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**Flash Appeal – Early Warning**

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**Evaluation and strengthening of Early Warning Systems in Countries Affected by the 26 December 2004 Tsunami**

**Submitted by International Strategy for Disaster Reduction Platform for the Promotion of Early Warning (UNISDR/PPEW)**

**1. EXECUTIVE SUMMARY**

According to latest information, the death toll for the tsunami that occurred in the Indian Ocean on 26 December 2004 has reached over 200,000 people. The tsunami was triggered by 9.0-magnitude earthquake near Sumatra in Indonesia. The initial earthquake killed many people in nearby locations under collapsed buildings, but the main cause of death was trauma and drowning from the flux of sea water and waves pouring into coastal areas without warning.

If effective tsunami early warning systems had been in place in the Indian Ocean region, many thousands of lives could have been saved. Following the event, there are continuing high levels of anxiety about further tsunamis and already there have been false alarms and panic.

The Pacific Ocean has effective tsunami early warning systems in place, as 80% of large earthquakes occur around this huge ocean. These are coordinated by multilateral mechanisms under the Intergovernmental Oceanographic Commission, of UNESCO, involving 26 countries of that region.

This proposal will link the available technical capacities on tsunami early warning with humanitarian and emergency management capacities. It will quickly implement the first steps to establish effective tsunami warning capacities in the region, in particular through facilitating an interim warning capacity based on existing national and international capacities, supporting a conference to achieve technical specification and political consensus on the design of an appropriate early warning system, developing networks among practitioners and authorities concerned with all hazards, conducting regional meetings of relevant practitioners for both training and coordination aims, developing interim information materials for practitioners and community leaders, providing necessary coordination and support for the affected countries, and developing educational support and demonstration projects. The activities will be carried over an 18 month period, with greatest effort concentrated in the first six months.

The benefits of the proposed activities will be improved public confidence and security, a rapid boosting of the capacities for action and planning by public authorities in the countries affected, authoritative information products needed by the humanitarian community, and a sound basis for coordination and informed implementation of tsunami warning systems in the region.

**2. CONTEXT AND HUMANITARIAN CONSEQUENCES**

## 2.1 Context

Governments, humanitarian organisations have been shocked to learn that if tsunami early warning systems had been in place in the region, many thousands of lives could have been saved.

In the Pacific Ocean region, tsunami early warning systems have been in place for many years. About 80% of all large earthquakes occur around this huge ocean, and countries bordering the Pacific Ocean have experienced great destruction and loss of life from tsunamis in the past. Warning systems are well established in Japan and the United States, to protect citizens and towns along vulnerable coastlines. Now people are better prepared and vulnerable areas are evacuated when threatened by tsunami, with fewer deaths resulting.

The massive earthquake that caused the tsunami was detected and located just a few minutes after it occurred. The Pacific Tsunami Warning Center in Hawaii tried desperately to contact the affected countries across in the Indian Ocean. But it was Sunday, most offices were closed, and there was no 24 hour system in place in the region, so the warnings did not reach the millions of people living along the affected coastlines.

Many world leaders, including UN Secretary General Kofi Annan and US Secretary of State Colin Powell have put their weight behind calls for better tsunami early warning systems. ISDR Director Sálvano Briceño makes the case in a press statement on 29 December 2004 (<http://www.unisdr.org/eng/media-room/media-room.htm>). Some countries in the region, including India and Indonesia, have already declared their intention to establish tsunami early warning systems.

For many years, the Intergovernmental Oceanographic Commission, based in UNESCO, has supported the International Co-ordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU - see <http://ioc.unesco.org/itsu>). Currently 26 countries are members of this group. The group established and operates the International Tsunami Information Center (ITIC) ([http://www.prh.noaa.gov/itic/more\\_about/itsu/itsu.html](http://www.prh.noaa.gov/itic/more_about/itsu/itsu.html)), which is co-located with the Pacific Tsunami Warning Center (PSWC), in Honolulu, Hawaii, both of which are hosted by the National Oceanic and Atmospheric Administration (NOAA) of the United States. In Japan, the Japan Meteorological Agency (JMA) supports and operates extensive tsunami warning systems in its area of interest. In many countries the tsunami warning system is operated by the national meteorological services, which are supported by the World Meteorological Organization (WMO).

Under the ITSU mechanism, a Working Group on the Southwest Pacific and Indian Ocean Tsunami Warning Systems was set up in September 2003. Other regions of the globe do not have comparable coordination mechanisms and normally look to the Pacific institutions for guidance and assistance. Moves are afoot to widen the mandate of the IOC mechanism to include all basins at risk of tsunamis and to internationalise tsunami early warning systems.

The International Early Warning Programme (IEWP), that was launched by a coalition of UN agencies at the World Conference on Disaster Reduction (WCDR) held in Kobe, Hyogo, Japan 18-22 January 2005, will provide a vehicle to meet calls to systematically widening the scope of early warning to cover all countries and all hazards..

As of 16 February 2005, ISDR/PPEW, IOC/ITSU and close partners have already initiated close collaboration toward the goals described in this proposal. The proposed tasks have been jointly prepared and include inputs from the Japan Meteorological Agency and the US National Oceanic and Atmospheric Administration.

An initial scoping meeting for the development of tsunami early warning systems was held in association with the World Conference on Disaster Reduction. This meeting involved diverse relevant partners and over 200 participants and provided a timely opportunity to learn from Pacific countries' experiences and transfer knowledge of tsunami early warning systems to those surrounding the Indian Ocean and to identify key issues, requirements and players in the future development of a tsunami early warning system. It was agreed that steps should be taken immediately to establish an interim early warning capacity based on rapid strengthening of available capacities inside and outside the region.

Effective warning systems for any natural hazard also require strong public information and preparedness components. Many commentators including the ISDR Platform for the Promotion of Early Warning ([www.unisdr.org/ppew](http://www.unisdr.org/ppew)) have emphasised that early warning is largely a social issue, and that technology alone will not solve the problem. Many early warning systems fail at times of crisis because the warnings do not get to the people at risk, or are not understood, or are not acted upon. An effective early warning system needs to be people-centred. It requires active engagement with community leaders and the public, in addition to sound technical systems. Also, the system needs good public education and experienced emergency management to ensure that warnings are well communicated, well understood, and rapidly acted upon. Inputs from many sectors need to be integrated.

In addition, regional coordination is essential, as earthquakes and tsunamis do not restrict themselves to territorial borders. Cooperation and coordination is particularly required for monitoring systems, warning and communications, and disaster response.

## 2.2 Humanitarian consequences

The consequences of the tsunami of 26 December 2004 are well known. Over 200,000 people have died, possibly 750,000 have been injured and 5 million are homeless. The worst affected areas are Aceh province of Indonesia, Sri Lanka, and Tamil Nadu State and the Andaman and Nicobar islands of India, coastal Thailand, and the Maldives. Many other territories were affected.

The populations that were most affected now live in great fear of further tsunamis, and false alarms and panic have been reported. Some people are refusing to return to their villages for fear of return waves. Aftershocks are continuing in the region, causing continuing concern among the populations.

This project is primarily targeted at national institutions responsible for the welfare of the populations that live in all coastal zones, both those that were directly affected by the 26 December event, and other populations who are potentially vulnerable to future tsunamis in the region.

The project will help secure public confidence in their security against further tsunami, will rapidly boost the capacities for networking and action and planning by public authorities in the region, and will set in place a sound basis for the longer term coordination and implementation of tsunami warning systems. It will also improve the long term outcomes on tsunami early warning by integrated the current strong interest in early warning systems into existing frameworks for emergency management and disaster risk reduction.

### **3. RESPONSE PLANS (Part 1)**

The purpose of part 1 activities is to quickly establish a basis of capacities and confidence in the worst affected countries for dealing with the risk of tsunamis. Eight tasks will be undertaken.

1. Conduct a scoping meeting of relevant organisations on the margins of the World Conference on Disaster Reduction to map out and coordinate activities on tsunami early warning systems.
2. Support meetings and other in-region processes initiated by countries of the region (e.g. Ministers meeting in Phuket) including missions by experts to assess and advise on tsunami warning capacities of the region, and build networks among practitioners and authorities.
3. Conduct a technical conference on the design, planning and coordination of efforts to establish tsunami early warning systems in the region.
4. Conduct a conference with high level officials of the region's governments to confirm commitments on design, planning and coordination of efforts to establish tsunami early warning systems in the region.
5. Undertake strengthening of existing in-region capacities and international information in order to establish an interim early warning system.
6. Undertake training and familiarisation meetings for relevant administrators and practitioners on tsunami early warning systems in the region, covering technical and social aspects
7. Develop interim information materials for practitioners and community leaders.
8. Provide short-term support to IOC/ITSU, ITIC, and ISDR/PPEW to support coordination and information provision.

The activities would be conducted over a period of 6 months.

1. The scoping meeting was held soon after the closing ceremony of the World Conference on Disaster Reduction.

2. Support has been provided on an ongoing basis to four significant meetings so far (Jakarta, Beijing, Phuket, New Dehli), and through correspondence. Intensive efforts have begun to interact with key agencies in the region and internationally, to clarify roles and interests, and to work toward shared understanding and action. Expert missions are being planned.

3. The technical conference is planned for Paris 3-8 March, hosted by UNESCO/IOC. The programme and invitations already are in hand. The focus will be on establishing a common agreed design of a regional early warning system, including roles of national agencies and inputs of donors and international technical groups.
4. The regional conference aims to secure the necessary high level administrative commitments needed for effective national and regional warning systems.
5. Steps have been taken by the tsunami warning centres in Japan and the United States to provide interim information, and IOC and WMO will implement interim upgrades of existing seismic and oceanographic observation systems and telecommunication systems in the region.
6. A policy dialogue for high level administrators will be held in Japan, primarily to examine the technical and social features of Japan's well-developed tsunami early warning systems and to familiarise them with the organisational and administrative requirements. National coordination meetings in the affected countries will be organised after the above major planning conferences have been concluded.
7. Information products on the basic facts of tsunami risk and tsunami warning for practitioners and community leaders will be developed in a set of relevant languages. This is vital to the functioning of the warning system. UNESCO/IOC has begun to extend its web pages to support the project activities.
8. Assistance to the coordinating organizations is necessary to support the project activities.

#### **4. COMMUNITY PREPAREDNESS (Part 2)**

The purpose of the second phase is to develop the capacities of countries to make use of tsunami warnings, by integrating tsunami early warning capacities into preparedness and emergency management systems, and by developing and advocating for tsunami early warning and preparedness at community and local authority levels. Tasks to be undertaken are.

1. Identify, compile and analyse existing national reviews on disaster preparedness early warning systems and disaster risk reduction and other relevant ongoing processes for the countries concerned.
2. Develop the methodology for national multi-sectoral assessments of tsunami vulnerability, preparedness, and early warning systems.
3. Run two preparatory seminars, in the region, dividing the countries concerned in two sub-regions, to support the countries prepare for the national multi-sectoral workshops, and invite feedback from the countries on methodologies suggested.
4. Undertake national multi-sectoral workshops in each country (to be coordinated related activities in Part 1)

5. Publication of country assessments of needs, in English and local languages. Support will be provided to national institutions to develop this along the format agreed in preparatory seminars.
6. Strengthen National Committees for disaster risk reduction and web-based information nodes, in each country, of relevant initiatives, carried out in different sectors, communities related to tsunami early warning systems, preparedness and disaster risk management. This will include a regional web-based information system, linked to PPEW and UNESCO's IOC.
7. Undertake pilot projects at specific localities (e.g. Aceh): (i) Support the local administrations to develop locally effective early warning systems and to disseminate these, including through a local language news letter. (ii) Develop community awareness and preparedness by providing support through local NGOs, international and national UNV to bring about community awareness of the multi hazard risks, early warning systems and preparatory activities like mock drills. Support long-term Disaster Risk Management (DRM) through training and capacity building of district level institutions and community leaders.
8. Develop and document selected pilot projects as model projects, and capture and disseminate good practice information resulting from the projects.

## 5. ROLES AND RESPONSIBILITIES

The proposal is submitted and will be coordinated by the International Strategy for Disaster Reduction (ISDR), through its Platform for the Promotion of Early Warning (PPEW). The activities of Part 1 will be jointly organised by the ISDR/PPEW and the UNESCO/IOC, in close consultation with the International Co-ordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU), WMO, and other relevant regional and national institutions. The activities of Part 2 will be organised primarily by ISDR/PPEW, but in close collaboration with agencies concerned with development and risk management. Because of the unprecedented nature of the task of setting up new systems in the region, flexibility to interact with and involve different institutions will be most important.

The roles of the principal parties are as follows

Organization	Type	Main roles
ADPC	Regional organisation, disaster preparedness coordination and training,	Regional networks, coordination, training, education, information
ADRC	Nationally supported, international advocacy and information on risk reduction	Public education, training, information, experts
IOC/UNESCO	UN, science, oceans, tsunami coordination, technical expertise	Technical direction, organise meetings and training, experts, link to Pacific tsunami network
IFRC	Coordination and support of national RC/RC societies,	Project support at national to local levels

	advocacy, preparedness activities	
ISDR/PPEW	UN, advocacy and coordination, disaster risk reduction, early warning promotion	Proposal coordination, multi-agency networking, overall oversight, identify partners, link to disaster risk networks
ITIC	Nationally supported, international advocacy and information, under ICG/ITSU	Information support, training definition, identify consultants
JMA, US/NOAA, USGS	National services responsible for elements of tsunami early warning services	Technical inputs, operational experience, consultants and trainers
UNDP	UN, development coordination, country project management and risk reduction.	Project support, national networks and coordination
UNEP	UN, environmental coordination, technical networks, warning systems	Networking, technical support, information, experts
UN/OCHA	UN, humanitarian office	Humanitarian coordination
UN-ESCAP	UN, regional support and coordination of economic and social development	Support, networks, information
UNU	Research and development on issues of concern to UN	Expertise, project design and evaluation. Community based early warning systems.
UNV	Volunteer support to development , promotion of volunteerism	Support to projects at community levels
WMO	UN, meteorological coordination, technical networks, communications, hazards and warning systems	Networking, technical operations and support, information, experts

Many other organisations are expected to engage in the activities and integrate their early warning activities with the proposed response, including many national institutes and authorities in the region.

It is expected that these response activities will generate important lessons learned not only for tsunami early warning and preparedness, but also for the rapid assessment and strengthening of other types of early warning systems in post-disaster situations.