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

**Report to the ICG/PTWS Steering Committee**

**March 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 2022; 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 2018; Tonga Trench 1837 to 2022; Papua New Guinea and Solomon Islands  1768 to 2018, and New Hebrides Trench 1849 to 2019.

**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.

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. 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 Stakeholder Training Workshop, February 2023

Planned trainings for 2023 are:

* Tsunami Ready Implementation training, Micronesia (Yap), Marshall Islands (Majuro), Palau, Fiji
* Vanuatu TWC and TER SOP Update, April 2023
* PICT Regional Training on Tsunami Ready II (or TEMPP trainings) – tentative
* National Tsunami Ready Stakeholder Training Workshops (PICT, upon request)

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 Q2)
* Tsunami Ready (2023 Q3)
* Tsunami Early Warning Systems (2023)
* TEMPP (2023 - 2024)
* 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

•      TWC Operations - what happens in a TWC during an event

**Evacuation Planning**

To support and upscale Tsunami Ready globally, the ITIC and Indonesia BMKG (OTGA Specialized Training Centres) are 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 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 centres, 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, is developing an interactive map that will enable users to mouse-over to obtain metadata on Tsunami Ready communities.

**Tsunami Ready Status**

The following is a summary of the current status with regards to Tsunami Ready as of February 2023. 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 | 6: Ostional, 2017; ElCoco 2019; Samara,2021; Tamarindo, 2021; Quepos; Uvita | 5: Hermosa (Carillo), Puerto Jimenez, Tivives, Dominical, Cahuita | 42 other communities |
| Ecuador |  | Cristobal, GalapagosPuerto 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 workshopplanned 2022 |
| Guatemala | 2: Sipacate, San Jose Port, 2020 |  |  |
| Honduras | 3: Cedeno, 2017; 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 SalinasGrandes y Poneloy |
| 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 |  |

**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 indictors. 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 will be discussed further 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”.

**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**

TsuCAT (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. The tool was introduced in 2017 and the current version, v4.3, was made available in Quarter 1 of 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 community tsunami exercise injects that are 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>

**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 tsunami.

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