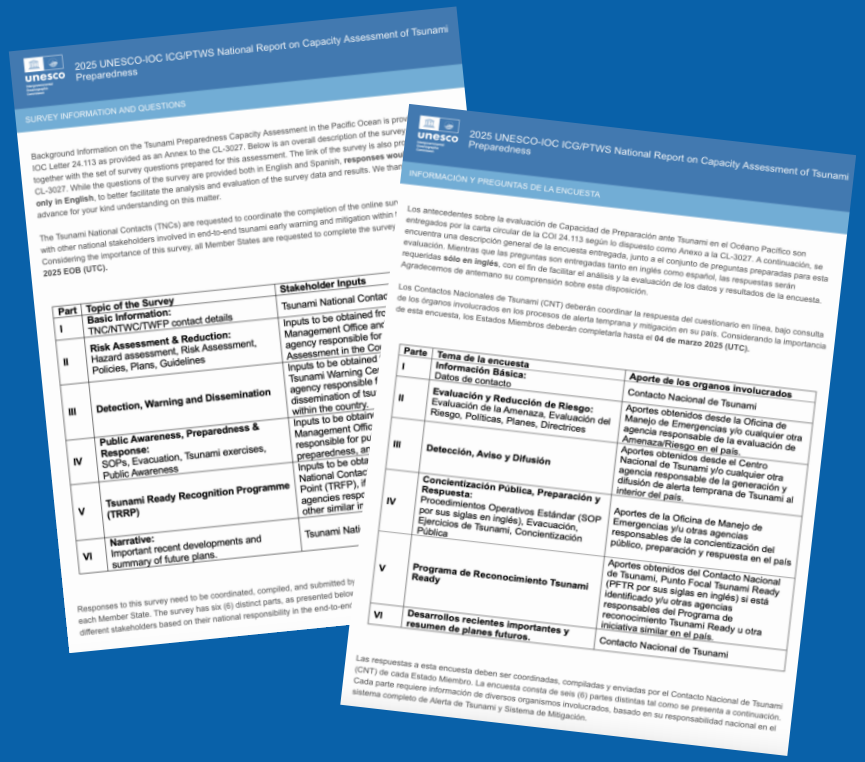
RESULTS OF THE SURVEY

II.2. DETECTION, WARNING AND DISSEMINATION



2025 UNESCO-IOC ICG/PTWS National Report on Capacity Assessment of Tsunami Preparedness

SURVEY INFORMATION AND QUESTIONS

Part	Topic of the Survey	Stakeholder Inputs
I	**Basic Information:** TNC/NTWC/TWFP contact details	Tsunami National Contac
II	**Risk Assessment & Reduction:** Hazard assessment, Risk Assessment, Policies, Plans, Guidelines	Inputs to be obtained fro Management Office and agency responsible for Assessment in the Co
III	**Detection, Warning and Dissemination**	Inputs to be obtained Tsunami Warning Ce agency responsible f dissemination of tsu within the country.
IV	**Public Awareness, Preparedness & Response:** SOPs, Evacuation, Tsunami exercises, Public Awareness	Inputs to be obtain Management Offic responsible for pu preparedness, an
V	**Tsunami Ready Recognition Programme (TRRP)**	Inputs to be obta National Contac Point (TRFP), if agencies respo other similar in
VI	**Narrative:** Important recent developments and summary of future plans.	Tsunami Nati

Responses to this survey need to be coordinated, compiled, and submitted by each Member State. The survey has six (6) distinct parts, as presented below different stakeholders based on their national responsibility in the end-to-en

2025 UNESCO-IOC ICG/PTWS National Report on Capacity Assessment of Tsunami Preparedness

INFORMACIÓN Y PREGUNTAS DE LA ENCUESTA

Parte	Tema de la encuesta	Aporte de los organos involucrados
I	**Información Básica:** Datos de contacto	Contacto Nacional de Tsunami
II	**Evaluación y Reducción de Riesgo:** Evaluación de la Amenaza, Evaluación del Riesgo, Políticas, Planes, Directrices	Aportes obtenidos desde la Oficina de Manejo de Emergencias y/o cualquier otra agencia responsable de la evaluación de Amenaza/Riesgo en el país.
III	**Detección, Aviso y Difusión**	Aportes obtenidos desde el Centro Nacional de Tsunami y/o cualquier otra agencia responsable de la generación y difusión de alerta temprana de Tsunami al interior del país.
IV	**Concientización Pública, Preparación y Respuesta:** Procedimientos Operativos Estándar (SOP por sus siglas en inglés), Evacuación, Ejercicios de Tsunami, Concientización Pública	Aportes de la Oficina de Manejo de Emergencias y/u otras agencias responsables de la concientización del público, preparación y respuesta en el país
V	**Programa de Reconocimiento Tsunami Ready**	Aportes obtenidos del Contacto Nacional de Tsunami, Punto Focal Tsunami Ready (PFTR por sus siglas en inglés) si está identificado y/u otras agencias responsables del Programa de reconocimiento Tsunami Ready u otra iniciativa similar en el país.
VI	**Desarrollos recientes importantes y resumen de planes futuros.**	Contacto Nacional de Tsunami

Las respuestas a esta encuesta deben ser coordinadas, compiladas y enviadas por el Contacto Nacional de Tsunami (CNT) de cada Estado Miembro. La encuesta consta de seis (6) partes distintas tal como se presenta a continuación. Cada parte requiere información de diversos organismos involucrados, basado en su responsabilidad nacional en el sistema completo de Alerta de Tsunami y Sistema de Mitigación.

DETECTION AND WARNING (1/11)

9a) Does your country have a national capability to assess and/or receive potential tsunami threat information and advise/warn its coastal communities?

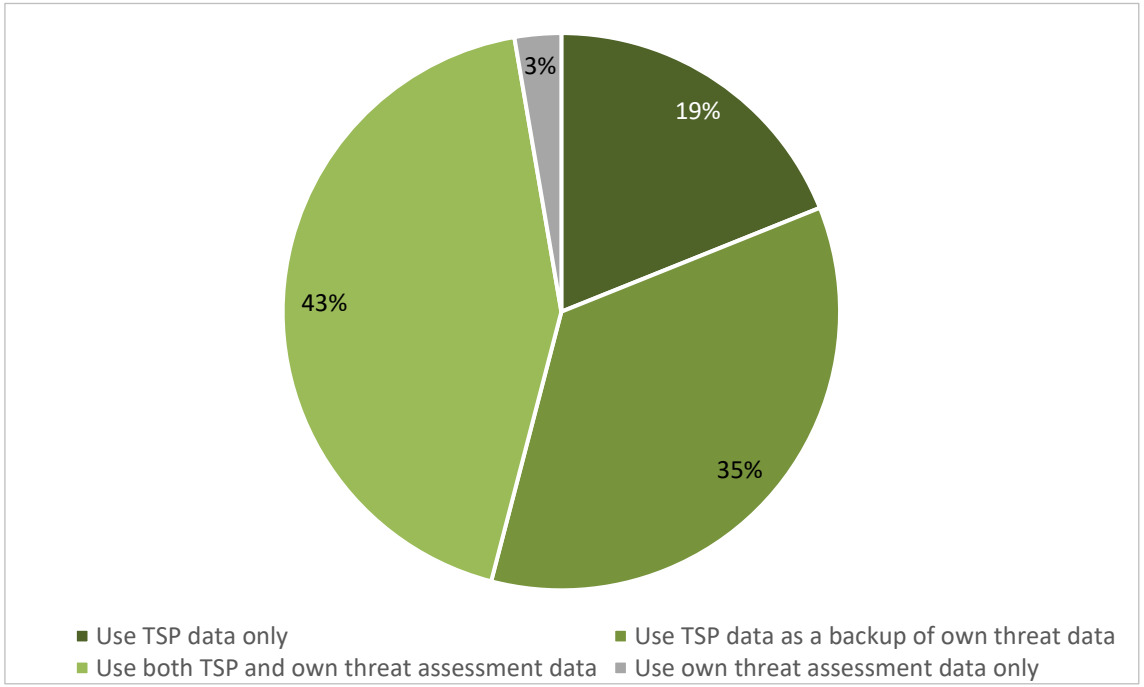
Answered: 39 Skipped: 0

- **OVERALL** - Capability for 37 countries (95%) to assess and/or receive potential tsunami threat information and advise / warn its coastal communities
- **CENTRAL AMERICAN PACIFIC COAST** – 83%
- **SOUTH CHINA SEA** – 87,5%
- **SOUTHEAST PACIFIC** – 100%
- **PACIFIC ISLAND COUNTRIES AND TERRITORIES** - 100%

DETECTION AND WARNING (2/11)

DATA USED FOR DETERMINING NATIONAL THREATS

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?



Answered: 37 Skipped: 2

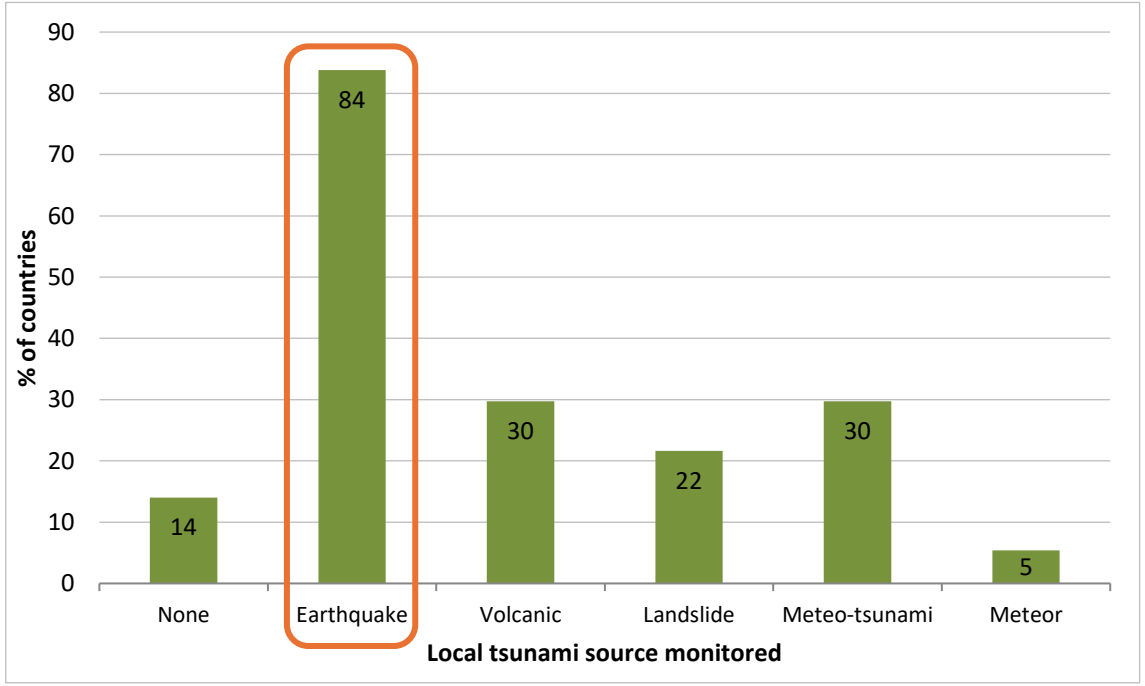
DETECTION AND WARNING (3/11)

9e) Does the organisation responsible for assessing and/or receiving potential tsunami threat information operate 24x7?
Answered: 37 Skipped: 2

- Responsible organisation operates 24x7 for 35 countries (95%)

MONITORING BY NTWCS

9c) What known local tsunami sources is your country's NTWC able to monitor?



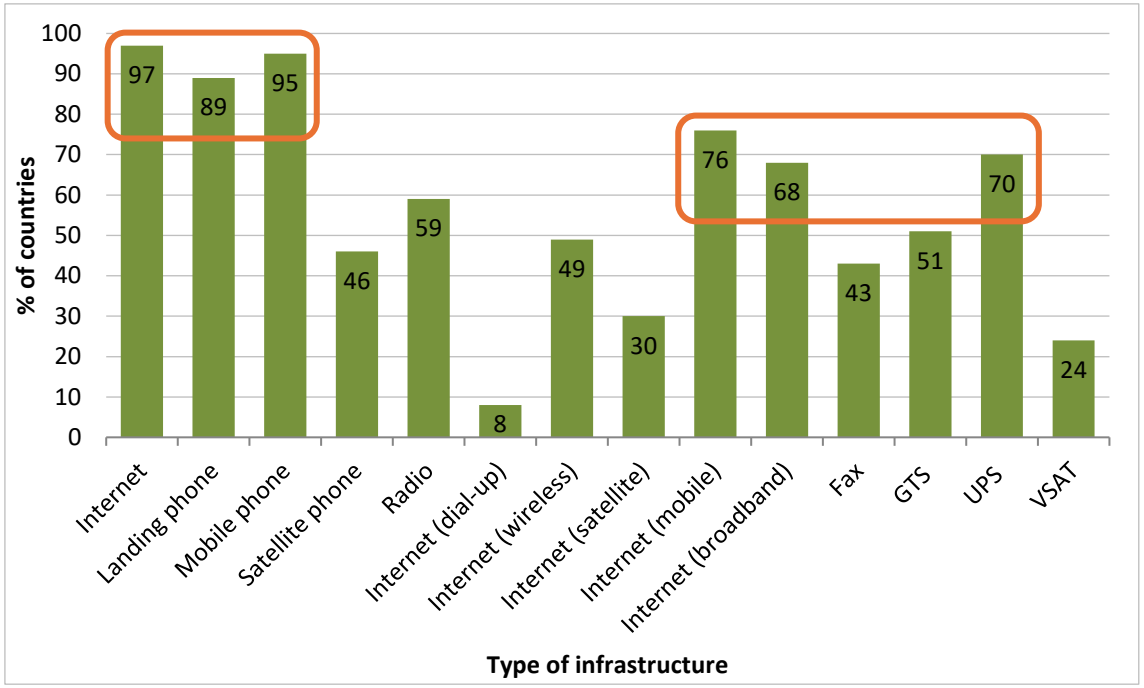
Answered: 37 Skipped: 2

- No monitoring for none of the listed sources for 5 countries (14%)
- More than one source monitored 15 countries (41%)

DETECTION AND WARNING (4/11)

TYPE OF INFRASTRUCTURE AVAILABLE

9f) What / which infrastructure is available to enable 24x7 operations?



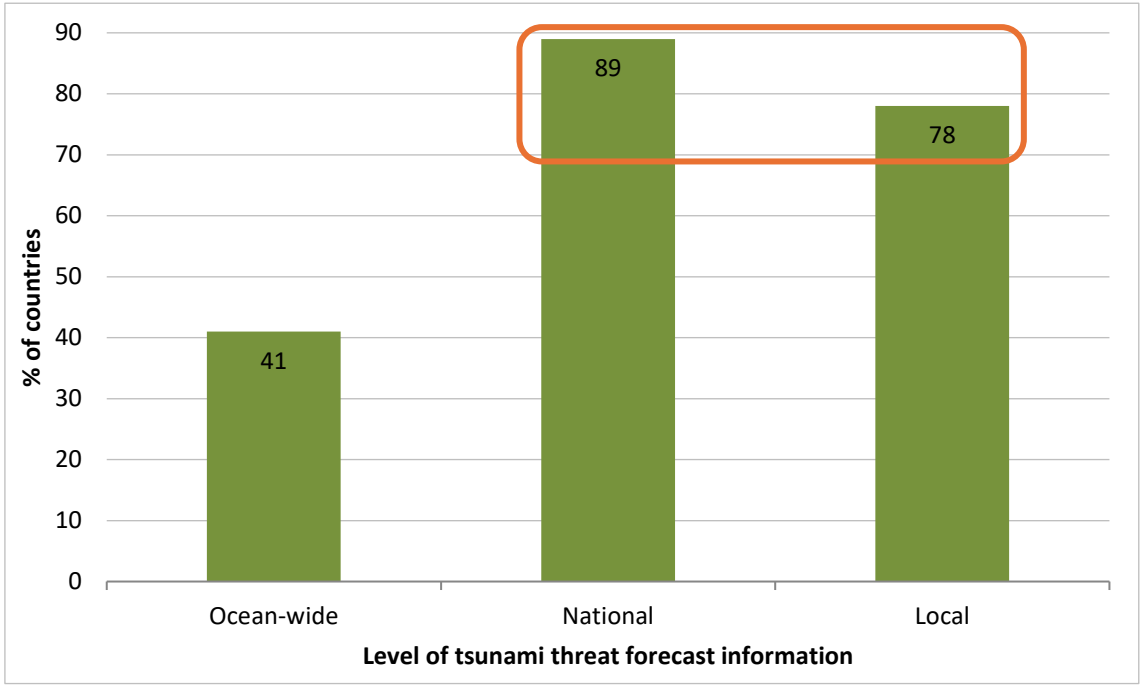
Answered: 37 Skipped: 2

- Use of at least 2 different types of infrastructures by all countries
- Other: 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

DETECTION AND WARNING (5/11)

LEVEL OF TSUNAMI THREAT FORECAST INFORMATION

9g) Which level of tsunami threat forecast information is produced by the responsible organisation?



Answered: 37 Skipped: 2

- Multiple levels information produced by 76% of the countries

DETECTION AND WARNING (6/11)

ACCESS TO SEISMIC NETWORK

• Access to both national & international networks by 27 countries (73%) • Access to either network by 7 countries (19%) • No access at all by 3 countries (8%)	9h) Does the organisation have access to national and/or international seismic networks?	Answered: 37 Skipped: 2
• National seismic data all shared in real time by 19 countries (58%) or partially shared by 12 countries (36%) • Main shared data: earthquake magnitude, location and depth	9i) Is national seismic data shared in real time?	Answered: 33 Skipped: 6
• Broadband seismometers listed accurately in the IRIS GSN by 61% of respondent countries	9k) Is the list of broadband seismometers operated by your country listed accurately in IRIS database?	Answered: 28 Skipped: 11
• Stations added by 9 respondent countries (30%) • Stations decommissioned by 3 respondent countries (10%) • No changes reported by 19 countries (63%) • Notable 23% (9 countries) skipped this question	9l) When compared to the IRIS database have you decommissioned or added broadband seismometers operated by your country?	Answered: 30 Skipped: 9

DETECTION AND WARNING (7/11)

ACCESS TO SEA LEVEL NETWORK

• Access to both national & international networks by 32 countries (86%), to either one by 2 countries / No access by 3 countries • Sources of information: national data through national communication infrastructures / international data through WMO GTS, IOC Sea level Facility, PTWC	9m) Does the organisation have access to national and/or international sea level networks?	Answered: 37 Skipped: 2
• National sea level data all shared in real time by 24 countries (71%) or partially shared by 7 countries (21%) • Main shared data: sea surface temperature, sea level height, atmospheric pressure, wind speed, wind gust and direction, water temperature, ETA • 100% of sensors share data in real time for 13 countries, 57% for 1 country	9n) Is national sea level data shared in real time?	Answered: 34 Skipped: 5
• Sea level stations accurately listed in the IOC database for 24 countries (75%)	9o) Is the list of sea level stations operated by your country listed accurately in the IOC Sea Level Station Monitoring Facility	Answered:32 Skipped: 7
• Stations added by 4 respondent countries (16%) • Stations decommissioned by 3 respondent countries (12%) • No changes reported by 18 countries (72%) • Results biased since only 25 countries answered to this question	9p) When compared to the IOC Sea Level Station Monitoring Facility, have you decommissioned or added sea level stations operated by your country	Answered:25 Skipped: 14

DETECTION AND WARNING (8/11)

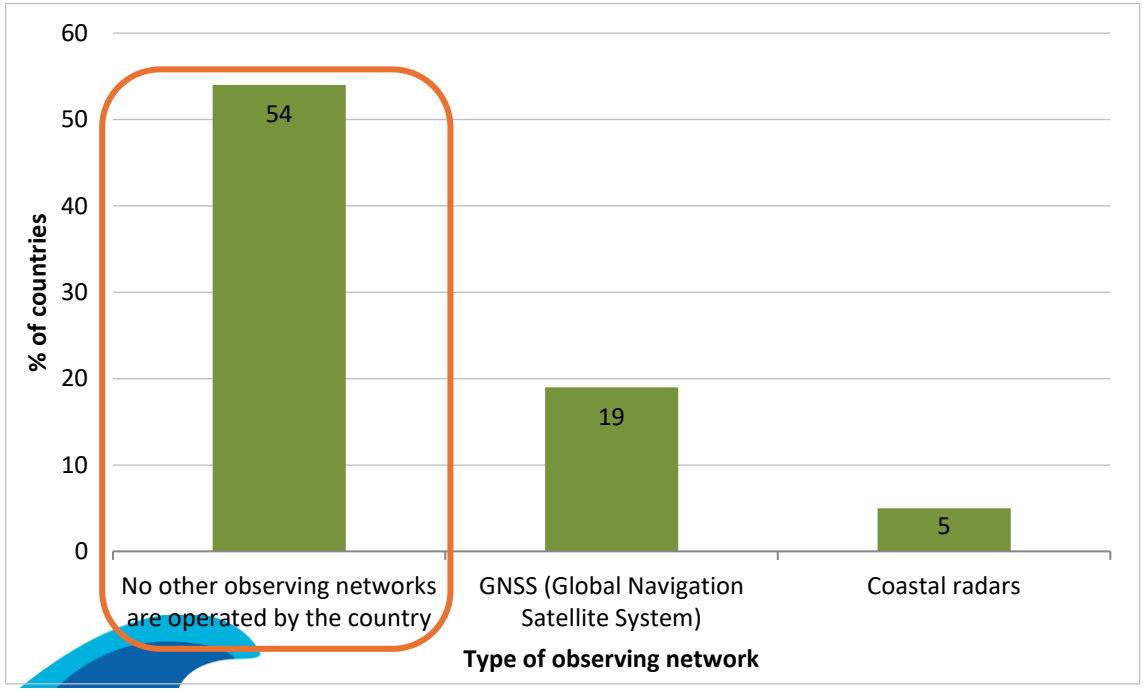
ACCESS TO GNSS NETWORK

9j) Does your organisation have access to GNSS data?
Answered: 36 Skipped: 3

- Access to GNSS network by 58% of respondent countries (21 countries)

ACCESS TO OTHER NATIONAL NETWORKS

9q) What other observing networks are operated by your country and used for tsunami early warning?



Answered: 37 Skipped: 2

- Other: 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
- Probable bias concerning GNSS network answers (21 versus 7 countries)

DETECTION AND WARNING (9/11)

COUNTRIES CAPACITIES

- 78% YES (29 respondent countries)
- Software tools used:
  - *Seismic data:* Atlas, SeisComP (3 & 5), TOAST, SWIFT, EQP, SEISAN, Antelope (TM), SIGMA
  - *Sea level data:* Tsunami database, Hydra, TTT, Moment tensor and tsunami analysis software, TsuCAT, Tsunami synthesizer model, SIPAT, TeWS Visualization, IOC Sea Level Station Monitoring Facility, IOC Tide Tool, SIFT inversion of DART data, MOST

9r) Does the organisation have the capability of analysing real-time seismic and sea-level data for potential tsunami threat?

Answered: 37
Skipped: 2

- 72% YES (26 respondent countries)
- Modelling tools: ComMIT, Tsunami Synthesizer Model, GPU-based tsunami model, TOAST, RCET SIFT, SIPAT, WINITDB, CISN, EMWIN, TsuCAT, TsuSim (EasyWave), JAGURS, TOAST, TUNAMI, COMCOT, MOST, in-house-developed tools
- Used data: bathymetry (GEBCO, NAMRIA, ETOPO), topography (NAMRIA IfSAR, SRTM), source parameters, shoreline data (CoastSaT, NAMRIA)

9s) Does the organisation have the capability for tsunami modelling to support generation of threat forecasts?

Answered: 36
Skipped: 3

- 76% YES (28 respondent countries)

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?

Answered:37
Skipped: 2

DETECTION AND WARNING (10/11)

PARTICIPATION TO COMMUNICATION TESTS AND EXERCISES

9w) Did your country's NTWC and/or TWFP participate in the regular communications tests conducted by the PTWS TSPs?
Answered: 37 Skipped: 2

- 97% participation at communication tests (36 countries)

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?
Answered: 37 Skipped: 2

- 92% participation at national and/or international exercises (e.g. PacWave, Aelan Wave, CaribeWave, IOWave, PacifEX)

DAMAGING TSUNAMIS SINCE 2005

9y) Since 2005 was your country impacted by any damaging tsunami?
Answered: 37 Skipped: 2

- 51% YES
- Most cited tsunamis with an earthquake source, particularly the 2011 Tohoku earthquake in Japan
- Mention of the 2022 Hunga Tonga Hunga Ha'Apai (HTHH) volcanic eruption by several countries, bringing out another tsunami source

DETECTION AND WARNING (11/11)

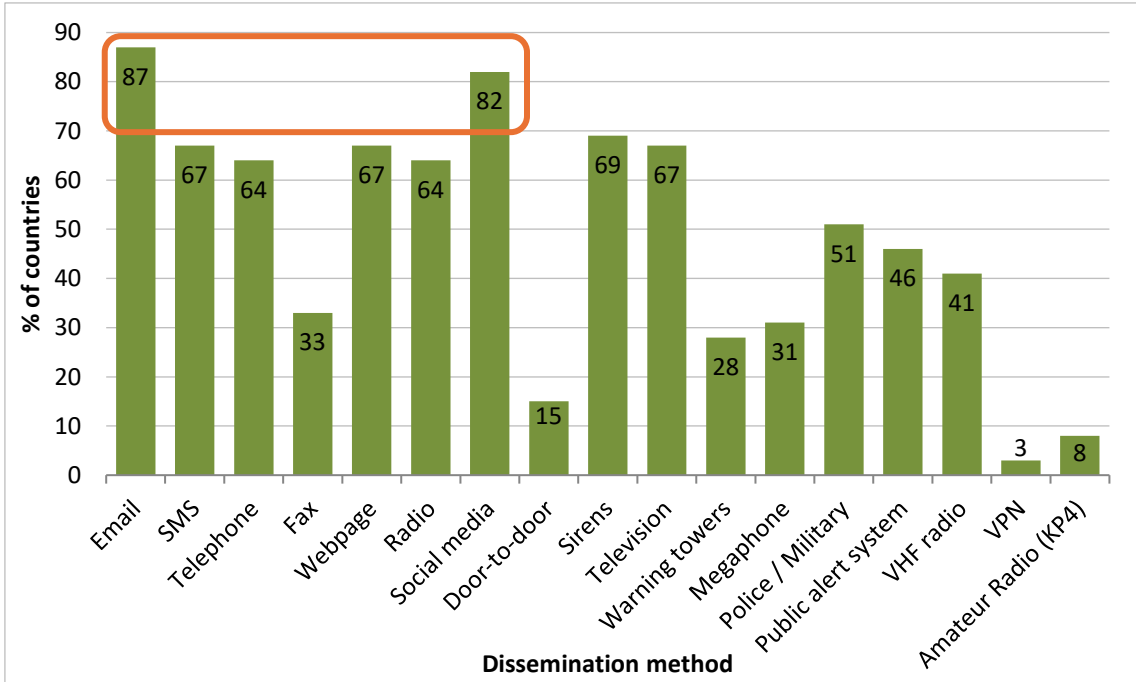
MAJOR ENHANCEMENTS TO SOPS AND ALERTING SINCE 2020

9z) Since 2020, were there any major enhancements in your national warning SOPs and alerting?
Answered: 36 Skipped: 3

- 27 countries reported a wide range of improvements, including:
  - Review of national warning SOPs and/or response plans
  - Improvement of seismic networks, 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, 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 EEW to send warning messages, improvement of communication systems, use of CBS even for low level tsunami forecast, upgrade and increasing number of siren stations, inclusion of EAWM
  - Introduction of constant training of the different stakeholders with exercises

DISSEMINATION

METHODS



Answered: 39 Skipped: 0

10a) How is the tsunami information (warning, public safety action, etc) disseminated within country?

- Multiple ways used by 100% of the countries, at least two
- Other: dedicated lines, community word distribution, cell broadcast, mobile applications, communities' coconut wireless network and traditional instruments

10e) Does your country's national tsunami warning system utilize the Common Alert Protocol (CAP) for the dissemination of warnings?

Answered: 37 Skipped: 2

- 32% of the countries with a national tsunami warning system using CAP