



# | Impact of Tsunami on Achieving the MDGs

## | Section III



The brush strokes of truth, the reality of the moment.  
Paintings from the little hands who experienced the disaster at first hand.

## Introduction<sup>1</sup>

The tsunami that struck Sri Lanka on the 26th of December 2004, left behind widespread destruction. This resulted in the loss of 31,000 lives, displacement of approximately 443,000 people with more than 900 children orphaned or separated from their parents. There was severe damage to homes, peoples' livelihood, ecosystems and coastal infrastructure. Those who have borne the brunt have been the most vulnerable groups of society, such as coastal communities and those in the North and East region. The percentage of the coastal population affected, ranges from an estimated 35% in Kilinochchi to 80% in Mullaitivu and 78% in Ampara coastal district divisions and less than 20% of the coastal population in the southern districts of Galle, Matara, and Hambantota.

Overall damage is estimated at approximately US\$ 1 billion (4.5% of GDP). The largest share of output losses are in the fisheries and tourism sectors due to lost income and production. Many coastal fishermen, those working in the informal sector, who service the fisheries and tourism sectors and the livelihoods of small scale farmers were affected by the tsunami, causing greater vulnerability to poverty in what were already poor areas.

Overall incremental financing needs are estimated at US\$ 1.5-1.6 billion. Destruction of private assets in the affected districts was estimated at US\$ 700 million. The fishing and tourism industries lost infrastructure and equipment worth US\$ 97 million and US\$ 250 million respectively while the housing sector sustained damages close to US\$ 306-341 million. The joint Needs Assessment done by JBIC/ADB/World Bank has estimated the recovery cost at around US 1.5 billion (about 7% of GDP) of which the financing requirement for the recovery and reconstruction work in 2005 is estimated at around US\$ 500 million.

**Table 40: Tsunami Affected Losses and Financing Needs - Preliminary Estimates**

(US \$ M)

Sector	Losses		Financing Needs		
	Asset Loss	Output Loss****	Short Term	Medium Term	Total Needs
Housing	306-341	-	50	387-437	437-487
Roads	60	-	25	175	200
Water and Sanitation	42	-	64	53	117
Railways	15	-	40	90	130
Education	26	-	13	32	45
Health	60	-	17	67	84
Agriculture*	3	-	2	2	4
Fisheries*	97	200	69	49	118
Tourism*	250	130	130	-	130
Power	10	-	27	40-50	67-77
Environment	10	-	6	12	18
Social Welfare**	-	-	30	-	30
Contingency ***	90		30	120	150
Total (US\$ M)	970-1,000	330	500	1,000-1,100	1,500-1,600
% of GDP	4.4-4.6		1.5		7.0-7.3

\*Includes estimates from livelihood damage assessment of fishermen, small farmers, and small businesses in tourism totalling \$140 million

\*\*Targeted assistance to vulnerable groups

\*\*\* 10% of the total estimates

Source: Ministry of Finance and Planning

### The Government Needs Assessment highlighted two important requirements.

- The first immediate relief and rehabilitation phase is addressing the needs of about 100,000 displaced families. This involves compensation for victims, provision of safety and health of women and children, food and temporary shelter, textbooks and uniforms for school children, basic health facilities, immediate livelihood support as well as the restoration of electricity, water, transport and road access. The overall funding requirement for this phase which may involve a 3-4 month period is estimated at approximately US\$ 200- 250 million

<sup>1</sup> The main text for this section is extracted from the World Bank, ADB and JBIC Needs Assessment Report prepared in January 2005.

- The second is the reconstruction and rebuilding phase which involves a 3-5 year period for the development of housing and townships, infrastructure for human resource development, assistance for agriculture, fisheries and tourism industries and infrastructure consisting of roads, railways, telecommunications, water supplies, ports, fisheries harbours and electricity is estimated to cost around US\$ 1.8 billion

The Government's reconstruction and rebuilding plan would concentrate on the various sectors from infrastructure development, enterprise development to the environment (Figure 22)

Figure 22: Sectoral Distribution of Reconstruction Strategy

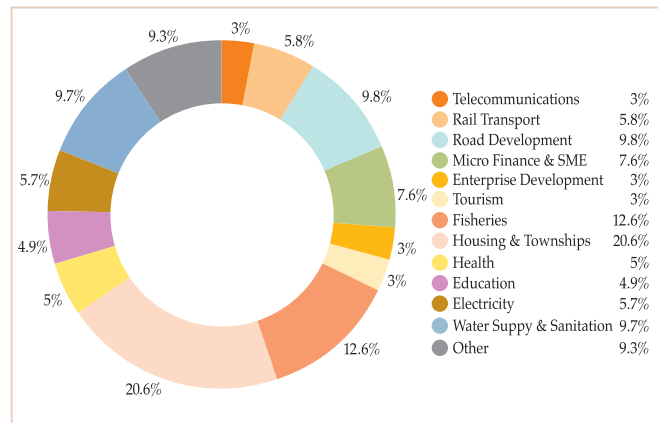


Table 41: Action Plan for Rebuilding the Tsunami Affected Areas

Development Area	Sectors	Reconstruction projects
Infrastructure	Road Development	<ul style="list-style-type: none"> <li>Development of Southern Coastal Road</li> <li>Development of Eastern Coastal Roads</li> <li>Development of Northern Coastal Roads</li> <li>Access Roads</li> </ul>
	Rail Transport	<ul style="list-style-type: none"> <li>Track Rehabilitation</li> <li>Restoration and improvements to Bridges and Culverts</li> <li>Replacement of Signaling and Communications System</li> <li>Rebuilding of Stations and Related Buildings</li> <li>Replacement of Rolling stock</li> <li>Restoration of Road Passenger Transport System</li> </ul>
	Electricity	<ul style="list-style-type: none"> <li>Installation of Electrical Distribution System Net Work in the Coastal Belt affected by Tsunami Disaster (Phase I)</li> <li>Installation of Electrical Distribution System Net Work in the Coastal Belt affected by Tsunami Disaster (Phase II)</li> <li>Power Generation Projects in Coastal Belt Affected by Tsunami Disaster (Phase III)</li> </ul>
	Water Supply & Sanitation	<ul style="list-style-type: none"> <li>Restoring Water Supply and Sanitation Facilities in Affected Areas</li> <li>Provision of Water Supply to Transit Camps</li> <li>Construction of Dug Wells in Affected Areas</li> <li>Construction of Tube wells in Disaster Affected Areas</li> <li>Immediate Rehabilitation of Pipe Borne Water Supply in Eravur, Addempady- Batticaloa District</li> <li>Re-establishment of Pipe Borne Water Supply in affected Districts</li> </ul>
	Telecommunications	<ul style="list-style-type: none"> <li>Construction of New Towers for the provision of Telecommunication Services</li> <li>Telecommunication Facilities in Affected Areas</li> </ul>
	Ports	<ul style="list-style-type: none"> <li>Restoration of Damage, Desilting and Clearance of Wreckage in the Port of Galle</li> <li>Restoration Damage, Desilting and Clearance of Wreckage in the Port of Kankasanthurai (KKS)</li> <li>Restoration of Damage, Desilting and Clearance of Wreckage in the Port of Point Pedro (PPD)</li> </ul>

Human Resources	Education	<ul style="list-style-type: none"> <li>• Reconstruction, Renovation and Relocation of Schools in the Devastated Areas</li> <li>• Renovation of Universities</li> <li>• Renovation of Teacher Training Colleges</li> <li>• Rehabilitation of Vocational Training Centres</li> </ul>
	Health	<ul style="list-style-type: none"> <li>• Restoration of Damaged Health Facilities due to Tsunami Disaster</li> <li>• Provision of Comprehensive and High Quality Health Service in the Tsunami Stricken Districts</li> <li>• Rehabilitation of the indigenous Health Care facilities in the Tsunami Stricken Areas</li> </ul>
Development & Social Services	Social Services	<ul style="list-style-type: none"> <li>• Providing Counseling Services for Restoration to normal life of the Tsunami Affected People</li> <li>• Special Programme for Women, Children &amp; Differently Abled including Skills Reorientation</li> </ul>
Housing & Township Development		<ul style="list-style-type: none"> <li>• Reconstruction of Townships in the Tsunami Ravaged Areas</li> <li>• Reconstruction of the Damaged Properties of the Local Government Authorities</li> </ul>
Fisheries Industry		<ul style="list-style-type: none"> <li>• Establishment of containerised Ice Plants and provision of Freezer trucks to re-commence livelihood of Fishermen</li> <li>• Construction of temporary shelter for Fishermen</li> <li>• Repairing, rebuilding and replacement of damaged / destroyed Fishing Crafts and Gear.</li> <li>• Rehabilitation of Fishery Harbours and Anchorages with the provision of required Machinery</li> <li>• Rehabilitation and Re-construction of Training, Research and Management Facilities</li> <li>• Construction of Houses for Fishermen</li> <li>• Rebuilding the Agriculture, Livestock, Lands and Irrigation Sub Sectors</li> </ul>
Industrial Sector	Industries	<ul style="list-style-type: none"> <li>• Rehabilitation and Reconstruction of Cottage Industry</li> <li>• Regional Industrial Estate Development Programme</li> </ul>
	Tourism	<ul style="list-style-type: none"> <li>• Investment in Tourism Marketing Recovery Plan</li> <li>• Investment in Tourism Resort Re-development and Infrastructure Construction</li> <li>• Hotel Refurbishment Import Duty Waiver Facility</li> <li>• Duty Waiver for Tourism Vehicles Replacement Programme</li> <li>• Investment in Community Restoration Plan</li> </ul>
	Environment	<ul style="list-style-type: none"> <li>• Restoration of Damaged Coastal Environment</li> <li>• Regional Laboratory for Environmental Quality Assurance and effluent Treatment Facilities for High and Medium Polluting Industries in Southern Province and one in North Easter Province</li> <li>• Establishment of a Database on Natural Disasters</li> </ul>
Administrative and Regulatory infrastructure	Administrative and Regulatory Infrastructure	<ul style="list-style-type: none"> <li>• Rehabilitation and Reconstruction of the Damaged Courts and Residential Places of Judges</li> <li>• Rehabilitation and Reconstruction of the Damaged Prison buildings</li> <li>• Rehabilitation and Reconstruction of Damaged Police Stations</li> </ul>
	Finance	<ul style="list-style-type: none"> <li>• Relief package to Affected Loan Customers by Tsunami State Banks</li> <li>• Relief package to Affected Loan Customers by Tsunami State Mortgage Bank</li> <li>• Relief package to Affected Loan Customer by Tsunami Insurance Board of Sri Lanka</li> </ul>

## Sectoral Impact

### Poverty

The available poverty data for districts in the Southern province show that between one-quarter to one-third of the population in the areas affected by the tsunamis live below the poverty line.<sup>2</sup> The tsunami disaster increased the vulnerability of this portion of the population, making a case for channeling resources to address the needs of these groups. Poverty in the North and East is widely thought to be higher than the national average. The tsunami surge completely destroyed around 99,480 homes and partially damaged about 44,290. Completely and partially damaged houses together comprise 13 % of the housing stock in the administrative divisions along the coast. The net replacement cost for housing is estimated between Rs. 46 to 51 billion (US\$ 437 million to US\$ 487 million). The impacts on people's livelihoods have been severe while there has also been a loss of 5,000 small businesses. The damage to the agricultural sector is confined to the destruction of standing crops in paddy and other crop fields. The entry of seawater to productive fields has induced a high level of soil salinity. The most affected districts are the Matara, Hambantota, Ampara, Batticaloa and Jaffna districts. Poorer families have also lost their livestock. The number of those who lost means of supplementing their incomes by working in informal jobs is 40,000 while the loss of employment in the fishing industry is 100,000. The total job loss is estimated at 200,000.

### Priorities for Development

- Micro credit intervention to provide assistance for the self employed and small businesses
- Utilize local resources and employ local people in rebuilding activities
- Planned housing schemes
- Programmes to assist affected communities and encourage more productive agricultural and livestock farming methods should be introduced

### Environmental Impact

Except in extremely small pockets, the tsunami has affected a narrow strip along the southern and western coastlines of 500 meters or less at elevations below 2.5 to 3 meters. The

<sup>2</sup> The per-capita GDP in the affected provinces is estimated at about US\$ 640, compared to a national average of US\$ 930 and about US\$ 1500 in the Western Province.

North East coastline bore the brunt of the disaster, with affected areas reaching 2-3 km inland. Areas protected by natural barriers, such as mangroves and sand dunes, were virtually unaffected.

Sri Lanka harbours many key marine and coastal ecosystems. While there has been no documented loss of fauna in the protected areas affected by the tsunami, there has been a significant impact on flora and biodiversity. Extensive soil erosion, as well as stress and dying flora, were noted in areas of seawater intrusion. The greatest ecological impacts are on freshwater bodies and fishery breeding grounds in protected areas that have been contaminated with saline water. Coastal marine eco-systems were also affected and there is a possibility of contamination as a result of land run-off wastes and pollutants, debris, soil and organic matter. In addition, mangrove areas, which protected property and lives during the tsunami, were also damaged.

The extent of debris, waste material, and rubble requiring disposal poses a huge issue because of the sheer volume and associated costs involved. Emergency clearance efforts have resulted in haphazard disposal of rubble along roads, in open fields, into drainage ditches, low lying lands and waterways, and along beaches. This would in the long-run lead to severe environmental hazards.

The Government's decision to demarcate a coastal buffer zone of 100 meters in the Western and Southern coasts and 200 meters along the Northern and Eastern coasts has been met with mixed reactions. The Government's main argument for imposing such a buffer zone is to prevent loss of life and damage to property in the future. From the environmental perspective, the declaration of the buffer zone would reap positive results, as it would assist in the efforts in preserving the coastal eco-systems to ensure that human development is in harmony with the environment.

### Priorities for Development

- Dumping of debris in inappropriate locations must be addressed immediately to prevent long-term problems of flood control, waterway blockages, and pollution of beaches
- Adopt measures to protect existing marine and coastal ecosystems
- Restoration of natural defence resources and allow corral reefs to develop by strictly enforcing the ban on coral mining

## Education

The tsunami caused damage to a total of 168 public schools, 4 universities, and 18 vocational/industrial training centres. The number of damaged schools was highest in the Ampara (38), Batticaloa (33) and Trincomalee (27) districts. The total cost of the damage to the education capital stock, according to preliminary estimates, is approximately Rs. 2.7 billion (US\$ 26 million). The major proportion of damage has been to primary and secondary schools, which account for over 90% of the number of institutions damaged and about 92% of the cost. The number of students in primary education affected by the tsunami is approximately 38,862. The damage includes school buildings, equipment, machinery and tools, furniture, books and other library resources, and consumable teaching learning material such as chemicals, chalk and white-board pens. The cost of reconstructing and restoring damaged schools, universities, and vocational training and technical education institutions with quality upgrading, is estimated to be about Rs. 4.7 billion (US\$ 45 million). Other impacts include the psychological trauma, and the physical and social losses suffered by students, teachers and other education administrators.

Plans are underway by the government to repair schools, universities and vocational training institutes. The repaired institutions would be upgraded according to modern educational quality norms and standards. Measures are also underway in providing textbooks and basic education kits to affected schools by various donor organisations. Steps have also been taken to ensure normalcy in education services.

### Priorities for Development

- Repair educational facilities wherever possible to enable students to commence their academic programmes
- Relief camps which were set up in about 275 undamaged schools to provide temporary shelter for displaced individuals need to be cleared with classes recommencing as quickly as possible
- Where reconstruction of other education institutions is likely to be delayed, either due to the extent of damage suffered or the need to relocate the school or training institution, alternative arrangements must be made to facilitate students ability to attend other schools and training institutions
- Reconstruct and re-equip educational institutions to provide students with all the modern facilities
- Provide various incentives to encourage children to go back to school

## Health

Damage to the health system occurred in the loss of services, human resources, and damage to health-related infrastructure. The estimated cost of the damage to the health sector is approximately Rs. 6.3 billion (US\$ 60 million). 92 local clinics, hospitals and drug stores were either destroyed or damaged, causing disruptions to delivery of health services and patient care. The highest number of health institutions damaged were in the Ampara (11) and Batticaloa (9) districts. Further, several health sector personnel were killed by the tsunami, which created gaps in service provision following the disaster. Public health infrastructure losses include damaged hospitals, drug stores, cold rooms, preventive health care offices, health staff accommodation facilities, district health offices, vehicles (ambulances, lorries, vans, double cabs, motor bikes), and medical equipment (in hospitals, stores, clinics). The estimated total cost of rehabilitating the health sector, including the provision of medical equipment and vehicles, is approximately Rs. 8.8 billion (US\$ 84 million).

### Priorities for Development

- Make basic health care services available to displaced people
- Re-establish preventive health care needs (especially vaccine preventable and vector borne diseases) among the affected people (including the displaced)
- The tsunami caused considerable trauma to those affected, and a holistic program addressing the psycho-social needs of the affected (including displaced) should be implemented
- Non-damaged health institutions need to be equipped to provide expanded curative services
- Reconstruct and re-equip the health institutions damaged due to the disaster
- Ensure delivery of micronutrients to vulnerable groups
- Support to restoration and strengthening of cold chain facilities and provision of referral and outreach services
- Construct primary health care facilities
- Raise awareness in camps of the risks of sexually transmitted diseases, such as HIV/AIDS

## Water Supply and Sanitation

The tsunami disaster affected 14 districts in the Northern, Eastern and Southern Provinces, mostly in the areas where dependency on wells was high. All of the dug wells located in coastal areas where salt water has penetrated are polluted by wastewater and seepage from damaged septic tanks. This is a serious public health issue, as most local water sources have been contaminated. In addition, the pipe borne water supply system in the affected coastal areas is largely out of service because of damage to the distribution network.

A rough estimate shows at least 12,000 wells were damaged mainly by salt-water intrusion and approximately 50,000 were abandoned. The physical damage to the existing water supply schemes by the tsunami is principally restricted to the distribution network along the shoreline. Approximately 12,000 shallow wells and 60,000 household latrines were affected. Damage to sanitation facilities includes individual household latrines and the sewerage pump house at Mt. Lavinia, which is part of the Colombo sewerage system. Along with infrastructure, water supply-related equipment was also damaged that needs replacement. The total damage is estimated to be Rs. 4.4 billion (US\$ 42 million). The estimated total cost for both phases is Rs. 12.2 billion (US\$ 117 million).

## Priorities for Development

- Provide clean water into the relief camps and to health facilities
- Immediate restoration of service expansion for the replacement of damaged wells, as water demand grows
- Damaged wells to be cleaned, repaired, or reconstructed, and water quality needs to be systematically tested over a reasonable period
- Sanitation facilities need to be provided in areas where communities are beginning to return to their homes
- Rehabilitation of damaged water distribution network
- Physical rehabilitation works need to be complemented by hygiene education programmes, particularly in relief camps
- Due to prior damage to the water delivery system by the civil conflict, along with the lack of adequate water resources, most of the tsunami-affected areas suffered water shortages even before the tsunami. These areas need to receive expanded water supply services based on demand forecasts

## Gender Dimensions

In the aftermath of the tsunami and in light of the Government's reconstruction and rehabilitation efforts, it is essential to recognize the gender dimension in the effectiveness of the actions itself, in our human rights, political and social development activities. In this regard the following concerns should be met<sup>3</sup>:

- Security against abuse of women, girls and children within shelters and provide escorts where necessary
- Special attention to pregnant women and nursing mothers
- Pay special attention to women - headed households;
  - a) Help women who have been earners to resume earning
  - b) Help those who were not earners to obtain traditional/ non-traditional employment or skills for earning and provide them support till then
  - c) Help women to form themselves into cooperatives in order to benefit from micro credit schemes
- Test women and older girls for HIV/ AIDS and provide treatment
- Cater to ante/post natal care including provision of nutritional supplements
- Facilitate women's access to economic rehabilitation packages
- Facilitate and ensure legal recognition of women who are heads of households and ensure that new title deeds are in the name of both husband and wife
- Provide support for women care givers
- Pay special attention to vulnerable women such as widows, single mothers, those below the poverty line, and socially marginalised women in targeting rehabilitation measures
- Ensure that women are participants in planning, implementing and monitoring rehabilitation measures, not only for their benefit but also for their capacity building, and that they are beneficiaries of them

### Overall Recovery and Reconstruction Strategy

The reconstruction strategy should be based on several considerations. These include:

- Attracting long term private investment into devastated areas to develop modern infrastructure to overcome poverty
- Reconstruction should be on the cost of required infrastructure to effect modern development taking into account the multifaceted risks and vulnerabilities of these areas to possible future disaster
- Programmes should be aimed at providing livelihood support to kick start economic activities in the affected areas to minimize post tsunami transitional difficulties such as unemployment and poverty
- As the reconstruction phase is a long term task it is important to incentivise affected families to become key players in their own activities
- Reconstruction and development of infrastructure and other community facilities should not overlook the future operational maintenance expenditure needs of such investments

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<sup>1</sup>The main text for this section is extracted from the World Bank, ADB, and JBIC Needs Assessment Report prepared in January 2005

<sup>2</sup>The per-capita GDP in the affected provinces is estimated at about \$640, compared to a national average of \$930 and about \$1500 in the Western Province.

<sup>3</sup>Abeysekara, M (2005) "Gender Relief and Rehabilitation", Daily News 08.03.2005.