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ICG/PTWS Tsunami Ready Equivalency Guidelines

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1.   Introduction

In December 2004, 227,899[1] people lost their lives and around US$10 billion were estimated as overall economic losses in the 14 countries affected by the 9.1-magnitude Indian Ocean earthquake[2]. In response to the devastation caused by the earthquake and consecutive tsunami, the international community reinforced and expanded its initiatives to reduce the tsunami-related risk of coastal communities worldwide.

In response, the Tsunami Unit of the Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC) was established. It aims to prevent the loss of lives and livelihoods that are caused by tsunamis, offering its support to IOC Member States in assessing tsunami risk, implementing Tsunami Early Warning Systems (EWS) and educating communities at risk about preparedness measures[3].

On 5 December 2017, the United Nations declared that a Decade of Ocean Science for Sustainable Development would be held from 2021 to 2030. The Ocean Decade provides a

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[1] The Munich Re Group. Annual Review: Natural Catastrophes 2004, Knowledge Series, Topics Geo, 2005, 60 p.

[2] IFRC, 2013.

[3] See more about the UNESCO/IOC here: http://www.ioc-tsunami.org.

common framework to ensure that ocean science can fully support countries to achieve the 2030 Agenda for Sustainable Development.

The Ocean Decade provides a 'once in a lifetime' opportunity to create a new foundation across the science-policy interface to strengthen the management of our oceans and coasts for the benefit of humanity. The Ocean Decade will strengthen the international cooperation needed to develop the scientific research and innovative technologies that can connect ocean science with the needs of society.

One of the seven outcomes of the Decade is 'A Safe Ocean' where life and livelihoods are protected from ocean hazards, such as tsunamis In June 2022, the IOC Assembly approved the establishment of the IOC Ocean Decade Tsunami Programme, with an associated aim of making '100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Recognition Programme and other initiatives.'

2. The Tsunami Ready Recognition Programme and the concept of 'equivalency'

The Tsunami Ready Recognition Programme has been promoted in some form since 2015 as an international performance-based community recognition pilot consisting of key actions that help to reduce tsunami-related risks to individuals and communities. Formal guidance (IOC Manual and Guide 74) was published in 2022.

The aim of the programme is ultimately to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods and property from tsunamis in different regions, and to ensure a structural and systematic approach to building community preparedness.

The UNESCO/IOC Tsunami Ready approach is intended to:

- Bring the ownership of preparedness to the community.
- Ensure structural and systematic approach in building community preparedness.
- Be a collaborative effort to achieve a level of tsunami preparedness through the fulfilment of a set of established best practice guidelines and indicators.
- Be implemented on a voluntary basis that entails a "bottom-up" process with the community taking the initiative to build its own capacity. This approach ensures ownership of the process that strengthens its sustainability.

Among the benefits of implementing the UNESCO/IOC Tsunami Ready Recognition Programme are that it:

- Strengthens tsunami preparedness of coastal communities through:
  - Improved assessments of Hazards, Risk, Inundation, and Evacuation.
  - Improved early warning systems/warning chain.
  - Improved public awareness, understanding of tsunami threat and preparedness.
  - Tested awareness and preparedness through regular exercises.
- Strengthens the relationship between tsunami scientists, warning officials and local communities.
- Strengthens preparedness for other hazards.
- Improves community planning.
- Encourages a consistent and sustainable approach to disaster risk reduction.

- Contributes to the aims of the Sendai Framework for Disaster Risk Reduction and Sustainable Development Goals.
- Provides international recognition from UNESCO IOC as Tsunami Ready Community.

"Tsunami Ready" recognition does not mean that a community is tsunami proof; rather, it is an acknowledgement and recognition that a community has adopted mitigation measures to cope with its tsunami risk. Through the Tsunami Ready Recognition Programme, communities become aware of the risks they face from tsunamis and take steps to address them. Since then and to date, multiple communities in the Pacific, Caribbean, Mediterranean and Indian Ocean have received Tsunami Ready Recognition.

2.1. Strategy, Indicators and Implementation of Tsunami Ready

The Tsunami Ready Recognition Programme Guidelines list strategies that must be implemented for a community to be recognized as Tsunami Ready. These strategies are defined by 12 key indicators covering I. Assessment, II. Preparedness and III. Responses actions (table below).

The Programme is facilitated by each region's the UNESCO/IOC Tsunami Information Centres, e.g., the International Tsunami Information Centre for the PTWS. The formal recognition process follows standard guidelines (UNESCO/IOC Manual and Guides 74, 2022).

Successful implementation of the Programme requires inclusive oversight through governance at a national and local level, and confidence that the community will be able to sustain the established indicators for at least four years. Communities must have a voluntary interest to be recognized as 'Tsunami Ready' under the UNESCO/IOC programme, and recognition is renewed on a four-yearly basis.

	TSUNAMI READY INDICATORS
I	**ASSESSMENT (ASSESS)**
1	**ASSESS-1**. Tsunami hazard zones are mapped and designated.
2	**ASSESS-2**. The number of people at risk in the tsunami hazard zone is estimated.
3	**ASSESS-3**. Economic, infrastructural, political, and social resources are identified.
II	**PREPAREDNESS (PREP)**
4	**PREP-1**. Easily understood tsunami evacuation maps are approved.
5	**PREP-2**. Tsunami information including signage is publicly displayed.
6	**PREP-3**. Outreach and public awareness and education resources are available and distributed.
7	**PREP-4**. Outreach or educational activities are held at least three times a year.
8	**PREP-5**: A community tsunami exercise is conducted at least every two years.
III	**RESPONSE (RESP)**
9	**RESP-1**. A community tsunami emergency response plan is approved.
10	**RESP-2**. The capacity to manage emergency response operations during a tsunami is in place.
11	**RESP-3**. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.
12	**RESP-4**. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

2.2.   The need to consider equivalency

The implementation of the Tsunami Ready Recognition Programme was intended to be a key tool to achieving the goal of '100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030'. The programme therefore is generally used as the framework and language to measure tsunami preparedness towards this global goal.

While wherever possible, it would be preferred that the Tsunami Ready Recognition Programme was directly implemented, this may not always be practical in countries which have existing tsunami preparedness programmes. In such cases, the implementation of formal recognition may result in additional costs, duplication of strategies, and the risk of confusion between the global, national and local frameworks. It is therefore recognized that an approach is needed to enable such countries to contribute to the UN Ocean Decade goal.

This document therefore presents Standard Guidelines for the description and reporting of existing tsunami risk management strategies in a manner similar to the Tsunami Ready Recognition Programme, with the following principles:

- It provides similarly strong motivation to ensure tsunami resilience.
- The twelve indicators of the Tsunami Ready Recognition Programme are used to promote global consistency in reporting and measurement of tsunami preparedness.
- It builds upon a state's existing programmes, capacities and strengths.
- It contributes to Intergovernmental Coordination Group progress reporting for the UN Ocean Decade Tsunami Programme.
- Where possible, the Tsunami Ready Recognition Programme should be implemented as a first option.

3.   Implementation of the Equivalency Approach

Implementation of the "equivalency' approach is in three parts which together ensure that appropriate governance structures and access to expertise is in place, assessment is done against the Tsunami Ready Recognition Programme framework, and that the outcomes contribute to the UN Ocean Decade reporting.

3.1. Identification or establishment of national governance

National governance should be in place in order to provide oversight of this process. In many cases an existing governance body may be able to be identified for this purpose to avoid duplication, or a bespoke National Tsunami Ready Board or equivalent could be established.

Such a governance mechanism should normally consist of designated representatives of:

- National Emergency Management Agency or Disaster Management Office
- National Tsunami Warning Centre
- Tsunami National Contact
- The scientific community

It may also contain other guests either at discretion of the Chair, or relevant to other purposes, such as NGOs for community-based disaster risk reduction.

The functions of this governance group will be to:

- Provide expert interpretation of the tsunami ready indicators in the country/territory's own context
- Provide expert commentary on the definition of community in the country/territory's own context
- Coordinate and oversee implementation of this equivalency process

Should formal Tsunami Ready Recognition appropriately wish to be pursued by any individual community, this governance structure may be able to be utilized for the recognition process as per IOC MG 74.

3.2 Assessment of tsunami preparedness and resiliency

➢ Define Community

In order to be able to measure or evaluate progress towards indicators, the most pragmatic definition of 'community' must be considered, so that assessment can be conducted in a meaningful and sustainable manner.

This is generally recommended to be the most appropriate structure or authority that has legislative responsibilities or governance authority with respect to disaster management. It is important that the level of community identified is appropriate for each country/territory's' existing disaster management preparedness context, and it is likely that this will align closely with existing reporting where this exists.

A country should identify how they are going to measure proportional national progress, either through identifying the total number of communities, or some other metric.

➢ Conduct a cross-referencing process

At national level, a review should be conducted for all existing activities and strategies that contribute to tsunami preparedness as described by the Tsunami Ready Recognition Programme indicators. The purpose of this is to identify where Tsunami Ready indicators have already been met through existing national or community disaster management or tsunami preparedness efforts. Where indicators are not met, it could be considered where improvements could be made.

Examples of existing material may include, but is not limited to:

- Disaster Risk Reduction Strategies
- Community or National Response Plans
- National Warning Centres, Systems and Plans
- Legislation and Frameworks
- Community or National reporting
- Hazard or Evacuation Maps
- National or community outreach and awareness materials

The cross-referencing guide in Annex 2 can be used to help compare country activities in a 'Tsunami Ready' format. The approach is deliberately intended to enable qualitative assessment, even when quantitative measures don't exist. This means, that even if the community's existing reporting to the state does not allow for explicit determination of preparedness activities, if it is believed that known or implied preparedness activities contribute to an indicator this can be recorded as justification to meet the overall indicator. An example of this would be when laws related to disaster prevent mandate certain activities to occur in the community.

This review, along with supporting documentation such as plans, should then be verified by the established governance mechanism (NTRB or equivalent). The cross-referencing process should be completed at least once every four years, in alignment with the Tsunami Ready Recognition Programme renewal timeframe.

3.3 Reporting of Progress

PTWS Member States should report the progress of implementation of either Tsunami Ready Recognition Programme or through the equivalency approach through national reporting to the Intergovernmental Coordination Group (ICG) operated in the region.

Future PTWS KPI and National Reporting changes are yet to be finalized and implemented, but the reporting should be along the lines of the following:

What % of your at-risk communities are 'prepared for and resilient to tsunami' [or are consistent with the Tsunami Ready Framework].

4.   Resources Needed

The intent of the Tsunami Ready Equivalency Approach is it builds upon a state's existing programmes, capacities and strengths. Resources additional to existing disaster management programmes should practically be limited to national effort to facilitate the administrative application of this guidance, and capability committed to the governance function.

This section will be further informed by a pilot of this guidance.

5.   Tools and References

The following list offers information resources that may be appropriate reference for the implementation of this approach:

IOC Manuals and Guides 74 Standard Guidelines for the Tsunami Ready Recognition Programme,   presents the Standard Guidelines for the Tsunami Ready Recognition Programme, on which this equivalency approach is based. It includes the framework and background information, as well as further detail on the indicators and a list of available tools and references. This may be useful for comparison when undertaking the self-assessment process.

Click here to see the document.

IOC Tsunami Ready Programme Website consolidates official resources for Tsunami Ready, including a Tsunami Ready lecture series, recognised community map viewer, updates and other tools.

Click here to explore the web pages.

This section will be further informed by a pilot of this guidance.

Annex 1. Glossary of Terms

Where applicable, definitions were taken from the following references:

UNDRR, 2017. Terminology, online glossary, https://www.undrr.org/terminology

UNESCO/IOC. 2019. *Tsunami Glossary*, fourth edition. Paris, UNESCO, IOC Technical Series, 85. (IOC/2008/TS/85 Rev.4)

UNESCO/IOC. 2020. *Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises.* Paris, UNESCO, IOC Manuals and Guides, 82. (IOC/2020/MG/82, Sup 1 and 2)

TERM	DEFINITION
Tsunami Response Plan (TRP)	A document maintained by various jurisdictional levels setting procedures for responding to a potential or real tsunami threat. It should include the following: a. Describe how people and property will be protected. b. Detail who is responsible for carrying out specific actions. c. Identify the personnel, equipment, facilities, supplies and other resources available. d. Outline how all actions will be coordinated. Could also be called an Emergency Operations Plan (EOP).
Inundation	The horizontal distance inland that a tsunami penetrates, generally measured perpendicularly to the shoreline.
Local Government	A county, parish, borough, municipality, city, town, township, local public authority, indigenous groups, intrastate district, council of governments, regional or interstate government entity, or agency or instrumentality of a local government.

Recognised Community (of the Tsunami Ready Recognition Programme)	A national/territorial/local government entity, or a local community, that has successfully obtained recognition by meeting the Tsunami Ready Recognition Programme indicators.
Response Plan	A document that establishes the framework for a response process. It includes a descriptor of the hazard or hazards that it applies to, sets the responsibilities of all the stakeholders, and provides an outline of processes – i.e. thresholds, sequence, timelines, mechanisms, systems, etc. to respond quickly and effectively.
Tsunami	Japanese term meaning wave ("nami") in a harbour ("tsu"). A series of travelling waves of extremely long length and period, usually generated by disturbances associated with earthquakes occurring below or near the ocean floor. (Also called seismic sea wave and, incorrectly, tidal wave). Volcanic eruptions, submarine landslides, and coastal rock falls can also generate tsunamis, as can a large meteorite impacting the ocean. These waves may reach enormous dimensions and travel across entire ocean basins with little loss of energy. They proceed as ordinary gravity waves with a typical period between 10 and 60 minutes. Tsunamis steepen and increase in height on approaching shallow water, inundating low-lying areas, and where local submarine topography causes the waves to steepen, they may break and cause great damage. Tsunamis have no connection with tides; the popular name, tidal wave, is entirely misleading. Tsunamis are classified as local, regional, or distant, depending on the relative area of generation and the coastlines impacted.
Tsunami Evacuation Map	A drawing or graphical representation that outlines danger (hazard) zones and designates limits beyond which people must be evacuated to avoid harm from tsunami waves. Evacuation routes (and assembly areas) are sometimes designated to ensure the efficient movement of people out of the evacuation zone to evacuation shelters. Tsunami evacuation maps should be based on tsunami inundation model outputs or the best available science.

Tsunami Evacuation Zone	Pre-identified region or area determined to be a safe distance away from locations vulnerable to tsunami impact.
Tsunami Hazard Zone (Tsunami Inundation Zone)	The area expected to be flooded or inundated by water in coastal areas. Hazard is synonymous with inundation in this sense, even though there are instances where simple inundation (flooding) may not necessarily be hazardous.
Tsunami Information Centres (TIC)	Centres which provide education, outreach, technical and capacity building assistance to Member States and the public in preventing, preparing and mitigating measures for tsunamis. Among other activities, the centres manage post-event performance surveys, serve as a resource for the development, publication and distribution of tsunami education and preparedness materials and information on tsunami occurrences, and may support risk assessment and mitigation activities. A TIC has been established in each of the regional tsunami warning systems within the ICG framework.
Tsunami Ready Boards	Responsible for general oversight of the Country Tsunami Ready Recognition Programme. Maintains indicators. Reviews existing and proposed changes to Country Tsunami Ready Recognition Programme indicators and publishes updates as needed. Reviews and approves Tsunami Ready Recognition Programme applications for communities. Membership, representative of: • National Emergency Management or Disaster Management Office (Chair) • National Tsunami Warning Centre • Tsunami National Contact • Guests at discretion of NTRB Chair, such as the Regional TIC, scientific community, Meteorological Service.

Annex 2. Tsunami Ready Equivalency Indicator Cross-Reference Guide

Tsunami Ready Indicator Fulfillment Guide for Equivalency		
I. ASSESSMENT Indicators (ASSESS)		
ASSESS-1	Tsunami hazard zones are mapped and designated.	☐ Verified
How does the community (quantitatively or qualitatively) understand the area of potential tsunami hazard, with respect to national and / or international standards?		
ASSESS-2	The number of people at risk in the tsunami hazard zone is estimated	☐ Verified
How does the community (quantitatively or qualitatively) understand the number of people exposed to tsunami hazards, in order to guide response planning such as evacuation?		
ASSESS-3	Available economic, infrastructural, political, and social resources are identified	☐ Verified
How does the community (quantitatively or qualitatively) identify resources that could be used to reduce tsunami risk?		

II. Preparation Indicators (PREP)		
PREP-1	Easily understood tsunami evacuation maps are approved.	☐ Verified
How does the community (quantitatively or qualitatively) prepare for evacuation?		
PREP-2	Tsunami information is publicly available or displayed	☐ Verified

	How does the community (quantitatively or qualitatively) access evacuation information? 11		
PREP-3	Outreach and public awareness and education resources are available and distributed.	☐	Verified
	How does the community (quantitatively or qualitatively) share evacuation information?		
PREP-4	Outreach or educational activities are held regularly	☐	Verified
	How does the community (quantitatively or qualitatively) promote evacuation information?		
PREP-5	A community tsunami exercise is conducted regularly according to a plan or programme (or equivalent).	☐	Verified
	How does the community (quantitatively or qualitatively) practice tsunami evacuation?		

	IV. Response Indicators (RESP)		
RESP-1	A community tsunami emergency response plan is approved.	☐	Verified
	How does the community (quantitatively or qualitatively) plan to address responding to a tsunami?		
RESP-2	The capacity to manage emergency response operations during a tsunami is in place.	☐	Verified

How does the community (quantitatively or qualitatively) ensure that the right resources and processes are in place to respond to a tsunami? 12		
RESP-3	Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place	☐ Verified
How does the community (quantitatively or qualitatively) receive official tsunami alerts?		
RESP-4	Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place	☐ Verified
How does the community (quantitatively or qualitatively) further disseminate or communicate tsunami alerts to individuals?		