulation of climate. By averting the risk of extinction of globally threatened, endangered and endemic species and habitats, and maintaining a diverse pool of genes and resources, the Project will make a significant contribution to the global option values associated with the possible future use and development of protected area biodiversity." Drawbacks or risks to the global environment are not envisaged.

3. Evaluation of the project's compliance or fulfilment of the goals of GEF

Sri Lanka ratified the United Nations Convention to Combat Desertification (UNCCD) on 9 March 1999, the Convention on Biological Diversity (CBD) on 23 March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) on 23 November 1993, and acceded to the Kyoto Protocol in September 2002 as a non-Annex I party. <As such, Sri Lanka is not bound by any legal requirements in the implementation of the FCCC, and is not required to control its emissions, but only to take climate change concerns into account in formulating socio-economic policies.> Sri Lanka is fully eligible to receive technical assistance from IFAD.

The Project is consistent with Operational Program 15 – Sustainable Land Management (revised 18 December 2003), as it focuses on effective ecosystem restoration and sustainable management, and achieving sustainable livelihoods. The Project complies with the Operational Guidelines for the Strategic Priority on "Piloting an Operational Approach to Adaptation" (SPA), as on the one hand it aims at increasing adaptive capacity to climate change and reducing vulnerability to adverse effects, while on the other hand it also delivers global benefits by promoting conservation and sustainable use of biodiversity, and reduction of land degradation through sustainable land management.

The Project is also compliant with two GEF Biodiversity strategic priorities: BD2 Mainstreaming Biodiversity in Production Landscapes and Sectors and BD4, Generation and Dissemination of Best Practices for Addressing Current and Emerging Biodiversity Issues, and two GEF Sustainable Land Management strategic priorities: SLM1, Targeted Capacity Building, and SLM2, Implementation of Innovative and Indigenous Sustainable Land Management Practices.

4. Assessment of how the project fits within its regional context

The Project focuses its activities on the coastal region of eastern Sri Lanka, targeting key areas, but with the ultimate objective of benefiting all affected areas along the east coast. Within a larger regional context, the Project will benefit the region by restoring ecosystems important to migratory and far ranging species such as waterfowl, dugong, smaller cetaceans and marine turtles that use the near coastal area as a habitat and/or breeding area, at least on a seasonal basis. Because of this, links should be established with Ramsar and Bonn conventions, and with the Asia-Pacific Migratory Waterbird Conservation Strategy (see 8, below). <There is no mention of cooperation with counterparts in India, but this may be a politically sensitive issue given the relationship between the two countries, although this has improved in the aftermath of the tsunami, with the Indian Army contributing to reconstruction activities in Sri Lanka, such as the bridge at Pottuvil, for example. Best practice guidelines could be distributed to counterpart agencies of the CCD in India, and to Indian NGOs involved in coastal zone restoration and management.>

5. Evaluation of the replicability of the project

Replicability has been well incorporated into the Project design. While the Project initially aims at restoration of ecosystems at a few pilot sites, the Project Objectives is to restore coastal ecosystems all along Sri Lanka's east coast. On the one hand, the Project will provide technical tools and examples of how to proceed with restoration. The key, however, will be mainstreaming ecosystem restoration into the policy governing post-tsunami reconstruction. This is also the Project's Achilles heel, because if this policy is not adopted by GoSL, funding of replication becomes doubtful.

In order to facilitate replication, the Project will test best-practice guidelines from other regions, and lessons learned will be evaluated. The approach will involve a review of methods, pilot-testing, and scaling up of trials to larger areas. At the same time, the Project will equip and train the Ecosystem Restoration and Adaptation Unit (ERAU) (within the Coast Conservation Dept. CCD), increase coordination among agencies, and help create a policy and planning framework in support of ecosystem restoration. Lastly, the Project will produce and disseminate best practice guidance material, targeting local villagers. This seems a sound enough approach, which hinges upon the establishment and funding of the ERAU.

6. Evaluation of the sustainability of the project

The PD lists three main aspects of the Project that combine to ensure sustainability, namely institutional, financial and economic aspects:

- Institutional aspects. The Project will establish linkages, collective actions and partnerships with, and build on the dynamics of, other projects to enhance sustainability. It will also strengthen the Coast Conservation Department (CCD) by providing it with a new specialist unit (ERAU), and by mainstreaming habitat restoration requirements into reconstruction programmes.
- Financial aspects. According to the PD, capital costs of replicating restoration will be a) low because of the low-cost community-led activities, and b) met through the policy (to be introduced under Outcome 2.2) requiring all post-tsunami reconstruction projects to include ecosystem restoration. The recurring costs of staffing the ERAU will be met by budgetary allocations to

- the CCD, the cost of which can be offset against the savings made by employing low-cost methods and from the economic gains that will ensue from rehabilitating a sustainable natural resource base.
- Economic aspects. According to the PD, the introduction of co-management agreements should encourage the careful husbandry of resources to provide long-term economic benefits from the ecosystem restoration activities.

The reviewer wonders about the sustainability of the ERAU, as this will need to be funded, and if the policy recommended under Outcome 2.2 is not adopted, the ERAU concept unravels. Also, what will happen with ERAU funding once post-tsunami reconstruction projects are completed and donors have moved on? Economic gains from a rehabilitated natural resource base accrue to local resource users, not to the central coffers of GoSL, who will have to fund the ERAU. Also, it is bit presumptuous to assume that co-management will automatically lead to 'careful husbandry' of natural resources. Firstly, co-management will need to be supported by legislative changes. Secondly, co-managers will need to be fully aware of the effects of their actions on environment, resource base, and their own pockets, and this requires a significant amount of awareness raising and changing of attitudes.

B. SECONDARY ISSUES:

7. Evaluation of linkages to other focal areas (international waters, climate change, etc...)

The following links exist with the other GEF focal areas.

- There is a strong link with the biodiversity focal area, as the Project will restore and protect key ecosystems (dunes, reefs, lagoons, mangroves) that are of importance for globally significant biodiversity.
- There is a link with the climate change focal area, as the Project will strive to restore affected ecosystems such as dune scrub and mangroves, and sustainably manage these area, all of which will have beneficial, albeit modest, effects in this focal area.
- There is a weak link with the international waters focal area via conservation of migratory species (esp. migratory and far ranging species such as certain waterfowl, marine turtles, cetaceans and dugong). Although this link is fairly weak it should be mentioned in the proposal.

No direct links with the other GEF focal areas - Persistent Organic Pesticides (POPs) and ozone layer depletion – are expected.

8. Evaluation of linkages to other programs and action plans at the regional and sub-regional level

The proposal indicates linkages with the following projects (some of which have already been finalised), some of which are national, others which are regional:

- Conservation of Biodiversity through Integrated Collaborative Management in the Rekawa, Ussangoda and Kalametiya (RUK) Coastal Ecosystems (UNDP-GEF) 2002-2005
- Bay of Bengal Large Marine Ecosystem (GEF-World Bank) 2006-2012
- Strengthening Partnerships for Effective Control of Invasive Alien Species in Sri Lanka (SPECleS) (UNDP-GEF)
- National Capacity Needs Self-Assessment (NCSA) for Global Environmental Management (UNDP-GEF) 2004-2005
- Protected Areas and Wildlife Conservation Project (GEF-WB/ADB) 2001-2006

- Conservation and Sustainable-use of Sri Lanka's Medicinal Plants (GEF-World Bank) 1999-2005
- In-situ Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application (UNEP-GEF) 2004-2009
- Conservation of Threatened Species in the Rainforests of Southwest Sri Lanka (UNDP-GEF) 2001-2005
- Sri Lanka GEF Small Grants Programme (GEF) 2005-2008
- GEF Climate Change Enabling Activity (Phase II)

The Project is also linked with, and builds upon two main regional development projects, namely the North-East Coastal Community Development Project and the North-East Community Restoration and Development Project. Both of these are large, multi-year projects funded by the Asian Development Bank and have a focus on sustainable development of Sri Lanka's east coast.

The Project therefore appears to be well-embedded in programmes and activities that are co-financed by GEF, and financed by other donors.

Links should be established with Ramsar and Bonn conventions, and with the Asia-Pacific Migratory Waterbird Conservation Strategy, because of the regional importance of the coastal habitats for migratory and far ranging species (see 4).

9. Assessment of other beneficial or damaging environmental effects

The Project will have significant environmental benefits, especially for the coastal region of Sri Lanka's Eastern Province, but also for biodiversity in Sri Lanka in general if the replication process via ERAU/CCD extends to other regions in the country. It may also benefit biodiversity in the greater region, as it may have beneficial effects on populations of migratory and far ranging species. Damaging environmental effects due to the implementation of the Project are not anticipated.

10. Evaluation of the degree of involvement of stakeholders in the project

During Project preparation (the PDF-B phase), the Project design team consulted extensively with the two main projects already operating in the Province – North-East Coastal Community Development Project and North-East Community Restoration and Development Project. The proposal does not mention the degree of involvement of the other stakeholders during the Project design phase, and this needs to be added.

Stakeholder involvement during Project implementation has been well taken care of in the Project design, as it is well outlined in a stakeholder involvement plan included in Annex 5 of the Project Document. This recognises that the main stakeholders on the Project are the fishers and farmers of the rural communities along the East Coast. The fishers and displaced farmers will receive support and training on procedures and techniques of community level resource-use; decision-making; creating, negotiating, and implementing community development plans; resolving resource-use conflicts; and providing leadership in ecosystem restoration and conservation. Other stakeholders include government agencies, such as the local authorities and Coast Conservation Department, who will receive support and capacity building on principles and practices of natural resource planning and sustainable land management; technical issues related to ecosystem restoration, vulnerability assessments and adaptation measures; and resolution of resource-use conflicts. It is also envisaged that NGOs and Civil Society Organizations will play a crucial role in community mobilization and awareness-raising. The Reviewer considers these stakeholder involvement activities to be ample to ensure ownership and facilitate cooperation.

11. Assessment of the capacity building aspects

Capacity building is rightfully a central tenet of the Project, and forms a key part of each of the three main Project outcomes (1-3; outcome 4 is basically project management).

Outcome 1: *Best practices for effective restoration <and sustainable management> of key coastal ecosystems developed and demonstrated*, aims at providing information and examples of best practices for restoration <and management>, and ensuring that this is disseminated among a wide group of stakeholders. To ensure that all key stakeholders are targeted, all publications will be in three languages (Singhalese, Tamil and English) and the Project will work through national and international NGOs. The reviewer advises the Project to also work with Tamil and Muslim NGOs (which are unlikely to be national NGOs, but more likely regional), as coastal populations are wary of national NGOs (that are usually dominated by Singhalese).

Outcome 2: *Effective ecosystem restoration and conservation management are mainstreamed into post-tsunami reconstruction planning and implementation*. This outcome focuses on i) creating a binding policy (which also creates funding) for incorporating ecosystem restoration into tsunami reconstruction efforts; ii) creating capacity within the CCD to manage this; and iii) providing tangible examples by executing pilot projects in three districts, while at the same time developing practical capacities.

Outcome 3: *Coastal communities empowered to manage local nature resources to enhance sustainable livelihoods*. Outcome 3 aims at i) enhancing the legal and regulatory processes in support of coastal ecosystem protection, and ii) establish co-management regimes with local communities at the three pilot Project sites (Pigeon Island, Vakarai and Panama/Pottuvil). While the first is primarily the creation of an enabling environment, the latter will largely consist of local capacity building.

The Project is therefore consistent with: i) OP15, which sees capacity building as one of the main tools in achieving sustainable land management; ii) Biodiversity strategic priority BD4, Generation and Dissemination of Best Practices for Addressing Current and Emerging Biodiversity Issues; and iii) Sustainable Land Management strategic priority SLM1, Targeted Capacity Building.

12. Innovativeness of the project

While ecosystem restoration itself is not innovative – also in Sri Lanka – the Project's main innovation is to integrate this into the post-tsunami reconstruction efforts to ensure that environment concerns are met, and not trampled by well-intended but hastily designed projects. The creation of a body within the CCD to manage restoration (ERAU), funded out of reconstruction funds is also innovative and appears sound, as does linking restoration with co-management of restored ecosystems with local communities, facilitated by changes in the Coast Conservation Act.

These innovations are good, and would provide an excellent opportunity for sustainable management of coastal resources. At the same time, they are also the chinks in the armour of the Project: what if the policy for mainstreaming ecosystem restoration into post-tsunami reconstruction efforts is not adopted, or significantly delayed? What if CCD does not support the establishment of the ERAU, because of other commitments or new concerns? What if the Coast Conservation Act is not amended, so there is no legal basis for co-management? These are real risks and causes for concern regarding Project design. The Proponent should therefore aim to minimise these risks, by obtaining letters of commitment, agreement or support from key agencies for these three main thrusts of the Project.

Response by the Project Team:

Two letters of commitment have been received from the Coast Conservation Department and the Ministry of Environment – they are annexed to the Project Brief as Annex 12 and 13

Concluding remarks

While the Project is generally well-founded and well-designed, there are a number of issues that need to be addressed. Firstly, there should be letters of agreement or support for the innovations mentioned under 12), as without these there are significant risks. Secondly, the focus on ecosystem restoration should be broadened to include sustainable ecosystem management, as this should be (a major part of) the long-term goal. Provided that these are taken care of, there should not be any major impediment to successful Project implementation. Other issues mentioned are minor, and can readily be addressed by making small changes.

Annex 12: Letter of Commitment – Coast Conservation department



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கரைப் பாதுகாப்புத் திணைக்களம்
COAST CONSERVATION DEPARTMENT

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த.பெ. 556, புதிய செயலகம், மாலிகாவத்த, கொழும்பு 10.
P. O. Box 556, New Secretariat, Maligawatta, Colombo 10.

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உமது இல
Your No.

21 - 03 - 2006

21st March 2006

Mr Tito Santos,
Programme Officer – GEF Unit
International Fund for Agricultural Development
Via del Serafico 107
00142 Rome
Italy

Dear Mr Tito,

Submission of the full-scale proposal on Participatory Coastal Zone Restoration in the Eastern Province of Post-Tsunami Sri Lanka (IFAD/GEF PDF B)

As you are aware, the above proposal was endorsed and submitted to you by the GEF National Focal Point for Sri Lanka on 20th February 2006 and I am informed that it is presently under the review of the GEF secretariat. It has been also brought to my notice that the GEF review process has identified that the Ecosystem Restoration and Adaptation Unit (ERAU) proposed to be established within the Coast Conservation Department (CCD) and proposed amendments would facilitate SAM process where co-management practices will be promoted.

We wish to inform you that the above components were included into the project design following a detailed consultative process and with the agreement of the National Steering Committee set up for the project. The CCD is fully committed to the establishment of the ERAU within the first two years of project implementation and has taken necessary action to enable the proposed amendments to the CCA. As pointed out, these two key initiatives would no doubt facilitate the effective implementation of the proposed project to benefit the eastern coast of Sri Lanka.

Thanking you,

Yours Sincerely

Dr R.A.D.B. Samaranayake
Director
Coast Conservation Department

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Annex 13: Letter of Commitment – Ministry of Environment



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சுற்றுடல் அமைச்சு
MINISTRY OF ENVIRONMENT
"සම්පත්පාය" අංක: 82, රජමල්වත්ත පාර, බත්තරමුල්ල, ශ්‍රී ලංකාව.
"சம்பத்பாய", இல: 82, ரஜமல்வத்த வீதி, பத்தரமுல்லா, இலங்கை.
"Sampathpaya" No: 82, Rajamalwatta Road, Battaramulla, Sri Lanka.

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Your No.

දිනය
திகதி
Date
21st March 2006

Mr Tito Santos,
Programme Officer – GEF Unit
International Fund for Agricultural Development
Via del Serafico 107
00142 Rome
Italy

Dear Mr Tito,

Submission of the full-scale proposal on Participatory Coastal Zone Restoration in the Eastern Province of Post-Tsunami Sri Lanka (IFAD/GEF PDF B)

As you are aware, the above proposal was endorsed and submitted to you by this Ministry as the GEF National Focal Point for Sri Lanka, on 20th February 2006. It has been brought to my notice that the on-going GEF review process has identified the importance of integrating the environmental dimensions into the post-tsunami reconstruction efforts particularly the interventions identified for implementation under the project.

In this connection, we wish to inform you that the Ministry of Environment is fully committed to integrate the environmental dimensions into the post tsunami reconstruction process, and has already established a multi stakeholder institutional arrangement known as Tsunami Environmental Response Platform (TERP) to provide policy guidance and the Environmental Help Desk for technical backstopping in this process.

We confirm that the proposed IFAD/GEF project will conform to these efforts and will be duly monitored accordingly.

Yours Sincerely


Mr W R M S Wickramasinghe
Additional Secretary
for Secretary
Ministry of Environment

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24 March 2006

Dear Mr. Good,

We have the pleasure to inform you that IFAD will co-finance its GEF proposal entitled “*Participatory Coastal Zone Restoration in the Eastern Province of post-tsunami Sri Lanka*” (GEFID 2753) in the amount of USD 7 083 650. This GEF initiative will be a component of the IFAD funded project “*Post-tsunami Coastal Restoration and Resource Management Programme*” in Sri Lanka and it will replicate and mainstream the lessons learned into the overall coastal programme.

This GEF initiative in Sri Lanka is very important as it is part of IFAD’s response to the Tsunami affected countries, working to address the requirements for long-term recovery, including private and public asset rehabilitation, and harness the energies of local stakeholders under the leadership of governments.

Lastly, it demonstrates to Sri Lanka our joint support and commitment to help overcome the consequences of this unprecedented human and natural disaster.

Warm regards,

Thomas Elhaut
Director, Asia and the Pacific Division
Programme Management Department

Mr. Leonard Good
Chief Executive Officer
of the Global Environment
Facility Secretariat
Washington DC
USA