

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
of UNESCO
PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM (PTWS)

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REPORT OF
TASK TEAM
FUTURE GOALS AND PERFORMANCE MONITORING

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PTWS TASK TEAM: FUTURE GOALS AND PERFORMANCE MONITORING **REPORT TO ICG/PTWS XXIX, DECEMBER 2021**

Feedback and Current State 2019-2021

The following report provides a synthesis and summary of the last self-assessment of ICG-PTWS Member States, on their performance against the PTWS Framework for Future Goals and Performance Monitoring of Risk Reduction Tsunami Hazard Warning and Mitigation.

The Global Covid-19 pandemic has impacted our ability to affectively monitor progress on an annual basis. The pandemic has provided an example of how probabilities of occurrence for disaster events have needed to be rapidly described and communicated to communities, who are in turn, making risk-based decisions on information provided by governments and officials. This is something the PTWS can reflect on when assessing our work programmes going forward, notably regarding the communication of tsunami hazard and risk.

The next in-country reporting is anticipated to be carried out in 2022. More information on this is provided in Section 4 of this report.

1. Background/Overview

The PTWS Framework for Future Goals and Performance Monitoring was updated in 2018, with 26 (21 by the deadline and a further five countries during the ICG/PTWS-XXVIII meeting). This was reported to the Steering Committee at the twenty-eighth session of the ICG/PTWS (IOC/ICG/PTWS-XXVIII), held in Nicaragua, in April 2019.

The framework was designed to ensure the future goals and performance of PTWS Tsunami Service Providers (TSPs), National Tsunami Warning Centres (NTWCs), and national warning systems was sustainable, achievable, and adequately monitored. The new Framework aligns with the goals and priorities of the Medium-term strategy: Pacific Tsunami Warning and Mitigation System (PTWS MTS), 2014-2021 (IOC/2013/TS/108), and the global targets and priorities for action of the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030. Specifically, the framework is aligned closely to Target G of the SFDRR, which aims to “*Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030*”. This is to ensure international alignment with best practice tsunami risk management, measure status against requirements and assist with obtaining resources for continued improvement. In addition, the Framework contributes to the EC decision EC-LI/3.3.

The main assessment activities include tsunami hazard risk assessment; warning system requirements; community awareness and preparedness; and planning.

The Task Team Terms of Reference (ToR) includes:

1. Finalising the ICG PTWS Framework for Goals and Performance Monitoring of Tsunami Warning & Mitigation Systems, to be harmonised with other ICGs, for use in the next two inter-sessional periods.

2. Using the outcomes from the 27th Meeting of the ICG/PTWS to establish a performance baseline and a list of activities and resources required to help meet the identified goals.
3. Developing a PTWS Status Report for reporting the status and performance of the PTWS at the next meeting of the ICG.
4. Utilising the new National Report template for Member States to collect the required information and determine performance metrics for the PTWS Status Report.

Task Team members include:

- Sarah-Jayne McCurrach, New Zealand, *Chair*
- Mary Rangifo, Colombia, *Vice Chair*
- Dr Diego Arcas, USA
- Bill Fry, New Zealand,
- David Coetzee, New Zealand
- Dr Silvia Chacón, Costa Rica
- Mr Diego Gago, DHN, Peru
- Mr 'Ofa Fa'Anunu, Tonga
- Mr. Chan Sai-Tick, China-Hong Kong
- Dr. Chip McCreery

The first assessment round completed by Member States, resulted in several suggestions for improvements in the framework model and the associated online survey. Given the TOWS KPI Task Team is developing a 'Global IOC KPI Framework' (linked closely to Inter-ICG Task Team on Disaster Management and Preparedness), to improve the consistency of all ocean basin performance, it was agreed all feedback would be taken into the development of the new local framework, rather than amending the PTWS KPI Framework. This is because we anticipate the Global IOC KPI Framework will replace the PTWS KPI Framework.

We also noted that the results provided in this report, should not be taken as true representation of the PTWS as the results are based on partial Member State completion. The results of the survey were provided at the ICG/PTWS-XXVIII under item 4.1.

2. Intersessional Activities

The Chair and Co-Chair of the Task Team have been working on an aligned project during the last intersessional period – the development of a global ocean performance monitoring framework. The intention of the global framework is to have all IOC-ICG's monitoring their performance against the same framework. The framework will have key performance targets that are harmonised with the goals and intentions of the Sendai Framework for Disaster Risk Reduction and aligned with the UN Ocean Decade.

This work is progressing at pace and is on track to be delivered as a first draft, with recommendations to make final and publish, at the next IOC-ICG meeting in February 2022.

Once the global framework is finalised it will replace the PTWS Framework for Goals and Performance Monitoring of Tsunami Warning & Mitigation Systems. PTWS Member States and the ICG/PTWS (Working Groups and Task Teams) will then be required to assess their performance against the global framework, via a survey hosted by IOC.

A further update on the development of the global framework, including implications for PTWS Member States will be provided at the next PTWS Steering Committee meeting in 2022.

3. 2019 Future Goals and Performance Monitoring Results

The results of the 2019 Future Goals and Performance Monitoring self-assessment are summarised in the following sections of this report. Data from the online report has been assessed graphically and summarised per 'Goal' (1-4).

In general, improvements need to be made by each Member State regarding self-assessment and consistency in response. Only 56% of PTWS Member States completed the survey and of these, many Member States often skipped questions. In addition, the translation of answers was sometimes questionable and didn't 'match' from Goal to Goal, especially if they were related to one another. For example, completing exercising, but having no exercise documentation. It is hoped further refinement of the online survey tool and improvement in the transparency of the framework will help address this in the next reporting round.

It is imperative all Member States efficiently and effectively report on their progress via the online survey. The online survey is aligned closely to the framework, its corresponding measures and most importantly, the PTWS Strategy. Consistent reporting will allow us to make PTWS and Global programmes of work actionable and intentional, as well as continuing to grow a thriving and sustainable PTWS.

Key considerations and limitations in the results provided in this report are as follows:

- Does not include answers to questions where less than 10% of Member States responded, this is because it does not provide a representative result of the system.
- Where most Member States answered a question, but only a few 'skipped' the same question, this has been considered as a 'no' response.
- Questions that were asked for informational purposes only, such as 'what format are your country's tsunami evacuation zones published in?' have been excluded from this summary, however these results are provided in Appendix 1.

GOAL 1: Understanding and Managing Tsunami Hazard and Risk

The intention of Goal 1 is for Member States to fully understand their tsunami risk in all its dimensions. This includes their community's vulnerability, exposure of persons and assets, and the many possible and/or likely tsunami hazard scenarios. Fully understanding tsunami hazard translates to improved risk reduction incentives and initiatives, preparedness, and response planning activities. Given the UN Decades goal that 100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030, this is a critical area for us to understand. It will allow us to identify gaps and choose relevant actions/development areas for us to focus on over the next eight years.

In general, Member States are very strong at establishing the means to assess tsunami hazard and model impacts from all sources. Improvements need to be made in how we translate this into robust, multi-level risk assessments. If we do not improve this ability, it may result in poor risk-based decision making.

A clear gap exists in taking inundation modelling and translating that into evacuation zones. Only 24% of PTWS Member States that answered the survey have completed this. A surprisingly low number which may increase if the additional Member States answered survey. Interestingly, this 24% is much lower than the 83% of Member States that have answered positively to community preparedness activities and public education. One is required to effectively deliver the other. Being able to translate risk (event probabilities) and what to do about this, needs to include the development, implementation and continued use of evacuation zones and maps.

In general, developing plans and guidance that relate to tsunami hazard and risk is well-accomplished, with the exception of understanding and carrying out non-seismic threat assessments. Only 33% of countries have completed this.

We need to strengthen technical and scientific capability, do better in our completion of risk assessments, and ensure these are translated into national and local plans. This is backed by the 96% of countries agreeing that strengthening technical and scientific capability is required.

Only 40% of Member States have completed risk assessments for all their at-risk communities, of this number, 56% have a standardised methodology and 0% are annually reviewed and updated these. We need to regularly review our risk. If we don't this, we can't fully understand changes in our exposure and vulnerabilities and therefore make effective decisions for risk reduction and community preparedness. Despite the low numbers for tsunami hazard risk assessment, 86% make the risk assessments publicly available/accessible. This should be an action for the steering committee to follow up to ensure the information base for all tsunami risk management work is based on sound, tested methodologies, before these are made public.

General observations from Goal 1 data analysis:

- As a system, we are good at identifying what we need to do regarding understanding tsunami hazard and risk, but not at seeing these actions through.
- Funding tsunami hazard and risk assessment can be a struggle for many countries.
- We are strong supporters of technology and sharing knowledge gaps/information sharing.
- We look at risk reduction incentives and initiatives as long-term goals. Over 81% don't include this in current plans. We need to address this, if we reduce the risk, we increase resilience. The answers provided across all Goals (especially in planning and operations) imply we focus more on response than risk reduction.
- We are good at building connections with stakeholders involved in tsunami risk management, particularly response. It may be worth considering in the next survey if these connections are maintained.

GOAL 2: Tsunami Detection, Warning & Dissemination

The intention of Goal 2 is to ensure Members States countries with at risk coastal communities receive timely, accurate, reliable, and effective warnings for tsunami sources. The survey questions are focussed on tools, data, systems, and the dissemination of warnings based on these.

Questions in the survey related to this Goal had some of the lowest number of responses, but of those responses, the scores were very high (>90%). This may be due to some countries relying on others for monitoring and detection, and therefore they did not answer the question. This will be resolved when the survey is updated so the overall scores are not affected as a result.

The acquisition of seismic and sea-level data is a strength for the 24 countries who answered these questions. 92% have real-time data freely and accurately available from seismic monitoring networks and 100% have data freely and accurately available from tsunami buoys and/or tide gauges. Of the data collected from these countries, 96% share this with other tsunami services providers and Member States. This is an encouragingly high number and aligns well with the answers provided under Goal 4 on coordination and cooperation.

The following responses demonstrate the strength in acquiring, using, and translating data for tsunami threat advice and warning's:

- 100% (of the 24 countries who answered) have access to required earthquake information available in sufficient time to generate warnings for local, regional, and distant source tsunamis
- 100% of countries have EOC's that are tested yearly and 75% of these can demonstrate the systems are maintained
- 100% Does your country have national 24/7 capability to generate tsunami threat information and issue tsunami warnings to agencies and at-risk coastal communities
- 80% country have reliable and accurate tsunami threat information and ability to warn at risk coastal communities
- 75% of Member States have had the accuracy and capability of their data, systems and EOC's tested during a real event response.
- 96% of which have in-country testing via exercises and communications tests (equal answer scores of 96% for each) 92% have SOPs. All issue warnings via multiple channels,

Scores are also high across response preparedness activities, especially our ability to locally and regionals provide tsunami threat information to tsunami warning focal points (TWFPs) and at-risk coastal communities.

Suggested improvements in this Goal are to support the development of/coverage of tsunami monitoring and detection capacity for smaller Pacific Island countries, especially those at risk from non-seismic sources.

GOAL 3: Enhancing tsunami preparedness for effective community response

The intention of Goal 3 is to strengthen tsunami preparedness and awareness for more effective response and immediate recovery. As such, the questions in the survey cover the following topics: developing, promoting public education at all levels, establishing, and disseminating the required tsunami education materials and conducting exercises (at all levels).

Assessment of local public education approaches implies countries have them, but these are not widely supported by implementation plans: 84% have national and/or local public education strategies, but only 56% of these countries have developed an implementation plan(s) associated with the strategy. A question for the next survey round should focus on understating, how countries are implementing their public education strategies if they have no plan to do so.

Member states appear to have good stakeholder engagement regarding tsunami preparedness. Answers provided in this section of the survey are in synergy with those under Goal 1 regarding stakeholder engagement. 74% of Member States have involved community-based organisations and non-governmental organisations to disseminate the tsunami risk information they have developed. This is supported by 75% of countries also displaying this information via evacuation maps. Results become questionable when numbers for 'public display of maps' drops to around 50-60%. Maps being multi-language and via multi-channels is also around 50%. This does not match with 86% of Member States stating they have safe routes identified and made public using multi-multiple languages are multi-channel. Having evacuation maps translates to identification and display of safe routes. The next survey will have to ensure these questions are asked together, so answers are transferable. If the same results appear in the next survey round, the Task Team will suggest improvements need to be made in the process carried out for displaying public preparedness information.

A clear strength for Pacific Member States is exercising with 83% of countries who answered the survey promoting and completing exercising (40% across the Pacific when averaged to include those Member States who did not answer the survey). Only 60% however, have a National Exercise Plan. Of the 83%, 91% conduct post exercise reviews and use lessons identified to improve their planning and preparedness. PacWave involvement high, with 96% of Member States participating in the Pacific wide tsunami exercise every two years. Answers relating to PacWave also demonstrates good integration of public education planning and delivery. This is also demonstrated in the growth of the PacWave since 2004. Response scores continue to be high in regard to post event analysis. Countries that have either tested response plans or experience real life events have embedded lessons identified into response plans. Overall Member States provided evidence that shows across the PTWS we are good at response planning at the national, regional, and local level.

Pacific country involvement in tsunami preparedness, particularly via the PTWS, is high. Our engagement and promotion of UNESCO-IOC initiatives such as 'World Tsunami Day', the Tsunami Evacuation Maps, Plans and Procedures (TEMPP) programme and the Tsunami Ready programme is notable. Continued engagement in this work aligns with the PTWS Strategy and will support PTWS member states to improve in aspects of community preparedness to tsunami risk.

GOAL 4: International Coordination and Cooperation

The intention of Goal 4 is to encourage all ICG-PTWS Member States to work together at the regional (Pacific) and global level. By working together, we can increase our ability to monitor and detect tsunami threat and build capacity and capability to respond.

Of the 24 Member States who answered this part of the survey, all Member States said they have enhanced their capacity and capability to respond to tsunami threat because of international and/or PTWS collaboration. This is encouraging and is supported by the high number of Member States who are also engaged in the intergovernmental process (80% of those who answered, this however translates to 39% overall). Of concern, is the support for capacity building to support smaller Pacific Member States. Only 30% of countries who answered the survey (14% across the Pacific) are involved in capacity building projects or could identify other means they have supported these countries. This will need to be a focus for the PTWS Steering Committee to ensure more support is provided to smaller island Member States through the Working Groups and Task Teams.

In summary, our international engagement scores have been brought down by the low number of PTWS Member States who answered the survey.

4. Planned and future activities

The Task Team have been assessing whether it would be useful to run another performance survey, similar to the survey completed in 2018. The intention would be to develop an abbreviated version of the survey and have the ICG/PTWS and its Member States review their performance before the global framework is finalised.

We are aware there will likely be minimal changes to Member State and ICG/PTWS performance given the Covid-19 global pandemic. However, it may be an opportunity for us to identify learnings from operating within a pandemic situation, for example 'operational changes due to Covid-19', 'challenges or opportunities' and/or 'updated response procedures.

A suggestion to run this survey will be made at ICG/PTWS XXIX in December 2021. Should the ICG/PTWS agree this is a useful task, the Task Team will develop an abbreviated survey for Member State assessment in January 2022.

5. Recommendations

The following recommendations for ICG/PTWS, are provided based on the 2019 performance monitoring results. Analysis of the results indicate clear areas for improvement, and these should be addressed via the work programmes set out in the ICG/PTWS Working Groups 1-3. If applicable, specific actions can be adopted by existing Task Teams. The recommendations for action are aligned with the PTWS Strategy 2022-2030 and support the intended outcomes for the UN Decade priority for Safer Oceans. Addressing the recommendations and associated actions provided below will continue the future improvement of the PTWS.

The Task Team on future goals and performance monitoring recommend the Steering Committee endorse and direct the following actions be completed:

- **Agree** the survey needs to be refined, made easier for the user and accessible by an IOC hosted site.
- **Agree** to one of the following:
 - The development of a shorter survey that includes questions on Covid-19, to be completed by Members States and the PTWS in January 2022. This will be used as the second round of reporting since 2019 and will address the current gap in performance monitoring.
 - Alternatively, endorse the global framework that is in development and wait until this is finalised for the next performance monitoring of the PTWS to be completed. The global survey will be hosted by IOC via a web-based portal that can assess user responses in real-time.
- **Urge** all regional groups to promote completion of the survey, by all countries in of their region, to have the required information of 100% of the ICG/PTWS Member States. We require stronger promotion of reporting on the framework via the online survey tool, given the low number of Member States who completed the last round of national reporting and assessment against the framework. ICG/PTWS needs to emphasise the importance of performance assessment. The revision of the survey, including its simplification should encourage Member State participation.
- **Direct** Working Group 1 to ensure the information used for in country tsunami risk management is based on sound, tested methodologies, before these are made public. Working Group 1 should help countries identify gaps and areas for improvements in tsunami risk assessments and develop guidance to support countries in the translation of risk-based information into planning and preparedness activities.
- **Direct** Working Group 1 to develop guidance and work with Member States on tsunami risk reduction initiatives. This should include assessments on risk tolerance at the community and governance level. Risk reduction incentives and initiatives should not be seen as long-term goals. Reducing risk are clear goals and targets of the Sendai Framework for Disaster Risk Reduction and the UN Decade, and in turn, the PTWS Strategy. By implementing risk reduction incentives and/or initiatives, we increase the resilience of our communities.
- **Direct** a current Working Group or the development of a Task Team to find ways to support countries in have a 'holistic', streamlined approach to reporting i.e., reporting on the PTWS Performance Framework should be used in, in-country reporting on the Sendai Framework for Disaster Risk Reduction and the UN Decade. This will reduce double handling of information and improve governance of tsunami hazard.
- **Endorse** the current PTWS Task Team on the UN Decade to use the results from this survey to identify possible resources and areas for improvement that will align with delivery on the UN Decade. Support the Task Team to then suggest possible projects or programmes of work for the current PTWS Working Groups.
- **Direct** Working Group 3 to promote improved tsunami response planning and public education initiatives that are founded on tsunami risk assessments and underpinned by inundation modelling and evacuation planning for *all* at-risk communities.

- **Direct** Working Group 1 to develop guidance on non-seismic threat assessments. This could include the provision of support to countries to identify these sources.
- **Direct** Working Group 2 to identify ways to better support the development of/coverage of tsunami monitoring and detection capacity for smaller Pacific Island countries, especially those at risk from non-seismic sources. Especially those also at risk from non-seismic sources.
- **Urge** Member States to place emphasis on the importance of evacuation maps and materials being multi/bi-lingual and available via multi-channels and in placed in appropriate public spaces.

Sarah-Jayne McCurrach

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