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Standard Guidelines for the Tsunami Ready Recognition Programme

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A Tsunami Ready recognition does not imply approval or confirmation that a community can or will perform at a certain level in case of a tsunami. Tsunami Ready recognition does not mean that a community is tsunami proof; it is rather an acknowledgment and recognition of the measures adopted by the community to cope with their tsunami risk.

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1 Table of Contents

ANNEXES

Acronyms

CARIBE-EWS	Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
CG	Coast Guard
CTIC	Caribbean Tsunami Information Centre
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EAS	Emergency Alert System
EOC	Emergency Operations Centre
EWS	Early Warning System
ICG	Intergovernmental Coordination Group (IOC)
IOC	Intergovernmental Oceanographic Commission of UNESCO
IOTIC	Indian Ocean Tsunami Information Centre
IOTWMS	Indian Ocean Tsunami Warning and Mitigation System
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITIC	International Tsunami Information Center
ITIC-CAR	International Tsunami Information Centre, Caribbean Office (formerly NOAA Caribbean Tsunami Warning Program)
M&G	IOC Manual and Guides series
NEAM	North-Eastern Atlantic and Mediterranean
NEAMTIC	Tsunami Information Centre for the North-Eastern Atlantic and Mediterranean and Connected Seas
NEAMTWS	Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas
NOAA	National Ocean and Atmospheric Administration (US)
NTRB	National Tsunami Ready Board
NTWC	National Tsunami Warning Centre
NWS	National Weather Service (US)
PTWS	Pacific Tsunami Warning and Mitigation System
RTRB	Regional Tsunami Ready Board
SDG	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction
SHOA	Servicio Hidrográfico y Oceanográfico de la Armada de Chile
SOP	Standard Operating Procedures
TEMPP	Tsunami Evacuation Maps, Plans and Procedures
TIC	Tsunami Information Centre
TNC	Tsunami National Contact
TOWS-WG	Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (IOC)
TRB	Tsunami Ready Board
TRLC	Tsunami Ready Local Committee
TRP	Tsunami Response Plan
TSP	Tsunami Service Provider
TWC	Tsunami Warning Centre

TWFP	Tsunami Warning Focal Point
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO/IOC	Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization
UNGA	United Nations General Assembly
US	United States of America

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].

Since 2015, the UNESCO/IOC has been promoting the Tsunami Ready Recognition Programme as an international performance-based community recognition pilot consisting of key actions that help to reduce tsunami-related risks to individuals and communities. Through the Tsunami Ready Recognition Programme, communities become aware of the risks they face from tsunamis and take steps to address them.

Figure 1. Recognition sign delivered to St Kitts & Nevis, in 2021.

To support current and future pilots, UNESCO/IOC commissioned the review and analysis of the Tsunami Ready Guidelines, which were initially established in the Caribbean, with the purpose of expanding the implementation of the programme globally. To this end, a desk-based review of all key documents and literature was conducted to assess the existing frameworks, documents and additional literature about the implementation of the Tsunami Ready Recognition Programme in different regions and countries. Likewise, interviews with experts on the Tsunami Ready Recognition Programme, as well as an online survey among relevant and experienced users, were conducted with the purpose of having a better understanding of the areas to be reinforced.

This document presents the Standard Guidelines for the Tsunami Ready Recognition Programme based on the review process undertaken. After this introduction, the second section of this manual includes the framework and background information; the third section identifies key issues concerning the Tsunami Ready Recognition Programme and its methodological references; the fourth section presents the indicators to achieve the Tsunami Ready recognition, as well as the templates for requesting recognition; and finally, the fifth section contains the glossary of terms and a list of available tools and references to facilitate its implementation.

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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.

2 Frameworks and Background Information for the Tsunami Ready Recognition Programme

2.1 Frameworks and Agreements to be considered

International frameworks and agreements considering tsunami risk create standards and define goals for the international community. They are instruments and strategies developed by global and sectorial organizations with the aim to save lives, protect livelihoods and reduce loss of property. Global frameworks and agreements are having a growing impact as regional, national and local organizations are committed to their implementation by setting international goals benefiting people living in risk.

The following frameworks and agreements are the most important international instruments advocating for tsunami risk management.

2.1.1 Disaster Risk Management Approach

Disaster Risk Management (DRM) is a development approach which supports the inclusion of risk reduction initiatives. DRM is indispensable if development is to be sustainable for the future. Implementation of this approach is expected to reduce material and human losses during a disaster. Through planning, coordination and participation strategies, societies can transform their risk conditions in pursuit of sustainable development.

The risk condition of any group or community can be analyzed describing the 'hazards' that could affect them, the 'vulnerability' of the group to those hazards and their 'capacities' to cope with them. These three factors are the key elements within a risk management strategy[4]. It is important to consider that disasters occur when risk conditions are not managed. Communities that are aware of the risk they face, but also conscious of their capacities[5], can transform their conditions by acting on the risk causes and implementing effective preventive and coping measures.

Figure 2. Strengthening capacities through community organization.

A tsunami risk assessment includes[6] the evaluation of the hazard, the level of vulnerability of coastal communities and capacities or resources available to cope with the risk. Hazard assessment encompasses the identification of the probability of occurrence of a tsunami, based on the identification of possible tsunami sources including the valuation of historical data. Vulnerability assessment aims at identifying the pre-existing physical, social and demographic factors (age, gender, differently-abled, cultural or language barriers), economic and environmental conditions that make a community more susceptible to suffering important losses and damages. Capacity, or the resources available to reduce risk conditions, should consider physical resources such as land, safe

[4] Disaster Risk Reduction approach supported by the UNDP.
[5] See more about the term 'capacity' here: https://www.preventionweb.net/risk/capacity.
[6] See: UNDRR on Words into Action Guidelines: National Disaster Risk Assessment Hazard 2. Tsunami Hazard and Risk Assessment https://www.undrr.org/publication/tsunami-hazard-and-risk-assessment

spaces, infrastructure available and humanitarian aid stores, intangible resources such as knowledge, community or local organizations, and protective plans and policies such as evacuation zone planning and public drills and exercises. This information is essential for establishing DRM strategies.

It is essential that communities at risk know the actions that need to be undertaken in case of imminent danger. Community workshops for tsunami risk assessments, public awareness campaigns and Standard Operating Procedures (SOPs) must be designed; evacuation routes need to be identified and evacuation drills must be organized. Community-based approaches must be taken into consideration in order to take advantage of traditional coping mechanisms and ensure that the needs and concerns of individuals at risk are considered.

2.1.2 Tsunami Early Warning Systems

The UNESCO/IOC promotes international cooperation and coordinates programmes in marine research, observation systems, hazard mitigation and capacity development in order to understand and effectively manage ocean and coastal resources. By applying this knowledge, the Commission aims to improve the governance, management, institutional capacity and decision-making processes of its Member States with respect to marine resources and climate variability and to foster sustainable development of the marine environment, in particular in developing countries and Small Island Developing States.

The Tsunami Unit supports IOC Member States in assessing tsunami risk and establishing and implementing Tsunami EWS in four regions: The Pacific Ocean (PTWS), Indian Oceans (IOTWMS), North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTWS) and Caribbean and Adjacent Regions (CARIBE-EWS). The objective of the Unit is to reduce the loss of life and livelihoods from tsunamis worldwide.

Tsunami EWS are based on earthquake and tsunami observation networks of seismometers, geodetic sensors and sea level measuring stations, which send real-time data to Tsunami Service Providers (TSPs) and National Tsunami Warning Centres (NTWCs). Based on these observations, TSPs and NTWCs are able to issue tsunami related information. When a tsunami threat is detected, national authorities should decide if a tsunami warning and an evacuation order are to be issued to the public. The IOC Tsunami Unit, through the coordination of regional meetings, capacity building activities and the support of national and regional projects, is a key stakeholder for advancing the tsunami warning system.

Four Intergovernmental Coordination Groups (ICGs), corresponding to the regions Pacific, Caribbean and Adjacent Regions, Indian Ocean, and the North-eastern Atlantic, the Mediterranean and Connected Seas, have been established to address particular regional needs. Operational TSPs determine the level of tsunami threat for the four regions. Additionally, each ICG counts on the strategic advice of specialized Working Groups and Task Teams whose members include professionals from key disaster management and science institutions.

The IOC Tsunami Unit is comprised of the Head of the Unit, the Technical Secretariats of these four regional systems, the regional Tsunami Information Centres [Caribbean Tsunami Information Centre (CTIC), Indian Ocean Tsunami Information Centre (IOTIC), International Tsunami Information Center (ITIC), NEAMTWS Tsunami Information Centre (NEAMTIC)], and technical and professional staff. Regional TSPs, hosted by Member States, provide operational tsunami products and threat information to Member States of the four regions.

The fulfilment of the indicators in the Tsunami Ready Guidelines supports communities to have a strong end-to-end tsunami early warning and mitigation system with a particular focus on community awareness and preparedness. In 2015, the UNESCO/IOC Intergovernmental Coordination Group for Tsunamis and other Coastal Hazards for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-X) approved Tsunami Ready Guidelines for community performance-based tsunami recognition as a pilot project for the Caribbean. In 2017, the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG) recommended, through the IOC Assembly, for all ICG regions to consider piloting the guidelines with a view to develop harmonized consistent global guidelines.

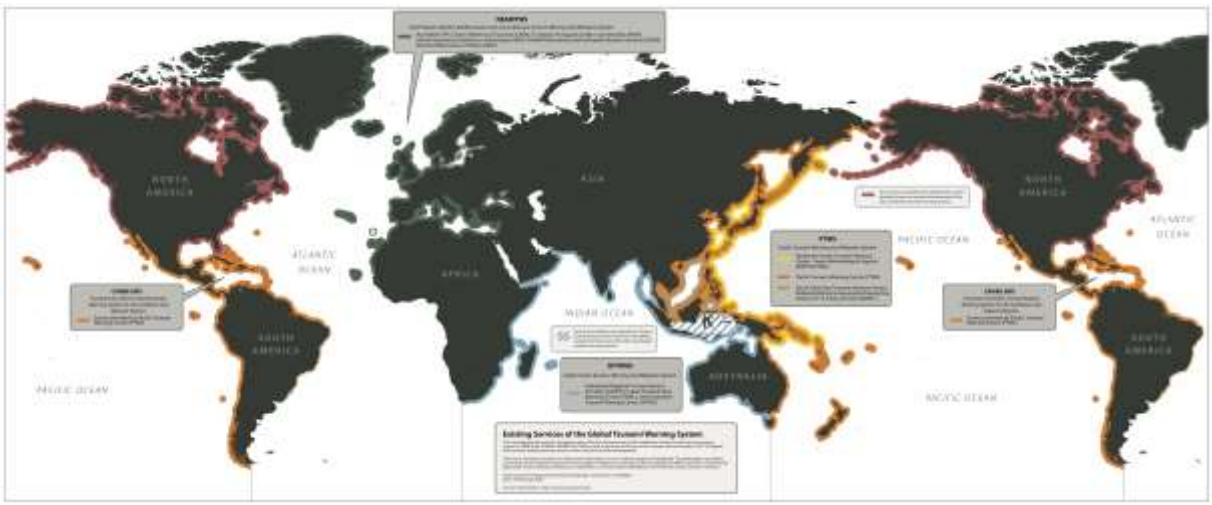
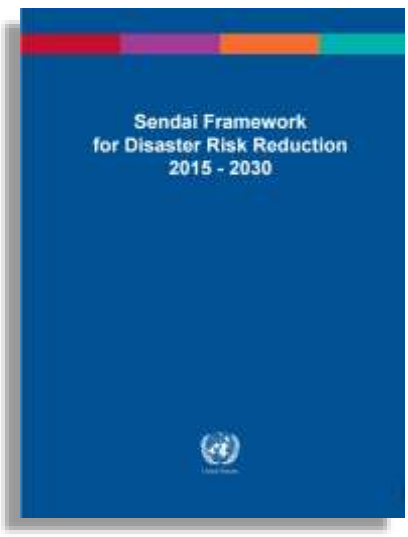


Figure 3. Existing Services of the Global Tsunami Warning System (February 2020)
Area of coverage for each of the four ICGs for the tsunami warning systems
(CARIBE-EWS, IOTWMS, NEAMTWS, PTWS) as well as the Areas of Service of the TSP.

2.1.3 The Sendai Framework for Disaster Risk Reduction



The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 is the international instrument for the implementation of disaster risk reduction (DRR) adopted by the Member States of the United Nations at the Third United Nations World Conference on Disaster Risk Reduction, held from 14 to 18 March 2015 in Sendai, Miyagi, Japan.

As a 15-year, voluntary, non-binding agreement it recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with other key participants including local government, the private sector and other stakeholders.

Its expected outcome is to achieve *"substantial reduction of disaster risk and losses in lives, livelihoods and health, and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries".*

Its goal is to *"Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience".*

The Tsunami Ready Recognition Programme contributes to the overall aim and goal of the SFDRR and specifically supports the implementation of its first and fourth priorities:

Priority 1: *Understanding disaster risk.*

DRM needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

Priority 4: *Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.*

The Tsunami Ready Recognition Programme also contributes to all seven of the targets that are being used to support the assessment of global progress in achieving the aim and goal of the SFDRR:

Substantial reductions in:

1. Global disaster mortality
2. Numbers of affected peoples
3. Disaster economic losses in relation to global gross domestic product (GDP)
4. Disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities

Substantial increases in:

5. The number of countries with national and local DRR strategies
6. International cooperation to developing countries
7. Availability and access to multi-hazard EWS and disaster risk information and assessments

Experience indicates that disaster preparedness needs to be strengthened for more effective response and to ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to "Build Back Better" through integrating disaster risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

2.1.4 Sustainable Development Goals

The 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015 provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. It includes the 17 Sustainable Development Goals (SDGs), a major agreement for urgent actions to be implemented for all countries in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality and spur economic growth – all while tackling climate change and working to preserve our oceans and land resources.

The Tsunami Ready Recognition Programme contributes to several SDGs, but most specifically addresses Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable". Communities recognized as Tsunami Ready contribute to increasing the number of settlements adopting strategies to become disasters resilient.

2.1.5 The UN Decade of Ocean Science for Sustainable Development (2021–2030)

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 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. One of the 10 challenges is to increase community resilience to ocean hazards. In June 2021, the IOC Assembly approved the establishment of the IOC Ocean Decade Tsunami Programme, with the aim of making 100 percent 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. The implementation of the Tsunami Ready Recognition Programme will be a key contribution to achieving the societal outcome 'A Safe Ocean' of the Ocean Decade.

2.2 Background of the Tsunami Ready Recognition Programme Guidelines

Since 2001, the United States National Weather Service (US NWS) of the National Ocean and Atmospheric Administration (NOAA) has been implementing the recognition programme TsunamiReady® in its states, territory and commonwealths. This programme was modelled after the US StormReady recognition programme. The goal was that communities recognized as TsunamiReady® would be better prepared to protect life and property through hazard assessment, mitigation, preparedness, planning and warning coordination. Voluntary participation in the programme has helped communities mitigate, prepare and plan for life safety response actions when a tsunami occurs. Through education and outreach, the public has learned to recognize a tsunami threat as well as strategies to reduce their tsunami risk.

TsunamiReady®
NATIONAL WEATHER SERVICE

Figure 4. The NOAA NWS TsunamiReady® Programme is a voluntary community recognition programme, and part of the NWS's Weather-Ready Nation initiative to build communities that are ready, responsive, and resilient to weather, water, and climate threats.

In June 2011, the US NWS provided initial funding to support the joint NWS and UNESCO/IOC TsunamiReady® pilot project as the first initiative for the Caribbean and the international community. The International Tsunami Information Center Caribbean Office, ITIC-CAR (formerly the NOAA Caribbean Tsunami Warning Program), in coordination with the ICG/CARIBE-EWS, worked with the Governments of Anguilla and the British Virgin Islands to help them strengthen their tsunami operations and improve readiness, which led to their recognition as 'TsunamiReady®' in 2011 and 2014, respectively.

In 2015, the ICG/CARIBE-EWS recommended the approval of its Tsunami Ready Guidelines, which were then approved by the IOC Assembly. Also, in 2015, the US NWS stated that calling the UNESCO/IOC Tsunami Ready Recognition Programme was not an infringement on its trademark of 'TsunamiReady®', giving license for the use of the term 'Tsunami Ready'. Subsequently, in 2016, UNESCO recognized St. Kitts and Nevis in the Caribbean as Tsunami Ready, and in 2017, the communities of Cedeño in Honduras, Ostional in Costa Rica, and Savaia in Samoa in the Pacific. For Cedeño, TEMPP – a Tsunami Evacuation Maps, Plans and Procedures training course which took place from 2015 to 2017 – facilitated the Tsunami Ready recognition process and helped strengthen the local and national capacities for tsunami risk reduction. Since 2017 and to date, nearly 30 additional communities in the Pacific, Caribbean and Indian Ocean have received Tsunami Ready recognition.

3 Key elements of the Tsunami Ready Recognition Programme

3.1 Aim of the Tsunami Ready Recognition Programme

The Tsunami Ready Recognition Programme aims to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods and property from tsunamis in different regions.

The main goal of the programme is to improve coastal community preparedness for tsunamis and to minimize the loss of life, livelihoods and property. This is achieved through a collaborative effort to meet a standard level of tsunami preparedness through the fulfilment of a set of established indicators. The Tsunami Ready Recognition Programme is implemented as a voluntary, performance-based community recognition programme that promotes an understanding of the concept of readiness as an active collaboration among national and local warning and emergency management agencies, and government authorities, scientists, community leaders and the public.

Although communities can be recognized as being 'Tsunami Ready', this recognition does not imply approval or confirmation that a community can or will perform at a certain level in the event of an actual tsunami. 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 their tsunami risk.

3.2 Conditions for the Tsunami Ready Recognition Programme

The Tsunami Ready Recognition Programme indicators (section 4.3) described in these Guidelines facilitate the establishment of a consistent standard to evaluate and mitigate the risk of, prepare for, and respond to tsunamis. Communities that present evidence of meeting the 12 indicators are recognized as 'Tsunami Ready' by the UNESCO/IOC.

Successful implementation of the Tsunami Ready Recognition Programme is subject to the following conditions:

- *Inclusive Oversight*

  To be achievable at the community level, the programme must be overseen by a Tsunami Ready Local Committee (TRLC) comprised of local authorities, emergency management institutions and members of civil society, and other key participants. This ensures collective involvement and commitment by all the relevant organized stakeholders. At the national and regional levels, Tsunami Ready Boards (TRB) will be established that will be responsible for general oversight of the Tsunami Ready Recognition Programme and approve the corresponding Tsunami Ready applications. It will ensure the indicators are met and clarify doubts on their implementation, review existing and proposed changes and publish updates as needed.

- *Voluntary*

  Any coastal community can be considered Tsunami Ready if the standard indicators are met. The community should show a voluntary interest to be recognized as Tsunami Ready in order to ensure ownership and participation.

- *Sustainable*

  The participating community must be able to sustain the established indicators for at least four years. The TRLC, as well as private and public supporters, can help to ensure the sustainability of the programme.

- *Renewable*

  If the Tsunami Ready condition is sustained over time, the recognition can be renewed every four years. New local investment projects, authorities, as well as sudden changes in a community can interfere with the sustainability of the Tsunami Ready conditions. These changes should be considered during the renewal process.

Figure 5. Public education display in Noliasahi, Odisha, India.

4 The Tsunami Ready Recognition Programme Indicators

The Tsunami Ready Recognition Programme Guidelines include 12 key indicators (in the table below) that serve as the standard for reducing tsunami risk at the community level. These indicators can be grouped into three categories of essential actions: Assessment, Preparedness and Response. Communities that demonstrate that they have met the 12 indicators can be recognized as 'Tsunami Ready'.

	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.

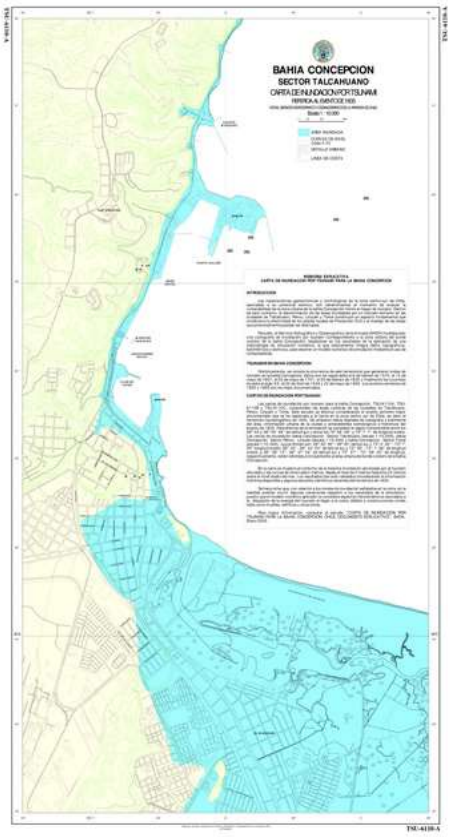
4.1 Tsunami Ready Recognition Programme Indicators – Assessment

I	ASSESSMENT (ASSESS)

The Tsunami Ready Recognition Programme Guidelines include three indicators for Assessment (ASSESS).

1	**ASSESS-1**. Tsunami hazard zones are mapped and designated.

The primary source for mapping potential tsunami hazard zones is inundation modelling, which illustrates expected areas to be flooded by the tsunami. The result of an inundation modelling study is the tsunami inundation map depicting the tsunami hazard zone. If models are unavailable, other acceptable sources include guidance from tsunami experts from technical agencies, universities, or consultants. These modelling and mapping efforts should follow national and/or international standards. Additional guidance is available from *Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises* (UNESCO IOC Manuals and Guides, 82, 2020).



Notes:

For communities with no modelling, a “baseline tsunami zone” can be used. Storm surge modelling can also be used as a guide for this purpose.

The community could request external experts (disaster management offices, universities, academics, researchers and consultants) to assist in establishing the tsunami hazard zone based on inundation modelling.

Example:

The tsunami hazard zones depict the areas that are prone to tsunamis. Tsunami hazard zone maps are used as a base for tsunami evacuation mapping and planning.

Figure 7. Participatory development of an inundation map.

2	**ASSESS-2**. The number of people at risk in the tsunami hazard zone is estimated.

This assessment should include local residents, vulnerable populations (persons with disabilities, elderly, young, etc.) and non-residents (workers and tourists) that are at risk. It is also recommended to estimate both the daytime and nighttime population in the hazard zone, as well as population during summer and winter seasons and mass gatherings. Knowing the number of people in the hazard zone is necessary for guiding the response and is also relevant for planning evacuation shelters and defining evacuation routes.

Figure 8. Identifying the tsunami risk zone in Esmeraldas, Ecuador.

Notes:

The local census, the Tsunami Response Plan (TRP), municipal data or information from the Disaster Management Office can be good references to obtain this initial estimate.

3	**ASSESS-3**. Economic, infrastructural, political, and social resources are identified.

The data will recognize the available local resources in the community to reduce its tsunami risk. This inventory could be a basic estimate that can be used as a reference in case of a tsunami incident. Being aware of local resources and capacities that are available, be these tangibles or intangibles, can strengthen the resilience of the community to cope with tsunamis.

If official data are not available, it is recommended to share, compare and discuss this information within the TRLC.

Example:

Available local or national emergency budget, public buildings that can be used as temporary shelters or for capacity- building workshops and meetings, local emergency operations or response plans for other hazards, social and volunteer organizations, local networks, parent associations of local schools, volunteer university students, etc.

Figure 9. Example of available local resources to mitigate the tsunami risk.

4.2 Tsunami Ready Recognition Programme Indicators – Preparedness

II	PREPAREDNESS (PREP)

The Tsunami Ready Recognition Programme Guidelines include five indicators for Preparedness (PREP).

4	**PREP-1**. Easily understood tsunami evacuation maps are approved.

Tsunami evacuation maps should depict tsunami evacuation routes and assembly areas. Maps should be based on tsunami hazard zone mapping and in accordance with the community's TRP. Maps should be made available via appropriate print and/or digital media (see: TEMPP, and guidance in *Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises* (UNESCO IOC Manuals and Guides, 82, 2020).

Notes:

Communities should be involved in the preparation of evacuation maps to incorporate local knowledge (e.g. accessibility/difficulties to reach or to take certain evacuation routes).

The hazard maps should be the basis for preparing evacuation maps (see: ASSESS-1).

For communities for which there is no inundation modelling, a baseline tsunami hazard zone can be used to prepare the evacuation map.

Figure 10. Evacuation map in Praia da Batata, Lagos, Portugal.

Example:

An evacuation map illustrates the evacuation zones, routes and safer areas as higher ground or tsunami shelter, assembly areas and critical and sensitive facilities.

5	**PREP-2**. Tsunami information including signage is publicly displayed.

The public display should provide signage about tsunami risk information, as well as public education on how to respond in the community in the event of a tsunami.

The following types of signs are suggested:

- Tsunami danger area and/or hazard zones (entering and leaving signs).
- Evacuation routes.
- Assembly/Meeting area/points.
- Tsunami response education (e.g. go to higher ground, alert levels).
- Tsunami evacuation maps.

Figure 11. Evacuation map in St Patrick, Grenada.

Signage needs to be in accordance with national and local policies, and as deemed appropriate by authorities with possible assistance from partners. Signage needs to comply with national and/or international standards specifications. Signage must inform both the local population and international visitors.

Local or national authorities have to define the number of signs by localities, but at a minimum, there must be signs for public education and signage for evacuation. Find more information about the International Organization for Standardization (ISO) approved international signage here.

Notes:

Multi-hazard signs and displays that include the tsunami hazard are adequate for this indicator. The adoption of a tsunami signage standard will provide a basis for a consistent set of signage and symbols nationwide.

The most visible way to educate the public about the tsunami hazard in the coastal zone is by using signboards. The tsunami signage will contribute to public awareness of the risk posed by tsunamis and better understanding of what should be done by the community in response to the event. It is critical that residents and tourists be aware of tsunami hazard zones, evacuation routes and safe zones in coastal areas.

Figure 12. Tsunami signage in Israel.

Figure 13. Tsunami signage in Bali, Indonesia.

Figure 14. Tsunami signage in Callao, Peru.

6	**PREP-3**. Outreach and public awareness and education resources are available and distributed.

Materials should include, where appropriate, tsunami evacuation maps, evacuation routes, safety tips and information about when and how to respond to warnings (including natural warnings for regions with a local tsunami threat). They should be tailored to meet local information needs and be based on location-specific tsunami threats. All schools within the community requesting recognition should receive a copy of the materials. Distribution should use three or more wide-reaching diverse methods, including, but not limited to:

- Brochures and flyers distributed at public venues and/or bulk mailed to local residents and businesses.
- Newspaper inserts.
- Public utility/service industry bill safety notices.
- Local faith-based and civic organization bulletins/mailings.
- Local radio and television.
- Billboard, roadside, highway or educational signs.
- Historical markers and interpretative signs.
- Informational or safety videos.
- Public service announcements (voice, video).
- Websites/social media.
- Bulk email.

Figure 15. Tsunami Safety Rules Flyer which can be used in support of PREP-3.

Figure 16. Tsunami Natural Warning Signs Image which can be developed into various resources e.g. flyer, magnet, beverage coaster to support of PREP-3.

Possible physical locations for distribution of materials include:

- Schools.
- Visitor centres and local tourist businesses (e.g. restaurants, bars).
- Hotels, motels and campgrounds.
- Public libraries.
- Community centres.

- Recreation centres.
- Kiosks or information centres (e.g. malls, stores, etc.).
- Childcare centres.
- Banks.
- Utility companies.
- Health centres.
- Transportation centres (bus, train, transit stops or central stations)
- Ports of entry (airports, harbors).

Figure 17. Tsunami sign in Bali, Indonesia.

Figure 18. Tsunami Leaflet Lagos, Portugal.

7	**PREP-4**. Outreach or educational activities are held at least three times a year.

Public outreach and educational activities should be conducted annually in the community. The aim is to educate community residents, businesses, and visitors, with an emphasis on those in the tsunami hazard zone, on tsunami hazards, evacuation routes, how warning information will be received (including natural warnings for regions with a local tsunami threat), safety, and response. These activities may be multi-hazard as long as they include tsunamis in the content. The number of activities required for a given community will be three, where at least one is a community-wide event. The TRB may determine another amount.

Figure 19. Tsunami awareness campaign at school in Ecuador.

Acceptable activities include, but are not limited to:

- Leveraging of national, state and regional campaigns, including use of social media.
- Multi-hazard events or presentations.
- Booths at community events and fairs.
- Community tsunami safety workshops, town hall or similar public meetings.
- Presentations or workshops for faith-based or cultural organizations, community or civic groups.

- Local public safety campaigns, such as “Tsunami Preparedness” week/month.
- Media workshops.
- Local business workshops to help them develop response and business continuity plans.
- Information for business owners for employee training, outreach or education that targets high-occupancy businesses in tsunami hazard zones (e.g. hotels, restaurants, fisheries, industrial sites).
- Door-to-door safety campaigns targeted to residents and businesses living or working in the community’s tsunami hazard zone.

Figure 20. School drill exercise in Aleipata, Upolu Island, Samoa

8	**PREP-5**: A community tsunami exercise is conducted at least every two years.

The exercise can focus solely on the tsunami hazard or can be a multi-hazard exercise that also addresses the tsunami hazard combined with a fire, hurricane and volcano exercise. The exercises could be tabletop, functional or full-scale. The exercise should include a communications test between the components of the tsunami warning system. An effort should be made for the schools within the mapped evacuation zone to participate by conducting an evacuation drill. It is recommended to develop a drill assessment after the community exercise has been completed.

Additional guidance is available from *Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises* (UNESCO IOC Manuals and Guides, 82. 2020).

Figure 21. Tsunami community exercise in Cedeño, Honduras.

Another good resource for community exercise planning and conduct is *Multi-Annual Community Tsunami Exercise Programme Guidelines for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions* (UNESCO IOC Manual and Guides 86, 2021). This guide provides guidance on how to plan, conduct, and evaluate a multiannual local tsunami exercise programme. It has been designed by Member States of the Intergovernmental Oceanographic Commission for use by their coastal communities who participate in multiannual exercises. The guide is divided into four sections which provide a range of practical advice and templates for community stakeholders an in-country exercise developer. It highlights that a progressive and long-term approach is needed for tsunami exercises.

Example:

The tsunami hazard requires a simultaneous response by national, regional and local emergency services, utilities such as power and telecommunications agencies, and even non-governmental organizations (NGOs). During tsunami community exercises, gaps with regards to the local tsunami warning, preparedness and response can be identified.

4.3 Tsunami Ready Recognition Programme Indicators – Response

III	RESPONSE (RESP)

The Tsunami Ready Recognition Programme Guidelines include four indicators for Response (RESP).

For communities with local tsunami hazards, response actions should recommend that during a local tsunami event, all at-risk individuals should immediately self-evacuate – they should not wait for official alerts to be issued. Individuals, including emergency personnel, will need to take personal responsibility to evacuate immediately after recognizing the natural tsunami warnings or environmental clues of a possible or imminent tsunami (e.g. strong or long ground shaking from an earthquake, unusual rapid rise or fall of ocean, roaring sound like a jet airplane or train caused to onrushing wave). In a local tsunami scenario, official communications and warnings may be difficult or limited due to damage of telecommunication infrastructure caused by the earthquake, and due to the short time between tsunami generation and arrival of the first wave.

9	**RESP-1**. A community tsunami emergency response plan is approved.

The community must have a community TRP in place that addresses responding to a tsunami incident. This can be part of a multi-hazard emergency response plan as long as it covers a specific plan for tsunamis. If a community-level plan does not exist, other acceptable plans include a countywide emergency response plan or a state or local (province, district or village) comprehensive emergency management plan.

Pertinent information assembled to meet the Tsunami Ready Recognition Programme Assessment (ASSESS), Preparedness (PREP), and Response (RESP) Indicators should be included.

To meet this requirement, plans should:

- Identify the hazards associated with tsunamis.
- Present tsunami-hazard profile, including source locations, extent of inundation, run-up or height that a wave reaches above sea level, previous tsunami occurrences and likelihood of future tsunamis in the community.
- Describe community vulnerability, including areas exposed to inundation and an impact summary of the resident population and specific sub-populations of people expected to be affected (e.g. persons with disabilities, visitors, seasonal workers), businesses, and critical infrastru²cture
- Detail 24-hour warning procedures relating to tsunamis.
- Specify criteria and procedures for the activation of the public warning system in its area of responsibility, e.g. criteria and procedures for siren activation, broadcasting/cable television override, and/or local activation in accordance with emergency warning system plans, warning fan-out procedures, and communication to persons with disabilities.
- Provide contact information for all jurisdictional agencies and response partners, including the Tsunami Warning Focal Point (TWFP), NTWC, Tsunami National Contact (TNC), Regional TSPs.
- Include evacuation plans for tsunamis, roles of community entities/agencies, tsunami hazard zone maps with evacuation routes, and protocols for evacuation, including persons with disabilities.
- Include procedures for updating information and determining when to advise it is safe for (1) emergency response personnel to enter the evacuated zones, and (2) when it is safe

for the public to return to homes and businesses in the evacuated zone(s), e.g. “All Clear” status has been given.
- Include procedures for providing security for the evacuated zone(s).
- Include procedures for reporting tsunami impacts in the community.
- List schools and critical infrastructure. Schools and infrastructure facilities should be encouraged to include tsunamis in their emergency response plans.
- Describe training, i.e. training for emergency management and TWFP staff, volunteers, and the village/community. Training should be provided at various levels to ensure coordinated and quick response at all levels.
- Include where possible, women and youth participation in volunteer teams.

Figure 22. Tsunami Warning Information Dissemination Protocol and SOPs for St. Kitts and Nevis which satisfies RESP–1.

10	**RESP-2**. The capacity to manage emergency response operations during a tsunami is in place.

The community should have the means to ensure that community officials can execute tsunami warning functions (public notifications) and response functions (evacuation) based on predetermined procedures related to tsunami warning information and tsunami emergency response operations during a tsunami incident. This may involve the use of an Emergency Operations Centre (EOC).

- Has 24-hour operations or plan to activate an EOC for tsunami incidents in accordance with the community TRP or emergency operation plan.
- Has warning reception and dissemination capability.
- Has the ability and authority to activate the public warning system in its area of responsibility.
- Maintains the ability to communicate within and across jurisdictions (to other EOC’s, incident command posts, etc.).
- Maintains established communication links with NTWC and/or Emergency or Disaster Management Office to relay reports on local conditions and impacts and to support the warning decision making process
- Has capacity to manage evacuations and respond to the consequences of a tsunami.

11	**RESP-3**. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.

The community should be able to receive tsunami threat notifications at any time (24-hour) from the NTWCs and/or the Emergency or Disaster Management Office, or other officially recognized alerting authorities such as local emergency management agencies. Notifications must be able to reach the 24-hour receipt point by at least three of the following methods:

- Public Alert Radio Systems, like Radio Digital Signals (RDS).
- National/Territorial warning call-out tree system (documented in writing with backup indicated).
- Instant messaging programmes available via the Internet used by operational personnel to share critical warning decision expertise and other significant information.
- Amateur Radio transceiver: Potential communications directly to NTWC or TWFP or Emergency or Disaster Management Office or other official alerting authority.
- Through a third-party provider: Typically received via phone, email and/or a texting service to a smartphone, tablet, or computer.
- Local Radio: Emergency Alert System (EAS).
- Active Internet monitoring capability, including social media such as Facebook, Twitter, WhatsApp, Viber, Signal, others.
- Direct email from NTWC, TWFP and/or Disaster Management Office.
- Direct fax from NTWC, TWFP and/or Disaster Management Office.
- Text message, direct pager or social media message from NTWC, TWFP and/or Disaster Management Office.
- Coast Guard (CG) or other maritime agency official broadcasts: warning point monitoring of CG marine channels.

Figure 23. Communication equipment within the Community EOC which supports RESP–3.

12	**RESP-4**. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

The community should be able to disseminate tsunami alerts, especially warnings to all of its members.

Alerts must be able to be disseminated at any time of the day from the warning point (24-hour) and/or EOC through at least three of the following methods:

- Country EAS message initiation and broadcast.
- Public/private television and audio/video overrides (broadcast of ‘breaking news’).
- Local flood warning systems ideally with no single point of failure.
- Audible alerts, such as outdoor warning sirens, siren/megaphone mounted on emergency vehicles, school or church bells or mosque loudspeakers, village ‘bells’ (old propane tank hung from tree hit with metal rod).
- Visual alerts, such as roadway signs (electronic billboards), flags or banners (colour-coded or with specific symbology).
- Local pager/texting system.
- Other local alert broadcast system.
- Amateur radio operator network.

- Telephone mass notification system (automatic dialing).
- Call out tree.
- Coordinated jurisdiction-wide radio network.
- For counties, parishes, islands and boroughs, a countywide communications network that ensures the flow of information between all cities and towns within its borders, including acting as the surrogate warning point and/or EOC for communities without those capabilities.
- Social media usage (Twitter, Facebook, WhatsApp, Viber, Signal, others.).
- Water safety officials, such as lifeguards on beaches and on patrol.
- Airborne notification, such as by low-flying airplanes equipped with speakers, and/or flags/banners flying pre-planned routes along coastlines.

Figure 24. The Police Telecommunication Unit (911), of the Royal St. Christopher & Nevis Police Force, which is the TWFP for St. Kitts & Nevis. Image provided by the National Emergency Management Agency and the Nevis Disaster Management Department, December 2021.

Figure 25. Community tsunami warning systems (bullhorn or megaphone (left), radio (right).

5 Implementation Workflow for the Recognition Process

5.1 Implementation of the Tsunami Ready Recognition Programme

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**. For a community to be recognized as Tsunami Ready, all 12 indicators must be met.

The primary users of the Tsunami Ready Guidelines are local authorities of coastal communities at risk of tsunami impact, as well as representatives of Emergency Management Agencies or Disaster Management Offices working with coastal communities facing risk of tsunami impact.

Figure 26. Entering a TsunamiReady® Community signboard in US.

5.2 Steps for Tsunami Ready Recognition

As a community performance-based programme, the Tsunami Ready Recognition Programme promotes the participation of local actors, in coordination with local and national authorities, in order to strengthen local capacities to cope with the tsunami risk. Those capacities involve both institutional strengthening as well as community organization, to collectively address the tsunami risk by implementing Assessment, Preparedness and Response activities.

Within the framework of the Tsunami Ready Recognition Programme the following seven steps should be followed:

5.2.1 Familiarization with the Tsunami Ready Recognition Programme Guidelines

To begin the process of being recognized as a Tsunami Ready community, a review of the Guidelines must be done, and the national TWFP or other officials tasked with emergency management responsibilities should be contacted. These authorities can help the communities understand and identify gaps and resources to meet the Guidelines and work through the application process.

The community must meet the 12 Tsunami Ready Indicators listed in the Tsunami Ready Recognition Programme Guidelines before requesting Tsunami Ready recognition.

5.2.2 Establish a National Tsunami Ready Board (NTRB)

A National Tsunami Ready Board (NTRB) has to be established. The NTRB consists of designated representatives of the National Emergency Management Agency or Disaster Management Office (serves as Chair), NTWC, TNC, the scientific community, and other guests at the discretion of the NTRB Chair. The members of the NTRB are responsible for guiding the community and for the review and approval of the community's Tsunami Ready application.

The establishment of the NTRB should be informed to the UNESCO/IOC ICG Technical Secretary of the region (Pacific, Indian, North-eastern Atlantic and Mediterranean, and Caribbean) and the corresponding Tsunami Information Centre (TIC). The role of the NTRB is to oversee the Tsunami Ready Recognition Programme, its administrative paperwork and implementation.

In the case of small countries and territories, the Tsunami Ready recognition may be granted at the national/territorial level. For this case, the Regional Tsunami Ready Board (RTRB) would be responsible for reviewing and approving recognition. The RTRB for each region consists of the ICG Chair (serves as the RTRB Chair), TIC Director, ICG Working Group Chairs that cover the topics of tsunami warning and dissemination, disaster management, preparedness and risk reduction, the ICG Technical Secretary, and other guests at the discretion of the RTRB Chair.

5.2.3 Establish a Tsunami Ready Local Committee (TRLC)

A TRLC for each community has to be established. The members of the TRLC ensure the proper management of the preparedness activities and evaluation process. It is suggested that relevant local authorities, representatives of Emergency Management Agencies or Disaster Management Offices, as well as voluntary or community organizations, NGOs, universities, schools, private sector, among others, be included. The Chair of the TRLC is the point of contact between the NTRB and the other members of the TRLC.

The following activities, among others, might be considered by the TRLC:

- Organize regular meetings to review the status of the fulfilment of the Tsunami Ready Recognition Programme Indicators.
- Prepare a list of all the entities that can support the Tsunami Ready Recognition Programme in the community.
- Appoint representatives responsible for the different Tsunami Ready Indicators.
- Prepare a work plan.
- Complete and submit the Application Form under the guidance of local and/or national authorities.
- Be represented in the Tsunami Ready verification and review meetings.

5.2.4 Fill out and Submit Application Forms

Once the community understands it has met the Tsunami Ready Indicators, the local committee should complete the Tsunami Ready Recognition Programme Application Forms (Annex 1). The form must be signed by the Chair of the TRLC and must be submitted to the Chair of the NTRB or RTRB (in the case of smaller countries/territories seeking one recognition for the whole jurisdiction).

The Application should include supporting documentation, e.g. hazard and evacuation maps, outreach and awareness materials, response plan, signage pictures, images/video of tsunami exercises, warning and response centres and methods, etc.

5.2.5 Review of the Application

After a community submits a Tsunami Ready Application to the NTRB, the NTRB Chair circulates the application to the NTRB for review, with copy to UNESCO/IOC ICG Technical Secretary, the regional TIC, and sets a date for a site verification visit (if needed), and application review (and approval) meeting. The Application is used as the checklist for the visit.

If the community is determined not to be Tsunami Ready as defined in the indicators, the application will be returned to the community with information about what is missing. Once

these issues are addressed, an updated application should be submitted following the same steps as in the first application.

The NTRB approves the application and informs the UNESCO/IOC ICG Technical Secretary, with copy to the TIC, of the region.

5.2.6 Recognition by UNESCO/IOC

UNESCO/IOC sends the signed Tsunami Ready Recognition and Appreciation certificates to the NTRB Chair. A Tsunami Ready recognition ceremony can be held to celebrate the accomplishment and recognize local stakeholders.

The NTRB Chair and/or Director of the National Emergency Management Agency or Disaster Management Office and UNESCO/IOC present community leads with recognition certificates. The leads may be the local political authority (e.g. mayor) and/or local emergency management director. As part of the recognition process, it is suggested to develop a communications plan with a press release highlighting key information regarding the Tsunami Ready recognition. Spots and interviews in radio and TV, as well as social media posts, are suitable options.

The Tsunami Ready recognition is valid for four years. The community may receive a Tsunami Ready sign. Other distinctions and presentations can be made locally.

The Tsunami Ready recognition will be signed by:

- UNESCO/IOC Executive Secretary
- ICG Chair
- NTRB Chair (in the case of communities within a country/territory)

It is important to consider that Tsunami Ready recognition is not a certification of readiness. Tsunami Ready recognition appreciates and acknowledges the community that has built their capacity and implemented measures in accordance with the agreed indicators of the Tsunami Ready Recognition Programme.

Figure 27. Tsunami ready recognition ceremony of the Cedeño community in Honduras.

5.2.7 Renewal procedure

The Tsunami Ready recognition can be renewed every four years. For the renewal process, the Chair of the TRLC should contact the NTRB Chair and submit the updated information regarding the Tsunami Ready indicators. The same process and same application form should be used.

Steps to get the Tsunami Ready Recognition

5.3 Application Forms

The following templates are to be completed by the community seeking Tsunami Ready recognition and can be found in the Annexes of this Guidelines.

- Community Contact Information: To be completed by the TRLC Chair. It includes the contact details of the community applying for the recognition.
- National Tsunami Ready Board: To be completed by the NTRB Chair. It includes relevant details of the NTRB.
- Fulfilment of the Indicators: To be completed by the TRLC Chair in coordination with the NTRB Chair. It includes supporting evidence demonstrating the fulfilment of the indicators.
- Signatures: Signatures of the applying official and the members of the NTRB. At least one of the members of the NTRB, or their representatives, should do a site visit and verify that the community has met the Tsunami Ready indicators. If all board members are not able to participate in the site visit, all members should be briefed before signing.

6 Resources Needed

The following list was compiled from experience and lessons learned during the Tsunami Ready pilots. It identifies human and funding resources that may make the implementation of Tsunami Ready in a community quicker and more efficient. Depending on the in-country arrangements, the resources may be desirable at the national and/or local level.

Organization and coordination, including:

1. Defined Point of Contact (contractor/designee) to coordinate and document the implementation in the community seeking the recognition.
2. Local technical consultant to facilitate the community in working on the indicators. This local consultant will work with the community leader, community champions and the community disaster management committee. Having a local consultant is important because it is difficult to engage in and follow a project from outside the country, especially with regards to lobbying local authorities for successful implementation.
3. Tsunami Ready champion at the local level – Disaster Manager officer or volunteer to coordinate and motivate participation, and in some cases, this can replace a need for a contractor.
4. Legal knowledge and capacity committed to facilitate the process of achieving Tsunami Ready (this may be the most challenging part).
5. Resource capacity committed to establishing and maintaining local Tsunami Boards.
6. Resources dedicated to identifying spaces for community meetings.
7. Resources committed to the selection/identification and implementation of the Tsunami Ready indicators.
8. Resources committed to coordination activities with schools and local authorities, the production and installation of signage, etc.
9. Administrative tools to facilitate and harmonize procedures for the involvement of municipalities.

Production or updating of maps, educational materials and plans:

1. Data to inform the evacuation and inundation maps. The ideal situation is to identify the corresponding national or local institutions to gather these data and/or create these maps themselves.
2. Digital Elevation Models at the required resolution for tsunami inundation modelling. If not available, these may need to be resourced.
3. Science-based definition of the tsunami hazard zone, preferably through tsunami inundation modelling. If possible, it can be done at the national level or at the community level. It is probably most efficient and cost effective to do this at a national or sub-national level (versus at the community level).
4. Tsunami Evacuation mapping requires GIS capacity and a process to engage with the community. Open-source programmes like QGIS can be used if governmental offices do not have a license for licensed GIS software.
5. TRPs for other coastal hazards or template for the development of local TRPs; a template at the national level can help facilitate the development of local plans.
6. Identification of funding, local sponsors and suppliers for public displays (signs, billboards, murals, etc.) and for awareness materials.
7. Templates and international and national education materials that can be used or adapted for the community integration of tsunami in brochures and materials for other hazards.
8. Population and economic census and other social data to inform vulnerability evaluation.

Tsunami Evacuation Exercises and Alerts:

1. Support for tsunami exercises. If integrated into exercises for other hazards (e.g. earthquakes) or to regional exercises like CARIBE WAVE, PACWAVE, IOWAVE and NEAMWAVE, this can significantly help reduce the cost.
2. Funding for acquisition and maintenance of equipment or systems for the reception and dissemination of tsunami alerts – sirens, bullhorns or loudpseakers, radios, EAS, Wireless Emergency Alerts (this can range up to $40,000 (or more) each for "sophisticated" multi-hazard siren systems).
3. Resources invested towards establishing an integrated telephone messaging system and audio alert system, especially for emergency alerts.
4. Resources invested towards establishing and restoration of footpath, evacuation roads and evacuation sites.
5. Capacity development – for the technical systems to monitor and analyze tsunami threat and issue alerts, also in the development of SOPs, the education and awareness activities, communication systems.

Communications:

1. It is essential to include strategies for socialization of the Tsunami Ready products/outputs (maps, plans, etc.) and education materials with the community in order to build ownership.
2. Maintain the public and government authorities informed on the process, launch, development and recognition phases – this is essential for creating the public support to motivate the government funding for new recognition activities and the sustainability in recognized communities.
3. (Re-)dissemination of tsunami materials, including evacuation maps – both digital and in print. There are regional and international resources that can support this effort directly or be adapted for local needs, which can help reduce costs.

Expected costs:

Costs for implementing Tsunami Ready has varied from $5,000 to $100,000 or more, and depends on the size or population of the community, data and equipment availability, and capacity. If tsunami inundation maps are available and there is equipment in place to monitor, receive and disseminate alerts, the cost is significantly reduced.

7 Tools and References

The following list offers information resources that can be used as training or as awareness tools to work on tsunami risk reduction with community organizations, local and national authorities as well as the general population.

7.1 Tsunami Ready Resources

The following are resources for the UNESCO/IOC Tsunami Ready Recognition Programme.

7.1.1 Resources

UNESCO/IOC Tsunami Ready Recognition Programme Website

This is a comprehensive site that includes key documents for implementation of the Programme, and summaries of Tsunami Ready communities that have been recognized.

Click here to see the website.

UNESCO/IOC Tsunami Ready Communities Global Map

A web-based visualization map of UNESCO/IOC Tsunami Ready recognized communities, as well as communities seeking recognition.

Click here to see the map and Tsunami Ready recognized communities.

International Tsunami and Tsunami Evacuation Signs

- In 2008, the ISO approved international signage for tsunami hazard zones, evacuation areas and evacuation buildings.

  Click here to see the signs.

- The ISO signage is recommended, but not mandatory, and many countries have developed their own signage. Sites that show examples of tsunami signage from different countries, include:
  - Resources for the United States: Click here to see the website.
  - Evacuation Signage National and ISO Standards: Click here to download the file.
  - ITIC Signs and Symbols (international summary): Click here to see the website.

7.1.2 Guides and Training

IOC Manuals and Guides 82, Preparing for Community Tsunami Evacuations: from inundation to evacuation maps, response plans and exercises (UNESCO, 2020), describes the steps required to produce reliable and practical community-level tsunami evacuation maps, and covers all of the Tsunami Ready Recognition Programme indicators. The Manual can be used as a reference and/or a training manual. It is based on a pilot, TEMPP Training Pilot, that was conducted in Honduras and Central America between 2015 and 2017. In February 2017, with the completion of the TEMPP trainings, Honduras was able to recognize the community of Cedeño as the first UNESCO/IOC Tsunami Ready community in the Pacific. This was followed soon after by Costa Rica, who had also participated in the TEMPP trainings.

Click here to see the document.

ITIC Training Programme

ITIC assists countries in establishing tsunami warning systems and improving tsunami preparedness and, for decades, has annually conducted a training programme.

Topics have covered tsunami EWS, warning and emergency response SOPs, inundation modelling, evacuation planning, and exercises, all of which are pertinent for the implementation of Tsunami Ready. Trainings and training materials typically target national warning and emergency response staff and stakeholders, as well as businesses and communities when there is interest.

Click here to see the programme and materials.

OceanTeacher Global Academy (Online Training)

OceanTeacher Global Academy (OTGA) provides a comprehensive web-based training platform that supports classroom training (face-to-face), blended training (combining classroom and distance learning), and online (distance) learning. The OTGA courses, covering a range of IOC programme topics. including DRR, contribute to the IOC Mandate and implementation of the IOC Capacity Development Strategy, and enable the equitable participation of all IOC Member States and IOC Programmes.

For the Tsunami Ready Recognition Programme, the OTGA provides a standard set of training courses to assist countries and communities in implementing Tsunami Ready.

Click here to go to the OTGA home page.

7.1.3 Videos and Games

Tsunami Ready Boardgame

The Indian Ocean Tsunami Information Center (IOTIC) has developed an educational game as a communication and education tool aiming to create awareness and understanding of the 12 Tsunami Ready Indicators.

Click here to know more about the game.

Tsunami Ready Communities Around the World

In 2020 and 2021, as part of the World Tsunami Awareness Day, the United Nations Office for Disaster Reduction (UNDRR) in collaboration with UNESCO/IOC produced short videos to showcase the importance of Tsunami Ready community planning to save lives from tsunamis. The videos also show how international cooperation to and from countries and partners have worked together to build tsunami preparedness. Additionally, tsunami survivor videos share their valuable stories and lessons learned.

Click here to for the entire playlist of more than 70 videos.

Tsunami Ready Implementation in Communities

Series of short animation videos on Tsunami Ready information for communities developed by IOTIC. There are 13 videos explaining each of the Tsunami Ready Indicators used in the Indian Ocean.

Click here to see the videos.

7.2 Tsunami Awareness and Preparedness Resources

There are many tsunami education, awareness, and preparedness websites. Use your search engine to look for these websites.

7.2.1 Resources

Get Up to High Ground (Children's book)

Launched on the occasion of the 2018 World Tsunami Awareness Day, the child-friendly booklet is for children aged 6-12 years old to generate tsunami awareness through animated characters and simple but strong messages. The booklet provides relevant tsunami facts and explains both how to identify a tsunami and how to cope with one.

Click here to download the document.

I don't take risks (Campaign)

The campaign "I don't take risks Tsunami" was tested for the first time in 2014, at the occasion of the international drill Twist – Tidal Wave in Southern Tyrrhenian Sea and was financed by the European Commission. Since then, it has been a part of a promoted national campaign.

Click here to see the campaign.

Click to see the leaflet and card.

ITIC Tsunami Awareness Materials

The International Tsunami Information Center (ITIC) has developed a database of materials focused on tsunami preparedness and to support trainings. The materials have been developed for various audiences, including teachers, students, community members and emergency officials.

Click to visit and explore the Aware/Educate web pages.

New Zealand Preparedness Resources: Get Tsunami Ready

All of New Zealand is at risk of earthquakes and all coastlines are at risk of tsunamis. *If an Earthquake is Long or Strong, Get Gone – Move immediately to the nearest high ground or as far inland as possible. Don't wait for an official tsunami warning.* Find out what to do before, during and after a tsunami.

Click here to explore this valuable content.

Stop Disasters! (Online Game)

In 2007, as part of its education campaign *Disaster risk reduction starts at school*, the UNDRR created an online game aimed at teaching children aged 9 to 16 how to build safer villages and cities against disasters. Children learn how the location and construction materials can make a difference when disaster strikes and how EWS, evacuation plans and education can save lives and livelihoods. Players have different types of missions to accomplish within a specific budget and time limit before a simulated hurricane, earthquake, flood, tsunami or wildfire strikes. They have to choose between five scenarios with three levels of difficulty and the winners will be the ones who save more people and livelihoods.

Click here to access the game.

Tanah: The Tsunami and Earthquake Fighter – A Mobile App Helping Kids Be Prepared (Online Game)

This is a disaster preparedness educational mobile app designed for kids and families. The game follows heroine Tanah as she learns to prepare and protect herself from tsunamis and earthquakes. Through helping Tanah navigate fun and interactive challenges, users enhance their hazard awareness while learning key concepts of DRR.

Click here to download the game.

Tsunami Kit

The TSUNAMI*Kit* aims to support communities and save lives with timely preparedness and warning. The kit shares experiences from the work of a joint German-Indonesian Project in coastal regions of Bali, Lombok, Java and Sumatra as well as other initiatives. Modules introduce the key elements of early warning, provides checklists and tools for practical implementation, portrays experiences and best practices, presents a compilation of various outreach materials and offers further resources.

Click here to see the modules.

UNDRR Prevention Web: Knowledge Base – Tsunami (Compilation of documents)

Online searchable compilation of tsunami literature by content type, theme, organization type, country and region, and year.

Click here to search the database for tsunami related documents.

UNDRR Terminology on Disaster Risk Reduction

Online glossary of terminology on DRR. The UNDRR Terminology is the international standard terminology related to DRR, at least in all official United Nations languages, for use in programme and institutional development, operations, research, training curricula and public information programmes. This is an update of the *2009 UNISDR Terminology on Disaster Risk Reduction*.

Click here to see this UNDRR resource.

United States National Tsunami Hazard Mitigation Program (NTHMP) – Partner Resources

The US NTHMP is a coordinated national effort to mitigate the impact of tsunamis through public education, community response planning, hazard assessment, and warning coordination. The NTHMP includes NOAA, the Federal Emergency Management Agency, the US Geological Survey, and 28 US States and Territories. This strong and active partnership connects States with the federal agencies, and enables all levels of government to work together toward the common goals of protecting lives and reducing economic losses from tsunamis at the community level, including for TsunamiReady®.

Click here to explore this valuable resource on education and outreach and other mitigation activities.

World Tsunami Awareness Day (Campaign)

In December 2015, the United Nations General Assembly (UNGA) designated 5 November as World Tsunami Awareness Day. The initiative was introduced and led by Japan, which due to its repeated, bitter experience has over the years built up major expertise in areas such as tsunami early warning, public action and building back better after a disaster to reduce future impacts. The date for the annual celebration was chosen in honour of the Japanese story of “Inamura-no-hi”, meaning the “burning of the rice sheaves”. During a 1854 earthquake, a farmer saw the ocean receding, a sign of a looming tsunami. He set fire to his entire harvest to warn villagers, who fled to high ground. Afterwards, he built an embankment and planted trees as a buffer against future waves. The UNGA has called on all countries, international bodies and civil society to observe the day, in order to raise tsunami awareness and share innovative approaches to risk reduction.

Click here to see the information related to the campaign.

7.2.2 Videos

How Tsunamis work? (Video)

A 3-minute animated video about tsunamis. Alex Gendler -Ted-Ed. 2014.

Click here to see the video.

Tsunami Just-In-Time Training (Video)

This is a Tsunami Preparedness Just in Time Training with Dr Eddie Bernard, former Director of the NOAA Pacific Marine Environmental Laboratory.

Click here to see the video.

Tsunamis: Be Prepared and Stay Safe (Video)

People are often unaware of the threat that tsunamis pose along the coast, as well as inland. If you live, work or play on the coast, be prepared and stay safe! This short fast-draw animated video by US NOAA provides compelling messages in an easy-to-understand format.

Click to view the videos in English, Spanish and Samoan.

Strengthening Preparedness to Tsunami (Video)

Simple Dos & Don'ts to keep your family and loved ones safe if disaster strikes by the United Nations Development Programme (UNDP) India office.

Click here to see the video.

10 Menit Kehidupan (Video in Indonesian)

A four-part video by IOTIC on tsunami hazards, tsunami EWS, preparation to face tsunami and SOP training conducted by relevant agencies.

Click here to see the videos.

Ayo Siaga Tsunami Video series (In Indonesian with English Subtitles)

Four animated videos by IOTIC on tsunami preparedness, tsunami EWS, tsunami evacuation, tsunami survival strategy.

Click here to see the videos.

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. 2017. *Plans and Procedures for Tsunami Warning and Emergency Management*. Paris, UNESCO, IOC Manuals and Guides, 76. (IOC/2017/MG/76 REV)
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
24-Hour Warning Point	A communication facility at a state or local level, operating 24 hours a day, which has the capability to receive tsunami alerts, plus has the authority and ability to activate the public warning systems in its area of responsibility.
Communications/Dispatch Centre	Agency or interagency dispatch centres, 911 call centres or equivalent, emergency control or command dispatch centres, or other facility and staff who handle emergency calls from the public and communication with emergency management/response personnel. This centre may act as a 24-hour warning point.
Critical Infrastructure	The physical structures, facilities, networks and other assets which provide services that are essential to the social and economic functioning of a community or society. Critical infrastructure provides services and functions essential to a community, especially during and after a tsunami. Examples of critical infrastructure or facilities requiring special consideration include: • Police stations, fire stations, critical vehicle and equipment storage facilities, and EOCs needed for tsunami response activities before, during, and after a tsunami. • Medical facilities, including hospitals, nursing homes, blood banks, and health care facilities (including those storing vital medical records) likely to have occupants who may not be sufficiently mobile to avoid injury or death during a tsunami. • Schools and daycare centres, especially if designated as shelters or evacuation centres.

TERM	DEFINITION
	• Power generating stations and other public and private utility facilities vital to maintaining or restoring normal services to tsunami-hit areas. • Drinking water and wastewater treatment plants. • Structures or facilities that produce, use or store highly volatile, flammable, explosive, toxic and/or water-reactive materials.
Distant Tsunami **(Also referred to as a tele-tsunami)**	A tsunami originating from a faraway source, generally more than 1,000 km/621 miles or three or more hours tsunami travel time from its source to the area impacted. What may be a distant tsunami in one location can be a local tsunami for another location. A distant tsunami may also be referred to as a “far-field” tsunami hazard.
Emergency Management/Response Personnel	Includes federal, state, territorial, tribal, sub-state, regional, and local governments, NGOs, private sector organizations, critical infrastructure owners and operators, and all other organizations and individuals who assume an emergency management role. Emergency management addresses all aspects of emergencies, including preparedness, response and initial recovery steps. Emergency Management Agencies are also referred to as Civil Protection Agencies and/or Disaster Management Offices/Organizations.
Emergency Operations Centre (EOC)	The physical location at which the coordination of information and resources to support incident management (on-scene operations) activities normally takes place. An EOC may be a temporary facility, a permanently established facility or located at a higher level of organization within a jurisdiction. EOCs may be organized along the functions defined in the country’s Incident Command System (ICS), and with representation of major functional disciplines (e.g. fire, law enforcement, medical services), or jurisdiction (e.g. federal, state, regional, tribal, city, county), or by some combination thereof.
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.

TERM	DEFINITION
	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).
Incident	An occurrence, natural or manmade, that requires a response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, civil unrest, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, tsunamis, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.
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. For local governments, a National/Territorial Board would be established to provide recognition. For a national or territorial government, a RTRB would provide recognition.
Local Tsunami	A tsunami from a nearby source for which its destructive effects are confined to coasts less than 1 hour tsunami travel time, or typically within about 200 km from its source. A local tsunami is usually generated by an earthquake, but can also be caused by a landslide or a pyroclastic flow from a volcanic eruption. Over history, 90 percent of tsunami casualties have been caused by local tsunamis. What may be a local tsunami in one location can be a regional or distant tsunami for another location. A local tsunami may also be referred to as a “near-field” tsunami hazard. A local tsunami includes tsunamigenic influences due to tectonics in the source zone such as uplift, subsidence, landslides, and strong shaking.
National Tsunami Warning Centre (NTWC)	A centre officially designated by the government to monitor and issue tsunami warnings and other related statements within their country according to established national SOPs.
Natural Tsunami Warning Signs	a. Very strong, or unusually long, ground shaking lasting one minute or more from a subduction zone earthquake.

TERM	DEFINITION
	b. Unusual ocean activity, especially if the ocean recedes seaward exposing the sea bottom, rocks and fish, or the ocean rapidly rises in elevation looking like an oncoming wall of water. It's important to note that a surge is just as likely to be the first indication as a drawdown. c. Loud roar sounds from the ocean like an approaching airplane or train. These are natural warnings and mean that a tsunami is on its way and that you should head to high ground or inland immediately.
Recognised Community (of the Tsumai 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.
Regional Tsunami	A tsunami capable of destruction in a particular geographic region, generally within 1,000 km or 1-3 hours tsunami travel time from its source. Regional tsunamis also occasionally have very limited and localized effects outside the region. Most destructive tsunamis can be classified as local or regional. It follows that many tsunami related casualties and considerable property damage also comes from these tsunamis. What may be a regional tsunami in one location can be a local tsunami for another location.
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

TERM	DEFINITION
	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 National Contact	The person designated by an ICG Member State government to represent his/her country in the coordination of international tsunami warning and mitigation activities. The person is part of the main stakeholders of the national tsunami warning and mitigation system programme. The person may be the TWFP from the national disaster management organization, from a technical or scientific institution, or from another agency with tsunami warning and mitigation responsibilities.
Tsunami Ready Boards (ICG National/Territorial and Regional)	National Tsunami Ready Board (NTRB): 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

TERM	DEFINITION
	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. Regional Tsunami Ready Board (RTRB): Responsible for general oversight of the ICG Tsunami Ready Recognition Programme. Maintains guidelines. Reviews existing and proposed changes to the Tsunami Ready Recognition Programme Guidelines and publishes updates as needed. Reviews and approves Tsunami Ready Recognition Programme applications for countries. Membership: • ICG Chair (Chair) • TIC Director • ICG Working Group Chairs that cover the topics of tsunami warning and dissemination, disaster management, preparedness and risk reduction • UNESCO/IOC ICG Technical Secretary • Guests at discretion of RTRB Chair, such as relevant regional organization(s), TSP(s).
Tsunami Service Provider (TSP)	Centre that monitors seismic and sea level activity and issues timely tsunami threat information within an ICG framework to NTWCs/TWFPs and other TSPs operating within an ocean basin. The NTWCs/TWFPs may use these products to develop and issue tsunami warning for their countries. TSPs may also issue public messages for an ocean basin and act as NTWCs providing tsunami warnings for their own countries. Several ICG TSPs have been established.
Tsunami Source	Location of tsunami origin, most typically an underwater earthquake epicentre. Tsunamis are also generated by submarine landslides, underwater volcanic eruptions, or, less commonly, by meteoric impact of the ocean.
Tsunami Warning Focal Point (TWFP)	A 24x7 point of contact (office, operational unit or position, not a person) officially designated by the NTWC or the government to receive and disseminate tsunami information from an ICG TSP according to established national SOPs. The TWFP may or may not be the NTWC.

Annex 2. Tsunami Ready Recognition Programme Application Forms

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Tsunami Ready Recognition Programme Application Forms

Form 1: **Community Contact Information**			
Country	Locality/City/Town	Total amount of population	Amount of population to be evacuated
Primary Point of Contact		**Secondary Point of Contact**	
Full Name		Full Name	
Office / Institution		Office / Institution	
Title		Title	
Mailing Address		Mailing Address	
City		City	
State, ZIP		State, ZIP	
Phone		Phone	
Email		Email	

1. Please add any important information as contact details.

2. Information regarding the Tsunami Ready Local Committee can be added in this box: (members' titles, date of its establishment, institutions represented, key stakeholders, donors, etc.).

Form 1: **Community Contact Information**		
National Tsunami Ready Board - NTRB		
Country	Total amount of population of the country	Date of establishment of the NTRB
Contact information of the NTRB Chair		
Full Name		
Office / Institution		
Title		
Mailing Address		
City		
State, ZIP		
Phone		
Email		
List of members of the NTRB[7] (please indicate: name, institution and title)		
1. 2. 3.		

[7] Add as many entries as needed.

Form 1:	**Community Contact Information**
4. 5.	
UNESCO/IOC ICG Technical Secretary contacted:	
Please add any important information:	

Form 2:	**Tsunami Ready Recognition Programme Fulfilment of the Indicators Initial Recognition of Renewal**	
☐ New Recognition		☐ Renewal Recognition
I. ASSESSMENT Indicators (ASSESS)		
ASSESS-1	Tsunami hazard zones are mapped and designated.	☐ Verified
☐ Inundation modelling for maps		☐ Baseline tsunami zone for maps
ASSESS-2	The number of people at risk in the tsunami hazard zone is estimated	☐ Verified
☐ Approx. Number of persons with disabilities		☐ Approx. Number of elderlies
☐ Approx. Number of young		☐ Approx. Number of workers
☐ Approx. Number of tourists		☐ Other (specify):
☐ Approx. Number of daytime population (summer)		☐ Approx. Number of nighttime population (summer)
☐ Approx. Number of daytime population (winter)		☐ Approx. Number of wintertime population (winter)
Verification Team/Renewal Notes *(Please do not write in shaded areas)*		
ASSESS-3	Available economic, infrastructural, political, and social resources are identified	☐ Verified
☐ Volunteer organizations		☐ Local or national budget
☐ Buildings and public spaces		☐ Local plans
☐ Local networks		
☐ Other (specify):		

II. Preparation Indicators (PREP)

PREP-1	Easily understood tsunami evacuation maps are approved.	☐ Verified
	☐ Print ☐ Digital media ☐ Other (specify):	
PREP-2	Tsunami information including signage is publicly displayed.	☐ Verified
☐ Tsunami hazard zone signs	☐ Entering/leaving tsunami hazard zone signs	☐ Evacuation routes signs
☐ Assembly areas signs	☐ Tsunami response education signs	

Verification Team Notes:

(Please do not write in shaded areas)

PREP-3	Outreach and public awareness and education resources are available and distributed. Distribution should use **<u>three or more</u> wide-reaching diverse methods**.	☐ Verified
☐ Brochures/flyers distributed at public venues	☐ Websites/social media	
☐ Local faith-based, cultural, or civic organization bulletins/mailings	☐ Billboard, roadside, highway, or educational signs	
☐ Local radio and television	☐ Public utility/service industry bill safety notices	
☐ Bulk email	☐ Historical markers and interpretive signs	
☐ Newspaper inserts	☐ Informational or safety videos	
☐ Public service announcements (voice or video)	☐ Other (specify):	
PREP-4	Outreach or educational activities are held at least three times a year.	☐ Verified
☐ Leverage of national, state, or regional campaigns including use of social media		
☐ Multi-hazard events or presentations		
☐ Booth at community events and/or fairs		
☐ Community tsunami safety workshops, town hall, or public/private meetings, including for faith-based,		

cultural or civic organizations)
☐ Local public safety campaigns, such as “Tsunami Preparedness” week/month
☐ Media workshops
☐ Local business workshops for response planning, employee training, especially high-occupancy businesses in tsunami hazard zones (e.g. hotels, restaurants, fisheries, industrial sites
☐ Door-to-door safety campaigns targeted to people leaving or working in the tsunami hazard zone
☐ Other (specify):

PREP-5	A community tsunami exercise is conducted at least every two years.	☐ Verified

☐ Tabletop exercise (Table simulation)	☐ Functional exercise (Medium scale exercise)	☐ Full-scale exercise (All actors involved)

Verification Team Notes

(Please do not write in shaded areas)

IV. Response Indicators (RESP)

RESP-1	A community tsunami emergency response plan is approved.	☐ Verified

☐ Identify tsunami as a hazard and provides risk assessment
☐ Present tsunami-hazard profile, including source locations, extend of inundation, run-up, previous or future tsunamis
☐ Describe community vulnerability
☐ Details 24-hour warning point procedures
☐ Specify emergency operations centre (EOC) activation criteria
☐ Specify tsunami criteria and procedures for the activation of the public warning system
☐ Provide contact information for all jurisdictional agencies and response partners
☐ Include evacuation plans for tsunamis, roles of community entities/agencies, maps and protocols
☐ Include procedures for updating information and determine when evacuated zones are safe
☐ Include procedures for providing security for the evacuated zone(s)

☐ Include procedures for reporting tsunami impacts in the community		
☐ Include schools and critical infrastructure in the tsunami response plan		
☐ Describe training to ensure coordinated and quick response at all levels		
RESP-2	The capacity to manage emergency response operations during a tsunami is in place.	☐ Verified
☐ Has 24-hour operations or plan to activate an EOC for tsunami incidents		
☐ Has warning reception and warning dissemination capability		
☐ Has ability and authority to activate the public warning system in its area of responsability		
☐ Maintains the ability to communicate within and across jurisdictions		
☐ Maintains established communication links with NTWC and/or Emergency or Disaster Management Office to support the warning decision making process		
☐ Has capacity to manage evacuations and respond to the consequences of a tsunami		
Verification Team Notes *(Please do not write in shaded areas)*		

RESP-3	Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place **(at least three methods)**.	☐ Verified
☐ Public Alert Radio Systems	☐ Active Internet monitoring capability, including social media	
☐ National/Territorial warning call out tree system	☐ Direct email from NTWC, TWFP, and/or Disaster Management Office	
☐ Instant messaging programmes available via Internet	☐ Direct fax from NTWC, TWFP, and/or Disaster Management Office	
☐ Amateur radio transceiver	☐ Text message or direct pager from NTWC, TWFP, and/or Disaster Management Office	
☐ Third-party alert provider	☐ Coast Guard (CG) or other maritime agency official broadcasts	
☐ Local radio: Emergency Alert System	☐ Other (specify):	
RESP-4	Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place **(at least three methods)**.	

		☐ Verified
☐ Emergency alert system message initiation and broadcast	☐ Amateur radio operator network	
☐ Public/Private television audio/video overrides (broadcast 'breaking news')	☐ Telephone mass notification system	
☐ Local flood warning system	☐ Call out tree	
☐ Audible alerts (outdoor or indoor warning sirens, siren/megaphone mounted on emergency vehicles, school or church bells or mosque loudspeakers, village 'bells', etc.)	☐ Coordinated jurisdiction-wide radio network	
☐ Visual alerts, such as roadway signs (electronic billboards), flags or banners (colour-coded or with specific symbology)	☐ Countywide communications network	
☐ Local alert broadcast system	☐ Social media (Twitter, Facebook, WhatsApp, Viber, Signal, etc.)	
☐ Local pager/texting system	☐ Water safety officials, such as lifeguards on beaches and on patrol	
☐ Other (specify):		
Verification Team Notes *(Please do not write in shaded areas)*		

Form 3:	**Signature of Applying Official**		
Office Name			
Application Submitted by (name of applicant)		Title	
Signature		Date	
Print name of the authority receiving application / Chair of the Tsunami Ready Board		Date Received	
Site Verification Team Signatures (to be signed by the members of the Tsunami Ready verification team)			
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	
Print Name			
Office		Title	
Signature		Date	
Signature in Renewal Year			
Office			
Application Submitted by (name of applicant)		Title	
Signature		Date	

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Intergovernmental Oceanographic Commission

Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS)

Tsunami Ready

Certificate of Recognition

MUNICIPALITY OF LA LIBERTAD

El Salvador

For successfully implementing the UNESCO IOC Tsunami Ready Pilot Project
in La Libertad
18 September 2019

Vladimir Ryabinin, PhD
Assistant Director General and Executive Secretary
UNESCO

Dr Wilfried Strauch
Chair
UNESCO IOC ICG/PTWS

Sr. Orlando Tejada Castillo
Director General, Dirección General de
Protección Civil Prevención Mitigación de
Desastres de El Salvador

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Intergovernmental Oceanographic Commission

Tsunami Ready

Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards
Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS)

Certificate of Recognition

Old Harbour Bay, St. Catherine

JAMAICA

For successfully implementing the UNESCO IOC Tsunami Ready Pilot Project
in Old Harbour Bay, St. Catherine
January 24, 2022

Vladimir Ryabinin, PhD
Assistant Director General and Executive Secretary
UNESCO

Dr.rer.nat. Silvia Chacón-Barrantes, PhD
Chair
UNESCO IOC ICG/CARIBE EWS

Mr. Richard Thompson
Director General (Acting)
Office of Disaster Preparedness and Emergency Management

Annex 4. Tsunami Ready Recognition Programme Sign

Annex 5. Sources consulted

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

United Nations Development Programme (UNDP) – Crisis Prevention and Recovery Practice Area. Disaster Risk Reduction. What does UNDP do in Disaster Risk Reduction in Latin America and the Caribbean? Panama, 2014.

UNESCO/IOC ICG/CARIBE-EWS Community Recognition Tsunami Ready Pilot Project – Foundation, CARIBE-EWS Tsunami Ready Guidelines, Glossary of Terms, Recommendation ICG/CARIBE-EWS-X.6, Application Form, 2017. http://www.ioc-tsunami.org/index.php?option=com_oe&task=viewDocumentRecord&docID=18861

UNESCO/IOC ICG/PTWS Community Recognition Tsunami Ready Pilot Project – Foundation, PTWS Tsunami Ready Guidelines, Glossary of Terms, Application Form, 2017. http://www.ioc-tsunami.org/index.php?option=com_oe&task=viewDocumentRecord&docID=16923&allversions=1

PTWS Tsunami Ready Pilot Programme. Application and Approval Process, Management and Responsibilities, Frequently Asked Questions (Draft), 2019.

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- http://www.ioc-tsunami.org
- http://itic.ioc-unesco.org
- https://sustainabledevelopment.un.org/sdgs
- http://www.unesco.org/new/en/natural-sciences/ioc-oceans/about-us/

IOC Manuals and Guides

No.	Title
1 rev. 2	Guide to IGOSS Data Archives and Exchange (BATHY and TESAC). 1993. 27 pp. (English, French, Spanish, Russian)
2	International Catalogue of Ocean Data Station. 1976. *(Out of stock)*
3 rev. 3	Guide to Operational Procedures for the Collection and Exchange of JCOMM Oceanographic Data. Third Revised Edition, 1999. 38 pp. (English, French, Spanish, Russian)
4	Guide to Oceanographic and Marine Meteorological Instruments and Observing Practices. 1975. 54 pp. (English)
5 rev. 2	Guide for Establishing a National Oceanographic Data Centre. Second Revised Edition, 2008. 27 pp. (English) *(Electronic only)*
6 rev.	Wave Reporting Procedures for Tide Observers in the Tsunami Warning System. 1968. 30 pp. (English)
7	Guide to Operational Procedures for the IGOSS Pilot Project on Marine Pollution (Petroleum) Monitoring. 1976. 50 pp. (French, Spanish)
8	*(Superseded by IOC Manuals and Guides No. 16)*
9 rev.	Manual on International Oceanographic Data Exchange. (Fifth Edition). 1991. 82 pp. (French, Spanish, Russian)
9 Annex I	*(Superseded by IOC Manuals and Guides No. 17)*
9 Annex II	Guide for Responsible National Oceanographic Data Centres. 1982. 29 pp. (English, French, Spanish, Russian)
10	*(Superseded by IOC Manuals and Guides No. 16)*
11	The Determination of Petroleum Hydrocarbons in Sediments. 1982. 38 pp. (French, Spanish, Russian)
12	Chemical Methods for Use in Marine Environment Monitoring. 1983. 53 pp. (English)
13	Manual for Monitoring Oil and Dissolved/Dispersed Petroleum Hydrocarbons in Marine Waters and on Beaches. 1984. 35 pp. (English, French, Spanish, Russian)
14	Manual on Sea-Level Measurements and Interpretation. (English, French, Spanish, Russian)
	Vol. I: Basic Procedure. 1985. 83 pp. (English)
	Vol. II: Emerging Technologies. 1994. 72 pp. (English)
	Vol. III: Reappraisals and Recommendations as of the year 2000. 2002. 55 pp. (English)
	Vol. IV: An Update to 2006. 2006. 78 pp. (English, Arab)
	Vol. V: Radar Gauges. 2016. 100 pp. and Supplement: Practical Experiences. 100 pp. (English, French, Russian, Spanish)
15	Operational Procedures for Sampling the Sea-Surface Microlayer. 1985. 15 pp. (English)
16	Marine Environmental Data Information Referral Catalogue. Third Edition. 1993. 157 pp. (Composite English/French/Spanish/Russian)
17	GF3: A General Formatting System for Geo-referenced Data
	Vol. 1: Introductory Guide to the GF3 Formatting System. 1993. 35 pp. (English, French, Spanish, Russian)
	Vol. 2: Technical Description of the GF3 Format and Code Tables. 1987. 111 pp. (English, French, Spanish, Russian)
	Vol. 3: Standard Subsets of GF3. 1996. 67 pp. (English)
	Vol. 4: User Guide to the GF3-Proc Software. 1989. 23 pp. (English, French, Spanish, Russian)

No.	Title
	Vol. 5: Reference Manual for the GF3-Proc Software. 1992. 67 pp. (English, French, Spanish, Russian)
	Vol. 6: Quick Reference Sheets for GF3 and GF3-Proc. 1989. 22 pp. (English, French, Spanish, Russian)
18	User Guide for the Exchange of Measured Wave Data. 1987. 81 pp. (English, French, Spanish, Russian)
19	Guide to IGOSS Specialized Oceanographic Centres (SOCs). 1988. 17 pp. (English, French, Spanish, Russian)
20	Guide to Drifting Data Buoys. 1988. 71 pp. (English, French, Spanish, Russian)
21	*(Superseded by IOC Manuals and Guides No. 25)*
22 rev.	GTSPP Real-time Quality Control Manual, First revised edition. 2010. 145 pp. (English)
23	Marine Information Centre Development: An Introductory Manual. 1991. 32 pp. (English, French, Spanish, Russian)
24	Guide to Satellite Remote Sensing of the Marine Environment. 1992. 178 pp. (English)
25	Standard and Reference Materials for Marine Science. Revised Edition. 1993. 577 pp. (English)
26	Manual of Quality Control Procedures for Validation of Oceanographic Data. 1993. 436 pp. (English)
27	Chlorinated Biphenyls in Open Ocean Waters: Sampling, Extraction, Clean-up and Instrumental Determination. 1993. 36 pp. (English)
28	Nutrient Analysis in Tropical Marine Waters. 1993. 24 pp. (English)
29	Protocols for the Joint Global Ocean Flux Study (JGOFS) Core Measurements. 1994. 178 pp . (English)
30	MIM Publication Series:
	Vol. 1: Report on Diagnostic Procedures and a Definition of Minimum Requirements for Providing Information Services on a National and/or Regional Level. 1994. 6 pp. (English)
	Vol. 2: Information Networking: The Development of National or Regional Scientific Information Exchange. 1994. 22 pp. (English)
	Vol. 3: Standard Directory Record Structure for Organizations, Individuals and their Research Interests. 1994. 33 pp. (English)
31	HAB Publication Series:
	Vol. 1: Amnesic Shellfish Poisoning. 1995. 18 pp. (English)
32	Oceanographic Survey Techniques and Living Resources Assessment Methods. 1996. 34 pp. (English)
33	Manual on Harmful Marine Microalgae. 1995. (English) [superseded by a sale publication in 2003, 92-3-103871-0. UNESCO Publishing]
34	Environmental Design and Analysis in Marine Environmental Sampling. 1996. 86 pp. (English)
35	IUGG/IOC Time Project. Numerical Method of Tsunami Simulation with the Leap-Frog Scheme. 1997. 122 pp. (English)
36	Methodological Guide to Integrated Coastal Zone Management. 1997. 47 pp. (French, English)
37	International Tsunami Survey Team (ITST) Post-Tsunami Survey Field Guide. 2nd Edition. 2014. 120 pp. (English)
38	Guidelines for Vulnerability Mapping of Coastal Zones in the Indian Ocean. 2000. 40 pp. (French, English)
39	Manual on Aquatic Cyanobacteria – A photo guide and a synopsis of their toxicology. 2006. 106 pp. (English)
40	Guidelines for the Study of Shoreline Change in the Western Indian Ocean Region. 2000. 73 pp. (English)

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42	Des outils et des hommes pour une gestion intégrée des zones côtières - Guide méthodologique, vol.II/ Steps and Tools Towards Integrated Coastal Area Management – Methodological Guide, Vol. II. 2001. 64 pp. (French, English; Spanish)
43	Black Sea Data Management Guide *(Cancelled)*
44	Submarine Groundwater Discharge in Coastal Areas – Management implications, measurements and effects. 2004. 35 pp. (English)
45	A Reference Guide on the Use of Indicators for Integrated Coastal Management. 2003. 127 pp. (English). *ICAM Dossier No. 1*
46	A Handbook for Measuring the Progress and Outcomes of Integrated Coastal and Ocean Management. 2006. iv + 215 pp. (English). *ICAM Dossier No. 2*
47	TsunamiTeacher – An information and resource toolkit building capacity to respond to tsunamis and mitigate their effects. 2006. DVD (English, Bahasa Indonesia, Bangladesh Bangla, French, Spanish, and Thai)
48	Visions for a Sea Change. Report of the first international workshop on marine spatial planning. 2007. 83 pp. (English). *ICAM Dossier No. 4*
49	Tsunami preparedness. Information guide for disaster planners. 2008. (English, French, Spanish)
50	Hazard Awareness and Risk Mitigation in Integrated Coastal Area Management. 2009. 141 pp. (English). *ICAM Dossier No. 5*
51	IOC Strategic Plan for Oceanographic Data and Information Management (2008–2011). 2008. 46 pp. (English)
52	Tsunami risk assessment and mitigation for the Indian Ocean; knowing your tsunami risk – and what to do about it. 2009. 82 pp. (English)
53	Marine Spatial Planning. A Step-by-step Approach. 2009. 96 pp. (English; Spanish). *ICAM Dossier No. 6*
54	Ocean Data Standards Series: Vol. 1: Recommendation to Adopt ISO 3166-1 and 3166-3 Country Codes as the Standard for Identifying Countries in Oceanographic Data Exchange. 2010. 13 pp. (English) Vol. 2: Recommendation to adopt ISO 8601:2004 as the standard for the representation of date and time in oceanographic data exchange. 2011. 17 pp. (English) Vol.3: Recommendation for a Quality Flag Scheme for the Exchange of Oceanographic and Marine Meteorological Data. 2013. 12 pp. (English) Vol. 4: SeaDataNet Controlled Vocabularies for describing Marine and Oceanographic Datasets – A joint Proposal by SeaDataNet and ODIP projects. 2019. 31 pp (English)
55	Microscopic and Molecular Methods for Quantitative Phytoplankton Analysis. 2010. 114 pp. (English)
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57	Reducing and managing the risk of tsunamis. Guidance for National Civil Protection Agencies and Disaster Management Offices as Part of the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas Region – NEAMTWS. 2011. 74 pp. (English)
58	How to Plan, Conduct, and Evaluate Tsunami Exercises / Directrices para planificar, realizar y evaluar ejercicios sobre tsunamis. 2012. 88 pp. (English, Spanish)
59	Guide for designing and implementing a plan to monitor toxin-producing microalgae. Second Edition. 2016. 63 pp. (English, Spanish)

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60	Global Temperature and Salinity Profile Programme (GTSPP) — Data user's manual, 1st Edition 2012. 2011. 48 pp. (English)
61	Coastal Management Approaches for Sea-level related Hazards: Case-studies and Good Practices. 2012. 45 pp. (English)
62	Guide sur les options d'adaptation en zone côtières à l'attention des décideurs locaux – Aide à la prise de décision pour faire face aux changements côtiers en Afrique de l'Ouest / A Guide on adaptation options for local decision-makers: guidance for decision making to cope with coastal changes in West Africa / Guia de opções de adaptação a atenção dos decisores locais: guia para tomada de decisões de forma a lidar com as mudanças costeiras na Africa Ocidental. 2012. 52 pp. (French, English, Portuguese). *ICAM Dossier No. 7*.
63	The IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Cook Book. 2012. 221 pp. (English). *Also IHO Publication B-11*
64	Ocean Data Publication Cookbook. 2013. 41 pp. (English)
65	Tsunami Preparedness Civil Protection: Good Practices Guide. 2013. 57 pp. (English)
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67	IODE Quality Management Framework for National Oceanographic Data Centres. 2014; revised edition 2019 (English)
68	An Inventory of Toxic and Harmful Microalgae of the World Ocean (in preparation)
69	A Guide to Tsunamis for Hotels: Tsunami Evacuation Procedures (North-eastern Atlantic and the Mediterranean Seas). 2016 (English)
70	A guide to evaluating marine spatial plans. 2014. 96 pp. (English)
71	IOC Communication Strategy for Marine Information Management (2015-2017). 2015
72	How to reduce coastal hazard risk in your community – A step-by-step approach. 2016
73	Guidelines for a Data Management Plan. 2016
74	Standard Guidelines for the Tsunami Ready Recognition Programme. 2022. 60 pp. (English)
75	ICAN (International Coastal Atlas Network) - best practice guide to engage your CWA (Coastal Web Atlas) user community. 2016
76	Plans and Procedures for Tsunami Warning and Emergency Management – Guidance for countries in strengthening tsunami warning and emergency response through the development of Plans and Standard Operating Procedures for their warning and emergency management authorities. 2017
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79	IOC Communication and Outreach Strategy for Data and Information Management (2017-2019). 2017
80	Ocean Literacy for All – A toolkit. 2017
81	Procedures for Proposing and Evaluating IODE Projects and Activities. 2018
82	Preparing for community tsunami evacuations: From Inundation to Evacuation Maps, Response Plans, and Exercises (English and Spanish) and Supplement 1 and 2 (English only), 2020.
83	Quality Control of in situ Sea Level Observations: A Review and Progress towards Automated Quality Control, Vol. 1. (English only), 2020
84	Towards a Best Practice for Developing Best Practices in Ocean Observation (BP4BP): Supporting Methodological Evolution through Actionable Documentation. (English only). 2020
85	Vol1.: Workbook: How to Reduce Coastal Hazard Risk in your Community – A step-by-step approach. English only (2021)

No.	Title
	Vol 2: Community Guide for community members interested in risk reduction efforts. How to reduce coastal hazard risk in your community: A step-by-step approach (English, French, Spanish, Russian, Arabic and Portuguese) 2021
86	Multi-Annual Community Tsunami Exercise Programme: Guidelines for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions. 2022. 65 pp. (English)
87	*In preparation*
88	Guidelines for the Study of Climate Change Effects on HABs. 2021. 118 pp. (English)
89	MSPglobal International Guide on Marine/Maritime Spatial Planning. 2021. 150 pp. (English)
90	A New Blue Curriculum – A toolkit for policy-makers. 2022. 128 pp. (English)