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Recommendation for Tsunami Public Awareness, Preparedness and Response Capacity Development

Based on 2024 CATP

Prepared by

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Weniza

Three Strategic Pillars of IOTWMS (MTS 2019-2024)

Public Awareness, Preparedness and Response Capacity Development Components are imbedded in Pillar no 1 and 3:

1. Risk assessment and reduction
2. Detection, warning and dissemination
3. Awareness and response

Foundation Elements of IOTWMS (MTS 2019-2024)

Public Awareness, Preparedness and Response Capacity Development Components are imbedded elements:

1. Interoperability
2. Research
3. Capacity building
4. Funding and system sustainability
5. Outreach
6. IOTIC

Public Awareness, Preparedness and Response Capacity Development: Related Components of 2018 and 2024 CATP

II. Risk Assessment and Reduction – Pillar 1

III. Detection, Warning and Dissemination – Pillar 2

IV. Public Awareness, Preparedness and Response – Pillar 3

V. Tsunami Ready Recognition Programme (TRRP) – Pillar 1, 2 and 3

DRR based Public Awareness, Preparedness and Response Capacity Development: 2018 v. 2024 CATP

Based on Pillar 1

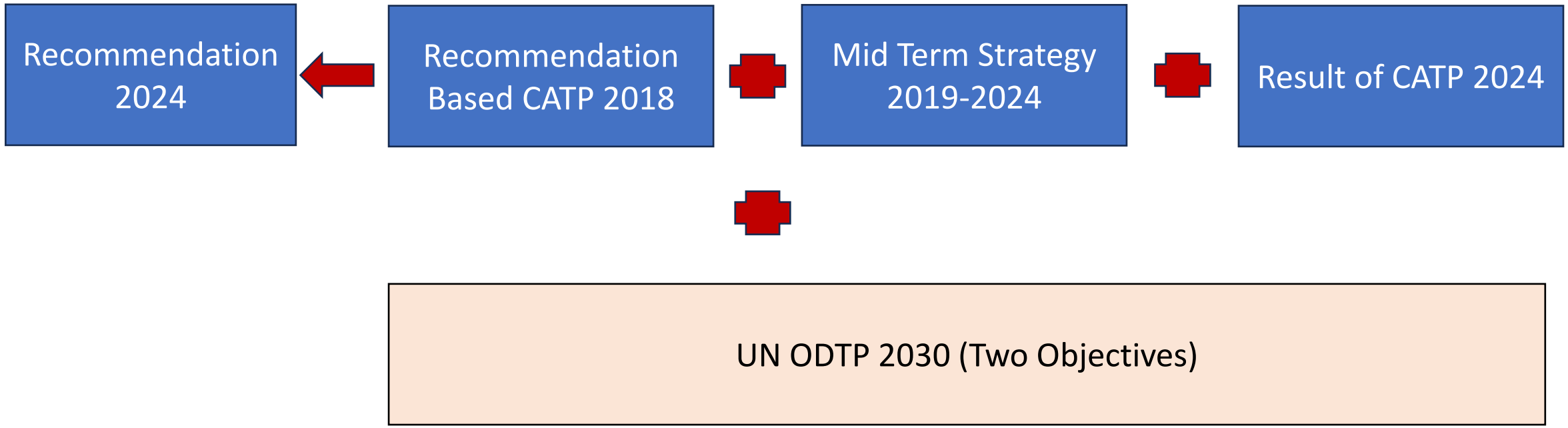
- Products to emerge from TRA – Fig 15
- Tsunami Policy based TRA – Fig 18 (national) and Fig 19 (local)
- DRR Plans:
  - Prevention and Mitigation DRR Plans – Fig 20
  - Preparedness DRR Plans – Fig 21
  - Emergency Response Plans – Fig 22
  - RR Plans – Figure 23
- Tsunami Guidelines – Fig 24 (national) and Fig 25 (local)

DRR based Public Awareness, Preparedness and Response Capacity Development: 2018 v. 2024 CATP

Based on Pillar 3

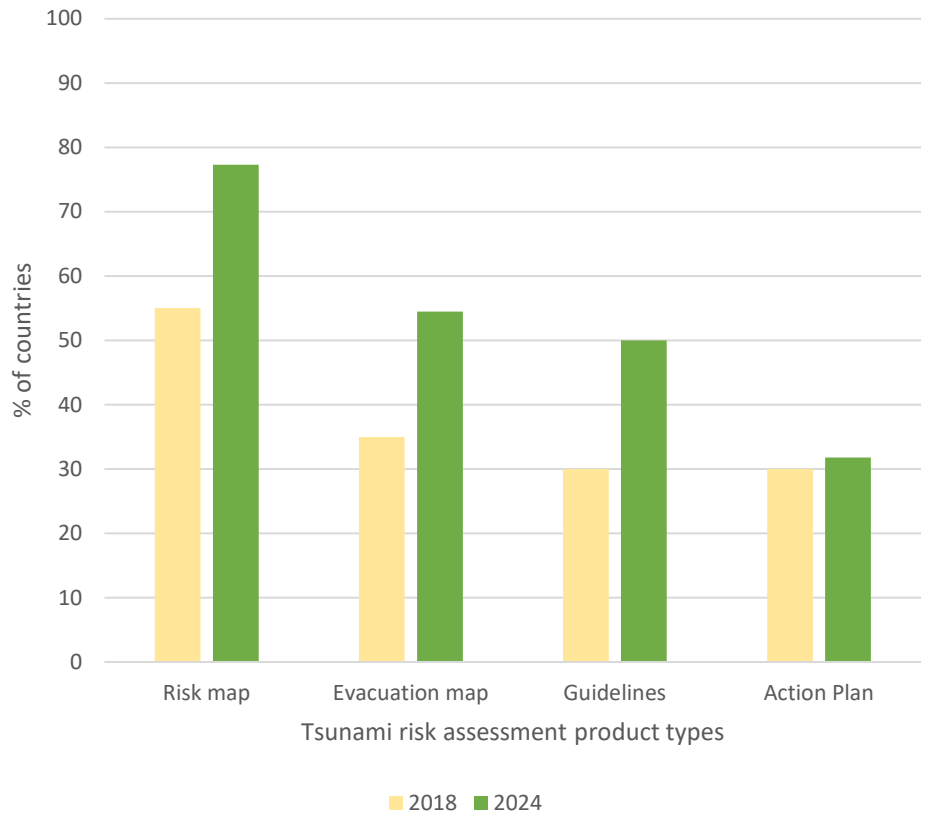
- SOPs:
  - Upstream Emergency Response – Fig 31
  - Downstream Emergency Response – Fig 32
- Communication Infrastructure – Fig 33
- Evacuation infrastructure – Fig 34
- Tsunami Exercise:
  - Level of exercise – Fig 35
  - Type of exercise – Fig 36
- Public Awareness:
  - Organization involved – Fig 37
  - Materials – Fig 38
  - Activities – Fig 39 and Fig 40

Strategic Recommendation 2024 based on 2018 v. 2024 CATP



Based on Pillar #1

1. Products to emerge from TRA – Fig 15



Review the Gaps and Challenges:

a. In overall: a slight increase of TRA based products from 2018 to 2024

b. Improved TRA based Risk Map in 2024 with above 50% - A risk map is produced by 17 of the countries (77% of all countries) that conduct tsunami risk assessments

c. Low TRA based products on Evacuation Map, Guidelines, and Action Plan: less than 50% of member countries have done them

d. Action plan is still the least component and no improvement - with just 32% countries producing them.

e. 15 countries develop two products or more

Recommendation:

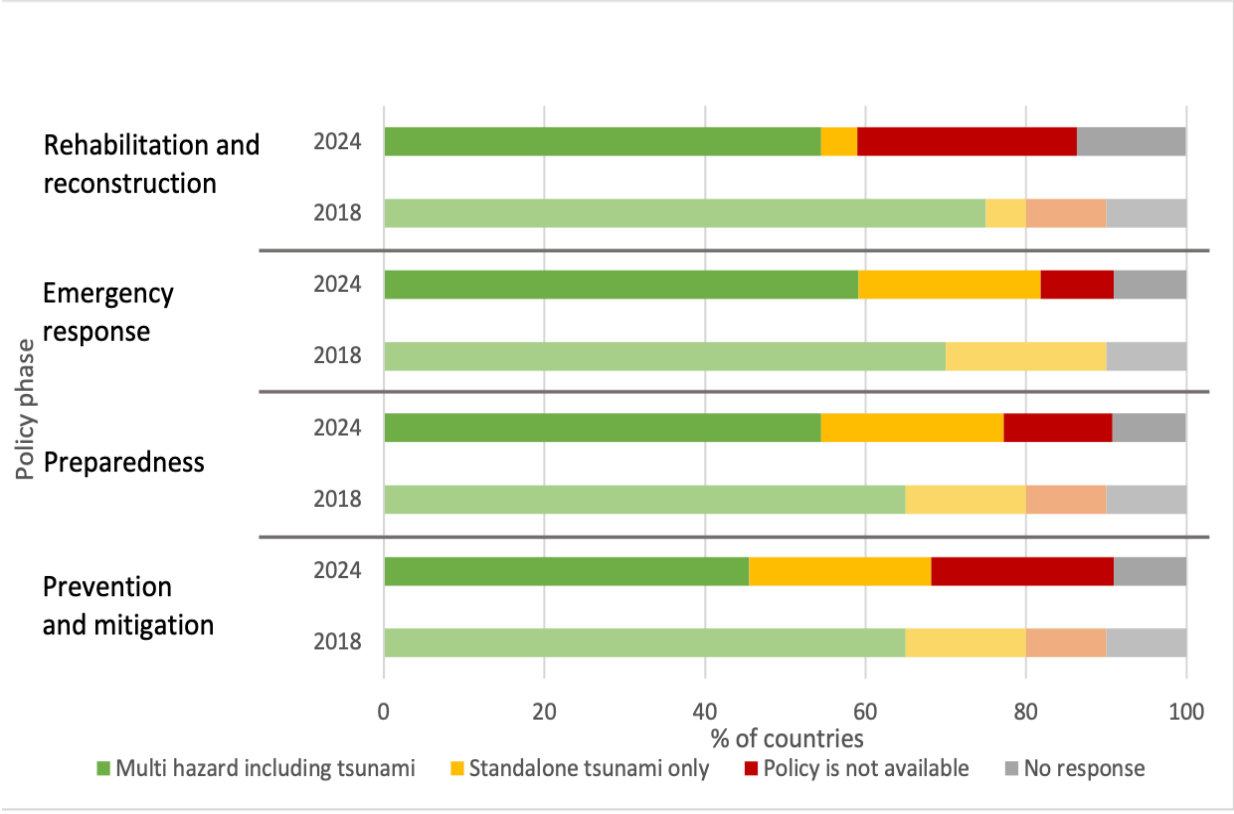
a. Continuous capacity building (training, internship etc.) for 50% member states to be able to produce TRA based products with priority focus on: 1. Comprehensive Action Plan, 2. Guidelines and 3. Evacuation Map

b. Engage DMOs, Universities or research institution, example of Indonesia, India

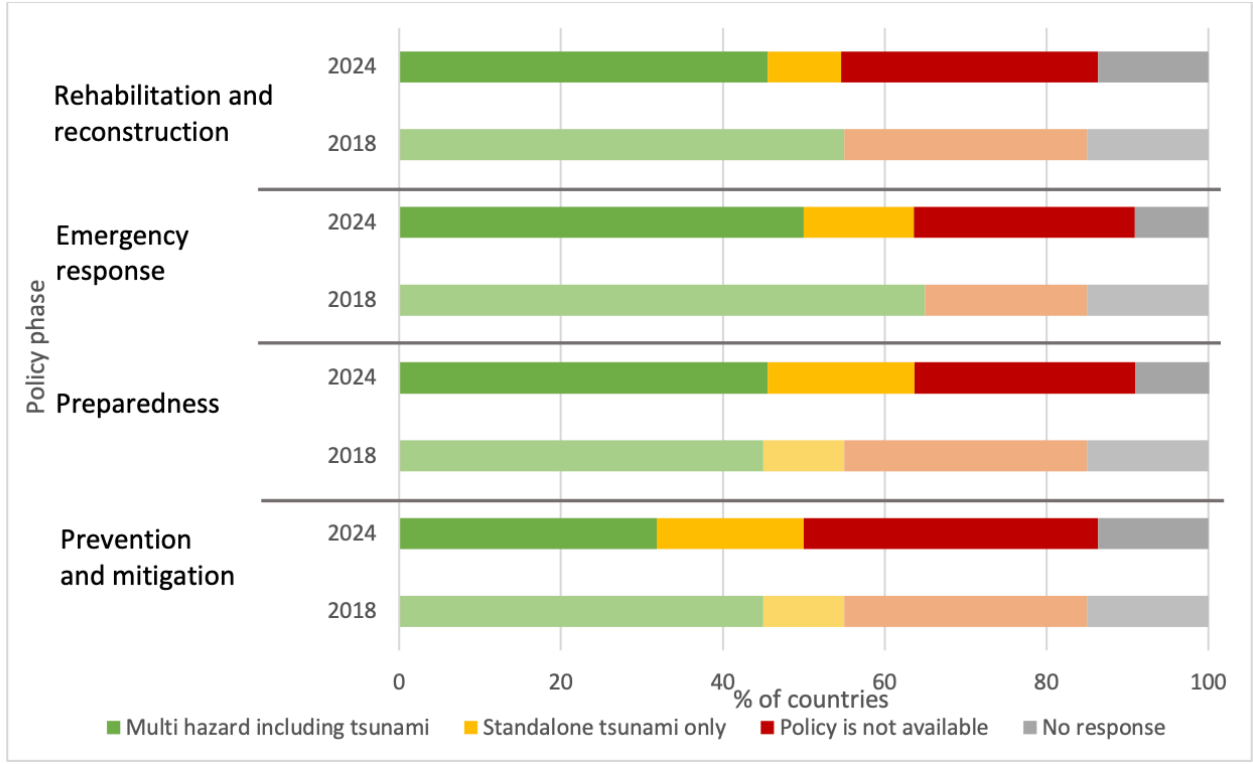
c. Pool of experts in the region to support the capacity building (training)

d. Training with priority focus on: 1. Comprehensive Action Plan, 2. Guidelines and 3. Evacuation Map

2. Policies to emerge from TRA – Fig 18 & 19



National Policies



Local Policies

TRA based Policies: Recommendations

Review Gaps and Challenges:

National Policy

- Weak National policy for PM
- The responses indicate that 20 of the 22 countries (91%) have some form of national tsunami policy. A majority address tsunami as a part of a multi-hazard policy. Over 80% of countries have a national policy have addresses the emergency response phase and over 75% that addresses the preparedness phase. However, less than 60% of countries have a policy that addresses the rehabilitation and reconstruction phase.
- Overall, the results show a reduced level of availability of national policies when compared to the 2018 survey results

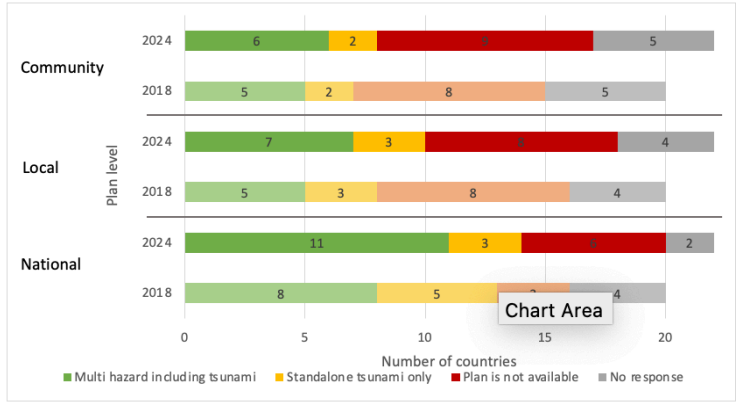
Local Policy

- Results show a similar level of availability of local policies when compared to the 2018 survey results
- Weakest Local Policy for PM
- 14 of the 22 countries (64%) have some form of local tsunami policy: A majority of those address tsunami as a part of a multi-hazard policy.
- Over 60% of countries have a policy have addresses the emergency response and preparedness phases
- Over 50% have a policy that addresses the prevention and mitigation & rehabilitation and reconstruction phases.

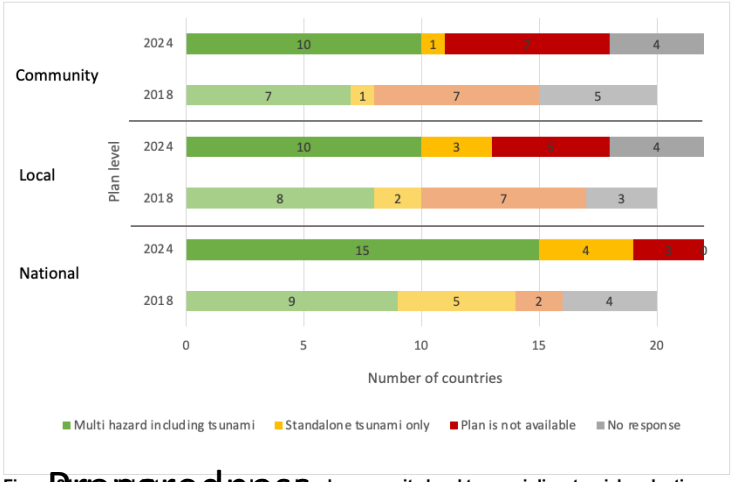
Recommendation:

- Encourage Contingency Plan Development based on TRA at local level, case of Indonesia with National Guideline (NDMO) supported by related stakeholders
- Training for MS and make sure to become National Policy
- Encourage MS to make sure Local Level adapt TRA in the Policy development

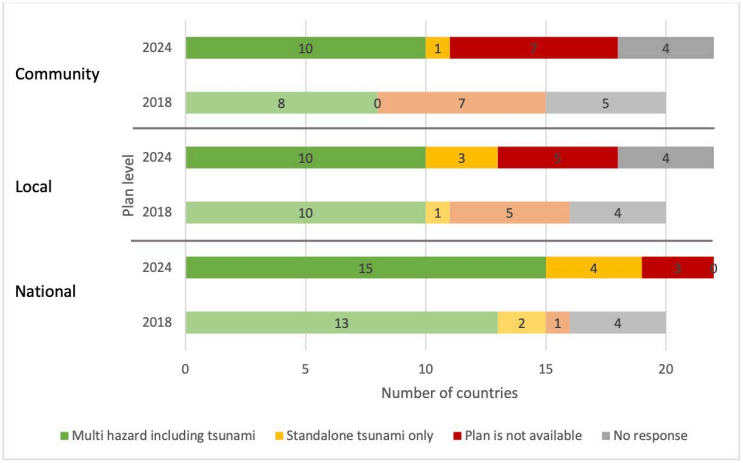
3. DRR Plans: Fig 20, 21, 22 and 23



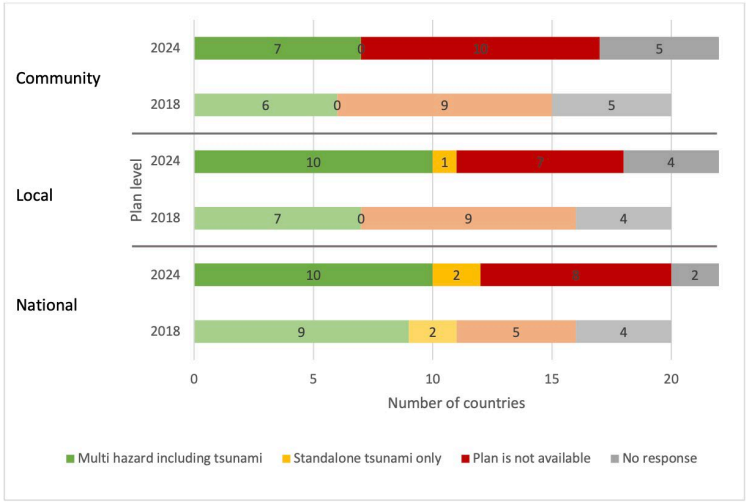
Prevention and Mitigation



Preparedness



Emergency Response



Preparedness

DRR Plans Recommendations:

Review Gap and Gaps and Challenges:

- Not much different data 2018 v. 2024 on DRR Plan
- Low DRR Plan at national level and weakest DRR Plan at community level and local level
- 22 (100%) of the respondent countries have some form of tsunami disaster risk reduction plans.
- A significant majority of countries address tsunami risk reduction as a part of a multi-hazard plan, rather than as standalone plans.
- Across all four phases of the disaster management lifecycle, availability of plans is significantly higher at the national level, followed by the local level.
- There is least availability at the community level. For example, at the emergency response phase 86% of countries have national level plans, while 59% have local and 50% have community level plans. This pattern is similar in all phases of disaster management.
- Availability of tsunami plans is highest during the preparedness and emergency phases. For example, the 86% of countries with national plans at the emergency response phase exceeds those during the prevention and mitigation phase (64%) and the rehabilitation and reconstruction phase (55%).
- This pattern is replicated at the local and community levels, with availability at the emergency response and preparedness phases exceeding other phases.

Recommendation:

a. Integrated TRA based regional and national training for DRR plan from national, local and community level.

b. Encourage Guidelines for the development of DRR Plan cover at city level with criteria as follows

- Prevention Mitigation Plan:
    1. DRR Based Urban Planning for City level/District level (Scale 1:25,000)
    2. Detail spatial plan for Sub-districts (scale 1:5,000)
- Preparedness Plan: Contigency Plan at city level
- Emergency Response Plan: Operation Plan at city level

4. Tsunami Guidelines – Fig 24 (national) and Fig 25 (local)

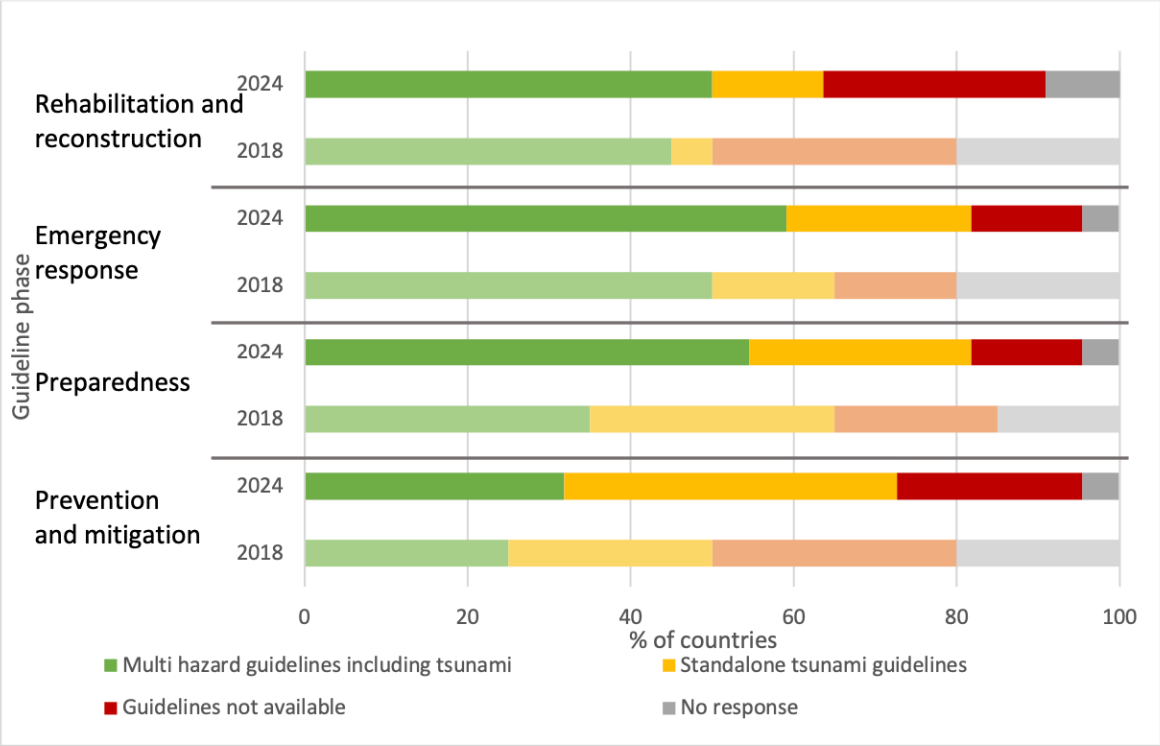


Figure 24: Types and phases of national tsunami guidelines

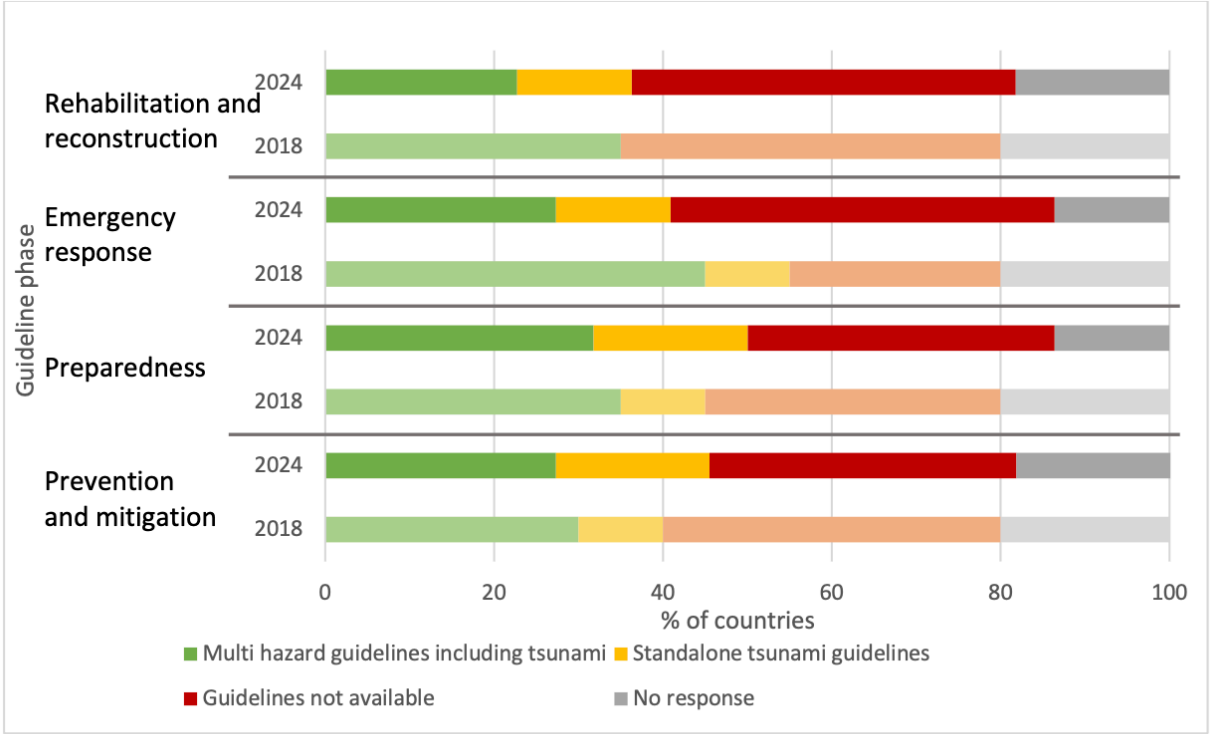


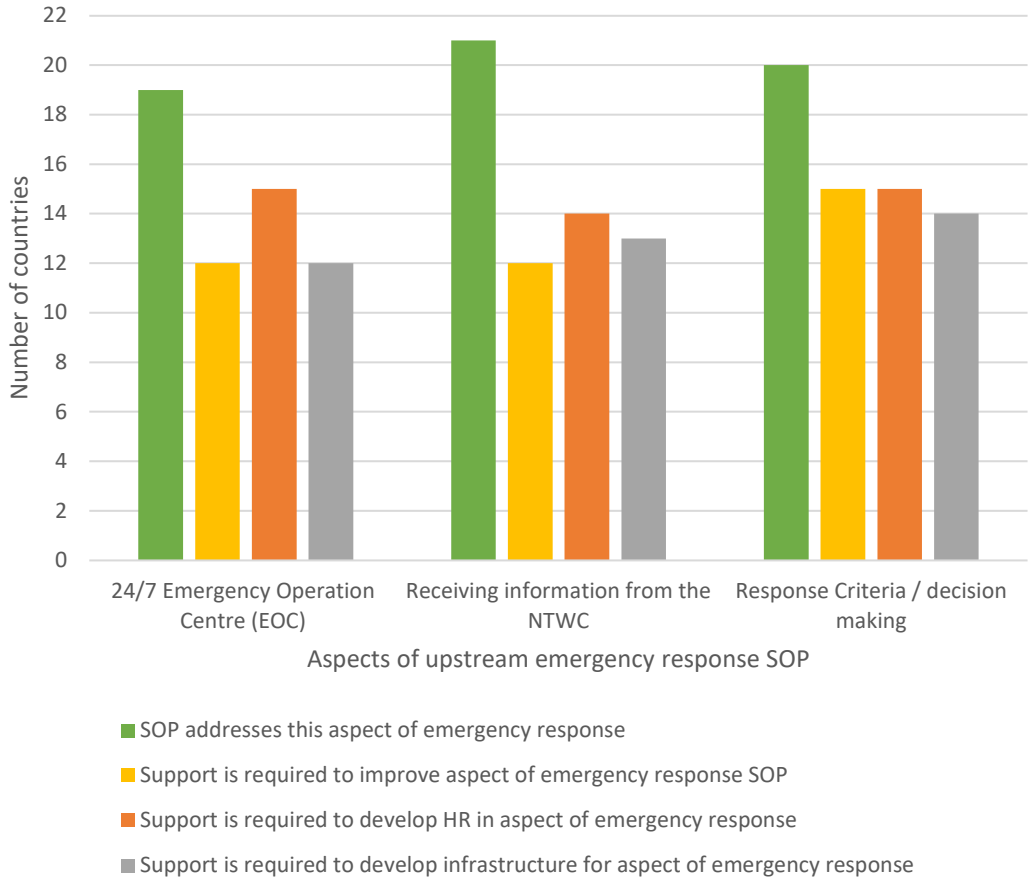
Figure 25: Types and phases of local tsunami guidelines

Tsunami Guidelines: Recommendations

- **Review Gaps and Challenges:**
  a. Increase multi hazard and stand alone Tsunami Guidelines at national level from 2018 v. 2024
  b. In contrary to local level reduced the number of countries having TRA based Guidelines
  c. Increased number of countries do not have guidelines for the four disaster management phases
- **Recommendation:**
  a. Encourage more member states development of both MHEWS and Stand Alone Guidelines based on TRA
  b. Regional and national capacity building for the TRA based guidelines development
  c. TRA based Tsunami Guidelines covers:
    - PM: Tsunami Building Code, Critical Facilities Ready to Tsunami Guide, Hotel Ready for Tsunami
    - Preparedness: Contingency plan development guidelines
    - Emergency: Operation plan development guidelines
    - Rehab Recon: Post recovery plan and Pre-disaster recovery plan

Based on Pillar #3

1. SOP: Upstream Emergency Response – Fig 31



	ASPECT OF UPSTREAM EMERGENCY RESPONSE SOP											
	24/7 Emergency Operation Centre (EOC)				Receiving information from the NTWC				Response criteria / decision making			
	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure
Australia	●	○	○	○	●	○	○	○	●	○	○	○
Bangladesh	●	●	●	●	●	●	●	●	●	●	●	●
Comoros												
France Indian Ocean Territories	●	○	○	○	●	○	○	○	●	●	●	●
India	●	○	●	○	●	○	○	○	●	○	○	○
Indonesia	●	●	●	●	●	●	●	●	●	●	●	●
Iran	○	●	●	●	●	●	○	○	●	●	●	●
Kenya	●	●	●	●	●	●	●	●	●	●	●	●
Madagascar	●	●	●	●	●	●	●	●	●	●	●	●
Malaysia	●	○	●	○	●	○	●	○	●	●	●	○
Maldives	●	●	●	●	●	●	●	●	●	●	●	●
Mauritius	●	○	○	○	●	○	○	○	●	○	○	○
Mozambique	●	●	●	●	●	●	●	●	●	●	●	●
Myanmar					●	●	●	●				
Oman	●	●	●	●	●	●	●	●	●	●	●	●
Pakistan	●	○	●	●	●	○	●	●	●	●	●	●
Seychelles	●	●	●	●	●	●	●	●	●	●	●	●
Singapore	●	○	○	●	●	○	○	○	●	○	○	○
South Africa	●	●	●	●	●	○	●	●	●	●	●	●
Sri Lanka	●	●	●	●	●	●	●	●	●	●	●	●
Thailand	●	●	●	●	●	●	●	●	●	●	●	●
United Arab Emirates	●	○	○	○	●	○	○	○	●	○	○	○

● = Yes ○ = No Blank = No Response

Support required to develop upstream emergency response SOP

1. SOP: Upstream Emergency Response – Fig 31

Review Gaps and Challenges:

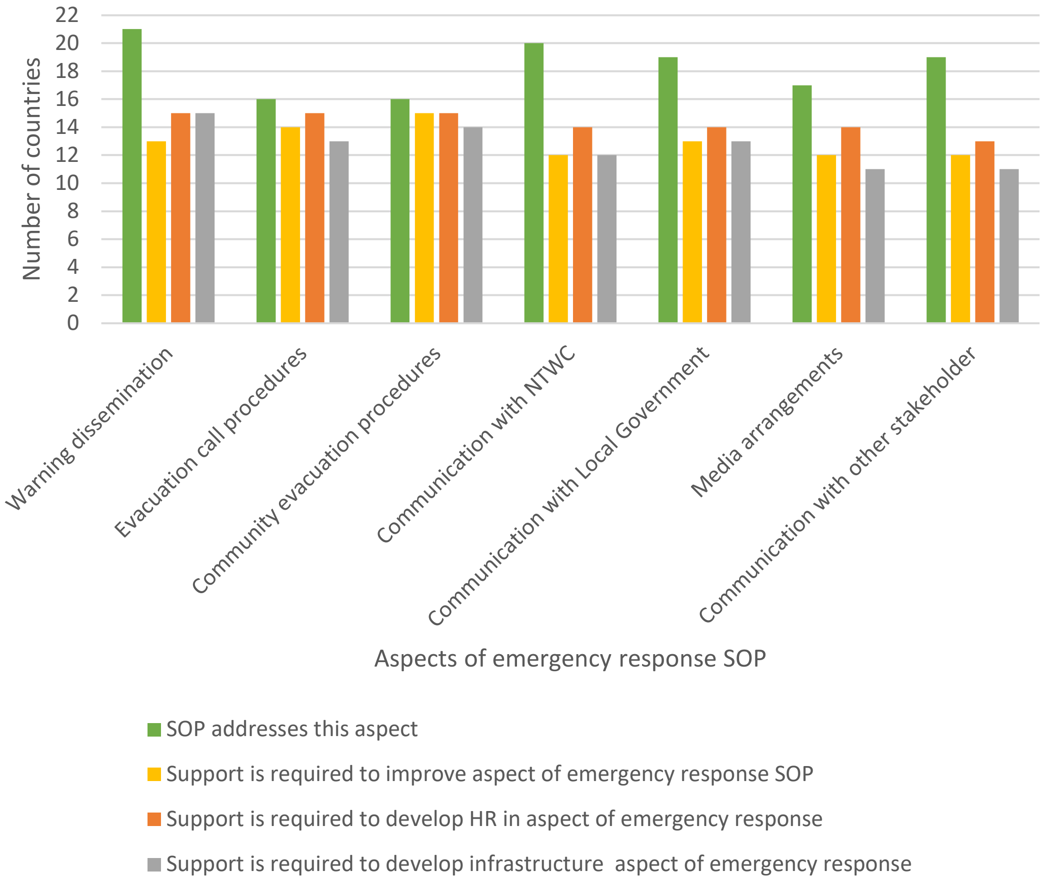
a. Most countries have SOPs that address:

b. the operation of a 24/7 emergency operation centre (86%), receiving information from the NTWC (96%) and response criteria and decision making (91%). However, although to a lesser extent than reported in the 2018 survey, these results also indicate that many countries still require support to develop SOPs in all three aspects (55 – 68%). They also require support to develop human resources in these areas, especially 24/7 emergency operations and response criteria / decision making (64 – 68%). Support to develop infrastructure across all three aspects is also required in many countries (55 – 64%)

Recommendation:

a. Provide support for countries to improve the SOP to address warning dissemination, communication including the operation of a 24/7 emergency operation centre, receiving information, response criteria in decision making as well as associated human resource and infrastructure

1. SOP Downstream Emergency Response – Fig 32



ASPECT OF DOWNSTREAM EMERGENCY RESPONSE SOP

	Warning dissemination				Evacuation call procedures				Community evacuation				Communication with NTWC				Communicaton with local government				Media arrangements				Communication with other stakeholders			
	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure	SOP addresses this aspect	Support required to develop/improve SOP	Support required to develop human resources	Support required to develop infrastructure
Australia	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	○	●	●	●	○	●	●	●	○	●	●	●	○
Bangladesh	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Comoros																												
France Indian Ocean Territories	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○
India	●	○	○	○	●	○	●	○	●	○	●	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○
Indonesia	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Iran	●	○	●	●	●	○	○	○	●	●	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○
Kenya	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Madagascar	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Malaysia	●	○	●	●	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○
Maldives	●	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●
Mauritius	●	○	○	○	●	●	○	●	●	●	○	●	●	○	○	○	●	○	○	●	●	○	○	○	●	○	○	○
Mozambique	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Myanmar	●	●	●	●																								
Oman	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Pakistan	●	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○
Seychelles	●	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●
Singapore	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○
South Africa	●	○	○	●	○	●	●	●	○	●	●	●	●	○	●	●	●	●	●	●	○	●	●		○	●	●	●
Sri Lanka	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●
Thailand	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
United Arab Emirates	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○	●	○	○	○

● = Yes ○ = No Blank = No Response

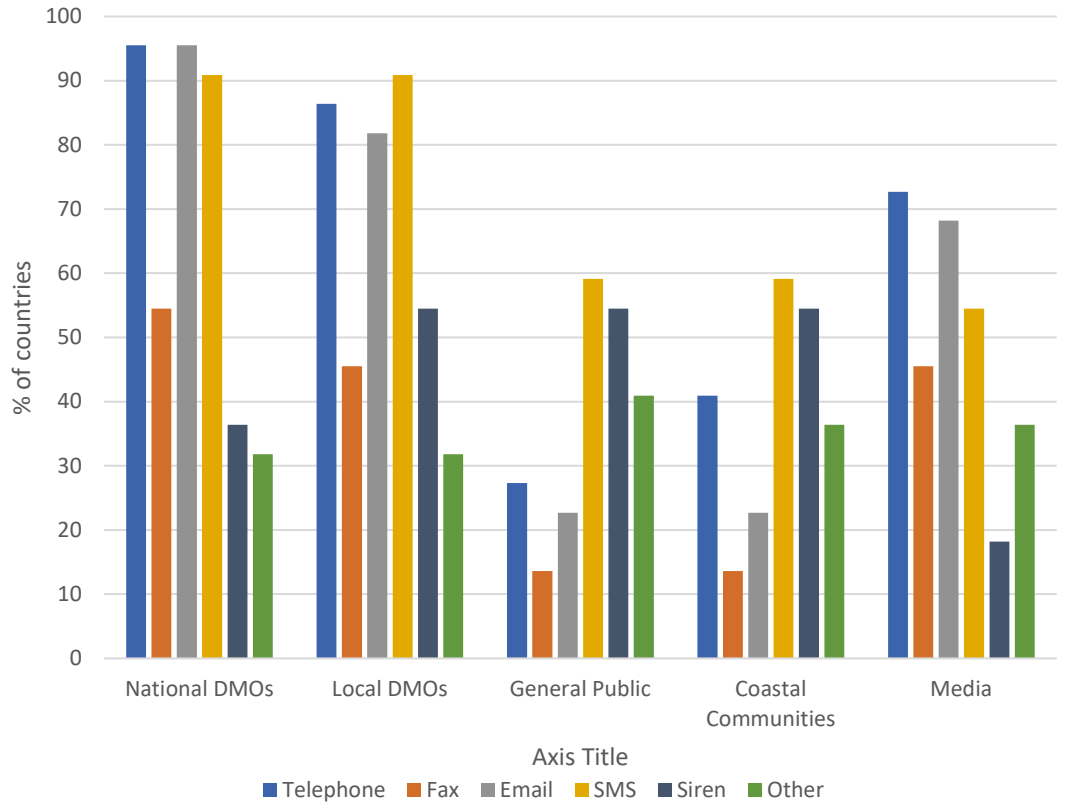
Support required to develop downstream emergency response SOP

1. SOP: Downstream Emergency Response – Fig 32

- **Review Gaps and Challenges:**
  a. The responses indicate that more than 90% of countries have SOPs that address warning dissemination and communication with the NTWC, while more than 70% of countries have SOPs that address all aspects of emergency response.
  b. However, despite widespread availability and although to a lesser extent than reported in the 2018 survey, a majority of countries still require support to develop SOPs (55 – 68%), support to develop human resources (59 - 68%) and support to develop infrastructure across all seven aspects (50 – 68%).
  c. 20 of the countries indicated their willing to share SOPs with IOTIC and other countries.

- **Recommendation:**
  Provide support for countries to improve the SOP to address warning dissemination, communication with the NTWC, other stakeholder, local government, media as well associated human resources and infrastructure

2. Communication methods for emergency response: Fig 33



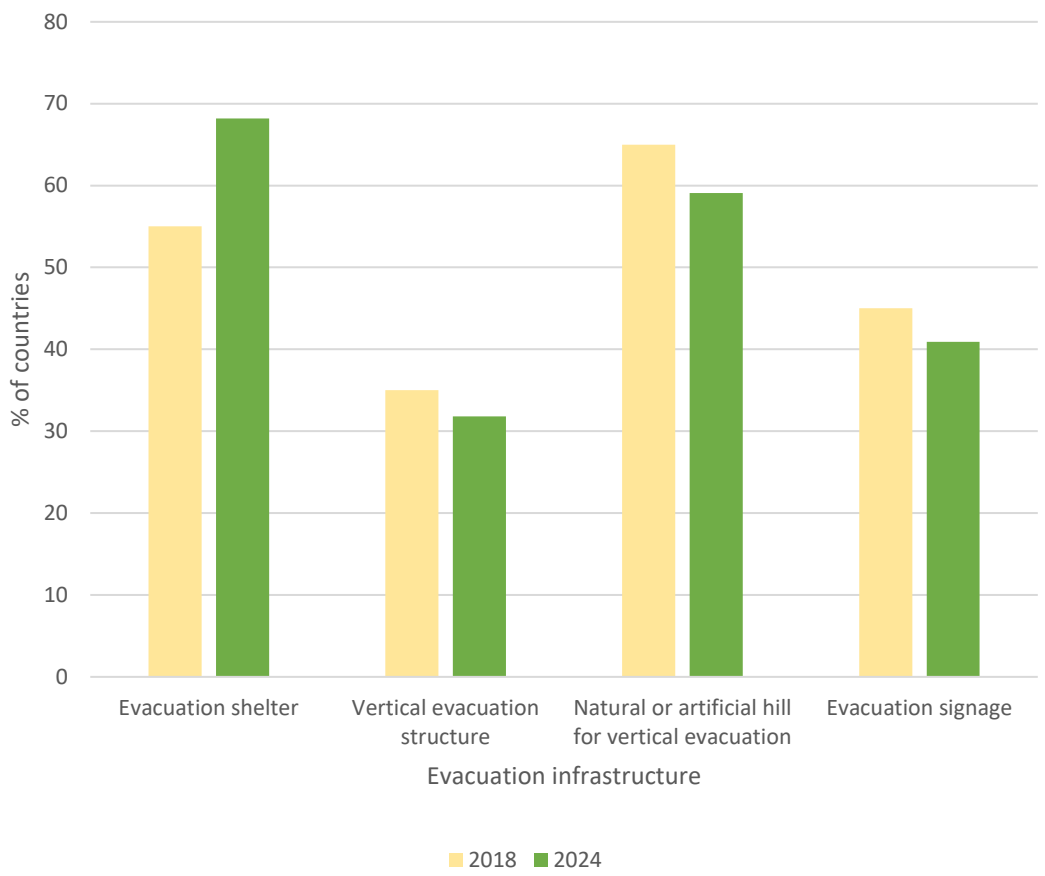
Review Gaps and Challenges:

- For National DMOs, telephones, email and SMS are all widely used in many countries (90% or more). The situation is similar for Local DMOs (80% or more). Use of Fax has diminished significantly since the 2018 survey results for both National DMOs (90% to 55%) and Local DMOs (75% to 45%).
- For communicating with the media, the telephone and email remain the most widely used methods, but again, use of the Fax has diminished (75% to 45%).
- Unsurprisingly, the pattern of responses for the general public and coastal communities is similar, and more than 50% of countries use to some extent SMS and sirens to reach these groups.
- Other communication methods mentioned by countries included websites, social media, radio, dedicated applications, broadcast alert systems, and television.

Recommendation:

a. Encouraging the member state to provide the robust communication method for each target. For example used email and SMS for National and Local DMO, used telephone and email for media and used SMS, sirens and social media, television, radio, dedicated application for general public and coastal communities.

3. Evacuation Infrastructure: Fig 34



Review Gaps and Challenges:

a. Shelter: evacuation shelters within countries when compared to the 2018 survey (55% to 68%), while Natural or artificial hills for vertical evacuation also remain widely reported and identified by 59% of countries.
b. Evacuation signage (41%) and vertical evacuation structures (32%) remain less common.
c. 14 countries (64%) also reported that evacuation infrastructure is incorporated into the evacuation plans.

Recommendation:

a. Provide regional training and engage professional societies in national activities to share best practices of different type of vertical evacuation infrastructure, for example encouraging using other structure.
b. Secretariat to share national Tsunami Signages including examples of best practice taking into consideration recommendations from the TOWS-WG TTDMP.

4. Tsunami Exercise: Fig 35, 36

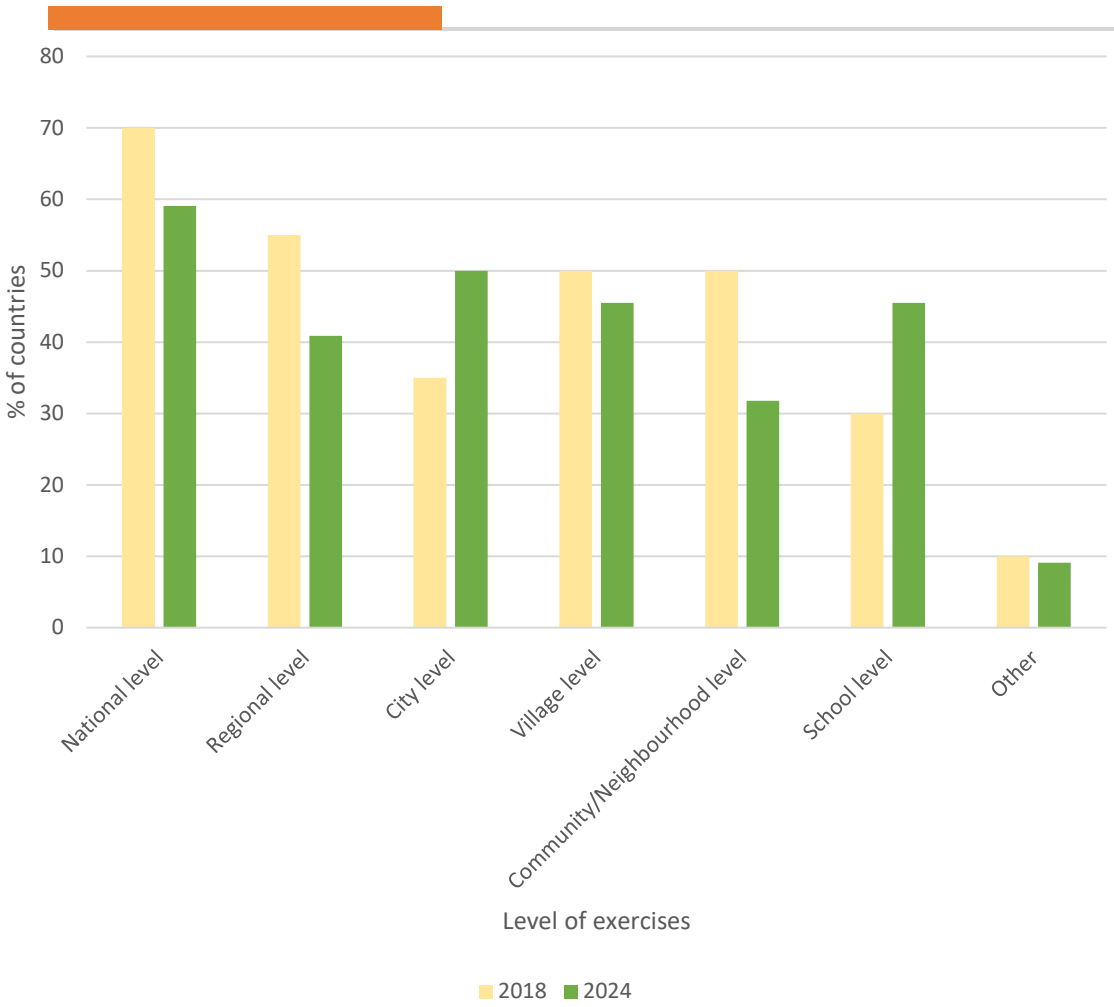


Figure 35: Levels of tsunami exercise conducted

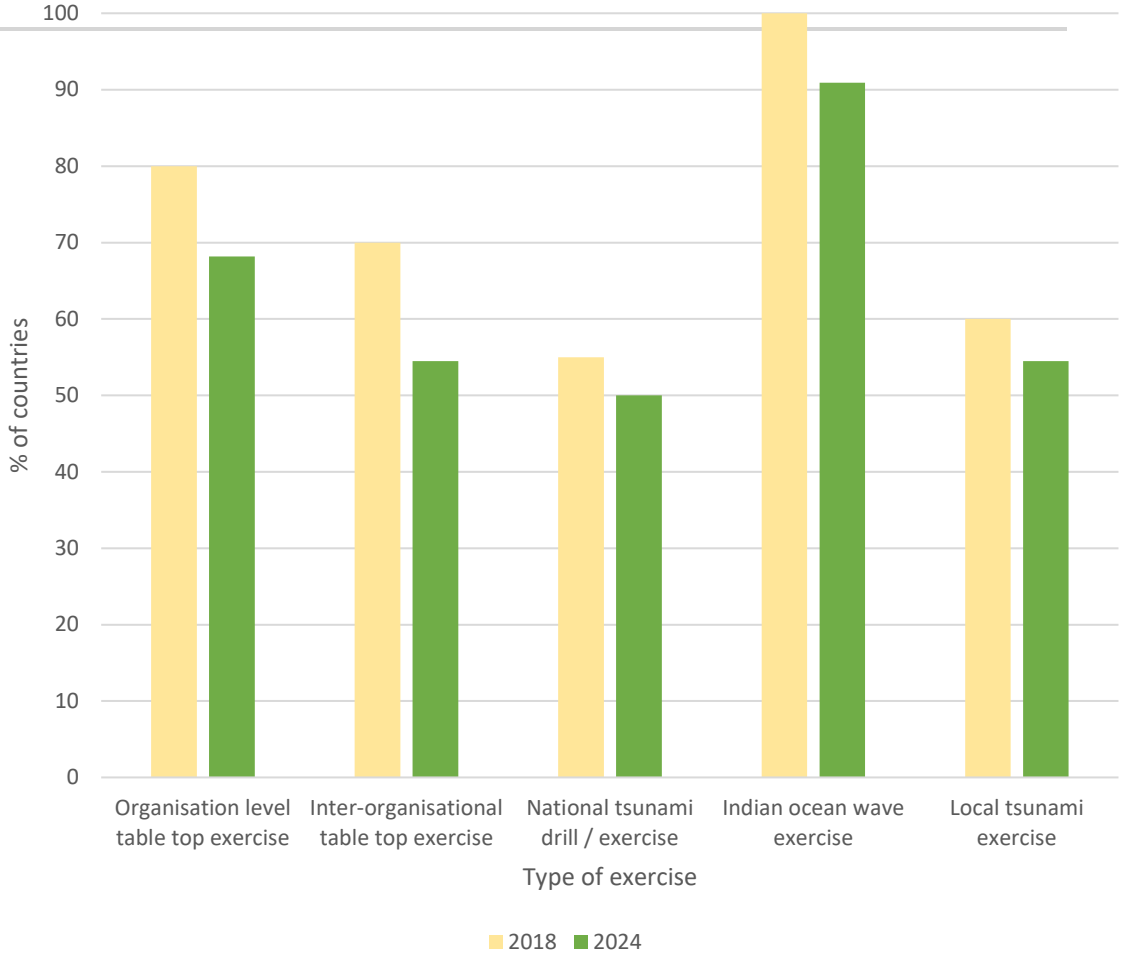


Figure 36: Types of tsunami exercise conducted

4. Tsunami Exercise:

Review Gaps and Challenges:

Level of Tsunami Exercise:

a. 14 (64%) of the respondent countries reported that they have tsunami exercises incorporated within their national policies and 14 (64%) have tsunami exercises incorporated within national guidelines. Six countries incorporated them within national policies and guidelines.

b. 21 respondent countries (96%) reported conducting tsunami exercises at one or more levels during the inter-sessional period (Figure 35).

c. Exercises were conducted at the national level within 59% of countries and at the regional, city, village and school levels in more than 40% of countries.

Type of Tsunami Exercise:

a. 20 (91%) of respondent countries reported that they took part in the Indian Ocean Wave exercise. Tabletop exercises (intra- and inter-organisational), as well as national and local tsunami exercises were all undertaken by 50% of respondent countries or more.

b. Despite this, the results show a small reduction in the conduct of all exercise types when compared to the 2018 survey 21 respondent countries (96%) reported conducting tsunami exercises at one or more levels during the inter-sessional period (Figure 35).

Recommendation:

a. Provide training and share Member States experience and best practice of different type of exercise and valuable output/outcome of each exercise (utilsing tools such as MGs)

b. Encourage countries to establish regular programme of tsunami exercise into cities, villages, communities and school as a key to community preparedness including Conduct national pre-exercise simulation between the IOWaves

5. Public Awareness: Fig 37, 38

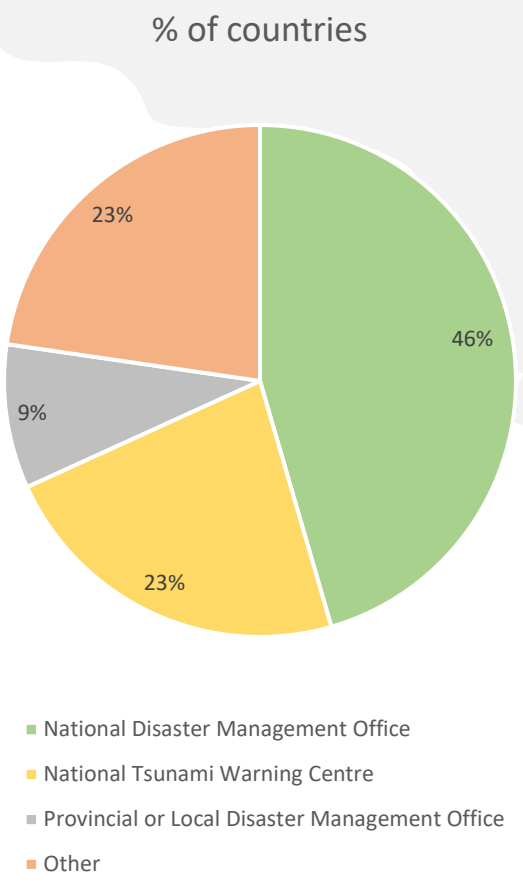


Figure 37: Organisation responsible for tsunami public awareness programmes

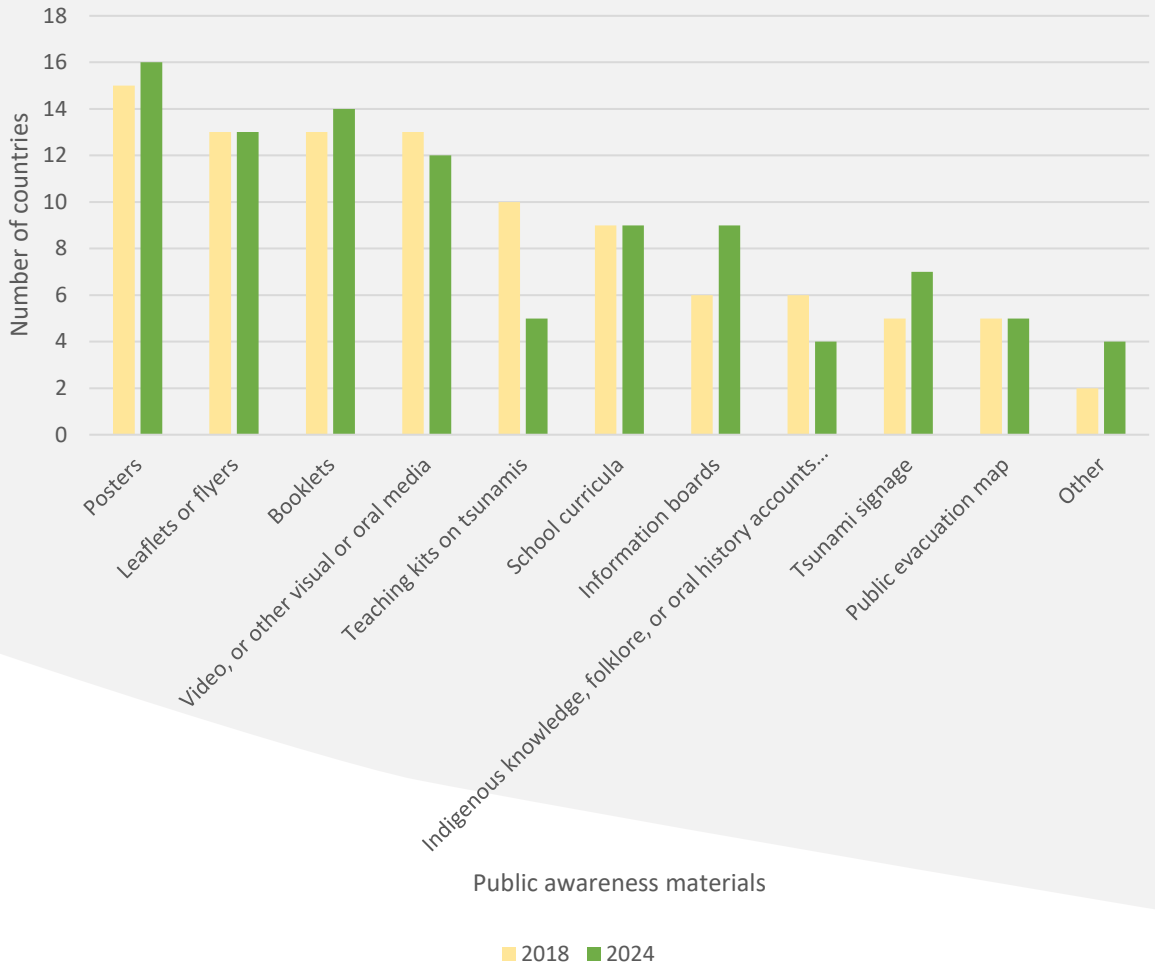


Figure 38: Types of public awareness materials

5. Public Awareness

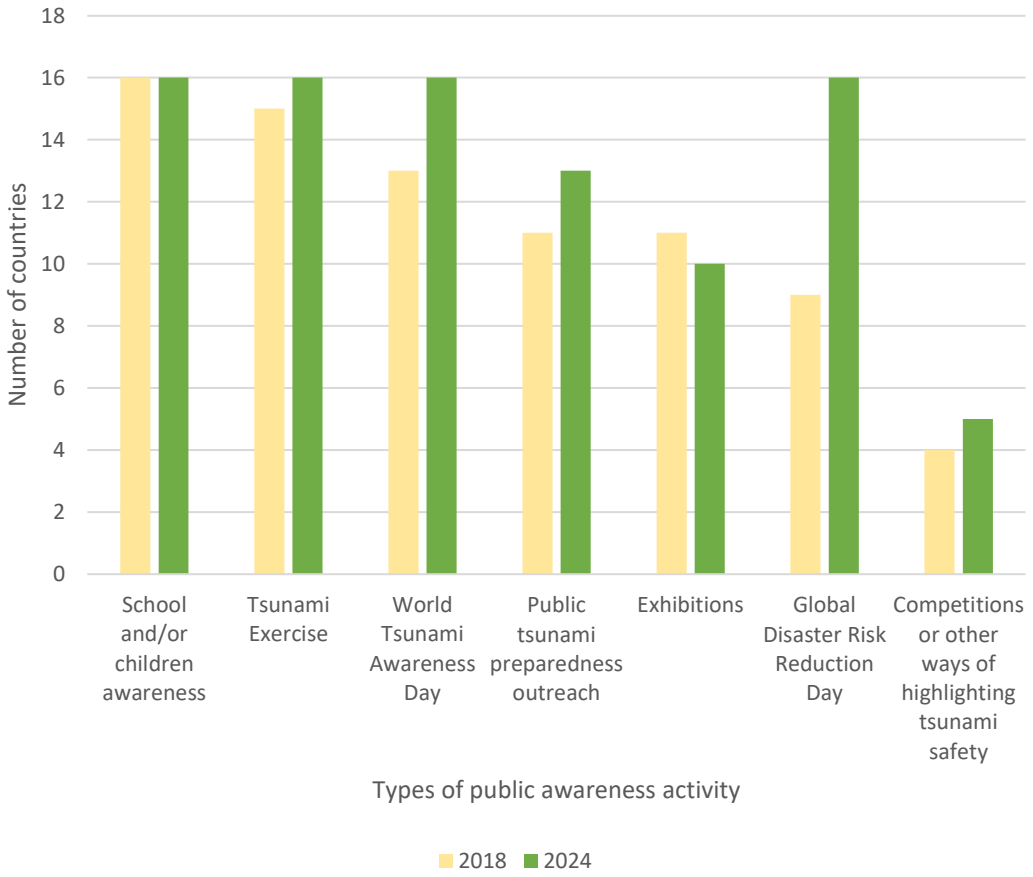


Figure 39: Types of public awareness activity

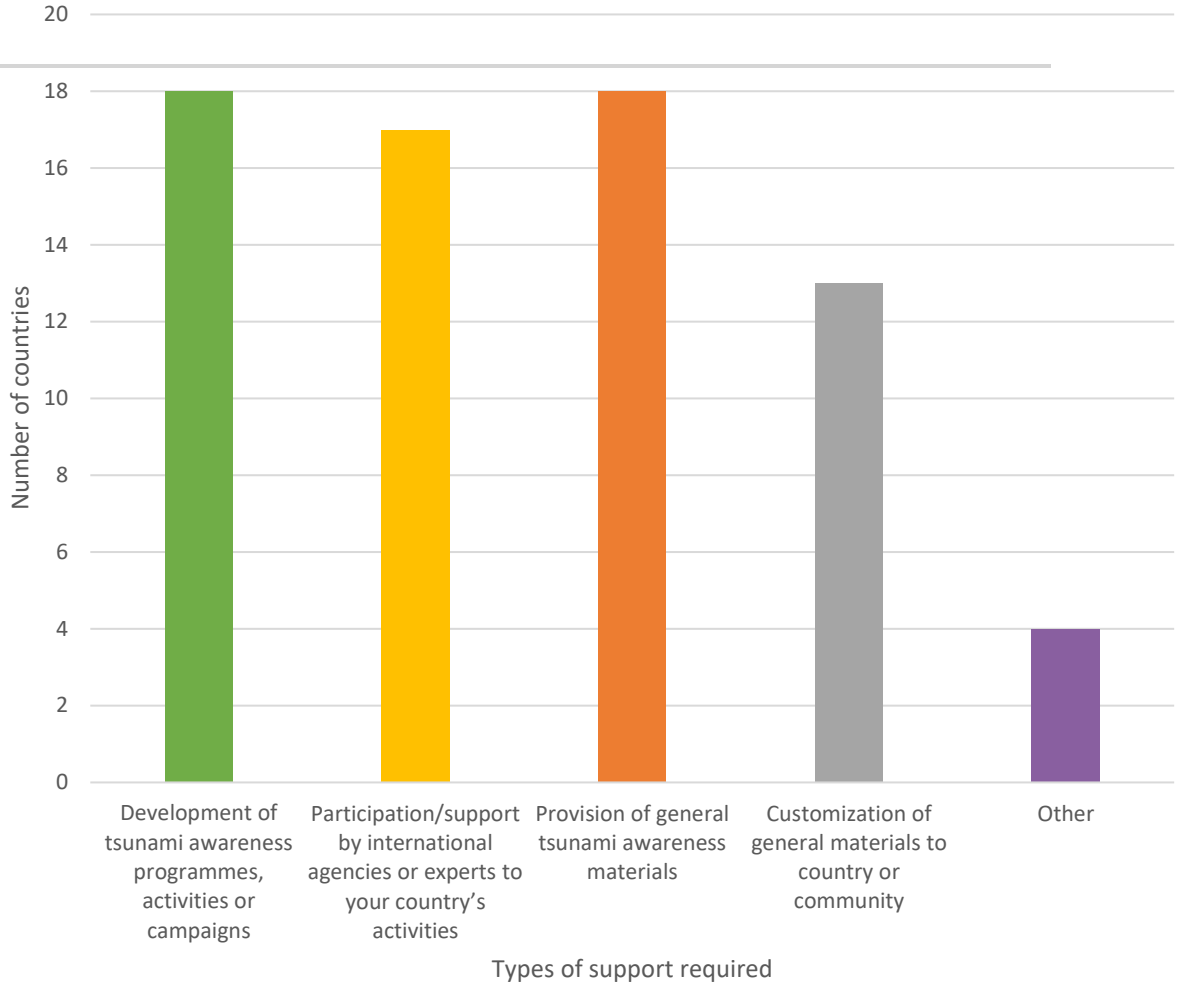


Figure 40: Types of Support Required

5. Public Awareness

Review Gaps and Challenges:

Responsible Organisation:

a. National Disaster Management Office takes responsibility (46%),
b. National Tsunami Warning Centre (23%)
c. Local Disaster Management Office (9%)
d. Several countries reported that is the responsibility of multiple organisations, including the NDMO, LDMO, NTWC and international organisations.

Type of Public Awareness Material:

a. In a similar outcome to 2018: posters, leaflets and flyers, booklets and video/oral media were identified by the majority of countries. Education materials such as information boards and school curricular (40%) were also used in many countries. Less common were the use of teaching kits, indigenous knowledge, signage and public evacuation maps. Among other responses, were a tailored-to-Australia online tsunami education resource called "Tsunami: The Ultimate Guide" and a sensitisation campaign.
b. 19 of the respondent countries (86%) confirmed that they are willing to share these education and awareness materials with the Indian Ocean Tsunami Information Centre (IOTIC) and other countries

Recommendation:

Encourage Member States to

- Utilise national and IOTIC resources
- Develop public education materials tailored for individual stakeholders through various dissemination (fliers, posters, booklet, ebook, youtube, tiktok, instagram, FB)
- Inclusive public awareness material
- Collaboration between UNESCO and UNDP for tsunami awareness materials for the school curricula in close collaboration with the Ministry of Education
- Continue to participate in International events. i.e. GPDRR, WTAD, International Day for DRR

Thank you …