

ANNEX XV - HAZARD RISK MANAGEMENT

A. DISASTER RISK EXPOSURE

1. Sri Lanka experiences mostly weather-related hazards resulting in localized and seasonal floods, landslides, cyclones and droughts. Floods occur during the two monsoon seasons. The flood plains of Kalu Ganga and Kelani Ganga are the most vulnerable areas. East and north-eastern coastal areas are vulnerable to cyclones, but parts of north-central and north-western areas have also been subject to occasional cyclone impacts. Droughts occur in the south-east, north-central and north-western areas. Monsoon associated landslides occur in the districts of Badulla, Nuwara Eliya, Ratnapura, Kegalle, Kalutara, Kandy and Matale; and have recently occurred in Galle, Hambantota and Matara districts.

2. Large scale disasters such as tsunamis or earthquakes are very rare, but medium and localized small scale disasters cumulatively can result in sizable loss of life and economic assets. Floods and associated landslides in May 2003 alone destroyed and damaged up to 35,000, affecting 137,000 families and costing LKR 5.5 billion in economic losses.

3. In Sri Lanka, vulnerability to hazards is related to physical, environmental and legal-institutional weaknesses. Land use patterns, human settlement developments and construction practices that are not sensitive to weather related hazards contribute significantly to unsafe conditions. Recurrent patterns include encroachments into flood plains and substandard construction on unstable slopes. Land use practices that do not respect natural resource protection, as well as environmental factors such as depletion of forests and mangroves, coastal erosion, siltation, and inadequate water and water-shed management, may further exacerbate the impacts of natural hazards. It is anticipated that changes in demography and climate, and the continuation of unsound environmental practices and development patterns may increase frequency and losses from small and medium size disasters.

B. INSTITUTIONAL ARRANGEMENTS

4. Multiple agencies and specialized technical bodies have a direct or indirect role in emergency and disaster risk management in Sri Lanka. The overall responsibility at the national level for disaster management officially lies with the Ministry of Women Empowerment and Social Welfare exercised through the National Disaster Management Centre (NDMC). The Human Disaster Management Council (HDMC) under the Presidential Secretariat has the coordination role in relation to war and conflicts. The draft Disaster Management Bill which would clarify the role of NDMC and provide legal and administrative powers is still under review.

5. The Reconstruction and Rehabilitation Authority, Essential Services Department, the District Secretariats, Divisional Secretary offices and Grama Niladhari (government officer at the lowest administrative level), Provincial Councils and local authorities participate in various aspects of disaster management in their jurisdictions. Specialized institutions such as National Building Research Organization, Center for Housing Planning and Building, Urban Development

Authority, Central Environment Authority, Coast Conservation and Irrigation Departments and Universities provide technical inputs to building standards, land use planning or drought management. Line ministry units carry out specific technical services, for example in meteorological services, landslide mapping and warning, epidemic surveillance. Local and international NGOs have been actively involved in relief and recovery activities after disasters.

6. Due to the unprecedented scale of the tsunami relief operation in Sri Lanka, and the need to coordinate numerous government actors, international donors and organizations, a special unit called Centre for National Operations (CNO) was created under the direct purview of the President.

C. CRITICAL ISSUES

7. Recognizing the challenges exposed by the recent tsunami, Sri Lanka should develop a Risk Management Approach based on the principles that:

- The post-tsunami reconstruction program, and in general, all development programs should be guided by multi hazard risk considerations;
- Improved institutional capacities are required for better management of emergency response, particularly at the local level;
- The interest expressed by the international community to support an advanced early warning system in the region should be seized, as it provides an opportunity for better forecasting and early warning of disasters to save lives and livelihoods.
- Risk transfer mechanisms should be considered to mitigate the financial impact of disasters on the economy and future development.

8. Based on these principles, the following areas have been identified where further improvements can significantly contribute to protecting communities, their livelihoods, and environment, as well as national infrastructure and economy, from future disaster impacts.

Risk Identification

9. *Multi hazard risk assessment:* Understanding where the risks from natural hazards are concentrated in the country, what population, physical and economic assets would be at risk from future disaster events and what factors would contribute to creating these risks is central to all actions to reduce future life and economic losses from disasters. Such a comprehensive assessment of the location and potential impact of the multiple-hazards facing Sri Lanka does not exist; therefore, the potential economic and social losses from disasters are not fully known. A nationwide, multi hazard risk mapping from existing data and further local assessments should be undertaken to inform reconstruction decisions as well as underpin future development plans and risk transfer mechanisms such as insurance. Environmental factors that exacerbate the impact of hazards should also be factored into this assessment. For this comprehensive assessment to be achieved, an institutional arrangement and establishment of a central database would be necessary to bring together relevant sectors and administrative levels and information.

Emergency Preparedness

10. *Early warning systems (EWS):* In Sri Lanka, most disasters are weather related which can be forecasted and monitored. Therefore, a well functioning early warning system can improve effectiveness of emergency response and save lives and property. The recent tsunami once again revealed the importance of EWS in emergency preparedness. Development of a proposed Indian Ocean Tsunami Warning system would take several years. In the meantime, existing national systems to monitor regular hazards needs to be strengthened and upgraded to be integrated with the proposed regional system. Improved equipment, increased national coverage, and training of staff in new techniques would all help to enhance emergency preparedness capacity.

11. *Emergency information and communication systems:* Bringing the right information to the public and authorities is crucial to mounting a swift emergency response operation in order to save lives and property. The technical improvement of the EWS needs to be backed up by an information dissemination system that provides timely, accurate and coordinated information flow to emergency management agencies, press, local administration and the public. In Sri Lanka, dissemination of the early warning to relevant government agencies, to the press and the public is undertaken by the national bodies in charge of early warning. This system needs to be strengthened in the light of recent disaster experiences. Special attention should be given to strengthening the information flow of early warning messages to communities and linking such information with local emergency preparedness activities.

12. *Decentralized emergency preparedness:* To act upon early warning information, there is need for decentralization of emergency response capacity to the local level where disasters occur. Communities and local level governments have always been the front line responders to localized disasters in Sri Lanka, and the tsunami was no exception despite its scale. The enhancement of emergency preparedness capacity of the communities, District and Grama Niladhari level administration in high disaster risk areas would be the most effective way of improving public resilience and rapid response to future events.

Investment in Risk Reduction

13. *Reducing risks in post-tsunami reconstruction:* Post-tsunami reconstruction is a major investment in rebuilding the country. While the probability of another tsunami of equal magnitude is rare, the opportunity to protect this investment from other types of disasters Sri Lanka faces should not be missed. Experience from the tsunami should be captured. Such lessons combined with the findings from the rapid multi hazard risk assessment should be fed into reconstruction planning and future risks reduced through improved building standards and design considerations.

14. *Protection of public infrastructure:* Safety of public buildings such as schools and hospitals is particularly important as they house large numbers of the people, and are critical in emergencies. Medical and educational facilities built in high risk areas should incorporate improved standards to reduce their risks to hazard impacts. Educational buildings rebuilt after the tsunami should also be located in safe locations and use design specifications to double as

cyclone and tsunami evacuation centers for the affected population, particularly in low lying cyclone areas.

15. *Legislations and standards for future safety:* A significant number of ordinances, acts and laws exist in Sri Lanka that relate to construction standards, land use planning, human settlements, development and conservation of natural resources. While some include practical measures that could reduce damaging impact of disasters, recent floods and the tsunami revealed the difficulties in enforcing such legislations and standards. Some difficulties relate to the overlaps, contradictions and complicated procedures while others to weak institutional arrangements for their policing. A comprehensive risk reduction strategy should review existing legislations and standards from a risk reduction perspective, and address the simplification of procedures for their implementation. Institutional arrangements for their implementation should be clarified.

16. *Local risk management strategies:* As hazards in Sri Lanka are very localized and vary from place to place, risk reduction measures should be carefully tailored to local areas rather than imposed in a blanket fashion. While, for example in drought areas, water resource management options could be explored, in cyclone areas sound land use planning and safe construction would be a priority. However, strengthening local institutions and community capacity for effective disaster mitigation is a longer-term investment that justifies careful assessment, design, and a longer implementation schedule.

Institutional Capacity Building

17. Current capacities in disaster management are largely centered around emergency response and post-disaster recovery. A comprehensive risk reduction strategy and an institutional framework to address long term disaster risk reduction issues should be systemized.

18. *Disaster Management Authority and a system for coordination:* Major national and international level coordination and support have rarely been required in Sri Lanka, since most disasters have been managed at the lower administrative levels. Coordination capacity at the local level varies across districts. The tsunami revealed the need to establish a National Disaster Management Authority to coordinate relief and oversee recovery with legal and administrative powers. Currently the CNO under the Presidential secretariat serves this function well, but it is an ad-hoc arrangement. The draft Disaster Management Bill under envisages this role for the NDMC located under a line ministry. The lessons and experiences of the tsunami relief and recovery coordination should be distilled in developing an appropriate disaster management mechanism and an authority that reflects the risks faced by Sri Lanka. A National Disaster Management Plan would clarify roles, responsibilities and streamline coordination across administrative levels and various stakeholders. An emergency relief fund could support the plan for the speed of action in emergencies. Review of different systems from other countries and multi stake holder consultations could assist in determining the most effective model for Sri Lanka.

19. *Education and training:* Training and exercising of disaster management plans help to maintain a well functioning system to respond and should involve national, provincial and

municipal staff, NGOs and the public. The NDMC has training as part of its mandate. Some sector training takes place, but systematic human resource development for emergency management is not undertaken in Sri Lanka. A facility to train relevant officers and authorities in disaster management at all levels should be established. National and local authorities should be routinely trained both on emergency preparedness and principles of how to reduce risks. Professional education, short training courses and primary and secondary school books should also raise awareness and knowledge of hazard risk reduction. Basic training of contractors and builders on safety measures for construction should also be considered as part of the post-tsunami reconstruction plan.

20. *Creating a culture of safety through awareness-raising:* While public awareness of disaster risks is high due to the tsunami, in general there is limited public understanding of the local risks, or the actions that can be taken to reduce their impact. This is evident in the encroachment of settlements onto flood plains and protected coastal areas despite legislations to control such action. Loss of life and assets in medium size disasters also indicate that public awareness is low. Information packages should be updated and communication strategies improved. A major public awareness campaign on various hazards should start while the memory of the tsunami is still recent.

21. *Knowledge sharing:* Sri Lanka does not have significant experience with large scale emergency response and reconstruction planning, or with disaster risk management practices. International exchange of best practices and knowledge sharing among practitioners, authorities and NGOs, particularly from the region, can significantly contribute to capacity building at all levels. Priority should be given to capturing experiences of relief and its sharing with other countries in the region and learning from other major reconstruction programs.

Mechanisms for Risk Transfer and Financing

22. To ensure that both the local people and the national economy can recover quickly following a disaster, it is important to consider the benefits of risk transfer and financing mechanisms. In Sri Lanka larger businesses in tourism and industry are insured, middle class families have some insurance policies covering certain assets such as cars; however, insurance penetration is inconsistent and individual housing and livelihood insurance against losses caused by natural disasters is not widespread.

23. Poor families do not have access to insurance but also have no means to recover from the impact of the tsunami due to loss of livelihood, breadwinners, housing and assets. As most households have been all affected at the same time, pooling of family or neighborhood networks is also difficult. In the case of small and medium size enterprises (SME) loss of basic means of production, customer base and interruption to business will delay their recovery. International donors and Government will assist the poor to recover but their recovery can be at risk from future disasters. Risk transfer through insurance allows for the burden of reconstruction to be shared among public and private actors, saving valuable resources after a disaster that can assist other recovery priorities.

24. At the micro level, options for transferring risks include insurance, micro credit, and micro-finance. An insurance package to the poor that addresses their main post-disaster risks can indemnify against the risk of loss of life, loss of property, loss of livelihood, and the cost of living for a few months. SMEs can be compensated separately for the loss of their business assets. At the macro level, national governments should consider investing in ex ante risk reduction measures, such as insurance pools and reserve funds that can be mobilized rapidly. Donor capital injection and creation of a regional insurance facility could also be considered.

25. Such a scheme would be feasible for low frequency, high intensity (catastrophic) disaster events. It will be closely linked with the comprehensive risk assessment of the country and potential impact from various hazards on different social groups. While linking insurance with risk reduction and management is desirable monitoring of compliance and quality control of risk reduction actions would require availability of large cadre of technical people. Frequent and moderate intensity disasters will need to be approached differently. The feasibility of these options should be further investigated in the context of Sri Lanka.

D. PROPOSED STRATEGY

Short Term Actions

1. A rapid multi hazard disaster risk mapping to be integrated into relocation and reconstruction strategy.
2. National and international knowledge sharing to capture emergency response experiences from the tsunami including review of damage and loss assessments, as well as sharing of international knowledge from recent large scale recovery and reconstruction operations.
3. National level policy consultations and international knowledge sharing to start on the formation of a national disaster management authority.
4. Participation of Sri Lanka in planning process for Indian Ocean Tsunami Early Warning System.
5. Incorporate into the design of schools to be rebuilt the necessary site, construction and design standard for their doubling as evacuation centers.

Medium Term Actions

6. *Strengthen the forecasting and early warning systems*, establish an information dissemination system that links with community based disaster preparedness.
7. *Establish a national disaster management system* and a Disaster Management Authority.
8. *Establish a mechanism for risk transfer and financing* through insurance and regional reinsurance pool.
9. *Strengthen a decentralized local level emergency preparedness system*, in the first phase, along the tsunami affected areas as a means to raise awareness, and disseminate information regarding reconstruction and relocation strategies among the public and the authorities.
10. *Start the multi hazard risk mapping* and the necessary database, establish a Task Force for this purpose, equip and train the staff.