



Institutional and Legislative Systems for Early Warning and Disaster Risk Reduction

Sri Lanka **Summary**

Regional Programme on Capacity Building for Sustainable Recovery and Risk Reduction



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1. Introduction

The Indian Ocean Tsunami of 26 December 2004 was one of the most devastating disasters in recorded human history. Within minutes, almost 200,000 lives were lost; populations were displaced; and livelihoods, homes and infrastructure were destroyed, setting back hard-earned development gains. After the tsunami, possibly the most disturbing realization was that many, if not most lives could have been saved had an effective Early Warning System (EWS) been in place. The development of EWS has therefore attracted an exceptional amount of attention and resources in the affected region. The main focus, however, has been on technical and instrumental arrangements and needs, and less on system reform and development.

This brochure argues that EWS needs to be embedded in a wider disaster risk reduction (DRR) strategy permeating governance and development thinking and practice at national and local levels. *A sustainable EWS requires the formulation, enactment and implementation of institutional, policy and legal changes that emphasize preparedness and prevention.* This includes the need to devote more attention to community-based or 'people-centred' *and gender sensitive* approaches in

the establishment of EWS. Ultimately the success of EWS must be measured by the degree to which vulnerable communities are empowered to receive, understand and respond to warnings in an effective manner. *Unless women and men participate actively in these systems, little progress can be made.*

2. Background

UNDP has a long track record in supporting the capacity development of national risk reduction institutions and government agencies. Between 1984 and 2004 alone, UNDP engaged in over 50 DRR programmes in 63 countries. In 2004, the Disaster Reduction Unit of UNDP's Bureau for Crisis Prevention and Recovery conducted a review of UNDP's support to Institutional and Legislative Systems (ILS) for DRR. The review highlighted linkages between good governance including effective administration, risk reduction and the mitigation of impacts from recurring disasters. EWS are an intrinsic component of DRR and an important function of governance.

Since the 2004 tsunami, several disasters revealed the persisting shortcomings of national warning and response mechanisms in South Asia. There is a need to

understand and analyse existing DRR strategies, policies, organizational relationships, mechanisms and processes, laws and regulations, resources and procedures at all levels of administration. Responding to this need UNDP's Regional Programme on Capacity Building for Sustainable Recovery and Risk Reduction commissioned a review of its support to ILS for Early Warning and DRR in Indonesia, Sri Lanka and Thailand in 2007. This brochure summarizes the main findings and recommendations of the report with the expectation that these may feed into further regional and national discussions amongst major stakeholders and strengthen EWS development in the region.

3. Institutional and Legislative Systems for Early Warning

The United Nations International Strategy for Disaster Reduction (UN/ISDR) defines Early Warning as:

*"The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response."*¹

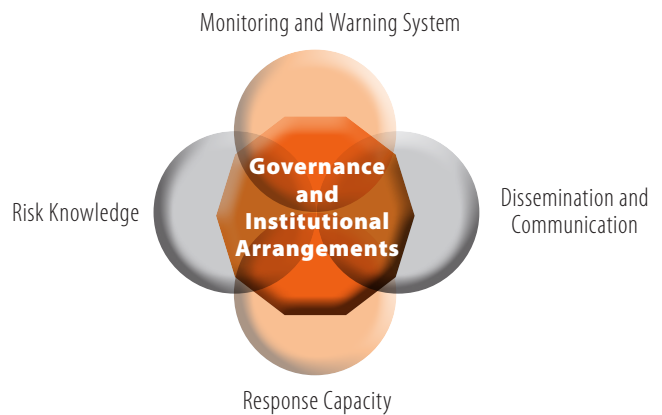
In March 2006, the Third International Conference on Early Warning sponsored by UN/ISDR and the German Government identified the following areas as critical for establishing a people-centred EWS. These areas provide a structured approach to EWS that this report follows:

- **Governance and Institutional Arrangements** – The aim is to develop national institutional, legislative and policy frameworks that support the implementation and maintenance of effective EWS.
- **Risk Knowledge** – The aim is to establish a systematic, standardized process to collect and assess data, maps and trends on hazards and vulnerability. This area includes the establishment of organizational

arrangements, identification of natural hazards, analysis of community vulnerability, assessment of risk, and storage and accessibility of information.

1. **Monitoring and Warning System** – The aim is to establish an effective hazard monitoring and warning system with a sound scientific and technological basis.
2. **Dissemination and Communication** – The aim is to develop systems to ensure local, national and regional coordination and information exchange.
3. **Response Capacity** – The aim is to strengthen the ability of communities to respond to natural disasters through enhanced education of natural hazard risks, community participation and disaster preparedness.

Figure 1: EWS and Governance / ILS



The effectiveness of any EWS depends upon political will, the administrative and technical capacity of a given country and the degree of acceptance and awareness of rules by the population. EWS therefore require a people-centred approach where formal mechanisms such as laws, protocols and standards complement informal mechanisms such as the engagement and participation of communities. EWS become effective and sustainable when citizens can easily access credible information on hazards and on the performance of EWS, and when they realize their own rights and duties in early warning. Indicators of good institutional and legal systems for EWS are related to:

1. **Gender equality.** DRR measures consider the needs of women and men, girls and boys and protect the most vulnerable groups.
2. **Policy priorities and commitment.** National policies, plans and legislation assign clear mandates and adequate resources to undertake early warning activities.

¹ UN/ISDR, *Living with Risk: A global review of disaster reduction initiatives*, Volume II, Annexes, New York and Geneva, 2004.

3. **Multi-sector responsibility.** The EWS is shared across all relevant sectors, levels of governance and society and addresses all of the hazards that threaten the population.
4. **Accountability for warning.** The design and coverage of the EWS matches transparent criteria of vulnerability prioritizing most at-risk areas. Clear roles and responsibilities are defined.
5. **Resources.** The level of resources allocated is appropriate and available resources are used efficiently.
6. **Application.** The EWS functions as part of a DRR system that is incorporated into longer term development planning and practice, including land use planning, human settlement development, environmental protection, etc.
7. **Civil society and private sector participation.** Civil society and the private sector are mobilized to participate in the design, implementation and monitoring of the system.
8. **Decentralization of EWS.** Resources are decentralized to support early warning activities, decision-making is decentralized, and local actors have the necessary knowledge and tools to carry out their roles in EWS.



4. Main Findings of the Study

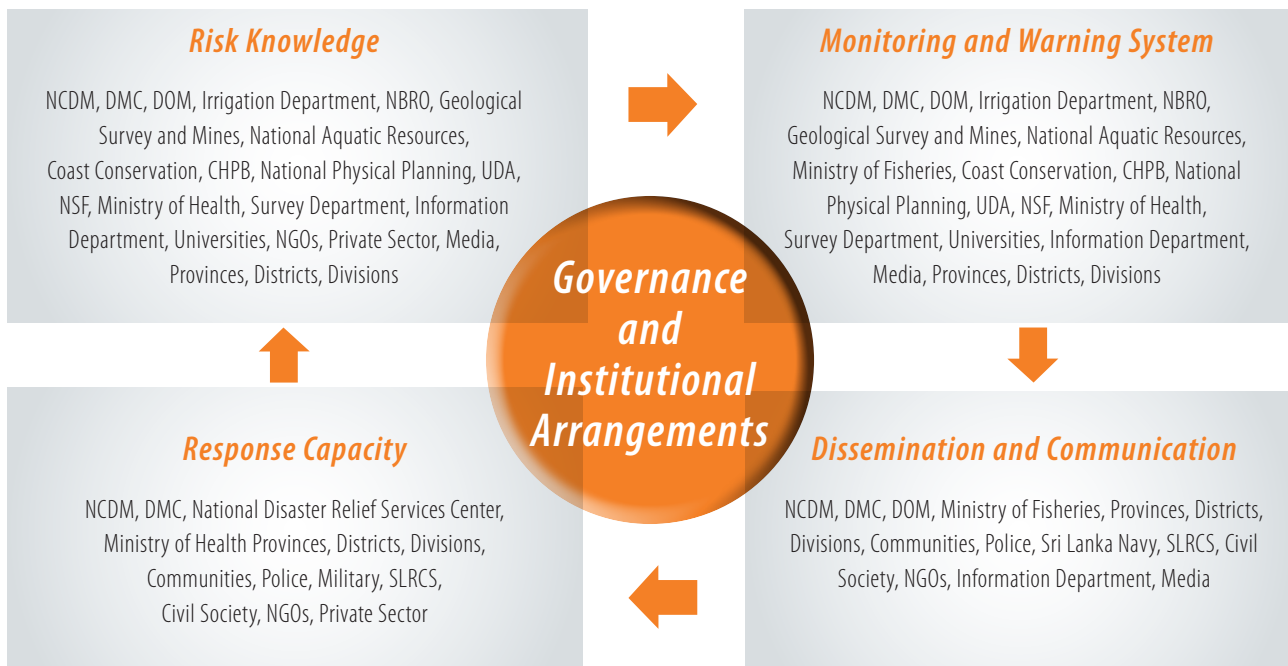
4.1 Governance and Institutional Arrangements

The Sri Lankan government has demonstrated its commitment to DRR and the development of an integrated EWS by passing the innovative Disaster Management Act No. 13 of 2005, establishing the Disaster Management Centre (DMC) under the Ministry of Disaster Management and Human Rights, and developing the Road Map for Disaster Risk Management, Volumes I and II. Furthermore, a National Disaster Management Policy and Plan have been drafted that spell out the establishment of an Early Warning Unit in the DMC and set out a vision and general guidelines for EWS (awaiting approval). A master plan and schema for the end-to-end multi-hazard EWS including identification of all actors and their roles has not yet been established. The Early Warning Unit in the understaffed DMC is not yet fully functional and warnings are mostly managed by the Department of Meteorology (DOM). The system involves a multitude of other institutional actors but the roles of individual agencies and coordination mechanisms of an integrated system remain unclear. Linkages between different administrative levels for warning also require clarification and formalization including the development of standard operating procedures (SOP).

Figure 2 provides an overview of how the four main early warning functions are distributed among the many institutional actors in the Sri Lanka EWS.

The DMC has made much progress in supporting district level disaster planning, while there is further room to strengthen the capacities of Provincial Councils in exercising their DRR mandates. The Road Map outlines some key steps to develop EWS, but they centre on the needs of individual agencies and do not reflect an integrated assessment of capacity gaps in the system. Important gaps include the fact that about 10 percent of the population may be living outside the reach of communications loops. This illustrates the need to focus more on capacity development in vulnerable communities. The non-governmental organization (NGO) network has important resources to support EWS but faces some issues related to registration, lack of respect for humanitarian law, etc. that prevent it from reaching its full potential. Private sector cooperation in EWS is improving, particularly in the tourist sector. More efforts could be undertaken to tap the potential of the media in EWS.

Figure 2: Institutional Roles and Responsibilities in the Sri Lanka EWS



4.2 Risk Knowledge

Responsible organizations in Sri Lanka are putting considerable efforts into strengthening the systematic collection, sharing and analysis of data on hazards and vulnerabilities and in disseminating this knowledge through training and education. However database development suffers from varying formats for data used by multiple actors, imprecise estimates of disaster losses and difficulty getting reliable information from districts. A wide range of different tools are currently used for the historical analysis and prediction of future disasters that would benefit from synchronization within the country and across the region. Very few risk assessments have been conducted at the community level and the understanding and documentation of social, economic and environmental vulnerability factors is still fragmented. The translation of risk knowledge into standards, codes and regulations suffers from weak enforcement related to: 1) a lack of unified risk reduction policies and integrated development strategies; and 2) a lack of awareness of relevant legislation and norms. A number of agencies are engaged in training, education and capacity development that include the incorporation of DRR into school curricula, the establishment of university courses and ad hoc training courses. However, the efficiency of these investments (in terms of resource allocation and use) and the effectiveness (in terms of coverage of critical areas, and adequacy of contents and methodology) is unclear.

4.3 Monitoring and Warning System

Sri Lanka has made progress toward strengthening hazard monitoring and warning systems. An integrated multi-hazard monitoring and warning system, with the Early Warning Unit of the DMC at the centre of coordination (as outlined in the draft National Disaster Management Plan of 21 March 2007), is however still in the early stages of development. The DOM is the lead institution for tsunami early warning and works closely with the Irrigation Department and others on drought and flood warning. The DOM needs to upgrade aging and insufficient observation and data communication facilities and mechanisms. The flood classification system, dam operation standards, and development of a national hydro-meteorological data management system require particular attention. The Department of Agriculture plays a major role in dissemination of drought warning information but the low capacity to deliver localized forecasts that meet end user needs (such as crop forecasting and predicting drinking water needs) is a major constraint. A number of additional institutions are involved in the monitoring of various other hazards but some require more capacities and not all are mandated to issue technical warnings. Communication with regional and international monitoring and warnings systems also require strengthening. In general, monitoring and early warning capacity needs to move closer to communities to stay relevant and lead to warnings that can be acted upon.



4.4 Dissemination and Communication

The regional and national Indian Ocean Tsunami Warning Systems have been forerunners in enhancing dissemination and communication systems and in identifying technical and institutional gaps. The DOM plays a key role in the formulation and delivery of warnings, and the Inspector General Command System of the Sri Lanka Police maintains a well-rehearsed communication system. Communication in Sri Lanka reaches from the national level to district levels and further on to divisional and local authorities. The communication to the Grama Niladhari level is mainly through police stations and fixed telephone lines. Various methods are used to reach the public i.e. alarms, sirens, loudspeakers, beating of drums and public announcements through radio and television. Major gaps in Sri Lanka include inadequate institutional capacity; information and communications systems that are not up to international technical standards; and need for alternative communications systems mobilizing social networks. Other needs include the clarification of roles and authorities of different government actors; formalization of procedures for the release and exchange of information among government staff, and with media and civil society; standardization of communications systems; and dealing with panic and false alarms. The confusion over government roles and authority,

and inadequate cooperation among information providers reverberates with the media and the public who may be skeptical about the sources of messages and the messages themselves, seriously threatening the effectiveness of the system.

4.5 Response Capacity

Successful warnings should activate an orderly movement of people out of harm's way and motivate them to seek shelter and secure their assets. A technically sound warning is ineffective if people do not know what to do next. Efforts are underway in Sri Lanka to improve the ability of people to respond to warnings and – more broadly – to disasters. These include the establishment of Emergency Operation Centres (EOCs) at national and district levels, the introduction of Incident Command Systems and disaster planning at district levels. However, there is a continuing tendency towards a top-down approach, and cooperation between local and national actors requires further intensification. Local authorities are not yet fully prepared to respond to major hazards and require more operations training and equipment. Efforts to strengthen community level capacities are also underfunded and not hooked up with higher level disaster planning and capacity building exercises. Although the frequency of evacuation drills is

increasing, considerably more work is needed to reach all vulnerable communities, and build and maintain people's risk awareness and coping capacities.

4.6 Gender Aspects

Overall, Sri Lanka has the most advanced human development indicators in South Asia. Sri Lanka has a constitution that guarantees equal rights and has ratified the relevant international conventions. Gender equality has been reached in primary and secondary education, and the number of women in universities is on track for reaching equality by 2015. However, high literacy and education levels have not yet been translated into adequate economic opportunities, parity in legal rights and adequate political participation.

Women and children suffered significantly higher casualties in the 2004 tsunami. In the aftermath of the disaster, women's vulnerability to gender-based violence increased due to, among other, stress and men's increased alcohol consumption, as well as weak designs for sanitary facilities in collective temporary accommodation. Having often lost their livelihoods and roles as breadwinners, men suffered in terms of their psycho-social well-being and their specific needs were also poorly understood by assistance providers. Gender and cultural 'blindness' by assistance providers was maybe most obvious when recovery strategies threatened to remove traditional practices in the east of the country that ensure women's right to land.

The institutional and legal frameworks governing DRR and EWS offer opportunities for ensuring that risk reduction and early warning policy and practices are supportive of the needs of both women and men, however, neither the Disaster Management Act nor the Draft National Disaster Management Policy address gender explicitly.

There is relevant gender expertise and capacity in the Ministry of Women's Affairs, Women's Bureau, National Committee on Women, Ministry of Women's Empowerment and Social Welfare, and in more than 3,000 national NGOs that interface with gender aspects. Other stakeholders include the Centre for Women's Research, as well as many donor and international NGOs. The DMC is well positioned to build its own capacity for gender awareness and use its influence for the inclusion of gender aspects in DRR. Together, these institutions can help to ensure that far more

women participate in EWS, and that warning messages, processes and procedures employ a gender sensitive approach, considering specific concerns such as physical strength, security and protection.

5. Main Recommendations for Stakeholders

5.1 Governance and Institutional Arrangements

Work towards passage of the National Disaster Management Policy, so that development of the EWS is more completely secured as a national priority.

Integrate the concepts, mechanisms and activities of early warning into the National Disaster Plan, and ensure that provincial and district plans do the same.

Continue to support the DMC development and elevate the development of the Early Warning Unit to a higher priority.

Develop a master plan and schema for the end-to-end multi-hazard EWS identifying, all actors and their roles as well as how funded projects contribute.

- Develop detailed guidelines and SOP to cover EWS in structural and operational detail.

Elaborate on the EWS chapter in the Road Map so it can serve as a prioritized and comprehensive plan for EWS capacity development, covering all major hazards and encompassing all major stakeholders from government, private sector and civil society, including the media.

- Within the Road Map/Plan, focus resources to strengthen capacities at the local level, in particular in vulnerable communities.

Follow up on EWS project evaluations, and generate community feedback to feed results and recommendations into EWS development.

5.1.1 Including women and men in governance and institutions for EWS

- Support the review of disaster management policies, plans and legislation to address gender-based vulnerability and increase equality in EWS participation and decision-making.
 - Specifically ensure that the plan for EWS capacity development encourages participation of women from different sectors (government, civil society, communities, etc.)
- Clearly stipulate activities that designate EWS roles of and protective measures for women and men, and girls and boys.
- Provide support for gender awareness training to government staff and research to increase knowledge about gender aspects.

5.2 Risk Knowledge

Promote coordination for risk mapping and data collection/analysis, and tackle the problems associated with database development, including standardization of methodology across the country and in the region.

Promote community-based participatory vulnerability mapping and assessments nationwide using networks of trained volunteers or NGOs to reach vulnerable groups and communities.

Strengthen risk communication methods in public awareness activities to ensure that different target groups understand the risks they face. Use vulnerability data from participatory assessments at the community level to identify priority needs and messages.

Increase risk knowledge regarding small-scale disasters and their cumulative impact. Modify mitigation measures so that they are hazard-specific and address anthropogenic causes of 'natural' disasters.

Focus efforts on updating policies and enforcing laws and regulations related to land use, environmental and natural resources protection, building codes and integrated coastal management, in light of up-to-date knowledge of risks.

5.2.1 Strengthening understanding of gender-based vulnerability and capacity

- Promote gender analysis and the development of monitoring and evaluation tools to assess the vulnerability of each gender and their access to information regarding hazards and vulnerability, and to follow up on equality in all EWS projects and programmes.
- Draw attention to the increased vulnerability of women to gender-based violence following disasters for consideration in preparedness planning, and raise awareness of harmful response and recovery practices
- Make effective use of education systems, female politicians and legislators, and organizations and groups with gender-related mandates to further risk knowledge and participation in risk management and EWS.
- Provide capacity development support to community groups and networks to help change attitudes and promote empowerment of women through risk knowledge.
- Ensure the participation of women in development of building codes, land titling, and environmental protection laws and practices.

5.3 Monitoring and Warning System

Address gaps and deficiencies in staffing and equipment of technical agencies responsible for monitoring and warning, and ensure key actors are provided with legitimate mandates (following a mutually agreed master plan, see recommendation no. 2.1) to coordinate, monitor and issue warnings.

Continue to enhance support for the DMC, DOM and the wider network of relevant agencies for development of an integrated forecasting and warning system.

Work on reducing information gaps between the DMC, DOM and other organizations monitoring various hazards, as well as between central authorities and communities.

Ensure that resources are available to strengthen community level monitoring and early warning within more comprehensive community preparedness and risk management initiatives.

Involve NGOs such as the Savordaya and the Sri Lanka Red Cross Society, the private sector and the media to push dissemination and capacity building, particularly at the local level.

5.3.1 Meeting warning needs specific to gender, age and physical capacity

- Involve women in assessing their own risks and in designing warning systems that reflect their monitoring and warning needs relative to individual hazards.
- Increase resources to incorporate protective measures in EWS for the disabled and elderly.

5.4 Dissemination and Communication

Conduct a gap analysis to determine the reach of communications networks and technologies, considering the necessary redundancy and direct resources to areas requiring coverage.

Unify the concepts of warning dissemination and communication across organizations through development of a clear flow-chart supported by cross-organizational SOP.

- Formalize arrangements for information exchange and communication among government staff, media and civil society.

Provide support for training human resources to manage technical and operational aspects of dissemination and communication.

Strengthen dissemination and communication capacity at community levels within more comprehensive community preparedness and risk management initiatives.

Facilitate feedback from the community on the use and effectiveness of warning messages.

Strengthen public perception of warnings as protective mechanisms. Start a dedicated information campaign involving community leaders to build trust in the system.

Support development of media partnerships in EWS, at national and local levels.

5.4.1 Ensuring warning messages reach both genders

- Prepare actionable warning messages that employ a gender sensitive approach in the context of community disaster preparedness and awareness programmes. Various times of day and the activities that females and males will be engaged in should be considered in terms

of how each group can be effectively reached, and the reaction time they will need to flee to safety relative to the types of disasters they may face. The protection of children will require extra time for evacuation.

5.5 Response Capacity

Develop regulations and SOP for each hazard/area that mandate the:

- Frequency of evacuation drills in high risk areas;
- Evaluation of drills according to specific indicators of success and feedback from participants;
- Clear identification and realistic mapping of evacuation routes;
- Identification of designated places for evacuation; and
- Development of specific procedures for where to seek shelter and how to reach these safe areas considering the needs of particularly vulnerable groups.

Strengthen cooperation between national and local actors by ensuring that planning is a joint exercise, and that community-based work undertaken by NGOs and grass-roots organizations is recognized and incorporated in the overall planning.

Prioritize and coordinate the provision of resources to the capacity development of local authorities and communities for preparedness and response.

- Devote adequate human and material resources in order to increase the coverage of response drills, evacuation information and response planning, particularly in high risk areas and communities.

Ensure that NGOs and businesses have plans to support the response to warnings.

Undertake lessons learned exercises after evacuation drills or actual warnings, and ensure that a responsible coordinating body stores and analyses results for follow-up and incorporation into ongoing preparedness plans and training.

5.5.1 Learning to design EWS that work for women and men

- Develop gender sensitive guidelines that focus on all aspects of DRR and EWS using a cooperative approach, and make use of lessons learned in previous disasters in Sri Lanka and other countries.
- Empower women through training and replication of good practices to become actors in community-based DRR and EWS.
- Evacuation drills, routes and procedures should be mapped taking into account gender considerations such as access, security, etc. for women.



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