

**Regional Workshop on Mitigation, Preparedness and Development for Tsunami
Early Warning Systems in the Indian Ocean Region
Bangkok, Thailand, 14-16 June 2006**

Agreed text to be included in the report of the meeting

Conclusions

Drawing on the presentations, panel discussions and break-out group reports, the workshop noted the following conclusions concerning the implementation of tsunami warning systems in the region.

The workshop welcomed the intention expressed at the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System at its second session (ICG-IOTWS-2), in Hyderabad, 14-16 December 2005, to develop a working group on the societal aspects of tsunami early warning systems and the invitation by the Chair for the ISDR secretariat to undertake a consultation on the matter and report back to ICG-IOTWS-3. The workshop expressed its appreciation to the workshop organisers (ISDR secretariat, UNESCO-IOC, UNESCAP) for the opportunity to provide input and to the donors of the ISDR-coordinated Early Warning Strengthening Project for supporting the event.

The Workshop agreed that the societal aspects of tsunami early warning systems are fundamentally critical to the effectiveness of the systems, but have not been given sufficient attention to date. Several participants emphasised that technology, while important, cannot do the job alone. It was recognised that this is a complex issue, involving large populations, numerous and diverse organisations and wide-ranging cultural factors.

Participants considered a range of issues concerning tsunami hazards, early warning, mitigation, preparedness and response, and the linkages with other hazards. A number of upstream technical issues, such as observation needs, data exchange and tsunami centre operations were also raised, and while it was recognised that these lie outside the mandate of the workshop, it was felt that some points were important enough to draw attention to in the meeting report. The meeting noted that the societal issues affect all aspects of the early warning system design and operation, and emphasised the benefits of linkages between the working groups of ICG-IOTWS to harmonise their work as appropriate to accommodate these connections.

New working group and terms of reference

The principal outcome of the workshop was the endorsement of the proposal to establish a working group under the ICG-IOTWS on mitigation, preparedness and development, to complement the existing ICG-IOTWS technical working groups, and development of

proposed terms of reference for the new working group. This would become ICG-IOTWS Working Group 6, namely the Working Group on Mitigation, Preparedness and Response.

The meeting reviewed the draft terms of reference prepared at Hyderabad and agreed on a revised terms of reference, as set out in Annex 1. These include some proposed concrete priority actions for the working group to consider.

The workshop recognised that the implementation of a tsunami warning system depends on the wider institutional context such as relevant legislation, existence of a national disaster management organisation and specific ministerial responsibility for disaster matters. It also requires specific expertise from a variety of fields associated with mitigation, preparedness and development, such as is available within the ISDR system's regional networks and capacities. The working group therefore should include representatives with expertise and experience in such fields, particularly in disaster management and disaster risk reduction.

This report and the proposed terms of reference will be submitted for consideration and endorsement to the next meeting of the ICG-IOTWS, planned for Bali, Indonesia, 31 July - 2 August 2006, as requested by the previous meeting ICG-IOTWS-2 in Hyderabad, 14 - 16 December 2005.

Participants also drew attention to the following issues.

Warning dissemination

There is a critical need to establish effective regional and national dissemination mechanisms, to ensure that timely, accurate, relevant and understandable warnings reach all parts of society for proper and timely response.

Capacity building

At the core of tsunami early warning systems – whether national or regional – are the national institutional capacities and national ownership to ensure sustainable effective operation. It is important to strengthen communities' capacity to respond appropriately to warnings and cope with disasters – this constitutes a key element of a successful early warning system. The organisation of simulation exercises, such as the Pacific Wave 06, not only test the effectiveness of warning systems at the national level, but also build capacity throughout the region.

Decision making process

Good decision-making processes require the explicit clarification of roles and responsibilities with respect to tsunami early warning at all levels – regional, national and local. Policy makers need to be well informed of international developments and domestic requirements in disaster risk reduction so that effective political responses and strategic planning processes are successfully implemented.

Standard operating procedures

Standard operating procedures are a foundation of effective reliable warning systems, and must be tailored to the chosen form of the warning system. Countries may need to assess the strengths and weaknesses of their existing systems and take steps to address gaps for the development and implementation of standard operating procedures.

Coordination

Coordination is critical owing to the multiplicity of parties involved in an effective system. Existing mechanisms for the overall coordination of the warning and response system may need to be strengthened and streamlined, for example as a responsibility of the national disaster management organisation or similar authority. There also must be clearly established responsibility for securing coordination across national borders.

Linking early warning systems and development processes

To ensure their long term support, and effective linkages with other national policies, tsunami early warning systems need to be integrated into existing regional and national disaster risk reduction frameworks and development plans. There is a need to review and re-visit the approach taken by donors and support agencies as to how they set up country plans. Coordination among donors and international organisations is needed.

Political commitment

Strong political endorsement at national level is crucial for the establishment and maintenance of regional early warning systems. Economic cost-benefit analysis is an important tool and should be used to justify high-level support.

Public awareness and education

Public awareness and education constitute two essential and powerful strategic and tactical tools to enhance capacity building and change behaviour for better protection of future generations. Also, the media play an important role as a tool for mass communication, both for warning dissemination and for advocacy and education in the efforts to strengthen community understanding and community resilience to tsunamis.

Cooperation and information exchange

It is desirable to exchange experiences, especially from national and regional activities that test disaster preparedness and mitigation (early warning exercises, evacuation drills, etc.) This should include the promotion of regional/sub-regional networking and platforms in the development of warning systems, as well as bilateral mechanisms for exchange of experiences. Regional cooperation is valuable in the development of standard operating procedures and interoperability, as well as in research, such as on risk and social vulnerability assessments. It is needed for addressing sector concerns such as in tourism and fisheries.

Data exchange and telecommunications

There is a need for standard formats and mechanisms for regional information and warning exchange, in order to allow free, easy access and open transfer of regional data. The WMO Global Telecommunication System (GTS) provides an important basis for the

international exchange of real-time data, while specialised seismographic communication networks are necessary for the exchange of seismic data.

Multi-hazard perspective

The process of implementing tsunami early warning systems needs to reflect a multi-hazard approach. Therefore, in order to ensure sustainability it is important to establish specific procedures and modalities for the effective integration of tsunami warning systems into existing warning and management systems, together with appropriate training efforts.

Sub-regional perspectives

The characteristics and special needs of different regions and areas, both geophysical and socio-economic, require tailored approaches and coordination mechanisms. Among other things, joint multilateral assessments should be undertaken of the less well-understood tsunamigenic risks in the Indian Ocean such as the Makran submarine region and the volcanic islands.

Disaster risk reduction agenda

Mainstreaming tsunami early warning systems into plans to address the priority areas of implementation of the Hyogo Framework for Action will help anchor the tsunami warning system in overall risk reduction policies. The Hyogo Framework for Action stresses many features needed for effective early warning systems, such as assessment of national and community-level vulnerabilities and risks, multi-hazard management and regional and international cooperation. Mitigation of tsunami risks also needs consideration of structural mitigation measures such as evacuation routes, safe assembly places, coastal wave defences, and environmental protection practices.

Key areas for action

Flowing out of the above conclusions, the meeting identified the following key areas for action concerning mitigation, preparedness and development related aspects of tsunami early warning systems.

1. Focus on human aspects of effective tsunami early warning systems by addressing gaps and weaknesses identified by the countries.
2. Implement activities that meet the requirements and priorities identified by the countries, including those identified in the above conclusions.
3. Promote public awareness and education at regional, national and local levels.
4. Promote international knowledge exchange on the tsunami early warning systems.
5. Organise high-level officials' meetings for consultation and prioritisation of areas for regional cooperation.

6. Promote political commitment for and institutionalisation of the development and maintenance of tsunami early warning systems, and make use of the international consortium assistance package endorsed by UN Special Envoy on Tsunami Recovery President Clinton.
7. Develop tsunami evacuation planning and conduct regular drills to assess the effectiveness of the system and readiness at all levels.
8. Make concerted efforts at the regional, sub-regional and national levels to enhance the communication of tsunami and other hazards warnings in an accurate, timely and understandable manner for rapid community response.
9. Integrate tsunami early warning systems and disaster risk management of other hazards into national efforts to implement the Hyogo Framework for Action, in order to optimise the investments to reduce disaster risk for socio-economic development, with special emphasis on the coastal community resilience to disasters.

In addition, the workshop proposed the following two areas for action on upstream technical aspects.

1. Consider a regional coordination mechanism to support the development of effective national standard operating procedures for tsunami early warning systems.
2. Stimulate technical and institutional capacity building and develop regionally-transferable procedures for rapid exchange of data and information related to tsunami early warning systems.

Annex: Proposed terms of reference for new ICG-IOTWS Working Group on Mitigation, Preparedness and Response

The Working Group on Mitigation, Preparedness and Response will support national and regional efforts to develop comprehensive tsunami warning and response capabilities, including standard operating procedures, within a multi-hazard and risk-reduction context. The working group will focus on improved mitigation, preparedness and response to warnings and the achievement of coastal community resilience to tsunami disaster, through activities on:

- a. The application of good practice to the mainstreaming of tsunami warning systems into development planning and practice, including policy and institutional development, project identification, sector policies, risk mitigation, and recovery processes;
- b. The participation of national tsunami centres and experts in national platforms for disaster risk reduction, all-hazard integration processes, and national disaster management processes;
- c. The development of tsunami-related guidelines, tools and best practice information for the disaster management sector, concerning *inter alia* public information, education, training, communication processes, evacuation planning and drills, standard operating procedures, and emergency management.
- d. The development of approaches to promote and enhance the institutionalisation of tsunami early warning system implementation and maintenance.
- e. The assessment of needs for, and the stimulation of, technical and institutional capacity building on the topics in a-d above, with special attention to the needs of those countries with least tsunami warning capacity;
- f. The facilitation of communication between ICG-IOTWS processes and relevant development and disaster management forums.
- g. Coordination at regional and sub-regional levels and with donors and international organisations on the above matters.

It is suggested that the Working Group consider the following activities as possible priorities for its work plan.

- i. In partnership with national authorities, undertake a review of the mitigation, preparedness and development elements of the national assessment reports on tsunami warning capabilities, updated as required, and identify relevant priority follow-up actions.

- ii. Prepare a short discussion paper on introducing tsunami resilience objectives into national development processes and into national disaster management plans, with guidance on how to achieve this, and with a view to promoting understanding and commitment by political leadership, senior officials and donors.
- iii. Undertake an assessment of the status of national platforms for disaster reduction and the current level of involvement in tsunami warning system development, and provide illustrations of national experience in these respects.
- iv. Collate, summarise and disseminate examples of effective community-based practices for early warning and response.
- v. Organise a small meeting of tsunami experts and education specialists to map out a harmonised approach to the development of tsunami-related educational materials for the region.
- vi. Undertake a consultative study of the conceptual and practical basis for standard operating procedures, and develop guidelines for their development and application by national authorities.
- vii. Stimulate the organisation of familiarisation tours of regional and international tsunami centres for warning operations managers and staff, with targeted learning objectives.