Early Warnings and late reactions? Challenges and opportunities for effective national and global early warning systems

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17 May 2006

Context
Early warning is not a new issue in disaster risk management but a wide international attention to this issue is very recent. Negative impact of major disasters in particular the huge losses and damages of the Asian tsunami of 2004, created serious concerns about the adequacy and effectiveness of available early warning systems. The Hyogo Framework for Action adopted by the World Conference on Disaster Reduction in Kobe, January 2006 puts its 2nd priority for action to "identify, assess and monitor disaster risks and enhance early warning". Following Kobe Conference and along with the increasing global attention and awareness on early warning, at the request of the Secretary General of the United Nations, the "Global Survey of Early Warning Systems" was conducted. The report of the Survey that was released at the Third International Conference on Early Warning in Bonn in March 2006 concludes that considerable progress has been made in developing the knowledge and technical required to assess risks and to generate and communicates predictions and warnings, particularly as a result of growing scientific understanding and the use of modern information and communication technologies. [1]

But a glance over the various risk reduction and disaster preparedness programs as well a disaster response operations being carried out in different parts of the world shows that there is still a huge gap between scientific and technical knowledge of early warning and the capacities of the governments and communities in utilizing such knowledge to minimize disasters risks and negative impacts. Effective utilization of early warning scientific and technical knowledge will have a considerable positive impact on the quality of disaster risk management, but the responsible institutions for disaster risk management around the world and the people do not use the scientific outputs of such systems as they should. Why?

Challenges
The report of Global Survey of Early Warning Systems states that among both developed and developing nations, the weakest elements concern warning dissemination and preparedness to act. The Survey identifies the root causes for this problem to be inadequate political commitment, weak coordination among various actors, lack of public awareness and lack of public participation in the development and operation of early warning systems.[2]

1) Global Survey of Early Warning Systems, p iii
2) Global Survey, p iv

It seems that the root causes for ineffective dissemination and use of early warning in disaster risk management are more than what mentioned above. There are a number of other aspects that should be taken into consideration such as:

1. There should be a strategic vision and holistic approach in disaster risk management to define the role of early warning.
Early warning should be seen as an integral part of disaster risk management. Early warning systems can be effective only if the entire disaster risk management is a well-functioning system that can identify how early warning can contribute to the overall function of disaster risk management. As in practice, many early warning systems belong to institutions that are not an organizational part of disaster risk management in national and global levels, there is need for "conceptual" and "institutional" mainstreaming of early warning capacities into national and global disaster risk management systems. Therefore, early warning should be disseminated based on its link with a larger disaster risk management system. Moreover, the concept of "system" in early warning should be defined based on the roles and functions of early warnings in disaster risk management. In developing national disaster policies and structures, the governments should consider a comprehensive early warning concept that can be supported by all sectors and can support the national disaster risk management effectively. *Multi-hazard approach in early warning systems* can exist only within an efficient disaster risk management system that is able to manage the flow of information and knowledge on various risks and disasters, despite the diversity of sources of early warning.

2. Early warning should become a part of culture of safety and resilience
The concept of "*people centered early warning systems*" is recommended by the HFA.
The experiences of disaster risk and response management shows that often the people affected by disasters are the first who help each other before arrival of any responsible organization. Similarly, the people provide valuable information about hazards and disasters that are vital for the short and long term actions of disaster risk management. The responsibility of early warning systems is not limited to getting and transferring timely and accurate data and information on hazards, but efforts should also be made to develop mechanisms through which sophisticated scientific information and knowledge on hazards can be converted to publicly understandable and usable information that can help responsible institutions as well as the individuals. Additionally, the early warning systems based on the wider disaster risk management plans should provide ways and procedures for the participation of civil society. Private sector and volunteers can play a major role in risk assessment (hazards and vulnerability), dissemination and education, using and monitoring of early warning services.

3. Early warning and vulnerability
The existing early warning systems are very much hazard-oriented. The link between hazards and vulnerability that result in disasters can not be ignored. Therefore, early warning systems should extend their range of coverage also to understanding the vulnerabilities related to hazards. This is possible only if early warning systems are positioned within the above mentioned wider disaster risk management systems and within the culture of safety and resilience with the central role of people. To have a good

understanding of vulnerabilities, there is need for more developed mechanisms within disaster risk management systems that combine scientific knowledge and expertise with social and cultural contexts.

4. Risks and disasters do not recognize the political and territorial boundaries, there is need for regional and global early warning set ups

Beside the conceptual and institutional mainstreaming of early warning into overall disaster risk management, there should be also appropriate link between early warning systems in local, national, regional and global levels. In doing so the following areas of action are to be considered:

- National disaster risk management should establish regulations for cooperation and coordination in regional and global levels that includes early warning.
- Standard Operation Procedures need to be developed in technical level to facilitate practical cooperation of countries in early warning
- Global early warning systems may require specific structures in scientific and technical terms, but in practical disaster risk management term it is more effective to reinforce the existing or establish new "network of actors" that despite their diverse objectives, mandate and functions can cooperate toward a common overarching risk reduction goal.
- Regional and global early warning systems should be based on" from local to global "approach. This approach will provide strategic directions for more harmonized cooperation among governments, regional and global actors.
- International and to some extent national actors in the area of disaster risk management are often unaware of various initiatives, processes, activities and resources available in this filed. Therefore, support of relevant international bodies such as ISDR seems to be essential to facilitate the necessary networking and harmonization.
- Global early warning systems in addition to hazard mapping that may result in some globally similar patterns of hazard information management, should consider a wide range of diversity and difference in vulnerability in developing and developed nations. This in addition to scientific and technical knowledge will require adequate cultural, socio-economic and political inputs.

Disaster risk management is a multi-sectorial and cross-cutting issue. Early warning as an essential element of risk management can be successful if all related sectors in local, national, regional and global level work together effectively. Working together requires common objectives and vision, strategic directions, integrated and harmonized approach, and commitment by all actors.