Annex 1: Guiding Principles for Effective Early Warning

Early Warning Programme of the International Decade for Natural Disaster Reduction (IDNDR), August 1997

THE OBJECTIVE of early warning is to empower individuals and communities, threatened by natural or similar hazards, to act in sufficient time and in an appropriate manner so as to reduce the possibility of personal injury, loss of life and damage to property, or nearby and fragile environments.

RISK ASSESSMENT provides the basis for an effective warning system at any level of responsibility. It identifies potential threats from hazards and establishes the degree of local exposure or vulnerability to hazardous conditions. This knowledge is essential for policy decisions that translate warning information into effective preventive action.

Several groups must contribute to this empowerment. Each has a set of essential overlapping functions for which it should be responsible:

- Members of vulnerable populations should be aware of the hazards and the related effects to which they are exposed and be able to take specific actions themselves which will minimize their personal threat of loss or damage;

- Local communities should have sufficient familiarity with hazards to which they are exposed, and the understanding of advisory information received, to be able to act in a manner to advise, instruct or engage the population in a manner that increases their safety or reduces the possible loss of resources on which the community depends;

- National governments should exercise the sovereign responsibility to prepare and issue hazard warnings for their national territory in a timely and effective manner, and to ensure that warnings and related protective guidance are directed to those populations determined to be most vulnerable to the hazard risk. The provision of support to local communities to utilize information and to develop operational capabilities is an essential function to translate early-warning knowledge into risk reduction practices;

- Regional institutions should provide specialized knowledge, advice or benefit of experience in support of national efforts to develop or to sustain operational capabilities related to hazard risks experienced by countries that share a common geographical environment. Regional organizations are crucial to linking macro-scale international capabilities to the particular needs of individual countries and in facilitating effective early warning practices among adjacent countries; and

- International bodies should provide means for the shared exchange of data and relevant knowledge among themselves as a basis for the efficient transfer of advisory information and the technical, material and organizational support necessary to ensure the development and operational capabilities of national authorities or agencies officially designated as responsible for early warning practice.

Principles for the Application of Early Warning at National and Local Levels

1. Early warning practices need to be a coherent set of linked operational responsibilities established at national and local levels of public administration and authority. To be effective, these early warning systems should themselves be components of a broader program of national hazard mitigation and vulnerability reduction.

2. Within each country, the sole responsibility for the issuance of early warnings for natural and similar disasters should rest with an agency, or agencies, designated by the Government.

3. The decision to act upon receipt of warning information is political in character. Authoritative decision-makers should be identified and have locally recognized political responsibility for their decisions. Normally, action resulting from warnings should be based on previously established disaster management procedures of organizations at national and local level.

4. In the chain of political responsibility, initial hazard information, is often technically specialized or specific to a single type of hazard authority. To be applied effectively, warnings need to be clearly understood and operationally relevant to local agencies, which are more frequently oriented toward non-specific hazard functions.

5. Early warning systems must be based upon risk analysis that includes the assessment of the occurrence of hazards, the nature of their effects and prevailing types of vulnerability, at national and local levels of responsibility. The warning process must lead to demonstrated practices that can communicate warning and advisory information to vulnerable groups of people so that they may take appropriate actions to mitigating loss and damage.

6. Locally predominant hazard types and patterns, including small-scale or localized hydrometeorological hazards related to patterns of human economic or environmental exploitation, must be incorporated if early warning is to be relevant to risk reduction practices.

7. There is a continuing need to monitor and forecast changes in vulnerability patterns, particularly at local levels, such as sudden increases in vulnerability resulting from social developments. These may include conditions of rapid urbanization, abrupt migration, economic changes, nearby civil conflict or similar elements that alter the social, economic or environmental conditions of an area.

8. The primary responsibilities must rest at local levels of involvement for producing detailed information on risks, acting on the basis of warnings, communicating warnings to those individuals at risk and, ultimately, for facilitating appropriate community actions to prevent loss and damage. A high resolution of local knowledge and developed experience of local risks, decision-making procedures, definitive authorities concerned, means of public communication and established coping strategies are essential for functions to be relevant.

9. Groups of people that exhibit different types of vulnerability will have different perceptions of risk and various coping strategies. Locally appropriate warning systems will provide a range of communication methods and should provoke multiple strategies

for protection and risk reduction.

10. To be sustainable, all aspects of the design and implementation of early warning systems require the substantive involvement of stakeholders at the local and national levels. This includes production and verification of information about perceived risks, agreement on the decision-making processes involved, and standard operational protocols. Equally important abilities involve the selection of appropriate communication media and dissemination strategies that can assure an effective level of participation in acting upon receipt of warning information.

Principles for Early Warning Systems at International and Regional Levels

1. In the interest of concerted international efforts to reduce the adverse effects of natural and similar disasters, the technologically advanced countries have an obligation to encourage and support improved early warning practices in developing countries, small island developing states, economies in transition, and other disaster-prone countries with special circumstances.

2. Primarily-affected countries equally have a primary responsibility to conduct a rigorous audit of the effectiveness, or consequential identification of needs, of their early warning capabilities. The conduct of post-mortem assessments of regional and national warning system capabilities are particularly relevant following any disaster event.

3. Specialized regional and global centers involved in the preparation and dissemination of warnings, such as the WMO Regional Specialized Meteorological Centers provide important links to national early warning systems. The application of their technical capabilities and the utility of their products should be carefully integrated with the needs of the countries being served, including any necessary clarification about the warning responsibilities between these centers and national agencies in the same region.

4. In the interest of protecting people from the risk of natural hazards, it is essential that the formulation and presentation of warnings be based on the best available technical and scientific knowledge, and free of political distortion or manipulation.

5. International bodies and regional organizations must work to maintain the vital importance of timely exchange and unrestricted access of observational data and other warning information between countries, particularly when hazardous conditions affect neighbouring countries.

6. Timely, accurate and reliable warnings should be understood in the context of commonly accepted international standards, nomenclature, protocols and reporting procedures. Established or internationally agreed means of communications should be employed for the international and regional dissemination of any warning information to specific authorities designated in each country.

7. Collaboration and coordination is essential between scientific institutions, early warning agencies, public authorities, the private sector, the media, and local community leaders to ensure that warnings are accurate, timely, meaningful and can result in appropriate action by an informed population.

Annex 2: Key Research Questions

The following key questions served as the backbone of this research:

a) What are the source(s) of observational data and how are these data communicated to the weather and flood forecasting office?

b) How are cyclone and flood warnings disseminated? What communication channels are used to disseminate the warnings?

c) How effective are the cyclone and flood warnings as perceived by the community?

d) Does the public understand the content of the warning, the different levels of warning signals used?

e) Does the public know what to do when a warning is given?

f) What is the role of the media in the Early Warning System?

g) What is the role of the political leaders and the disaster managers in disseminating warnings?

h) What is the contribution of international organizations in enhancing the preparation of the hazard warning?

i) Are there plans to enhance the present early warning system?

j) Is the community response based on vulnerability maps and/or disaster response plans in the community?

k) What preparedness and mitigation actions are practiced in the communities that are triggered by warning?

Annex 3: Research Informants: List of organizations visited and people interviewed

Cambodia

- H.E. Nhim Vanda, First Vice-President, National Committee for Disaster Management
- Mr. Khun Sokha, Assistant to the First Vice-President, National Committee for Disaster Management
- Mr. Peou Samy, Secretary General, National Committee for Disaster Management
- Mrs. Seth Vannareth, Director, Cambodia Meteorological Department
- Mr. Mao Hak, Deputy Director, Department of Hydrology and River Works, Ministry of Water Resources and Meteorology
- Mr. Long Saravuth, Deputy Director, Department of Hydrology and River Works, Ministry of Water Resources and Meteorology
- Mr. Te Navuth, Ministry of Water Resources
- Mr. Lim Kin Ny, Department Secretary, Provincial Committee for Disaster Management
- Mr. Hem Hon, Chief, Sdao Kong Commune, Baphnom District, Prey Veng Province
- Management, Kandal Province
- Mr. Limseng Duangsavanh, Deputy Director, Mekong River Commission, Phnom Penh
- Mr. Lieven Geerinck, Chairman of the Task Force on Flood Management and Mitigation, Mekong River Commission
- Mr. Tan Visal, Project Manager, Disaster Preparedness Action Plan, CARE Cambodia

Indonesia

- Dr. Adang Setiana, Director, International Cooperation, BAKORNAS PBP, Jakarta
- Budi Atmadi, BAKORNAS PBP
- Novian Reski, Kepala Sub-Bidang (Head of Training Sub-Division), Potlat, Jakarta Satkorlak, Jakarta Selatan
- Saiman, Kepala Sub-Bidang Penyelenggaraan & Pengendalian (Head of Operations and Control Sub-Division), Bidang Tarlat
- Syarifuddin Arsyad, Kepala Bidang Penataran dan Latihan (Head of Training), Mawil Hansip DKI Jakarta (Civil Defense), Jakarta Pusat
- Yuyun Sumirat, Balaikota
- Theresia Wuryantari, OXFAM

Lao PDR

- Mr. Phetsavang Sounnalath, Director, National Disaster Management Office, Department of Social Welfare, Ministry of Labor and Social Welfare, Vientiane, Lao PDR
- Mrs. Souvanny Phonevilay, Deputy Chief, Weather Forecasting Division, Department of Meteorology and Hydrology, Vientiane, Lao PDR
- Mr. Thone Pho Kham Inthasone, Planning Unit, National Disaster Management Office, Ministry of Labor and Social Welfare, Vientiane, Lao PDR
- Mr. Thatsanithan Khamphane, Village Chief, Bane Sanedin

Philippines

- MGen. Melchor P. Rosales, Administrator, Office of Civil Defense, and Executive Officer, National Disaster Coordinating Council, Camp Gen. Emilio Aguinaldo, Quezon City
- Dr. Aida Jose, Chief, Climatology and Agrometeorology Branch, Philippine Atmospheric, Geophysical and Astronomical Services Administration, Quezon City

Vietnam

- Mr. Dang Quang Tinh, Director, Department of Dike Management, Flood and Storm Control, Hanoi

Annex 4: Documents Reviewed for the Research

ADPC (2000); ENSO Climate forecast Applications in Vietnam, Asian Disaster Preparedness Center, Thailand

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UNDP (2001); The Vietnam Disaster Management Unit online, http://www.undp.org.vn/dmu/dmu/en/intro.htm (2001, September)

UNEP, NCAR, UNU, WMO, ISDR (2000); Lessons Learnt from the 1997-98 El Niño: Once Burned, Twice Shy, Reducing the Impact of Environmental Emergencies through Early Warning and Preparedness: The Case of The 1997-98 El Niño

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Annex 5: Sample of a Flood Warning and Forecast by the Mekong River Commission

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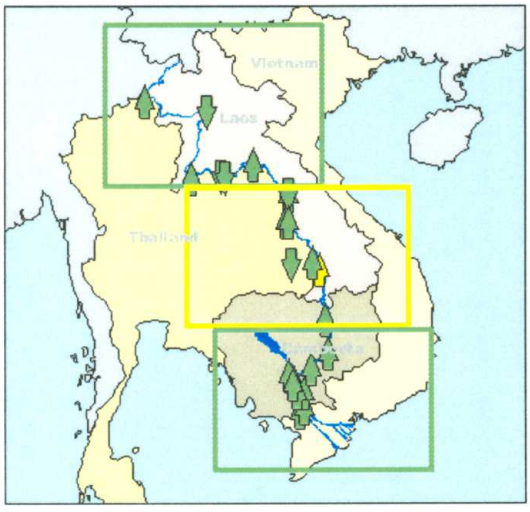
For an explanation of the water level and alarm stages click here



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