

ICG/PTWS Working Group 3 on Disaster Risk Management and Preparedness

Report to the ICG/PTWS-XXX

September 2023

Working Group on Disaster Risk Management and Preparedness

1. Facilitate in collaboration with TOWS Task Team on Disaster Management and Preparedness and organizations such as UNISDR, the exchange of experiences and information on risk reduction and preparedness actions, and matters related to disaster management.
2. Promote preparedness in coastal communities through education and awareness products and campaigns.
3. Facilitate SOP training across regions to strengthen emergency response capabilities of Member States and their Disaster Management Offices.
4. Facilitate and monitor Tsunami Ready campaigns and outcomes, and report results to the ICG/PTWS and the TOWS-WG.
5. Develop and promote best practice preparedness material, programs and assessment tools.
6. Develop and Promote tsunami risk reduction theory and practice
7. Support the ITIC of the ICG

ACTIVITIES

1. **Facilitate in collaboration with TOWS Task Team on Disaster Management and Preparedness (TTDMP) and organizations such as UNDRR, the exchange of experiences and information on risk reduction and preparedness actions, and matters related to disaster management**

TOWS TT-DMP

The Working Group continued to play an active role in the TOWS TT-DMP, with the Director of ITIC bringing an on-going prominent contribution.

At the TOWS-WG-XVI meeting on 2-3 March 2023, the Working Group welcomed Recommendation ICG/PTWS-XXIX.4 Disaster Risk Management and Preparedness request from the PTWS to *explore, in cooperation with the TOWS Task Team on*

Disaster Management and Preparedness, ways to recognize communities that choose not to implement the UNESCO/IOC Tsunami Ready programme, as compliant with the Tsunami Ready indicators. The TOWS-WG also welcomed contributions from the Tsunami Ready Coalition, whose Terms of Reference include the advising to the TT-DMP on implementation including measures related to:

- (i) flexibility with regards to accomplishing the indicators to allow for circumstances where formal bureaucratic frameworks/requirements may pose barriers,
- (ii) consideration of unique regional and/or local circumstances,
- (iii) recognition of similar standards already in place in some countries.

The TOWS WG accepted the report of the TT-DMP, which will continue through the next TOWG WG in 2024. The TT-DMP tasks include:

- Prepare a guideline for mainstreaming tsunami disaster risk reduction for coastal urban development planning;
- Prepare a guideline for critical infrastructure from impacts e.g., AirportGetReady to Tsunami;
- Update the Tsunami Hotel Guide developed by NEAMTWS in 2012 to include the ITIC materials and other recent documents, and translate in other languages, including other lessons learned;

Supporting the UN Ocean Decade

The implementation of the UNESCO/IOC Tsunami Ready Recognition Programme remains a key contribution to achieve the societal outcome 'A Safe Ocean' of the UN Ocean Decade. The Working Group continued to participate in the development of the IOC Tsunami Ready Guideline to promote international consistency in the application of Tsunami Ready. The IOC Guideline (MG 74) was published in April 2022 and is now under implementation in all four ocean basins.

In June 2021 the Thirty-first Session of the IOC Assembly, approved the establishment of a Scientific Committee in support of the Ocean Decade Tsunami Programme. This Committee has since presented a Draft Ocean Decade Tsunami Programme Research and Development Plan to IOC-UNESCO ICGs for review. The Working Group is represented in the Scientific Committee.

In June 2022 the IOC Executive Council at its 55th session approved the establishment of the UNESCO/IOC Tsunami Ready Recognition Programme (TRRP) and a Tsunami Ready Coalition, which aims to raise the profile of TRRP in collaboration with critical stakeholders across the UN system, interested regional organizations, national disaster management agencies, and the public. The Director of ITIC was appointed Chairperson of the Tsunami Ready Coalition in February 2023.

She will serve for a two-year period 2023 -2024, and her mandate includes proposing a governing structure to the TOWS-WG and being responsible for reporting activities and progress made in the TRRP to the TOWS-WG.

Supporting other bodies

The Working Group, through the Director of ITIC, continued to participate in the IUGG Joint Tsunami Commission (JTC). She chairs the JTC Working Group on Science-based Tsunami Warning, and a member of the WG on Tsunami Terminology which contributed to the Tsunami Glossary 2019 updates.

The Working Group, through the ITIC, also works with the WDS/Marine Geology and Geophysics (MGG), which is hosted by the NOAA National Centers for Environmental Information (NCEI), to produce global and regional hazard maps to support hazard assessments, awareness and preparedness. These include the Global Tsunami Sources, BC 1610-AD 2023; Significant Earthquakes, 2150 BC to AD 2022; Significant Volcanic Eruptions 4360 BC to AD 2022; and Tsunami Historical Tsunami Effects regional maps for Caribbean, Central America, Mexico, and Adjacent Regions 1530 to 2023; American Samoa / Samoa / Tonga 1837 to 2023; Papua New Guinea and Solomon Islands 1768 to 2018, New Hebrides Trench 1849 to 2019, and Hawaii 1812-2022.

2. Promoting preparedness in coastal communities through education and awareness products and campaigns

World Tsunami Awareness Day

In 2022, the United Nations Office for Disaster Risk Reduction (UNDRR) positioned the day as an opportunity to advocate for reducing tsunami risk globally in the context of the “Safe Ocean” outcome of the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) and Target G of the Sendai Framework: *Substantially increasing the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.*

PTWS contributions to WTAD include numerous national activities, including UNDRR - UNESCO IOC video on the Tsunami in Tonga, and SPC DRR Senior Advisor participation to the global Early Warning Early Action Before Every Tsunami Webinar on 4 November 2022 in Bangkok.

Previous UNDRR-UNESCO IOC WTAD short videos on joining the Global Tsunami Ready Community in the Pacific have been featured: Tonga (2022), New Zealand and Solomon Islands (2021), Costa Rica, New Zealand, Fiji, Philippines, Samoa, Tonga, Hawaii, and Vanuatu (2020). In 2021, the ITIC organized Tsunami Ready

'shout-outs' (Be Aware, Be Prepared, Be Tsunami Ready) by PTWS countries in the Western Pacific, Pacific Islands, and Eastern Pacific.

For the 2023 campaign, the theme will focus on fighting inequality for a resilient future.

Exercises – PacWave22

The PTWS designed and carried out a tenth Exercise Pacific Wave in the months of September through to November 2022 to support International Disaster Risk Reduction Day (31 October) and World Tsunami Awareness Day (5 November).

PacWave22 was conducted with the same objectives as PacWave20 as agreed by the ICG. These are:

- a) Test communications from the PTWS Tsunami Service Providers (TSP) to the Tsunami Warning Focal Points (TWFP) and National Tsunami Warning Centres (NTWC) of the Member States concerned.
- b) Test national communication and cooperation, and readiness within each of the participating countries.
- c) Test regional communication and cooperation between Member States of the tsunami warning system.
- d) Support the development of tsunami procedures and products by the Central America Tsunami Advisory Centre (CATAC), a potential new Tsunami Service Provider (pending endorsement of full functionality by IOC governing bodies)

At ICG/PTWS-XXIX the ICG further decided that PacWave22 was to be conducted as a series of regional exercises organized through the PTWS regional Working Groups where applicable. Regional exercises were conducted by the Southeast Pacific Working Group and the Pacific Island Countries and Territories Working Group. The latter used the 2022 Hunga Tonga – Hunga Ha'apai Tsunami with live information sharing through Whats App, dedicated email listserv, and HF Radio.

The PTWS Task Team on PacWave22 will report on the outcomes and will also propose Terms of Reference for PacWave24.

Awareness Products

The ITIC continued to update its global and regional awareness products, and to create new ones, many in collaboration with the WDS / NOAA NCEI (see above). These will be reported in detail in the ITIC Report (Agenda 8). The materials can be viewed and downloaded from

http://itic.ioc-unesco.org/index.php?option=com_content&view=category&layout=blog&id=1075&Itemid=1075

Updates to 2022 were done for the Global Tsunami Sources, Significant Earthquakes, and Volcanic Eruptions, and the American Samoa/Samoa/Tonga regional poster. Printed copies of some maps are available on request to all Member States.

The Working Group have identified that undertaking further identification of existing awareness products would be beneficial. In particular, it would be of value for IOC to provide a tabled list of videos in the UNDRR IOC video repository by name, country, description and URL.

3. Facilitate SOP training across regions to strengthen emergency response capabilities of Member States and their Disaster Management Offices

Training

ITIC did not conduct any in-person trainings due to the COVID pandemic from March 2020 to October 2022. From November to February 2023, it conducted the following in-person trainings:

- Tsunami Ready Implementation training, Micronesia (Chuuk, Pohnpei), November 2022
- Cook Islands Review and Update of TWC and TER SOPs, January 2023
- PICT Regional Training on Tsunami Ready I, January 2023
- Fiji Tsunami Ready Implementation and Stakeholder Training Workshops, February 2023, September 2023 (planned)
- Tsunami Ready Implementation training, Marshall Islands (Majuro), May, August 2023
- Tsunami Ready Implementation training, Micronesia (Yap), July 2023
- Tsunami Ready Implementation training, Palau, July 202, September 2023 (planned)
- Vanuatu TWC and TER SOP Update, April 2023
- ITIC Training Programme – Hawaii training on Tsunami Early Warning Systems – August 2023

Planned

- Tsunami Ready Implementation training for Kiribati, Samoa, Solomon Islands, Vanuatu

ITIC is supporting the IOC Ocean Teacher Global Academy (OTGA) as a designated Specialized Training Center for Tsunamis. ITIC and the Indian Tsunami Information Centre are working together to support Tsunami Ready training for the topics of:

- Tsunami Awareness (2023 Q4)
- Tsunami Ready (2023 Q4)

- Tsunami Early Warning Systems (2024)
- TEMPP (2024 - 2025)
- Tsunami TWC and TER SOPs (2024)
- NTWC Competencies (2024-25)

ITIC videos to support trainings are available on the following topics:

- PTWC Enhanced Products and Staging – Pacific and Caribbean
- TWC Operations - what happens in a TWC during an event

Evacuation Planning

To support and upscale Tsunami Ready globally, the ITIC (OTGA Specialized Training Centre) is developing standard training courses that can be delivered online or in hybrid formats (see above).

4. Facilitate and monitor Tsunami Ready campaigns and outcomes, and report results to the ICG/PTWS and the TOWS-WG.

The Working Group, through the lead of ITIC, continues to promote the implementation and outcomes of Tsunami Ready, and reporting the results to the ICG/PTWS and the TOWS-WG. Member States of the ICG/PTWS were invited to support the implementation of the TsunamiReady Recognition Programme via IOC Circular Letter No 2896 in July 2022.

ITIC and IOTIC conducted a 3-day Regional Tsunami Ready Training based on OTGA Material for Pacific Island Countries and Territories (PICT) 30 January to 1 February 2023, bringing together 11 countries and participants from disaster management offices, tsunami warning centers, and geological services.

The ITIC currently hosts the UNESCO IOC Tsunami Ready web site, www.tsunamiready.org. It includes a summary of the guidelines and application process, and information on recognized communities around the world. Through an external contract, the IOC with each ICG Tsunami Information Center, developed an interactive Tsunami Ready Communities map viewer that enables users to mouse-over to obtain metadata on communities.

Tsunami Ready Status

The following is a summary of the current status with regards to Tsunami Ready as of February 2023, as known by Working Group 3. 10 communities in 4 countries (Honduras; El Salvador, Costa Rica, and Samoa) have official recognition under the pilot program. One further community has a confirmed plan to become recognized (Panama) and there is progress in the implementation in 14 communities from 6

countries (Ecuador, Costa Rica, Marshall Islands, Federated States of Micronesia). Recognition is expected to be completed in the latter 14 communities in 2023 or early 2024.

5 further member states have expressed interest to implement Tsunami Ready: Vanuatu, Solomon Islands, Tonga, Samoa, and France (French Polynesia and Caledonia). Most countries have already achieved some of the TR indicators.

Country	TR Completed	TR Underway / Planned	Interest/ TR Planned Later
Costa Rica	10: Ostional, 2017 (expired); El Coco 2019; Samara, 2021; Tamarindo, 2021; Quepos Municipality (2022); Uvita; Playa Hermosa (2022), Tivives (2022), Puerto Jimenez (2022), and Dominical, Dominicalito and Baru		42 other communities
Ecuador		Cristobal, Galapagos Puerto Ayora, Puerto Baquerizo Moreno, Puerto Villamil	
El Salvador	2: La Libertad, Tamanique, 2019		Isla Mendez
Federated States of Micronesia		Chuuk, Pohnpei, Yap	
Fiji		2: Ono-i-Lau, Yasawa-i-rara	National workshop planned 2022
Guatemala	2: Sipacate, San Jose Port, 2020		
Honduras	3: Cedeno, 2017 (expired); Omoa; Tornabe/Tela, 2019		
Marshall Islands		Majuro	
Nicaragua	2: Corn Islands; Bluefields, 2019 (Caribbean coast)	4: Corinto, Puerto Sandino, Masachapa, San Juan del Sur	Las Salinas Grandes y Poneley
Palau			
Panama		1: Puerto Armuelles	
Philippines			Unspecified # piloted
Samoa	1: Savaia Lefaga, 2017		
Solomon Islands		7: Babanga, Tambaka, Goldie, Nusa Simbo, Lengana, Banga, Titiana	
Tonga		2: Tongatapu, Moungaone	
Vanuatu		4: Mele, Pango, Lakatoro, Lenakel	

Vietnam		2: Danang; Quang Nam Provinces	
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Mechanisms for Tsunami Ready participation

The ICG/PTWS-XXIX (December 2021) **noted** that some Member States already have similar tsunami hazard mitigation programmes in place, and **encouraged** Member States that apply other programmes, to confirm alignment with the twelve UNESCO IOC Tsunami Ready Indicators in relevant communities and report outcomes;”

New Zealand has begun preliminary work considering how existing national program requirements might be ‘cross-credited’ with the Tsunami Ready indicators. Establishing such a framework nationally would mean that communities can submit the same documentation created to meet national requirements, for consideration of Tsunami Ready recognition with minimal administrative burden. This would also enable capturing the status of ‘tsunami readiness’ even where communities do not decide to apply for formal recognition.

This was discussed in agenda items 13 and 14 of the PTWS-SC meeting, regarding Tsunami Ready implementation.

The Working Group will continue to work with TOWS TT-DMP3 to “propose mechanisms by which National tsunami preparedness and readiness programmes and initiatives will be able to fully participate and contribute to the UN Ocean Decade Tsunami Programme’s UN Ocean Decade Tsunami Programme’s “prepared for and resilient to Tsunamis” goal”.

ICG/PTWS-XXX Agenda Item 4.2 will discuss the UNESCO / IOC Tsunami Ready Recognition Programme. A Working Group Three Information Document has been prepared to guide discussion on Tsunami Ready implementation in countries that have existing Tsunami DRR Programme, and specifically recognising that not all communities will volunteer to undergo the recognition process. Working Group Three proposes an approach that seeks to enable reporting for tsunami preparedness in a manner compatible with the Tsunami Ready Recognition Programme, using existing national administrative frameworks and reporting requirements, and without requiring formal recognition.

Governance of Tsunami Ready in the PTWS

Within the ICG/PTWS, monitoring and implementation of Tsunami ready is integrated into a number of Working Groups and Task Teams. At the meeting of the Steering Committee of the PTWS in March 2023, it was discussed (agenda item 13) how this differed from other ICGs, which have dedicated task tasks or working groups.

ICG/PTWS-XXX Agenda Item 4.2 will discuss the UNESCO / IOC Tsunami Ready Recognition Programme. A Working Group Three Information Document has been prepared to guide discussion on appropriate governance mechanisms for the support of Tsunami Ready in the PTWS. Working Group Three proposes that the creation of a Task Team Tsunami Ready would be the most effective structure to centralise and coordinate governance, and focus on implementation of Tsunami Ready.

5. Develop and promote best practice preparedness material, programs and assessment tools

Hunga Tonga – Hunga Ha’apai Interim Procedures

Working Group members provided DMO representation on Task Team on Hunga-Tonga Hunga-Ha’apai (HTHH) Volcano Tsunami Hazard Response to facilitate the implementation of the PTWS Hunga Tonga - Hunga Ha’apai Volcanic Tsunami Hazard Response (PTWS Interim Procedures Plan). This was made effective on March 15 2022.

The interim procedures were tested as part of a regionally coordinated exercise by WG-PICT during PacWave22, with planning support from ITIC and members of the Working Group.

TsuCAT

The Tsunami Coastal Assessment Tool (TsuCAT, version 4.3.3, 2023, ITIC, NOAA PMEL) is a tool for quick hazard assessment using pre-calculated scenarios for Tsunami Response Planning, and Exercise Development and includes a tool to generate the PTWC message products that can be used for national tsunami exercises. The tool was introduced in 2017 and the current version, v4.3.3, was made available in September 2023; this version introduces stronger security, adds password protection for the PTWC Enhanced Graphical Products (which are not shared publicly), adds Expert Meeting Sources. The major addition is the addition of options to include customized situational community exercise injects based on the PTWC messages.

Structural Design and Vertical Evacuation Guidance

An ITIC compilation of global best practices in tsunami resistant building design and vertical evacuation guidance remains available here:

http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=2070&Itemid=2927

This includes both Phase One and Phase Two of New Zealand guidance for consideration of tsunami vertical evacuation. Phase One guidance includes regional DMO considerations such as understanding the hazard, assessing the risk and evaluating different risk management measures and was published in 2021. Phase

Two guidance contains technical information intended to inform the design, construction and operation of vertical evacuation structures, and is primarily based on the ASCE/SEI 7, 2016 standard.

Phase One: <https://www.civildefence.govt.nz/cdem-sector/guidelines/assessment-and-planning-for-tsunami-vertical-evacuation/>

Phase Two: <https://www.building.govt.nz/building-code-compliance/specific-buildings/designing-vertical-evacuation-structures-for-tsunami-loads/>

Marine Ports Guidance

In 2022, the U.S. compiled tsunami maritime guidance and practices for hazard planning and preparedness for Maritime Communities (harbors, ports, and other areas that are economically and socially linked to marine waterways). The Guidance website covers life-safety and damage-reduction mitigation measures that Maritime Communities can implement before, during, and after tsunami to reduce risk, improve resilience, and facilitate recovery.

<https://calema.maps.arcgis.com/apps/MapSeries/index.html?appid=baea43e6453b49ff9ae3f967eb6935be>

6. Promote tsunami risk reduction theory and practice

Sendai Framework MidTerm Review

The Working Group notes that a MidTerm Review of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 has taken place. In examining progress made and challenges experienced since 2015 in realizing the expected outcome - the substantial reduction of disaster risk and losses - and goal - prevent new and reduce existing disaster risk, the midterm review explores efforts to integrate risk reduction into decision-making, investment and behaviour that spanned sectors, disciplines, geographies and scales so as to prompt re-examination and redress of the relationship with risk. A report containing a summary of the findings and recommendations of the midterm review was published by the UN General Assembly in January 2023.

<https://sendaiframework-mtr.undrr.org/publication/main-findings-and-recommendations-midterm-review-implementation-sendai-framework>

The report recommends accelerated effort to achieve the goals of the framework across four priorities by 2030, many of which reflect the activities of the ICG/PTWS. These four priorities are:

1. Understanding Disaster Risk

2. Strengthening Disaster Risk Governance to manage disaster risk
3. Investing in Disaster Risk Reduction for Resilience
4. Enhancing disaster preparedness for effective response and to “build back better” in recovery, reconstruction and rehabilitation.

Three of the recommendations pertain to early warning systems:

- “Member States must continue to mobilize resources, technology and capacity to implement and extend the reach of multi-hazard early warning systems, developing guiding strategies and governance arrangements across all four phases of multi-hazard early warning systems implementation: risk knowledge, monitoring and forecasting, dissemination and communication and preparedness and response capability.”
- “Closer work with communities and across national boundaries is required to develop multi-hazard early warning systems that are integrated with both local, traditional and Indigenous knowledge and regional data on disaster risks integrating and investing in perspectives of women-led organizations, persons with disabilities and local, traditional and Indigenous knowledge holders.”
- “Member States should develop governance arrangements and methodologies that enable: the integration of vulnerability data into multi-hazard early warning systems, including information on human health, ecosystem health and gender; data sharing; and the coherent use of existing data at the national level. Linking multi-hazard early warning systems to social protection can support countries in addressing vulnerability to natural hazard and climate change impacts.”

Risk Assessment Guidance

In 2022 UNDRR published “Technical guidance on comprehensive risk assessment and planning in the context of climate change”. This guidance is intended to offer a framework on how to apply comprehensive risk assessment and planning, in the context of increasingly complex and cascading risks due to climate change. A comprehensive approach takes into consideration a number of factors to purposively strengthen synergies between disaster risk reduction and climate change adaptation, by identifying mutually beneficial opportunities.

<https://www.undrr.org/publication/technical-guidance-comprehensive-risk-assessment-and-planning-context-climate-change>

New Zealand has published an updated risk assessment guideline for use by regional Civil Defence Emergency Management Groups in support of risk reduction, readiness, and response planning. This guideline provides clear methodology to a detailed granular assessment of risk, agnostic of hazard, with clearer identification of specific consequences on particular aspects (e.g., education or healthcare infrastructure). This encourages treatment of risk across multiple hazards, including tsunamis.

<https://www.civildefence.govt.nz/cdem-sector/guidelines/risk-assessment-guidance-for-cdem-group-planning/>

Recommendations

It is recommended that the ICG/PTWS-XXX:

Notes the report of Working Group 3 (Disaster Management & Preparedness);

Notes the publication of IOC MG 74 Standard Guidelines for the Tsunami Ready Recognition Programme to support implementation of Tsunami Ready;

Notes the appointment of the Director of ITIC as the Chairperson of the Tsunami Ready Coalition in February 2023;

Notes the publication of the report of the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015 -2030;

Encourages Member States to continue share outcomes and progression towards the 100% 'Tsunami Ready' goal with Working Group 3, including communities that are already considered compliant through national standards

Mandates the International Tsunami Information Centre (ITIC) to continue to facilitate implementation and data collation re Tsunami Ready compliance in the PTWS;

Considers the most appropriate mechanism of governance in the ICG/PTWS for Tsunami Ready under Agenda Point 4.2

Considers the proposed approach to recognition of the tsunami readiness of communities not implementing the Tsunami Ready Recognition Programme under Agenda Point 4.2