

**World Conference on Disaster Reduction  
Regional/Thematic Special Session**

**Session Report**

**Promotion of tsunami disaster mitigation in the Indian Ocean**

*–Towards establishment of tsunami early warning systems in the Indian Ocean by  
sharing experiences in the Pacific Ocean –*

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The session:

- noting the unprecedented tsunami disaster in the Indian Ocean that occurred on 26 December 2004;
- reaffirming that a tsunami early warning system, which is a prerequisite and fundamental measure for mitigation/prevention of tsunami disasters, should be established by the governments of the relevant countries with their primary responsibility;
- considering that it is significant for the governments to utilize the functions and abilities of local governments and communities in partnership with relevant bodies and organizations;
- emphasizing that the international community should support these activities with international and regional organizations;
- recognizing the effectiveness of sharing experience of the Tsunami Warning System in the Pacific Ocean, in particular the activities of UNESCO/IOC/ICG/ITSU and ITIC;

figured out the following items, from the professional point of view, to be considered by the parties involved in the establishment of the tsunami early warning system in the Indian Ocean, giving particular emphasis on the enhancement of the warning systems of the individual countries and development of an international mechanism to coordinate those systems.

## **1. Enhancement of tsunami early warning systems in the countries of the Indian Ocean**

### **1) Actions to be taken by the countries of the Indian Ocean on their initiatives**

#### **a. Promote knowledge about tsunamis**

For promoting basic knowledge about tsunami disasters, it is effective to use all sorts of media such as videos and booklets and to implement risk communications with the people.

#### **b. Identify and publicize high-risk areas**

The highest priority to raise the awareness of the people in coastal areas of the risk of tsunami hazards at all times is to identify and publicize the areas at high risk of tsunami disasters in such vulnerable regions as heavily populated cities, tourist resorts, and major ports, taking into account the areas struck by the last tsunami.

Such efforts as specification of routes to and places for evacuation in the areas at high risk of tsunami disasters and compilation of tsunami-hazard maps with the help of functions and abilities of local governments and communities to be used for emergency evacuation in their disaster prevention trainings will make the high-risk areas more resistible to tsunami hazards.

#### **c. Ensure delivery of tsunami warnings to the people in the coastal areas**

To ensure the delivery of tsunami warnings to the people in the coastal areas, it should take first priority to use existing means of communication as efficiently as possible, including early development of the national policies to establish the systems for disseminating tsunami warnings and full mobilization of available communication systems.

**d. Quickly issue tsunami warnings**

To establish systems to issue tsunami warnings, identification of the organizations to manage the systems should be made initially, followed by development of human resources. It is also important to install/operate seismic stations and sea level gauges as appropriate and share the observational data on a real time basis.

**2) Actions to be taken by the international community to support the countries of the Indian Ocean**

To support the countries of the Indian Ocean in their development and enhancement of tsunami-disaster prevention measures, it is effective to offer existing knowledge of tsunamis, expertise in tsunami-hazard maps, and techniques for developing/operating systems for issuing/disseminating tsunami warnings and to develop human resources through expert services, seminars, and trainings.

**2. Establishment of the international tsunami early warning system in the Indian Ocean region**

**1) Urgent actions (in the upcoming 6 months)**

**a. Hold an international coordination meeting**

It is highly recommended, as an initial action for the establishment of the international tsunami early warning system, that UNESCO/IOC that has accumulated knowledge through the experiences in the Pacific Ocean holds a meeting, shortly after the WCDR in cooperation with relevant international organizations such as UN/ISDR, WMO, and regional partners of these organizations, with the participation of the countries of the Indian Ocean, the countries with advanced techniques and valuable experiences of tsunami warning systems, and the countries, international organizations, and regional organizations which expressed financial assistance, for the purpose of coordinating views between the entities concerned.

**b. Assess tsunami warning capabilities of the countries of the Indian Ocean**

The action that should be taken subsequently to the meeting is to organize missions comprised of experts on tsunami disasters for conducting surveys and assessment on the people's awareness of tsunamis, current status of the organizations that could undertake the issuance/dissemination of tsunami warnings, and existing conditions of the seismic and sea level observations and the communication infrastructure in the countries of the Indian Ocean.

**c. Hold seminars for the government personnel in the Indian Ocean**

For the development of national tsunami warning systems in the countries of the Indian Ocean, it is effective that the international organizations such as UNESCO/IOC, UN/ISDR, WMO, and regional partners of these organizations hold seminars, with the cooperation of the countries with skills and experience in tsunami early warnings, for the personnel of the central and local governments of the countries to provide the relevant knowledge and skills.

**d. Disseminate tsunami watch information in the Indian Ocean on a provisional basis**

Until the tsunami early warning system in the Indian Ocean becomes fully operational, it is recommended that information for tsunami watch should be disseminated on a provisional basis, taking advantage of the experience accumulated in the Pacific Ocean. To this end, close cooperation should be sought from the countries with advanced techniques in operating tsunami warning systems, including US which manages the international tsunami warning center in the Pacific and Japan which runs a national tsunami warning system, and the international organizations such as UNESCO/IOC, UN/ISDR, WMO, and regional partners of these organizations.

Considering that the highest priority should be given to the earlier start of the dissemination of the tsunami watch information, existing telecommunication networks including Global Telecommunication System (GTS) and currently available seismic/sea level data should be utilized in principle. In this regard, it should be noted that content of the tsunami watch information be limited only to the possibility of tsunami hazards and, accordingly, the tsunami watch information is inferior to the tsunami warnings to be issued by the tsunami early warning system in quality, accuracy as well as timeliness.

For the effective operation of this provisional system, the countries of the Indian Ocean should designate their respective organizations to receive the information from this system on around-the-clock basis and establish communication networks, in a prompt manner, to deliver the information to the people in the coastal areas by utilizing existing communications.

**2) Actions to be taken until the tsunami early warning system in the Indian Ocean becomes fully operational (from 6 months to 2 to 3 years).**

**a. Develop an international coordination function**

To fully establish the international tsunami early warning system in the Indian Ocean, it is imperative for UNESCO/IOC that has accumulated knowledge through the experiences in the Pacific Ocean to develop an international coordination function to have coherent views between the entities concerned, in cooperation with relevant international organizations such as UN/ISDR, WMO and regional partners of these organizations, with the participation of the countries of the Indian Ocean, the countries with advanced techniques and valuable experience of tsunami warning systems, and the countries/international organizations/regional organizations which expressed financial assistance.

**b. Develop an integrated strategy for the establishment of the tsunami early warning system in the Indian Ocean**

For the full-scale operation of the tsunami early warning system in the Indian Ocean with long-term sustainability, it is necessary to identify the organizations relevant to the system and to develop an integrated strategy or master plan including operational procedures and schedule of the system based upon the report of the assessment described in 2.-1)-b.

To develop the integrated strategy, it should be kept in mind that necessary countermeasures against tsunamis are different between the countries due to the spatial bias of tsunami generating areas in the Indian Ocean (countermeasures against tsunamis from near-by origin and tsunamis from distant origin are different), that roles and functions of the organizations concerned with tsunami early warning are

different from country to country, that the individual countries have taken different measures with regard to tsunami early warning, and that the facilities for the tsunami early warning system in the Indian Ocean such as communication networks are also applicable to the prevention/mitigation of other kinds of natural disasters.

**c. Hold comprehensive seminars concerning the tsunami early warning system in the Indian Ocean**

For the full-scale operation of the tsunami early warning system in the Indian Ocean, it is effective that UNESCO/IOC, UN/ISDR, WMO, and regional partners of these organizations continuously hold seminars for the personnel to serve for the operation of the system and for the organizations to undertake national tsunami warning systems in the individual countries, with the cooperation of the countries with advanced techniques regarding tsunami warning system.

To implement the seminars most effectively, it should be noted that the seminars should be organized in such a way that they cover all the components of the early warning system ranging from installation and operation of the equipments to educational campaign for promoting knowledge about tsunamis and to planning of basic policies for disaster prevention.

**d. Promote sharing of the observational information for the operation of the tsunami early warning system in the Indian Ocean**

For the full-scale operation as well as enhancement of the tsunami early warning system in the Indian Ocean, it is necessary to secure cooperation of all the countries and institutions running seismic and sea level observation systems to provide their data to allow relevant countries and organizations including those in the Indian Ocean region to share the seismic and tidal data on a real time basis for the timely issuance of tsunami warnings.

**3) Actions after the tsunami early warning system in the Indian Ocean becomes fully operational (after 2 to 3 years and beyond)**

**a. Maintain the tsunami early warning system in the Indian Ocean**

To ensure the smooth and continuous operation of the tsunami early warning system, it is indispensable to hold regular meetings of the people and organizations concerned to monitor operation of the system and carry out discussions and coordination to adjust the integrated strategy that includes maintenance of the system.

**b. Promote international cooperation to operate the tsunami early warning system in the Indian Ocean**

It should be noted that public relations campaign should be conducted and broad-ranging cooperation and support from the international community should be secured with a view to having the activities of the tsunami early warning system in the Indian Ocean serve as a useful reference to other regions which are also under threat of tsunamis such as Mediterranean Sea and Caribbean Sea.