



# Task Team on “Tsunami Preparedness for a Near-Field Tsunami Hazard”

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# History of Formation and ToRs

- UNESCAP Project
- MSZ Hazard Assessment Workshop
- Discussions during 12<sup>th</sup> session in Kish Island, IRAN

The Task Team will work towards enhancing Tsunami preparedness for near-field tsunami hazard including improving end-to-end national warning chains, learning from the recent tsunami events.

1. Assist Member States threatened by near-field tsunami threat to adapt and integrate their national warning chains and SOPs, particularly in relation to community preparedness for self-evacuation.

2. Guide the implementation of Indian Ocean Tsunami Ready recognition programme in the IOTWMS Member States with a near-field tsunami threat.

# Terms-of-Reference

- 1.** Assist Member States threatened by near-field tsunami threat to adapt and integrate their national warning chains and SOPs, particularly in relation to community preparedness for self-evacuation.
- 2.** Guide the implementation of Indian Ocean Tsunami Ready recognition programme in the IOTWMS Member States with a near-field tsunami threat.

The Task Team will work towards enhancing Tsunami preparedness for near-field tsunami hazard including improving end-to-end national warning chains, learning from the recent tsunami events. The Task Team will be composed of representatives from WG-1, WG-2, WG-NWIO, IOTIC, interested Member States and Observers (GDRC, UNESCAP) with a chair and vice-chair to be elected.

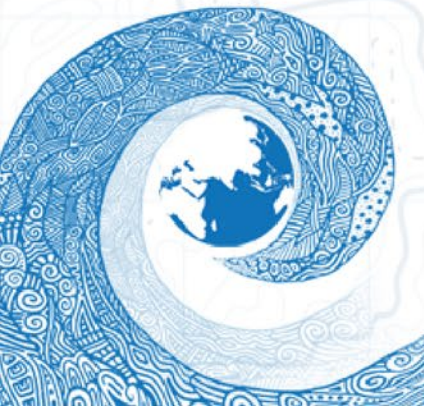


# Members

1. Dr Mahmood Reza Akbarpour Jannat, Iran (Chair)
2. Mrs Weniza, Indonesia (Vice Chair)
3. Ms Sunanda Manneela, India
4. Mr. AlYaqdhan Al-Siyabi, Oman
5. Mr. Ameer Hyder, Pakistan
6. Mr. Tariq Ibrahim, Pakistan
7. Dr Harkunti Rahayu, WG-1 Chair
8. Dr Yuelong Miao, WG-2 Chair
9. Dr Mohammad Mokhtari, WG-NWIO Chair
10. Mr Ardito Kodijat, Head of IOTIC

## Invited Experts:

1. Prof Dilanthi Amaraturunga, GDRC Invited Expert
2. Prof Richard Haigh, GDRC Invited Expert
14. Representative from UNESCAP



# Activities during Intersessional Period

- Virtual Meeting of the Task Team on 23 July 2019
- Jakarta, Indonesia 29 September 2019
- Virtual Meeting 8-9 December 2020
- Virtual Meeting 23-24 November 2021
- Virtual Meeting 22-23 August 2022

One of the immediate priorities for this task team was to come up with a Work Plan:

The opportunities/initiatives for organizing the work of this Task Team:

- A similar Task Team in the Pacific Tsunami Warning System (PTWS) chaired by Dr. Ken Gledhill is working on best practices for addressing local source tsunamis. A draft of the document circulated to all the members. It was valuable for our Task Team to consider the outputs of this PTWS Task Team and it would be good to collaborate in future.
- The UNESCAP project on “Strengthening Tsunami Early Warning in the North West Indian Ocean Region” has been signed. Several activities in the project contribute directly to the work of this Task Team.

# Achievements

- The terms of reference for the task team, which relate to activities of the UNESCAP-funded project on “Strengthening tsunami early warning in the North West Indian Ocean region through regional cooperation” including the NTWC product harmonization, national tsunami boards and warning chains were successfully realized
- We shared the TOWS-WG TTTWO (from PTWS) reference document for best practice for near-field tsunami response
- Member States were encouraged to adapt their own guidelines noting the best strategy is self-evacuation based on natural warning signs
- Official warning systems revised their SOPs to have simple warning chains.
- The accepted best practice is to issue a warning within 5-10 minutes based on the best information available at the time. Error on the side of caution (i.e. plus 0.3 magnitude) noting that the magnitude can increase in the first 30 minutes.
- Public education programs based on natural warnings such as **long and strong get gone**

# Noted Warnings by Task Team

## ➤ Warning Types

- **Natural Warnings:** Strong and/or long shaking, unusual sea observations (receding sea level like a fast tides) or sounds (loud aircraft-like roaring) indicate immediate self-evacuation is required. These can also include animal behavior, such as animals running away from the ocean.
- **Official Warnings:** These are the warnings issued by the National Authority of Member States. Tsunami Service Providers (TSPs such as the Pacific Tsunami Warning Centre, PTWC) issue advisory messages to assist the NTWC to respond to events, but it is the designated NTWC which is responsible for issuing official warns.
- **Unofficial warnings:** Unofficial warnings come from the community, friends and family. They may be relaying official warning or natural warning sign observations. Social media is now a strong source of unofficial warnings.

# Challenges

- Inclusion of complex sources (non-tectonic) such as submarine/coastal landslides and volcanies in the tsunami warnings
- Improvement of warning services at NTWC level to provide warnings within stipulated time (5-10 min)
- Improving SOPs at every level in the Warning chain to assure timely warnings and rapid response with due emphasis on self-protection for near source events
- **Scope of Member States** in the NWIO region to Include a disclaimer in near-field tsunami warnings to state that if there is no effect from the primary earthquake, a tsunami generated by secondary sources (such as submarine landslides) may still be possible
- Recommendation of preferred communication channels
- Role of TSPs in the absence of data for characterization of local sources

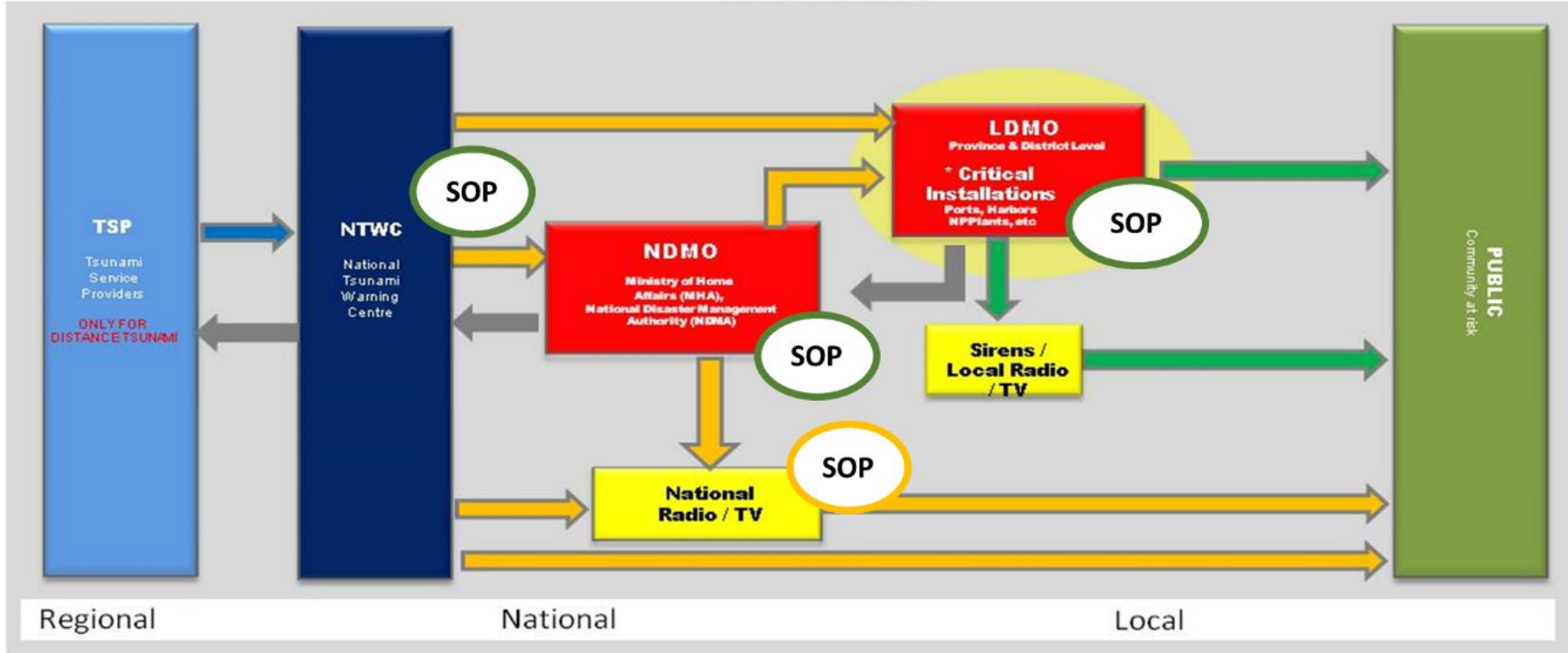


# Tsunami Warning Chain

10Min

20 Min

Timeline (Minutes after EQ)



\* Critical Installations evacuation call only at Institution level

# Recommendations

- **Self-evacuation** is the key to surviving local tsunamis, where we are left with very short times to respond
  - People must be made aware of natural warning signs so that they can self evacuate
  - Robust SOPs with clear instructions on when to evacuate, and where to and when it is safe to return
  - Evacuation maps showing safe and effective routes and clear signage are essential at hazard zones
  - Improving Knowledge on past events which are powerful lessons
- **Public Awareness and Preparedness**
  - Have effective, comprehensive and continuing public education programmes
  - Regular Exercises
  - Undertake debriefings and post-event public response analysis

# Recommendations

## ➤ Simple Warning Chains and Warnings

- Official warning systems must have simple warning chains
- Official warnings should be designed to reinforce natural warnings and strengthen self-evacuation. It is very important that official warning do not slow down natural self-evacuation. Research shows that people are more likely to act upon information if it comes from multiple sources.
- Target releasing warning quickly (target within 10 minutes). Best practice is to issue warnings within 5 to 10 minutes for a local-source tsunami, based on the best information available at the time.
- First warning to be conservative considering the error bar. Sometimes it may be the only warning public may receive due to communication and power outages later
- Regular warning updates to convey new information
- All Clear / No Threat : Because warnings need to be early and conservative, the chance of false alarms are high. Having procedures to quickly step back from the warning state are important but doing so too early has caused issues in the past.
- People must know not to wait for official warning before evacuation

# Recommendations to Member-states

- Ensuring participation of high-level representatives at regional meetings to discuss and reflect on national strategies for TEW, Warning chain and Community Preparedness in the context of near-field tsunamis
- Set-up National Working Groups (if not yet) to discuss and revise national strategies for TEW, Warning chains and Capacity building
- Adapt related SOPS with end-to-end perspective including specific arrangements and SOPs for Media publication
- Assign members from National Working Group to assist regional SOP workshop and assure feedback into the national SOPs
- Establish working relations with relevant public media regarding tsunami warning dissemination and promote participation of selected representatives in the regional media workshops
- Organize working process between National Working Groups and Media representatives, to agree on roles & responsibilities, arrangements and procedures for warning dissemination by the media on high priority basis
- Provision of necessary human and financial resources to run the agreed arrangements and procedures

# Recommendations to ICG/IOTWMS

- **Recommendations to ICG to address gaps and challenges and overall future work programme:**
  - Task Team to continue its important work in next inter-sessional period to help improving warning chains and increase the number of “Tsunami-Ready” Communities in the Indian Ocean
  - Terms-of-Reference need to be revised based on the achievements made so far
  - Guidance on How to account for Natural, official and unofficial warnings in the warning chain
  - Education and Awareness on non-tectonic sources of tsunamis and review SOPs to include such sources
  - Regular Workshops involving Media and DMOs to improve their SOPs
  - Regular end-to-end Exercises to evaluate the revised SOPs
  - Membership to be expanded wherever possible.

# Way Forward

- A mechanism for steering and coordination for TEWS at national level in each country considering integration into a multi-hazard approach
- The design of a warning chain for near-field tsunami threat to include complex sources
- Testing of revised SOPs along with the flow of warning chain
- Policies and SOPs for Public Media and Warning dissemination
- Agreements with Media on SOP for tsunami early warnings in each member-state
- Documentation of revised warning chains and SOPs for near-field prone member-states

**THANK YOU**

