

MEETING OF THE INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
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TASK TEAM MEETING

1. OPENING AND MEETING ORGANIZATION

The Chairperson Mr David Coetzee welcomed all members and participants to the TOWS -14 Task Team on Disaster Management and Preparedness (TT DMP). Mr Denis Chang Seng, IOC Programme Specialist and Technical Secretary, provided brief information and virtual meeting logistics.

2. REFLECTION ON TT REPORT TO TOWS WG XII (2020)

The Chairperson introduced the provisional Agenda. The Group adopted the Provisional Agenda with no change. The meeting reflected on the recommendations of the Task Team to TOWS WG XII. The Chairperson noted the meeting agenda reflected the recommendations from last year, which would be further discussed throughout the two days sessional meetings.

3. REVISIT TT DMP RECOMMENDATIONS TO TOWS-WG IN 2020

3.1 Wave exercises

The Chairperson noted that the TT DMP in 2020 recommended increased coordination between ICGs (in particular the Pacific and Indian Ocean regions) for wave exercises. He requested ICGs to report on wave exercises and recommendations concerning exercise coordination.

ICG/CARIBE EWS

CARIBE WAVE 2020 occurred on 19 March 2020 and its execution was scaled back from full-scale to a Communications Test by the Regional Tsunami Service Provider (PTWC). The number of participants in CARIBE WAVE 2020 has reduced from 800,000 in 2019 to 4,622. The significant reduction in number reflects the onset of the pandemic. CARIBE WAVE 2021 is scheduled for 11 March 2021 with two scenarios (Jamaica and Northern Lesser Antilles). From the onset, the pandemic situation was considered. Preparations are on track with registration, webinars and promotion of virtual Table Top exercises, other virtual and COVID safe activities. A special focus are the use of alternate communication systems like WMO/GTS/WIS and GEONETCast Americas and HRIT/EMWIN with the collaboration of WMO and NOAA. Some 33,000 persons have registered so far on tsunamizone.gov and efforts are underway to increase participation through promotion and upcoming webinars.

ICG/IOTWMS

Amidst the COVID-19 situation, Indian Ocean Member States agreed to proceed in conducting IOWave20 exercise. The IOWave20 used three scenarios and conducted exercise on three different days, 6, 13, and 20 October 2020. The IOWave20 Task Team published the exercise manual on 7 May 2020. The IOTIC and the ICG/IOTWMS Secretariat organized a pre-IOWave20 Webinar on Standard Operation Procedures in September. Twenty-three Indian Ocean Member States participated in the IOWave exercise. Five countries participated using the 3 scenarios, 3 countries used 2 scenarios, and the remaining exercise only using 1 scenario that most impacted the country. The exercise varied from Table Top Exercise, Orientation, Functional and 5 countries involved the communities. A post IOWave20 Webinar was held in November 2020 organized by IOTIC and the ICG/IOTWMS secretariat.

ICG/PTWS

A PacWAVE exercise took place in 2020 in the Pacific region. Although it was originally envisioned as a downstream type of exercise, due to Covid 19 it was scaled back to only a communications exercise on the World Tsunami Awareness Day (in November 2020), with

countries choosing to conduct any further exercises at their own discretion. A few regional exercises were also conducted in Central America and South America. Some countries also had Table Top or downstream exercises, but these were optional.

The Pacific ICG and Steering Committee have not been able to meet due to the Covid 19 pandemic (other than to decide to scale back PacWAVE 20 and postpone the ICG); as such, there has not been any discussions about the next PacWAVE, although as it stands it will probably take place in 2022 (following the schedule of every two years).

ICG/NEAMTWS

Countries in the North-eastern Atlantic, Mediterranean and Connected Seas (the NEAM region) will participate in a tsunami test and response exercise from 8 to 10 March 2021. NEAMwave21 will coincide with the 10th commemoration of 11 March 2011 Tohoku Earthquake and Tsunami. NEAMWave 21 will carry out three scenario exercise simulations. Key achievements in preparing for NEAMWave21 is the collaboration between TSPs to prepare two joint scenarios to simplify the exercise and the preparation of online platforms and forms for subscription and exercise evaluation. Member States are being encouraged to extend exercises to community level where appropriate, if national sanitary measures related to Covid-19 pandemic allow.

The Group noted that exercises in the Pacific and in the Indian Ocean should be organized and coordinated in alternate years to avoid overlap. The PTWS organized the PACWave20 in November 2020 and IOTWMS organized the IOWave20 in October.

The Group also noted that there has not been any ICG meetings in the PTWS, IOTWMS and NEAMTWS. The Group noted that the inter ICG Wave Exercise workshop has not yet been organized.

Recommendations to TOWS-WG

Notes that due to the COVID-19 pandemic the WAVE exercises workshop has not yet convened, and that CARIBEWAVE, PACWAVE, IOWAVE, and NEAMWAVE exercises did take place in 2020, and planning for future exercise is pending or underway,

Requests the Secretariat to organize a virtual meeting on WAVE exercises to improve coordination, so as to minimize timing conflicts, share best practices for exercise evaluation and the use of online tools, and

Agrees to share outcomes, lessons learned of regional exercises with relevant ICG Working Groups.

3.2 Tsunami risk management

In the NEAM region, the Joint Research Center (JRC) of the European Commission has implemented Last Mile projects in Kos (Greece) and Bodrum (Turkey) from 2019-2020. The project included the determination of tsunami inundation and development of tsunami evacuation maps; installation of a local earthquake-tsunami monitoring system, awareness and preparations activities (seminars etc.). JRC is now running a second phase of the Last Mile project with similar deliverables in partnership with the Civil Protection Agency and Malta University in Marsaxlokk town, Malta. A tsunami drill was planned as part of NEAMWave21 exercise, however the exercise will be limited to a functional drill because of the ongoing pandemic.

The NEAMTWS Secretariat has recently submitted a project proposal with DG-ECHO. The main objective of the project will be to strengthen the resilience of vulnerable coastal

communities in North East Atlantic, Mediterranean Tsunami Warning System (NEAMTWS) countries to tsunamis and other sea level-related hazards. The project will be implemented through three components: 1) Adapt Global Tsunami Ready Standards and Guidelines and pilot Tsunami Ready within the framework of the NEAMTWS; 2) supply and install tsunami detection and alerting equipment in selected NEAMTWS countries; 3) evaluate the effectiveness, compatibility, performance and benefits of the "Inexpensive Device for Sea Level" (IDSL) network in NEAMTWS countries and secure its sustainability. NEAMTWS countries that are expected to benefit from this project includes Cyprus, Egypt, Greece, Malta, Morocco, Spain, and Turkey. In Greece and Turkey, the project aims to build on the first phase of the Last Mile Project and establish pilot Tsunami Ready communities. A summary of the project will be shared via the Task Team meeting site.

3.3 Performance Indicators

Key Performance Indicators (KPIs) frameworks exist in several ICGs. ICG/NEAMTWS has its own interim KPI for upstream components. It was informally tested /applied for the first time following the recent Samos-Izmir tsunami on 30 October 2020. In IOTWMS, the KPI is based on three key pillars. In the ICG/PTWS region, the KPI includes a fourth pillar related to international cooperation. There is a need to better coordinate this work on KPI in all the ICG regions.

The Group agreed to maintain the international cooperation and development component of the KPI because it integrates and relates with the Sendai Framework for Disaster Risk Reduction. The Group underlined not to drop the international cooperation component because it is also related to the WTAD theme/target this year. The Task Team highlighted that the Inter-ICG KPIs should facilitate Member States to develop their own KPIs.

IOC is working closely with the WMO DRR group/programme regarding the Sendai Framework for Disaster Risk Reduction, in particular in relation to the Multi-Hazard Early Warning Systems. The KPI framework should have a multi-hazard approach.

Recommendations to TOWS-WG

Notes that the PTWS is the only ICG with International Cooperation indicators and the theme of the World Tsunami Awareness Day 2021 will link with the target F of the Sendai Framework for DRR (2015-2030) on International cooperation to developing countries,

Recommends that the CARIBE-EWS, IOTWMS, and NEAMTWS to strongly consider including International Cooperations in their Key Performance Indicators (KPIs),

Recommends that the Task Team on KPIs complete the work on harmonized performance monitoring framework including data collection tools/questionnaire and reporting formats for presentation to the next TOWS meeting,

Requests the Secretariat to arrange a virtual meeting of the Task Team on KPIs in the near future to discuss a work plan.

3.4 Local source tsunami SOPs

The meeting noted the importance of the SOP for local source tsunamis, especially in regards to building preparedness through natural warning signs, as well as taking into consideration

a-typical tsunamis. There are two categories of SOPs: Tsunami Services Providers/ NTWCs and CPA/ DMO and natural warnings. The local source tsunami SOP would also be a good reference for UNESCO-IOC Tsunami Ready. SOP development for a-typical tsunamis is ongoing.

The IOC Tsunami Glossary is being updated to include new information on volcanic and landslides sources.

Recommendations to TOWS-WG

Notes the importance of the SOP for local source tsunamis, especially in regards to building preparedness through natural warning signs, as well as taking into consideration a-typical tsunamis,

Notes that the local source tsunami SOP would also be a good reference for UNESCO-IOC Tsunami Ready,

Notes the IOC Tsunami Glossary is being updated to include new information on volcanic and landslides sources,

Recommends that ICGs / Working Groups to further advance the discussion on local source tsunami SOPs.

3.5 NTWC Competency Framework

OTGA plans to develop courses to support TEMP and Tsunami Ready. This will be further discussed in the agenda item on training.

Recommendations to TOWS-WG

Notes the International Tsunami Information Centre (ITIC) report on the NTWC Competency Framework to the TT-TWO regarding progressing on finalizing the PTWS Framework, and piloting training according to the Framework in Tonga in 2019,

Notes that ITIC and the Indonesia BMKG have been designated as Ocean Teacher Global Academy Specialized Training Centres (OTGA STC) in 2020,

Notes the confirmation by ITIC that it will take the lead to develop such training under the OTGA, in collaboration with the IOC, TICs, practitioner experts, and Indonesia BMKG,

Requests the ITIC to report to the TT on the progress at the next TOWS meeting.

3.6 Tsunami Evacuation Mapping

The Tsunami Evacuation Maps, Plans, and Procedures training is also part of a Specialized Training Centres program under OTGA and will support Tsunami Ready. This was further discussed under the training agenda.

The JRC-Malta Last Mile project has completed tsunami evacuation mapping in Marsaxlokk town. The project outcome will be shared at the next TT DMP meeting.

Recommendations to TOWS-WG

Appreciates the development of exercise guidance by the Caribbean through a draft IOC Manual Guide 86,

Notes that community exercise is a Tsunami Ready indicator,

Encourages the CARIBE-EWS to finalize, publish, and translate the IOC Manual Guide 86 in Spanish and French,

Agrees that the TOWS TT-DMP consider IOC Manual Guide 86 for global applicability.

3.7 Structural Design Guidance

The Group was informed that ITIC has completed an evaluation on structural design guidance since June / July 2020. The document is available on line at:

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

Recommendations to TOWS-WG

Notes with appreciation the completion by ITIC of the compilation of international structural design guidance for buildings used as evacuation shelters, and its sharing through the ITIC web site, per the request of the PTWS and TOWS TT-DMP,

Recommends Member States to use best practices in engineering design and construction of evacuation shelters, especially where local tsunami hazards exist.

3.8 Schools Programmes

IOTIC has posted the list of school disaster risk reduction and preparedness materials of Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES). The list includes approximately 107 references, provides information on existing risk reduction and resilience education materials that is accessible on various websites. The school disaster risk reduction and preparedness materials is based on the 3 pillars of the Comprehensive School Safety Framework. This list was set up in 2019 and is now being updated with new information and materials from 2020 (UNICEF is expected to perform this update).

These school disaster risk reduction and preparedness materials could be used as reference when working with schools under the tsunami ready community programme.

INGV, TSP is carrying out additional risk perception studies in new areas in Italy with the aim to also support school programmes. The Italian Department of Civil Protection has undertaken a national communication campaign 'I don't take risks – Tsunami' since 2013, with the objective of dissemination of risk knowledge and rules of behaviour to adopt before, during and after a tsunami event. The programme also targets schools.

The Chairperson concluded that the meeting considers this particular recommendation as achieved.

Recommendations to TOWS-WG

Notes with appreciation the completion by IOTIC of the compilation of school DRR and preparedness materials,

Recommends its inclusion as a resource by Member States, especially as part of Tsunami Ready pilots that include schools.

3.9 WTAD 2020 and WTAD 2021

UNDRR remarked that the WTAD 2020 activities were interesting and engaging despite the pandemic crisis. The two high level events, in particular the third Tsunami Museum Conference which showcased how museums contribute to keeping the memory of past disasters and lessons learned, through survivor's testimonies were impactful.

UNDRR pointed out the WTAD 2021 theme will relate to Target F of the Sendai Framework for DRR which is to substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030.

UNDRR highlighted the fact that the WTAD planning was progressively being initiated earlier every year. For 2021, they will be leveraging the 10th anniversary of Great Japan on 11 March 2021 through the release of a video message by the UN Secretary-General António Guterres and the UNDRR Special Representative. These features will emphasize the theme of International Cooperation.

The Group noted the growing support and partnership between IOC and UNDRR in connection with the WTAD.

Possible activities envisaged for WTAD 2021 include:

- Showcasing Portugal as the recent TSP,
- More visual materials produced,
- Promote international cooperation to developing countries/ SIDS. Support countries in identifying needs and achieve DRR actions,
- Engage in regional DRR platforms –include tsunami risk / TR in collaboration with UNDRR regional offices and Platform host countries,
- Promote and build partnerships depending on specific ideas/activities–WMO collaboration with the meteorological offices and the opportunity for collaboration with NWS NOAA Weather Ready Nations initiatives,
- Videos –NTWC/TSPs –Warning element showcased,
- Dialogue with development agencies. What can we learn? What makes international cooperation in developing countries successful? What are their perspectives?
- Link the WTAD with Ocean Decade-Safe Societal benefit outcome. Many materials are currently being prepared,
- Request countries for newsworthy activities to be highlighted,
- UNDRR requested the TTDMP to also consider initiatives, which can be promoted on the day itself.
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Recommendations to TOWS-WG

Appreciates the UNDRR IOC World Tsunami Awareness (WTAD) 2020 campaign consisting of high-level events, regional webinars, social media visuals, videos, and eyewitness accounts,

Appreciates the creation of fifteen videos highlighting countries joining the global Tsunami Ready community,

Notes that the 2021 WTAD, November 5, will highlight Target F of the Sendai Framework on international cooperation to developing countries through support to the implementation of their national and local strategies for disaster risk reduction,

Recommends the continued strong collaboration between the IOC and UNDRR for the 2021 WTAD highlighting among other initiatives the UN Decade for Ocean Science for Sustainable Development and the Tsunami Program transformative goals for 100% Global Tsunami Ready for highly vulnerable communities and deployment of Science Monitoring and Reliable Telecommunications (SMART) undersea cables for disaster warning.

3.10 Multi-Annual Community Tsunami Exercise Programme

The CARIBE EWS Draft *Multi-Annual Community Tsunami Exercise Programme* was reviewed and approved by WG 4 and the ICG for publishing as IOC Manual and Guide 86. It is still open for review. The meeting discussed whether it should be published as a CARIBE EWS document or a TT document. This document is particularly focused on community level evacuation, and thus differs from the 2015 Indian Ocean exercise guidelines and the IOC exercise manual which both focus on evacuation guidelines and exercises at the national level.

The Group agreed to circulate the draft of the CARIBE EWS Manual 86 on the TT DMP meeting website.

3.11 Tsunami Glossary

ITIC reported on the receipt of a request from Portugal for the '1755 tsunami in Lisbon', Portugal to be renamed as the 'Northwest Iberian Margin event'.

Recommendations to TOWS-WG

Notes the report from the Director of ITIC about updates to the Glossary that have been identified or requested,

Recommends that the ITIC compiles proposed updates for vetting by the TT-TWO and TT-DMP and approval at the next TOWS meeting in 2022.

3.12 Tsunami Guidance for Maritime and Ports

ITIC reported to have finished the Marine Port Guideline and it is now available on the ITIC website. Concerning the materials available from Japan, a formal request for translation should be requested to have them translated to English.

Recommendations to TOWS-WG

Appreciates the completion by ITIC of the compilation of international guidance for maritime and ports, and its sharing through the ITIC web site:

http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=2071&Itemid=2926), per

request of the PTWS and TOWS TT-DMP,

Notes the pending TOWS WG request to Japan to assist in the translation of Japan's best practices, and

Requests IOC to identify possible funding sources to translate this document to English and other languages,

Requests the IOC to report on the progress at the next TOWS TT-DMP,

Agrees that the TT-DMP considers the development of guidelines at its next meeting

3.13 Indonesia ISO Community Based Early Warning Systems

The meeting was informed that a vote was conducted by the Secretariat involving 48 countries. Twenty-three countries approved Indonesia ISO Community Based Early Warning Systems, two approved with comments, whilst twenty-three countries abstained. A meeting will be convened in June 2021 hosted by Germany.

4. TRAINING

ITIC and IOTIC presented the plan and progress of the training activities and programme under the Ocean Teacher Global Academy. ITIC and BMKG Indonesia have received the status of Specialized Training Centre for Tsunamis. Under the coordination of the Tsunami Unit in UNESCO IOC and in collaboration with the Tsunami Information Centres (CTIC, ITIC, IOTIC, NEAMTIC) the STCs will work on developing 7 planned courses until 2023. The training programmes consist of Tsunami Awareness, Tsunami Ready, Tsunami Early Warning Systems, Tsunami Warning and Emergency Response SOPs, TEMPP, and Tsunami Warning Centre Competencies. These training courses will be developed based on the related IOC Manual Guides and training that have been implemented by the TICs. Some courses have been developed with hybrid delivery in mind.

More information on the IOC's IODE OTGA Project can be found at:

<https://classroom.oceanteacher.org> and through the OTGA brochure and a presentation can be found on the TT-DMP meeting site:

http://www.ioc-tsunami.org/index.php?option=com_oe&task=viewEventDocs&eventID=2894).

The Group noted that adequate resources are critical to training sustainability. Funding has been earmarked from the UNESCO/IOC Regular Budget to support maintenance. OTGA is also funding specific components e.g., consultants to put in a Moodle format and IT support to host the platform. The Meteorology, Climatology and Geophysical Agency (BMKG) is

providing contributions as part of the UNESCO/IOC agreement arrangement and some resources from INDOCAP.

As NOAA continues to support Tsunami Ready in CARIBE and North Pacific, there are opportunities for supporting in-country activities and other upscaling activities, and to further develop online modules e.g. on DEMs and Inundation Modelling. A complete presentation is part of the meeting document.

Recommendations to TOWS-WG

Notes that the ITIC and the Indian Ocean Tsunami Information Centre (IOTIC) presented the plan and progress of the training activities and programme under the Ocean Teacher Global Academy (OTGA), and that ITIC and the Meteorology, Climatology, and Geophysical Agency, Indonesia) (BMKG) have received the status of Specialized Training Centre (STC) for Tsunamis.

Notes that under the coordination of the Tsunami Unit in UNESCO IOC and in collaboration with the Tsunami Information Centres (CTIC, ITIC, IOTIC, NEAMTIC) seven planned courses will be developed until 2023,

Notes that the training programmes consist of Tsunami Awareness, Tsunami Ready, Tsunami Early Warning Systems, Tsunami Warning and Emergency Response SOPs (Standard Operating Procedures) , TEMPP (Tsunami Evacuation Maps, Plans, and Procedures), and Tsunami Warning Centre Competencies. These training courses will be developed based on the related IOC Manual Guides and training that have been implemented by the TICs. Some courses have been developed with hybrid delivery in mind,

Notes the ITIC and Indonesia BMKG as OTGA STC will report on the progress at the next TOWS TT-DMP.

5. TSUNAMI READY PILOT PROGRAMME

The Task Team noted the significant progress achieved by NEAMTIC/ICG/NEAMTWS, CTIC, IOTIC in piloting Tsunami Ready in each basin. There is a strong link observed between Tsunami Ready and WTAD efforts.

NEAM

Mrs Cecelia Valbonesi reported on the development of Tsunami Ready in the NEAM region. Countries involved in exploring the Tsunami Ready initiative are France, Italy, Portugal, Greece and Spain (although there is only documentation for France and Italy). The city of Cannes, France is developing a Tsunami Ready programme in collaboration with a national working group. They have notably established evacuation routes and plans, tsunami signs, signed a tsunami charter in 2019, and are developing tsunami early warning for the population in collaboration with the civil defense. In addition, they are conducting tsunami tests, as well as surveys with the local population and tourists to assess tsunami knowledge. In Italy (Minturo), a Tsunami Ready programme is also being pursued. Several steps have been taken, including testing warning systems, designating and mapping hazard zones, and estimating the amount of people in risk zones. They have achieved several Tsunami Ready indicators, such as number 4, 5, 6, and 12.

In the NEAM region, the administrative challenges related to the national administrative procedures were noted. An IOC Circular Letter was also sent out to encourage countries to initiate Tsunami Ready programme and nominate experts to contribute to TR under Working Group 4 (Education, Awareness and Preparedness).

CARIBE

Mrs Alison Brome reported on the status and progress of the implementation of Tsunami Ready in the CARIBE region. There are currently a total of 14 Tsunami Ready communities in 11 Member States of the CARIBE region, with 4 communities covered by the DIPECHO project which ended in 2020. Some Tsunami Ready areas are territory wide, whilst others are at the level of local communities. There are currently 5 TR communities in progress with NOAA providing support to 3 of these. Additional projects are being conceptualized by NOAA. In addition, 3 communities are in the process of renewals, but these have been slowed down due to the COVID 19 pandemic.

The CARIBE region has also faced several constraints and challenges which have delayed activities. These obstacles include the: multi-hazard impact of COVID-19; the hurricane season; political transitions in the region; a dengue outbreak, as well as volcanic activity. As a result, access to data, technological support, and expertise were limited. Competing priorities of national authorities and limited funding also provided some constraints. These challenges impeded Tsunami Ready roll out and strategies in the Caribbean.

Indian Ocean

Mr Ardito Kodijat reported on Tsunami Ready in the Indian Ocean region. Within the IOTWMS, the IOTIC have been working on Tsunami Ready at the regional level, while the Member States will undertake the implementation at national level. IOTIC does not have any project to support the implementation of Tsunami Ready at the national level as the other TICs. In the past years IOTIC have supported Member States through providing guidelines, advocacy, and training. At the end of 2019, IOTWMS (IOTIC and ICG/IOTWMS secretariat) conducted a review of two communities in Odisha, India on fulfilling the UNESCO-IOC Tsunami Ready indicators. These two communities, Noliasahi and Venkatraipur received UNESCO IOC Tsunami Ready recognition in July 2020. The State of Odisha Disaster Management Agency is committed to implement Tsunami Ready in 328 other villages in Odisha coastline in the next few years. BMKG of Indonesia has committed to implement Tsunami Ready in 5 villages in Indonesia in the next 2 years.

Due to COVID-19, IOTIC organized an online Lecture Series on Tsunami Ready reaching out to more than 2,100 participants. The 6 Lectures introduced the UNESCO-IOC Tsunami Ready Indicators and guide on how to pilot the Tsunami Ready in the community. On the occasion of the World Tsunami Awareness Day, the IOTIC organized a Webinar on Tsunami Ready for Indian Ocean Island States. Output of the webinar is a recommendation for IOTIC to develop a draft proposal to support the implementation of Tsunami Ready in Indian Ocean Island States.

IOTIC will continue to advocate, promote, and support the implementation of Tsunami Ready in Indian Ocean aligned with the societal outcome of the Safe Ocean of the UN Ocean Decade. The IOTIC will support the development of the OTGA Tsunami Ready training module jointly with BMKG and the other Tsunami Information Centres.

Pacific

Mrs Laura Kong reported on the development of Tsunami Ready in the Pacific region. There are currently 4 countries that are recognized as Tsunami Ready (El Salvador, Honduras, Costa Rica and Samoa) with a total of 8 communities. There are several Tsunami Ready activities in progress in Central America (Costa Rica, Guatemala, and Panama), South America (Ecuador and Chile), Pacific islands (Fiji, Solomons, Vanuatu, and Cook Islands), and Southeast Asia (Vietnam). There are also planned Tsunami Ready activities in the Pacific islands (Marshall Islands, Fiji, Micronesia, and Palau) through US funds.

The ITIC is hosting the UNESCO IOC Tsunami Ready web site (www.tsunamiready.org, or http://itic.ioc-unesco.org/index.php?option=com_content&view=category&id=2234&Itemid=2758). A page will be created for each community that is designated as Tsunami Ready. Each page provides a standard set of information, including from the recognition process (certificates and the application), any related media releases, evacuation maps, and awareness materials.

ITIC proposed to add definitions for the next update of Tsunami Glossary (expected in 2022) as follows:

Tsunami Ready

Set of community-level indicators that elaborate a global standard of key actions to minimize the loss of life, livelihoods and property from tsunamis. The indicators cover hazard evaluation, mitigation, preparedness, and response. Being Tsunami Ready does not mean that a community is tsunami proof, but rather it is an acknowledgment and recognition of the measures adopted by the community to cope with their tsunami threat.

Tsunami Ready Programme (UNESCO IOC)

Modelled after the US TsunamiReady® Program, the UNESCO/IOC Tsunami Ready programme is a voluntary, performance-based program to recognize communities that have fulfilled the established Tsunami Ready indicators. This programme promotes an understanding of the concept of readiness as an active collaboration among national and local warning and emergency management agencies and government authorities, scientists, community leaders, residents and non government stakeholders. The Programme was established in the Caribbean in 2015 and expanded globally in 2017.

Tsunami Ready Community (UNESCO IOC)

A community that has met the Tsunami Ready indicators and been recognized by the UNESCO IOC as Tsunami Ready. Tsunami Ready communities are aware of the risks they face from tsunamis and have taken steps to address them.

Recommendations to TOWS-WG

Appreciates the growing interest and excellent progress by Member States in all ICGs in piloting UNESCO IOC Tsunami Ready,

Notes the challenges of upscaling required to achieve 100% Tsunami Ready in highly vulnerable communities as one of the transformative goals of the UN Decade for Ocean Science for Sustainable Development Tsunami Programme,

Notes the progress by Indonesia in their application for ISO (International Organization for Standardization) certification of a Community Based Early Warning System,

Appreciates the continued support from the United States Agency for International Development / Bureau of Humanitarian Assistance) (USAID/BHA) and the European Commission Humanitarian Aid Department's Disaster Preparedness Programme (DIPECHO) and Member States to provide funding support to Tsunami Ready pilots and invites contributions from other agencies,

Recommends the urgent completion of the IOC TS 74 Tsunami Ready Guidelines for widespread distribution to Member States, and

Recommends the IOC to finalize and provide guidance for a Tsunami Ready logo.

6. UN OCEAN DECADE

Mrs Christa von Hillebrandt-Andrade (ITIC/CTWP – CARIBE/EWS), acknowledged the significant advancements in the implementation of Tsunami Ready with pilots in all regions. She noted that the proposed goal of 100% of highly vulnerable communities being Tsunami Ready by 2030 is an audacious and transformative goal in line with the vision of the UN Decade of Ocean Science for Sustainable Development. It will require a step change in the implementation of the program. It is not business as usual, but rather bold and transformative. An ambitious aim is to have 2000 communities recognized as Tsunami Ready communities by 2030, considering that 325 villages are committed to Tsunami Ready in India alone.

Some of the challenges that will need to be addressed include: defining the number of target tsunami ready communities, human resources for administration and facilitation, acquiring data related to coastal bathymetry and topography and tsunami sources for inundation modeling and mapping, implementation at regional, national local levels, guidelines and tools/training for each of the indicators, inclusion of countries that have their own 'tsunami ready' programmes and the need for local/national TR champions and funding.

Opportunities to accelerate the implementation of the program include virtual/blended training like OTGA, regional modeling and training hubs with a special focus on universities and optimization of the regional and national exercises for community exercises.

Other opportunities noted were the synergies with the Sendai Framework (local and national disaster risk reduction strategies) and the WMO efforts in Multi Hazard Warning Systems. It is critical to establish alliances with other stakeholders such as WMO, and those working in community based disaster risk reduction like Red Crescent and Red Cross. This also includes collaborating with NGOs, establishing community champions, creating regional and national bathymetry grids, and online/blended training.

Given the need for a strategy for implementation, it was recommended that a Tsunami Ready Coalition with a broad group of stakeholders be established.

Recommendations to TOWS-WG

Considers the high number of population living along the coastlines that are at risk of tsunamis, the strong interest from Member States across all ICGs in implementing Tsunami Ready, and the opportunity for transformational and bold actions as part of the UN Decade of Ocean Science for Sustainable Development (2021-2030),

Recommends that the TOWS WG proposes a Comprehensive Tsunami Programme under the UN Decade dedicated to achieving the societal outcome of A Safe Ocean with the aim of making 100% of highly vulnerable communities prepared for and resilient to tsunamis by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Programme and other initiatives.

The TTDMP **further recommends** that this Comprehensive Decade Tsunami Programme should focus on inclusiveness and delivery through:

1. The adoption and continued implementation of the UNESCO IOC Tsunami Ready Guidelines and Indicators as the international standard for evidence-based community preparedness for tsunamis,
2. Enhanced access and capacity development for high-resolution near shore bathymetry and topography data and tsunami source identification for accurate and improved inundation modelling and evacuation mapping and planning in support of Tsunami Ready communities,
3. Enhanced integration to minimize tsunami disaster impacts and to enable rapid restoration of socio-economic activities and critical infrastructure services post tsunami impacts,

The establishment of a Tsunami Ready Coalition of stakeholders charged with delivering a strategic plan for consideration at TOWS WG XV to facilitate the implementation of the Comprehensive Decade Tsunami Programme through the UNESCO/IOC Tsunami Ready Programme and other initiatives.

Recommendations to TOWS-WG

Continuation of the TT-DMP for the next intercessional period.

7. CLOSING

The Chairperson Mr David Coetzee closed the TT DMP agenda items. Mr Denis Chang Seng, IOC Technical Secretary thanked the Chairperson for his leadership, and he remarked that the virtual meeting was very efficient and productive. He thanked everyone for their participation and support.

The TOWS -14 TT DMP meeting was closed at 12:00hrs, 23 February 2021.

8. SUMMARY OF RECOMMENDATIONS TO THE TOWS-WG XII

- 8.1 Notes** that due to the COVID-19 pandemic the WAVE exercises workshop has not yet convened, and that CARIBEWAVE, PACWAVE, IOWAVE, and NEAMWAVE exercises did take place in 2020, and planning for future exercise is pending or underway,
- 8.2 Requests** the Secretariat to organize a virtual meeting on WAVE exercises to improve coordination, so as to minimize timing conflicts, share best practices for exercise evaluation and the use of online tools, and
- 8.3 Agrees** to share outcomes, lessons learned of regional exercises with relevant ICG Working Groups,
- 8.4 Notes** that the PTWS is the only ICG with International Cooperation indicators and the theme of the World Tsunami Awareness Day 2021 will link with the target F of the Sendai Framework for DRR (2015-2030) on International cooperation to developing countries,
- 8.5 Recommends** that the CARIBE-EWS, IOTWMS, and NEAMTWS to strongly consider including International Cooperations in their Key Performance Indicators (KPIs),
- 8.6 Recommends** that the Task Team on KPIs complete the work on harmonized performance monitoring framework including data collection tools/questionnaire and reporting formats for presentation to the next TOWS meeting,
- 8.7 Requests** the Secretariat to arrange a virtual meeting of the Task Team on KPIs in the near future to discuss a work plan,
- 8.8 Notes** the importance of the SOP for local source tsunamis, especially in regards to building preparedness through natural warning signs, as well as taking into consideration atypical tsunamis,
- 8.9 Notes** that the local source tsunami SOP would also be a good reference for UNESCO-IOC Tsunami Ready,
- 8.10 Notes** the IOC Tsunami Glossary is being updated to include new information on volcanic and landslides sources,
- 8.11 Recommends** that ICGs / Working Groups to further advance the discussion on local source tsunami SOPs.
- 8.12 Notes** the International Tsunami Information Centre (ITIC) report on the NTWC Competency Framework to the TT-TWO regarding progressing on finalizing the PTWS Framework, and piloting training according to the Framework in Tonga in 2019,
- 8.13 Notes** that ITIC and the Indonesia BMKG have been designated as Ocean Teacher Global Academy Specialized Training Centres (OTGA STC) in 2020,
- 8.14 Notes** the confirmation by ITIC that it will take the lead to develop such training under

the OTGA, in collaboration with the IOC, TICs, practitioner experts, and Indonesia BMKG,

- 8.15 **Requests** the ITIC to report to the TT on the progress at the next TOWS meeting,
- 8.16 **Appreciates** the development of exercise guidance by the Caribbean through a draft IOC Manual Guide 86,
- 8.17 **Notes** that community exercise is a Tsunami Ready indicator,
- 8.18 **Encourages** the CARIBE-EWS to finalize, publish, and translate the IOC Manual Guide 86 in Spanish and French,
- 8.19 **Agrees** that the TOWS TT-DMP consider IOC Manual Guide 86 for global applicability.
- 8.20 **Notes with appreciation** the completion by ITIC of the compilation of international structural design guidance for buildings used as evacuation shelters, and its sharing through the ITIC web site, per the request of the PTWS and TOWS TT-DMP,
- 8.21 **Recommends** Member States to use best practices in engineering design and construction of evacuation shelters, especially where local tsunami hazards exist.
- 8.22 **Notes with appreciation** the completion by IOTIC of the compilation of school DRR and preparedness materials,
- 8.23 **Recommends** its inclusion as a resource by Member States, especially as part of Tsunami Ready pilots that include school
- 8.24 **Appreciates** the UNDRR IOC World Tsunami Awareness (WTAD) 2020 campaign consisting of high-level events, regional webinars, social media visuals, videos, and eyewitness accounts,
- 8.25 **Appreciates** the creation of fifteen videos highlighting countries joining the global Tsunami Ready community,
- 8.26 **Notes** that the 2021 WTAD, November 5, will highlight Target F of the Sendai Framework on international cooperation to developing countries through support to the implementation of their national and local strategies for disaster risk reduction,
- 8.27 **Recommends** the continued strong collaboration between the IOC and UNDRR for the 2021 WTAD highlighting among other initiatives the UN Decade for Ocean Science for Sustainable Development and the Tsunami Program transformative goals for 100% Global Tsunami Ready for highly vulnerable communities and deployment of Science Monitoring and Reliable Telecommunications (SMART) undersea cables for disaster warning.
- 8.28 **Notes** the report from the Director of ITIC about updates to the Glossary that have been identified or requested,
- 8.29 **Recommends** that the ITIC compiles proposed updates for vetting by the TT-TWO

and TT-DMP and approval at the next TOWS meeting in 2022.

- 8.30 Appreciates** the completion by ITIC of the compilation of international guidance for maritime and ports, and its sharing through the ITIC web site:
http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=2071&Itemid=2926), per request of the PTWS and TOWS TT-DMP,
- 8.31 Notes** the pending TOWS WG request to Japan to assist in the translation of Japan's best practices, and
- 8.32 Requests** IOC to identify possible funding sources to translate this document to English and other languages,
- 8.33 Requests** the IOC to report on the progress at the next TOWS TT-DMP,
- 8.34 Agrees** that the TT-DMP considers the development of guidelines at its next meeting,
- 8.35 Notes** that the ITIC and the Indian Ocean Tsunami Information Centre (IOTIC) presented the plan and progress of the training activities and programme under the Ocean Teacher Global Academy (OTGA), and that ITIC and the Meteorology, Climatology, and Geophysical Agency, Indonesia) (BMKG) have received the status of Specialized Training Centre (STC) for Tsunamis,
- 8.36 Notes** that under the coordination of the Tsunami Unit in UNESCO IOC and in collaboration with the Tsunami Information Centres (CTIC, ITIC, IOTIC, NEAMTIC) seven planned courses will be developed until 2023,
- 8.37 Notes** that the training programmes consist of Tsunami Awareness, Tsunami Ready, Tsunami Early Warning Systems, Tsunami Warning and Emergency Response SOPs (Standard Operating Procedures) , TEMPP (Tsunami Evacuation Maps, Plans, and Procedures), and Tsunami Warning Centre Competencies. These training courses will be developed based on the related IOC Manual Guides and training that have been implemented by the TICs. Some courses have been developed with hybrid delivery in mind,
- 8.38 Notes** the ITIC and Indonesia BMKG as OTGA STC will report on the progress at the next TOWS TT-DMP.
- 8.39 Appreciates** the growing interest and excellent progress by Member States in all ICGs in piloting UNESCO IOC Tsunami Ready,
- 8.40 Notes** the challenges of upscaling required to achieve 100% Tsunami Ready in highly vulnerable communities as one of the transformative goals of the UN Decade for Ocean Science for Sustainable Development Tsunami Programme,

- 8.41 Notes** the progress by Indonesia in their application for ISO (International Organization for Standardization) certification of a Community Based Early Warning System,
- 8.42 Appreciates** the continued support from the United States Agency for International Development / Bureau of Humanitarian Assistance) (USAID/BHA) and the European Commission Humanitarian Aid Department's Disaster Preparedness Programme (DIPECHO) and Member States to provide funding support to Tsunami Ready pilots and invites contributions from other agencies,
- 8.43 Recommends** the urgent completion of the IOC TS 74 Tsunami Ready Guidelines for widespread distribution to Member States, and
- 8.44 Recommends** the IOC to finalize and provide guidance for a Tsunami Ready logo.
- 8.45 Considers** the high number of population living along the coastlines that are at risk of tsunamis, the strong interest from Member States across all ICGs in implementing Tsunami Ready, and the opportunity for transformational and bold actions as part of the UN Decade of Ocean Science for Sustainable Development (2021-2030),
- 8.46 Recommends** that the TOWS WG proposes a Comprehensive Tsunami Programme under the UN Decade dedicated to achieving the societal outcome of A Safe Ocean with the aim of making 100% of highly vulnerable communities prepared for and resilient to tsunamis by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Programme and other initiatives.
- 8.47 The TTDMP further recommends** that this Comprehensive Decade Tsunami Programme should focus on inclusiveness and delivery through:
1. The adoption and continued implementation of the UNESCO IOC Tsunami Ready Guidelines and Indicators as the international standard for evidence-based community preparedness for tsunamis,
 2. Enhanced access and capacity development for high-resolution near shore bathymetry and topography data and tsunami source identification for accurate and improved inundation modelling and evacuation mapping and planning in support of Tsunami Ready communities,
 3. Enhanced integration to minimize tsunami disaster impacts and to enable rapid restoration of socio-economic activities and critical infrastructure services post tsunami impacts,

The establishment of a Tsunami Ready Coalition of stakeholders charged with delivering a strategic plan for consideration at TOWS WG XV to facilitate the implementation of the Comprehensive Decade Tsunami Programme through the UNESCO/IOC Tsunami Ready Programme and other initiatives.

- 8.48 The Continuation** of the TT-DMP for the next intercessional period.