Enhancing Tsunami Risk Assessment and Management, Strengthening Policy Support and Developing Guidelines for Tsunami Exercises in Indian Ocean Countries

Establishing a sustainable mechanism for training in coastal hazards and tsunami risk assessment and management for continuing professional development

A Policy Document and Strategic Plan

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1 The "TRATE" Project. Funded by the UNESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness (Project No. TTF-20)
1. Background

The Intergovernmental Coordination Group (ICG) for the Indian Ocean Tsunami Warning and Mitigation System (IOTWS) has a mandate to enhance awareness and implementation by Member States of the procedures for risk assessment and effective functioning of the “last mile” of the early warning system within communities (Recommendation ICG/IOTWS-X.1, March 2015). This mandate corresponds to priority aims identified in the Sendai Framework for Disaster Risk Reduction 2015-2030 – to achieve a substantial reduction of disaster losses, in lives, and in the social, economic and environmental assets of persons, communities and countries over the next 15 years. In particular they include “understanding disaster risk” and “enhancing disaster preparedness for effective response, and to ‘Build Back Better’ in recovery, rehabilitation and reconstruction”.

The ICG, with the support of UNESCO-IOC, has already constructed a substantial foundation for the achievement of these aims through its role as an enabler and facilitator. It has conducted regional and country-specific training workshops, launched UNESCO-IOC's Indian Ocean Tsunami Information (IOTIC), and published procedural guidelines. The latest guidelines, published in June 2015, are a revised edition of the UNESCO-IOC Manuals and Guides No. 52, “Tsunami Risk Assessment and Mitigation for the Indian Ocean: Knowing your Tsunami Risk – and what to do about it”.

The ICG is aware of the considerable demand amongst IOTWS Member States for structured training that will enhance this foundation of procedural knowledge and promote its take-up on a sustainable basis, as a step towards the implementation of these DRR aims. To date about 800 participants have been trained by formal ICG/IOTWS regional and national training workshops (including on tsunami risk assessment and mitigation). However, the ICG recognises the existence of hurdles or barriers to the effective dissemination of such knowledge to Member States in the application of its current training strategy. It will always be difficult to sustain an independent training activity which is not directly linked to the demands and tsunami risk reduction goals of the Member States. In this regard, revisiting Member States’ national tsunami risk reduction plans and basing the training/capacity development in the context of those plans would make the training relevant and demand driven.

A recurrent challenge is to attract appropriately qualified trainees from Member States who can fully benefit from the training content and are motivated and in a position to relay their acquired knowledge to practitioners in their own countries. To meet this challenge it may be useful to assess countries’ capacity development needs and design training in response to those needs. A Tracer Study undertaken by UNDP for the ICG/IOTWS indicated the need for “clubbing” low-capacity countries together and suggested a more tailored content.

The present connection between training efforts and the delivery of the skills required by Member States means that the implementation of risk assessment and management procedures by Member States is less than ideal, suggesting that a new, more sustainable approach to training is needed.

2. Aims and objectives

The overarching goal of this initiative is the establishment of a regional self-perpetuating fund of knowledge and experience in tsunami risk assessment and preparedness that will promote the
implementation of these activities by Member States within a multi-hazard context and a framework of Integrated Coastal Area Management (ICAM). Such a fund would serve as a regional training resource for continuing professional development. It would facilitate the implementation of coastal hazard risk reduction by Member States as a matter of routine for the foreseeable future to the benefit of communities under threat from coastal hazards, in particular inundation by tsunamis or storm surges. This document sets out options for possible approaches open to the ICG in overcoming existing impediments to the delivery of relevant knowledge to practitioners and policy makers in Member States, and in facilitating the required specialist training and its implementation on a sustainable basis.

3. Options for progress

A primary step in establishing a sustainable training mechanism for Member States to develop the skills needed for coastal hazard risk assessment and management would be for the ICG to request its Working Group 1 on Tsunami Risk, Community Awareness and Preparedness (WG1) to consider options for achieving the objectives as described in Item 2, then to make recommendations on the path or paths to be followed. Options for consideration are summarised below:

3.1 Business-as-usual training workshops: Regional “presence” training workshops covering the entire risk assessment and mitigation procedure for tsunamis within IOTWS have been a mainstay of the training carried out under the aegis of the ICG to date. Some experts consider that this regular workshop training programme is necessary and should continue, subject to funding, on a regional basis or sub-regionally to minimise transportation costs. The aim for such workshops has been training for capacity building. This traditional approach has served well in providing a basis of understanding the assessment and mitigation procedure for tsunami risk. However, it has limitations as described in Item 1. Lessons learned from previous presence training events covering these topics point to a need for a rigorous, structured approach with appropriate emphasis on discussion and hands-on exercises supported by dedicated experts or champions; also for linkage to the implementation process. Experience has shown a need for country-specific projects with expert input as follow-ups to such regional training workshops. Such follow-up courses need to be adequately resourced.

3.2 “Train-the-trainer” workshops: The regional workshop on Coastal Hazard Assessment: Applications in Risk Assessment, Management and Mitigation, held in Colombo, Sri Lanka, 2–5 June 2015 was envisaged as a “train-the-trainer” workshop, whose participants would be expected to relay their acquired knowledge and experience to trainees at subsequent training events in their own countries. Such an approach proved unsatisfactory, however, partly because of a lack of focus on the task of training trainers to train, instead adopting a more traditional approach of training in the technical aspects of the risk assessment and management procedure. Another factor was the difficulty in attracting participants with appropriate technical backgrounds that cover the range of different skills needed – e.g., propagation and inundation modelling vis à vis vulnerability and preparedness. If this approach is to be pursued, it is important to ensure that selection criteria are rigorous and that the training content focuses on the basic principles of the training process for the would-be trainers.

Previous individual country “train-the-trainer” workshops have been more successful, though some experts regard this approach as difficult. Downstream success for the “train-the-trainer” approach pre-supposes the availability of adequate resources in the receiving country (either from
national and international sources) for organizing the training and adapting the training materials to the country’s context. These services may be difficult to implement in a country where there is no established demand for training.

3.3 IOTIC as a coordinator: A possible option would be to establish a new structure for training with the UNESCO-IOC Indian Ocean Tsunami Information Centre (IOTIC) as the prime coordinator, supported by a team of “partners in progress” established by ICG Working Group 1. IOTIC would maintain a safely-kept repository of all tsunami and other inundation-related hazard information relevant to the region that Member States could access on request under guidance from the team.

3.4 A modular approach for dispersed training: The delivery of training to Member States in thematic packages or modules as parts of university courses is an option that could significantly improve the targeting of training efforts. Modules could either be presented as “presence” courses or accessed on-line under the guidance of an instructor, and would be supported by the information base maintained by IOTIC (Item 3.3). They would be developed or sponsored by international agencies and focused on individual topics, e.g., hazard assessment or structural mitigation, or, at a larger scale, they could cover the full risk assessment or mitigation procedures. Another style of module might deal with the procedure for negotiation with local or national authorities regarding the practical implementation of risk assessment and reduction requirements, or with the development of functional capacity in local and national government so as to enable the effective implementation of risk reduction at the technical level.

Training modules have been developed for UNESCO, particularly in the field of education. They are self-contained and readily exportable, and they have a standard structure – Title; Introduction; Objective; Module content; Methodology. Initially the modules would cover the assessment and management of tsunami risk, but this approach would be similarly suited to the coastal inundation hazards presented by storm surge events and, over the longer term, by sea-level rise. Training modules could be supplied as integrated chains of learning in a hierarchy by topic and by depth. The Task Team would have the responsibility for establishing and maintaining links with individual universities or groups of universities within the region, or otherwise with interests in the region, introducing training modules into existing or new teaching courses or programmes. Possibilities for trainees from groups of countries working together could be considered.

3.5 Using a training “champion”: The employment of a specialist consultant or “champion” by an individual Member State is a training and implementation model that has been successfully applied recently in Oman, building technical capacity and leading to the launch of a national multi-hazard early warning system. Such an approach requires considerable financial support at the national level and may not be widely applicable within the region. However, the experience gained by such Member States has the potential for relay to other countries under the facilitation of the ICG/IOTWS Working Group 1.

3.6 Incorporating a “self-learning” or an “e-learning” approach: The employment of “self-learning” or “e-learning” approaches could be considered. A self-paced, “self-learning” approach could be a way to facilitate the take-up of the training material by either professionals or trainers appointed by government agencies in Member States. Training modules, including multiple-choice questionnaires, would be developed and offered to such professionals or trainers. Ideally, such a self-paced approach would include a registration process so that UNESCO-IOC could monitor persons who have taken the courses. The elaboration of modules and their corresponding
multiple-choice questionnaires would be conducted under the notion of a project which could be funded by a regional or an international organization. The role of the ICG would be to promote the use of such a training opportunity by governments and institutions involved in disaster risk reduction, preparedness and response, as well as urban planners and other stakeholders. A certificate could be offered to those registered professionals or trainers who complete the training modules and are able to attain a minimum score in the multiple-choice questionnaires (see Item 5).

A registered “e-learning” approach could be conducted for Indian Ocean countries using the IOTIC web as the anchor, with the support of “on-line” trainers who could guide students over the period of several months, overseeing assignments and providing an approach more tailored than the “self-learning” model described above. Such on-line courses could be offered every two or three years on a virtual basis. In this case similarly, the roles of UNESCO-IOC and of the ICG would be to promote the enrolment of professionals and trainers in such courses as they are offered.

4. Training content

There has been a tendency in previous regional training workshops to be overly detailed or specialised in coverage of the risk assessment and management procedures leaving insufficient opportunity for hands-on exercises and, importantly, for adequate open discussion among trainees and resource persons. In recent training workshops held by UNESCO-IOC and UNDP, there has generally been a good appreciation of the exercises by participants, greatly helping to improve their understanding of the technical aspects of the coursework. An introduction of the delivery of training on a modular basis (Item 3.4) would provide flexibility in terms of content and learning formats including exercises.

For dealing with the tsunami hazard to coastal communities, the revised Guidelines on Tsunami Risk Assessment and Mitigation in Indian Ocean Countries (see Item 1) would provide a logical basis for the modular structure described in Item 3.4 and the content of individual training modules. Modules would be developed around the respective chapters of the revised Guidelines, or topics within chapters, as appropriate. Another possibility would be the linkage of the assessment and the management aspects of key topics such as vulnerability or preparedness. The modular content would reflect the main messages of the revised Guidelines, using the details and contained case studies, tools and methods as appropriate.

The new revised Guidelines should constitute a standard reference resource to explain the procedural framework for risk assessment and management. For regional training, the current training modules and exercises will continue to be useful. In the case of national training courses, the training course materials will need to be adapted to suit the context of the country or there may a need for the translation of course materials. Sometimes the national training may need to be merged with another on-going training activity. A more in-depth analysis (country-by-country) is needed to arrive at what is relevant to each country and how it will be sustained.

The revised Guidelines constitute a major training resource, linked to an extensive archive of key documents and research papers relating to the modules which would be available through IOTIC (Item 3.3) or online. A revised topic-oriented version of the Training Manual used for recent training workshops could provide guidance on the use of practical exercises that would be embedded in the modules. The template could include guidance on the application of the open-
source GIS (Geographical Information System) tool – the “Regional Training Scenario” – which has been successfully employed in support of various training topics at recent workshop events. For countries that have already acquired commercially sourced GIS, the Regional Training Scenario package could be readily reconstructed to suit the required format.

5. Monitoring and certification

ICG/IOTWS Working Group 1 would have the responsibility of monitoring the take-up of training by Member States under the selected new regime, as well as assessing its effectiveness both in the development of national capacities in the relevant skills and in the implementation of those skills in the pursuance of risk reduction. Member States have expressed a demand for certification for their trainees who have participated in training workshops. Certification would apply also to trainees following a modular training path, based on evaluation to determine the level of understanding for individual participants for each module. Such certification would be issued by course supervisors and supported by a supervised report and written agreement with the aim of maintaining the standards and quality of training.

The standard and quality of training can be enhanced by selecting appropriate participants, reviewing the compliance of material delivered in the training course with the Guidelines and training manuals, reviewing the effectiveness of the learning process through pre- and post-testing, and time management. However, it is underlined by the Tsunami Risk Assessment and Mitigation Project Task Team that conducting hazard and vulnerability assessment as well as disaster mitigation is a teamwork activity. The individual skills and abilities cannot be achieved by a 40-hour training workshop alone. Therefore, to avoid malpractice certification should be carefully and strictly provided using this kind of examination.

6. Resources

Potential sources of dedicated funding for these training initiatives need to be identified.