Intergovernmental Oceanographic Commission
Technical Series

XXX

DRAFT

Capacity Assessment of Tsunami Preparedness in the Pacific Ocean

Status Report, 2025

UNESCO

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1. Introduction

1.1. Tsunamis in the Pacific Ocean

After the destructive 2004 Indian Ocean tsunami, which highlighted global vulnerability to such natural events, the Pacific Ocean has witnessed several tsunamis, about 264 events according to the NOAA National Centers for Environmental Information database. This has underscored its status as an area of notable seismic activity, as well as other sources like volcanic eruptions.

1.2. Pacific Ocean tsunami warning and mitigation system

The Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) was founded in 1965 in response to the 1960 Valdivia earthquake and subsequent tsunami. Resolution IV-6 of the 4th Session of the UNESCO-IOC General Assembly named it the International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU), and it convened for the first time in 1968. It was later renamed the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) – through Resolution EC-XXXIX.8 of the UNESCO-IOC Executive Council – to bring it closer to the other three regional ICGs (ICG/IOTWMS, ICG/NEAMTWS and ICG/CARIBE-EWS) created following the 2004 Indian Ocean tsunami (Figure 1). It counts 46 Member States (Pacific Ocean and its marginal seas).

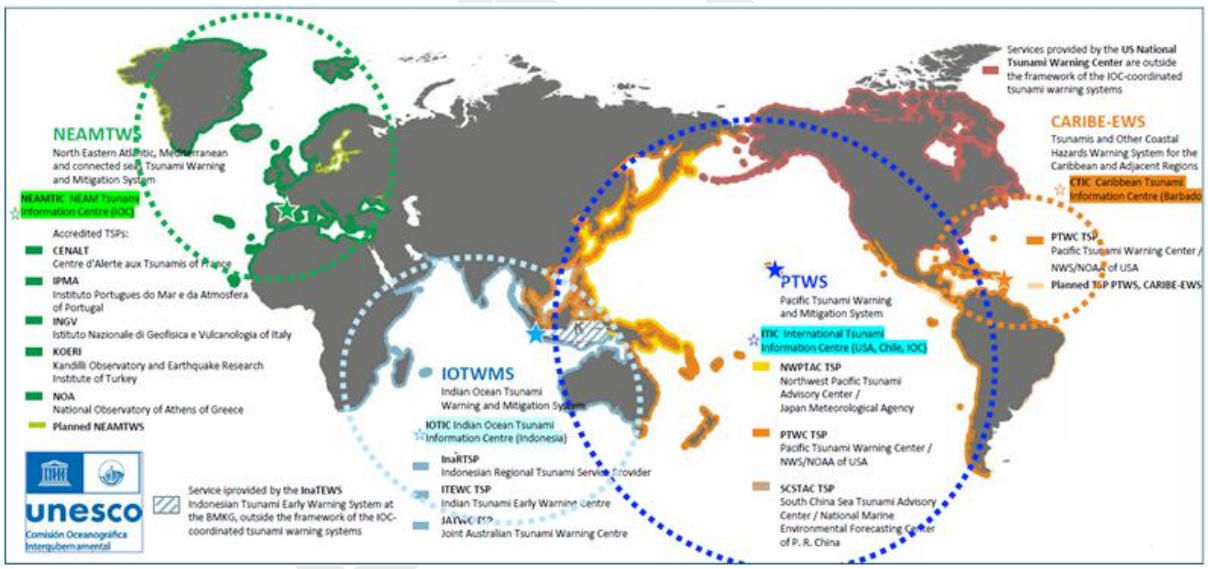

Figure 1. UNESCO-IOC Global Tsunami Warning and Mitigation System.

The organizational structure of the ICG/PTWS for the period 2025–2027, adopted at the thirty-first session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXXI – 07–11 April 2025, China), is as follows:

- Three sessional Working Groups (WG) to address specific technical issues:
  - *WG 1* – Understanding Tsunami Risk,
  - *WG 2* – Tsunami Detection, Warning and Dissemination,
  - *WG 3* – Disaster Risk Management and Preparedness.
- Four Working Groups address specific issues relating to different regions in the ocean basin:
  - *WG-CA* – Central American Pacific Coast,
  - *WG-SEP* – Southeast Pacific,
  - *WG-PICT* – Pacific Island Countries and Territories,

    - *WG-SCS* – South China Sea.
- Nine Task Teams (TT):
    - SC-TT-PacWave – Steering Committee Task Team PacWave Exercises,
    - WG2-TT-TSP – WG 2 Task Team Tsunami Service Providers,
    - WG2-TT-FOO – WG 2 Task Team Tsunami Forecasting from Ocean Observations,
    - WG2-TT-TGV – WG 2 Task Team Tsunami Generated by Volcano,
    - WG3-TT-TR – WG 3 Task Team Tsunami Ready,
    - WG-PICT-TT-SDSSWP – WG-PICT Task Team Seismic Data Sharing in the Southwest Pacific,
    - WG-PICT-TT-CD – WG-PICT Task Team Capacity Development,
    - WG-PICT-TT-ISP – WG-PICT Task Team Information Sharing Platforms,
    - WG-SCS-TT-CDS – WG-SCS Task Team Capacity Development and Services.

The International Tsunami Information Center (ITIC) is hosted by the United States National Oceanic and Atmospheric Administration National Weather Service in Honolulu, Hawaii. It helps develop and provide info on tsunami warning systems, risks, and good practices by engaging with Member States and the public.

1.3. Global frameworks

This capacity assessment of tsunami preparedness in the Pacific Ocean aligns with the goals of:

- the *United Nations Secretary-General's Early Warnings for All (EW4All)* initiative, with a focus on the importance of early warning systems for geophysical hazards, and the needs to develop the capacity of these systems to reduce the loss of lives and livelihoods from disasters by the end of 2027;
- the *United Nations Decade of Ocean Science for Sustainable Development 2021–2030 – Implementation Plan*, specifically Challenge 6, which is "Increase community resilience to ocean and coastal risks";
- the *UNESCO-IOC Tsunami Programme*, which relies on four Intergovernmental Coordination Groups (ICGs) to coordinate regional tsunami warning and mitigation activities, including the provision of tsunami information to National Tsunami Warning Centres (NTWCs);
- the *UNESCO-IOC Tsunami Ready Recognition Programme*, which aims to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods, and property from tsunamis in different regions;
- the *2030 Agenda for Sustainable Development*, specifically Goal 11, which is: "Make cities and human settlements inclusive, safe, resilient and sustainable";
- the *Sendai Framework on Disaster Risk Reduction (SFDRR)*, specifically Target G, which is "to substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030".

2. Methodology

The present survey is the first one driven in the Pacific Ocean, compared to the Indian Ocean, which had already since 2004 event three surveys, 2005, 2018 and 2024. The same methodology used in 2018 was applied to allow comparative analysis between these two regions.

Intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC) endorsed the 2018 capacity assessment of the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS). This assessment includes:

1. a national technical online survey questionnaire covering all aspects of the end-to-end tsunami warning and mitigation system,
2. a survey analysis,
3. a validation consultation workshop, and
4. endorsement by the UNESCO-IOC Intergovernmental Coordination Group (ICG) for the Pacific Tsunami Warning and Mitigation System (PTWS).

Initial communication on this survey was made to the Tsunami National Contacts (TNCs) of ICG/PTWS via a letter from the ICG/PTWS Chair dated 4 November 2024 (IOC/TSR/24.113/ON/ah), accompanied by a concept note on the assessment in the Indian (Phase I completed in 2024) and Pacific Oceans.

The survey constructed on the online platform SurveyMonkey consisted of six main parts, like those of the 2018 IOTWMS capacity assessment survey with an additional part on the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP):

- *PART I:* basic information (questions 1 to 3),
- *PART II:* risk assessment and reduction (questions 4 to 8),
- *PART III:* detection, warning, and dissemination (questions 9 to 10),
- *PART IV:* public awareness, preparedness, and response (questions 11 to 13),
- *PART V:* Tsunami Ready Recognition Programme (questions 14 to 15), and,
- *PART VI:* narrative with each section requiring input from different stakeholders based on their national responsibility in the end-to-end tsunami warning and mitigation system (questions 16 to 18).

The ICG/PTWS Secretariat circulated the online survey to the Tsunami National Contacts (TNCs) and Tsunami Warning Focal Points (TWFPs) of ICG/PTWS Member States on 1 February 2025. TNCs oversaw and coordinated the completion of the survey through consultation with national stakeholders involved in end-to-end tsunami warnings including the National Tsunami Warning Centers (NTWCs) and National Disaster Management Offices (NDMOs).

Submission of responses was timed on 14 March 2025 to coincide with a presentation of preliminary results at the Thirty-first Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXXI), 7–11 April 2025 in Beijing, China. Outcomes and recommendations were discussed and finalized by PTWS officers and representatives of the PTWS Working Groups, TSPs, Task Team Exercise Pacific Wave and International Tsunami Information Center (ITIC) at a dedicated ICG/PTWS Steering Committee Workshop, 14–16 May 2025 in Manila, Philippines. The consolidated PTWS draft summary report was presented to the 33rd Session of the IOC General Assembly in June 2025 to be finalized as the present IOC Technical Series Report.

A total of 39 of the 46 member states responded to the survey (85%), and 87% of the Small Islands Developing States (SIDS), including: Australia, Brunei Darussalam, Canada, Chile, China, Colombia,

Cook Islands (SIDS), Costa Rica, Ecuador, El Salvador, Federated States of Micronesia (SIDS), Fiji (SIDS), French Polynesia (France), Guatemala, Honduras, Indonesia, Japan, Kiribati (SIDS), Malaysia, Mexico, Nauru (SIDS), New Zealand, Nicaragua, Niue (SIDS), Palau (SIDS), Papua New Guinea (SIDS), Peru, Philippines, Republic of Korea, Russian Federation, Singapore (SIDS), Solomon Islands (SIDS), Thailand, Timor-Leste (SIDS), Tonga (SIDS), Tuvalu (SIDS), United States of America, Vanuatu (SIDS), Viet Nam.

3. Capacity assessment results

3.1. Policies, plans and guidelines

3.1.1. Policies

Countries were asked if they have national tsunami policies, if so of which type whether it is multi-hazard or standalone, and which phases of the disaster management lifecycle it addresses, from prevention and mitigation, through preparedness, emergency response, until rehabilitation and reconstruction (Figure 2).

Responses reveal that 34 out of 39 countries (87%) have implemented some form of national tsunami policy. Most of these policies address tsunami as part of a multi-hazard policy, with between 64% and 67% of the countries incorporating this approach. Additionally, 26 of the 34 countries (76%) with a national policy address all four phases of the lifecycle. These countries treat the rehabilitation and reconstruction phase only as part of a multi-hazard including tsunami policy.

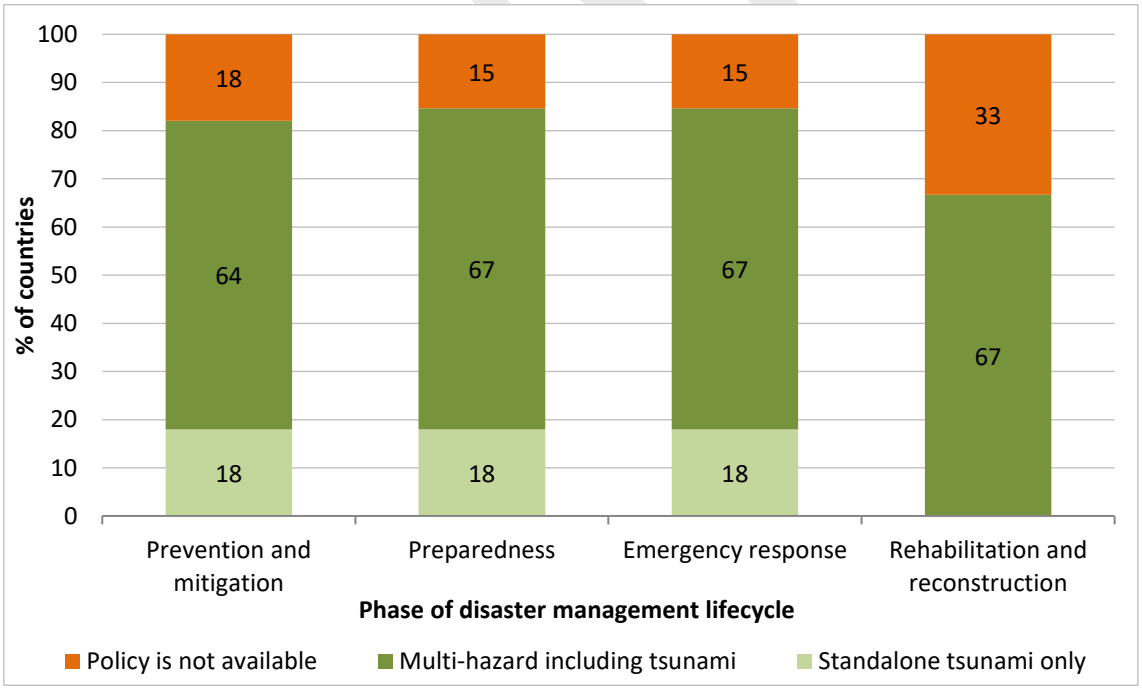

Figure 2. Types of national tsunami policies according to phases of disaster management lifecycle.

Using the same approach, countries were asked if they have local tsunami policies (Figure 3. Types of local tsunami policies according to phases of disaster management lifecycle.Figure 3). Responses indicate that 22 of the 37 respondent countries (59% – two countries skipped the question) have implemented some form of local tsunami policy. Almost all countries (except for 2) address the distinct phases as part of a multi-hazard policy. Of the 22 countries with a local policy,

19 (86%) addressed all four phases of the lifecycle. These countries treat the rehabilitation and reconstruction phase only as part of a multi-hazard including tsunami policy.

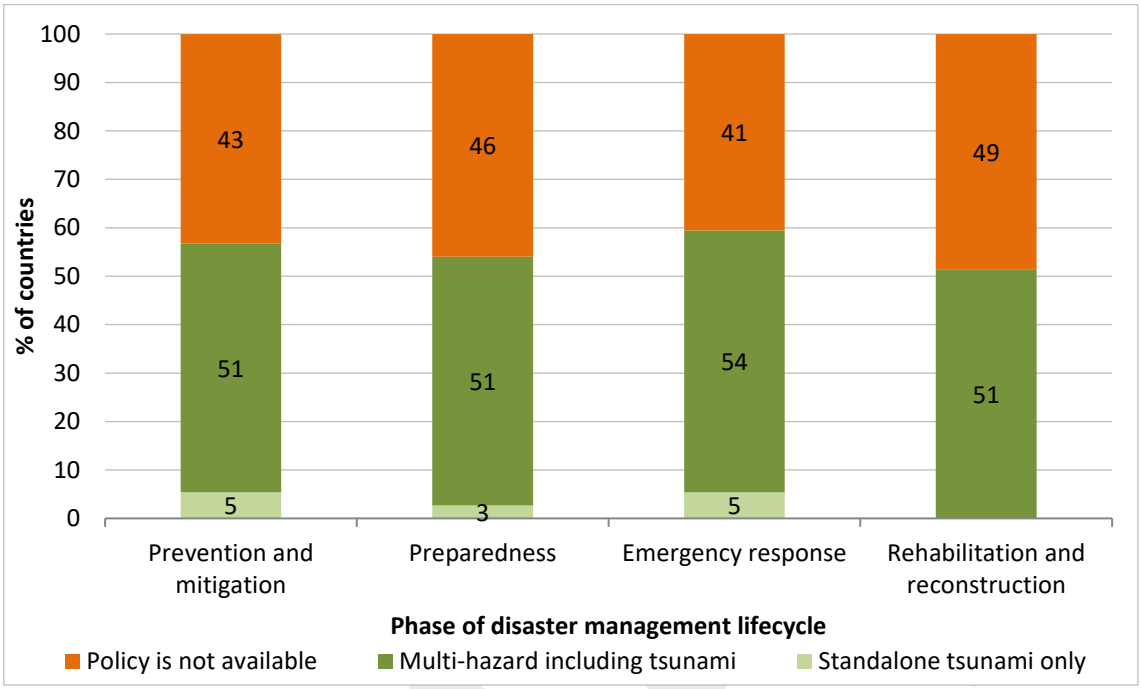

Figure 3. Types of local tsunami policies according to phases of disaster management lifecycle.

3.1.2. Plans

Countries were asked to confirm availability, level and type of tsunami risk reduction plans they have, including whether it is multi-hazard or standalone, whether it is treated at national, local or community level, and which phases of the disaster management lifecycle it addresses, from prevention and mitigation (Figure 4), through preparedness (Figure 5), emergency response (Figure 6), until rehabilitation and reconstruction phases (Figure 7).

Results of this section are biased and should be taken with caution, since 12 countries skipped answering if there is a disaster risk reduction (DRR) plan at the community level for each phase. Leaving aside this remark, the responses indicate that 31 countries (82%) have some form of tsunami DRR plan. Of these countries and across all four phases, availability of plans is slightly higher at the national level (66–82%), followed by the local level (66–77%) and finally the community level (52–64%).

A significant majority of countries address tsunami risk reduction as a part of a multi-hazard plan rather than as a standalone plan.

Thirty-one (31) countries (79%) reported that their tsunami disaster risk reduction plans are based on hazard and risk assessments.

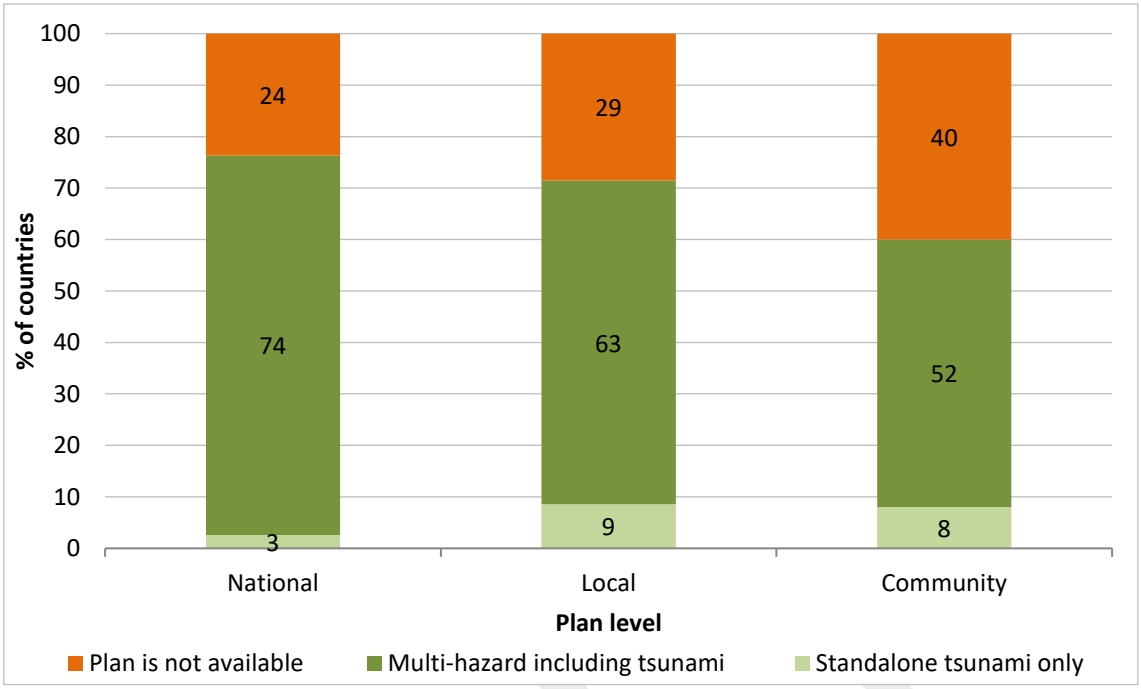

Figure 4. Availability of national, local and community level tsunami disaster risk reduction plans during prevention and mitigation phase.

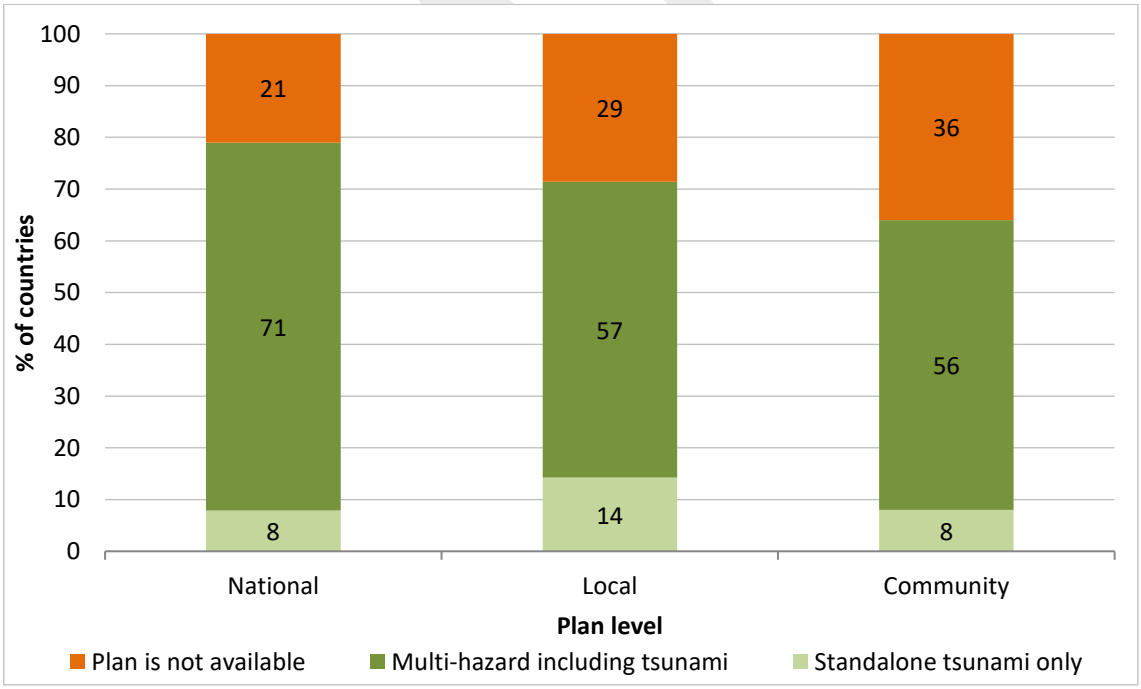

Figure 5. Availability of national, local and community level tsunami disaster risk reduction plans during preparedness phase.

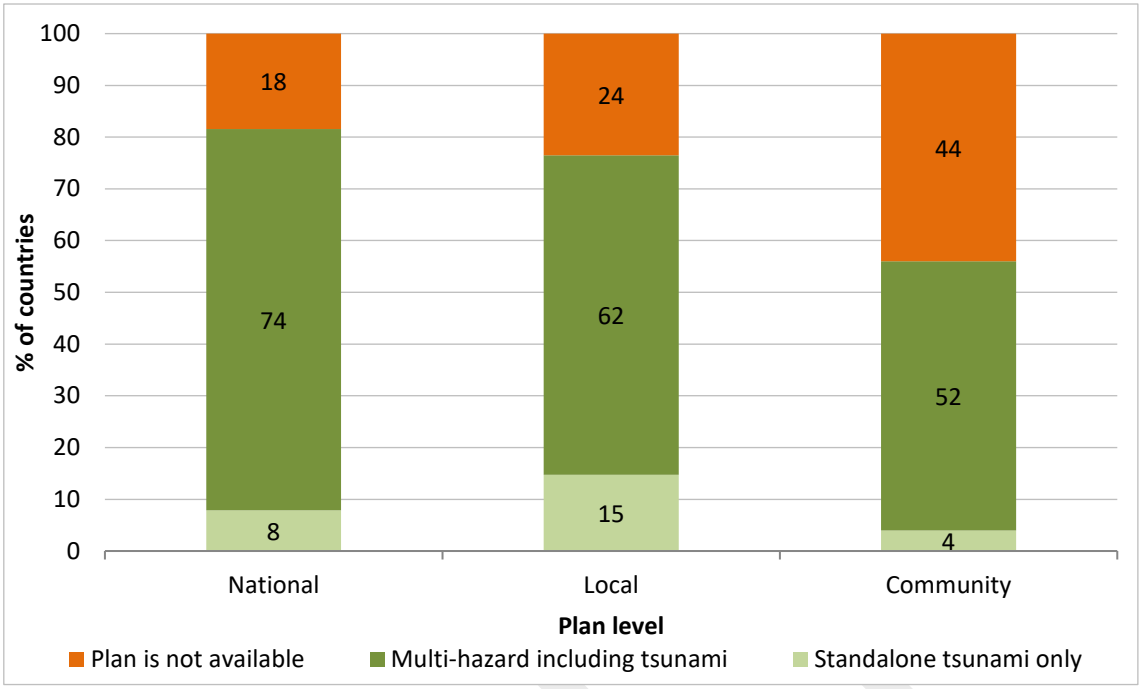

Figure 6. Availability of national, local and community level tsunami disaster risk reduction plans during emergency response phase.

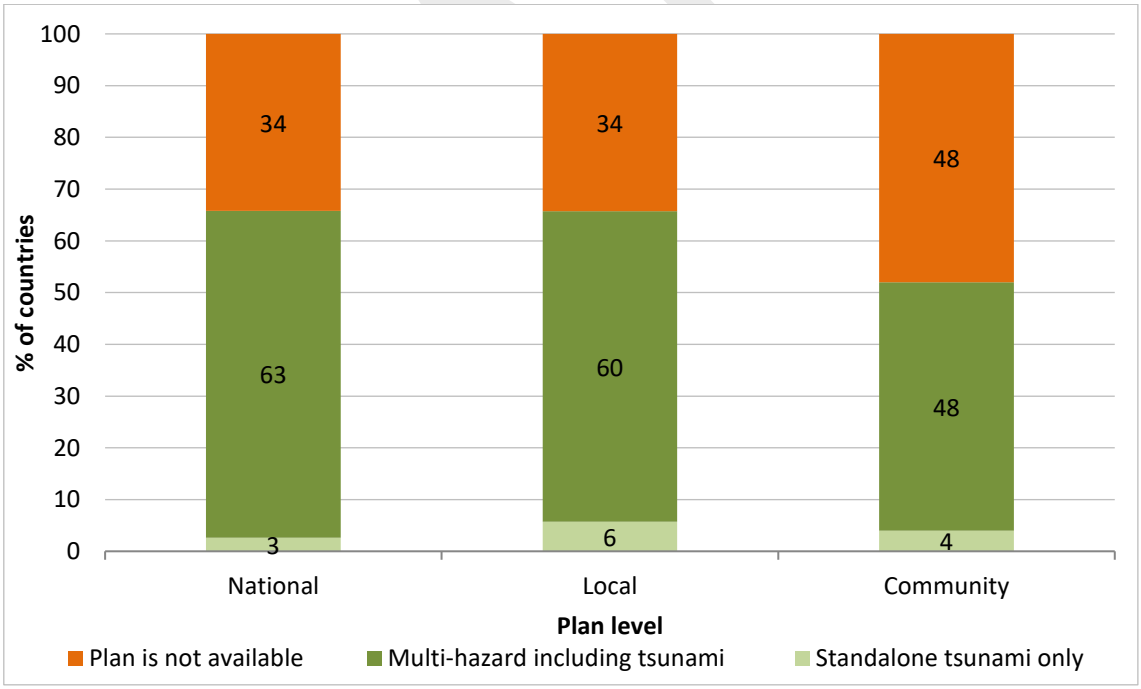

Figure 7. Availability of national, local and community level tsunami disaster risk reduction plans during rehabilitation and reconstruction phase.

3.1.3. Guidelines

Countries were asked to confirm the availability and type of national and local tsunami DRR guidelines they have, including whether it is multi-hazard or standalone, and which phases of the disaster management lifecycle it addresses, from prevention and mitigation, through to preparedness, emergency response, and rehabilitation and reconstruction (Figure 8 and Figure 9).

The responses indicate that 28 (74%) and 26 (68%) of the 38 respondent countries have some form of national and local tsunami guidelines, respectively. For each phase, countries address tsunami mainly as part of multi-hazard guidelines. Emergency response is the phase that presents the most available guidelines, while rehabilitation and reconstruction the least.

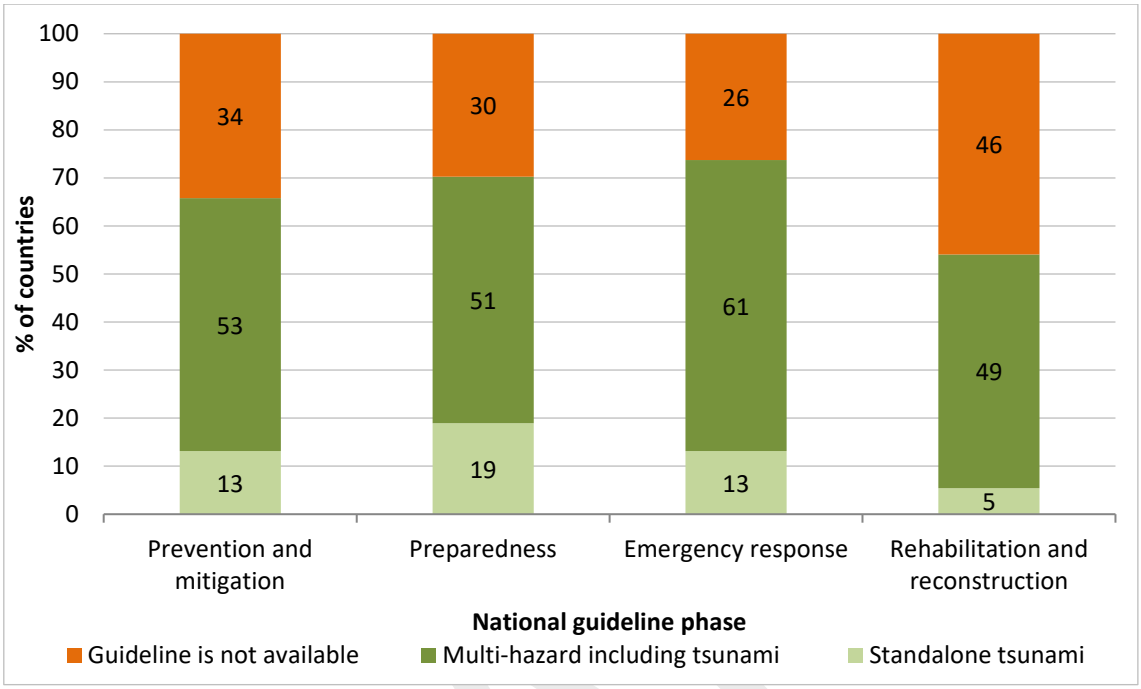

Figure 8. Types of national tsunami guidelines for each phase of disaster management lifecycle.

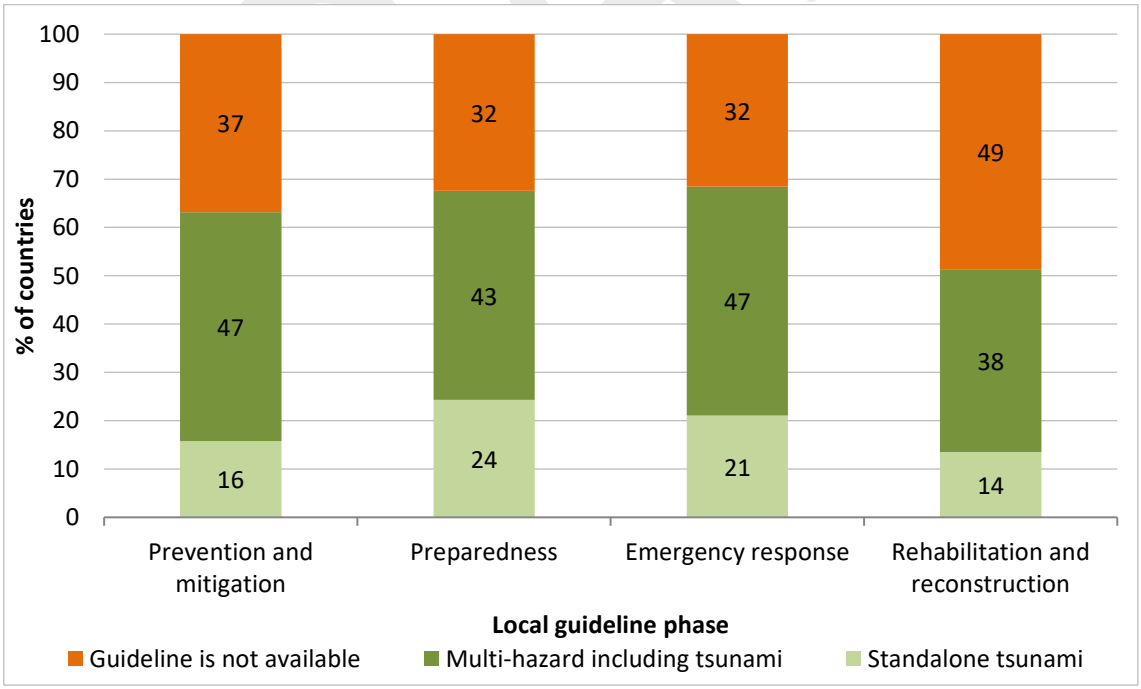

Figure 9. Types of local tsunami guidelines for each phase of disaster management lifecycle.

3.2. Risk assessment and reduction

3.2.1. Hazard assessment

Countries were asked if a tsunami hazard assessment has been undertaken, and if so, what type of assessment.

Thirty-one (31) of the 39 countries participating in this survey (79%) conducted a tsunami hazard assessment.

Figure 10 shows the type of hazard assessment carried out by those countries. Seventeen (17) countries (55%) reported conducting a single hazard assessment on tsunami AND a multi-hazard assessment including tsunami, 9 countries (29%) a multi-hazard assessment that includes tsunami, and 5 countries (16%) a single hazard assessment on tsunami only.

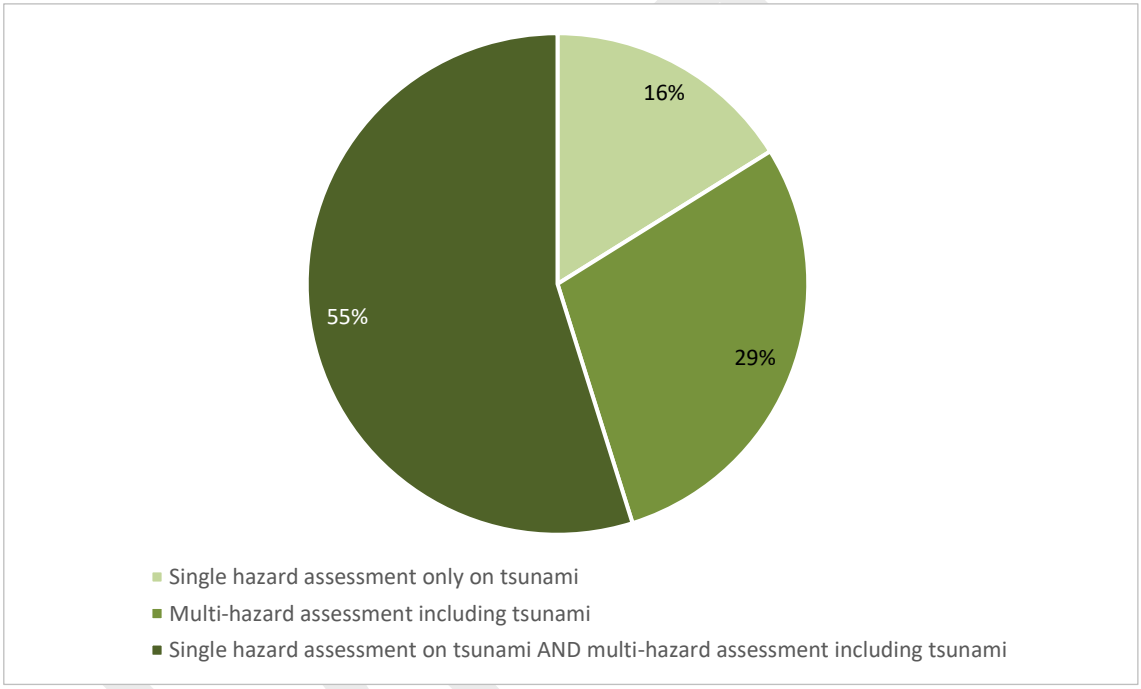

Figure 10. Type of hazard assessment.

For those countries that carried out multi-hazard assessments, respondents were asked to identify the types of hazards that were included (Figure 11). Twenty-three (23) respondent countries who do multi-hazard assessments also include earthquake (88%), 20 include flooding (77%) and 19 include landslide (73%). Less common hazards are cyclone (14 countries – 54%), drought and volcanic eruption (13 countries – 50%). Epidemics hazard is marginal (6 countries – 54%).

Countries mentioned other hazards such as torrential floods, coastal erosion, forest fires, avalanche, severe weather, sea surge, pandemic Covid, storm surge, ocean wave, sea ice and liquefaction.

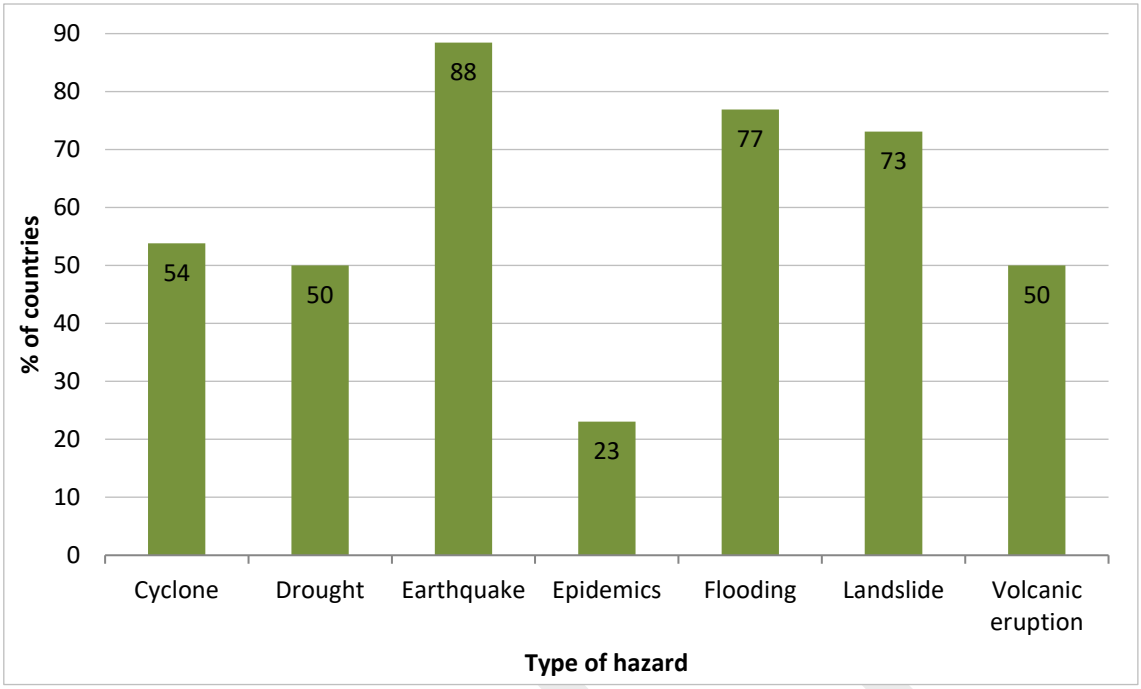

Figure 11. Type of hazard(s) included in multi-hazard assessment.

Out of the 26 countries that conducted a multi-hazard assessment, 2 countries included all seven hazards proposed in this survey. Most countries included between two and six different hazards, three hazards being the most common with 7 countries. One country combined only with the earthquake hazard. There is no constant hazard pattern.

Countries were asked to identify which organisation(s) is/are responsible for the tsunami hazard assessment and at what level they are carried out.

Ninety percent (90%) of the respondent countries reported that a national agency conducted their tsunami hazard assessment. Thirty-five percent (35%) involve a national or international consultant, 35% a national or local university, and 16% an international agency (Figure 12). Seventeen (17) countries (55%) implicate multiple types of organisations for their tsunami hazard assessment, including other propositions.

Some countries also mentioned resorting to states and territories, local governments, private consultants, regional scientific organisations (e.g., Pacific Community – SPC, Secretariat of the Pacific Regional Environment Programme – SPREP), and non-governmental organisations (e.g., Red Cross).

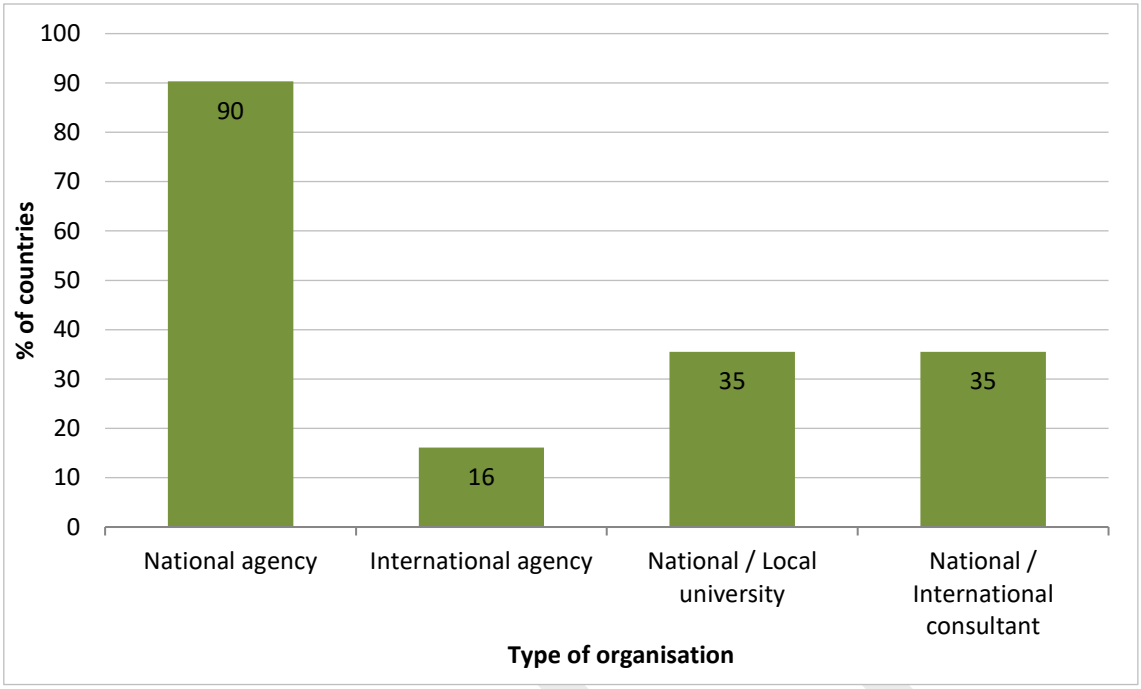

Figure 12. Organisation(s) responsible for the tsunami hazard assessment.

Most countries (81%) carry out the tsunami hazard assessment at a national level, and less than 52% at the other levels: 52% at a city level, 48% at a regional level, and 39% at the village level (Figure 13). Sixty-eight percent (68%) of countries conduct hazard assessments at multiple levels.

Some countries also assess the hazard at other levels such as state or province.

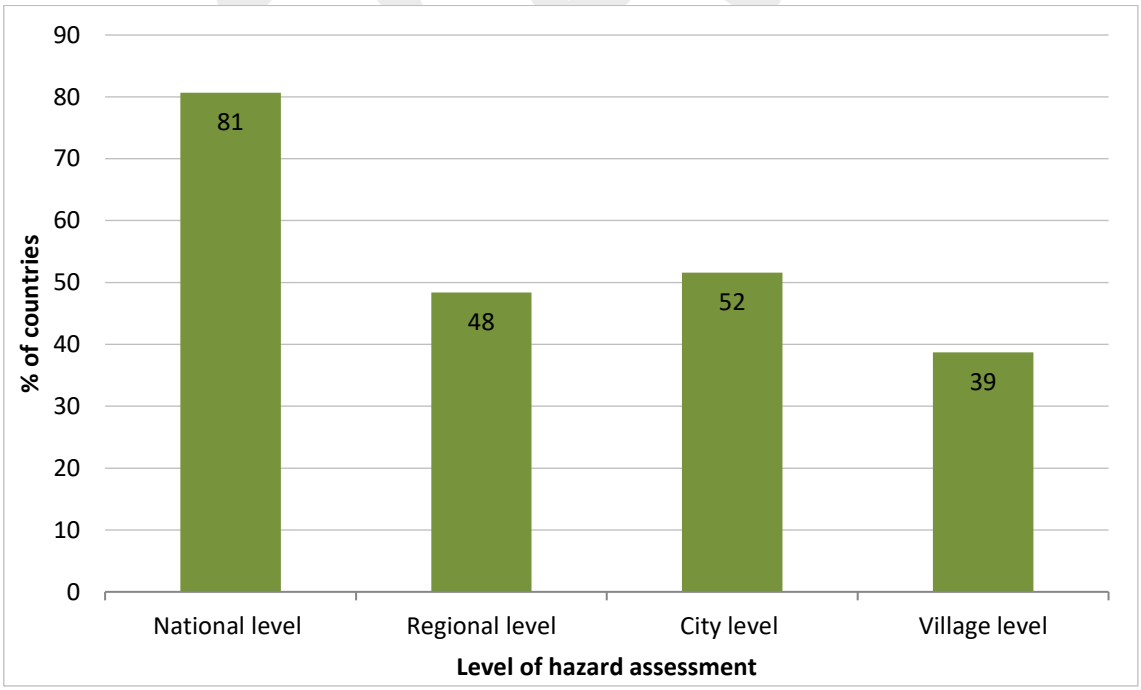

Figure 13. Level at which tsunami hazard assessment is carried out.

Tsunami hazard assessment was conducted mostly based on earthquake sources (97%) and slightly on volcanic and landslide sources (26%). Additional sources, including meteo-tsunami and meteor, are also referenced by one country.

Countries were asked to identify which type of data they used for the tsunami hazard assessment from the list provided in the survey and if they are publicly available, as well as the derivative products.

Thirty-one (31) countries (100%) identify two or more data types used to support their tsunami hazard assessment. Bathymetry data are used by all respondent countries, followed by topography (90%), seismo-tectonic model (84%), land cover (77%) and infrastructure details (77%) (Figure 14).

All these data sources are available to the public in over 32% of the countries, bathymetry being the most accessible (61%).

Seven countries reported other types of data to assess their hazards, such as: field studies, reports and surveys on tsunami impacts, historical tsunami observation testimonies, sea level and tidal regime calculations, household vulnerability and population data, volcano and landslide source models, and imagery (aerial, satellite, LiDAR).

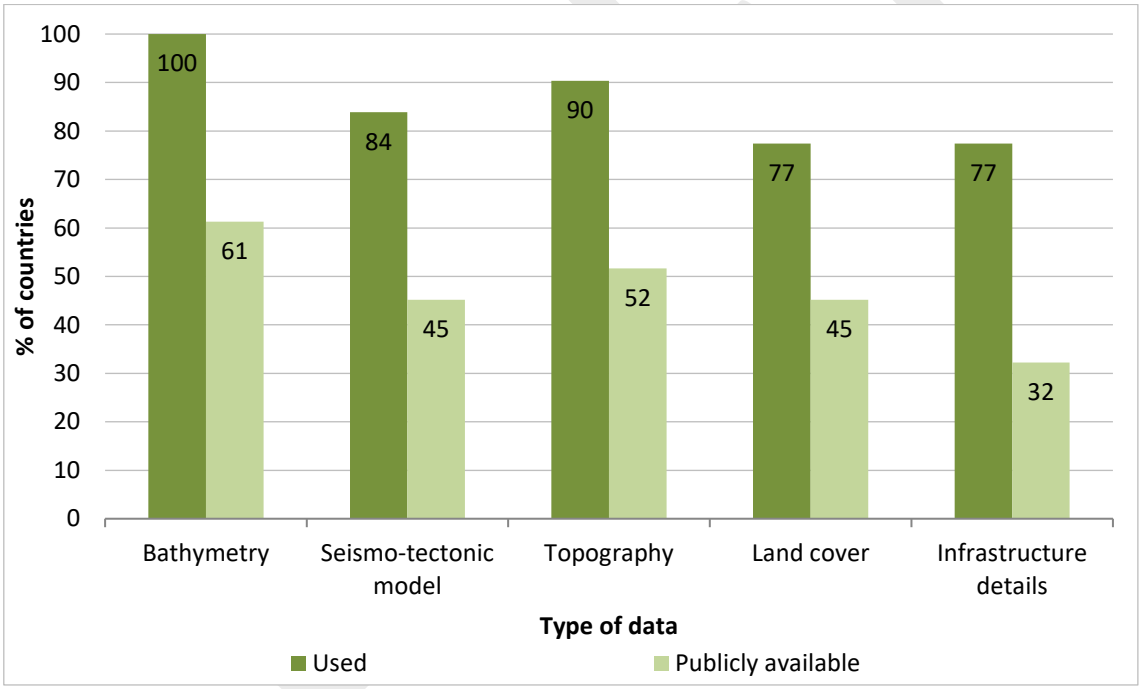

Figure 14. Data type used and publicly available for tsunami hazard assessment.

The number and type of products to emerge from the tsunami hazard assessment varies greatly across the 31 respondent countries (Figure 15). The most common products are inundation maps (90%), hazard maps (87%) and evacuation maps (74%). Other products are also developed by over 52% up to 68% of countries: Deterministic Tsunami Hazard Assessment (DTHA – 68%), field studies on tsunami impacts (65%), guidelines (58%), and Probabilistic Tsunami Hazard Assessment (PTHA – 52%). Most countries (21) have five products or more, while a minority (10) produces less than four. For one country, inundation maps are the only product that emerges from hazard assessment.

Countries also reported Tsunami Travel Times (TTT) and Standard Operating Procedures (SOPs).

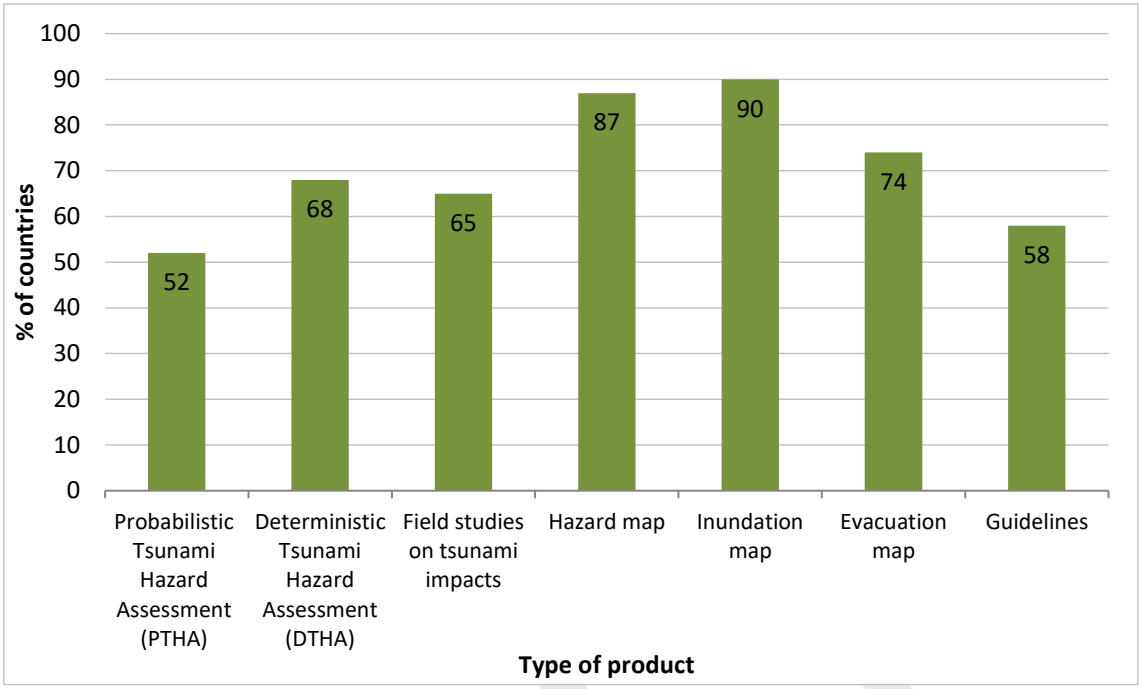

Figure 15. Products from tsunami hazard assessment.

Thirty countries have reported the coastal areas that have been mapped for tsunami hazard, along with an approximation of the percentage at the national level (Annex 1).

Countries were asked to rate their capability to undertake tsunami hazard assessment using a five-point scale, from very poor to very good (Figure 16). Twenty-eight (28) countries (74%) consider having good or very good capability, while 7 countries (18%) as having fair capability. Three (3) countries (8%) rate themselves as having poor or very poor capability.

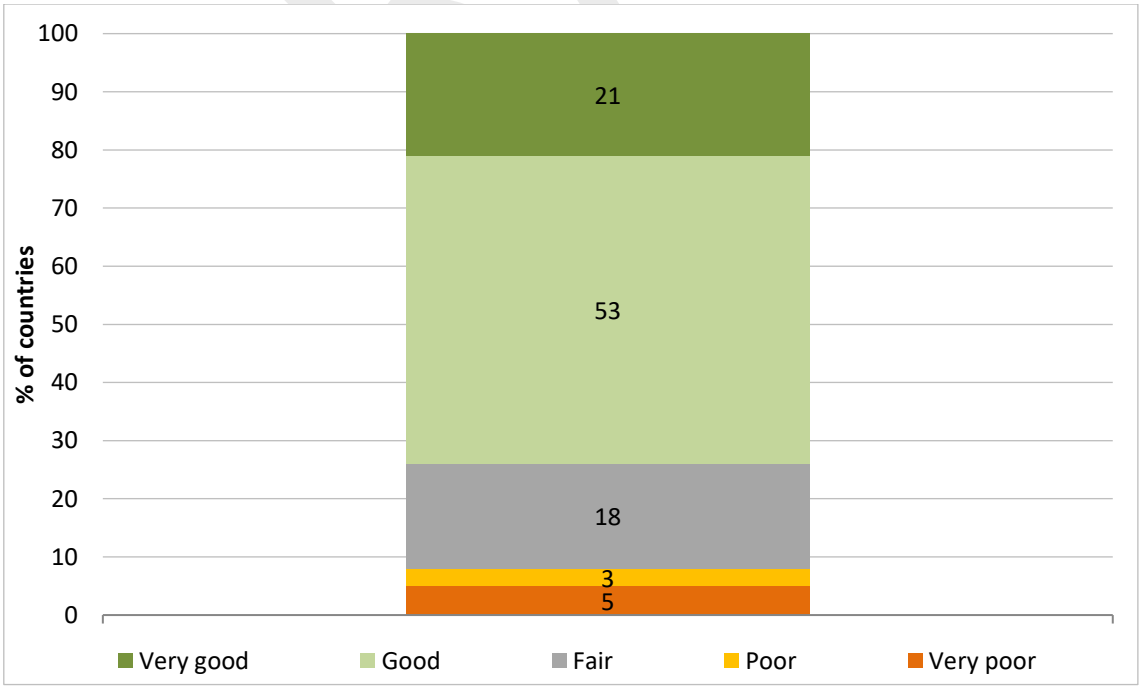

Figure 16. Capability to undertake tsunami hazard assessment.

In a comparable manner, each respondent was asked to rate their country's priorities for capacity improvement across six areas of tsunami hazard assessment, using a five-point scale, from not a priority to essential. The responses indicate that all areas require capacity improvement in at least some countries but using a weighted response across the thirty-eight (38) respondent countries, inundation mapping was ranked as the highest priority for capacity improvement, followed by evacuation and hazard mapping (Table 1).

Areas of tsunami hazard assessment	RII	Rank
Inundation map	0,83	1
Evacuation map	0,82	2
Hazard map	0,81	3
Deterministic Tsunami Hazard Analysis (DTHA)	0,78	4
Field studies on tsunami impacts	0,76	5
Probabilistic Tsunami Hazard Assessment (PTHA)	0,74	6

Table 1. Ranking of priority areas for capacity improvement in tsunami hazard assessment.
RII (Relative Importance Index) = W/AxN where W is the weightage given to each factor (1 = Not a priority, 2 = Low priority, 3 = Medium priority, 4 = High priority, 5 = Essential), A is the highest weight, and N is the number of respondents.

Other areas of capacity in tsunami hazard assessment requiring improvement are:

- Development and establishment of minimum tsunami competency standards / requirements for staff of the NTWC and capacity development for tsunami watch keepers in terms of building seismic skills,
- Ability to identify non-seismic tsunamigenic sources such as submarine landslides and volcanic eruptions,
- Tsunami impacts based financing,
- Tsunami modeling,
- Impacts (inundation and dragging), exposition and vulnerability maps,
- Maps and products to delineate locations where there is no high ground for evacuation and therefore vertical evacuation options (such as towers) must be constructed,
- Consideration of smaller settlements and islands,
- Human resources for tsunami software analysis, development, and dissemination,
- Communication between all parties (from modelers to emergency management) to ensure that the scientific results are translated into emergency management response.

Countries were asked to rate their capacity to give training and/or consultancy to other countries on the same six areas of tsunami hazard assessment, using a five-point scale, from no capacity to very good capacity (Figure 17).

The results indicate that there is capacity among the respondent countries to deliver training and/or consultancy in all six areas of tsunami hazard assessment. Considering good and very good capacity, it is highest for mapping and DTHA (≥43% of countries) and lowest for field studies on tsunami impacts (33%) and PTHA (24%). Three (3) countries (8%) have no capacity for none of the areas.

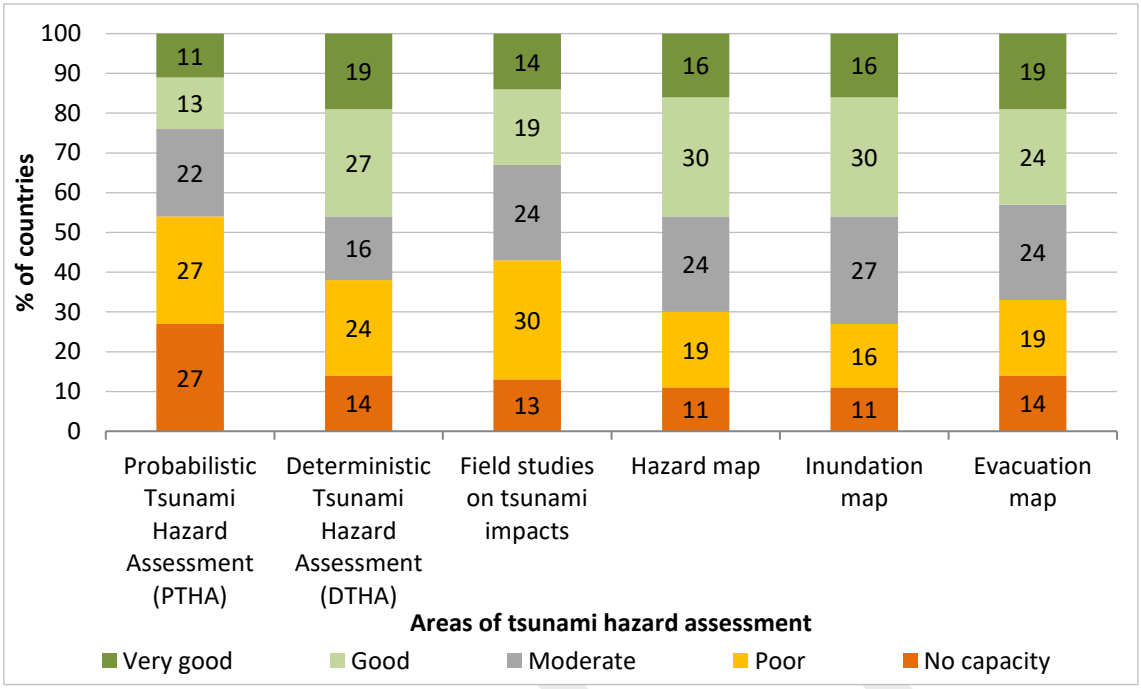

Figure 17. Capacity to give training and/or consultancy on tsunami hazard assessment to other countries.

3.2.2. Risk assessment

Countries were asked to confirm whether a risk assessment had been carried out, and if so, what type of assessment. Twenty-nine (29) of the 39 countries participating in this survey (74%) have undertaken tsunami risk assessments.

Figure 18 shows the type of risk assessment conducted by each of the 29 countries. Fourteen (14) countries (48%) reported conducting a single hazard assessment on tsunami AND a multi-hazard assessment including tsunami, 8 countries (28%) a multi-hazard risk assessment that includes tsunami, and 7 countries (24%) a single hazard assessment only on tsunami.

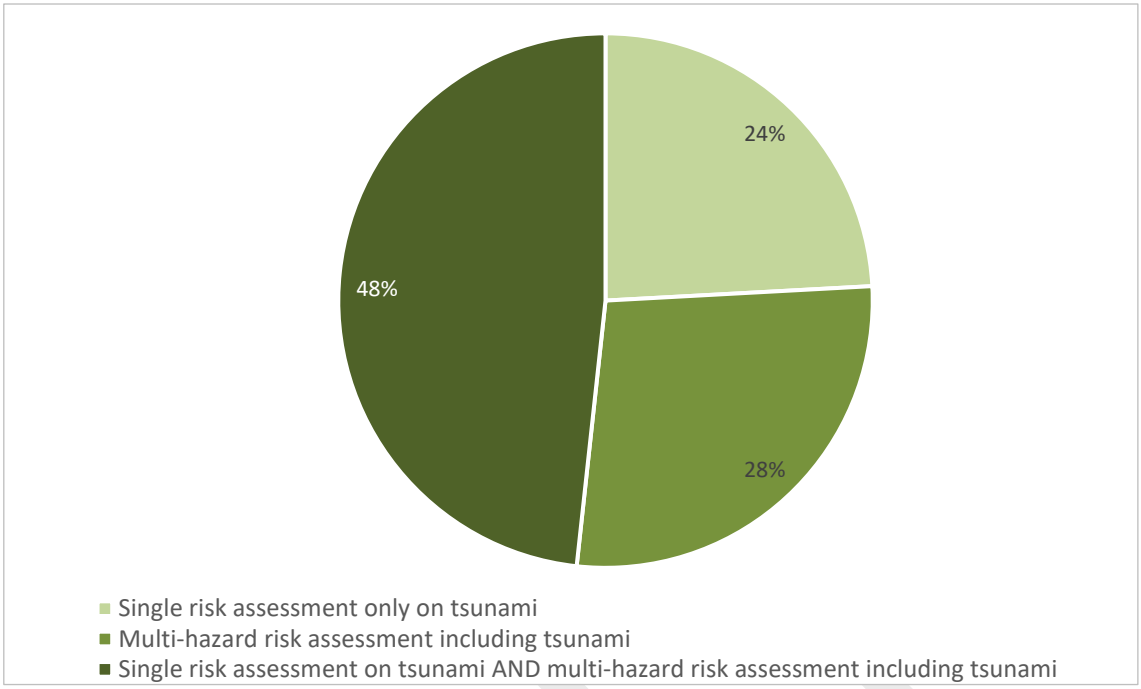

Figure 18. Types of risk assessment.

For those countries that carried out multi-hazard risk assessments, respondents were asked to identify the types of hazards that were included. As shown in Figure 19, 22 respondent countries which conduct multi-hazard risk assessments mostly include earthquakes (77%) and floodings (77%). Between 45 and 55% of the countries include cyclones, landslides, and droughts. Less common hazards (32% of the countries) are epidemics and volcanic eruptions.

Hazards mentioned by countries other than the ones proposed in the survey are forest fires, sea surge, king tide, extreme weather, extreme wave / abrasion, flash flood, and pandemic Covid.

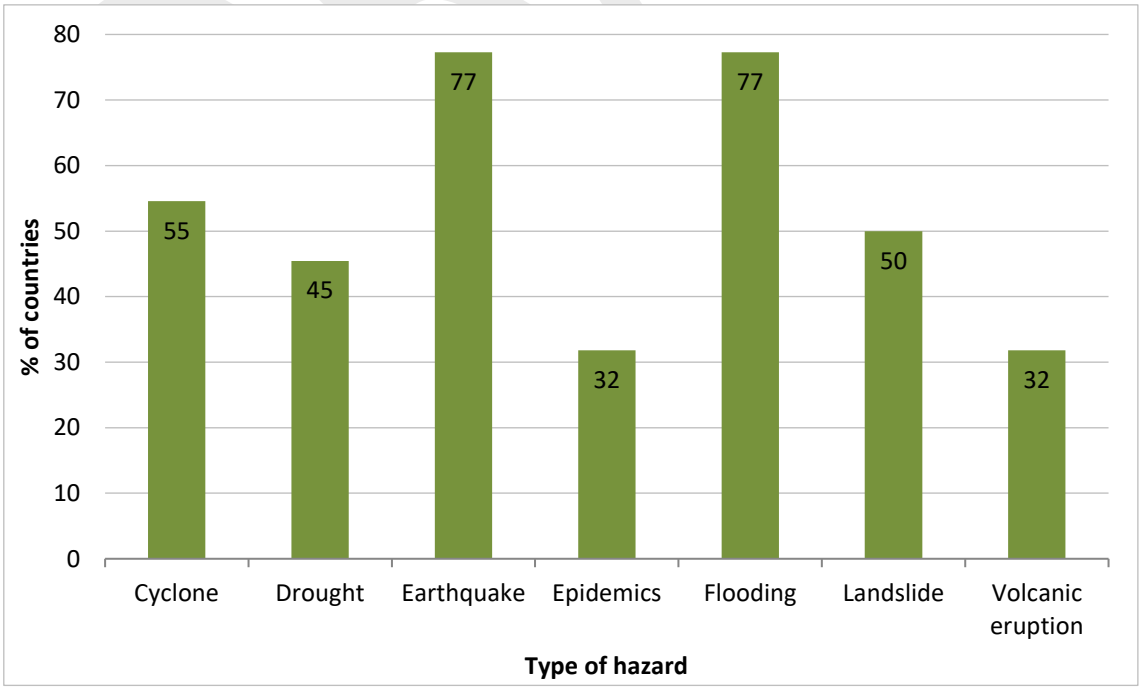

Figure 19. Type of hazard included in the multi-hazard risk assessment.

Countries were asked to identify the organisation(s) responsible for carrying out risk assessments and the level at which they are carried out.

The organisations responsible for conducting tsunami risk assessments vary across the respondent countries (Figure 20). However, 79% of the countries reported that a national agency is involved. To a lesser extent, other organisations include national / international consultants (24%), national / local university (21%) and international agency (10%). In fourteen countries (48%), tsunami risk assessment is the responsibility of multiple actors.

Other stakeholders mentioned by countries are regional agencies, state and local governments, local communities, private sector consultants, and non-governmental organisations (e.g., Red Cross).

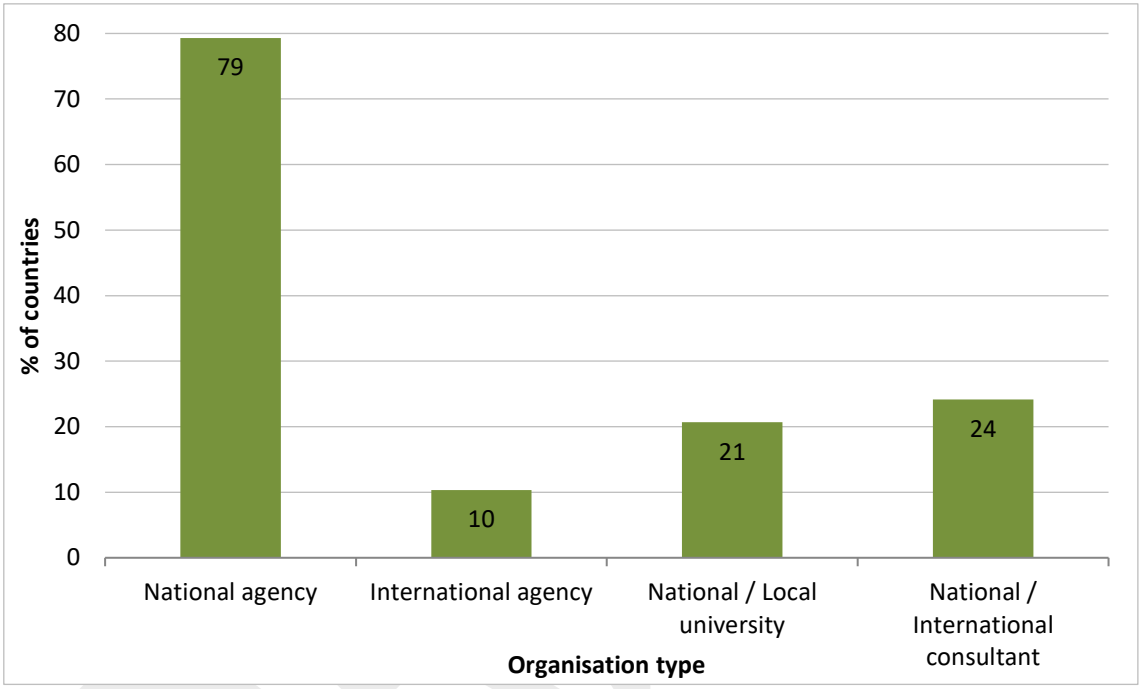

Figure 20. Organisation(s) responsible for the tsunami risk assessment.

Most countries conduct tsunami risk assessments at a national level (69%). Less than 45% of countries conduct it at other levels: regional level (45%), city level (38%), community / neighbourhood level (34%) and village level (31%) (Figure 21). Forty-eight percent (48%) of countries carry out hazard assessments at multiple levels.

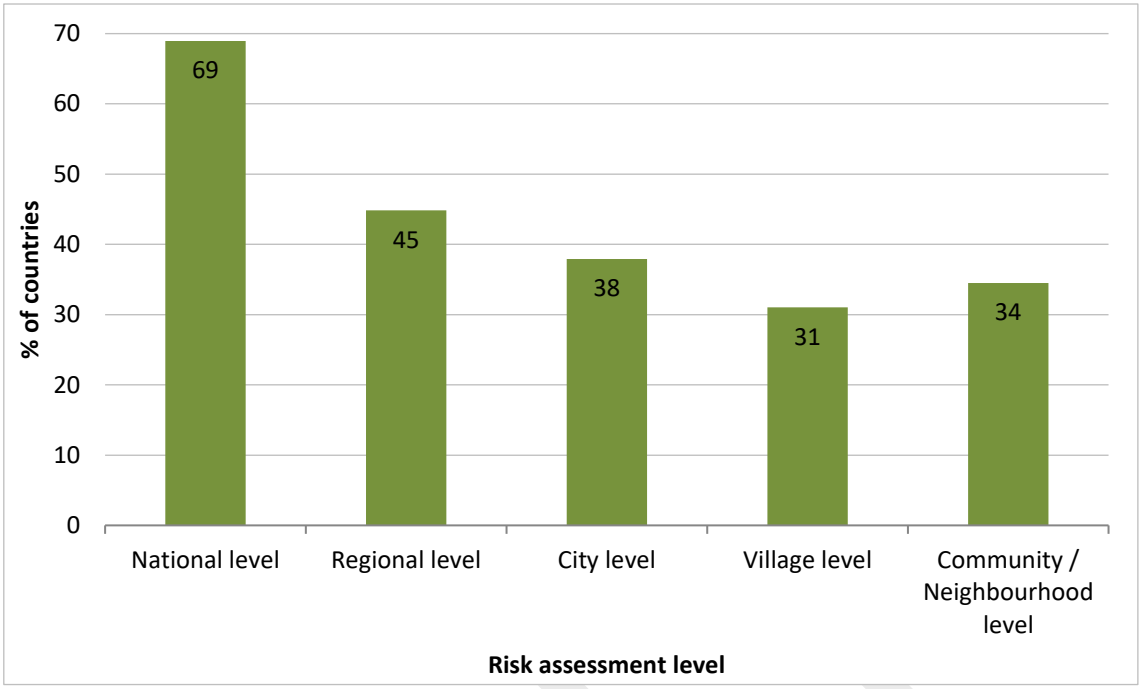

Figure 21. Levels at which the tsunami risk assessment is carried out.

Countries were asked to identify the type of products that emerge from the tsunami risk assessment. Every product on the list proposed in the survey was developed by more than 57% of the countries (Figure 22). Mapping is the most important product with risk map (26 countries – 90%), closely followed by the evacuation map (24 countries – 83%). Action plans and guidelines are produced by 69% and 55 % of the countries, respectively. Twenty-five (25) countries develop two products or more (86%). Four (4) countries developed a single product which is the risk map. Some other products mentioned by the respondents are Standard Operating Procedures (SOPs) and decrees. A pedestrian evacuation modelling has been included in the tsunami risk assessment for 16 countries (57% – 1 country skipped this question).

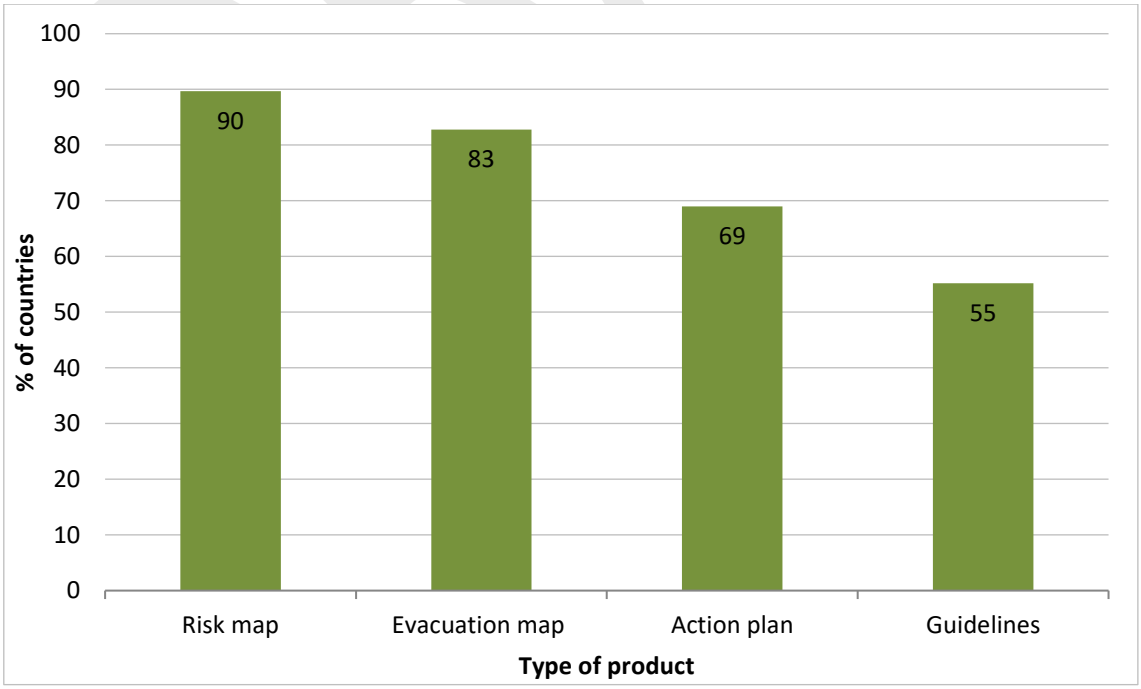

Figure 22. Type of product emerging from the tsunami risk assessment.

Twenty-seven (27) countries reported the coastal areas that have been mapped for tsunami risk and an approximation of the percentage at the national level as well as the number of cities / municipalities / regencies at risk (Annex 2).

Each country was asked to rate their capacity to undertake a tsunami risk assessment, using a five-point scale from very poor to very good. Responses indicate that 58% of countries rate their capacity as good or very good (Figure 23). Three (3) countries (8%) rate themselves as having poor or very poor capability.

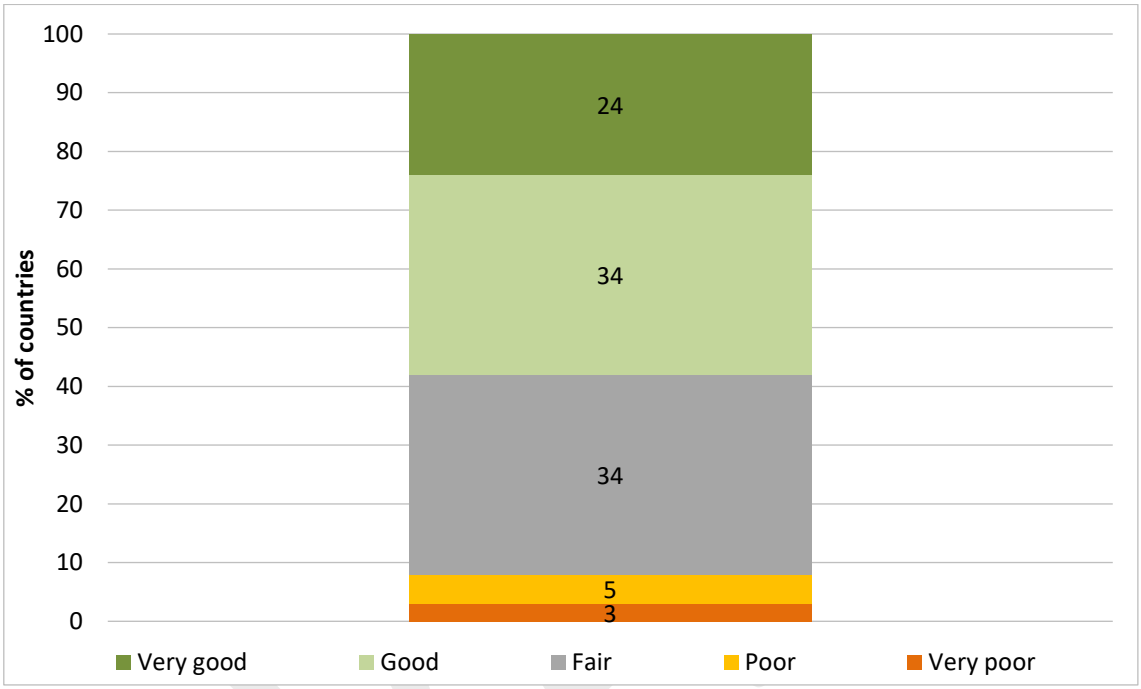

Figure 23. Capacity to undertake a tsunami risk assessment.

Using a similar approach, each country was asked to rate their priorities for capacity improvement across five levels of tsunami risk assessment, using a five-point scale, from not a priority to essential. Using a weighted response across the thirty-eight respondent countries, national level is ranked as the highest priority for capacity improvement, followed by regional, city, village and community / neighbourhood levels (Table 2).

Priority level	RII	Rank
National level	0,80	1
Regional level	0,79	2
City level	0,77	3
Village level	0,72	4
Community / Neighbourhood level	0,72	4

Table 2. Priorities for capacity improvement in tsunami risk assessment.
RII (Relative Importance Index) = W/AxN where W is the weightage given to each factor (1 = Not a priority, 2 = Low priority, 3 = Medium priority, 4 = High priority, 5 = Essential), A is the highest weight, and N is the number of respondents.

Three countries mentioned other areas that might require improvement: tsunami ready components, tsunami competency standards, scholarship opportunities, continuous advocacy on tsunami awareness and drills, required data for proper tsunami risk assessment, impact assessment with probability approach, building resistance evaluation, and tsunami modeling.

Each country was asked to rate their capacity to give training and/or consultancy to other countries on the same five levels of tsunami hazard assessment (from community / neighbourhood to national), using a five-point scale, from no capacity to very good capacity (Figure 24). For each level of risk assessment, up to 66% of the countries have at least a moderate capacity to give training and/or consultancy to other countries. Eight (8) countries (21%) reported good or very good capacity at each level. Five (5) countries (13%) mentioned having no capacity in any of the level.

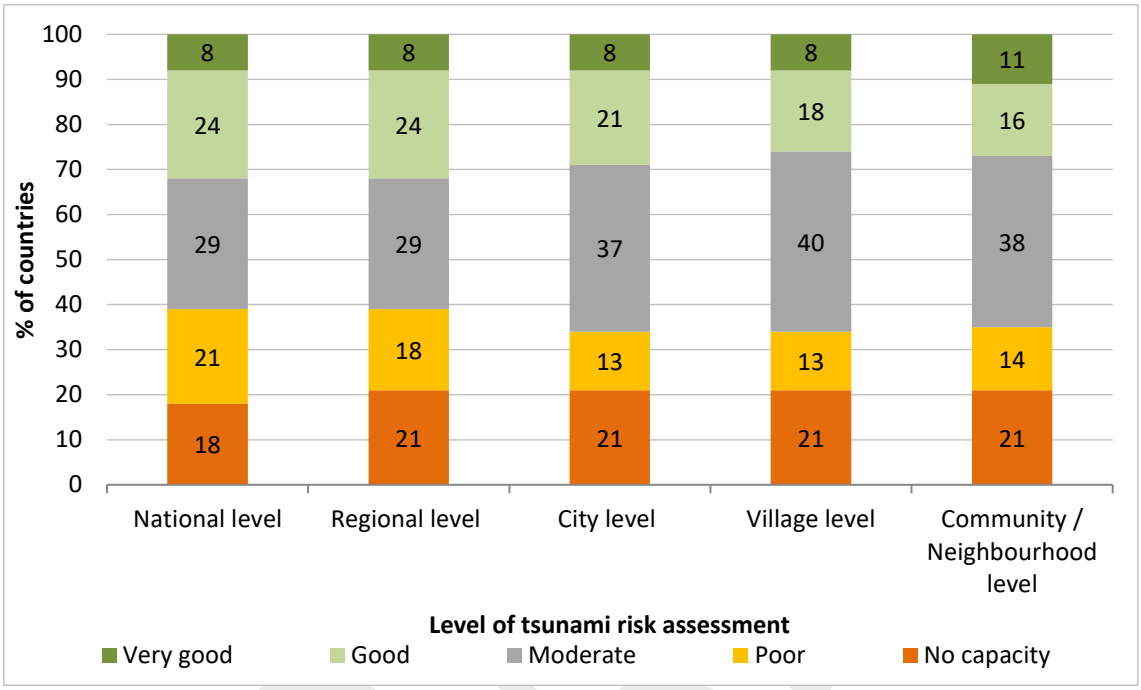

Figure 24. Capacity to give training on tsunami risk assessment.

3.3. Detection, warning and dissemination

3.3.1. Detection and warning

Thirty-seven (37) countries (95%) reported that they have a national capability to assess and/or receive potential tsunami threat information, and to advise and/or warn their coastal communities.

Countries were asked if they use the data provided by the PTWS Tsunami Service Providers (TSPs) or their own data to determine national threats (Figure 25). Seven of the 37 countries (19%) rely solely on the data provided by the PTWS TSPs and 1 on its own threat assessments (3%). For majority of countries, both types of data are used (43%). Thirteen (13) countries (35%) used TSP data as a back-up of their own threat assessment data.

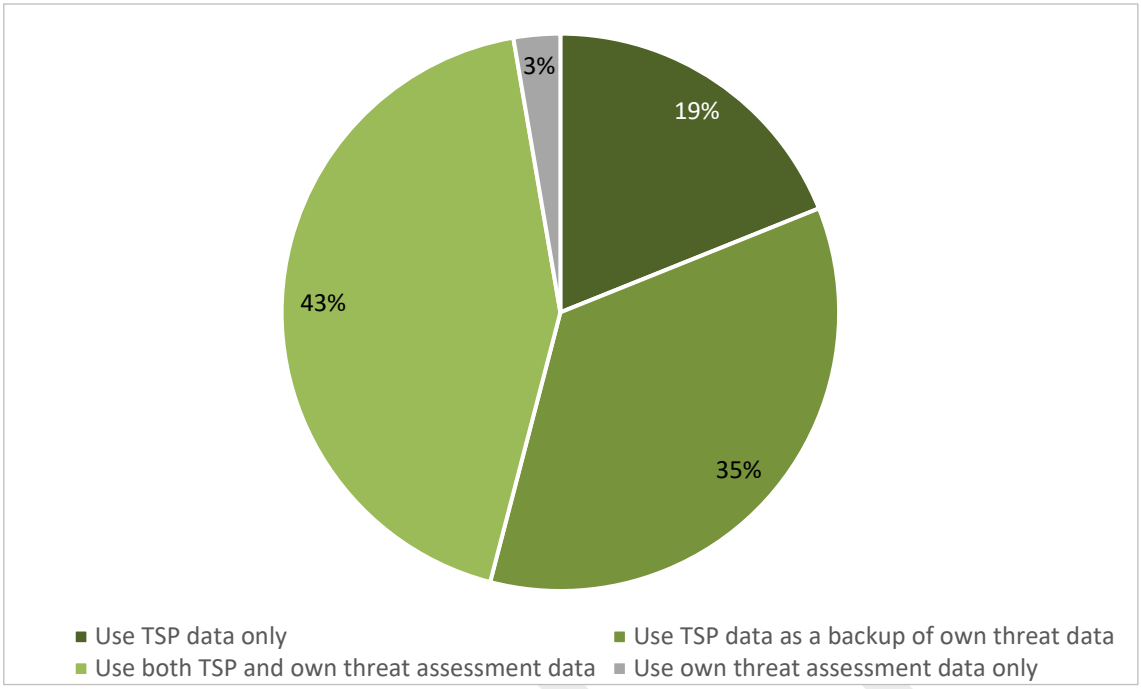

Figure 25. Data used to determine national threats.

National Tsunami Warning Centers (NTWCs) in countries are mostly able to monitor local tsunamis with an earthquake source (84%). Other sources are considered to a lesser extent to date (Figure 26): volcanic (30%), meteo-tsunami (30%), landslide (22%) and meteor (5%). For 5 countries (14%), none of these sources are monitored. Fifteen (15) countries (41%) monitor more than one local tsunami source.

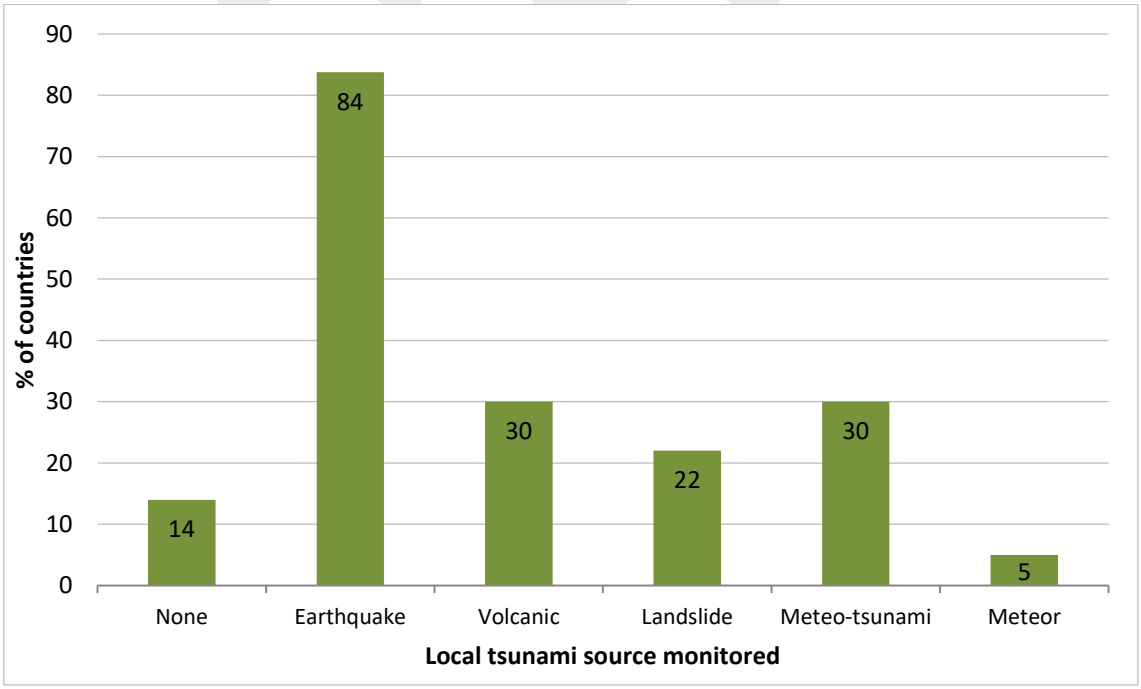

Figure 26. Local tsunami sources monitored by National Tsunami Warning Centers.

Thirty-five (35) countries (95%) reported that the organization responsible for assessing and/or receiving potential tsunami threat information operates 24x7. For the two last respondent countries, which are SIDS, it runs:

- in normal working hours, from 8 am to 4 pm, 24-hour for commercial flight, and 2-hour shift from 8 am to 10 am for weekends and public holidays,
- with officers performing partial 24x7 operations, being reachable whenever there is an emergency (mobile phone alerts, SMS, and email alerts).

Countries were asked to confirm what type of infrastructure is available to enable 24x7 operations (Figure 27). Over 89% of the countries reported the internet (97%), and mobile (95%) and landing (89%) phones. Internet (mobile – 76% – and broadband – 68%) and Uninterruptable Power Supply (UPS – 70%) were also widely mentioned. Radio (59%) and GTS (51%) were cited by about 50% of the countries. Less than 50% countries mentioned the remaining infrastructures (internet wireless – 49%, satellite phone – 46%, fax – 43%, internet satellite – 30%, VSAT – 24% and internet dial-up – 8%). Each country uses at least two distinct types of infrastructure.

Other cited configurations are the national tsunami siren system, warning receiver system, radio alerting system, HF radio, California Integrated Seismic Network (CISN), GEONETCast, mobile applications, social networks and TV station dedicated.

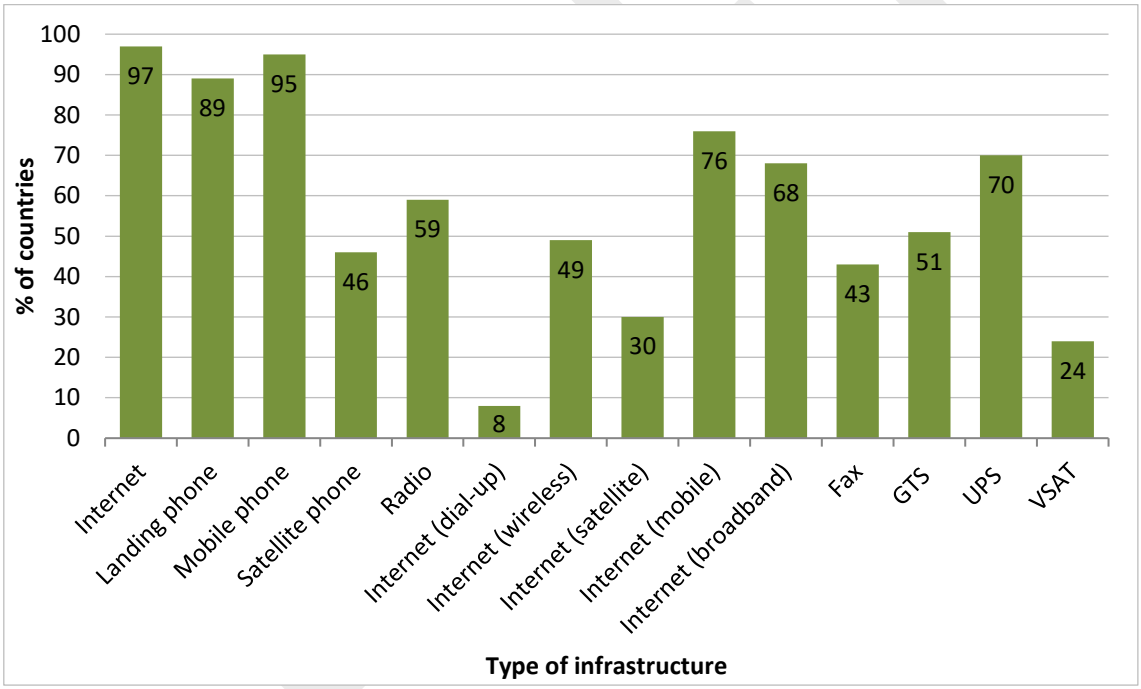

Figure 27. Infrastructure availability to support 24x7 operations.
GTS = WMO Global Telecommunication System; UPS = Uninterruptable Power Supply; VSAT = Very Small Aperture Terminal.

Countries were asked to report the level of tsunami threat forecast information produced by the responsible organization (Figure 28). Eighty-nine percent (89%) of countries reported producing national level threat forecast information, while 78% of countries produce local level information. Fifteen (15) countries (41%) mentioned producing ocean-wide information. Seventy-six percent (76%) of countries elaborate multiple levels of tsunami threat forecast information.

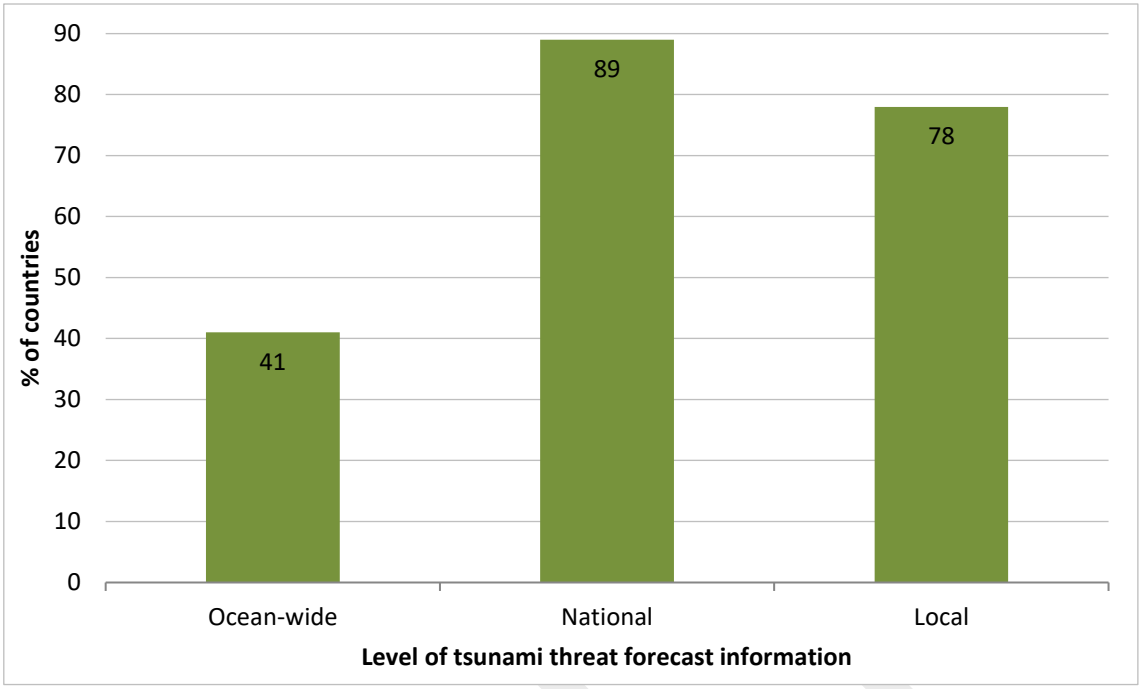

Figure 28. Level of tsunami threat forecast information is produced by the responsible organization.

Countries were asked about their access to seismic, sea level and Global Navigation Satellite System (GNSS) networks and associated data.

- ***Seismic network***

Twenty-seven (27) of the respondent countries (73%) reported that the organization responsible has access to both national and international seismic networks. Seven (7) countries have access to either one (3 countries to national only, 4 countries to international only). Three (3) countries (8%) have no access at all.

Most countries reported that national seismic data is either all (19 countries – 58%) or partially (12 countries – 36%) shared in real time. Two (2) countries (6%) mentioned that data is not shared. Six countries skipped the question. The shared data mainly consists of earthquake magnitude, location, and depth.

Sixty-one percent (61%) of respondent countries (28 total) reported that their broadband seismometers are listed accurately in the IRIS Global Seismographic Network (GSN). Eleven (11) countries skipped the question.

When compared to the IRIS database, 9 respondent countries (30%) reported that some stations have been added to their network, while for 3 countries (10%) some stations have been decommissioned. Nineteen (19) countries (63%) mentioned that there are no changes. A notable 23% (9 out of 39 countries) did not answer this question, introducing a bias.

- ***Sea level network***

Eighty-six percent (86%) of respondent countries reported that they have access to both national and international sea level networks (32 countries). Two (2) countries have access to either one (1 country to national only, 1 country to international only). Three (3) countries have no access to a network. The sources of information are national data through national communication infrastructures, and international data through the World Meteorological Organisation (WMO)

Global Telecommunications System (GTS), the IOC Sea level Facility, and the Pacific Tsunami Warning Center (PTWC – TIDE TOOL).

National data sharing is high, with 71% (24 countries) sharing all data in real time and 21% (7 countries) sharing partially. Three (3) countries (9%) have no access at all. Five countries skipped the question. Data consists of sea surface temperature, sea level height, atmospheric pressure, wind speed, wind gust and direction, water temperature, Estimated Time of Arrival (ETA). Thirteen (13) countries reported that 100% of their sensors shared data in real time and one country only 57%.

For sea level network accuracy, 75% of respondent countries affirmed their stations are listed correctly in the IOC sea level station monitoring facility database. However, 18% (7 countries) skipped this question, potentially skewing the results.

When compared to the database listing, 4 countries (16%) reported that stations have been added to their network, while for 3 countries (12%) some stations have been decommissioned. Eighteen (18) countries (72%) mentioned that there were no changes. Fourteen (14) countries out of 39 surveyed skipped this question, which might create bias in the analysis.

- ***Global Navigation Satellite System (GNSS) network***

Twenty-one (21) respondent countries (58%) reported having access to GNSS network.

Countries were asked about other national observing networks used for tsunami early warning (Figure 29). Twenty (20) countries (54%) reported that they operated no other observing networks, and 2 countries did not provide a response. Seven (7) respondent countries (19%) reported operating GNSS, and 2 (5%) reported operating coastal radars. Some countries identified other observing networks, including offshore water pressure gauges, fiber optic array, infrasound network weather station (atmospheric pressure sensors), one-point vertical sea level observation with radar sensor, Deep-ocean Assessment and Reporting of Tsunamis (DART) network, meteorological wave buoys, tsunami buoys and a monitoring network for volcanic activity. A discrepancy is noted in responses regarding GNSS network access (21 countries indicating access versus only 7 in this section).

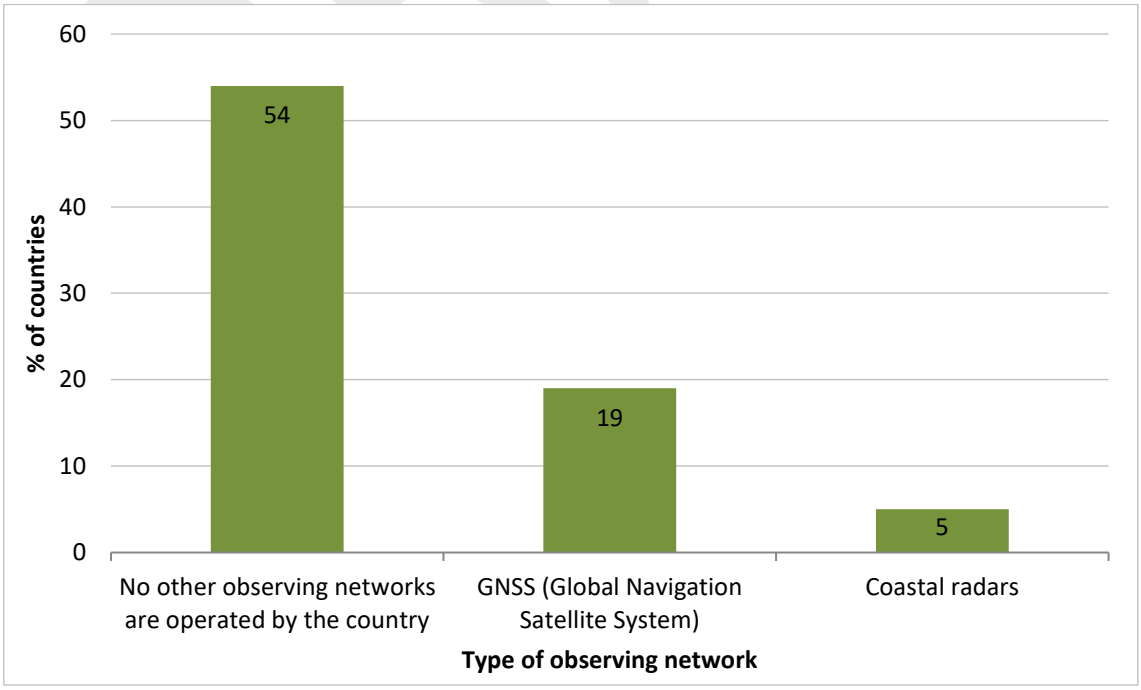

Figure 29. Other observing networks operated and used for tsunami early warning.

Countries were asked to report on their capacity to analyze real-time seismic and sea level data for tsunami threat, their capacity for tsunami modelling to support generation of threat forecasts, as well as the software tools they use to support these initiatives.

Twenty-nine (29) of respondent countries (78%) reported to be capable of analyzing real time seismic and sea-level data for potential tsunami threats. Software tools used for this purpose vary across countries, and some are in-house developed systems:

- *For seismic data:* Atlas, SeisComP (3 and 5), TOAST (Tsunami observation and simulation), SWIFT (Source parameter determination based on Waveform Inversion of Fourier Transformed seismograms), EQP (Earthquake Prediction), SEISAN, Antelope (TM), SIGMA.
- *For sea level data:* Tsunami database, Hydra, Tsunami Travel Time (TTT), Moment tensor and tsunami analysis software, TsuCAT, Tsunami synthesizer model, SIPAT (integrated tsunami warning and prediction system), TeWS Visualization, IOC Sea Level Station Monitoring Facility (SLSMF), IOC Tide Tool, SIFT inversion of DART data, MOST.

Twenty-six (26) of respondent countries (72%) have the capability for tsunami modelling to support generation of threat forecasts.

- *A range of modelling tools are used across countries:* ComMIT, Tsunami Synthesizer Model, GPU-based tsunami model, TOAST (Tsunami Observation And Simulation), RCET SIFT, SIPAT (integrated tsunami warning and prediction system), WINITDB, CISN, EMWIN, TsuCAT, TsuSim (EasyWave), JAGURS, TOAST, TUNAMI, COMCOT (COrnell Multi-grid COupled Tsunami model), MOST, TAITOKO, and in-house-developed tools.
- *Examples of data used:* bathymetry (GEBCO, NAMRIA, ETOPO), topography (NAMRIA IfSAR, SRTM), source parameters, and shoreline data (CoastSaT, NAMRIA).

Twenty-eight (28) of the respondent countries (76%) reported that the organisation responsible for identifying a potential tsunami threat also issues national tsunami watches, advisories, alerts, and/or warnings.

Thresholds for declaring a potential national tsunami emergency vary between countries but the criteria are quite similar. For an earthquake source, there are location (local, regional or teleseismic event), depth, magnitude, occurrence, and sea level height at the coast (Annex 3). Same observation can be made for termination of the warning situation, with a variety of criteria (Annex 4).

Countries were asked to report on their participation in communication tests and exercises. Ninety-seven percent (97%) of the respondent countries reported that their NTWC and/or TWFP participated in the regular communications tests conducted by the PTWS TSPs, and 92% in the national and/or international tsunami exercises (e.g., PacWave, Aelan Wave, CaribeWave, IOWave, PacifEX). Two countries skipped these two questions.

Countries were asked to report on any damaging tsunami since 2005, and the national response to those events. Fifty-one percent (51%) of the respondent countries have been impacted and their answers are recorded in Annex 5. Most cited tsunamis have an earthquake source, and particularly the 2011 Tohoku earthquake in Japan. Also, the 2022 Hunga Tonga Hunga Ha'Apai (HTHH) volcanic eruption has been mentioned by several countries, bringing out another tsunami source.

Countries were asked if there were major enhancements to their national warning standard operating procedures (SOPs) and alerting since 2020. Twenty-seven (27) countries (75%) reported a wide range of improvements, including:

- review of national warning SOPs and/or response plans,

- improvement of seismic networks, increasing number of seismic stations, use of offshore pressure gauges, installation of DART buoy network,
- consideration of non-seismic generated tsunami sources such as volcanic activity and landslide,
- inclusion of more warning points and of the outer islands,
- automation of the reception of seismic information, processing, writing, and issuing of the bulletin, ability to provide scientific advice containing ensemble and time-dependent forecasting, introduction of the W-Phase as an official source, consideration of database of precomputed scenarios, introduction of TsuCAT software,
- establishment of full 24/7 warning operations, creation of community groups of trained volunteers,
- implementation of Earthquake Early Warning (EEW) to send warning messages using social networks, improvement of communication systems, use of Cell Broadcasting Service (CBS) even for low level tsunami forecast, upgrade and increasing number of siren stations, inclusion of Emergency Alert and Warning Messages (EAWM),
- introduction of constant training of the different stakeholders with exercises.

3.3.2. Dissemination

Countries were asked to report on how their tsunami information (warning, public safety action, etc.) is disseminated (Figure 30). All countries (100%) use multiple ways for dissemination (at least two). Email (87%) and social media (82%) are most widely used (>80% of countries), closely followed by sirens (69%), webpage (67%), SMS (67%), television (67%), telephone (64%) and radio (64%).

Other methods reported by countries are dedicated lines, community word distribution, cell broadcast, mobile applications, communities' coconut wireless network and traditional instruments.

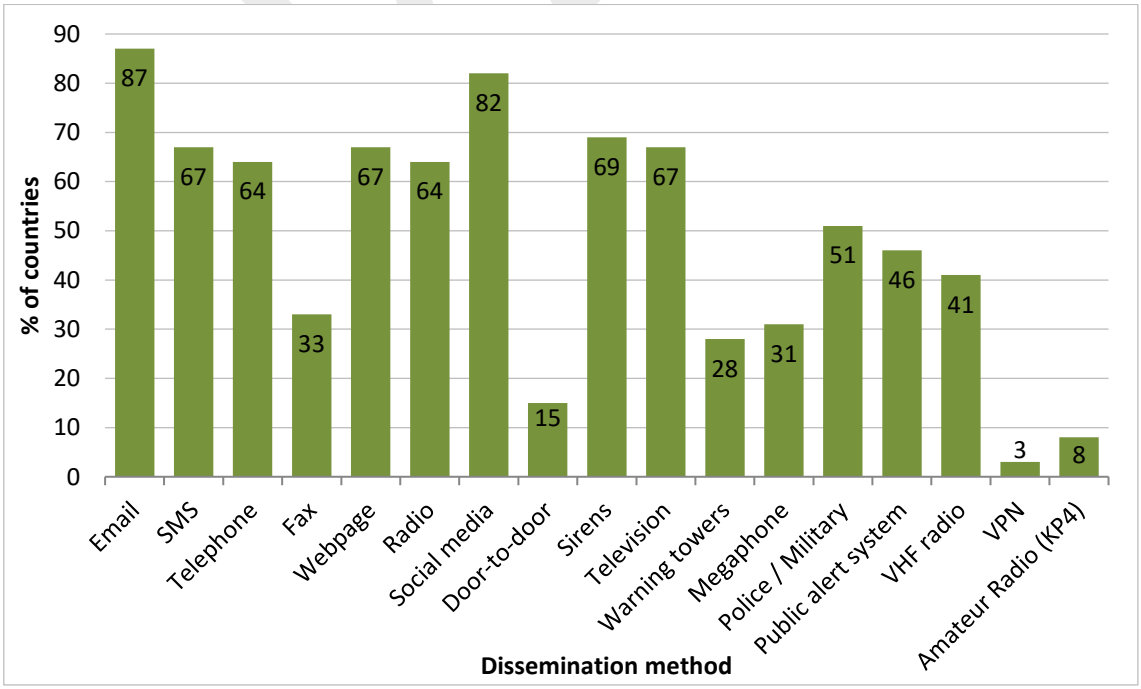

Figure 30. How tsunami information is disseminated.

Thirty-two percent of the countries (32%) have a national tsunami warning system utilizing the Common Alert Protocol (CAP) to disseminate warnings. It is often integrated through the Emergency

Alert System (ESA), a public system based on cell broadcast. The message is generated automatically and disseminated to the stakeholders (ministries, governments, public institutions, emergency agencies…) and various channels and platforms such as mobile applications and google alert.

3.4. Awareness, preparedness, and response

3.4.1. Standard operating procedures

Countries reported on the availability of standard operating procedures (SOPs) for emergency response during the upstream (Figure 31) **and downstream** (Figure 32) **stages of tsunami early warning**.

Over 90% of the countries have upstream emergency response SOPs that address 24/7 Emergency Operations Center (EOC – 90%), receiving information from the National Tsunami Warning Center (NTWC – 95%), and response criteria and decision-making (95%). However, between 56% and 62% of the respondent countries still require support to develop SOPs in all three aspects. To do so, they need assistance to develop / improve human resources (in 55–63% of the countries) and infrastructure (in 56–62% of the countries).

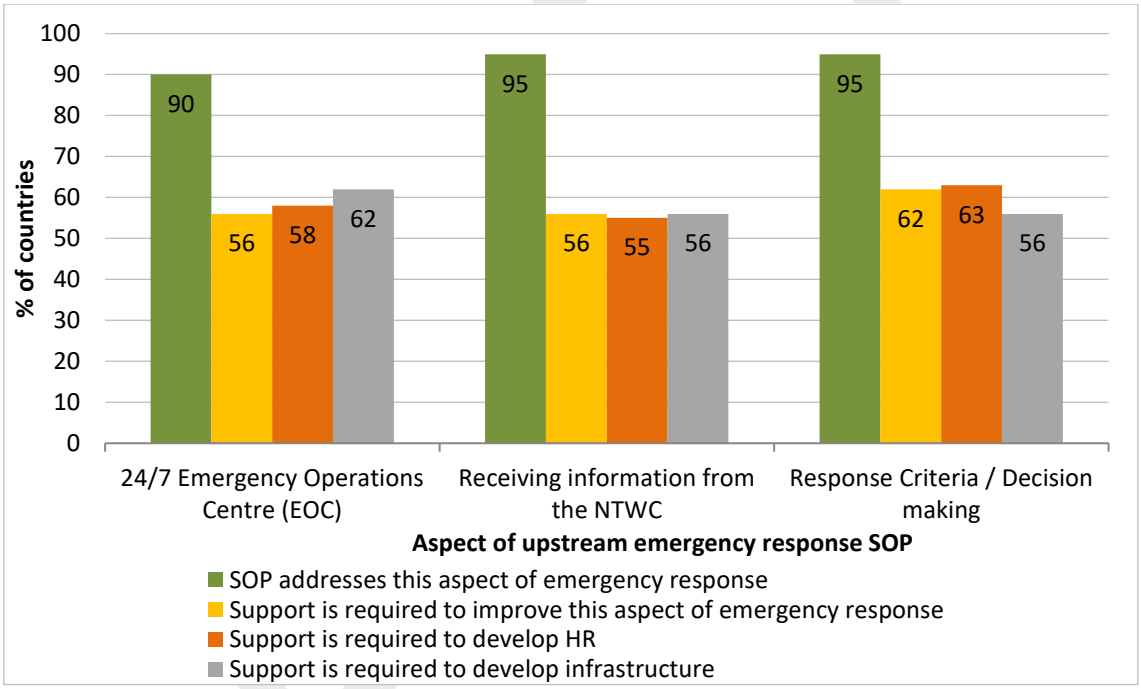

Figure 31. Consideration of aspects and support required to develop them for upstream emergency response SOPs.

All countries (100%) have downstream emergency response SOPs that deal with warning dissemination, while over 80% address all other aspects: communication with local governments (95%), with other stakeholders (92%) and with NTWC (86%), evacuation call procedures (84%), media arrangements (82%) and community evacuation procedures (81%).

Despite widespread consideration of these aspects in SOPs, most countries still require support to develop them (55–66%). They express the need of help to develop human resources (66–71%) and infrastructures (63–71%).

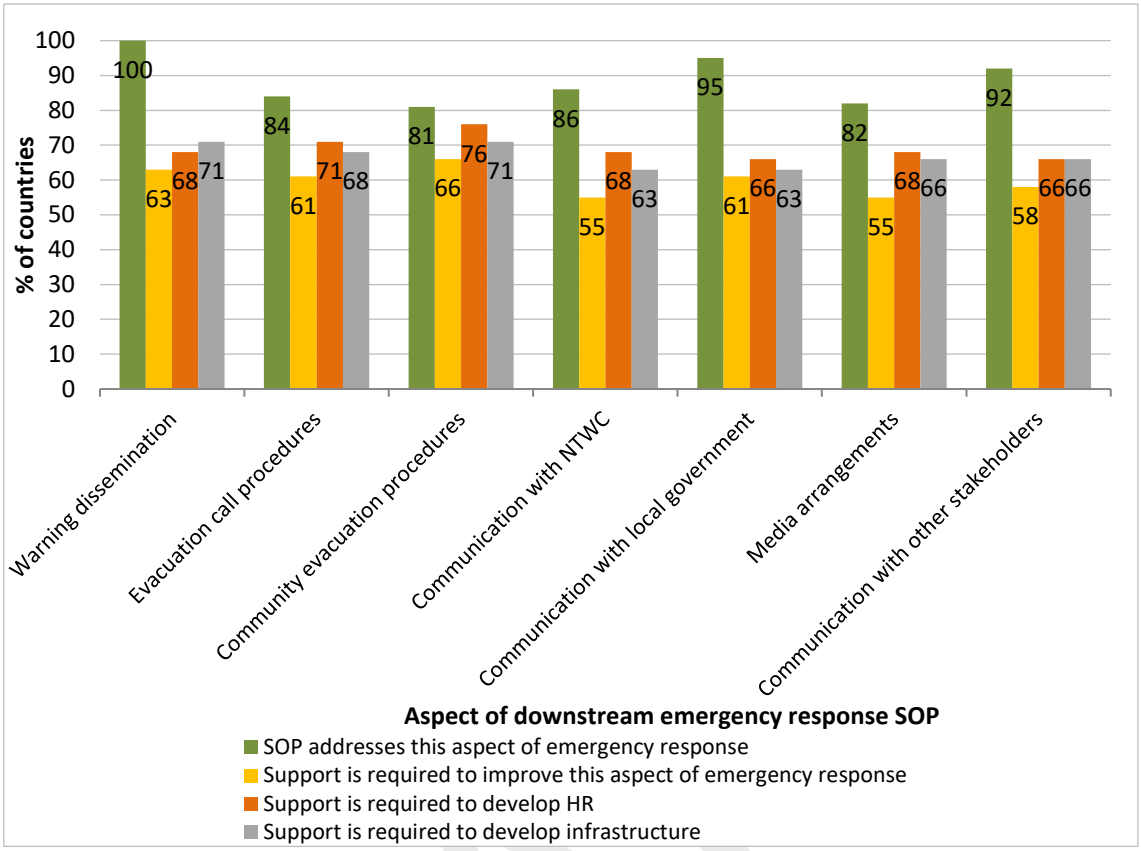

Figure 32. Consideration of aspects and support required to develop them for downstream emergency response SOPs.

Thirty-six (36) countries (95%) indicated their willingness to share their SOPs with the International Tsunami Information Center (ITIC) and other countries.

In the other hand, 59% of the countries reported needing support from ITIC to consolidate and/or update these SOPs among other topics (Figure 33): decision support tools (64%), evacuation planning (67%), staff competency (67%), tsunami exercises (69%), and hazard assessment tools and techniques (77%). Five countries (13%) do not require support from ITIC.

Some complementary areas suggested by countries are linkages, development of community SOP / EOP, non-seismic tsunami detection, and tsunami minimum competency requirements and standards. One country proposed to help ITIC to translate documents and guidelines into French.

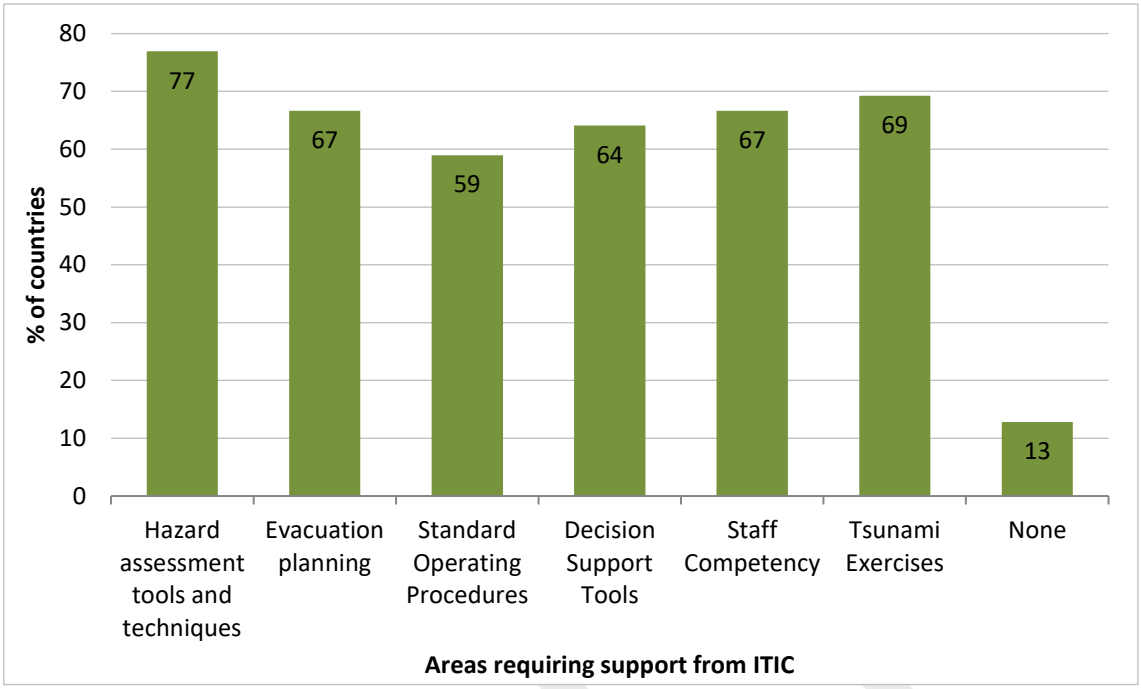

Figure 33. Areas requiring support from ITIC to develop or conduct capacity development activities.

Countries were asked to report which communication methods for emergency response are available (Figure 34).

For National Disaster Management Offices (NDMOs), SMS (76%), telephone (89%) and email (92%) are the most widely used. Same pattern is observed for media (57–86%). For local DMOs, the three communication methods are also available with telephone being the first one with 86% of the countries, followed by email (83%) and SMS (64%). For general public and coastal communities in particular, sirens are a complementary communication method to reach these groups. Fax is still used but in a low range of respondent countries (17–43%).

Other communication methods mentioned by countries include warning tower system, manual warning equipment in villages, computer-computer communication, telegram, satellite phones, Marine VHF radio, radio broadcast, dedicated mobile applications, cell broadcast alert systems, TV broadcast, websites, and social media (Facebook, WhatsApp, Telegram, Twitter, Instagram).

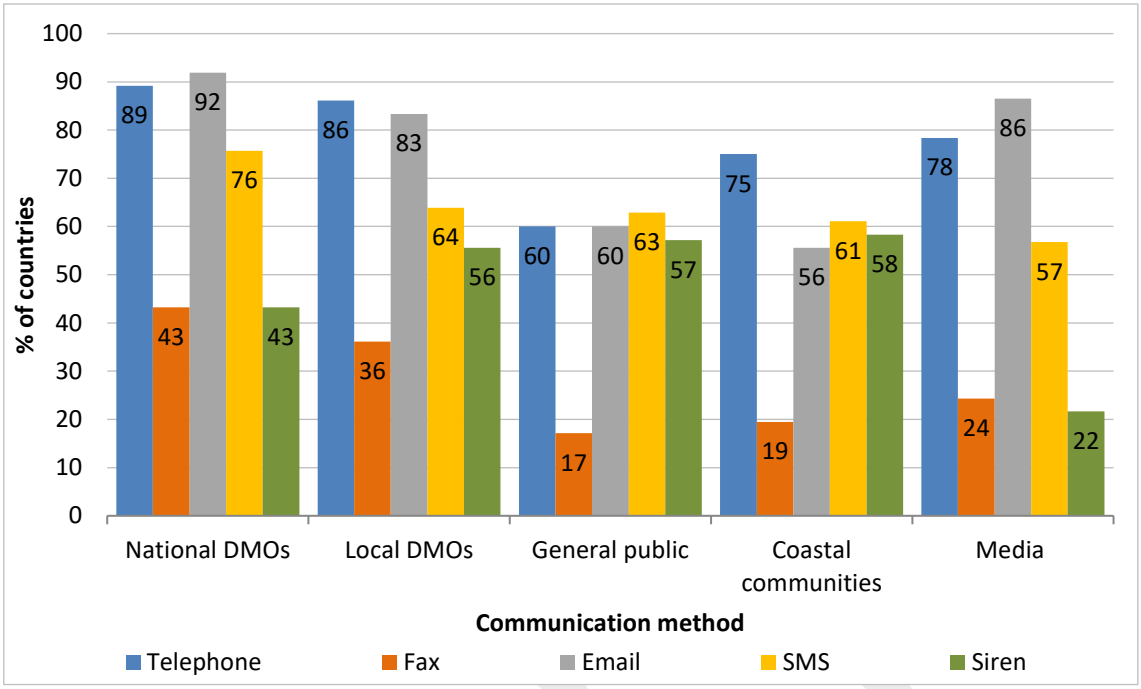

Figure 34. Communication methods for emergency response.

3.4.2. Evacuation infrastructure

Respondents were asked to specify the availability of five diverse types of evacuation infrastructure in their country. Results reveal that natural or artificial hill for vertical evacuation and evacuation route signage are the most used infrastructures with 82% of respondent countries (Figure 35. Evacuation infrastructures available in countries.Figure 35 – Annex 6). Evacuation zone maps and shelter are also reported by 67% and 71%, respectively. Evacuation structure built specifically for tsunamis remains less common with only 37% of countries.

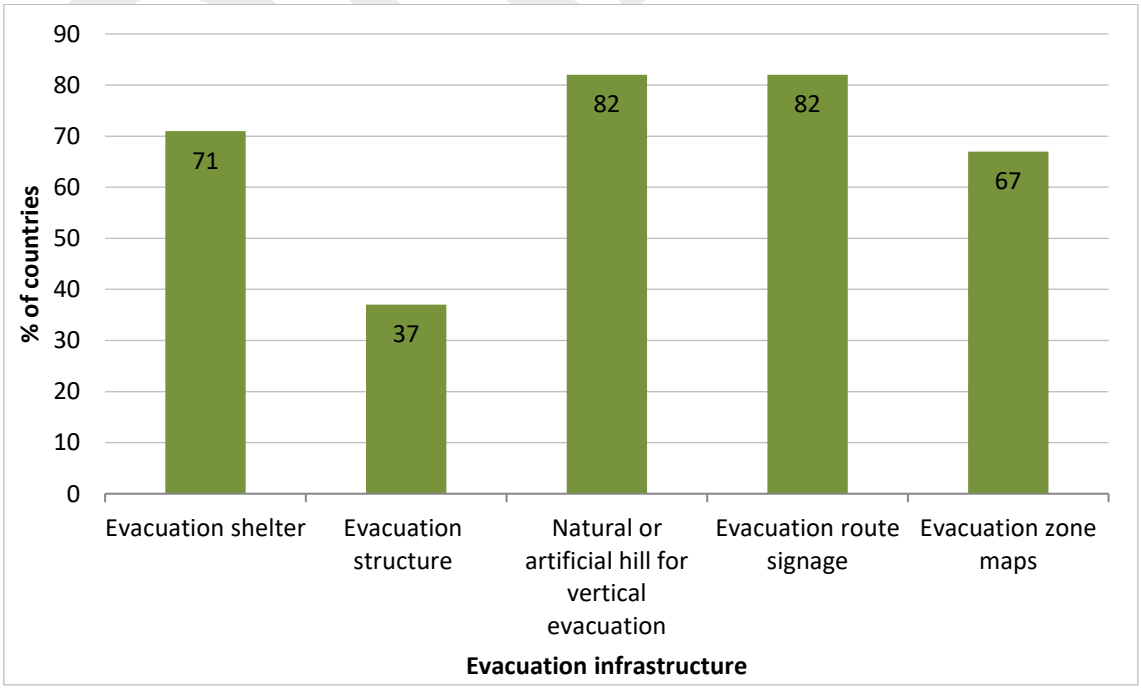

Figure 35. Evacuation infrastructures available in countries.

Twenty-four (24) countries (63%) reported that evacuation infrastructures are integrated in their evacuation plans.

3.4.3. Tsunami exercises

Countries were asked if they integrated tsunami exercises in their documentations and at which level they conduct them.

Seventeen (17) countries (44%) reported that they have tsunami exercises incorporated within their national policies, and 22 countries (56%) within their national guidelines. Eleven (11) countries (28%) did not include them.

Twenty-seven (27) countries (71%) conduct tsunami exercises at multiple levels during the inter-sessional period (between IGC meetings). Exercises are mostly done at the national level (68%), and to a lesser extent at the city (42%), village (47%), community (47%), school (55%), and finally regional (58%) levels (Figure 36). Four countries reported an answer as "not applicable" and one country skipped this question.

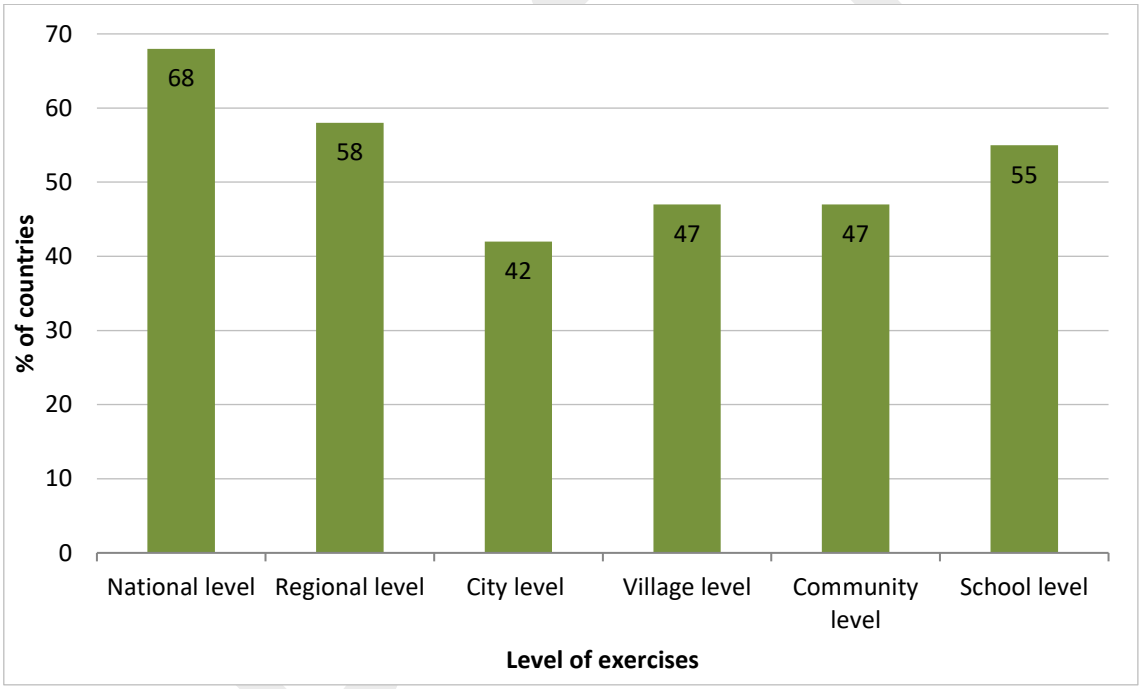

Figure 36. Levels of tsunami exercise conducted.

Respondents were also asked to report on the kind of tsunami exercise they have been undertaken in their countries. Thirty-two (32) countries (86%) declared that they took part in the regional Pacific Wave exercise (Figure 37). All other types of exercises (local, tabletop exercises and national) were undertaken by more than 82% of the countries, up to 84%. Thirty-five (35) countries (90%) conduct at least two types of exercises. One (1) country mentioned not participating in any of these exercises. Frequency varies among countries but the most common is annually.

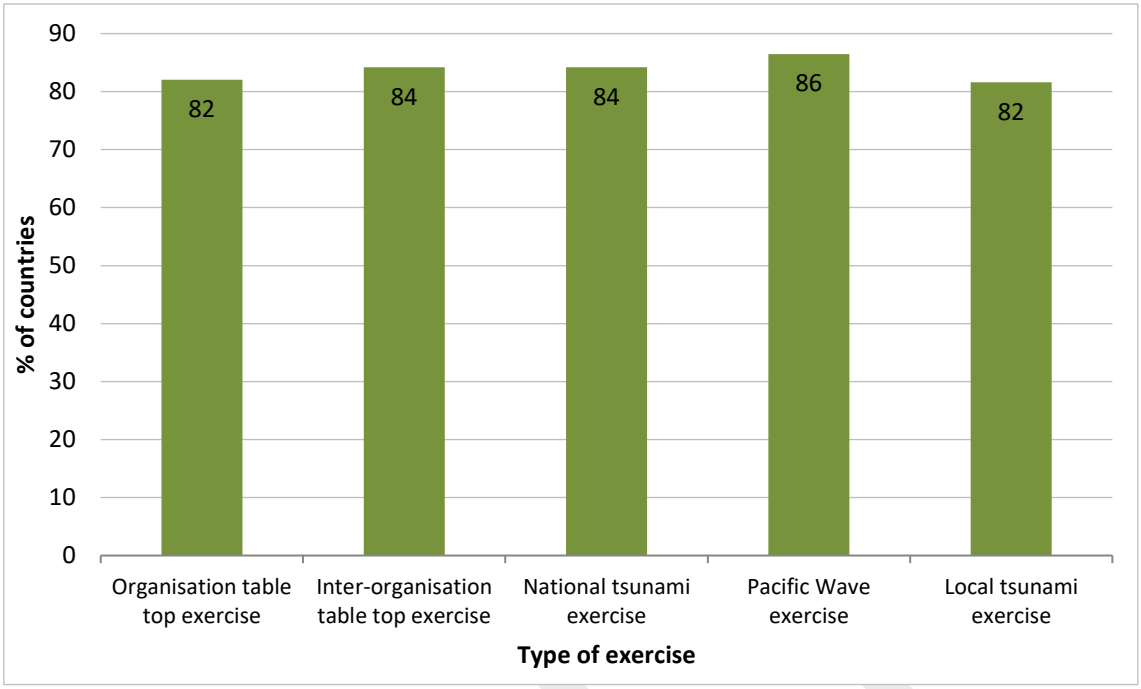

Figure 37. Types of tsunami exercise conducted.

Eighty-seven percent (87%) and 82% of countries tested SOPs and warning products dissemination respectively, most frequently annually. Forty-five percent (45%) evaluated their backup operating procedures.

3.4.4. Public awareness

Respondents were asked to identify the organization(s) responsible for tsunami public awareness programmes in their countries. In most countries NDMOs take responsibility at the rate of 90%. Local (49%) and provincial (51%) disaster management offices, and NTWCs (56%) were also identified by some countries (Figure 38). Several countries reported that there is a shared responsibility between multiple organisations (72% of respondent countries).

Other cited stakeholders are international organisations (e.g., International Organization for Migration – IOM, United Nations Development Programme – UNDP), non-governmental organisations (e.g., Red Cross), community of practice and civil society. One country mentioned that they formed an advisory group involving all players of the end-to-end tsunami warning chain, which coordinates national efforts.

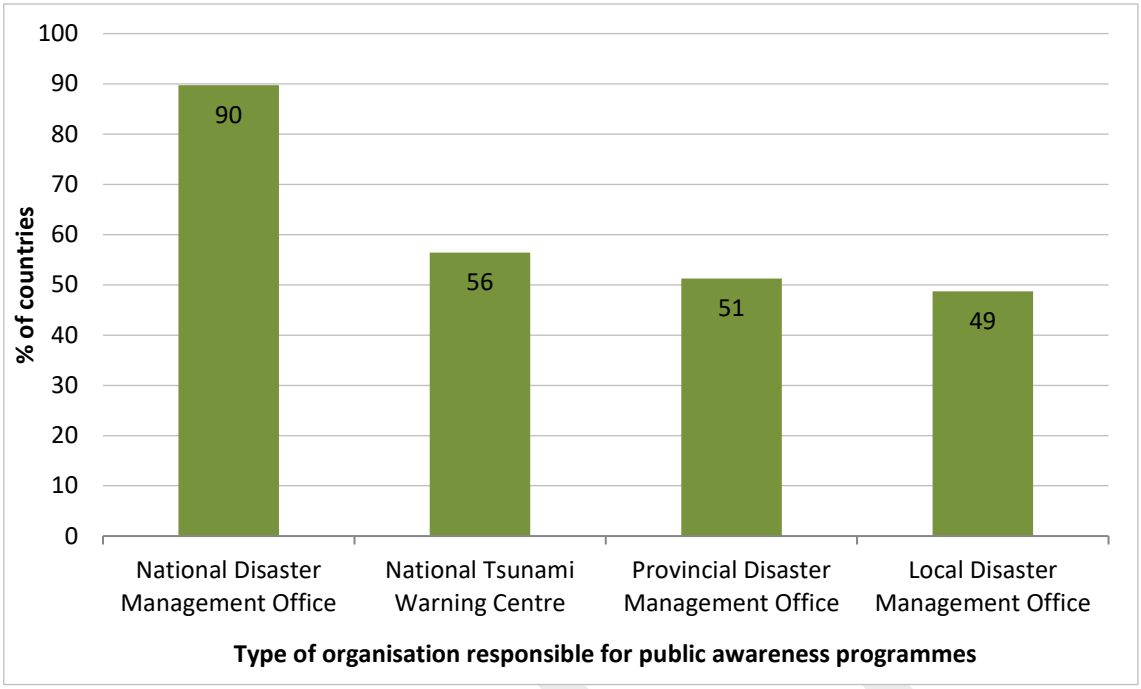

Figure 38. Organization responsible for tsunami public awareness programmes.

Countries were asked to identify what tsunami-related education and awareness materials they have developed and used. Posters (69%), leaflets or flyers (72%), tsunami signage (72%), and video, or other visual or oral media (72%) are reported to be the most common used materials by countries (Figure 39). Others are used by less than 51% of the countries (school curricula – 23%, information boards – 33%, Indigenous knowledge – 36%, teaching kits – 46%, public evacuation map – 46%, and booklets – 51%). All countries use at least two different communication tools.

Among other responses were presentations, dedicated webpages, social media toolkits, tsunami tank exhibits, comics, and an online tsunami education resource.

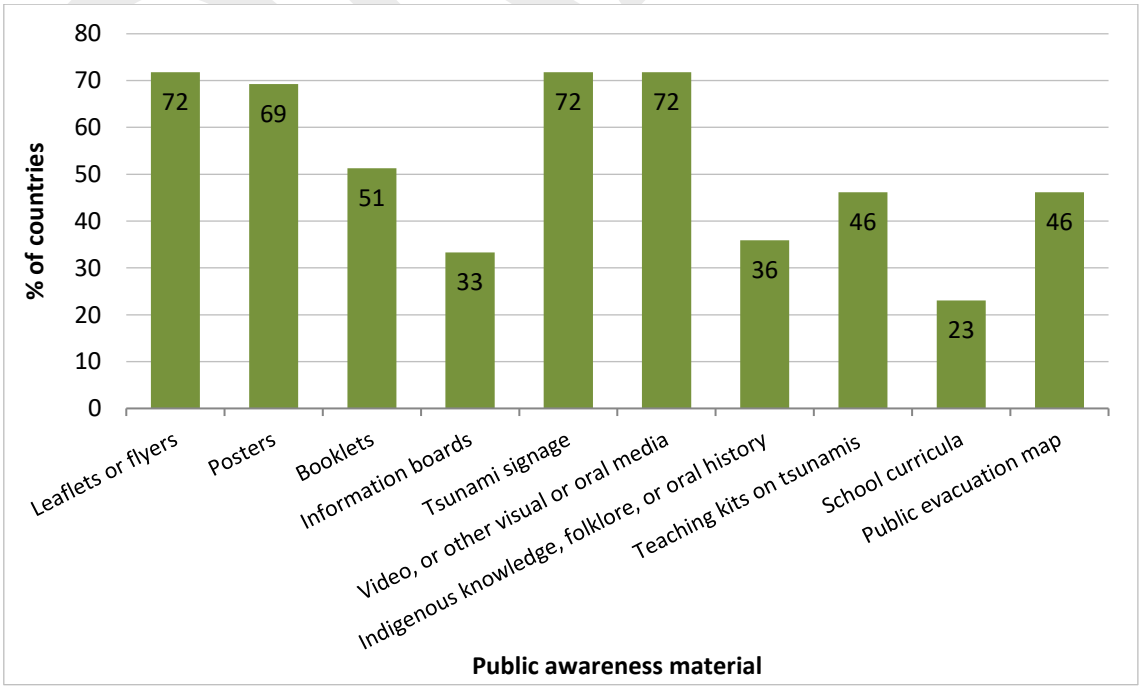

Figure 39. Types of public awareness materials.

Thirty-six (36) countries (92%) are willing to share these education and awareness materials with ITIC and other countries.

Countries were asked if they undertake tsunami public awareness activities and their frequency (Figure 40). Several annual activities stand out from the rest, being the Global Disaster Risk Reduction Day (13 October – 57%), public tsunami preparedness outreach (69%), World Tsunami Awareness Day (5 November – 74%), and the school and/or children awareness (79%). Competitions highlighting tsunami safety (30%) and exhibitions (43%) are used by less than 45% of the countries. Three (3) countries (8%) conduct none of these activities.

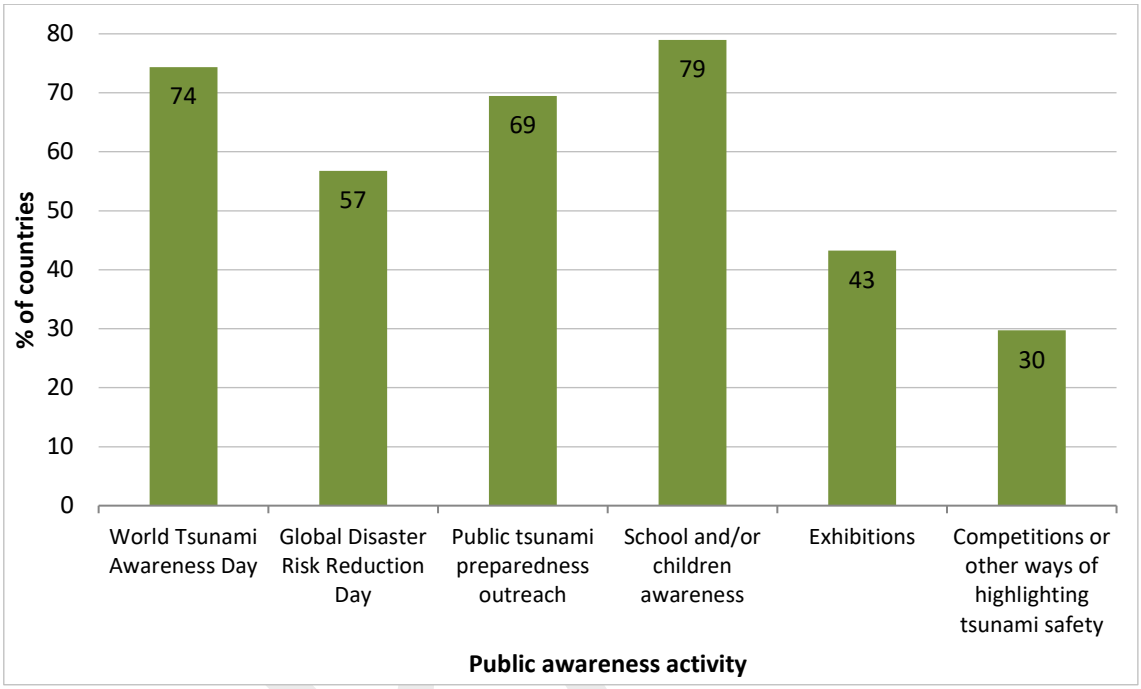

Figure 40. Types of public awareness activity.

Respondents were also asked to indicate any areas in which they required support from ITIC to develop or enhance public awareness in their country. Support was requested by most countries (over 67%) for three areas (Figure 41): provision of general tsunami awareness materials (67%), customization of general materials to country or community (74%), and development of tsunami awareness programmes, activities or campaigns (74%). Twenty-six (26) countries (67%) are also favorable to have support from international agencies or experts. Five (5) countries (13%) declared requiring no support.

Other areas suggested by countries for support are educational tsunami exercises, production of French materials to share with New Caledonia and Wallis-and-Futuna, as well as a local language version, and Tsunami Ready Recognition Programme implementation guidelines for communities.

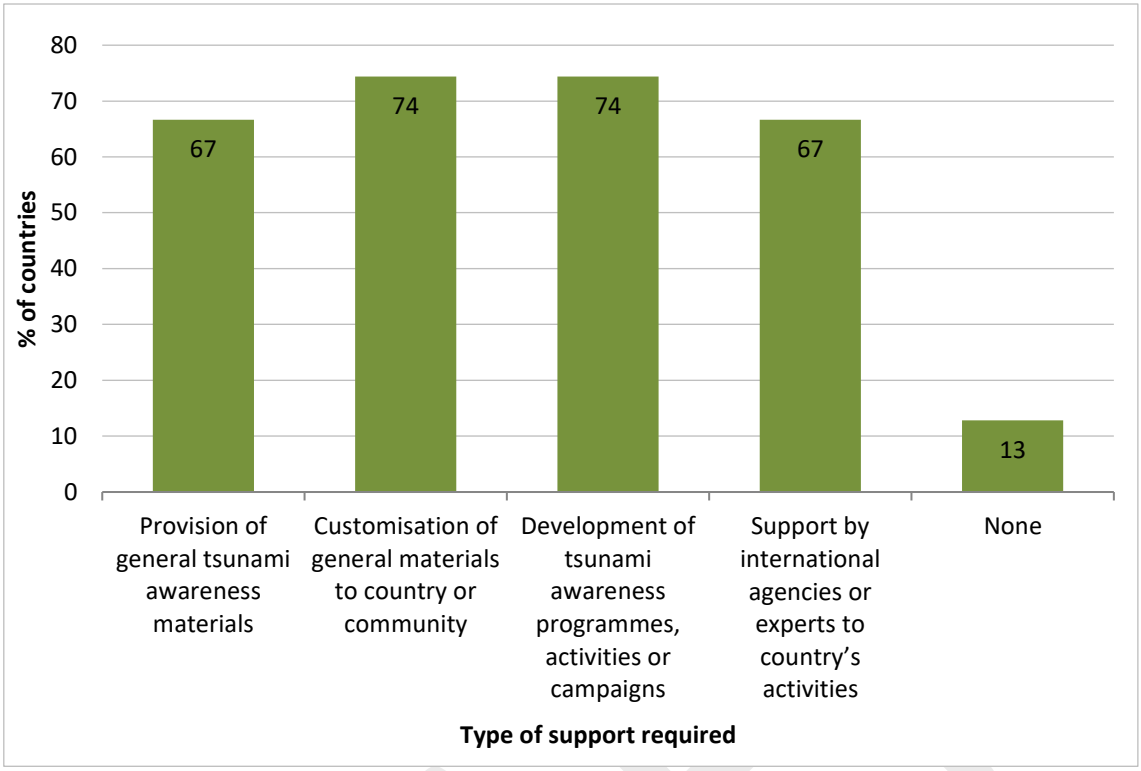

Figure 41. Support required for public awareness activity.

Fifty-three percent (53%) of the respondents also offered to support other Member States to develop or enhance public awareness in their country. The type of support proposed by these countries included:

- to provide consultation, human resources, and technical assistance,
- to share relevant materials and resources,
- to improve monitoring and information dissemination capability,
- to conduct or support training activities, online talks, experience sharing, and lessons learned.

3.4.5. UNESCO-IOC Tsunami Ready Recognition Programme

Countries were asked a series of questions about their involvement in the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) and other tsunami resilience and preparedness related initiatives or programmes.

Twenty-three (23) countries (59%) confirmed that they are already participating in TRRP, while sixteen (16) countries (41%) responded that they are not currently doing so. Of those:

- Eight countries have plans to do so in the near future. Some reasons given for not having contributed yet are the lack of human resources and funding, the on-going negotiation with relevant authorities, and the process of determining how existing programmes would translate to TRRP and if they meet all aims.
- Eight countries do not plan to implement TRPP because of the existence of other programmes that do not require external certification, the knowledge of coastal communities and possible misunderstanding encouraged by the implementation of a new programme, the lack of knowledge on the subject, and the fact that the evaluation according to the Tsunami Ready Equivalency Guidance discussed by the ICG/PTWS is both effective and efficient.

Nineteen (19) countries (49%) responded that they are currently implementing other initiatives and programmes:

- running local / national programmes (e.g. DESTANA – village disaster resilient programme, Disaster Ready Programme by Australian Humanitarian Partnership – AHP, Tsunami Observation for community Warning, Evacuation, and Resilience – TOWER – project, Coastal Assessment and Research of Tsunami Hazards in the Philippines – COAST – project), national multi-hazard programmes, and international programmes (e.g. Tsunami Safe School Programme by UNDP);
- participating in the World Tsunami Awareness Day (WTAD),
- conducting earthquake and tsunami exercises in schools and performing tabletop exercises,
- training in community-based disaster risk management with a multi-hazard approach,
- improving facilities for tsunami disaster prevention,
- conducting public education, preparedness, and awareness activities,
- mapping out evacuation center.

All countries have different physiognomy as far as their geography is concerned; it is therefore difficult to have a proper analysis of the data collected. However, an estimation of 458 369 villages, 2 799 cities / districts and 324 provinces / states have been declared at risk to tsunami by 36 respondent countries.

Thirteen (13) countries (33%) reported having a National Tsunami Ready Board (NTRB), which is responsible for guiding the community in the steps for Tsunami Ready Recognition and for the review and approval of the community's Tsunami Ready application. Of the countries that reported not having a NTRB, sixteen (16) countries reported an existing coordination mechanism that could fulfil this role, consisting of National Councils and Advisory Groups.

When asked which institution(s) should be involved in the implementation of TRRP or similar national initiative, country responses varied greatly. They ranged from individual institutions (e.g., NDMO, NTWC), to a variety of national agencies, coastal councils, local and provincial governments, ministries, police, army forces and emergency services, academics, civil societies, and non-governmental organisations (e.g., Red Cross).

Twenty-two (22) countries (59%) reported that communities (e.g., villages, cities, districts, provinces, or states) are currently working towards implementing or are interested in implementing the UNESCO-IOC TRRP or similar national initiative. Thirteen (13) countries (34%) reported having achieved recognition through UNESCO-IOC TRRP or a similar national initiative.

Countries were then asked a series of questions about their national capacity to implement different indicators of TRRP, including the extent to which each aspect can be achieved entirely or partially through mobilising national experts and funding, or whether there is a strong need for international technical expertise (Figure 42).

Analysis across all indicators of TRPP reveals that between 74% and 92% of the countries have the national capacity for implementing them:

- totally, through mobilising national experts and funding (44–64%); or
- partially, through mobilising national experts and funding, and some international technical expertise (23–46%).

Ninety percent and above (≥90%) of the countries are very much able to achieve entirely or partially the following aspects, relying on their national capacity and some international technical expertise:

- Training the community on identifying and estimating the number of people that live in the tsunami hazard zone (91%) – Assessment,
- Training and building capacity of community to be able to organise and implement outreach and education activity (90%) – Response,
- Working with the community to develop a public display of tsunami information (92%) – Preparedness,
- Training and building capacity of community to be able to organise and implement tsunami exercise (92%) – Response, and
- Training and building capacity of communities to be able to develop their community emergency operation plan (92%) – Response.

Between 11 and 26% of the countries reported the need for technical support from ITIC and/or ICG/PTWS activities to implement the following aspects of TRPP:

- Working with the community to develop local context outreach and public education materials (11%) – Preparedness,
- Working with the community to develop tsunami evacuation maps, plans, and procedures at the community level (15%) – Preparedness,
- Training and building capacity of communities to manage 24/7 tsunami emergency response operation (16%) – Response,
- Training the community on the inventory of available economic, infrastructural, political, and social resources to reduce tsunami risk at the community level (20%) – Assessment,
- Training and working with the communities to develop mechanisms (means and procedures) to receive 24/7 warning (21%) – Response,
- Training and working with the communities to develop mechanisms (means and procedures) to disseminate 24/7 warning to the community (21%) – Response, and
- Developing tsunami hazard maps (26%) – Assessment.

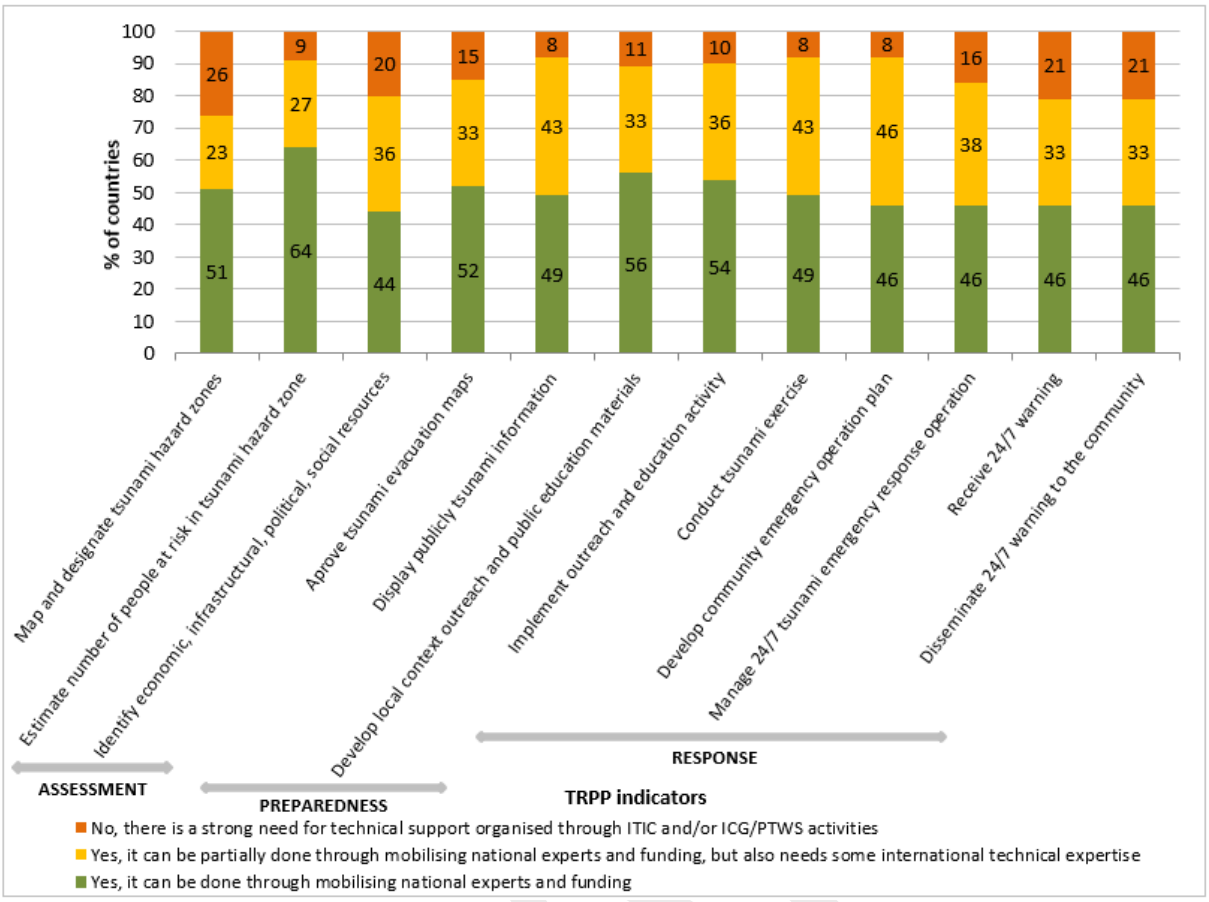

Figure 42. Summary of national capacity according to various aspects of the TRRP.

The most significant challenges inhibiting the implementation of TRRP or similar national initiatives (Figure 43) were limited resources, limited support of government, and limited awareness (25 countries – 66%), and limited activity (20 countries – 23%). Other significant challenges include that tsunami is not a high priority hazard (45%) and a lack of community interest (45%). Eleven percent (11%) mentioned that there is no community group or engagement in DRR.

Some countries mentioned other challenges such as the lack of tangible benefits in implementing TRRP and limited guidelines.

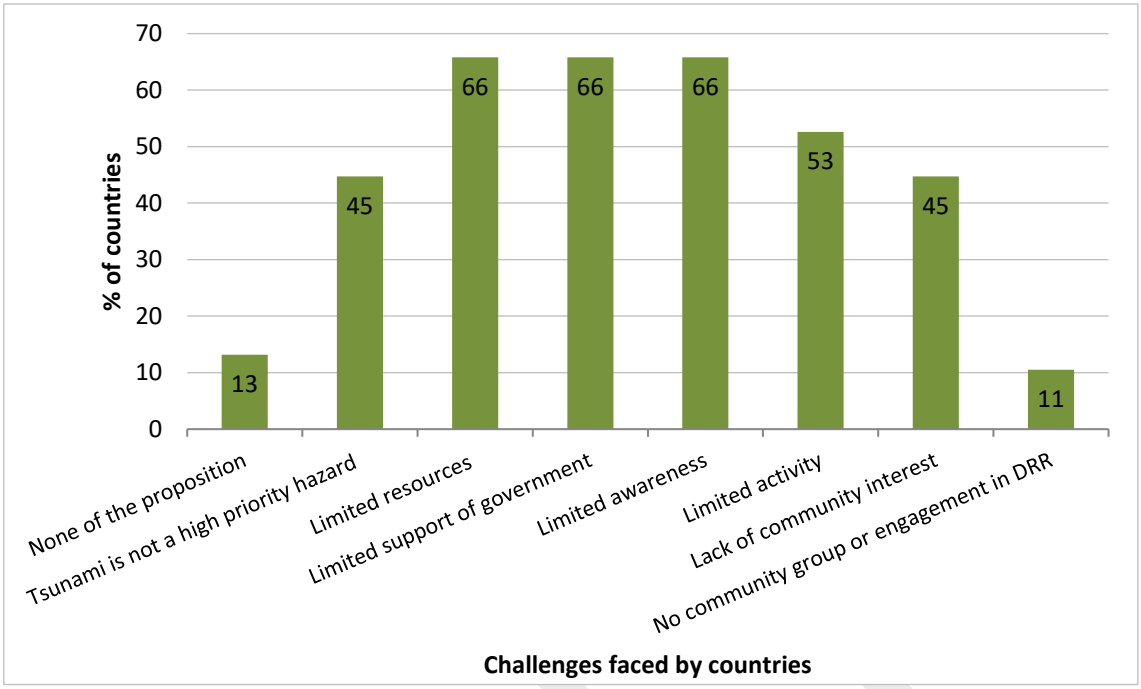

Figure 43. Challenges that inhibit the implementation of TRRP or similar national initiatives.

Annexes

Annex 1 – Coastal areas mapped for tsunami hazard in countries

Country	Coastal area mapped for tsunami hazard	%
Australia	Approximately 40% of the Australian coast has been mapped for tsunami hazard but accounts for approximately 80% of coastal population. • *Western Australia (WA) 2008-2009 maps at city level:* Broome; Port Hedland; Karratha/Dampier; Onslow; Exmouth; Carnarvon; Perth; Mandura; Busselton; Bunbury • *Western Australia (WA) 2021-2024:* continuous inundation map coverage from Geraldton to Dunsborough, including the Greater Perth area • *Queensland (QLD) 2013-2024 maps at regional level:* Sunshine Coast; Moreton Bay; Gold Coast; Gladstone (in-progress) • *New South Wales (NSW) 2009-2014:* Swansea/Lake Macquarie; Manly; Botany Bay/Cronulla/Kurnell; Wollongong/Port Kembla; Merimbula; Sydney • *New South Wales (NSW) 2023-2025:* statewide inundation mapping (100% coverage including Lord Howe Island, in progress) • *Northern Territory (NT):* Darwin • *South Australia (SA):* Victor Harbour • *Victoria (VIC):* Lakes Entrance; Port Fairy • *Tasmania (TAS):* Hobart	40%
Canada	This is probably an underestimation as many First Nations have had their coastlines mapped. Natural Resources Canada did a hazard assessment (with maps) of the coastline, but those are more regional scale. The estimate provided is for maps that can be used at the municipal / First Nation level. There are many remote coastal areas that do not necessarily need to be mapped, and areas of low risk have not all been mapped.	20%
Chile	• Chile has 75 flooding inundation maps, which cover around 80% of the national territory. Yearly new maps and updates are produced. • The name of the regions/cities are the following: Arica - Pisagua - Iquique - Chanavayita - Patillos - Patache - Tocopilla - Michilla - Mejillones - Antofagasta - Antofagasta Sur - Caleta Coloso - Taltal - Chañaral - Caldera - Calderilla - Bahía Inglesa - Huasco - Coquimbo - La Serena - Guanaqueros - Tongoy - Los Vilos - Pichidangui - Los Molles - La Ballena -Pichicuy - Longotoma - Papudo - Zapallar - Cachagua - La Laguna - Maitencillo - Quintero - Ventana - Horcón - Concón - Ritoque - Valparaíso - Viña del Mar - Laguna Verde - Quintay - Bahía Cumberland - Pascua Hanga Roa - Hanga Pico - Algarrobo - El Quisco - Isla Negra -El Tabo - Las Cruces - San Sebastián - Cartagena - San Antonio - Pichilemu - Llico - Lipimávida - Duao - Iloca - Constitución - Pelluhue-Curanipe - Cobquecura - Boca Itata - Perales - Pingueral - Dichato - Coliumo - Bahías Concepción y San Vicente - Tomé - Lirquén - Penco - Sector Isla de los Reyes - Talcahuano - San Vicente - San Pedro de la Paz - Coronel - Lota - Chivilingo - Laraquete - Arauco - Tubul - Llico - Lavapié - Lebu - Tirúa - Puerto Saavedra - Queule-Mehuín - Niebla - Corral - Puerto Montt - Maullín - Carelmapu - Pargua - Calbuco - Chacao - Ancud - Dalcahue - Curaco de Vélez - Chonchi - Quellón - Melinka - Puerto Aysén - Puerto Chacabuco - Punta Arenas - Porvenir - Puerto Williams	80%
China	The tsunami hazard maps for all coastal provinces in China have been drawn.	100%
Colombia	• *At the national scale:* the tsunami hazard was 100% mapped in the Caribbean and Pacific regions • *At the city and local level:* urban areas were mapped in 12 coastal municipalities of the Colombian Pacific (Tumaco, Francisco Pizarro, Guapi, Isla Cascajal, Juanchaco, Ladrilleros, La Barra, Bajo Baudó, Nuquí, El Valle, Bahía Solano, Juradó)	100% -
Cook Islands	Whole of the Cook Islands	100%
Costa Rica	• *Pacific coast:* Guanacaste and Puntarenas provinces • *Caribbean coast:* Limon province	-

Country	Coastal area mapped for tsunami hazard	%
Ecuador	• *Northern region:* Esmeraldas, Atacames - 10% • *Central region:* Crucita, Bahía de Caráquez, Manta - 17% • *South region:* Salinas, La Libertad, Ballenita, Punta Blanca - San Pablo, Monteverde, Jambelí, Palmar, Ayangue, San Pedro, Olón, Montañita, Manglaralto, Cadeate, Libertador Bolívar, La Rinconada, Las Núñez, San José, La Curia - 50% • *Insular region:* Puerto Ayora, Puerto Baquerizo Moreno, Puerto Villamil	75%
El Salvador	• National and local maps of hazards on the impacts generated by tsunamis on the Salvadorean coast: https://www.snet.gob.sv/ver/oceanografia/estudios/evaluacion+del+riesgo+por+tsunamis+en+la+costa+de+el+salvador+parte+i/ • The local maps were done for three of the four ports: Acajutla; la Libertad; El Triunfo.	-
Federated States of Micronesia	• Pohnpei state • Chuuk state • Yap state	-
Fiji	• Cuvu District • Sigatoka Town • Suva Peninsula	-
French Polynesia (France)	• Northeast of Tahiti, Marquesas islands, Rurutu and specific bays modelized (Omoa Bay - Fatu Hiva, Atuona bay - Hiva Oa, Taiohae bay - Nuku Hiva, Papeete harbor - Tahiti, Avatoru chanel - Rangiroa, Moerai bay - Rurutu (ARAI 1, 2006) • Matavai bay in Tahiti, Opunohu bay in Moorea (ARAI 3, 2013)	-
Honduras	• Cedeño, Marcovia, Choluteca • Omoa, Cortés • Tonabé, Tela, Atlántida	70% 80% 90%
Indonesia	Entire coastal area of Indonesia Indonesia has undertaken a nationwide effort to map areas prone to tsunami hazards at the village level. Approximately 5,700 villages have been identified as highly to moderately at risk. However, detailed inundation mapping which includes tsunami modeling has only been conducted in about 260 villages. This means that only around 4% of the identified tsunami-prone villages currently have detailed hazard maps.	100%
Malaysia	All coastal areas of Malaysia have been assessed for tsunami hazard with northwestern of Peninsular Malaysia and the whole coastal of Sabah have a higher risk of tsunami impact.	100%
Mexico	Country, México States: Jalisco, Colima, Michoacán, Guerrero, Oaxaca, and Chiapas http://www.atlasnacionalderiesgos.gob.mx/	100%
New Zealand	• 100% of the coast has an offshore probabilistic tsunami hazard assessment. All major cities have onshore tsunami hazard assessment. Some regions have onshore probabilistic tsunami inundation assessments. A national model update including complex local tsunami sources is currently undertaken. • Approximately 90% of the coastline has this mapped into evacuation zones, with the remainder 10% being unpopulated areas.	100%
Nicaragua	• *Pacific Coast:* Potosí/Fonseca Gulf, Corinto, Poneloya, Puerto Sandino, Masachapa-Pochomil, Casares, El Astillero, El Gigante, San Juan del Sur, El Naranjo, El Ostional • *Caribbean Coast:* Bilwi, Bluefields-El Bluff, Corn Island	-
Palau	Entire Palau Coastal Areas	100%
Papua New Guinea	Only on areas along the southern coast of New Britain Island	-

Country	Coastal area mapped for tsunami hazard	%
Peru	Tumbes Region, Piura Region, Lambayeque Region, La Libertad Region, Ancash Region, Lima Region, Ica Region, Arequipa Region, Moquegua Region, Ilo Region, Tacna Region	61%
Philippines	• 59 out of 66 coastal provinces - Agusan Del Norte, Aklan, Albay, Antique, Aurora, Basilan, Bataan, Batanes, Batangas, Bohol, Bulacan, Cagayan, Camarines Norte, Camarines Sur, Camiguin, Catanduanes, Cavite, Cebu, Davao del Sur, Davao Occidental, Davao Oriental, Dinagat Islands, Eastern Samar, Guimaras, Ilocos Norte, Ilocos Sur, Iloilo, Isabela, La Union, Lanao del Norte, Lanao del Sur, Leyte, Maguindanao del Norte, Maguindanao del Sur, Negros Occidental, Negros Oriental, Northern Samar, Occidental Mindoro, Oriental Mindoro, Palawan, Pampanga, Pangasinan, Quezon, Samar, Sarangani, Siquijor, Sorsogon, South Cotabato, Southern Leyte, Sultan Kudarat, Sulu, Surigao del Norte, Surigao del Sur, Tawi-Tawi, Zambales, Zamboanga del Norte, Zamboanga del Sur, Zamboanga Sibugay • 6 out of 832 coastal cities/municipalities - Calapan City, Vigan City, Pagadian City, General Santos City, Davao City, Iloilo City	89% 0.7%
Republic of Korea	Whole coasts of South Korea	100%
Russian Federation	Far East Coast of Russia	-
Singapore	Singapore, based on large earthquake scenarios in the Manila Trench and Sunda Trench	90%
Solomon Islands	Honiara City, Gizo Town, Western Province	-
Thailand	There are 509 tsunami hazard places in 6 provinces along Andaman Sea, 102 sub-districts and 26 districts. • *Krabi Province - 4 districts:* Ao Luk, Muang Krabi, Nuea Khlong, Khlong Thom • *Trang Province - 5 districts:* Yan Takhao, Si Kao, Kantang, Pa Lian, Hat Samran • *Phang Nga Province - 7 districts:* Khura Buri, Ta Kua Pa, Ta Kua Thung, Thai Muang, Thap Put, Muang Phang Nga, Ko Yao • *Phuket Province - 3 districts:* Tha Lang, Muang Phuket, Krathu • *Ranong Province - 3 districts:* Kapoe, Suk Samran, Muang Ranong • *Satun Province - 4 districts:* Tha Phae, Thung Wa, Langu, Muang Satun	-
Tonga	Tongatapu and 'Eua	-
United States of America	All U.S. states and territories with an oceanic coastline have had some degree of tsunami assessments completed. Many states and territories have completed tsunami hazard assessments for their entire coastline while others are focusing on coastlines with the highest risk or exposure.	100%
Viet Nam	Vietnamese coastal areas have been fully mapped for tsunami hazard, covering 100% of the coastline, especially the central coast including Nha Trang and Danang City	100%

Annex 2 – Coastal areas mapped for tsunami risk in countries

Country	Coastal area mapped for tsunami risk	%	
Australia	Work has started in understanding tsunami risk at regional and local scale. In Western Australia (WA), detailed hazard modelling based on the Probabilistic Tsunami Hazard Assessment 2018 has been undertaken from the Midwest (Geraldton) to the Southwest (Dunsborough), including the Greater Perth area, since July 2021. Older (about 10 to 15 years ago), less detailed hazard modelling has been undertaken in Broome, Port Hedland, Karratha/Dampier, Onslow, Exmouth, and Carnarvon Could be considered the same as above (Annex 1), as almost all hazard mapping considered the likelihood of a tsunami occurring. However, if risk is defined as the likelihood of impacts (not the hazard) that number would be less than 1%.	>1%	100 cities
Brunei Darussalam	The whole coastal area of Brunei Darussalam.	100%	1 City / 3 towns / a number of villages
Canada	There are many remote coastal areas that do not necessarily need to be mapped, and areas of low risk have not all been mapped.	18%	At risk of tsunami in coastal areas of British Columbia are 185 municipalities and First Nations within 14 regional districts
China	The tsunami risk maps for all coastal provinces in China have been drawn.	100%	The exact number is still in the process of statistical analysis, but it is estimated that over 10 coastal cities are at risk of tsunamis.
Colombia	Multi-hazard risk mapping, including tsunami, was carried out for 100% of the Colombian Caribbean and Pacific region in the Colombia Risk Atlas. https://repositorio.gestiondelriesgo.gov.co:8443/handle/20.500.11762/27179	100%	Three regions are at risk: the Caribbean, the Pacific, and the Colombian insular regions, which include 12 coastal departments and 46 coastal municipalities.
Cook Islands	Whole of the Cook Islands To date, EMCI office has full data GEOPORTAL MAPPING for 13 Islands in full and two being unhabitated. This data covers the coordinates of each individual household, number of people living in, disabilities, elderlies, children, owner of each household, utilities, ramps if any, every single hotel, motel, or private tourist accommodation accordingly. Additional is also data of the type of materials of each single structure, includes Government buildings. This data is supported with the additional technology of Lidar and works in progress. The GEOPORTAL MAPPING is the responsibility of EMCI and shared with the respected Government agencies (mainly IT personnels) and now have formalised the team now identified as the GIS USER GROUP and managed by the EMCI office. The data can be shared on request to EMCI but there are restrictions based on confidentiality of certain source.	100%	
Costa Rica	Guanacaste province and Puntarenas province. A tsunami risk index has been developed for each of the 273 coastal communities.	-	273 coastal communities (cities and small cities) in the Pacific / 15 municipalities / 2 provinces
Ecuador	Esmeraldas, Manabí, Santa Elena, Guayas, El Oro, and Galapagos with an approximation of 50% of risk-prone areas already mapped.	50%	31 municipalities

Country	Coastal area mapped for tsunami risk	%	
El Salvador	https://www.snet.gob.sv/ver/oceanografia/estudios/evaluacion+del+riesgo+por+tsunamis+en+la+costa+de+el+salvador+parte+ii/ National and local maps of vulnerability and risk on the impacts generated by tsunamis on the salvdorean coast. The local maps were for three of the four ports: Acajutla; la Libertad; El Triunfo.	-	The three ports (Acajutla, La Libertad, El Triunfo) and their influence areas. The fourth port (La Unión) is not at risk for tsunami because it is inside a coastal lagoon.
Federated States of Micronesia	Coastal areas in Pohnpei, Chuuk and Yap State	-	Pohnpei: 6 municipalities Yap: 10 municipalities Chuuk: 1 municipality Kosrae: 5 municipalities
Fiji	Cuvu District, Suva Peninsula, Nadi Town	-	3
French Polynesia (France)	• ARAI 1, 2006: Northeast of Tahiti, Marquesas islands, Rurutu and specific bays modelized (Omoa Bay – Fatu Hiva, Atuona bay – Hiva Oa, Taiohae Bay – Nuku Hiva, Papeete harbor – Tahiti, Avatoru chanel – Rangiroa, Moerai bay – Rurutu) • ARAI 3, 2013: Matavai Bay in Tahiti, Opunohu Bay in Moorea	-	Marquesas islands are the most exposed, Northeast Tahiti and Rurutu are less exposed. All the other islands are more exposed to cyclonic submersion than to tsunamis.
Indonesia	BNPB Indonesia has conducted tsunami risk mapping across the country. Out of approximately 83,000 villages in Indonesia, around 5,700 villages, or 7%, have been identified as at risk of tsunami hazards.	-	A total of 208 cities/municipalities, spread across 26 provinces, are at risk from tsunami.
Japan	-	-	About 700 cities
Malaysia	All coastal areas of Malaysia have been assessed for tsunami hazard with northwestern of Peninsular Malaysia and the whole coastal of Sabah have a higher risk of tsunami impact.	100%	36 Districts
Mexico	• Country: México • States: Jalisco, Colima, Guerrero, Oaxaca, and Chiapas http://www.atlasnacionalderiesgos.gob.mx/	100%	• Regions: 1 (Pacific Ocean Coast) • States: 6 (Jalisco, Colima, Michoacán, Guerrero, Oaxaca, and Chiapas) • Cities: 10 (Puerto Vallarta, Manzanillo, Lázaro Cárdenas, Zihuatanejo, Acapulco, Puerto Angel, Puerto Escondido, Huatulco, Salina Cruz, Puerto Chiapas • Approximately 130 coastal communities with a population of less than 100,000 inhabitants
New Zealand	This is different from our survey answer and represents the coastline that has had evacuation zones mapped.	90%	16 Regions (this will be the measure of 'community' defined in the Tsunami Ready Equivalency Approach)
Nicaragua	• *In the Pacific Region:* El Viejo, Chinandega, Chichigalpa, Leon, La Paz Centro, Nagarote, San Rafael del Sur, Jinotepe, Nandaime, Tola, San Juan del Sur • *In the Caribbean region:* Bilwi, Bluefields-El Bluff, Corn Island	-	Village / Pueblo: 175 (Communities) City / District: 19 (Municipalities) Province / State: 8 (Departamentos)
Palau	Average tsunami risk map for Palau areas close to trenches, such as the west of Palau from Manila Trench and Marianas Trench.	-	All 16 States of Palau
Papua New Guinea	Areas of the Southern coast of New Britain Island	-	12 maritime provinces

Country	Coastal area mapped for tsunami risk	%	
Peru	Tumbes Region, Piura Region, Lambayeque Region, La Libertad Region, Ancash Region, Lima Region, Ica Region, Arequipa Region, Moquegua Region, Ilo Region, Tacna Region	61%	225 cities
Philippines			832 coastal cities / municipalities 66 provinces 17 regions
Republic of Korea	Whole coasts of South Korea	100%	30 cities
Russian Federation	Oktyabrsky Spit, Western Kamchatka, Korf Spit, North-Eastern Kamchatka		62
Singapore	Singapore, 90% based on large earthquake scenarios in the Manila Trench and Sunda Trench	90%	-
Solomon Islands	Honiara City, Gizo Town, Western Province	-	Honiara, Gizo, Auki, Kirakira, Taro, Buala, Lata
Thailand	The coastal areas of 6 Provinces Andaman Sea • *Krabi Province - 4 districts:* Ao Luk, Muang Krabi, Nuea Khlong, Khlong Thom • *Trang Province - 5 districts:* Yan Takhao, Si Kao, Kantang, Pa Lian, Hat Samran • *Phang Nga Province - 7 districts:* Khura Buri, Ta Kua Pa, Ta Kua Thung, Thai Muang, Thap Put, Muang Phang Nga, Ko Yao • *Phuket Province - 3 districts:* Tha Lang, Muang Phuket, Krathu • *Ranong Province - 3 districts:* Kapoe, Suk Samran, Muang Ranong *Satun Province - 4 districts:* Tha Phae, Thung Wa, Langu, Muang Satun	-	There are 509 tsunami risk areas in 102 subdistricts and 26 districts: Krabi (4) / Trang (5) / Phang Nga (7) / Phuket (3) / Ranong (3) / Satun (4)
Tonga	Coastal Areas of Tongatapu and 'Eua islands	-	All villages / districts in low lying coastal areas are vulnerable to tsunami and coastal inundations.
United States of America	All U.S. States and territories with an oceanic coastline have had some degree of tsunami risk mapping completed. Many states and territories have completed risk mapping for their entire coastline while others are focusing on coastlines with the highest risk or exposure.	-	All U.S. States and territories with an oceanic coastline have some risk from a tsunami.
Viet Nam	The coastal areas of Nha Trang and Da Nang have been mapped for tsunami risk, representing approximately 3.5% of Vietnam's total coastal areas	3.5%	Based on tsunami hazard assessment results, approximately 12 provinces in Vietnam are at risk from tsunamis, including Quang Binh, Quang Tri, Thua Thien Hue, Da Nang, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan, Binh Thuan, Ba Ria – Vung Tau.

Annex 3 – National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning

Country	National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning
Australia	The model output has been calibrated against known impacts in Australia from several real tsunami events since 1960. The resulting threshold is based on the 95-percentile deep-water value for three threat levels. • No Threat: < 20 cm (< 10 cm for offshore islands), equivalent to < 40 cm near shore • Marine Threat: 20–55 cm (10–50 cm for offshore islands), equivalent to 40 cm – 1 m near shore • Land Threat: > 55 cm (> 50 cm for offshore islands), equivalent to > 1 m near shore The above deep-water thresholds equate to the near shore shallow water values of, after considering the very crude Green's Law approximation. • No Threat: < 40 cm • Marine Threat: 40–100 cm • Land Threat: > 100 cm It is important to note that the decision making for JATWC to issue a tsunami warning is solely based on deep-water thresholds.
Canada	Determined by National and Pacific Tsunami Warning Centers – NOAA
Chile	*Sea level:* • 0 m < Informative < 0.3 m • 0.3 m ≤ Advisory < 1.0 m • 1.0 m ≤ Watch < 3.0 m • 3.0 m ≤ Alarm
China	For the National Tsunami Warning Center of China, tsunami emergency thresholds are categorized into three types: No Tsunami Statement, Tsunami Occurred with No Threat to China, and Tsunami Warning. Further, the tsunami warning is further divided into three levels, namely, Red Alert (tsunami amplitude over 3 m), Orange Alert (tsunami amplitude over 1 m, but less than 3 m), and Yellow Alert (tsunami amplitude over 0.3 m, but less than 1 m).
Colombia	The NTWC uses earthquake information, magnitude, location, moment tensor, tsunami modelling for issuing information
Cook Islands (SIDS)	The Meteorological office of the Cook Islands certainly has mechanisms of their own in place where EMCI also has systems of our own and works closely with Climate Change partner representatives. Under the NDRM Act of the Cook Islands 2007, this provides the mandate for EMCI Director to act and comply with such and ensure compliance in having to declare a potential national tsunami emergency, watch, alert, advisory or warning. Trigger mechanism in place etc.
Costa Rica	It depends on the earthquake location.

Country	National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning
Ecuador	The technical protocol for evaluation and definition of tsunami warning (Version 3.0) has determined three domains for seismic monitoring, based on the level of competence to execute the tsunami warning evaluation originated by local earthquakes and based on the national level Ecuadorian monitoring capacity. • *Domain 1* – ECC-1 includes continental zone, Latitude: 4°N to 5.3° S and Longitude: 83° W to 73°W. • *Domain 2* – ECG-1 corresponds to the island zone, Latitude: 4°N to 5.3°S and Longitude: 93°W to 89°W. • *Domain 3* – ECF-1 includes an oceanic area from 83°W - 89°W where the National Seismograph Network does not cover the monitoring, it is poor. In this case, the information sources are USGS and PTWC. Ecuador's CNAT does not have the capacity to monitor local seismic events; however, it manages the national sea level network consisting of coastal tide gauges and ocean sensors, and receives information from IGEPN, the United States Geological Survey – USGS and the Pacific Tsunami Warning Center – PTWC. For each situation, INOCAR identifies and characterizes tsunamigenic events. The threshold or criteria for declaring a potential tsunami emergency is considered according to PTWC SOP. For local events, earthquake magnitude (equal to or greater than 6.9) in defined polygons (Protocol): Bulletin type / Wave amplitude / Warning level ETA Warning / H ≥ 1 m / Warning ETA < 3 h Advisory / 0.3 m ≤ H < 1 m / Advisory ETA < 3 h Watching / H ≥ 0.3 m / Watching 3 h ≤ ETA < 6 h Information / H ≥ 0.3 m / Information ETA ≥ 6 h Information / H < 0.3 m / Information
Federated States of Micronesia (SIDS)	Mw 6.6

Fiji (SIDS)	• *Type of events:*
	  ○ Local events – less than 1-hour TTT, Magnitude greater than 6.5 with a depth less than 10 km
	  ○ Regional events – greater than 1 hour but less than 2 hours, Magnitude greater than 7.0 with a depth less than 10 km
	  ○ Teleseismic events – more than three hours, Magnitude more significant than 8 with a depth less than 10 km
	• *PTWC Threat Message evaluation in the SOP:*
	  ○ Less than 0.3 m waves – "No significant Threat"
	  ○ 0.3 m to 1.0 m waves – "Marine and Coastal Threat"
	  ○ m to 3.0 m waves – "Land Threat"
	  ○ Over 3.0 m waves – "Major Land Threat"

Country	National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning
French Polynesia (France)	• *Seismic alarm is triggered at the CPPT as soon as an earthquake of a Mw > 7.3 is detected.* An automatic tsunami warning is then disseminated to the Direction de la Protection Civile – DPC (= Direction of Civil Defense) with an automatic adaptative response following the source parameters. The NTWC currently has 3 independent modes to trigger its preliminary alarm based on earthquake detection for the SEISCOMP System and TREMORS system but also from the Pacific DART® Buoys network detection, which alerts the duty officer by SMS as soon as one of the buoys has been triggered. • *For earthquake with a preliminary magnitude ≥ 7.3 located in the Pacific region or located at a tsunami travel time ≤ 13 hours from French Polynesia,* an automatic and preliminary tsunami threat is sent by mail and fax to the NDMO – DPC in less than 15 minutes after the origin time based on the initial earthquake parameters. The tsunami maximal heights forecast is automatically updated (fast global simulation) as earthquake parameters (Moment magnitude and CMT or FM) are updated. Then, the NTWC agent on duty will interpret and send reviewed bulletin with forecasts provided in the following hour to the NDMO. The tsunami warning level is based on tsunami heights forecast and fixed by the civil defense authority: o No impact (0–30 cm) – No alert and no communication to population o Marine threat (30 cm – 1 m) – Coastal access restricted and nautical activities are forbidden; ships should leave harbors and go in open ocean. No use of sirens. Localized evacuation can be performed. o Tsunami threat (1–3 m) – Population warning, sirens triggered 2 hours before the arrival time. The tsunami coastal impact can be observed. Evacuation is recommended. o Major tsunami threat (> 3 m) – Strong coastal inundation is forecasted, all concerned areas are evacuated.
Honduras	• *Local / Nearshore:* Originated in the interaction of the North American, Caribbean and Cocos plates, near the coast. Arrival time of the wave from 30 to 50 minutes. • *Regional / Intermediate:* Originated at the edge of the North American and Caribbean plates, near Puerto America and Caribbean plates, near Puerto Rico. Wave arrival time 3 to 4 hours. The Warning tsunami is implemented if an event has occurred that exceeds established thresholds with tsunamigenic potential: (i) Magnitude greater than or equal to 6.8 off the coasts of Honduras or of the Central American countries, (ii) Magnitude greater than or equal to 6.8 at the regional level in the Pacific Ocean or the Caribbean Sea, and (iii) Magnitude greater than or equal to 6.8 in the basins of the Pacific Ocean and the Caribbean Sea, far from the coasts of Honduras or Central American countries.
Indonesia	Three tsunami threat categories which are classified based on forecasted tsunami run-up in specific area: • *Major Warning* – Tsunami run-up height is more than 3 m • *Warning* – Tsunami run-up height is between 0.5–3 m • *Advisory* – Tsunami run-up is less than 0.5 m
Japan	When an earthquake hits, Japan Meteorological Agency (JMA) immediately determines the hypocenter and magnitude of the quake. JMA conducts tsunami forecast operations using a tsunami database containing tsunami amplitude and travel time calculated in advance by numerical simulation. Tsunami warnings/advisories are classified into three categories: "Major Tsunami Warning (tsunami height over 3 m)", “Tsunami Warning (1 m to 3 m)" and "Tsunami Advisory (0.2 m to 1 m)".
Kiribati (SIDS)	• *Information* – expected wave height < 0.3 m • *Watch level* – expected wave height 0.3 m ≤ H < 1 m or greater with expected time of arrival of 3 hr ≤ ETA < 6 hr • *Warning level time* – expected wave height 1 m ≤ H < 3 m or greater with expected time of arrival of < 3hr
Malaysia	Mw 6.5 and above, over the sea with depth less than 100 km and in South China Sea, Sulu Sea, Celebes Sea, Andaman Sea, Java Sea, Banda Sea, Flores Sea, and Makassar Straits

Country	National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning
Mexico	• Magnitude, location, and depth of earthquakes • Distance of the epicenter to Mexican coastal zones • If possible, the focal mechanism, tectonic setting of the earthquake

Nauru (SIDS)	PTWC Product with parameters for Nauru
	• *Tsunami Information Statement*
	  ○ Mw 6.5-6.9 – < 100 km depth – 2 hr – INFORMATION *Issue Tsunami Information Bulletin* and Monitor subsequent PTWC messages
	• *Tsunami Threat Message*
	  ○ Mw 7.0 or greater – undersea or very near the sea and < 100 km depth – < 0.3 m – None – 2 hr – INFORMATION *Issue Tsunami Information Bulletin* Monitor subsequent PTWC messages
	  ○ Mw 7.0 or greater – undersea or very near the sea and < 100 km depth – 0.3 to 1 m – Sections of coast with forecast amplitudes 0.3 to 1 m – 2 hr – ADVISORY * Issue Tsunami Advisory Bulletin (people to be on stand-by)* and Monitor subsequent PTWC messages
	  ○ Mw 8.0 or greater – undersea or very near the sea and < 100 km depth – ≥ 1 m – Sections of coast with forecast amplitudes ≥ 1 m – 2 hr – WARNING *Issue Tsunami Warning Bulletin (people along coasts to evacuate)* and Monitor subsequent PTWC messages

New Zealand	• *Wave height at coast thresholds:*
	  ○ 0.3–1 m – National Advisory
	  ○ 1m+ – National Warning
	• *There are no thresholds for an emergency* - this is event dependent.
	• *Earthquake thresholds for TSUNAMI ASSESSMENT are:*
	  ○ Mw 6+ for Local
	  ○ Mw 7.5+ for Regional
	  ○ Mw 8+ for Distant

Nicaragua	Mw 6.5 and 0.3 m
Palau (SIDS)	Same threshold as the Pacific Tsunami Warning Center, Honolulu, Hawaii
Papua New Guinea (SIDS)	Occurrences of earthquakes with magnitude Mw 6 and above or a volcanic eruption near the coast
Peru	Magnitude, depth, epicenter

Philippines	• *Local events – Tsunami Warning*
	  ○ Metro Manila Region (Manila Trench): 7.0 ≤ Mw < 7.5 – D ≤ 20 km / 7.5 ≤ Mw < 8.0 – D ≤ 60 km / Mw ≥ 8.0 – D ≤ 80 km
	  ○ Other areas: 6.5 ≤ Mw < 7.0 – D ≤ 10 km / 7.0 ≤ Mw < 7.5 – D ≤ 20 km / 7.5 ≤ Mw < 8.0 – D ≤ 60 km / Mw ≥ 8.0 – D ≤ 80 km
	• *Regional Events – Tsunami Warning (distance ≤ 1000 km)* – Mw ≥ 7.5 – D ≤ 100 km
	• *Teleseismic Events (distance ≤ 1000 km)* – Mw ≥ 8.0 – D <= 100 km

Republic of Korea	Magnitude, estimated tsunami height
Russian Federation	Magnitude, geographical criterion, with different magnitude threshold for different source areas
Singapore (SIDS)	If tsunami waves generated by Mw ≥ 8.5 undersea earthquake are expected to affect Singapore
Solomon Islands (SIDS)	Mw 7.0
Thailand	NDWC criteria and Tsunami SOP along with IOTWMS TSPs (Australia, India, Indonesia) and tsunami confirmation from Thailand Tsunami Buoy

Country	National threshold or criteria for declaring a potential tsunami emergency, watch, alert, advisory or warning
Timor-Leste (SIDS)	The thresholds or criteria for declaring a potential national tsunami emergency, watch, alert, advisory, or warning are aligned with the standards and guidelines provided by the Indian Ocean Tsunami Information Centre (IOTIC). These criteria typically include factors such as earthquake magnitude, sea-level changes, and proximity to the coastline, as outlined by IOTIC protocols.

Tonga (SIDS)	• *Urgent Tsunami Warning:*
	  ○ (1) Earthquake 7.1 ≤ Mw and < 100 km deep detected within 300 km of Tonga's Coast, or
	  ○ (2) Violent ground shaking observed from an unverified earthquake lasting at least 30 sec
	• *Significant Earthquake Advisory (SEA)/Tsunami Information Statement (TIS):*
	  ○ Earthquake 6.5 ≤ Mw < 7.1 and < 100 km deep has been detected anywhere in the Pacific Ocean
	• *Tsunami No Threat Advisory (TNTA):*
	  ○ Expected wave height < 0.3 m or when a tsunami or earthquake > 7.1 Mw has occurred in the Pacific Basin and assessment has been made that there is no direct threat to Tonga
	• *Tsunami Marine Alert (TMA):*
	  ○ Expected wave height 0.3 m ≤ H < 1 m with expected arrival time of 3 hr ≤ T < 6 hr
	• *Tsunami Marine Warning (TMW):*
	  ○ Expected wave height 0.3 m ≤ H < 1 m with expected arrival time of < 3 hr
	• Tsunami Alert (TA):
	  ○ Expected wave height is H ≥ 1 m with expected arrival time of 3 hr ≤ T < 6 hr
	• Tsunami Warning (TW):
	  ○ Expected wave height is H ≥ 1 m with expected arrival time of < 3 hr

Tuvalu (SIDS)	Wave amplitudes 1 m to 3 m
United States of America	https://tsunami.gov/images/procChartLargeAtlantic.gif https://tsunami.ioc.unesco.org/sites/default/files/medias/fichiers/2024/08/NTWCGuidance_CRITERIA_TABLE_PTWC_NewProducts_0.pdf
Vanuatu (SIDS)	• *Information:* Mw 6.0 to 6.9 and Mw 7.0 to 7.4 at more than 100 km depth • *Advisory:* Mw 7.5 with depth less than 100 km
Viet Nam	Magnitude, location, depth, focal mechanism, sea levels

Annex 4 – National threshold or criteria for termination of the warning situation

Country	National threshold or criteria for termination of the warning situation	Website
Australia	JATWC will issue a warning cancellation when it assesses that either no tsunami has eventuated, or the tsunami threat has passed. In the latter case, the observed wave amplitudes must be below the Marine Threat threshold for at least two hours, although abnormal sea level changes and currents may persist for many hours.	www.bom.gov.au/tsunami
Brunei Darussalam	No tsunami warning has been terminated.	None
Canada	On notification from the National and Pacific Tsunami Warning Centers.	https://www.tsunami.gov/
Chile	When the technical agency that assessed the tsunami threat indicated that there is no longer a threat and the conditions are safe exist, population is informed by the same way that the beginning of the warning situation was reported.	www.senapred.cl
China	NTWC issues warning cancellation.	https://www.nmefc.cn/zhyj/hx https://www.oceanguide.org.cn/TsunamiWarning https://www.hko.gov.hk/en/gts/equake/tsunami_info_warn.htm
Colombia	Following the guidelines of the National Tsunami Detection and Warning Protocol, DIMAR-CNAT determines that no more tsunami waves will arrive, and a "cancellation" bulletin is issued, informing the public that the tsunami threat has passed. This bulletin is issued to SNDAT entities. Following the bulletin's publication, UNGRD issues a situational report so that territorial entities can initiate Damage Assessment and Needs Analysis (EDAN) actions and make decisions regarding the response entities depending on the level of emergency presented and in coordination with the National Emergency Response Strategy.	https://x.com/UNGRD https://www.facebook.com/share/18Tf https://www.instagram.com/ungrd_oficial?igsh=MWVjeDl0azJkYmluNw==ENoWvK/
Cook Islands (SIDS)	This will depend on the circumstances of the situation. Policy and Act in place dictates due process. If it is a simple matter, there will be constant close monitoring of the situation by the EMCI Director, Meteorological Director and Climate Change.	-
Costa Rica	Once SINAMOT issues the end of warning, then CNE decides to issue an all clear.	https://unacostasegura.una.ac.cr/webServices/
Ecuador	The National Risk Management Secretary – Secretaría Nacional de Gestión de Riesgos (SGR in Spanish) and the National Directorate of Aquatic Areas act on the information provided by INOCAR for characterizing the potential tsunami threat, but the National Risk Management Secretary disseminate the information within the country because it is the responsible agency for disaster public safety action.	None
El Salvador	It depends on the distance of the earthquake, but the terminated criterion is that the tsunami has arrived and has been measured by the tide gauges.	http://www.snet.gob.sv/informacion/?area=tsunamis
Federated States of Micronesia	All clear messages are disseminated.	https://www.facebook.com/NationalWeatherServicesPohnpeiFsmOffice
Fiji (SIDS)	The warning situation is only terminated one hour after the arrival of the last tsunami wave.	https://www.ndmo.gov.fj/
French Polynesia (France)	Media, sirens, and megaphone.	www.polynesie-francaise.pref.gouv.fr @hcrpf987

Country	National threshold or criteria for termination of the warning situation	Website
Guatemala	By means of a finalization of alert bulletin.	None
Honduras	Cancellation bulletin.	https://x.com/copecogob?lang=en https://www.facebook.com/p/Copeco-Honduras-61562724550067/
Indonesia	BMKG monitors the tide gauges records regularly during the tsunami emergency and will terminate the tsunami warning if none of the tide gauges records any tsunami. If there were a lack of tide recordings, BMKG will terminate the situation 2 hours after the last estimated tsunami arrival time.	https://inatews.bmkg.go.id/wrs/index.html https://inatews.bmkg.go.id/web/tsunami
Japan	Tsunami warnings and/or advisories are cleared when JMA concludes that the dangerous situation has been over, namely, when the tsunami attenuates, and the observed height becomes adequately lower.	https://www.jma.go.jp/jma/indexe.html
Kiribati (SIDS)	Every Watch or Warning shall be cancelled in accordance with the criteria provided in the support plan.	None
Malaysia	When there are no more potential threats through tide gauges readings monitoring as well as advisories from international monitoring agencies.	https://www.met.gov.my
Mexico	The tsunami warning situation is terminated by a "Cancellation" bulletin issued exclusively by the Mexican Tsunami Warning Center (CAT). This bulletin is issued once normal sea conditions have been restored and it is determined that there is no longer any danger to the country's coasts.	https://digaohm.semar.gob.mx/cat/centroAlertasTsunamis.html Application: TSUNAMI MX
Nauru (SIDS)	NES is responsible for cancelling the warning when it deems that threat has diminished and safe for the community to return to their homes or continue with their normal chores.	-
New Zealand	1. Using our Emergency Mobile Alert which is broad-casted to all capable mobile phones from targeted cell towers. Agencies will only send alerts when there is a serious threat to life, health, or property. 2. Using our national warning system through Whispir (Soprano Limited) this goes to key stakeholders across government, lifeline utilities and civil defense groups across New Zealand. This is to forewarn them so that they can take the necessary steps to support their organisations and our communities affected.	https://www.civildefence.govt.nz/
Nicaragua	Publication by SINAPRED (Civil Protection).	catac.ineter.gob.ni
Niue (SIDS)	It depends on the situation. If there is no threat to the island, it will be included in the bulletin that there will be no further update. Active threat, update will continue until PTWC has stated that it will be the final update.	www.gov.nu
Palau (SIDS)	National Emergency Committee terminates warning after an update from PTWC is provided to WSO Palau.	weather.gov/gum/Palau
Papua New Guinea (SIDS)	ALL CLEAR advice from the NTWC through radio/TV broadcast and range of options mentioned in 10b above.	None
Philippines	Tsunami cancellation advisory is released once the tsunami threat has passed.	https://www.phivolcs.dost.gov.ph/index.php/tsunami/tsunami-advisory-and-warning3
Republic of Korea	KMA terminates the tsunami warning through the communication method (CBS, SNS etc.) used in the tsunami warning.	https://www.weather.go.kr/w/eqk-vol/recent-eqk.do
Russian Federation	Based on sea level monitoring.	https://www.meteorf.gov.ru/
Singapore (SIDS)	When the ALL-CLEAR signal is given by the NTWC that no tsunami is expected to affect Singapore.	https://www.weather.gov.sg/home/
Solomon Islands (SIDS)	Based on Tsunami Wave assessment (sea level observation)	https://met.gov.sb/tsunami-warnings/
Thailand	2hours after the last tsunami wave pass or there is no longer a destructive tsunami threat to the coast of Thailand	-

Country	National threshold or criteria for termination of the warning situation	Website
Timor-Leste (SIDS)	By official letter	https://www.apc.gov.tl/ https://www.facebook.com/profile.php?id=100082148566854&mibextid=wwXIfr&mibextid=wwXIfr
Tonga (SIDS)	Official Cancellation/Termination of Warning is disseminated from the Tonga MET Services (NTWC) via different dissemination platforms and Official All Clear/Stand down message issued by National Disaster Management Office.	www.met.gov.to Facebook: Tonga Meteorological Service Facebook: Tonga National Disaster Risk Management Office - NDRMO
Tuvalu (SIDS)	Once a cancellation message is received from PTWC, or the message issued says that there is no longer any threat to the country.	www.tuvmet.tv Facebook page
United States of America	With a cancellation statement.	tsunami.gov
Vanuatu (SIDS)	A Tsunami Cancellation message is sent through SMS and media.	https://www.vmgd.gov.vu/geohazards/tsunami
Viet Nam	NTWC continuously monitors sea level data, seismic activity, and tsunami wave propagation to determine when the threat has passed. Once it is confirmed that there is no longer a threat, the NTWC issues a cancellation bulletin or all-clear message to inform government agencies, emergency responders, and the public.	http://igp-vast.vn/index.php/en

Annex 5 – Events and national responses since 2005 reported by countries

Country	Event	National response
Australia	2022 January 15, Hunga Tonga Hunga Ha'Apai (HTHH) Volcanic eruption	Marine Warnings were issued and well verified against many sea level observations for: • Norfolk Island, three hours after the eruption, later upgraded to Land Warning. • Lord Howe Island, later upgraded to Land Warning with local emergency service ordered evacuation which took place overnight. • Most of the Australian East Coast.
Chile	2014 April 1, at 23:46 UTC, earthquake, 89 km SW of Cuya, Mw 8.2	The highest intensity reported by SENAPRED was VIII in the Region of Arica and Parinacota. It generated a tsunami from Arica and Parinacota to Bahía Mansa. The first arrival was at 00:11 UTC at the Iquique sea level station, being also the highest amplitude with 2.59 m, followed by Pisagua with 1.89 m. SNAM issued a total of 14 bulletins: In bulletin 1 it established Watch status for the entire national territory based in a preliminary CSN magnitude 7.8, and in bulletin 2 it elevated the threat to Alarm status (both statuses entail the same level of evacuation of the population).
	2015 September 16, at 22:54 UTC, earthquake, 42 km W of Canela Baja, Mw 8.4	The highest intensity reported by SENAPRED was VIII in Coquimbo and La Serena. It generated a tsunami recorded from Arica and Parinacota to Bahía Mansa, but its mayor amplitude was of 4.5 m at the Coquimbo station. The first record was at the Pichidangui sea level station at 23:06 UTC (12 min after the event). SNAM issued a total of 15 bulletins, establishing imminent danger of tsunami for the entire national territory since bulletin 1.
	2022 January 15, at 04:00 UTC, Hunga Tonga Hunga Ha'Apai (HTHH) Volcanic eruption	SNAM established tsunami threat by localities and based on sea level readings from both national and international stations. A total of 45 bulletins were issued and the maximum amplitude recorded was 1.9 m at the Chañaral sea level station.
El Salvador	2012 August 26, earthquake	There was an earthquake and tsunami that impacted a coastal section – No impacts – Not a lot of people.
Fiji	2009 September 29, South Pacific tsunami	Triggered by a powerful magnitude 8.1 earthquake near Samoa, this tsunami affected parts of Fiji, particularly the Lau and Lomaiviti islands. Waves reached heights of several meters, causing damage and prompting evacuations.
	2010 March 4, Tonga earthquake, Mw 8.0	Tsunami warnings were issued for nearby regions, including Fiji. Although Fiji experienced minor wave activity, there was no significant impact.
	2018 September 28, Sulawesi earthquake	A strong earthquake and the resulting tsunami in Indonesia raised concerns across the Pacific. Fiji's NDMO and Mineral Resources Department monitored the situation but reported no tsunami threat to the country.
	2022 January 15, Hunga Tonga Hunga Ha'Apai (HTHH) Volcanic eruption	While this event occurred in January 2022, it was preceded by significant volcanic activity in 2021. The underwater volcanic eruption in Tonga generated tsunami waves that caused alerts in Fiji. The waves caused minor coastal effects, but no significant damage was reported.
Japan	2011, Tohoku earthquake	The Japan Meteorological Agency (JMA) issued tsunami warnings. The JMA has improved its tsunami warnings based on lessons learned from each case.

Country	Event	National response
New Zealand	2016, Kaikoura earthquake	Due to the complex nature of the earthquake, a tsunami warning was delayed but issued. The public then self-evacuated, however this was after the first wave arrival. There were no casualties due to the small wave height in populated areas / no exposure.
	2021 March 5	There were three tsunamis generated off the east coast of the North Island that caused minor coastal damage. Tsunami Warnings were issued in a timely fashion for all three events, and the public self-evacuated. The event was resolved to a no-threat within 12 hours.
	2022 January 15, Hunga Tonga Hunga Ha'Apai (HTHH) Volcanic eruption	A Tsunami Advisory Beach & Marine was issued in a timely fashion. No evacuations were proactively undertaken, although a marina was subsequently self-evacuated after experiencing damage.
Nicaragua	2012, earthquake, in front of Fonseca Gulf, Mw 7.3	A tsunami, with 5 m wave height, impacted in a small area near Mechapa. No human losses. The response was problematic as it was a slow earthquake. In 2012, real time moment determination and numeric tsunami simulation were not yet implemented.
Philippines	2012, Negros earthquake	PHIVOLCS raised Tsunami Alert Level 2 to prevent people from approaching the beach. Tsunami Alert Level 2 recommends people to be on alert for unusual waves, to stay away from the beach, and there is no need for evacuation. The alert level was cancelled after 2.5 hours as per Standard Operating Procedures considering the arrival period and extended observation period. Generally, witness accounts of the tsunami arrival time are between 2 to 5 minutes after the earthquake, which means that there was not enough lead time for warning.
Papua New Guinea	2011, Tohoku earthquake	A tsunami warning was issued by NTWC upon the advice from TWFP for the whole of Northern coast mainland PNG. Patients were ordered to evacuate from a referral hospital in Wewak, ESP. The tsunami inundated the hospital premises and caused considerable damage thereafter.
Republic of Korea	2024 January 1, Noto Peninsula earthquake (Japan), Mw 7.5	KMA announced the tsunami information for the public via Cell Broadcasting Service, TV, SMS, and Internet.
Solomon Islands	2007, Gizo tsunami 2010, Rendova tsunami 2011, Japan tsunami 2013, Temotu tsunami 2016, Makira tsunami 2022, Honiara earthquake	-

Annex 6 – Evacuation infrastructures in countries

Countries	Evacuation shelter	Evacuation structure built specifically for tsunami evacuation	Natural or artificial hill or high ground for vertical evacuation	Evacuation route signage	Evacuation zone maps
Australia	There are shelters but not specifically designed for tsunami	There are shelters but not specifically designed for tsunami	Yes, but no definitive percentage. Places like Cocos Islands do not have hills for vertical evacuation.	Limited to very few coastal cities such as Manly Beach	Approximate coverage of 30%. Only exists for New South Wales and Queensland, Western Australia in development
Brunei Darussalam	Most of habitable regions	-	-	-	-
Canada	10%	-	-	90%	90%
Chile	-	-	Variable: Coverage depending on the territory	Exists in coastal cities, where the higher percentage of the population is concentrated	Evacuations maps are available in all coastal regions of the country with the coverage of more than 70% of coastal localities
China	60%	-	30%	-	70%
Colombia	-	-	-	-	A tsunami evacuation map is available for the urban areas of Tumaco and Salahonda, which represent approximately 5% of the country's coastal population.
Cook Islands (SIDS)	Whole of the Cook Islands	Whole of the Cook Islands	Mainly Southern Cook Islands. A disadvantage for Northen Cook Islands being an atoll.	Mainly Southern Cooks, Rarotonga with signs in place.	Evacuation zone, primary safety shelter identified to accommodate the need in the Southern Cook Islands when the Northen Cook Islands has Safety shelters build to suit for their needs.
Costa Rica	There are some multi-hazard shelters, but coverage is not known and neither if they are suitable for tsunamis		No percentage	About 10% of coastal communities	About 20% of coastal communities
Ecuador	-	-	Northern region 10% Central region 20% Southern region 20% Island region 60%	Northern region 10% Central region 20% Southern region 40% Island region 60%	Northern region 10% Central region 20% Southern region 40% Island region 60%

Countries	Evacuation shelter	Evacuation structure built specifically for tsunami evacuation	Natural or artificial hill or high ground for vertical evacuation	Evacuation route signage	Evacuation zone maps
Fiji (SIDS)	Evacuation shelters are in all villages in Fiji and urban areas.	-	-	Suva City, Cuvu Nadroga	Suva, Nadi, and Cuvu Nadroga
French Polynesia (France)	100%	Multi hazard shelter built only on atoll islands	100% (except Tuamotu archipelago)	70% of Society archipelago	100%
Honduras	-	-	Only Omoa, Cortés	Cedeño, Marcovia, Choluteca (70%), Omoa, Cortés (70%) Tornabé, Tela, Atlántida (80%)	Cedeño, Marcovia, Choluteca (70%), Omoa, Cortés (70%), Tornabé, Tela, Atlántida (80%)
Indonesia	16 vertical Evacuation shelters have been built in 16 villages in 6 provinces (Aceh, Padang, Bengkulu, Banten, Bali, Lombok)	In general, the Vertical Evacuation Structure also functioned as the Vertical Evacuation shelter. Therefore 6 vertical Evacuation shelters that have been built in 16 villages in 6 provinces (Aceh, Padang, Bengkulu, Banten, Bali, Lombok), are the vertical evacuation structure as well. However, in some places Hotels, Airport, School, High building are used for Vertical Evacuation Structure	Indonesia has both of natural and artificial evacuation site	Lots of cities and villages, especially the ones that have been recognized as tsunami ready communities have evacuation signage.	Lots of cities and villages, especially the ones that have been recognized as tsunami ready communities have evacuation signage.
Nauru (SIDS)	-	-	Nauru does not have any mountains, but there is in the central side of the island the topside which is about 65 meter high.	Some signage on each of the main roads that goes up to the topside, which are located at Aiwo and Meneng. However, need to put up more on other locations, but lack funding.	
New Zealand	All CDEM Groups have identified 'Civil Defense Centres'. There is no measure of how many of these are outside of tsunami inundation zones.	-	One location in Tauranga. Negligible %	4 of the 16 regions have tsunami evacuation route signs	All 16 regions of New Zealand have evacuation zones/ This covers 90% of the coastline
Palau (SIDS)	All 16 States of Palau have Evacuation Shelters.	-	-	-	-

Countries	Evacuation shelter	Evacuation structure built specifically for tsunami evacuation	Natural or artificial hill or high ground for vertical evacuation	Evacuation route signage	Evacuation zone maps
Papua New Guinea (SIDS)	-	-	Many centers along the coast have natural hills nearby and can be utilized for evacuation where necessary.	-	-
Republic of Korea	Tsunami emergency shelters are prepared in the eastern coastal areas of the Korean Peninsula (Busan, Ulsan, Gangwon-do, etc.) where tsunamis are expected.	A tsunami safety tower has been installed in Samcheok, Kangwon-do to protect the port from Tsunamis.	The natural hills are included in the tsunami emergency shelter.	Evacuation route signs are installed at 200m intervals at major intersections and places with good visibility.	
Russian Federation	Kuril Islands, Kamchatka region	-	Sakhalin region, Kamchatka region, Primorje region	Sakhalin, Kuril Islands	-
Solomon Islands (SIDS)	-	-	-	Honiara	-
Thailand	located in all of risk prone areas approximately 95 percent of 6 Province Andaman Sea.	They are in 509 risk prone area of 6 Andaman Province (approximate 95 percent)	There are some hilly safe areas in all 6 Adaman Province (not determine the numbers)	In all 6 Andaman Province (approximately 95 percent)	In all 6 Andaman Province (approximated 86 percent)
Timor-Leste (SIDS)	All regions have Evacuation shelter prepared by Local Authority and some support from Project (SPC-BSRP)	-	-	Liquica Municipality and Dili as a Capital	-
Tonga (SIDS)	In main island division of Tonga	Tongatapu island	In all major island divisions of Tonga	In all major island divisions of Tonga	In all major island divisions of Tonga
Tuvalu (SIDS)	Using existing double story Primary School buildings and churches in outer islands, Primary School, and main Government office building as evacuation centers on the capital	-	-	-	-
Vanuatu (SIDS)	Port Vila Municipal Area and Provincial Areas. Most of the Evacuation centers are public buildings and community shelters (Schools, church hall, Community Hall).	-	Shefa Province, Port Vila City approximate % risk is low 10%	Port Vila City Shefa Province	-

Annex 7 – Summary tables of survey responses

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			Central American Pacific Coast							Southeast Pacific				South China Sea								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
HAZARD ASSESSMENT	4a	Has your country undertaken a hazard assessment?	●	●	○	●	●	●		●	●	●	●	○		●	●	●	●	●	●	●
	4b	What type of hazard assessment has been carried out?	T	T	N/A	T + MH	MH	MH		T	T + MH	T	T + MH	N/A		T + MH	MH	MH	T + MH	T + MH	MH	T + MH
	4c	If multi-hazard, what additional hazard assessments have been carried out?																				
		Cyclone				●	●	●			●		○			●	●	○	○	○	●	○
		Drought				●	●	●			●		○			○	●	●	○	○	●	○
		Earthquake				●	●	●			●		●			●	●	●	●	●	●	●
		Epidemics				●	●	●			○		○			○	○	●	○	○	○	●
		Flooding				●	●	●			●		●			●	●	●	○	○	●	○
		Landslide				●	●	●			●		○			○	●	●	●	●	●	●
		Volcanic eruptions				○	●	●			●		○			○	●	○	●	●	○	○
		Other				○	○	○			●		○			●	●	○	○	○	○	○
	4d	Who did the tsunami hazard assessment in your country?																				
		National Agency	○	●		○	●	●		●	●	●	○			●	●	●	●	●	●	●
		International Agency	○	○		●	○	●		○	○	○	○			○	○	○	○	○	●	○
		National / Local University	●	○		●	●	●		○	●	○	○			○	○	○	○	●	●	○
		National / International Consultant	○	○		●	○	●		○	●	○	○			○	○	○	○	○	●	○
		Other	○	○		○	○	○		○	○	○	●			○	●	○	○	○	○	○
	4e	At what level was the tsunami hazard assessment carried out?																				
		National Level	●	●		●	●	●		●	●	○	●			●	●	●	○	●	●	●
		Regional Level	○	○		○	●	●		○	○	○	○			●	●	○	○	●	○	●
		City Level	○	●		○	●	●		○	●	●	○			●	●	○	●	○	●	○
		Village Level	○	○		●	○	●		○	●	○	○			●	●	○	○	○	●	○
		Other	○	○		○	○	○		○	○	○	○			○	○	○	●	○	○	○
	4f	For which type of sources was the tsunami hazard assessment carried out?																				
		Earthquake	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Volcanic	○	○		○	○	○		○	○	○	○			○	○	○	●	●	●	○
		Landslide	○	○		○	○	○		○	○	○	○			○	○	○	○	●	●	●
		Meteo-tsunami	○	○		○	○	○		○	○	○	●			○	○	○	○	○	○	○
		Meteor	○	○		○	○	○		○	○	○	●			○	○	○	○	○	○	○
	4h	Data used for hazard assessment and publicly available?																				
		Bathymetry – Used for hazard assessment	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Bathymetry – Publicly available	○	●		●	○	●		○	○	○	○			○	●	●	○	●	○	●
		Seismo-tectonic model – Used for hazard assessment	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Seismo-tectonic model – Publicly available	●	●		●	○	●		○	●	○	○			○	●	●	●	○	○	○
		Topography – Used for hazard assessment	●	●		●	●	●		●	●	●	●			●	●	○	●	○	●	●
		Topography – Publicly available	○	●		●	●	●		○	○	○	○			○	●	○	○	?	○	●
		Land cover – Used for hazard assessment	○	●		●	●	●		○	●	●	●			●	●	○	●	○	●	●
		Land cover – Publicly available		●		●	●	●		○	●	○	○			○	●	○	○	?	○	○
		Infrastructure – Used for hazard assessment	○	●		●	●	●		○	●	●	●			●	●	○	○	●	●	●
		Infrastructure – Publicly available		●		●	○	●		○	●	○	○			○	●	○	○	○	○	○
		Other – Used for hazard assessment	●	○		○	○	○		○	●	○	○			○	●	○	●	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
HAZARD ASSESSMENT	4i	What products do you have from the tsunami hazard assessment?																				
		Probabilistic Tsunami Hazard Assessment	○	○		●	○	○		○	●	○	○			●	●	●	○	●	●	○
		Deterministic Tsunami Hazard Analysis	●	●		○	●	●		●	●	○	○			●	●	●	●	●	●	●
		Field Studies on Tsunami Impacts	○	●		●	●	●		●	○	○	○			○	●	●	●	○	●	○
		Hazard map	●	●		●	●	●		●	●	○	●			●	●	●	●	○	●	●
		Inundation map	●	●		○	●	●		●	●	●	●			●	●	●	●	●	●	●
		Evacuation map	●	●		○	●	●		●	●	○	●			●	●	●	○	○	●	●
		Guidelines	○	●		○	●	●		●	○	○	○			●	●	●	●	○	●	●
		Other	○	●		○	○	○		○	○	○	○			○	●	●	●	○	○	○
	4j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami hazard assessment																				
		Rating	5	4	1	4	4	4		5	3	4	4	3		4	5	5	4	4	4	3
	4k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level in your country to improve capacity in the following areas of tsunami hazard assessment?																				
		Probabilistic Tsunami Hazard Assessment	5	4	5	4	3	3		2	3	2	4	3		3	5	2	1	5	4	5
		Deterministic Tsunami Hazard Analysis	4	4	5	2	5	5		5	3	4	4	4		2	5	2	5	5	4	4
		Field Studies on Tsunami Impacts	4	4	5	4	5	5		3	1	2	4	4		4	5	2	5	4	4	3
		Hazard map	2	4	5	4	4	5		5	2	3	4	4		2	5	3	5	4	4	4
		Inundation map	1	4	5	4	4	5		5	2	4	5	4		2	5	3	5	5	4	5
		Evacuation map	1	4	5	4	4	5		5	2	3	5	4		3	5	3	3	3	4	5
		Other	●	●	●	●	○	●		○	●	○	○	○		○	●	○	○	○	●	○
	4l	On a scale of 1 (No capacity) to 5 (Very good), what capacity does your country have to give training and/or consultancy on tsunami hazard assessment to other countries?																				
		Probabilistic Tsunami Hazard Assessment	1	3	1	3	3	1		3	4	2	5	2		3	5	2	1	3	4	1
		Deterministic Tsunami Hazard Analysis	5	3	1	3	5	4		5	4	2	5	2		4	5	2	3	3	4	1
		Field Studies on Tsunami Impacts	2	3	1	3	4	4		5	1	2	5	2		2	5	2	4	1	4	1
		Hazard map	5	3	1	3	4	4		5	4	2	5	3		4	5	2	4	3	4	1
		Inundation map	5	3	1	4	4	4		5	4	2	5	3		4	5	2	4	3	3	1
		Evacuation map	5	3	1	4	4	4		5	4	2	5	3		3	5	2	5	1	4	1
RISK ASSESSMENT	5a	Has your country undertaken a tsunami risk assessment?	●	●	○	○	●	●		○	●	●	●	●		●	●	●	○	●	●	●
	5b	What type of tsunami risk assessment was undertaken?	T	T			MH	T			MH	T + MH	T + MH	MH		T + MH	T + MH	MH		T + MH	MH	T
	5c	If multi-hazard, what additional hazards have been considered in your multi-hazard risk assessment?																				
		Cyclone					●				●	○	○	○		●	●	○		○	●	
		Drought					●				○	○	○	○		○	●	●		○	●	
		Earthquake					●				●	○	●	●		○	●	●		●	●	
		Epidemics					●				○	○	○	○		○	○	●		○	●	
		Flooding					●				●	○	●	●		●	●	●		○	●	
		Landslide					●				○	○	○	○		○	●	●		●	●	
		Volcanic eruptions					●				○	○	○	○		○	●	○		●	○	
		Other					○				○	●	○	○		○	●	○		○	●	
	5d	Who did the tsunami risk assessment in your country?																				
		National Agency	○	●			●	●			●	●	●	●		●	●	●		●	●	●
		International Agency	○	○			●	●			○	○	○	○		○	○	○		○	○	○
		National / Local University	●	○			●	○			○	○	○	○		○	○	○		●	○	○
		National / International Consultant	○	○			○	●			●	○	○	○		○	○	○		○	○	○
		Other	○	○			○	○			○	○	●	●		○	●	○		○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
RISK ASSESSMENT	5e	At what level was the tsunami risk assessment carried out?																				
		National Level	●	●			●	●			●	●	●	○		●	○	●		●	●	○
		Regional Level	○	●			●	●			○	○	○	●		●	●	○		○	○	○
		City Level	○	○			●	●			○	○	○	○		●	●	○		○	●	●
		Village Level	○	○			○	○			○	○	○	○		●	○	○		○	●	○
		Community / Neighbourhood Level	○	○			○	○			○	○	○	●		●	○	○		○	●	○
		Other	○	○			○	○			○	○	○	○		○	○	○		○	○	○
	5h	What products do you have from the tsunami risk assessment?																				
		Risk map	○	●			●	●			●	○	●	●		●	●	●		●	●	●
		Evacuation map	●	●			●	●			○	●	●	○		●	●	●		○	●	●
		Action Plan	●	○			●	●			○	●	○	●		○	●	●		○	●	●
		Guidelines	○	○			●	●			○	○	○	○		●	●	●		○	●	●
		Other	●	○			○	○			●	○	○	○		○	●	●		○	●	○
	5i	Has pedestrian evacuation modelling been included in the tsunami risk assessment?	●	●			●	●			●	●	○	○		●	●	○		○	●	●
	5j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami risk assessment																				
		Rating	4	4	1	3	4	4		5	3	3	4	3		4	5	5	3	5	5	3
	5k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level of your country to improve capacity in the following areas of tsunami risk assessment?																				
		National Level	4	4	5	5	5	5		5	3	5	5	5		2	5	2	2	5	4	5
		Regional Level	4	4	5	3	5	5		5	3	5	5	5		2	5	1	2	5	4	5
		City Level	2	4	5	4	5	5		4	3	5	5	5		2	5	1	2	5	4	4
		Village Level	2	4	5	4	4	5		4	3	5	5	5		2	5	1	1	1	4	3
		Community / Neighbourhood Level	2	4	5	4	4	4		3	3	5	5	5		3	5	1	1	1	4	3
		Other	○	○	○	●	○	○		○	○	○	○	○		○	○	○	○	○	○	○
	5l	On a scale of 1 (No capacity) to 5 (Very good) what capacity does your country have to give training and/or consultancy on tsunami risk assessment to other countries?																				
		National Level	2	3	1	3	4	4		4	3	3	5	2		4	5	1	3	3	4	1
		Regional Level	2	3	1	3	4	4		4	3	3	5	2		4	5	1	3	3	4	1
		City Level	4	3	1	3	4	4		3	3	3	5	2		4	5	1	3	3	4	3
		Village Level	4	3	1	3	4	4		3	3	3	5	2		3	5	1	3	1	4	3
		Community / Neighbourhood Level	4	3	1	3	4	4		3	3	3	5	2			5	1	3	1	4	3
		Other			1	3	4				3	3	5	2				1		1	4	1
POLICIES	6a	Does your country have national tsunami policies?																				
		Prevention and mitigation	T	N/A	MH	MH	MH	MH		MH	MH	N/A	MH	MH		MH	T	MH	MH	MH	MH	MH
		Preparedness	MH	N/A	T	MH	MH	MH		MH	MH	N/A	MH	MH		MH	T	MH	MH	N/A	MH	MH
		Emergency response	T	N/A	T	MH	MH	MH		MH	MH	N/A	MH	MH		MH	MH	MH	MH	N/A	MH	MH
		Rehabilitation and reconstruction	MH	N/A	MH	MH	MH	MH		N/A	MH	N/A	MH	MH		MH	MH	MH	MH	N/A	MH	MH
	6b	Does your country have local tsunami policies?																				
		Prevention and mitigation	N/A	N/A	N/A	N/A	MH	N/A		MH	N/A	N/A	MH	MH		MH	MH	MH	N/A	N/A	MH	MH
		Preparedness	N/A	N/A	N/A	N/A	MH	N/A		N/A	N/A	N/A	MH	MH		MH	MH	MH	N/A	N/A	MH	MH
		Emergency response	N/A	N/A	MH	N/A	MH	N/A		MH	N/A	N/A	MH	MH		MH	MH	MH	N/A	N/A	MH	MH
		Rehabilitation and reconstruction	N/A	N/A	N/A	N/A	MH	N/A		N/A	N/A	N/A	MH	MH		MH	MH	MH	N/A	N/A	MH	MH

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
PLANS	7a	Does your country have national, local and community level tsunami disaster risk reduction (DRR) plans?																				
		National – Prevention and mitigation	N/A	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	MH		MH	MH	MH	MH	MH	MH	MH
		Local – Prevention and mitigation	N/A	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	N/A			MH	MH	N/A	T	T	MH
		Community / Neighbourhood – Prevention and mitigation	T			N/A	N/A	MH			N/A	N/A	MH				MH	MH	N/A	T		
		National – Preparedness	N/A	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	MH		MH	MH	MH	MH	T	MH	MH
		Local – Preparedness	N/A	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	N/A			MH	MH	T	T	T	MH
		Community / Neighbourhood – Preparedness	T			N/A	N/A	MH			N/A	N/A	MH				MH	MH	MH	T		
		National – Emergency response	MH	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	MH		MH	MH	MH	MH	T	MH	MH
		Local – Emergency response	MH	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	N/A			MH	MH	T	T	T	MH
		Community / Neighbourhood – Emergency response	MH			N/A	N/A	MH			N/A	N/A	MH				MH	MH	N/A	T		
		National – Rehabilitation and reconstruction	MH	N/A	N/A	MH	MH	MH		N/A	N/A	N/A	MH	MH		MH	MH	MH	MH	T	MH	MH
		Local – Rehabilitation and reconstruction	MH	N/A	N/A	MH	MH	MH		N/A	N/A	N/A	MH	N/A			MH	MH	N/A	T	T	MH
		Community / Neighbourhood – Rehabilitation and reconstruction	MH			N/A	N/A	MH			N/A	N/A	MH				N/A	MH	N/A	T		
	7b	Are your country's tsunami DRR plans based on hazards and risk assessments?	●	○	○	●	●	●		●	●	○	●	○		●	●	●	●	●	●	●
GUIDELINES	8a	Does your country have national tsunami DRR guidelines?																				
		Prevention and mitigation	N/A	N/A	N/A	MH	MH	MH		MH	N/A	N/A	MH	N/A		MH	T	MH	N/A	T	T	MH
		Preparedness	N/A	N/A	N/A	MH	MH	MH		MH	T	N/A	MH	N/A		MH	T	MH	T	T	T	MH
		Emergency response	N/A	N/A	N/A	MH	MH	MH		MH	T	N/A	MH	MH		MH	MH	MH	T	T	MH	MH
		Rehabilitation and reconstruction	N/A	N/A	N/A	MH	MH	MH		N/A	N/A	N/A	MH	N/A		MH	MH	MH	N/A	T	MH	MH
	8b	Does your country have local tsunami DRR guidelines?																				
		Prevention and mitigation	N/A	N/A	N/A	T	MH	MH		N/A	MH	N/A	MH	N/A		MH	MH	MH	N/A	T	T	MH
		Preparedness	N/A	N/A	N/A	T	MH	MH		T	T	N/A	MH	N/A		MH	MH	MH	T	T	T	MH
		Emergency response	N/A	N/A	N/A	T	MH	MH		T	T	N/A	MH	N/A		MH	MH	MH	T	T	T	MH
		Rehabilitation and reconstruction	N/A	N/A	N/A	T	MH	MH		N/A	N/A	N/A	MH	N/A		MH	N/A	MH	N/A	T	T	MH
DETECTION AND WARNING	9a	Does your country have a national capability to assess and/or receive potential tsunami threat information and advise / warn its coastal communities?	●	●	○	●	●	●		●	●	●	●	○		●	●	●	●	●	●	●
	9b	Does your country utilise the data provided by the PTWS Tsunami Service Providers (TSPs) for the Threat Assessments of your country's coastline to determine national threats or does it undertake its own threat assessments?																				
		Use TSP data	○	●		●	●	●		○	○	○	○			○	○	●	○	●	○	●
		Use own threat assessments	●	●		○	●	●		●	●	●	●			●	●	●	●	○	●	●
		Use TSP data as backup	●	○		○	○	○		●	●	●	●			●	●	○	●	○	●	○
	9c	What known local tsunami sources are your country's NTWC able to monitor?																				
		None	○	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○
		Earthquake	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Volcanic	○	○		○	○	●		○	○	○	●			●	●	○	○	○	○	○
		Landslide	○	○		○	○	●		○	○	○	○			○	●	○	○	○	○	●
		Meteotsunami	○	○		○	○	●		○	○	○	●			●	●	○	○	○	○	○
		Meteor	○	○		○	○	○		○	○	○	●			○	○	○	○	○	○	○
	9e	Does the organisation responsible for assessing and/or receiving potential tsunami threat information operate 24x7?	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
DETECTION AND WARNING	9f	What / which infrastructure is available to enable 24x7 operations?																				
		Internet	●	●		●	●	●		○	●	●	●			●	●	●	●	●	●	●
		Landing phone	●	●		●	●	●		●	●	○	●			●	●	●	●	●	●	●
		Mobile phone	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Satellite phone	○	○		○	●	○		●	●	○	●			●	●	●	○	○	○	○
		Radio	●	○		●	●	●		●	●	○	●			●	●	○	●	○	○	○
		Internet (mobile)	○	●		●	●	●		○	●	○	●			●	●	●	●	○	○	●
		Internet (broadband)	●	●		●	●	●		●	●	○	●			●	●	○	●	○	○	●
		Fax	○	○		●	○	○		○	○	○	○			●	○	●	●	●	●	●
		GTS (Global Telecommunication System)	○	○		●	○	○		○	○	○	○			●	●	●	○	●	●	○
		UPS (Uninterruptable Power Supply)	○	●		●	●	●		●	●	●	○			●	●	●	●	○	●	●
		VSAT	○	○		○	○	○		●	○	○	●			●	●	●	●	○	○	○
		Internet (dial-up)	○	○		○	○	○		○	○	○	●			○	○	○	○	○	○	○
		Internet (wireless)	●	●		○	●	●		●	●	○	●			○	○	●	●	○	○	●
		Internet (satellite)	○	○		○	●	○		●	○	●	●			○	○	○	○	○	○	○
		Other	○	●		○	○	○		○	○	○	○			○	●	○	○	○	○	○
	9g	Which level of tsunami threat forecast information is produced by the responsible organisation?																				
		Ocean-wide	○	●		●	○	●		○	○	○	○			●	●	●	○	○	○	○
		National	●	●		○	●	●		●	○	●	●			●	●	●	●	●	●	●
		Local	●	●		○	●	●		●	●	○	○			●	●	●	●	●	●	●
	9h	Does the organisation have access to national and/or international seismic networks?																				
		Yes, national and international	○	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
		Yes, national only	○	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○
		Yes, international only	○	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○
		No	●	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○
	9i	Is national seismic data shared in real time?																				
		All national seismic data is shared in real time		●		●	●	●		●	●	○	●			○	○	○	○	●	●	○
		Some national seismic data is shared in real time		○		○	○	○		○	○	●	○			●	●	●	○	○	○	●
		No national seismic data is shared in real time		○		○	○	○		○	○	○	○			○	○	○	●	○	○	○
	9j	Does your organisation have access to GNSS data (Global Navigation Satellite System) data?	○	●		●	○	●		●	○	●	●			●	●	●	●	●	○	●
	9k	Is the list of broadband seismometers operated by your country listed accurately in the IRIS database (https://ds.iris.edu/mda/)?	●				○	●		●	○	●				●		●	○	●	○	●
	9l	When compared to the IRIS database (https://ds.iris.edu/mda/) have you decommissioned or added broadband seismometers operated by your country.																				
		Some stations have been decommissioned		○		○	○	●			○	●	○			○	○	○	○	○	○	○
		Some stations have been added		●		○	●	○			●	○	○			○	○	○	●	○	●	○
		There are no changes		○		●	○	○			○	○	●			●	●	●	○	●	○	●
	9m	Does the organisation have access to national and/or international sea level networks?																				
		Yes, national and international	●	●		●	●	●		●	●	●	○			●	●	●	●	●	●	●
		Yes, national only	○	○		○	○	○		○	○	○	●			○	○	○	○	○	○	○
		Yes, international only	○	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○
		No	○	○		○	○	○		○	○	○	○			○	○	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
DETECTION AND WARNING	9n	Is national sea level data shared in real time?																				
		All national sea level data is shared in real time	●	●		○	●	●		●	○	●	●			○	●	○	○	●	●	○
		Some national sea level data is shared in real time	○	○		○	○	○		○	●	○	○			●	○	●	●	○	○	●
		No national sea level data is shared in real time	○	○		●	○	○		○	○	○	○			○	○	○	○	○	○	○
	9o	Is the list of sea level stations, including tsunameters, operated by your country listed accurately in the IOC Sea Level Station Monitoring Facility (https://www.ioc-sealevelmonitoring.org/map.php) website?	●	●			●	●		●	○	●				●	○	●	○	●	○	●
	9p	When compared to the IOC Sea Level Station Monitoring Facility, have you decommissioned or added sea level stations, including tsunameters, operated by your country.																				
		There are no changes				●	○	○			●	○	●			●	○	●	○		●	●
		Some stations have been decommissioned				○	○	●			○	●	○			○	●	○	○		○	○
		Some stations have been added				○	●	○			○	○	○			○	○	○	●		○	○
	9q	What other observing networks are operated by your country and used for tsunami early warning?																				
		No other observing networks are operated by the country	○	●		○	●	○		●	●	●	○			○	○	●	○	●	○	●
		GNSS (Global Navigation Satellite System)	○	○		○	○	●		○	○	○	●			○	○	○	○	○	○	○
		Coastal radars	○	○		○	○	○		○	○	○	○			●	○	○	○	○	○	○
		Other	●	○		●	○	○		○	○	○	○			○	●	○	●	○	●	○
	9r	Does the organisation have the capability of analysing real-time seismic and sea-level data for potential tsunami threat?	●	●		○	●	●		●	●	●	●			●	●	●	●	●	○	●
	9s	Does the organisation have the capability for tsunami modelling to support generation of threat forecasts?	○			○	●	●		●	●	●	●			●	●	●	●	●	●	●
	9t	Does the organisation responsible for identifying a potential tsunami threat also issue national tsunami no threat, watches, advisories, alerts, evaluation messages and/or warnings?	●	○		○	●	●		●	○	●	●			●	●	●	●	●	●	●
	9w	Did your country's NTWC and/or TWFP participate in the regular communications tests conducted by the PTWS TSPs?	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
	9x	Did your country's NTWC and/or TWFP participate in national and/or international Tsunami Exercises (e.g. PacWave) conducted in the inter-sessional period between ICG meetings?	●	●		●	●	●		●	●	●	●			●	●	●	●	●	●	●
	9y	Since 2005, was your country impacted by any damaging tsunami?	○	●		○	○	●		●	○	○	●			○	●	○	●	○	○	○
	9z	Since 2020, were there any major enhancements in your national warning SOPs and alerting?	●			○	●	●		●	●	●	●			●	●	●	●	●	○	○

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DISSEMINATION	10a	How is the tsunami information (warning, public safety action, etc) disseminated within country?																			
		Email	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	○	●	●
		SMS	○	●	○	●	○	○		○	○	●	●	●		●	●	●	●	●	●	●
		Telephone	●	●	●	●	○	●		○	●	○	●	●		●	●	○	○	○	○	●
		Fax	○	○	○	○	○	○		○	○	○	○	●		●	●	●	●	○	○	●
		Webpage	○	●	○	○	●	●		●	●	●	●	○		●	●	●	●	●	○	●
		Radio	○	●	○	●	○	●		○	○	○	○	○		●	●	○	○	●	●	●
		WhatsApp / Facebook / Other social media	●	●	●	○	○	●		●	●	●	●	●		●	●	●	●	●	●	○
		Door-to-door	●	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○
		Sirens	●	○	○	●	○	●		●	○	●	●	○		○	●	●	●	●	●	○
		Television	○	○	○	●	○	●		○	○	○	●	●		●	●	●	●	●	●	●
		Warning towers	○	○	○	○	●	○		○	○	○	●	○		○	○	○	○	○	●	●
		Megaphone	●	○	○	○	●	○		○	○	●	○	○		○	●	○	○	○	○	○
		Police / Military	○	○	○	●	●	○		○	●	●	○	○		○	●	○	○	●	○	○
		Public alert system	○	○	○	○	●	○		●	○	●	●	●		●	●	○	●	●	●	○
		VHF radio	●	○	○	●	○	●		●	○	○	●	○		●	●	○	○	○	○	○
		VPN	○	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○
		Amateur Radio	○	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○
		Other	○	○	○	○	●	○		○	○	○	○	○		○	●	○	○	○	●	●
	10b	For each Disaster Management Office listed below, which communication methods for emergency response are available?																			
		National DMOs – Telephone	●	●		●	●	●		●	●	○		●		●	●	○	●	○	●	●
		National DMOs – Fax	●	●		○	○	○		○	○	○		○		●	●	●	●	○	●	●
		National DMOs – Email	●	●		●	●	●		●	●	○		○		●	●	●	●	○	●	●
		National DMOs – SMS	○	●		●	●	○		○	○	●		●		●	●	●	●	●	●	●
		National DMOs – Siren	○	○		○	○	○		○	○	●		○		○	●	●	●	●	○	○
		Local DMOs – Telephone	●	●		●	●			○	●	○		●		●	●	○	●	○	●	●
		Local DMOs – Fax	●	○		○	○			○	○	○		○		●	○	●	●	○	●	●
		Local DMOs – Email	●	○		●	○			●	●	○		○		●	●	●	●	○	●	●
		Local DMOs – SMS	○	○		●	○			○	○	●		●		●	●	●	●	●	●	●
		Local DMOs – Siren	●	●		○	●			○	○	●		○		○	●	●	●	●	○	○
		General public – Telephone	●	●		●	○	●		○		○		●		●	○	○	●	○	○	●
		General public – Fax	●	○		○	○	○		○		○		○		○	○	○	○	○	●	●
		General public – Email	●	●		●	○	●		○		●		○		○	○	○	○	○	●	●
		General public – SMS	○	●		●	○	○		○		●		●		●	○	○	●	●	●	●
		General public – Siren	●	○		○	●	●		●		●		○		○	●	●	●	●	○	○
		Coastal communities – Telephone	●	●	●	●	●	●		●		○		●		●	○	○	●	○	○	●
		Coastal communities – Fax	●	○	○	○	○	○		○		○		○		○	○	○	○	○	●	●
		Coastal communities – Email	●	○	●	●	○	●		●		○		○		○	○	○	○	○	○	●
		Coastal communities – SMS	○	○	○	●	●	○		○		●		●		●	○	○	●	●	●	●
		Coastal communities – Siren	●	●	○	○	●	●		●		●		○		○	●	●	●	●	○	●
		Media – Telephone	●	●	●	●	●	●		●		●		●		●	○	○	●	○	●	●
		Media – Fax	●	○	○	○	●	○		○		○		○		○	○	●	○	○	●	●
		Media – Email	●	●	●	●	●	●		●		●		○		●	○	●	●	○	●	●
		Media – SMS	○	●	○	●	●	○		○		○		●		●	○	○	●	●	●	●
		Media – Siren	○	○	○	○	●	○		○		○		○		○	●	○	○	●	○	○
		Other	○	○	○	●	●	●		●	●	○		○		●	●	●	●	●	●	○
	10e	Does your country utilize CAP?	●		○	●	○	●		●	○	●		○		●	●	○	○	○	●	○

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			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
STANDARD OPERATING PROCEDURES	11a	Does your SOP address this aspect of tsunami emergency response (upstream)?																				
		24/7 Emergency Operations Centre (EOC)	●	●	○	●	●	●		●	●	●	●	○		●	●	●	●	●	●	●
		Receiving information from the NTWC	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
		Response Criteria / Decision making	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?																				
		24/7 Emergency Operations Centre (EOC)	○	●	●	●	○	○		○	○	●	●	●		○	●	○	●	○	●	○
		Receiving information from the NTWC	○	●	●	●	○	○		○	○	●	●	●		○	●	○	●	○	●	○
		Response Criteria / Decision making	○	●	●	●	○	○		○	○	●	●	●		●	●	○	●	○	●	○
		Is support required to develop human resources for this aspect of tsunami emergency response?																				
		24/7 Emergency Operations Centre (EOC)	○		●	●	○	○		○	○	●	●	●		○	●	○	●	○	●	○
		Receiving information from the NTWC	○		●	●	○	○		○	○	●	●	●		○	●	○	●	○	●	○
		Response Criteria / Decision making	○		●	●	○	○		○	○	●	●	●		●	●	○	●	○	●	○
		Is support required to develop infrastructure for this aspect of tsunami emergency response?																				
		24/7 Emergency Operations Centre (EOC)	●	○	●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	○
		Receiving information from the NTWC	○	○	●	●	○	○		○	●	●	●	●		○	●	○	●	○	●	○
		Response Criteria / Decision making	○	○	●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	○
	11b	Does your SOP address this aspect of tsunami emergency response (downstream)?																				
		Warning dissemination	●		●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
		Evacuation call procedures	●		○	●	●	●		●	●	●	●	○		●	●	●	●	●	●	●
		Community evacuation procedures	●			●	○	●		●	●	●	●	○		○	●	●	●	●	●	●
		Communication with NTWC	●		○	○	●	●		●		●	●	●		○	●	●	●	●	●	●
		Communication with Local Government	●		○	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
		Media arrangements	○		○	●	○	●		●	○	●	●	●		●	●	●	●	●	●	●
		Communication with other stakeholders	●		○	●	●	●		●	●	○	●	●		●	●	●	●	●	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?																				
		Warning dissemination	●		●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	○
		Evacuation call procedures	○		●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	○
		Community evacuation procedures	●		●	●	●	○		○	●	●	●	●		●	●	○	●	○	●	○
		Communication with NTWC	○		●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	○
		Communication with Local Government	●		●	●	○	○		○	●	●	●	●		○	●	○	●	○	●	○
		Media arrangements	●		●	●	○	○		○	●	●	●	●		○	●	○	●	○	●	○
		Communication with other stakeholders	○		●	●	○	○		○	●	●	●	●		○	●	○	●	○	●	○
		Is support required to develop human resources for this aspect of tsunami emergency response?																				
		Warning dissemination	●		●	●	●	○		○	●	●	●	●		○	●	●	●	○	●	●
		Evacuation call procedures	○		●	●	●	○		○	●	●	●	●		●	●	●	●	○	●	●
		Community evacuation procedures	●		●	●	●	○		○	●	●	●	●		●	●	●	●	○	●	●
		Communication with NTWC	○		●	●	○	○		○	●	●	●	●		●	●	●	●	○	●	●
		Communication with Local Government	○		●	●	○	○		○	●	●	●	●		○	●	●	●	○	●	●
		Media arrangements	○		●	●	○	○		○	●	●	●	●		○	●	●	●	○	●	●
		Communication with other stakeholders	○		●	●	○	○		○	●	●	●	●		○	●	●	●	○	●	●
		Is support required to develop infrastructure for this aspect of tsunami emergency response?																				
		Warning dissemination	●		●	●	●	○		○	●	●	●	●		●	●	●	●	○	●	●
		Evacuation call procedures	●		●	●	●	○		○	●	●	●	●		●	●	○	●	○	●	●
		Community evacuation procedures	●		●	●	●	○		○	●	●	●	●		●	●	○	●	○	●	●
		Communication with NTWC	○		●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	●
		Communication with Local Government	○		●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	●
		Media arrangements	○		●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	●
		Communication with other stakeholders	○		●	●	○	○		○	●	●	●	●		●	●	○	●	○	●	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			CENTRAL AMERICAN PACIFIC COAST							SOUTHEAST PACIFIC				SOUTH CHINA SEA								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
SOPs	11c	Would your country be willing to share your SOPs with ITIC and other countries?	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
	11d	In which areas would you require support from the ITIC to develop or conduct capacity development activities?																				
		Hazard assessment tools and techniques	●	●	●	●	●	○		○	●	●	●	●		○	●	●	●	●	●	●
		Evacuation Planning	○	●	●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	●
		Tsunami Warning Centre SOPs	○	●	●	●	●	○		○	○	●	●	●		○	●	○	●	○	●	●
		Tsunami Warning Centre Decision Support Tools	○	●	●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	●
		Tsunami Warning Centre Staff Competency	○	●	●	●	●	○		○	●	●	●	●		●	●	●	●	○	●	●
		Tsunami Exercises	○	●	●	●	●	○		○	●	●	●	●		○	●	●	●	○	●	●
		Other	○	○	○	○	●	○		○	○	○	○	○		●	●	○	●	○	○	○
TSUNAMI EXERCISES	12a	Does your country have the following evacuation infrastructure?																				
		Evacuation shelter	●		○	●	●	○		○	○	○	●	●		●	●	●	●	○	●	●
		Evacuation structure built specifically for tsunami evacuation	○		○	○	●	●		○	○	○	●	○		○	●	●	○	○	●	●
		Natural or artificial hill or high ground for vertical evacuation	●	●	○	●	●	●		●	○	●	●	●		●	●	●	●	○	●	●
		Evacuation route signage	●	●	○	●	●	●		●	●	●	●	○		○	●	●	●	○	●	●
		Evacuation zone maps	●	●	○	●	●	●		●	●	●	●	○		●	●	●	●	○	●	●
		Other			○		●			○	○			○		○				○		
	12b	Is your evacuation infrastructure integrated in the evacuation plan?	●		○	○	●	●		●	○	○	●	●		●	●	●	○	○	●	●
	12c	Are tsunami exercises incorporated within national policies and guidelines?																				
		National policy	○	○	○	○	●	●		○	○	○	●	○		○	●	●	●	○	●	○
		National guidelines	●	○	○	○	●	●		○	●	●	○	○		●	○	●	○	●	●	○
		No	○	●	●	●	○	○		●	○	○	○	●		○	○	○	○	○	○	●
	12d	At what levels were the exercises conducted during the inter-sessional (between ICG meetings) period?																				
		National level	○	○	○	○	●	●		●	●	●	●	○		●	●	●	●	●	●	○
		Regional level	○	○	○	●	●	●		●	○	●	●	○		●	●	●	●	○	●	●
		City level	○	○	○	○	●	●		●	○	●	●	○		●	○	○	●	○	●	○
		Village level	●	●	○	○	○	●		○	○	○	●	○		●	●	○	●	○	●	○
		Community / Neighbourhood level	○	●	○	○	○	●		○	○	○	●	○		○	○	●	●	○	●	○
		School level	○	●	○	○	●	●		●	○	○	●	○		●	●	○	●	○	○	○
		N/A	○	○	●	○	○	○		○	○	○	○	●		○	○	○	○	○	○	○
	12e	What kind of tsunami exercises activities have been undertaken in your country and how many times during the inter-sessional (between ICG Meetings) period?																				
		Organisation tabletop exercise	●	●	○	●	●	○		●	●	●	●	○		●	●	●	●	●	●	●
		Inter-organisation tabletop exercise	●	○	○	●	●	○		●	●	●	●	○		●	●	●	●	●	●	○
		National tsunami drill / exercise	●	●	●	●	●	●		○	●	●	●	○		●	●	●	●	●	●	○
		Pacific Wave exercises	●	●	●	○	●	●		●	●	●	●	○		●	●	●	●	●	●	●
		Local tsunami drill / exercises	●	●	○	●	●	●		●	●	●	●	○		●	●	●	●	○	●	●
		Other			○		●			○	●		●	○						○	●	
	13a	What kind of activities have been tested during your country tsunami exercise, and how many times during the inter-sessional (between ICG Meetings) period?																				
		Standard Operating Procedures	●	●	●	●	●	●		●	●	●	●	○		●	●	●	●	○	●	●
		Backup Operating Procedures	○	●	○	○	●	●		●	○	○	○	○		●	●	○	●	○	○	○
		Warning Products Dissemination	●	●	●	●	●	●		●	●	●	●	○		●	●	●	●	●	●	●
		None	○	○	○	○	○	○		○	○	○	○	●		○	○	○	○	○	○	○
		Other	○		○	○					○			○				○		○		

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			Central American Pacific Coast							Southeast Pacific				South China Sea								
			CR	SV	GT	HN	MX	NI	PA	CL	CO	EC	PE	BN	KH	CN	ID	MY	PH	SG	TH	VN
PUBLIC AWARENESS	13b	Who is responsible for tsunami public awareness programmes in your country?																				
		National Disaster Management Office	●	●	●	●	●	●		●	●	●	○	●		●	●	●	●	○	●	●
		National Tsunami Warning Centre	●	○	○	○	○	●		○	●	○	●	●		●	○	○	●	○	●	●
		Provincial Disaster Management Office	○	○	○	○	●	○		○	●	○	○	○		●	○	●	●	○	●	●
		Local Disaster Management Office	●	○	○	○	●	○		○	●	○	○	○		●	○	●	●	○	●	●
		Other	○	○	○	○	○	○		○	○	○	●	○		○	○	○	●	●	○	○
	13c	What tsunami related education and awareness materials do you have?																				
		Leaflets or flyers	●	○	●	○	●	●		●	●	○	●	●		●	●	●	●	○	●	●
		Posters	●	○	●	○	○	●		○	○	○	●	●		●	●	●	●	○	●	●
		Booklets	○	○	○	○	●	○		○	●	●	○	○		●	●	●	●	○	●	○
		Information boards	●	○	○	○	●	●		○	○	○	●	○		○	●	○	●	○	●	○
		Tsunami Signage	●	●	○	○	●	○		●	○	●	●	○		○	●	●	●	○	●	●
		Video, or other visual or oral media	●	○	●	●	●	●		●	●	○	○	○		●	●	●	●	○	●	
		Indigenous knowledge, folklore, or oral history accounts or compilations	○	○	○	●	○	○		○	○	○	○	○		○	●	○	●	○	○	○
		Teaching kits on tsunamis	●	●	○	○	●	○		●	○	○	●	○		●	●	●	●	○	○	○
		School curricula	○	○	○	○	●	○		○	○	○	○	○		●	○	○	●	○	○	○
		Public Evacuation Map	●	●	○	●	○	●		●	○	○	●	○		●	●	○	●	○	○	●
		Other	○	○	○	○	○	●		○	○	○	○	○		○	○	●	●	●	○	○
	13d	Would your country be willing to share these education and awareness materials with the International Tsunami Information Centre (ITIC) and other countries?	●	●	●	●	●	●		●	●	●	●	○		●	●	●	●	○	●	●
	13e	Do you undertake the following tsunami awareness activities?																				
		World Tsunami Awareness Day (5 November)	●	●	●	○	●	●		●	●	●	●	○		●	●	●	●	○	○	●
		Global Disaster Risk Reduction Day (13 October)	○		○	○	●	○		●	●	●	○	○		●	●	○	○	○	○	●
		Public tsunami preparedness outreach	●		○	○	●	●		○	●	○	●	○		●	●	●	●	○	○	○
		School and/or children awareness	●		○	●	●	●		●	●	○	●	○		●	●	●	●	○	○	○
		Exhibitions	●		○	○	●	●		○	○	○	●	○		●	●	●	●	○	○	○
		Competitions or other ways of highlighting tsunami safety	○		○	○	○	○		○	○	○	●	○		○	○	○	●	○	○	○
		Other	○		○	●				○	○	○		○						●	○	
	13f	Use the boxes below to indicate any areas in which you require support from the ITIC to develop or enhance public awareness in your country.																				
		Provision of general tsunami awareness materials	○	●	●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	○
		Customisation of general materials to country or community	●	●	●	●	●	○		○	●	●	●	●		●	●	○	●	○	●	●
		Development of tsunami awareness programmes, activities or campaigns	●	●	●	●	●	○		○	●	●	●	●		●	●	●	●	○	●	●
		Participation / support by international agencies or experts to your country's activities	●	●	●	●	●	○		○	●	●	●	●		○	●	○	●	○	●	●
		Other	○	○	○	○	○	○		○	○	○	○	○		○	●	○	○	○	○	○
	13g	Can your country offer support to other Member States to develop or enhance public awareness in their country?	○	○	○	●	●	●		●	○	○	●	○		●	●	○	●	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			Central American Pacific Coast							Southeast Pacific				South China Sea								
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TSUNAMI READY RECOGNITION PROGRAMME	14a	Does your country have an interest to participate in the UNESCO-IOC TRRP?																				
		Yes, we are already participating	●	●	○	●	●	●		○	○	●	●	●		●	●	●	○	○	○	○
		No, but there are plans to do so in the near future	○	○	●	○	○	○		○	●	○	○	○		○	○	○	●	○	●	●
		No, and there are no plans to do so in the near future	○	○	○	○	○	○		●	○	○	○	○		○	○	○	○	●	○	○
	14b	Aside from UNESCO-IOC TRRP, is your country currently implementing any other tsunami resilience and preparedness related initiatives or programmes?	●	○	○	●	●	●		○	○	●	○	○		○	●	●	●	○	○	○
	14c	What number of villages, cities/districts and provinces/state levels in your country are at risk to tsunami?																				
		Village	273		19		151	175		0		443984	225	30			5732			0	509	90
		Cities / Districts		29	0		53	19		104	46	31		1			255		832	0	26	35
		Provinces / State		8	7	7	6	8		15	12	6		4			26	3	66	0	6	8
	14d	Does your country have a National Tsunami Ready Board (NTRB)?	●	○	○	●	○	○		○	○	●	●	○		○	●	○	○	○	○	○
	14f	Are any communities in your country currently working towards implementing or interested in implementing the UNESCO-IOC TRRP or similar national initiative?	●	●	●	●	●	●		○	●	●		○		●	●	○	●	○	○	○
	14g	Have any communities in your country achieved recognition through UNESCO-IOC TRRP or similar national initiative?	●	●	●	●	○	●		○	○	●	○	○		○	●	○	○	○	○	○
	15a	Is there national capacity to develop tsunami hazard maps?																				
		Yes, it can be done through mobilising national experts and funding	●	●	●	○	○	●		○	○	○	○	●		●	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	○	●	○		●	○	○	●	○		○	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	●	○	○		○	●	●	○	○		○	○	○	○	○	○	○
	15b	Is there national capacity to train the community on identifying and estimating the number of people that live in the tsunami hazard zone?																				
		Yes, it can be done through mobilising national experts and funding	●	●	●		○	●		○	○	●		○		●	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○		●	○		●	○	○		●		○	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○		○	○		○	●	○		○		○	○	○	○	○	○	○
	15c	Is there national capacity to train the community on the inventory of available economic, infrastructural, political, and social resources to reduce tsunami risk at the community level?																				
		Yes, it can be done through mobilising national experts and funding	●	●	●	○	○	●		○	○	○	○	○		○	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	●	○		●	●	○	●	●		●	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○		○	○	●	○	○		○	○	○	○	○	○	○

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TSUNAMI READY RECOGNITION PROGRAMME	15d	Is there national capacity to work with the community to develop tsunami evacuation maps, plans, and procedures at the community level?																				
		Yes, it can be done through mobilising national experts and funding	●	●	●	○	○	●		○	○	●	○	○		●	●	○	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	●	○		●	●	○	●	●		○	○	●	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○
	15e	Is there national capacity to work with the community to develop a public display of tsunami information?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	○	●	○	○		○	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	○	●	○		●	●	○	●	●		●	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	●	○	○		○	○	○	○	○		○	○	○	○	○	○	○
	15f	Is there national capacity to work with the community to develop local context outreach and public education materials?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	●	●	○	○		○	●	●	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	●	●	○		○	○	○	●	●		●	○	○	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○		●	○	○	○	○		○	○	○	○	○	○	○
	15g	Is there national capacity to train and build capacity of community to be able to organise and implement outreach and education activity?																				
		Yes, it can be done through mobilising national experts and funding	●	●	●	○	○	●		○	●	●	○	○		○	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	●	○		○	○	○	●	●		●	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○		●	○	○	○	○		○	○	○	○	○	○	○
	15h	Is there national capacity to train and build capacity of community to be able to organise and implement tsunami exercise?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	●	●	○	○		○	●	●	●	●	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	●	●	○		●	○	○	●	●		●	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○

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TSUNAMI READY RECOGNITION PROGRAMME	15i	Is there national capacity to train and build capacity of communities to be able to develop their community Emergency Operation Plan?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	○	●	○	○		○	●	●	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	○	●	○		●	●	○	●	●		●	○	○	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	●	○	○		○	○	○	○	○		○	○	○	○	○	○	○
	15j	Is there national capacity to train and build capacity of communities to manage 24/7 tsunami emergency response operation?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	○	○	○	○		○	●	●	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	○	●	○		●	●	●	●	○		●	○	○	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	●	○	○		○	○	○	○	●		○	○	○	○	○	○	○
	15k	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to receive 24/7 warning?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	○	○	○	○		○	●	●	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	●	○	●	○		○	●	●	●	○		●	○	○	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	●	○	○		●	○	○	○	●		○	○	○	○	○	○	○
	15l	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to disseminate 24.7 warning to the community?																				
		Yes, it can be done through mobilising national experts and funding	●	●	○	○	○	●		○	○	○	○	○		○	●	●	●	●	●	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	○	●	○		○	●	●	●	○		●	○	○	○	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	●	●	○	○		●	○	○	○	●		○	○	○	○	○	○	○
	15m	Which of the following challenges inhibit the implementation of TRRP or similar national initiatives in your country?																				
		None of the above	○	○	○	○	○	●		●	○	○	○	○		○	○	○	○	●	●	○
		Tsunami is not a high priority hazard in country	●	●	●	○	●	○		○	○	●	○	○		●	○	●	●	○	○	●
		Limited resources	●	●	●	○	●	○		○	○	●	●	●		●	○	●	●	○	○	○
		Limited support of government	●	●	●	●	●	○		○	●	●	●	●		●	○	○	●	○	○	○
		Limited awareness	●	●	●	●	●	○		○	●	●	○	●		●	●	●	●	○	○	●
		Limited activity	○	●	○	●	●	○		○	●	●	○	●		●	○	●	●	○	○	●
		Lack of community interest	●	○	○	●	●	○		○	●	●	●	●		●	●	●	●	○	○	●
		No community group or engagement in disaster risk reduction	○	○	○	○	○	○		○	○	○	○	○		○	○	○	○	○	○	○
		Other	○	○	○	○	○	○		○	○	○	○	○		○	●	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs												
			CK	**NU**	**PF**	**TO**	**TV**	**FM**	**KI**	**NR**	**PW**	**FJ**	**PG**	**SB**	**VU**
HAZARD ASSESSMENT	4a	Has your country undertaken a hazard assessment?	●	○	●	●	○	●	○	○	●	●	●	●	○
	4b	What type of hazard assessment has been carried out?	T + MH	N/A	T + MH	T + MH	N/A	T + MH	N/A	N/A	MH	MH	MH	T + MH	N/A
	4c	If multi-hazard, what additional hazard assessments have been carried out?													
		Cyclone	●		●	●		○			●	○	○	●	
		Drought	●		○	●		●			●	○	○	●	
		Earthquake	○		●	●		○			○	●	●	●	
		Epidemics	○		○	○		●			○	○	○	○	
		Flooding	●		●	●		●			●	●	○	●	
		Landslide	○		●	○		●			●	●	●	●	
		Volcanic eruptions	○		●	●		○			○	●	●	●	
		Other	●		○	●		●			○	○	○	○	
	4d	Who did the tsunami hazard assessment in your country?													
		National Agency	●		●	●		●			●	●	●	●	
		International Agency	○		○	●		○			○	○	○	●	
		National / Local University	○		○	○		○			○	○	○	○	
		National / International Consultant	○		●	●		○			○	○	●	●	
		Other	●		○	●		○			○	○	●	○	
	4e	At what level was the tsunami hazard assessment carried out?													
		National Level	●		●	●		●			●	○	○	●	
		Regional Level	○		●	●		○			○	○	●	○	
		City Level	○		○	○		○			●	●	○	○	
		Village Level	○		○	●		●			●	○	●	○	
		Other	○		○	○		○			○	○	○	○	
	4f	For which type of sources was the tsunami hazard assessment carried out?													
		Earthquake	○		●	●		●			●	●	●	●	
		Volcanic	●		○	●		●			○	●	○	○	
		Landslide	○		○	○		●			○	●	○	○	
		Meteo-tsunami	○		○	○		○			○	○	○	○	
		Meteor	○		○	○		○			○	○	○	○	
	4h	Data used for hazard assessment and publicly available?													
		Bathymetry – Used for hazard assessment	●		●	●		●			●	●	●	●	
		Bathymetry – Publicly available	●		●	○		●			●	●	●	●	
		Seismo-tectonic model – Used for hazard assessment	●		○	?		●			○	●	○	?	
		Seismo-tectonic model – Publicly available	○		○	?		●			○	○	○	?	
		Topography – Used for hazard assessment	●		●	●		●			●	●	●	●	
		Topography – Publicly available	○		●	○		●			●	●	●	●	
		Land cover – Used for hazard assessment	●		○	●		●			●	●	●	?	
		Land cover – Publicly available	○		○	○		●			●	○	●	?	
		Infrastructure – Used for hazard assessment	●		○	●		●			●	●	○	●	
		Infrastructure – Publicly available	●		○	○					●	○	○	?	
		Other – Used for hazard assessment	●		●	●		○			●	○	●	○	

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			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
HAZARD ASSESSMENT	4i	What products do you have from the tsunami hazard assessment?													
		Probabilistic Tsunami Hazard Assessment	○		○	○		●			●	●	○	●	
		Deterministic Tsunami Hazard Analysis	○		●	○		●			●	○	○	●	
		Field Studies on Tsunami Impacts	○		●	●		○			○	○	●	●	
		Hazard map	●		●	●		●			●	●	○	●	
		Inundation map	●		○	●		●			●	●	●	●	
		Evacuation map	●		○	●		●			●	●	○	●	
		Guidelines	○		○	●		●			○	●	○	○	
		Other	○		○	●		○			○	○	●	○	
	4j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami hazard assessment													
		Rating	5	4	3	4	4	5	1	2	3	4	3	5	4
	4k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level in your country to improve capacity in the following areas of tsunami hazard assessment?													
		Probabilistic Tsunami Hazard Assessment	1	5	4	5	5	3	5	4	4	4	5	5	3
		Deterministic Tsunami Hazard Analysis	4	5	1	5	5	3	5	4	4	4	4	5	4
		Field Studies on Tsunami Impacts	4	5	1	5	5	3	5	4	4	4	4	5	3
		Hazard map	4	5	3	5	5	3	5	4	4	4	5	5	5
		Inundation map	5	5	3	5	5	3	5	4	4	4	5	5	5
		Evacuation map	5	5	3	5	5	3	5	4	4	4	5	5	5
		Other	●	○	○	●	●	○	○	●	○	○	○	○	●
	4l	On a scale of 1 (No capacity) to 5 (Very good), what capacity does your country have to give training and/or consultancy on tsunami hazard assessment to other countries?													
		Probabilistic Tsunami Hazard Assessment	1	1	1	2	2	3	1	2	2	5	1	3	2
		Deterministic Tsunami Hazard Analysis	4	1	4	2	2	3	1	2	2	5	1	3	3
		Field Studies on Tsunami Impacts	4	2	3	3	3	3	1	2	2	5	2	3	3
		Hazard map	4	2	3	3	4	3	1	2	3	5	1	3	2
		Inundation map	4	2	3	3	4	3	1	2	3	5	1	3	3
		Evacuation map	4	3	2	3	3	3	1	2	3	5	1	3	2
RISK ASSESSMENT	5a	Has your country undertaken a tsunami risk assessment?	●	○	●	●	○	●	○	○	●	●	●	●	○
	5b	What type of tsunami risk assessment was undertaken?	T + MH		T + MH	T + MH		T + MH			T	T	T + MH	MH	
	5c	If multi-hazard, what additional hazards have been considered in your multi-hazard risk assessment?													
		Cyclone	●		●	●		○					○	●	
		Drought	●		○	●		●					○	●	
		Earthquake	○		○	●		○					●	●	
		Epidemics	○		○	○		●					○	●	
		Flooding	○		●	●		●					○	●	
		Landslide	○		●	○		●					●	●	
		Volcanic eruptions	○		○	●		○					●	●	
		Other	●		○	○		●					○	○	
	5d	Who did the tsunami risk assessment in your country?													
		National Agency	●		●	●		○			●	○	○	●	
		International Agency	○		○	○		○			○	○	○	●	
		National / Local University	○		○	○		○			○	○	○	○	
		National / International Consultant	○		○	●		●			○	●	●	●	
		Other	●		○	○		○			○	○	○	○	

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			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
RISK ASSESSMENT	5e	At what level was the tsunami risk assessment carried out?													
		National Level	●		●	●		●			●	○	○	●	
		Regional Level	○		●	●		○			○	○	○	○	
		City Level	○		●	○		○			●	○	○	○	
		Village Level	○		●	●		●			●	●	○	○	
		Community / Neighbourhood Level	○		○	●		●			●	●	●	○	
		Other	○		○	○		○			○	○	○	○	
	5h	What products do you have from the tsunami risk assessment?													
		Risk map	●		●	●		●			●	●	●	●	
		Evacuation map	●		○	●		●			●	●	○	●	
		Action Plan	●		○	●		●			●	○	○	●	
		Guidelines	●		○	○		●			○	○	○	○	
		Other	○		○	○		○			○	○	○	○	
	5i	Has pedestrian evacuation modelling been included in the tsunami risk assessment?	○		○	○		●			●	●	○	○	
	5j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami risk assessment													
		Rating	5	3	3	4	3	5	2	2	4	5	3	3	4
	5k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level of your country to improve capacity in the following areas of tsunami risk assessment?													
		National Level	4	5	1	5	4	3	5	5	3	5	4	5	4
		Regional Level	4	5	1	5	4	3	5	5	3	5	5	5	3
		City Level	4	3	3	5	4	3	5	5	3	5	5	5	5
		Village Level	4	5	3	5	5	3	5	5	3	5	4	5	3
		Community / Neighbourhood Level	4	5	3	5	5	3	5	5	3	5	4	5	3
		Other	●	○	●	●	○	○	○	●	○	○	4	○	●
	5l	On a scale of 1 (No capacity) to 5 (Very good) what capacity does your country have to give training and/or consultancy on tsunami risk assessment to other countries?													
		National Level	4	2	3	3	2	2	1	2	3	5	1	1	2
		Regional Level	4	2	3	2	4	1	1	2	3	5	1	1	2
		City Level	4	2	1	3	2	1	1	2	3	5	1	1	2
		Village Level	4	4	1	3	2	1	1	2	3	5	2	1	2
		Community / Neighbourhood Level	5	4	1	3	2	1	1	2	3	5	2	1	2
		Other	4				2	1		2	3			1	2
POLICIES	6a	Does your country have national tsunami policies?													
		Prevention and mitigation	MH	N/A	MH	MH	N/A	MH	T	N/A	MH	T	N/A	MH	N/A
		Preparedness	MH	T	MH	MH	N/A	MH	T	N/A	MH	T	N/A	MH	MH
		Emergency response	MH	T	MH	MH	N/A	MH	T	N/A	MH	MH	N/A	MH	MH
		Rehabilitation and reconstruction	MH	N/A	N/A	MH	N/A	MH	N/A	N/A	MH	MH	N/A	MH	N/A
	6b	Does your country have local tsunami policies?													
		Prevention and mitigation	MH	N/A	MH	MH	N/A		N/A	N/A	MH	MH	N/A	N/A	N/A
		Preparedness	MH	N/A	MH	MH	N/A		N/A	N/A	MH	MH	N/A	N/A	N/A
		Emergency response	MH	N/A	MH	MH	N/A		N/A	N/A	MH	MH	N/A	N/A	N/A
		Rehabilitation and reconstruction	MH	N/A	N/A	MH	N/A		N/A	N/A	MH	MH	N/A	N/A	N/A

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PLANS	7a	Does your country have national, local and community level tsunami disaster risk reduction (DRR) plans?													
		National – Prevention and mitigation	MH	MH	MH	MH	N/A	MH	T	N/A	MH	MH	N/A	MH	N/A
		Local – Prevention and mitigation	MH	MH	MH	MH	N/A	MH			MH	MH	N/A	MH	N/A
		Community / Neighbourhood – Prevention and mitigation	MH	MH		MH	N/A	MH			MH		N/A		N/A
		National – Preparedness	MH	MH	MH	MH	N/A	MH	T	N/A	MH	MH	N/A	MH	T
		Local – Preparedness	MH	MH	N/A	MH	N/A	N/A			MH	MH	N/A	MH	T
		Community / Neighbourhood – Preparedness	MH	MH		MH	N/A	MH			MH		N/A		N/A
		National – Emergency response	MH	MH	MH	MH	N/A	MH	T	N/A	MH	MH	N/A	MH	T
		Local – Emergency response	MH		MH	MH	N/A	MH			N/A	MH	N/A	MH	T
		Community / Neighbourhood – Emergency response	MH	MH		MH	N/A	MH			N/A		N/A		N/A
		National – Rehabilitation and reconstruction	MH	N/A	N/A	MH	N/A	MH	N/A	N/A	MH	MH	N/A	MH	N/A
		Local – Rehabilitation and reconstruction	MH	MH	N/A	MH	N/A	MH			N/A	MH	N/A	MH	N/A
		Community / Neighbourhood – Rehabilitation and reconstruction	MH	MH		MH	N/A	MH			N/A		N/A		N/A
	7b	Are your country's tsunami DRR plans based on hazards and risk assessments?	●	●	●	●	○	●	○	○	●	●	●	●	○
GUIDELINES	8a	Does your country have national tsunami DRR guidelines?													
		Prevention and mitigation	MH	N/A	MH	MH	MH	MH	N/A	N/A	MH	T	N/A	N/A	MH
		Preparedness	MH	N/A	MH	MH	MH		N/A	N/A	MH	T	N/A	N/A	MH
		Emergency response	MH	N/A	MH	MH	MH	MH	N/A	N/A	MH	T	N/A	N/A	MH
		Rehabilitation and reconstruction	MH	N/A	N/A	MH	MH		N/A	N/A	MH	T	N/A	N/A	N/A
	8b	Does your country have local tsunami DRR guidelines?													
		Prevention and mitigation	MH	N/A	MH	MH	MH	MH	N/A	N/A	MH	T	N/A	N/A	MH
		Preparedness	MH	N/A	MH	MH	MH		N/A	N/A	MH	T	N/A	N/A	MH
		Emergency response	MH	N/A	MH	MH	MH	MH	N/A	N/A	MH	T	N/A	N/A	MH
		Rehabilitation and reconstruction	MH	N/A	N/A	MH	MH		N/A	N/A	MH	T	N/A	N/A	N/A
DETECTION AND WARNING	9a	Does your country have a national capability to assess and/or receive potential tsunami threat information and advise / warn its coastal communities?	●	●	●	●	●	●	●	●	●	●	●	●	●
	9b	Does your country utilise the data provided by the PTWS Tsunami Service Providers (TSPs) for the Threat Assessments of your country's coastline to determine national threats or does it undertake its own threat assessments?													
		Use TSP data	●	●	○	●	●	○	●	●	●	●	●	○	●
		Use own threat assessments	●	○	●	●	○	●	○	○	●	●	●	●	●
		Use TSP data as backup	○	○	●	○	○	●	○	○	○	○	○	●	○
	9c	What known local tsunami sources are your country's NTWC able to monitor?													
		None	○	●	○	○	○	●	●	●	●	○	○	○	○
		Earthquake	●	○	○	●	●	○	○	○	○	●	●	●	●
		Volcanic	○	○	○	○	○	○	○	○	○	○	○	●	○
		Landslide	○	○	●	○	○	○	○	○	○	●	○	○	○
		Meteotsunami	●	○	○	●	○	○	○	○	○	○	○	●	○
		Meteor	○	○	○	○	○	○	○	○	○	○	○	○	○
	9e	Does the organisation responsible for assessing and/or receiving potential tsunami threat information operate 24x7?	●	○	●	●	●	●	●	●	●	●	○	●	●

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			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
DETECTION AND WARNING	9f	What / which infrastructure is available to enable 24x7 operations?													
		Internet	●	●	●	●	●	●	●	●	●	●	●	●	●
		Landing phone	●	○	●	●	○	●	●	○	●	●	●	●	●
		Mobile phone	●	●	●	●	●	○	○	●	●	●	●	●	●
		Satellite phone	●	○	○	●	○	●	○	○	●	○	○	●	○
		Radio	●	●	●	●	○	●	○	○	●	●	●	○	○
		Internet (mobile)	●	●	●	●	○	●	○	●	●	●	●	●	○
		Internet (broadband)	●	●	●	●	○	●	○	●	○	●	○	●	○
		Fax	●	○	●	○	○	○	○	○	●	○	○	●	○
		GTS (Global Telecommunication System)	○	○	●	●	●	○	○	○	●	○	○	●	●
		UPS (Uninterruptable Power Supply)	○	○	●	●	○	●	●	○	●	○	○	●	●
		VSAT	○	○	○	○	○	○	○	○	○	●	○	○	○
		Internet (dial-up)	○	○	○	○	○	○	○	○	●	○	○	○	○
		Internet (wireless)	○	○	○	●	●	○	○	○	●	●	○	○	○
		Internet (satellite)	●	○	●	○	●	○	○	○	○	●	○	○	○
		Other	●	○	○	●	●	●	○	○	○	○	○	○	○
	9g	Which level of tsunami threat forecast information is produced by the responsible organisation?													
		Ocean-wide	●	○	●	○	○	●	○	○	●	●	○	○	○
		National	●	●	●	●	●	●	●	●	●	●	○	●	●
		Local	●	●	●	●	●	●	○	○	○	●	●	●	●
	9h	Does the organisation have access to national and/or international seismic networks?													
		Yes, national and international	●	○	●	●	●	●	○	○	○	●	●	●	●
		Yes, national only	○	○	○	○	○	○	○	○	○	○	○	○	○
		Yes, international only	○	○	○	○	○	○	●	○	●	○	○	○	○
		No	○	●	○	○	○	○	○	●	○	○	○	○	○
	9i	Is national seismic data shared in real time?													
		All national seismic data is shared in real time	●		○	○	○	●	●		○	●	●	○	●
		Some national seismic data is shared in real time	○		●	●	●	○	○		○	○	○	●	○
		No national seismic data is shared in real time	○		○	○	○	○	○		●	○	○	○	○
	9j	Does your organisation have access to GNSS data (Global Navigation Satellite System) data?	●	○	○	●	●	○		○	○	○	○	○	○
	9k	Is the list of broadband seismometers operated by your country listed accurately in the IRIS database (https://ds.iris.edu/mda/)?	○		●	○	●			○	○	○	●	●	○
	9l	When compared to the IRIS database (https://ds.iris.edu/mda/) have you decommissioned or added broadband seismometers operated by your country.													
		Some stations have been decommissioned	○	○		○		○		○	○	○	○		○
		Some stations have been added	●	○		○		○		○	○	○	●		○
		There are no changes	○	●		●		●		●	●	●	○		●
	9m	Does the organisation have access to national and/or international sea level networks?													
		Yes, national and international	●	○	●	●	●	●	●	○	●	●	○	●	●
		Yes, national only	○	○	○	○	○	○	○	○	○	○	○	○	○
		Yes, international only	○	○	○	○	○	○	○	○	○	○	●	○	○
		No	○	●	○	○	○	○	○	●	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
DETECTION AND WARNING	9n	Is national sea level data shared in real time?													
		All national sea level data is shared in real time	●		●	○	●	●	●		○	●	○	●	●
		Some national sea level data is shared in real time	○		○	●	○	○	○		●	○	○	○	○
		No national sea level data is shared in real time	○		○	○	○	○	○		○	○	●	○	○
	9o	Is the list of sea level stations, including tsunameters, operated by your country listed accurately in the IOC Sea Level Station Monitoring Facility (https://www.ioc-sealevelmonitoring.org/map.php) website?	○	●	○	●	●		●	○	●	●	●	●	●
	9p	When compared to the IOC Sea Level Station Monitoring Facility, have you decommissioned or added sea level stations, including tsunameters, operated by your country.													
		There are no changes	○		●			●		●	●		●		●
		Some stations have been decommissioned	○		○			○		○	○		○		○
		Some stations have been added	●		○			○		○	○		○		○
	9q	What other observing networks are operated by your country and used for tsunami early warning?													
		No other observing networks are operated by the country	●	●	○	●	○	●	●	●	●	●	●	●	●
		GNSS (Global Navigation Satellite System)	○	○	○	○	●	○	○	○	○	○	○	○	○
		Coastal radars	○	○	○	○	○	○	○	○	○	○	○	○	○
		Other	○	○	●	○	●	○	○	○	○	○	●	○	○
	9r	Does the organisation have the capability of analysing real-time seismic and sea-level data for potential tsunami threat?	●	○	●	●	○	○	●	○	○	●	●	●	●
	9s	Does the organisation have the capability for tsunami modelling to support generation of threat forecasts?	●	○	●	●	○	○	●	○	○	●	○	●	○
	9t	Does the organisation responsible for identifying a potential tsunami threat also issue national tsunami no threat, watches, advisories, alerts, evaluation messages and/or warnings?	○	○	●	○	●	●	●	●	●	●	○	●	●
	9w	Did your country's NTWC and/or TWFP participate in the regular communications tests conducted by the PTWS TSPs?	●	●	●	●	●	●	●	●	●	●	●	●	○
	9x	Did your country's NTWC and/or TWFP participate in national and/or international Tsunami Exercises (e.g. PacWave) conducted in the inter-sessional period between ICG meetings?	○	●	●	●	●	●	○	●	○	●	●	●	●
	9y	Since 2005, was your country impacted by any damaging tsunami?	●	○	●	●	○	○	○	○	○	●	●	●	○
	9z	Since 2020, were there any major enhancements in your national warning SOPs and alerting?	●	●	●	●	●	●	●	○	●	●	○	●	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know		PICTs												
		CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
DISSEMINATION	10a	How is the tsunami information (warning, public safety action, etc) disseminated within country?												
		Email	●	●	○	●	●	○	●	●	●	●	●	●	●
		SMS	●	○	●	●	●	○	○	●	○	●	●	○	●
		Telephone	●	○	○	●	○	●	○	○	○	●	●	●	●
		Fax	○	○	○	○	○	○	○	○	●	○	○	○	○
		Webpage	●	○	○	●	●	○	○	○	●	●	○	●	●
		Radio	●	○	○	●	●	●	○	●	●	●	●	●	●
		WhatsApp / Facebook / Other social media	●	●	●	●	●	●	●	●	●	○	○	●	●
		Door-to-door	○	●	○	○	●	○	○	○	○	○	○	○	○
		Sirens	●	●	●	●	●	○	○	●	●	●	○	○	○
		Television	●	○	●	●	●	○	○	●	●	●	●	○	○
		Warning towers	○	●	○	○	○	○	○	○	○	○	○	○	○
		Megaphone	○	●	○	○	●	●	○	○	○	○	○	○	○
		Police / Military	○	●	○	○	●	●	○	●	●	●	●	●	○
		Public alert system	○	●	○	○	○	●	○	○	●	○	○	○	○
		VHF radio	○	○	○	●	●	●	○	○	○	●	○	●	○
		VPN	○	○	○	○	○	○	○	○	○	○	○	○	○
		Amateur Radio	○	○	○	○	○	●	○	○	○	○	○	○	○
		Other	○	○	●	●	●	○	○	○	○	○	●	○	○
	10b	For each Disaster Management Office listed below, which communication methods for emergency response are available?												
		National DMOs – Telephone	●	●	●	●	●	●	●	○	●	●	●	●	●
		National DMOs – Fax	○	○	●	○	○	○	○	○	●	○	○	●	○
		National DMOs – Email	●	●	●	●	●	●	●	●	●	●	●	●	●
		National DMOs – SMS	●	○	●	○	●	○	○	●	●	●	●	●	●
		National DMOs – Siren	●	●	●	●	○	○	○	○	●	●	○	●	○
		Local DMOs – Telephone	●	●	●	●	●	●	●	○	●	●	●	●	●
		Local DMOs – Fax	○	○	●	○	○	○	○	○	●	○	○	○	○
		Local DMOs – Email	●	●	●	●	●	●	●	●	●	●	●	●	●
		Local DMOs – SMS	●	○	●	○	●	○	○	●	○	●	●	○	●
		Local DMOs – Siren	●	●	●	●	○	○	○	○	●	○	○	○	○
		General public – Telephone	●	○	○	●	●	●	[redacted]	○	●	●	●	●	○
		General public – Fax	○	○	○	○	○	○	[redacted]	○	○	○	○	○	○
		General public – Email	●	●	○	●	●	○	[redacted]	●	●	●	●	●	○
		General public – SMS	●	○	●	○	●	●	[redacted]	●	○	●	○	○	●
		General public – Siren	●	●	●	●	○	○	[redacted]	○	●	●	○	○	○
		Coastal communities – Telephone	●	●	○	●	●	●	[redacted]	○	●	●	●	●	○
		Coastal communities – Fax	○	○	○	○	○	○	[redacted]	○	○	○	○	○	○
		Coastal communities – Email	●	●	○	●	●	○	[redacted]	●	●	●	●	○	○
		Coastal communities – SMS	●	○	●	○	●	●	[redacted]	●	○	●	○	○	●
		Coastal communities – Siren	●	●	●	●	○	○	[redacted]	○	●	○	○	○	○
		Media – Telephone	●	●	○	●	●	●	○	○	●	●	●	●	●
		Media – Fax	○	○	○	○	○	○	○	○	●	○	○	○	○
		Media – Email	●	●	●	●	●	●	●	●	●	●	●	●	●
		Media – SMS	●	○	●	○	●	○	○	●	●	●	○	○	●
		Media – Siren	●	●	○	●	○	○	○	○	●	●	○	○	○
		Other	●	●	●	○	●	○	●	○	○	○	●	○	○
	10e	Does your country utilize CAP?	●	○	○	○	○	○	○	○	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
STANDARD OPERATING PROCEDURES	11a	Does your SOP address this aspect of tsunami emergency response (upstream)?													
		24/7 Emergency Operations Centre (EOC)	●	●	●	●	●	○	●	○	●	●	●	●	●
		Receiving information from the NTWC	●	●	●	●	●	●	●	●	●	●	●	●	●
		Response Criteria / Decision making	●	●	●	●	●	●	●	●	●	●	●	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?													
		24/7 Emergency Operations Centre (EOC)	○	●	○	●	●	●	●	●	●	●	●	●	●
		Receiving information from the NTWC	○	●	○	●	●	●	●	●	●	●	●	●	●
		Response Criteria / Decision making	○	●	○	●	●	●	●	●	●	●	●	●	●
		Is support required to develop human resources for this aspect of tsunami emergency response?													
		24/7 Emergency Operations Centre (EOC)	○	●	●	●	●	●	●	●	●	●	●	●	●
		Receiving information from the NTWC	○	●	●	●	●	●	●	●	●	●	●	●	○
		Response Criteria / Decision making	○	●	●	●	●	●	●	●	●	●	●	●	●
		Is support required to develop infrastructure for this aspect of tsunami emergency response?													
		24/7 Emergency Operations Centre (EOC)	○	●	○	●	●	●	●	●	●	●	●	●	●
		Receiving information from the NTWC	○	●	○	●	●	●	●	●	●	●	●	●	●
		Response Criteria / Decision making	○	●	○	●	●	●	●	●	●	●	●	●	○
	11b	Does your SOP address this aspect of tsunami emergency response (downstream)?													
		Warning dissemination	●	●	●	●	●	●	●	●	●	●	●	●	●
		Evacuation call procedures	●	○	●	●	●	○	●	●	●	●	○	●	○
		Community evacuation procedures	●	○	●	●	●	○	○	●	●	●	○	●	●
		Communication with NTWC	●	●	●	●	●	○	●	○	●	●	●	●	●
		Communication with Local Government	●	●	●	●	●	○	●	●	●	●	●	●	●
		Media arrangements	●	○	●	●	●	○	●	●	●	●	○	●	●
		Communication with other stakeholders	●	○	●	●	●	●	●	●	●	●	●	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?													
		Warning dissemination	○	●	○	●	●	●	●	●	○	●	●	●	●
		Evacuation call procedures	○	●	○	●	●	●	●	●	○	●	●	●	●
		Community evacuation procedures	○	●	○	●	●	●	●	●	○	●	●	●	●
		Communication with NTWC	○	●	○	●	●	●	●	●	○	●	○	●	○
		Communication with Local Government	○	●	○	●	●	●	●	●	○	●	●	●	●
		Media arrangements	○	●	○	●	●	●	●	○	○	●	○	●	●
		Communication with other stakeholders	○	●	○	●	●	●	●	●	○	●	●	●	●
		Is support required to develop human resources for this aspect of tsunami emergency response?													
		Warning dissemination	○	●	○	●	○	●	●	●	●	●	●	●	●
		Evacuation call procedures	○	●	○	●	●	●	●	●	●	●	●	●	●
		Community evacuation procedures	○	●	●	●	●	●	●	●	●	●	●	●	●
		Communication with NTWC	○	●	○	●	●	●	●	●	●	●	●	●	●
		Communication with Local Government	○	●	○	●	●	●	●	●	●	●	●	●	●
		Media arrangements	○	●	●	●	●	●	●	●	●	●	●	●	●
		Communication with other stakeholders	○	●	○	●	●	●	●	●	●	●	●	●	●
		Is support required to develop infrastructure for this aspect of tsunami emergency response?													
		Warning dissemination	○	●	○	●	●	●	●	●	●	●	●	●	●
		Evacuation call procedures	○	●	○	●	●	●	●	●	●	●	●	●	●
		Community evacuation procedures	○	●	○	●	●	●	●	●	●	●	●	●	●
		Communication with NTWC	○	●	○	●	●	●	●	●	●	●	●	●	●
		Communication with Local Government	○	●	○	●	●	●	●	●	●	●	●	●	●
		Media arrangements	○	●	●	●	●	●	●	●	●	●	●	●	●
		Communication with other stakeholders	○	●	○	●	●	●	●	●	●	●	●	●	●

		● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know	PICTs												
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
SOPs	11c	Would your country be willing to share your SOPs with ITIC and other countries?	●	○		●	●	●	●	●	●	●	●	●	○
	11d	In which areas would you require support from the ITIC to develop or conduct capacity development activities?													
		Hazard assessment tools and techniques	●	●	○	●	●	●	●	●	●	●	●	●	●
		Evacuation Planning	○	●	○	●	●	●	●	●	●	●	●	●	●
		Tsunami Warning Centre SOPs	●	●	○	●	●	○	●	●	●	●	●	●	○
		Tsunami Warning Centre Decision Support Tools	●	●	○	●	●	○	●	●	●	●	●	●	○
		Tsunami Warning Centre Staff Competency	○	●	○	●	●		●	●	●	●	●	●	○
		Tsunami Exercises	○	●	○	●	●	●	●	●	○	●	●	●	●
		Other	○	○	●	●	●	○	○	○	○	○	○	○	○
TSUNAMI EXERCISES	12a	Does your country have the following evacuation infrastructure?													
		Evacuation shelter	●	●	●	●	●	●	○	○	●	●	○	○	●
		Evacuation structure built specifically for tsunami evacuation	●	○	●	●	○	●	○	○	○	○	○	○	○
		Natural or artificial hill or high ground for vertical evacuation	●	●	●	●	○	●	○	●	●	○	●	○	●
		Evacuation route signage	●	●	●	●	○	●	○	●	●	●	○	●	●
		Evacuation zone maps	●	●	●	●	○	●	○	○	●	●	○	○	○
		Other					○		○				○		○
	12b	Is your evacuation infrastructure integrated in the evacuation plan?	●	○	●	●	●	●	○	○	●	●	○	○	○
	12c	Are tsunami exercises incorporated within national policies and guidelines?													
		National policy	○	○	●	●	○	○	○	○	○	●	○	○	●
		National guidelines	●	○	●	●	●	●	○	○	●	●	○	○	○
		No	○	●	○	○	○	○	●	●	○	○	●	●	○
	12d	At what levels were the exercises conducted during the inter-sessional (between ICG meetings) period?													
		National level	○		●	●	●	○	○	○	●	●	○	●	●
		Regional level	○		●	○	○	○	○	○	○	●	○	○	○
		City level	○		●	○	○	○	○	○	●	●	○	○	●
		Village level	○		○	●	○	●	○	○	●	●	●	●	●
		Community / Neighbourhood level	●		●	●	○	●	○	○	●	●	○	●	●
		School level	○		●	●	●	●	○	○	●	●	●	●	●
		N/A	○		○	○	○	○	●	●	○	○	○	○	○
	12e	What kind of tsunami exercises activities have been undertaken in your country and how many times during the inter-sessional (between ICG Meetings) period?													
		Organisation tabletop exercise	●	○	●	●	●	●	○	○	●	●	●	●	●
		Inter-organisation tabletop exercise	●		●	●	●	●	●	○	●	●	●	●	●
		National tsunami drill / exercise	●		●	●	●	●	○	○	●	●	○	●	●
		Pacific Wave exercises	○		●	●	●	●	○	●	○	●	●	●	●
		Local tsunami drill / exercises	●	●	●	●	●	●	○	○	●	●	○	●	●
		Other			●		○		○		●		○		●
	13a	What kind of activities have been tested during your country tsunami exercise, and how many times during the inter-sessional (between ICG Meetings) period?													
		Standard Operating Procedures	●	●	●	●	●	●	●	○	●	●	●	●	○
		Backup Operating Procedures	●	○	○	○	○		○	○	●	●	○	●	○
		Warning Products Dissemination	●	○	●	●	○		○	○	●	●	○	●	●
		None	○	○	○	○	○	○	○	●	○	○	○	○	○
		Other			●	○	○			○			●		

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
PUBLIC AWARENESS	13b	Who is responsible for tsunami public awareness programmes in your country?													
		National Disaster Management Office	●	●	●	●	●	●	●	●	●	●	●	●	●
		National Tsunami Warning Centre	○	○	●	●	●	○	●	○	○	●	●	●	○
		Provincial Disaster Management Office	○	○	○	●	●	●	○	○	○	○	●	●	●
		Local Disaster Management Office	○	○	○	●	●	●	○	○	○	○	○	●	●
		Other	○	○	●	○	●	○	○	○	○	○	●	●	●
	13c	What tsunami related education and awareness materials do you have?													
		Leaflets or flyers	○	●	●	●	●	○	●	○	●	●	○	●	●
		Posters	○	●	○	●	○	●	●	○	●	○	●	●	●
		Booklets	○	○	○	●	○	○	○	○	●	○	●	●	●
		Information boards	○	○	○	○	○	○	○	○	○	○	○	●	○
		Tsunami Signage	●	●	●	●	○	●	○	○	●	●	●	●	●
		Video, or other visual or oral media	○	●	●	●	●	○	○	○	●	●	●	●	●
		Indigenous knowledge, folklore, or oral history accounts or compilations	●	●	○	●	○	○	○	○	○	●	○	○	●
		Teaching kits on tsunamis	●	○	○	○	●	○	○	○	●	●	○	○	○
		School curricula	●	○	○	○	○	○	○	○	○	○	○	○	○
		Public Evacuation Map	●	○	○	●	○	○	○	○	●	●	○	○	○
		Other	●	○	●	○	○	○	○	●	○	○	●	○	○
	13d	Would your country be willing to share these education and awareness materials with the International Tsunami Information Centre (ITIC) and other countries?	●	○	●	●	●	●	●	●	●	●	●	●	●
	13e	Do you undertake the following tsunami awareness activities?													
		World Tsunami Awareness Day (5 November)	●	●	○	●	○	●	●	○	○	●	●	●	●
		Global Disaster Risk Reduction Day (13 October)	○	●	●	●	●	●	●	○	○	●	●	●	●
		Public tsunami preparedness outreach		●	●	●	○	●	○	○	●	●	●	●	●
		School and/or children awareness	●	●	●	●	○	●	○	●	●	●	●	●	●
		Exhibitions	●	○	●	●	○	○	○	○	○	●	○	●	○
		Competitions or other ways of highlighting tsunami safety	○	●	○	●	○	○	○	○	●	●	○	○	○
		Other			○		○		○				●		○
	13f	Use the boxes below to indicate any areas in which you require support from the ITIC to develop or enhance public awareness in your country.													
		Provision of general tsunami awareness materials	○	●	○	●	●	●	●	●	●	●	●	●	●
		Customisation of general materials to country or community	●	●	●	●	●	○	●	●	●	●	●	●	●
		Development of tsunami awareness programmes, activities or campaigns	●	●	○	●	●	●	●	●	○	●	○	●	●
		Participation / support by international agencies or experts to your country's activities	○	●	○	●	●	○	●	●	●	●	●	●	●
		Other	○	○	●	○	●	○	○	○	○	○	○	○	●
	13g	Can your country offer support to other Member States to develop or enhance public awareness in their country?	●	○	●	●	○	●	○	○	○	●	●	○	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
TSUNAMI READY RECOGNITION PROGRAMME	14a	Does your country have an interest to participate in the UNESCO-IOC TRRP?													
		Yes, we are already participating	●	○	○	●	●	●	●	○	●	●	○	●	●
		No, but there are plans to do so in the near future	○	○	○	○	○	○	○	●	○	○	●	○	○
		No, and there are no plans to do so in the near future	○	●	●	○	○	○	○	○	○	○	○	○	○
	14b	Aside from UNESCO-IOC TRRP, is your country currently implementing any other tsunami resilience and preparedness related initiatives or programmes?	○	○	○	○	○	●	○	●	○	●	●	●	●
	14c	What number of villages, cities/districts and provinces/state levels in your country are at risk to tsunami?													
		Village		8	118	45	9			14	48	1200	100	5000	500
		Cities / Districts	24		118	17	9				16	195	20	1	10
		Provinces / State			5	6	9	4			16	15	14	9	6
	14d	Does your country have a National Tsunami Ready Board (NTRB)?	○	○	○	○	○	●	○	●	●	●	○	●	○
	14f	Are any communities in your country currently working towards implementing or interested in implementing the UNESCO-IOC TRRP or similar national initiative?	●	○	○	○	○		○	○	●	●	○	●	●
	14g	Have any communities in your country achieved recognition through UNESCO-IOC TRRP or similar national initiative?	●	○	○	○	○	●	○	○	●	●	○	○	○
	15a	Is there national capacity to develop tsunami hazard maps?													
		Yes, it can be done through mobilising national experts and funding	○	○	●	○	○	○	○	○	●	●	○	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	●	○	●	○	○	○	○	○	○	○	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	●	○	○	○	●	●	●	●	○	○	●	○	●
	15b	Is there national capacity to train the community on identifying and estimating the number of people that live in the tsunami hazard zone?													
		Yes, it can be done through mobilising national experts and funding	●		●	●	○		○	○	●	●	○	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○		○	○	●		○	●	○	○	●	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○		○	○	○		●	○	○	○	○	○	○
	15c	Is there national capacity to train the community on the inventory of available economic, infrastructural, political, and social resources to reduce tsunami risk at the community level?													
		Yes, it can be done through mobilising national experts and funding	○	○	●	○	○	○	○	○	●	●	○	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	●	○	○	○	○	○	○	●	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	●	●	●	●	○	○	○	○	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
TSUNAMI READY RECOGNITION PROGRAMME	15d	Is there national capacity to work with the community to develop tsunami evacuation maps, plans, and procedures at the community level?													
		Yes, it can be done through mobilising national experts and funding	○	○	●	○	○	○	○	○	●	●	○	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	●	○	○	○	○	○	○	●	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	●	●	●	●	○	○	○	○	○
	15e	Is there national capacity to work with the community to develop a public display of tsunami information?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	●	○	○	○	●	●	○	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	●	○	●	○	○	○	●	○	○	●	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	●	●	○	○	○	○	○	○
	15f	Is there national capacity to work with the community to develop local context outreach and public education materials?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	●	○	○	○	●	●	○	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	●	○	●	○	○	○	○	○	○	●	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	●	●	●	○	○	○	○	○
	15g	Is there national capacity to train and build capacity of community to be able to organise and implement outreach and education activity?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	●	○	○	○	●	○	○	○	●
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	○	○	○	●	○	●	●	●	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	○	●	●	○	○	○	○	○	○
	15h	Is there national capacity to train and build capacity of community to be able to organise and implement tsunami exercise?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	●	○	○	○	●	●	○	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	○	○	○	●	○	○	●	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	○	●	●	○	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			PICTs											
			CK	NU	PF	TO	TV	FM	KI	NR	PW	FJ	PG	SB	VU
TSUNAMI READY RECOGNITION PROGRAMME	15i	Is there national capacity to train and build capacity of communities to be able to develop their community Emergency Operation Plan?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	○	○	○	○	●	○	○	●	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	●	○	●	●	○	○	●	○	●	●	○	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	●	●	○	○	○	○	○	○
	15j	Is there national capacity to train and build capacity of communities to manage 24/7 tsunami emergency response operation?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	●	○	○	○	○	○	○	●	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	●	○	●	○	○	○	○	●	●	●	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	●	●	●	○	○	○	○	●
	15k	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to receive 24/7 warning?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	○	○	○	○	○	○	●	●	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	●	○	○	○	●	●	○	○	○
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	○	●	●	●	○	○	○	○	●
	15l	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to disseminate 24.7 warning to the community?													
		Yes, it can be done through mobilising national experts and funding	●	○	●	○	○	○	○	○	○	○	●	●	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	●	●	○	○	○	●	●	○	○	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	●	○	○	○	●	●	●	○	○	○	○	○
	15m	Which of the following challenges inhibit the implementation of TRRP or similar national initiatives in your country?													
		None of the above	○	○	○	○	○	○	○	○	○	○	○	○	○
		Tsunami is not a high priority hazard in country	●	●	○	○	●	○	○	●	○	○	○	○	○
		Limited resources	○	●	○	●	●	●	●	●	●	●	●	●	○
		Limited support of government	●	●	●	○	●	●	●	●	○	○	●	●	●
		Limited awareness	○	●	●	○	●	●	●	●	●	○	●	●	○
		Limited activity	●	●	○	●	●	○	○	●	●	●	●	○	○
		Lack of community interest	○	●	○	○	○	●	○	●	○	○	○	○	○
		No community group or engagement in disaster risk reduction	○	●	○	○	●	○	○	●	○	○	○	○	○
		Other	○	○	●	●	○	○	○	○	○	○	○	○	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
HAZARD ASSESSMENT	4a	Has your country undertaken a hazard assessment?	●	●	●	●	●	●	○	●
	4b	What type of hazard assessment has been carried out?	T + MH	T + MH	T + MH	MH	T + MH	T	N/A	T + MH
	4c	If multi-hazard, what additional hazard assessments have been carried out?								
		Cyclone	●	○	○	○	○			●
		Drought	○	○	○	○	○			●
		Earthquake	●	●	●	●	●			●
		Epidemics	○	○	○	○	○			○
		Flooding	●	○	○	●	●			●
		Landslide	○	●	○	○	●			●
		Volcanic eruptions	○	○	○	○	●			●
		Other	○	○	●	○	○			●
	4d	Who did the tsunami hazard assessment in your country?								
		National Agency	●	●	●	●	●	●		●
		International Agency	○	○	○	○	○	○		○
		National / Local University	●	●	○	○	○	●		●
		National / International Consultant	●	○	○	○	●	○		●
		Other	○	●	●	○	○	○		●
	4e	At what level was the tsunami hazard assessment carried out?								
		National Level	●	●	○	●	●	○		●
		Regional Level	●	●	●	○	●	●		●
		City Level	●	●	○	○	●	●		●
		Village Level	○	●	○	○	○	○		●
		Other	●	○	○	○	○	○		○
	4f	For which type of sources was the tsunami hazard assessment carried out?								
		Earthquake	●	●	●	●	●	●		●
		Volcanic	○	○	○	○	●	○		○
		Landslide	○	●	○	○	●	○		●
		Meteo-tsunami	○	○	○	○	○	○		○
		Meteor	○	○	○	○	○	○		○
	4h	Data used for hazard assessment and publicly available?								
		Bathymetry – Used for hazard assessment	●	●	●	●	●	●		●
		Bathymetry – Publicly available	●	●	●	●	○	○		●
		Seismo-tectonic model – Used for hazard assessment	●	●	●	●	●	●		●
		Seismo-tectonic model – Publicly available	●	●	●		●	○		●
		Topography – Used for hazard assessment	●	●	●		●	●		●
		Topography – Publicly available	●	●	●		○	○		●
		Land cover – Used for hazard assessment	●	●	●		●	●		●
		Land cover – Publicly available	●	●	●		●	○		●
		Infrastructure – Used for hazard assessment	●	●	●		●	●		●
		Infrastructure – Publicly available	●	●	●		○	○		●
		Other – Used for hazard assessment	●	○	○	○	●	○		○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
HAZARD ASSESSMENT	4i	What products do you have from the tsunami hazard assessment?								
		Probabilistic Tsunami Hazard Assessment	●	●	○	○	●	●		●
		Deterministic Tsunami Hazard Analysis	○	○	●	○	●	●		●
		Field Studies on Tsunami Impacts	●	●	●	●	●	●		●
		Hazard map	●	●	●	●	●	○		●
		Inundation map	●	●	●	○	●	●		●
		Evacuation map	○	●	●	●	●	○		●
		Guidelines	●	●	●	○	●	○		●
		Other	●	○	○	○	●	○		○
	4j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami hazard assessment								
		Rating	4	4		4	5	4	3	4
	4k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level in your country to improve capacity in the following areas of tsunami hazard assessment?								
		Probabilistic Tsunami Hazard Assessment	3	3		4	4	3	3	4
		Deterministic Tsunami Hazard Analysis	3	3		3	4	3	3	4
		Field Studies on Tsunami Impacts	2	4		4	3	3	5	4
		Hazard map	3	4		4	4	4	5	4
		Inundation map	2	4		3	5	4	5	5
		Evacuation map	3	4		4	5	4	5	5
		Other	●	○		○	○	○	○	●
	4l	On a scale of 1 (No capacity) to 5 (Very good), what capacity does your country have to give training and/or consultancy on tsunami hazard assessment to other countries?								
		Probabilistic Tsunami Hazard Assessment	4	4			5	4	2	3
		Deterministic Tsunami Hazard Analysis	4	4			5	4	2	4
		Field Studies on Tsunami Impacts	3	4			5	4	2	3
		Hazard map	4	4			5	3	2	4
		Inundation map	4	4			5	3	2	4
		Evacuation map	4	4			5	3	2	4
RISK ASSESSMENT	5a	Has your country undertaken a tsunami risk assessment?	●	●	●	●	●	●	○	●
	5b	What type of tsunami risk assessment was undertaken?	T + MH	MH	T + MH	MH	T + MH	T		T + MH
	5c	If multi-hazard, what additional hazards have been considered in your multi-hazard risk assessment?								
		Cyclone	●	○	○	○	●			●
		Drought	○	○	○	○	●			●
		Earthquake	●	●	●	●	●			●
		Epidemics	●	○	○	○	●			○
		Flooding	●	●	○	●	●			●
		Landslide	●	○	○	○	●			○
		Volcanic eruptions	○	○	○	○	●			○
		Other	○	○	●	○	○			○
	5d	Who did the tsunami risk assessment in your country?								
		National Agency	●	○	●	●	●	○		●
		International Agency	○	○	○	○	○	○		○
		National / Local University	○	●	○	○	○	●		●
		National / International Consultant	○	○	○	○	○	○		○
		Other	●	●	●	○	●	○		○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
RISK ASSESSMENT	5e	At what level was the tsunami risk assessment carried out?								
		National Level	○	○	○	●	●	○		●
		Regional Level	●	●	●	○	●	○		●
		City Level	○	●	○	○	○	●		●
		Village Level	○	●	○	○	○	○		●
		Community / Neighbourhood Level	○	●	○	○	○	○		●
		Other	●	○	○	○	○	○		○
	5h	What products do you have from the tsunami risk assessment?								
		Risk map	●	●	●	●	●	○		●
		Evacuation map	●	●	●	●	●	●		●
		Action Plan	○	●	●	●	●	●		●
		Guidelines	●	●	●	●	●	●		●
		Other	●	○	○	○	○	○		○
	5i	Has pedestrian evacuation modelling been included in the tsunami risk assessment?	○	●		○	●	○		●
	5j	On a scale of 1 (Very poor) to 5 (Very good), please rate your country's capability to undertake tsunami risk assessment								
		Rating	4	4		4	5	3	3	4
	5k	On a scale of 1 (Not a priority) to 5 (Essential), what is the priority level of your country to improve capacity in the follo3wing areas of tsunami risk assessment?								
		National Level	2	4		4	4	3	3	3
		Regional Level	3	4		4	3	3	3	3
		City Level	3	4		4	1	4	3	3
		Village Level	2	4		3	1	4	3	3
		Community / Neighbourhood Level	2	4		3	1	4	3	3
		Other	○	○		○	○	○	○	○
	5l	On a scale of 1 (No capacity) to 5 (Very good) what capacity does your country have to give training and/or consultancy on tsunami risk assessment to other countries?								
		National Level	4	4		4	1	3	3	3
		Regional Level	3	4		4	1	3	3	3
		City Level	3	4		4	1	3	3	3
		Village Level	3	4		3	1	3	3	3
		Community / Neighbourhood Level	3	4		3	1	3	3	3
		Other	1				1	3		3
POLICIES	6a	Does your country have national tsunami policies?								
		Prevention and mitigation	T	T	MH	MH	MH	MH	MH	T
		Preparedness	T	MH	MH	MH	MH	MH	MH	T
		Emergency response	T	T	MH	MH	MH	MH	MH	T
		Rehabilitation and reconstruction	N/A	MH	MH	MH	MH	MH	MH	N/A
	6b	Does your country have local tsunami policies?								
		Prevention and mitigation	T	T	MH	MH	MH	MH		MH
		Preparedness	T	MH	MH	MH	MH	MH		MH
		Emergency response	T	T	MH	MH	MH	MH		MH
		Rehabilitation and reconstruction	MH	MH	MH	MH	MH	MH		MH

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PLANS	7a	Does your country have national, local and community level tsunami disaster risk reduction (DRR) plans?								
		National – Prevention and mitigation	MH	MH	MH	MH	MH	MH		MH
		Local – Prevention and mitigation	T	MH	MH	MH	MH	MH		MH
		Community / Neighbourhood – Prevention and mitigation	MH	MH		N/A	N/A	MH		MH
		National – Preparedness	MH	MH	MH	MH	MH	MH		MH
		Local – Preparedness	T	MH	MH	MH	MH	MH		MH
		Community / Neighbourhood – Preparedness	MH	MH		N/A	N/A	MH		MH
		National – Emergency response	MH	MH	MH	MH	MH	MH		MH
		Local – Emergency response	T	MH	MH	MH	MH	MH		MH
		Community / Neighbourhood – Emergency response	MH	MH		N/A	N/A	MH		MH
		National – Rehabilitation and reconstruction	N/A	MH	MH	MH	MH	MH		MH
		Local – Rehabilitation and reconstruction	MH	MH	MH	MH	MH	MH		MH
		Community / Neighbourhood – Rehabilitation and reconstruction	MH	MH		N/A	N/A	MH		MH
	7b	Are your country's tsunami DRR plans based on hazards and risk assessments?	●	●	●	●	●	●	●	●
GUIDELINES	8a	Does your country have national tsunami DRR guidelines?								
		Prevention and mitigation	T	MH	N/A	MH	MH	MH		MH
		Preparedness	T	MH	N/A	MH	MH	MH		MH
		Emergency response	T	MH	N/A	MH	MH	MH		MH
		Rehabilitation and reconstruction	N/A	MH	N/A	N/A	MH	MH		MH
	8b	Does your country have local tsunami DRR guidelines?								
		Prevention and mitigation	T	T	N/A	MH	N/A	MH		MH
		Preparedness	T	T	N/A	MH	N/A	MH		MH
		Emergency response	T	MH	N/A	MH	N/A	MH		MH
		Rehabilitation and reconstruction	MH	T	N/A	MH	N/A	MH		MH
DETECTION AND WARNING	9a	Does your country have a national capability to assess and/or receive potential tsunami threat information and advise / warn its coastal communities?	●	●	●	●	●	●	●	●
	9b	Does your country utilise the data provided by the PTWS Tsunami Service Providers (TSPs) for the Threat Assessments of your country's coastline to determine national threats or does it undertake its own threat assessments?								
		Use TSP data	○	●	●	○	○	●	●	●
		Use own threat assessments	●	●	●	●	●	●	○	●
		Use TSP data as backup	○	○	○	●	●	○	○	○
	9c	What known local tsunami sources are your country's NTWC able to monitor?								
		None	○	○	○	○	○	○	○	○
		Earthquake	●	●	●	●	●	●	●	●
		Volcanic	●	●	●	●	●	○	○	●
		Landslide	●	●	○	○	○	○	○	●
		Meteotsunami	●	●	○	●	○	○	○	●
		Meteor	●	○	○	○	○	○	○	○
	9e	Does the organisation responsible for assessing and/or receiving potential tsunami threat information operate 24x7?	●	●	●	●	●	●	●	●

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
DETECTION AND WARNING	9f	What / which infrastructure is available to enable 24x7 operations?								
		Internet	●	●	●	●	●	●	●	●
		Landing phone	●	●	●	●	●	●	●	●
		Mobile phone	●	●	●	●	●	●	●	●
		Satellite phone	●	●	●	○	●	○	○	●
		Radio	○	●	●	●	○	○	○	●
		Internet (mobile)	●	●	●	●	●	○	●	●
		Internet (broadband)	●	○	●	●	●	○	○	●
		Fax	●	○	●	●	○	●	○	●
		GTS (Global Telecommunication System)	●	○	●	●	●	●	●	●
		UPS (Uninterruptable Power Supply)	●	○	●	●	●	○	●	●
		VSAT	○	○	○	○	●	○	○	●
		Internet (dial-up)	○	○	○	●	○	○	○	○
		Internet (wireless)	●	○	○	●	●	○	○	●
		Internet (satellite)	○	○	○	●	●	○	○	●
		Other	●	○	●	○	○	○	○	○
	9g	Which level of tsunami threat forecast information is produced by the responsible organisation?								
		Ocean-wide	●	○	●	○	○	○	●	●
		National	●	●	●	●	●	●	○	●
		Local	●	●	●	●	●	○	○	●
	9h	Does the organisation have access to national and/or international seismic networks?								
		Yes, national and international	●	○	●	●	●	○	○	●
		Yes, national only	○	●	○	○	○	●	○	○
		Yes, international only	○	○	○	○	○	○	●	○
		No	○	○	○	○	○	○	○	○
	9i	Is national seismic data shared in real time?								
		All national seismic data is shared in real time	●	●	●	○	●	○		○
		Some national seismic data is shared in real time	○	○	○	●	○	●		●
		No national seismic data is shared in real time	○	○	○	○	○	○		○
	9j	Does your organisation have access to GNSS data (Global Navigation Satellite System) data?	●	●	●	●	●	○	○	●
	9k	Is the list of broadband seismometers operated by your country listed accurately in the IRIS database (https://ds.iris.edu/mda/)?	●	●	●	●	○			●
	9l	When compared to the IRIS database (https://ds.iris.edu/mda/) have you decommissioned or added broadband seismometers operated by your country.								
		Some stations have been decommissioned	○	○	○	○	●	○	○	
		Some stations have been added	○	○	○	●	●	○	○	
		There are no changes	●	●	●	○	○	●	●	
	9m	Does the organisation have access to national and/or international sea level networks?								
		Yes, national and international	●	●	●	●	●	●	○	●
		Yes, national only	○	○	○	○	○	○	○	○
		Yes, international only	○	○	○	○	○	○	○	○
		No	○	○	○	○	○	○	●	○

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DETECTION AND WARNING	9n	Is national sea level data shared in real time?								
		All national sea level data is shared in real time	●	●	●	○	●	●		●
		Some national sea level data is shared in real time	○	○	○	○	○	○		○
		No national sea level data is shared in real time	○	○	○	●	○	○		○
	9o	Is the list of sea level stations, including tsunameters, operated by your country listed accurately in the IOC Sea Level Station Monitoring Facility (https://www.ioc-sealevelmonitoring.org/map.php) website?	●	●	●	●	●	●		
	9p	When compared to the IOC Sea Level Station Monitoring Facility, have you decommissioned or added sea level stations, including tsunameters, operated by your country.								
		There are no changes	●	●	●	○	●		●	
		Some stations have been decommissioned	○	○	○	○	○		○	
		Some stations have been added	○	○	○	●	○		○	
	9q	What other observing networks are operated by your country and used for tsunami early warning?								
		No other observing networks are operated by the country	○	○	○	○	○	●	○	○
		GNSS (Global Navigation Satellite System)	●	●	●	○	○	○	○	●
		Coastal radars	○	●	○	○	○	○	○	○
		Other	●	●	●	●	●	○	●	○
	9r	Does the organisation have the capability of analysing real-time seismic and sea-level data for potential tsunami threat?	●	●	●	●	●	●	○	●
	9s	Does the organisation have the capability for tsunami modelling to support generation of threat forecasts?	●	●	●	●	●	●	○	●
	9t	Does the organisation responsible for identifying a potential tsunami threat also issue national tsunami no threat, watches, advisories, alerts, evaluation messages and/or warnings?	●	○	●	●	○	●	●	●
	9w	Did your country's NTWC and/or TWFP participate in the regular communications tests conducted by the PTWS TSPs?	●	●	●	●	●	●	●	●
	9x	Did your country's NTWC and/or TWFP participate in national and/or international Tsunami Exercises (e.g. PacWave) conducted in the inter-sessional period between ICG meetings?	●	●	●	●	●	●	●	●
	9y	Since 2005, was your country impacted by any damaging tsunami?	●	●	●	●	●	●	○	●
	9z	Since 2020, were there any major enhancements in your national warning SOPs and alerting?	●	○	●	●	●	○	○	○

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DISSEMINATION	10a	How is the tsunami information (warning, public safety action, etc) disseminated within country?								
		Email	●	●	●	●	●	○	○	●
		SMS	●	●	●	●	●	○	○	●
		Telephone	●	●	●	●	○	●	●	●
		Fax	●	○	●	●	○	●	○	●
		Webpage	●	●	●	●	●	○	○	●
		Radio	●	●	●	●	●	●	○	●
		WhatsApp / Facebook / Other social media	●	○	●	●	●	○	●	●
		Door-to-door	●	●	○	○	○	○	○	●
		Sirens	●	●	●	●	●	●	●	●
		Television	●	●	●	●	●	●	○	●
		Warning towers	●	●	●	●	○	○	●	●
		Megaphone	●	○	●	●	○	○	●	●
		Police / Military	●	●	●	●	○	●	○	●
		Public alert system	●	●	●	●	○	○	○	●
		VHF radio	●	●	○	●	○	○	○	●
		VPN	●	○	○	○	○	○	○	○
		Amateur Radio	●	○	○	○	○	○	○	●
		Other	●	○	●	○	●	○	○	○
	10b	For each Disaster Management Office listed below, which communication methods for emergency response are available?								
		National DMOs – Telephone	●	●	●	●	●	●	●	●
		National DMOs – Fax	●	○	●	●	○	●	○	●
		National DMOs – Email	●	●	●	●	●	●	●	●
		National DMOs – SMS	●	●	●	●	●	○	●	●
		National DMOs – Siren	○	●	○	●	○	○	●	●
		Local DMOs – Telephone	●	●	●	●	●	●	●	●
		Local DMOs – Fax	●	○	●	●	○	●	○	●
		Local DMOs – Email	●	●	●	●	●	●	○	●
		Local DMOs – SMS	●	●	●	●	●	○	○	●
		Local DMOs – Siren	●	●	●	●	○	●	○	●
		General public – Telephone	●	●	●	●	○	○	●	○
		General public – Fax	●	○	●	●	○	○	○	○
		General public – Email	●	●	●	●	○	○	○	●
		General public – SMS	●	●	●	●	●	○	○	●
		General public – Siren	●	●	○	○	●	●	○	●
		Coastal communities – Telephone	●	●	●	●	○	●	●	●
		Coastal communities – Fax	●	○	●	●	○	●	○	○
		Coastal communities – Email	●	●	●	●	○	●	○	●
		Coastal communities – SMS	●	●	●	●	●	○	○	●
		Coastal communities – Siren	●	●	●	○	●	○	○	●
		Media – Telephone	●	●	●	○	●	○	●	●
		Media – Fax	●	○	●	●	○	○	○	○
		Media – Email	○	●	●	●	●	●	○	●
		Media – SMS	●	●	●	●	○	○	○	●
		Media – Siren	○	○	○	○	○	○	○	○
		Other	○	○	○	○	●	○	○	○
	10e	Does your country utilize CAP?	●	○	○	●	○	○	○	●

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STANDARD OPERATING PROCEDURES	11a	Does your SOP address this aspect of tsunami emergency response (upstream)?								
		24/7 Emergency Operations Centre (EOC)	●	●	●	●	●	○	●	●
		Receiving information from the NTWC	●	●	●	●	●	○	●	●
		Response Criteria / Decision making	●	●	●	●	●	○	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?								
		24/7 Emergency Operations Centre (EOC)	○	○	○	○	○	○	●	●
		Receiving information from the NTWC	○	○	○	○	○	○	●	●
		Response Criteria / Decision making	○	○	○	●	○	○	●	●
		Is support required to develop human resources for this aspect of tsunami emergency response?								
		24/7 Emergency Operations Centre (EOC)	○	○	○	○	○	○	●	●
		Receiving information from the NTWC	○	○	○	○	○	○	●	●
		Response Criteria / Decision making	○	○	○	●	○	○	●	●
		Is support required to develop infrastructure for this aspect of tsunami emergency response?								
		24/7 Emergency Operations Centre (EOC)	○	○	○	○	○	○	●	●
		Receiving information from the NTWC	○	○	○	○	○	○	●	●
		Response Criteria / Decision making	○	○	○	○	○	○	●	●
	11b	Does your SOP address this aspect of tsunami emergency response (downstream)?								
		Warning dissemination	●	●	●	●	●	●	●	●
		Evacuation call procedures	●	●	●	●	●	●	●	●
		Community evacuation procedures	●	●	●	●	●	●	●	●
		Communication with NTWC	●	●	●	●	●	●	●	●
		Communication with Local Government	●	●	●	●	●	●	●	●
		Media arrangements	●	●	●	●	●	●	●	●
		Communication with other stakeholders	●	●	●	●	●	●	●	●
		Is support required to develop/improve this aspect of tsunami emergency response in your SOP?								
		Warning dissemination	●	○	○	○	○	○	●	●
		Evacuation call procedures	●	○	○	○	○	○	●	●
		Community evacuation procedures	●	○	○	○	○	○	●	●
		Communication with NTWC	●	○	○	○	○	○	●	●
		Communication with Local Government	●	○	○	○	○	○	●	●
		Media arrangements	●	○	○	○	○	○	●	●
		Communication with other stakeholders	●	○	○	○	○	○	●	●
		Is support required to develop human resources for this aspect of tsunami emergency response?								
		Warning dissemination	●	○	○	○	○	○	●	●
		Evacuation call procedures	●	○	○	○	○	○	●	●
		Community evacuation procedures	●	○	○	○	○	○	●	●
		Communication with NTWC	●	○	○	○	○	○	●	●
		Communication with Local Government	●	○	○	○	○	○	●	●
		Media arrangements	●	○	○	○	○	○	●	●
		Communication with other stakeholders	●	○	○	○	○	○	●	●
		Is support required to develop infrastructure for this aspect of tsunami emergency response?								
		Warning dissemination	○	○	○	○	○	○	●	●
		Evacuation call procedures	○	○	○	○	○	○	●	●
		Community evacuation procedures	●	○	○	○	○	○	●	●
		Communication with NTWC	○	○	○	○	○	○	●	●
		Communication with Local Government	○	○	○	○	○	○	●	●
		Media arrangements	○	○	○	○	○	○	●	●
		Communication with other stakeholders	○	○	○	●	○	○	●	●

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SOPs	11c	Would your country be willing to share your SOPs with ITIC and other countries?	●	●	●	●	●	●	●	●
	11d	In which areas would you require support from the ITIC to develop or conduct capacity development activities?								
		Hazard assessment tools and techniques	○	○	○	●	○	○	●	●
		Evacuation Planning	○	○	○	○	○	●	●	●
		Tsunami Warning Centre SOPs	○	○	○	○	○	○	●	●
		Tsunami Warning Centre Decision Support Tools	○	○	○	●	○	○	●	●
		Tsunami Warning Centre Staff Competency	○	○	○	●	○	○	●	●
		Tsunami Exercises	○	●	○	○	○	●	●	●
		Other	○	○	○	○	○	○	○	○
TSUNAMI EXERCISES	12a	Does your country have the following evacuation infrastructure?								
		Evacuation shelter	○	●	●	●	●	●	●	●
		Evacuation structure built specifically for tsunami evacuation	○	○	●	●	○	○	○	●
		Natural or artificial hill or high ground for vertical evacuation	●	●	●	●	●	●	●	●
		Evacuation route signage	●	●	●	●	●	●	●	●
		Evacuation zone maps	●	●	●	○	○	○	○	●
		Other	○			○		○		○
	12b	Is your evacuation infrastructure integrated in the evacuation plan?	○	●	●	●	●	●	○	●
	12c	Are tsunami exercises incorporated within national policies and guidelines?								
		National policy	●	○	●	●	●	○	●	●
		National guidelines	●	●	○	●	○	●	●	●
		No	○	○	○	○	○	○	○	○
	12d	At what levels were the exercises conducted during the inter-sessional (between ICG meetings) period?								
		National level	●	○	●	●	●	●	●	●
		Regional level	●	●	●	●	●	●	●	●
		City level	○	○	●	●	○	○	●	●
		Village level	○	○	●	○	○	○	●	●
		Community / Neighbourhood level	○	○	●	○	●	○	●	●
		School level	○	○	●	○	●	○	●	●
		N/A	○	○	○	○	○	○	○	○
	12e	What kind of tsunami exercises activities have been undertaken in your country and how many times during the inter-sessional (between ICG Meetings) period?								
		Organisation tabletop exercise	●	●	●	●	○	●	●	●
		Inter-organisation tabletop exercise	●	●	●	●	●	●	●	●
		National tsunami drill / exercise	●	●	●	●	●	●	●	●
		Pacific Wave exercises	●	●	●	●	●	●		●
		Local tsunami drill / exercises	●	●	●	●	○	●		●
		Other				○				○
	13a	What kind of activities have been tested during your country tsunami exercise, and how many times during the inter-sessional (between ICG Meetings) period?								
		Standard Operating Procedures	●	●	●	●	●	●	○	●
		Backup Operating Procedures	●	●	●	○	●	●	○	●
		Warning Products Dissemination	●	●	●	●	●	●	○	●
		None	○	○	○	○	○	○	●	○
		Other				○		○		○

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PUBLIC AWARENESS	13b	Who is responsible for tsunami public awareness programmes in your country?								
		National Disaster Management Office	●	○	●	●	●	●	●	○
		National Tsunami Warning Centre	●	●	●	○	○	●	●	●
		Provincial Disaster Management Office	●	●	●	●	●	●	●	○
		Local Disaster Management Office	●	○	●	●	○	●	●	●
		Other	●	○	○	○	○	○	○	●
	13c	What tsunami related education and awareness materials do you have?								
		Leaflets or flyers	●	○	●	●	○	○	●	●
		Posters	●	●	●	●	●	●	●	●
		Booklets	●	●	●	●	●	●	○	●
		Information boards	●	○	●	○	●	●	○	●
		Tsunami Signage	●	●	●	●	●	●	○	●
		Video, or other visual or oral media	●	●	●	●	●	○	●	●
		Indigenous knowledge, folklore, or oral history accounts or compilations	○	●	●	○	●	●	●	●
		Teaching kits on tsunamis	●	●	●		○	○	●	●
		School curricula	●	●	●	●	○	○	○	●
		Public Evacuation Map	●	○	●	○	●	○	○	●
		Other	●	●	○	○	●	○	○	○
	13d	Would your country be willing to share these education and awareness materials with the International Tsunami Information Centre (ITIC) and other countries?	●	●	●	●	●	●	●	●
	13e	Do you undertake the following tsunami awareness activities?								
		World Tsunami Awareness Day (5 November)	●	●	●	○	●	●	○	●
		Global Disaster Risk Reduction Day (13 October)	●	○		○	●	○	●	●
		Public tsunami preparedness outreach	●	●	●	●	●	●		●
		School and/or children awareness	●	●	●	●	●	●	●	●
		Exhibitions	○	○	●	●	○	○		●
		Competitions or other ways of highlighting tsunami safety	○	●	●	●	●	○		●
		Other				○		○		○
	13f	Use the boxes below to indicate any areas in which you require support from the ITIC to develop or enhance public awareness in your country.								
		Provision of general tsunami awareness materials	●	○	○	○	○	●	●	●
		Customisation of general materials to country or community	●	○	○	○	○	○	●	●
		Development of tsunami awareness programmes, activities or campaigns	●	○	○	●	○	○	●	●
		Participation / support by international agencies or experts to your country's activities	●	○	○	○	○	○	●	●
		Other	●	○	○	○	○	○	○	○
	13g	Can your country offer support to other Member States to develop or enhance public awareness in their country?	●	●		○	●	○	●	●

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TSUNAMI READY RECOGNITION PROGRAMME	14a	Does your country have an interest to participate in the UNESCO-IOC TRRP?								
		Yes, we are already participating	○	○	○	○	○	●	●	●
		No, but there are plans to do so in the near future	●	○	○	○	○	○	○	○
		No, and there are no plans to do so in the near future	○	●	●	●	●	○	○	○
	14b	Aside from UNESCO-IOC TRRP, is your country currently implementing any other tsunami resilience and preparedness related initiatives or programmes?	●	●	●	○	●	○	●	○
	14c	What number of villages, cities/districts and provinces/state levels in your country are at risk to tsunami?								
		Village		30			0		109	
		Cities / Districts	100	30	700	30	0	62	36	
		Provinces / State	7	6		18	16		11	
	14d	Does your country have a National Tsunami Ready Board (NTRB)?	○	○	○	●	○	●	○	●
	14f	Are any communities in your country currently working towards implementing or interested in implementing the UNESCO-IOC TRRP or similar national initiative?	●	●		●	○	○	●	●
	14g	Have any communities in your country achieved recognition through UNESCO-IOC TRRP or similar national initiative?	○	○		○	○	○	●	●
	15a	Is there national capacity to develop tsunami hazard maps?								
		Yes, it can be done through mobilising national experts and funding	●	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15b	Is there national capacity to train the community on identifying and estimating the number of people that live in the tsunami hazard zone?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●		
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	○	○	○		
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	●	○	○	○	○	○		
	15c	Is there national capacity to train the community on the inventory of available economic, infrastructural, political, and social resources to reduce tsunami risk at the community level?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	○	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	●	○	○	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
TSUNAMI READY RECOGNITION PROGRAMME	15d	Is there national capacity to work with the community to develop tsunami evacuation maps, plans, and procedures at the community level?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	○	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	●	○
	15e	Is there national capacity to work with the community to develop a public display of tsunami information?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15f	Is there national capacity to work with the community to develop local context outreach and public education materials?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15g	Is there national capacity to train and build capacity of community to be able to organise and implement outreach and education activity?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15h	Is there national capacity to train and build capacity of community to be able to organise and implement tsunami exercise?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	○	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	●	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○

● = Yes – ○ = No – N/A = Not available – Black = No answer Grey = Logic of non-response – ? = Don't know			AU	CA	JP	KR	NZ	RU	TL	US
TSUNAMI READY RECOGNITION PROGRAMME	15i	Is there national capacity to train and build capacity of communities to be able to develop their community Emergency Operation Plan?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	○	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	●	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15j	Is there national capacity to train and build capacity of communities to manage 24/7 tsunami emergency response operation?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15k	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to receive 24/7 warning?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15l	Is there national capacity to train and work with the communities to develop mechanisms (means and procedures) to disseminate 24.7 warning to the community?								
		Yes, it can be done through mobilising national experts and funding	○	●	●	●	●	●	○	○
		Yes, it can be partially done through mobilising national experts and funding, but also needs international technical expertise	●	○	○	○	○	○	●	●
		No, there is a strong need for technical support organised through ITIC and/or ICG/PTWS activities	○	○	○	○	○	○	○	○
	15m	Which of the following challenges inhibit the implementation of TRRP or similar national initiatives in your country?								
		None of the above	○	●		○	○	○	○	○
		Tsunami is not a high priority hazard in country	●	○		●	○	○	●	●
		Limited resources	●	○		○	●	●	●	●
		Limited support of government	●	○		○	●	○	●	●
		Limited awareness	●	○		○	○	○	●	●
		Limited activity	●	○		○	○	○	●	○
		Lack of community interest	●	○		○	○	○	●	○
		No community group or engagement in disaster risk reduction	○	○		○	○	●	○	○
		Other	○	○		○	○	○	○	○

Annex 8 – Acronyms

AHP	Australian Humanitarian Partnership
CAP	Common Alert Protocol
CBS	Cell Broadcasting Service
COAST project	Coastal Assessment and Research of Tsunami Hazards in the Philippines project
COMCOT	COrnell Multi-grid COupled Tsunami model
DART	Deep-ocean Assessment and Reporting of Tsunamis
DMO	Disaster Management Office
DRR	Disaster Risk Reduction
DTHA	Deterministic Tsunami Hazard Assessment
EAWM	Emergency Alert and Warning Messages
EEW	Earthquake Early Warning
EOC	Emergency Operations Center
EQP	Earthquake Prediction
ESA	Emergency Alert System
ETA	Estimated Time of Arrival
EW4All	Early Warnings for All
GNSS	Global Navigation Satellite System
GTS	WMO Global Telecommunication System
ICG	Intergovernmental Coordination Group
ICG/CARIBE-EWS	Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
ICG/ITSU	International Coordination Group for the Tsunami Warning System in the Pacific
ICG/IOTWMS	Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System
ICG/NEAMTWS	Intergovernmental Coordination Group for the TEWMS in the North-Eastern Atlantic, the Mediterranean and Connected Seas
ICG/PTWS	Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System
IOM	International Organization for Migration
ITIC	International Tsunami Information Center
NDMO	National Disaster Management Office
NTRB	National Tsunami Ready Board
NTWC	National Tsunami Warning Center
PICTs	Pacific Island Countries and Territories
PTHA	Probabilistic Tsunami Hazard Assessment
PTWC	Pacific Tsunami Warning Center
PTWS	Pacific Tsunami Warning and Mitigation System
SC-TT-PacWave	Steering Committee Task Team PacWave Exercises
SFDRR	Sendai Framework on Disaster Risk Reduction
SIDS	Small Islands Developing States
SLSMF	IOC Sea Level Station Monitoring Facility
SOP	Standard Operating Procedure
SPC	Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SWIFT	Source parameter determination based on Waveform Inversion of Fourier Transformed seismograms
TNC	Tsunami National Contact

TOAST	Tsunami Observation And Simulation
TOWER project	Tsunami Observation for community Warning, Evacuation, and Resilience project
TRRP	Tsunami Ready Recognition Programme
TSP	Tsunami Service Provider
TTT	Tsunami Travel Times
TWFP	Tsunami Warning Focal Point
UNDP	United Nations Development Program
UNESCO-IOC	Intergovernmental Oceanographic Commission of UNESCO
UPS	Uninterruptable Power Supply
VSAT	Very Small Aperture Terminal
WG	Working Groups
WG-CA	Working Group Central American Pacific Coast
WG-SEP	Working Group South-East Pacific
WG-PICT	Working Group Pacific Island Countries and Territories
WG-PICT-TT-CD	WG-PICT Task Team Capacity Development
WG-PICT-TT-ISP	WG-PICT Task Team Information Sharing Platforms
WG-PICT-TT-SDSSWP	WG-PICT Task Team Seismic Data Sharing in the Southwest Pacific
WG-SCS	Working Group South China Sea
WG-SCS-TT-CDS	WG-SCS Task Team Capacity Development and Services
WMO	World Meteorological Organisation
WTAD	World Tsunami Awareness Day
WG2-TT-FOO	WG 2 Task Team Tsunami Forecasting from Ocean Observations
WG2-TT-TGV	WG 2 Task Team Tsunami Generated by Volcano
WG2-TT-TSP	WG 2 Task Team Tsunami Service Providers
WG3-TT-TR	WG 3 Task Team Tsunami Ready