UNIVERSIDAD NACIONAL
International Organization for Migration
National Commission for Risk Prevention and Disaster Control

Training Manual

on Community Tsunami Risk Management

CNE COSTA RICA · SINAMOT COSTA RICA · PIC Programa Interdisciplinario Costero · UNA Universidad Nacional Costa Rica · OIM ONU Migración · Programa Regional sobre Migración Mesoamérica y el Caribe

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Faculty of Exact and Natural Sciences
Department of Physics
National Tsunami Monitoring System (Sinamot)

Faculty of Social Sciences
Instituto de Estudios Sociales en Población, Idespo (Institute of Social Studies in Population)
Programa Interdisciplinario Costero, PIC (Coastal Interdisciplinary Program)

Training Manual on Community Tsunami Risk Management

Silvia Rojas Herrera, PIC Coordinator
Gabriela Sáenz Gutiérrez
Bernardita Alfaro Boza
Silvia Chacón Barrantes, Sinamot Coordinator
Catalina Carrillo Vargas
Roger Castillo Barquero
Lindsay Ryan Valerio
Ramón Araya Araya, CNE
Fabio Rivera Cerdas
Gonzalo Mora Cortés

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The section on migrant populations in emergency situations or contexts was authored by Maritza Matarrita Gutiérrez, Alexa Fernández Arguedas and Gustavo Gatica of the International Organization for Migration (IOM).

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In addition, this work has benefitted from the methodological contributions and endorsement of the Standardization and Advisory Unit of the National Commission for Risk Prevention and Emergency Management(Comisión Nacional de Prevención de Riesgos y Atención de Emergencias or CNE), and the substantive contribution of the International Organization for Migration (IOM) in understanding and taking into account migrants in risk management, and in the layout and production of this Manual.

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Cenepred	Peruvian National Center for Estimation, Prevention and Reduction of Disaster Risk
CNE	Costa Rican National Commission for Risk Prevention and
GIRD	Integral Management for Disaster Risk
Idespo	Institute of Social Studies in Population
Indeci	National Institute of Civil Defense
INEC	National Institute of Statistics and Census of Costa Rica
IOC/UNESCO	Intergovernmental Oceanographic Commission of UNESCO
IOM	International Organization for Migration
JICA	Japan International Cooperation Agency
NOAA	National Oceanic and Atmospheric Administration of the United States of America
PIC	Coastal Interdisciplinary Program
Ronmac	Sea Level Observation Network and Coastal Threat Research Program
Sinamot	National Tsunami Monitoring System
Sinapred	Nicaraguan National System for Prevention, Mitigation and Attention of Disasters
SNGR	Costa Rican National Risk Management System
UNDP	United Nations Development Program
Unesco	United Nations Educational, Scientific and Cultural Organization
UNA	Universidad Nacional

CHAPTER

01

INTRODUCTION

THE TRAINING MANUAL ON COMMUNITY TSUNAMI RISK MANAGEMENT

is intended to provide scientific information about tsunamis and their impacts, and to create new knowledge based on dialogues between facilitating teams, communities and other representatives of social sectors who are present in coastal communities.

The approach adopted respects human rights, democratization of knowledge, and humanistic and humanitarian principles. The strengths, needs and conditions that make people living in a community vulnerable are considered in terms of gender, social class, ethnicity, migratory status, and physical and cognitive conditions.

The training modules discussed in this manual take a comprehensive approach to the prevention, response, and attention to the effects of a tsunami, and are pedagogical instruments that can be used to promote collective actions and contribute to reducing the impacts of a natural threat of this type.

A series of theoretical-methodological concepts from the social, natural and earth sciences are used in this approach, and the three modules presented in this Training Manual have been created with contributions from several disciplines including geography, oceanography, sociology, psychology, and law.

The inter-disciplinary approach enhances the participatory methodology, including the use of multiple pedagogical tools and specialized information, the acknowledgement of community actions, and the importance of engaging participants as agents of change in risk prevention.

This Training Manual includes three training modules, composed of workshops. The first module introduces participants to the topics of risk, risk management, tsunamis and other key concepts. One of the main objectives of this first approach is to develop and use a common language and knowledge.

In the second module, three workshops are presented which are aimed at strengthening technical knowledge and its application, based on the preparation of a Tsunami Emergency Preparedness and Response Plan.

Finally, the third module includes a theoretical-practical workshop on community evacuation plans and protocols, with simulations and drills which incorporate psychosocial components of responses in the event of a tsunami. It is worth mentioning that all the modules are theoretical-practical and employ a horizontal and participatory methodology.

CHAPTER

02

JUSTIFICATION

COASTAL COMMUNITIES throughout the world have historically had to cope with natural events that alter their lifes. Some occur imperceptibly through the years and are only detected when irreversible changes are identified, such as long-term consequences of climate change, while others such as storms, cyclones, earthquakes and tsunamis occur very quickly and have an immediate effect.

Earthquakes occur in convergent margins or subduction zones associated with tectonic plates. They are one of the most destructive and dangerous events for human beings and ecosystems, not only because of the large amounts of seismic energy released, but also because they produce other coastal threats such as tsunamis (Chacón and Protti, 2011), whose detrimental effects on human life occur in a very short period of time.

Not all plate boundaries can generate major catastrophic earthquakes; however, it is extremely important to study seismic-tectonic (local and regional), geomorphological, bathymetric and socio-spatial conditions to understand the potential threats and risks inherent in coastal areas (Protti, Güendel and Malavassi, 2001; Chacón and Protti, 2011).

Costa Rica is a country which is subject to high levels of seismic risk. According to studies by Protti, Güendel and Malavassi (2001), the country has subduction zones on the Pacific and the Southern Caribbean coasts, with a potential for seismic events of magnitudes between 7.4 and 7.8.

These authors also divided the forearc regions into three semi-independent seismotectonic segments, differing in their bathymetry, roughness, age and coupling, where subduction occurs underground, which limits the generation of destructive tsunamis. However, according to Chacón and Protti (2011), one may occur which is capable of flooding large areas of land.

On the Caribbean coast of Central America, unlike the Pacific coast, there are no records or evidence of tsunamis which have affected the entire region; however, tsunamis which have had effects at a more local scale have been reported. Chacón and Zamora state that:

Local scenarios like the 1991 Limón tsunami are relevant on the assessment of tsunami hazard, as they could pose a high threat for Costa Rica and Panamá due to very short arrival times. (2017, p.1)

Costa Rica has created policies such as the Seismic Building Code to mitigate the devastating effects of earthquakes; however, even though the threat of tsunamis does exist, exposure to such events has been ignored. Among the obvious deficiencies in terms of dealing with tsunami risk at the national level are a lack of information and preparation of stakeholders (communities, the tourism industry, institutions). Likewise, there is a lack of knowledge about the community as a territory, which can save lives.

Among the inputs needed to establish a tsunami early warning system are the creation of evacuation maps and a Tsunami Emergency Preparedness and Response Plan.

Recently, SINAMOT has prepared evacuation maps for several Pacific coastal communities and created a Tsunami Preparedness and Response Plan for some of those communities. Sinamot is a research Program of the Department of Physics of the UNA in Costa Rica. This was done through a research project as part of a Cooperation Agreement with the National Commission for Risk Prevention and Emergency Management (CNE). In this project, the propagation of several tsunamis were simulated numerically throughout the Pacific Ocean, to define areas in Costa Rica which might be flooded. The most efficient routes and the most convenient meeting points for each sector of the hypothetically flooded areas were calculated based on these areas.

This document is a methodological proposal for community well-being and not only discusses aspects about risk. It also focuses on assisting communities to develop real responses to dangerous events, which communities can help to develop by discussing their daily experiences. Likewise, one of the main objectives of the document is to guide facilitators and communities to be better prepared and aware of relevant aspects of their territories to eventually be recognized as "Tsunami Ready."

The components of the training modules are developed in three areas related to theoretical and practical elements of tsunami response in Costa Rica. The goal is to enhance the capacities of future facilitators and coastal communities in managing tsunami risks, recognizing the community as the main stakeholder, as its inhabitants are those who best know their realities. This approach assists inhabitants in developing a critical vision of their environments, defining their problems, and becoming aware of the need for change, thus fostering an informed, trained, and prepared population.

CHAPTER

03

ETHICAL PRINCIPLES OF POPULAR EDUCATION AND LEARNING-BY-DOING FROM A PSYCHOSOCIAL APPROACH

REPARING PEOPLE to face a tsunami threat implies developing certain capabilities in local populations related to how this might affect their personal lives, the life of their communities, and their environments.

Although specific community network is built naturally in territories, it can be better understood through collective, educational, and reflective experiences and dialogue, based on knowledge acquired by the exchange of know-how and specialized training. This is broadened by participatory pedagogy, which contributes to the self-acknowledgement of individual or collective strengths in moments of crisis caused by a tsunami emergency

A participatory, dialogue-based and cross-cutting learning methodology is proposed, from the perspective of popular education, inspired by the thoughts of Pablo Freire, the constructivist approach, and the pedagogical principles of the Universidad Nacional. The person facilitating the learning-teaching process must recognize the ongoing need for building alternatives and action proposals to deal with multiple ways of preventing and responding to tsunami risks. This must be a participatory action, leading to a collective understanding of threats, risks, and protection of individual and collective life, which will require incorporating worldviews from the perspective of gender, intergenerational relations, and cultural diversity.

This critical pedagogy, aimed at promoting the exchange of knowledge, has democratized scientific progress and innovations. The dissemination of experiences implies continuous self-evaluation of the learning and teaching process, accountability of all participants, and assertive, fluid, and constant communication.

On the other hand, a psychosocial approach can provide tools that preserve the psychological integrity of affected individuals, as well as the balance of social networks in the face of natural disasters.

This approach is comprehensive, focusing on the mindset needed to face these types of disasters. As stated by Japan's International Cooperation Agency (JICA) "From the perspective of protecting and caring for mental health, a preparatory stage allows individuals to acquire and develop capacities to confront difficult situations caused by emergencies and disasters". (JICA, 2011, p. 16)

Psychosocial support includes:

Illustration 1. Psychosocial support

Source: Taken from JICA, 2011.

One of the functions of the facilitators (specialized or non-specialized staff) is to generate participatory community activities which provide mutual support in socializing impacts of disasters and mobilizing resources (personal and collective) that facilitate effective adaptation and reduce external dependency.

In Costa Rica, Executive Decree 41599 of November 17th 2019 establishes the mandatory application of an integrated mental health and psychosocial approach to support health services and communities in cases of emergencies and disasters. The decree also specifies the social actors responsible for its enforcement, and the process to be followed.

This standard specifies a general and comprehensive approach to:

1. Ensure basic services and safety.
2. Provide community family support.
3. Provide psychological support
4. Provide specialized treatment.

CHAPTER

04

OBJECTIVES

GENERAL OBJECTIVE

Strengthen the abilities of coastal communities to prepare for and respond to the threat of tsunamis, following "Tsunami Ready" guidelines.

SPECIFIC OBJECTIVES

1. Promote the **dissemination of and access to information** related to the threat of tsunamis in coastal communities of the country.

2. Train the country's coastal communities in **preparing for and responding to the threat of tsunamis** through participatory processes of popular education and "learning by doing".

3. **Plan for the articulation** of social actors in coastal areas to prepare for and respond to possible tsunami at a community level.

4. Foster a culture of **periodic tsunami simulations** and drills in coastal communities to evaluate and update tsunami preparedness.

CHAPTER

05

PARTICIPANTS

FACILITATORS who wish to use the modules and workshops presented in this Training Manual will need to recognize the different types of participants who will be involved. These may include members of the community, commercial and business sectors, tourists, workers, students, public employees related to Disaster Risk Management and Local Community Management, community associations, and various types of organizations and alliances.

Therefore, this manual is aimed at benefitting communities and those who participate in the training process. This group is formed by key social stakeholders, who will generate new knowledge and develop a participatory, useful, and applicable Tsunami Emergency Preparedness and Response Plan.

Since these are important participatory activities which will benefit the entire population, an open invitation must be made to all interested parties. This will ensure a greater number of attendees in activities and workshops to obtain a more complete and diverse representation of the coastal community.

Although members of the community must participate throughout the entire process, from the preparation to the implementation of the plan, it is possible to distinguish certain key moments for the participation of civil society:

- **During the training phase**, the population shares relevant information with experts regarding their community, based on their own reality;
- **During the mapping phase**, the community's main social elements are analyzed and discussed;
- **During the drill phase**, collective decision-making is defined for possible actions in case of an emergency.

These contributions are used as inputs for the development of technical criteria which are appropriate for the realities of each location. These will be integrated into management of the plan, allowing the community to accept the studies and proposals and take responsibility for their implementation and development.

Therefore, it is possible to define two important actors in the consolidation of an emergency plan against the threat of tsunamis for a coastal locality: community and external stakeholders.

A. COMMUNİTY STAKEHOLDERS:

The residents of a coastal community that is directly or indirectly threatened by a potential tsunami. These include residents, public institutions, NGOs, commerce, services, among many others that make up the fabric of the coastal community.

B. EXTERNAL STAKEHOLDERS:

These individuals may include representatives of civil society and Government; however, they do not form part of the daily life of the community. They may be representatives of regional institutions with influence in the community, as well as tourists, migrants, and national businesses, and land and sea services providers. The number and representativeness of these participants will depend on how the convocation is carried out.

5.1 MIGRANTS IN EMERGENCY SITUATIONS OR CONTEXTS

In emergency situations, it must be considered that communities incorporate populations with varying needs, including the migrant population. "The International Organization for Migration estimated that in 2019 there were 272 million migrants in the world" (IOM, 2019, p.3). In Costa Rica, it is estimated that nine percent of the people living in the country are foreigners(INEC, 2019).

There are migrants with their own particularities and needs in our communities. The access that migrants have to resources, skills and networks has repercussions during emergency situations that may be due to natural disasters, technological accidents, conflicts, or violence. These situations may affect the wellbeing of foreign nationals and native residents in very different ways (IOM, 2016, p.27).

The invisibility often suffered by migrants has an impact, given the very few provisions that are made available to this population in terms of prevention, mitigation, response and recovery within the national risk mitigation and emergency response systems – and there are even fewer provisions made at the local or territorial levels. In addition, the different nationalities and forms of migration present in the country (intra-regional, extra-regional and returnees) create a large variety of vulnerability profiles among migrants.

The condition of vulnerability is closely tied to structural, social, economic, political and cultural factors, but also to processes or contexts that may place persons at risk in the specific situation in which they may find themselves.

More specifically, a migrant population is a group of people that may easily be forced into a condition of vulnerability. This may occur due to disadvantages that they experience when arriving in the country of destination or transit, such as poverty or the social disadvantage of discriminatory practices, or because their specific needs have not been fully identified by institutional stakeholders, either at the level of local or central government.

The IOM developed a Migration Crisis Operational Framework(MCOF) in 2012. This instrument recognizes that:

> States have the primary responsibility for safeguarding inhabitants residing within their territory; at the same time, (the instrument) states how the IOM can support the Member States and associates to adequately respond to the needs for assistance and protection of the population affected by crisis situations (IOM, 2012, p.1)

The IOM's actions are based on a human rights and humanitarian approach, considering the needs and vulnerabilities of a particular group, such as migrants. This framework also facilitates the commissioning of a series of instruments that complement the humanitarian response for migrants that have been stranded due to a crisis situation, including technical assistance for human-

itarian border management; a point of contact to ensure that migrants have access to emergency consular services; referral systems for individuals with specific protection needs; and the organization of safe evacuation of migrants to ensure a safe return to their homes.

The IOM (2016) also developed a training manual titled Integration of migrants into the Emergency Preparedness, Response and Recovery Systems of the host country. This document identifies at least twelve specific vulnerabilities faced by migrants within an emergency context:

• LANGUAGE BARRIERS.

Migrants may have little or no knowledge of a country's language, which may impede their understanding of the information or other indications provided during the processes of evacuation or seeking shelter.

• ACCESS TO ALTERNATIVE MEDIA OR SOURCES OF INFORMATION.

If domestic media do not take cultural and linguistic differences of migrants into account, these migrants may prefer to use others from their country of origin.

• ADMINISTRATIVE OR LEGAL BARRIERS.

Legal or political frameworks may not include specific provisions aimed at protecting migrants in emergency situations, or may actually exclude them from accessing certain services being provided.

• EXPLOITATION AND HUMAN TRAFFICKING.

Human trafficking is a modern form of slavery. Currently, many people fall victim to this type of crime. In the context of an emergency, such victims may not have access to their documents and thus continue to be exploited.

• UNAWARENESS OF LOCAL CONTEXT.

Mobile individuals may be unaware of the specific conditions of an environment, and the risks and threats

that they may be exposed to in that environment.

• LACK OF SOCIAL NETWORKS.

When people decide to leave their place of origin and move to a new destination, their family and community bonds are weakened, and any support they previously relied upon may be reduced.

• LOW LEVELS OF PARTICIPATION IN COMMUNITY AFFAIRS.

Migrants frequently have low levels of participation in community processes or activities; this occurs particularly in the case of emergency prevention, training, or planning regarding responses to emergencies.

• MISTRUST OF AUTHORITIES.

The lack of trust that migrants have towards local authorities, due to different factors, may be an important aspect limiting their engagement in Risk Management processes.

• LACK OF INTEGRATION IN THE PLANNING OF PREPARATORY AND RESPONSE ACTIVITIES.

Frequently, preparation and contingency plans and staff training do not take migrants and their specific needs into consideration.

• DISCRIMINATION AND HOSTILITY.

Discrimination is an activity that excludes people, due mainly to prejudice against migrants. This minimizes their opportunities of forming part of designed strategies and risk management in general.

• POVERTY.

Even though poverty is not necessarily linked to migration, the barriers to integration into countries of destination or transit experienced by migrants may contribute to living a life of poverty.

• ISOLATION.

As is the case with poverty, isolation is not inevitable in the life of migrants; however, this population is more exposed to working and living in conditions of social, physical and geographical segregation, and they may possibly be less connected to information or communication networks than other groups in the community [1].

Internationally, it is important to note that the 2015-2030 Sendai Framework for Disaster Risk Reduction (the Sendai Framework) sets forth the global commitments made on risk reduction and fostering resilience from disasters. It is the first global agreement that contains clear references to migration and displacement. It not only recognizes the relevance of displacement in the context of Disaster Risk Reduction, but also clearly recognizes the supporting role migrants have in the efforts of prevention, preparation, response, and recovery, as well as fostering resilience (UNISDR, 2015).

Equally, the Migrants in Countries in Crisis Initiative establishes principles and guidelines for governments, the private sector, international organizations, and civil society to be able to foresee and meet the needs of migrants in countries affected by conflicts or disasters.

The incorporation of migrants into risk preparedness, prevention and management may require that certain local stakeholders develop a proactive attitude towards identification of and searching for migrants living in the community. For the initiatives aimed at fostering direct participation by migrants in disaster risk management processes to produce optimal outcomes, it is necessary that institutions in a community have a greater understanding of the number, location and socio demographic profiles of migrants living in that community.

An emergency preparation process is an invaluable opportunity to connect the migrant population to a community, allowing them to be co-responsible participants in responses designed at the local level to attend to risk management.

CHAPTER

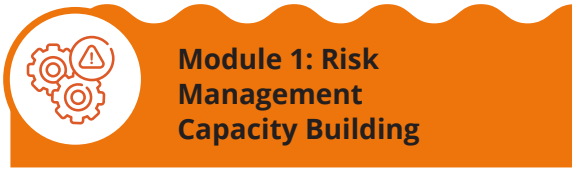
06

GENERAL DESCRİPTİON OF THE TRAİNİNG MANUAL

THIS TRAINING MANUAL is a sequential and systematic document with a common thread that strategically unites different stages of Tsunami Risk Management planning through work modules. The First Module contains one workshop, the Second Module contains three workshops, and the Third Module contains one workshop. All workshops have an approximate duration of three hours. The methodology facilitates the relation between theory and practice based on a "Learn by Doing" process. This improves understanding of the contents, generating cross-cutting training and the incorporation of knowledge that is built together within the learning process.

6.1 THEMATIC CONTENTS

6.1.1 ORGANIZATION AND DESCRIPTION OF THE TRAINING MODULES



Workshop:

Tsunami Hazards and Risk Management

This First Module includes a workshop with an approximate duration of two and half hours. It starts with the introduction of all participants in the training process. It also contains group questions to help identify ideas and previous existing conceptions that people had regarding risks, risk management, dangers, threats, vulnerabilities, tsunamis, and others.

After the workshop stage, the main concepts of the session on risk management will be more fully explained within the context of coastal communities, with specific focus on the threat of tsunamis, to complement the existing empirical knowledge of the communities with conceptual knowledge about risk management. Finally, a popular education technique known as "The World" is used to summarize the information provided.

Participants are introduced to the main concepts to acquire a greater understanding and to promote a common language for further discussions. The basics of risk management are explored in this Module, from prevention to response and recovery from tsunami risks in coastal communities in Costa Rica.

A theoretical-methodological dialogue is carried out to improve knowledge about perspectives on risk in the country, and to learn more about points of view on this subject in different disciplines. This will align the concepts that will orient the Training Manual and will also consider the previous perceptions communities have had regarding this issue.

Module 2: Creating the Tsunami Emergency Preparedness and Response Plan

Workshop 1:

Initial steps in creating the Tsunami Emergency Preparedness and Response Plan

The first activity in this workshop will be a session on Tsunami Emergency Preparedness and Response Plans. Its objective will be to provide conceptual and methodological tools to develop a community plan in a collaborative effort, with the full participation of different local stakeholders. This will be a theoretical-practical session; for example, there will be an activity to motivate the group and balance the content of the workshop. The practical, participatory component arises when stakeholders, including inhabitants of the community and representatives of institutions, commercial sector allies, and organizations that work in the community begin to work together to develop the Tsunami Emergency Preparedness and Response Plan.

The Second Module focuses on the effective articulation of stakeholders in the development of a plan based on the knowledge and skills acquired in Module 1. It proposes the articulation of the different sectors involved in the dynamics of the community to generate, in the following workshop, a plan based on an ongoing and collective sharing of knowledge between stakeholders.

Workshop 2:

Development of the Tsunami Emergency Preparedness and Response Plan

The purpose of the Second Workshop is to begin a joint presentation of the information that has been collected. Participants are asked to share key information for the development of a community plan, to be presented to other participants after collecting it from smaller groups.

Afterwards, the community plan is developed based on the theoretical and methodological knowledge that has been collected and shared, including empirical information and knowledge from the participants. Finally, a mapping of results is proposed, as well as a first approach to identify local stakeholders that will facilitate the application of technical tools in evacuation processes. This task will serve as a basis for Workshop 3 of Module 2 and Module 3, after completing the Development of a Tsunami Emergency Preparedness and Response Plan.

Workshop 3:

Completing the Tsunami Emergency Preparedness and Response Plan

This is the last workshop of Module 2. The purpose of this module is to complete the final details of the Tsunami Emergency Preparedness and Response Plan to be implemented in Module 3. This workshop will start with a presentation of the tasks involved in performing the first mapping of key institutional and community stakeholders to properly apply the module.

The plan is then completed and reviewed in the light of what has been developed in the previous workshops, so that the activities covered in Module 3can contribute to the effective implementation of the plan. New conceptual knowledge about drills and simulations is presented and reinforced, explaining the main differences between these activities and their importance in preparing for the evacuation. Finally, general discussions are given on the information that must be collected and disseminated to conclude the training process, and to prepare the final written details to put them into practice.

Module 3: Plan Assessment and Updating Through Simulations and Drills

Workshop 1:

Plan Assessment and Updating through Simulations and Drills

This is the last Module, which completes the Tsunami Emergency Preparedness and Response Plan jointly drafted by the community and local stakeholders. It will begin with simulation exercises to put into practice everything that has been learned, after which a popular educational technique known as “The Boats” is applied.

Psychosocial aspects are then explored from a preventive perspective, and as a response to tsunami emergency crisis and disasters. In conclusion, a drill is planned and performed at a later date.

The community must develop a preparedness and response plan in the three workshops of the second Module. Therefore, participation is a basic requirement. After this, in Module 3collective knowledge is put into practice, emphasizing the need to carry out simulations and drills. These tools make it possible to gain experience and practice the use of knowledge acquired during the three modules. Evacuation plans can only be successful if they have adequate assessment and updating mechanisms.

Table 1. Description of the objectives for each training module

Modules	Objectives
Module 1. Risk Management Capacity Building.	Promote dissemination and access to information related to tsunamis threats through "learning by doing" for the development of risk management capacities
Module 2. Preparation of the Tsunami Emergency Preparedness and Response Plan	Foster a planned articulation of social stakeholders living in coastal communities, in the development of a Tsunami Emergency Preparedness and Response Plan.
Module 3. Evaluation and update of the plan through simulations and drills	Foster a culture of daily exercises in the coastal communities regarding their preparedness against possible tsunamis.

Source: Prepared by the authors.

6.2 METHODOLOGY

This training plan adds pedagogical contributions from popular education that facilitate the training process, motivate learning, generates greater interest among participants, and maintains a balance between motivation and analysis through games and other techniques.

The emancipatory focus of popular education helps to reduce the social inequalities that prevent different populations from acquiring knowledge about Tsunami Risk Management. Their contributions, viewed from a critical pedagogy perspective, help provide a response to issues associated with limited access to information about how to face an emergency.
Theorizing is also discussed in popular education:

> This process of theorizing must always allow us to return to practice to transform, improve and resolve it; that is, to return with new elements that allow the initial knowledge, the situation, the feelings from which we started, to be explained and understood, comprehensively and scientifically. Therefore, it is important to clearly justify and consciously assume commitments or tasks. This is when we say that theory becomes a guide to transformative practice. (Bustillos and Vargas, 1990, p. 4)

Despite having a high practical content, this plan also tries to strengthen theoretical and scientific knowledge to generate new knowledge from dialogue. In popular education, theorizing is also understood as part of the learning process."Seen in this way, the process of theorizing allows us to locate the everyday, the immediate, the individual and the partial, within the social, the collective, the historical, and the structural" (Bustillos and Vargas. 1990. p. 4).

6.2.1 PEDAGOGICAL TECHNIQUES TO BE USED. DESCRIPTION OF PARTICIPATORY PEDAGOGY

Module 1.

The techniques used in this First Module are based on the practice-theory-practice relationship, and have a logical sequential order to facilitate the training process. In this module the methodology provides tools for group reflection, which have a highly practical component: the objective of animating group activities within popular education is precisely to encourage maximum participation and to create an environment of trust (Bustillos and Vargas, 1990, p.4), while the techniques contribute to a theoretical sense of the learning process.

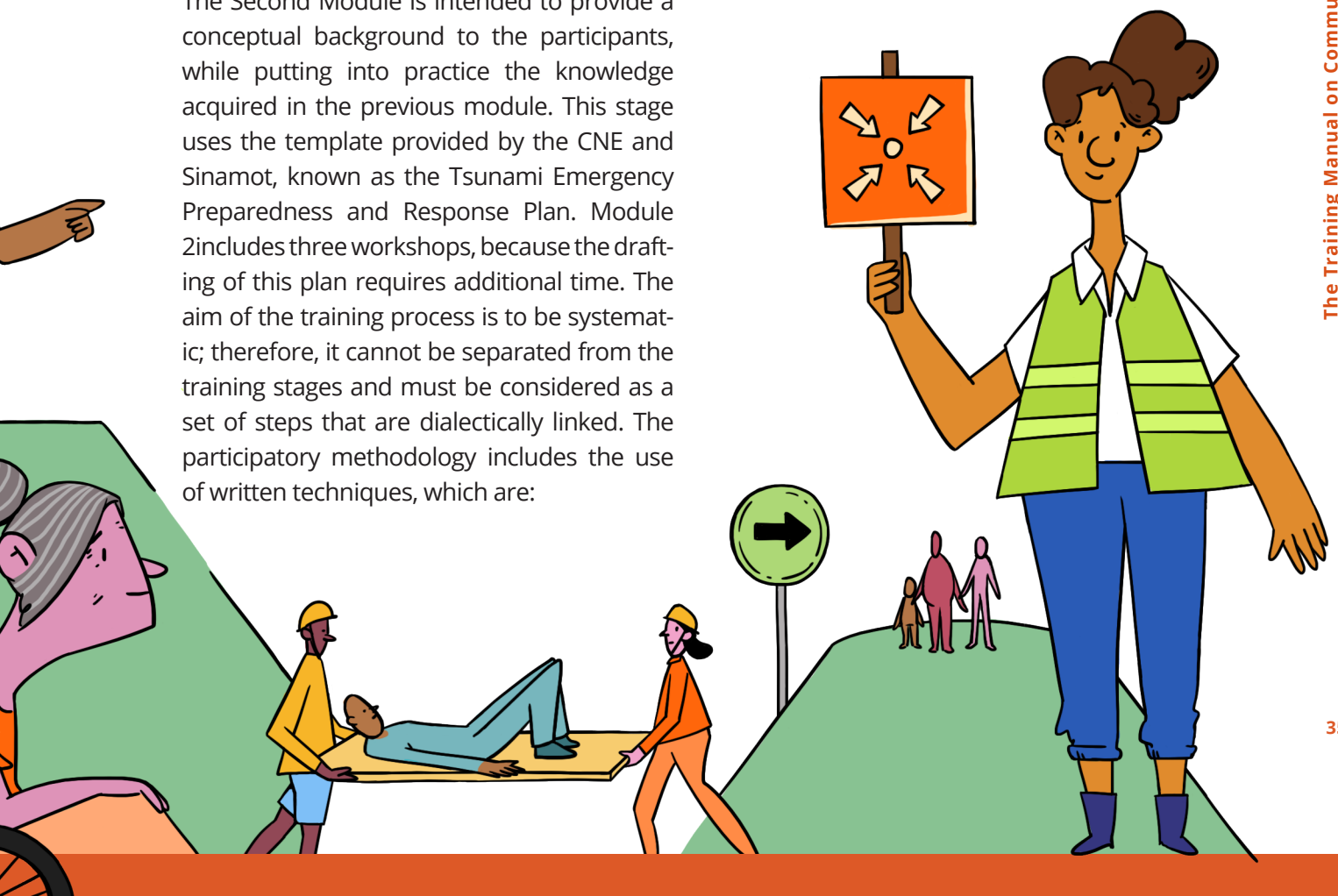
Module 2.

The Second Module is intended to provide a conceptual background to the participants, while putting into practice the knowledge acquired in the previous module. This stage uses the template provided by the CNE and Sinamot, known as the Tsunami Emergency Preparedness and Response Plan. Module 2includes three workshops, because the drafting of this plan requires additional time. The aim of the training process is to be systematic; therefore, it cannot be separated from the training stages and must be considered as a set of steps that are dialectically linked. The participatory methodology includes the use of written techniques, which are:

> Elaborated by a group during the training process... and may be characterized as the direct result of what the group knows or understands about a certain subject matter; they are the outcome of the collective work at the moment of its application. (Bustillos and Vargas, 1990, p. 4) .

Module 3.

In this last Module several concepts are explored and the practical tools for tsunami evacuation processes are explained. Evacuation exercises provide a way to assess the Tsunami Emergency Preparedness and Response Plan; therefore, several evacuation exercises are performed as simulations and drills. These exercises must be accompanied by mid-term systematic plan assessments and updating.



CHAPTER

07

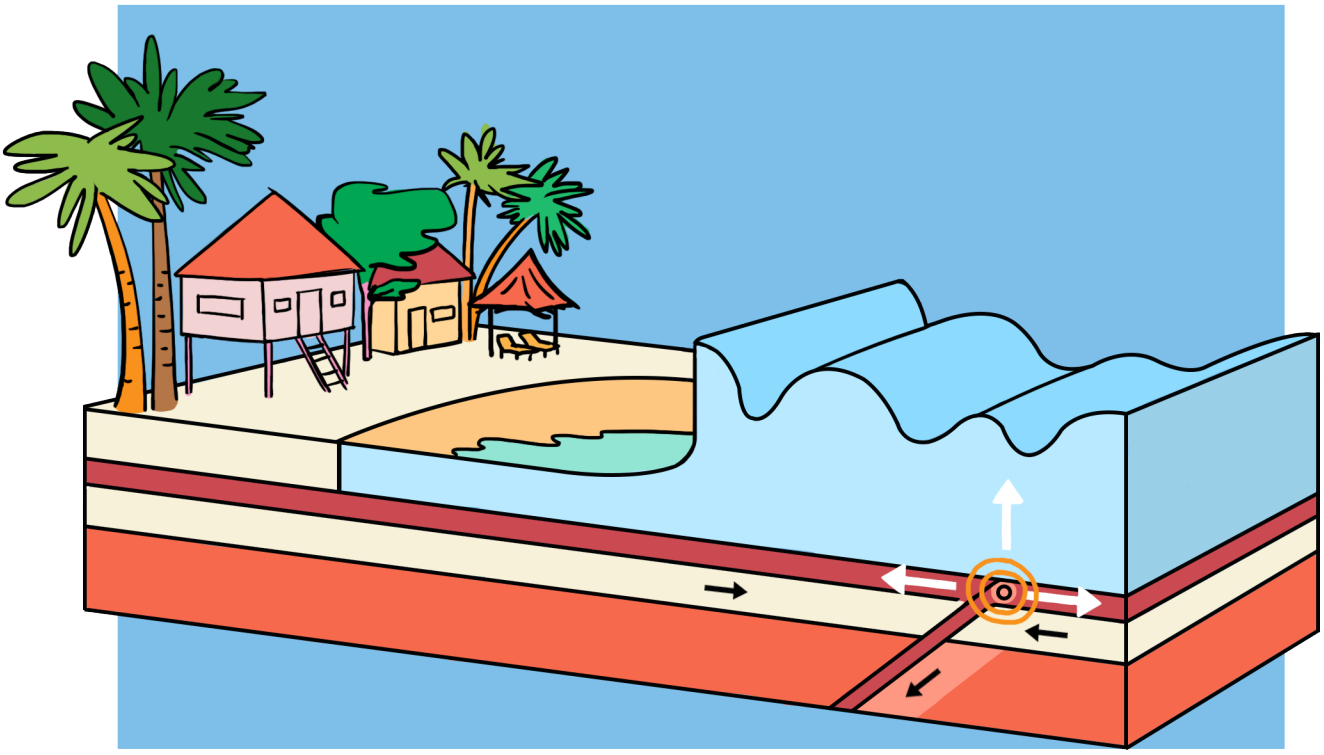
GLOSSARY

FOR THE PURPOSES OF THIS MANUAL, it is relevant to know some key concepts that will serve as a guide in the investigative process. The risk management approach allows the articulation of elements and behaviors typical of humanity and its inter-subjectivity, with events that are supposed to be natural.

7.1 TSUNAMI

The definition given in the IOC / Unesco Tsunami Glossary is:

> A series of travelling waves of extremely long lengths and periods, usually generated by disturbances associated with earthquakes occurring below or near the ocean floor. (Also called seismic sea wave and, incorrectly, tidal wave). Volcanic eruptions, submarine landslides, and coastal rock falls can also generate tsunamis, as can a large meteorite impacting the ocean. These waves may reach enormous dimensions and travel across entire ocean basins with little loss of energy. They proceed as ordinary gravity waves with a typical period between 10 and 60 minutes. Tsunamis steepen and increase in height on approaching shallow water, inundating low-lying areas, and where local submarine topography causes the waves to steepen, they may break and cause great damage. Tsunamis have no connection with tides(IOC / Unesco, 2019, p. 9).



7.2 RISK

The concept of risk can be viewed from local, economic, and environmental perspectives; it can also be numerically described in terms of human loss, economic effects on commercial sectors due to an event, or environmental damages (Barrantes and Márquez, 2011). Conceptualizing loss from these three perspectives can produce ambiguous results.

In Costa Rica, the National Law on Emergencies and Risk Prevention, No. 8488, defines it as the probability of situations that generate losses, damages, or consequences, and that, in addition, are temporary in nature, which makes it very characteristic.

The CNE (2014) views risk from different dimensions, structured as follows: current risk (represents existing conditions), future risk (may appear due to trends in social development), residual risk (derived from the intrinsic uncertainty of risk assessment methods), accepted risk (the product of a complex combination of economic, environmental, political, social and cultural factors that generates scenarios that are difficult to mitigate), acceptable risk (a level of loss that a society or community considers tolerable, taking into account prevailing social, economic, political, cultural and environmental conditions).

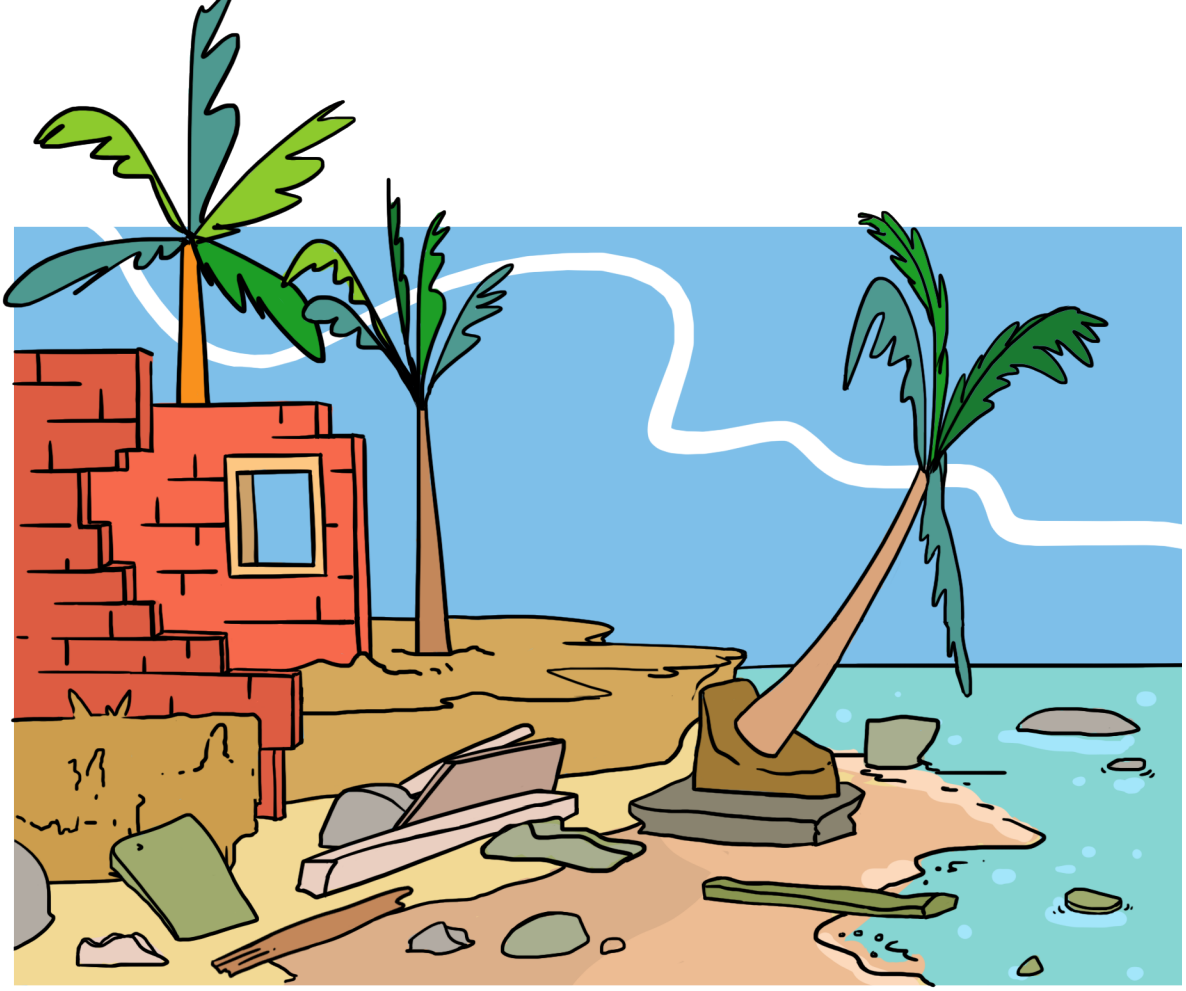
7.3 RISK MANAGEMENT

Conceptions of risk management are varied, but they do coincide on some key points; for example, that it is a complex and dynamic process subject to control. Cardona (2001) sees it as a complex social process whose purpose is to reduce risks and reduce the impact of social and/or natural disasters, based on the idea of risk as a dynamic social process.

The UNDP (2012) agrees with the dynamism and control of risk by mentioning that Risk Management is "the planned, concerted, participatory and comprehensive process for reducing the conditions of disaster risk in a community, a region or a country" (P. 6).

The conceptual position of the UNDP considers aspects of risk management that should be considered essential in socio-political decision-making; for example, that it must be a participatory and comprehensive process in the application of plans or programs to mitigate vulnerability in the face of a disaster. Lavell and Franco (1996) proposed an even more comprehensive conception when they stated that a risk management system is an open, dynamic and functional organization of institutions and their set of guidelines, standards, resources, programs and activities of a technical–scientific nature, planning, emergency preparedness and community participation, and that its objective is the incorporation of risk management in the culture and the economic and social development of communities (Franco and Lavell, 1996).

Risk management is a multilateral commitment in which the institutions and organizations allied with the communities must work hand in hand with local inhabitants. It is a shared responsibility and must examine the causes that make communities vulnerable, prevent disasters based on previously planned responses, and be prepared for threats.



7.4 THREAT

A threat is defined as "the probability of a potentially disastrous event occurring during a certain period of time in a given place" (Barrantes and Márquez, 2011, p.17).

In broader terms it can be understood as:

> A threat is considered as such when it could directly or indirectly affect the life or property of a population, caused by a natural or man-made phenomenon which acts at a specific time and place. Interpreted in this way, it is not limited exclusively to natural factors, but also acquires a social character, hence a threat must be understood as an extreme natural event that represents a potential danger inherent to the natural phenomena or adverse events themselves (Office of the United States of America for Disaster Assistance Abroad, cited in Reyes et al., 2017, p. 24).

As was the case for risk management, the Costa Rican National Commission for Risk Prevention and Disaster Control considers that people influence threats, which are intensified due to their ways of life. The slow expansion of areas occupied by human beings and a lack of planning, can accelerate and intensify the presence or effects of socio-natural threats (natural threats exacerbated or intensified by human action or vulnerability) and anthropogenic threats (derived exclusively from human activity) (Mora et al., 2014).

7.5 VULNERABILITY

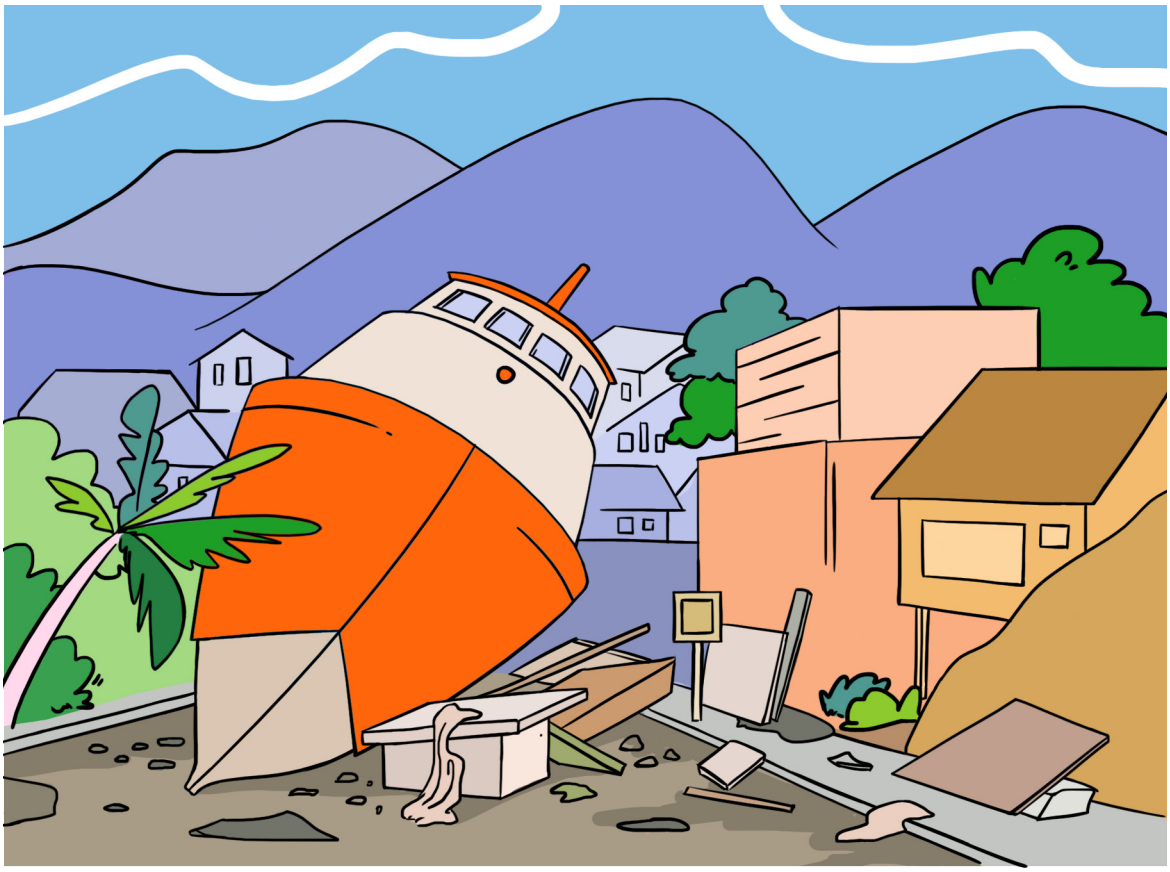
Vulnerability as a concept is not isolated from the concept of a threat, because the degree of vulnerability of a community to threats depends on the conditions that would help it to mitigate them. Social perception and living through a disaster are intensified if the degree of vulnerability is higher.

This concept does not only mean the "level of loss of an element or group of elements at risk, which may result in the probable occurrence of a disastrous event" (Barrantes and Márquez 2011, p.17), but also has an intrinsic relation with the unpredictable phenomena of nature itself and with social phenomena that increase vulnerability. Examples of these social phenomena include social-economic inequality, institutional abandonment and social exclusion, in its broadest sense, including access to basic resources such as water, which is supposed to be a universal right, especially in a country such as Costa Rica where sources of water are abundant.

The concept of vulnerability is also associated with the lack of "capacity of a community at risk to anticipate, survive, resist, and recover from the impact of a threat" (Barrantes and Márquez 2011, p.17). However, when we speak about institutional abandonment and neglect of coastal communities by the State, we refer to the fact that communities are given the sole responsibility for preventing, responding to or recovering from a disaster, exonerating the State from any blame. This discourse has a long tradition, and is the product of a capitalist ideology that values individual success over social change.

On the other hand, Costa Rica's CNE has managed to identify several reasons for conditions of social vulnerability exist when faced with disasters.

> This condition arises from several physical, social, economic, and environmental factors. As an example, in Costa Rica the common factors that increase vulnerability include inadequate design and defective construction of infrastructure, lack of infrastructure maintenance, lack of detailed information about threats in communities, risk denial and lack of local awareness in areas of high susceptibility to threats, insufficient preparatory measures to face a situation of risk, and inadequate environmental management processes (inadequate management of hydrographic basins) (Mora et al. 2014, p. 6).



7.6 DISASTER

> [A disaster] is a social event that may occur as a result of an event that, with the proper conditions of vulnerability, can cause severe alterations in the normal conditions in which the community works; this translates into human and property loss, and has impacts on social systems. This focus is oriented towards prevention, because it deals with the materialization of risk, which can be managed to avoid a disaster. (Cardona, 2001 cited in Barrantes and Márquez, 2011, p. 18).

> However, when we discuss disasters, we can speak of two important periods. One is before a possible disaster, when actions are directed at creating a culture of prevention, working with populations at risk to enhance their resilience, and the other is concerned with all actions in response to an emergency, executed with the purpose of minimizing losses. (Barrantes and Márquez 2011, p. 31).

Putting this approach into practice requires the articulation of networks between vulnerable communities and the institutions and organizations responsible for their wellbeing.

7.7 RESPONSE

A response occurs when previous preparations come together with theoretical knowledge and empirical knowledge acquired in everyday life, because even though a phenomenon may be foreseeable, there is always some uncertainty about the effects that it may produce on a population.

For Barrantes and Márquez (2011), a response is "the execution of actions foreseen during the stage of preparation, implying immediate reaction to quickly care for the population" (p.17). For a response to a disaster to be successful, it is necessary to have a culture of prevention that is strengthened through the process of Risk Management education.

7.8 COMMUNITY RESILIENCE

Communities have developed different response mechanisms to possible threats, according to their specific context. These mechanisms are generally aimed at mitigating the negative effects of activities driven by certain economic expansionist development models which are based on extraction with little or no environmental liability and may also include responses to the effects of climate change.

These protective measures are based on the concept of resilience, which involves individual and collective re-adaptation to transformations experienced by the environment and individuals. However, although the concept originated in the natural sciences and can only partially explain differences in inherent human attitudes, the social sciences more commonly discuss this concept as a social construct.

We must detach ourselves from the static and positivist sense prevailing in the concept of resilience; a sense that inhibits subjectivity and the capacity of action of individuals and imposes external stimulation and transformations without the ability to respond.
Thus, we appeal to the change and the dynamism of the concept:

> It is change and not stability that characterizes social-ecological systems; therefore, conservation and sustainability must inevitably become dynamic. The resilience of a social-ecological system should be understood as the integrated capacity to face such changes; therefore, it is the ability of a social-ecological system to creatively absorb such transformation without losing its identity as such (Escalera and Ruiz, 2011, p. 114-115).

We thus understand resilience as the ability of a territory, a community, or an individual to "anticipate, prepare, respond to, recover and adapt from a shock or distortion" (Foster, 2007, cited in Ceña, et al., 2014). This approach incorporates a sense of prevention since it emphasizes anticipation and preparation as starting points of the resilience process. Furthermore, it incorporates the importance of subjective action in recognizing the need to respond to external environmental stimuli, including the process of assimilating such changes without losing identity and the capacity of adapting or learning from them.

7.9 HUMAN MOBILITY

According to the IOM, "migrant" is

> A generic term not defined in international law that, by common use, designates any person moving out of their habitual place of residence, either within a country or over an international border, either temporarily or permanently, for various reasons. This term comprises a series of well-defined judicial categories of individuals, such as migrant workers; individuals with a particular form of movement that is legally defined, such as migrants subject to trafficking; as well as individuals with a condition or mode of movement not expressly defined in international law, such as international students (IOM, 2019, p. 131).

7.10 COMMUNITY NETWORKS FOR DISASTER PREVENTION AND RESPONSE

Dealing with the community networks that are created to counteract the risks posed by a disaster are one of the pillars for the proper operation of preventive management. When a network of local and community actors is created, greater focus must be placed on common ground and organizational consistency, because its structure, form and identity depend on it. As Ferradas states, "the fisherman that weaves his net to venture into the sea must pay special attention to the precise points where the threads of such a net meet" (Ferradas, n.d. p.24), and the same is true for creating and maintaining human and community networks.

It is important to emphasize a common purpose, shared conditions and what is jointly inherited: it is precisely those knots that mold and strengthen the identity of the community. Ferradas views community networks as the articulation of community actors as a whole, that operate as a network, using the foundation of a synergistic relationship based on transparent, plain, critical, and sincere communication, based on the recognition of shared roots, problems and aspirations. (Ferradas, n.d.).

It is important to highlight the emphasis on communication, which is characterized as a fundamental, critical, and transparent basis for the construction of community networks: an aspect that, without a doubt, we cannot ignore in Costa Rican university outreach efforts.

CHAPTER

08

METHODOLOGİCAL GUİDE TO TRAİN THE TRAİNERS İN TSUNAMİ RİSK MANAGEMENT İN COASTAL COMMUNİTİES

8.1 OVERVIEW

This methodological guide has been developed from an inter-disciplinary perspective which can bring together representatives from multiple social sectors of a specific territory, in this case, a coastal community.

A dialogue of knowledge and active, critical, and proactive participation is fostered in the workshops in each of the Modules, which will contribute to collective creation of products that promote understanding of the marine and coastal surroundings of communities in which the workshops are held, as well as of the scientific contributions of academic institutions and national and international organizations involved in Tsunami Risk Management. The sharing of this knowledge clearly requires recognizing the knowledge that is acquired from generation to generation, as well as from various daily practices that have been mostly internalized by the members of these communities.

Each community is diverse, with its own cultural, social-economic, political and ecosystem complexity; therefore, the activities implemented using the participatory methodology will have varying responses. The manual must be considered as a work guide, with a pace and degree of insight that is directly linked not just to attaining objectives, but also to the responses given in the training process by the participants in a specific time and place, and with respect to the social-environmental conditions faced by such community, such as floods.

The workshops include moments for understanding new technical knowledge, moments to carry out group site exercises, and other exercises to be performed at home or in the community in general, without a facilitator, leading to the development of a Tsunami Emergency Preparedness and Response Plan. It is putting into practice a democratic exercise in validation and collective approval of results and the execution of decisions that will allow communities to be recognized as Tsunami Ready in the future, but, above all, it will provide communities with the minimum capacity necessary to detect and react intelligently to tsunamis.

8.2 ORGANIZATION OF THE TRAINING PROCESS

8.2.1 Module 1: Risk Management Capacity Building Module

Module 1 objective:

Promote the dissemination of and access to information related to tsunami threats through “Learning by Doing” to develop capacities in Risk Management.

TABLE 2. ORGANIZATIONAL CHART FOR WORKSHOP 1:

Tsunami Hazard and Risk Management

Workshop objective: Share with coastal communities a first exchange of knowledge about Tsunami Risk Management.

Activity 1: Opening Remarks

- **Description:** Presentation of facilitators and participants, as well as a brief introduction to the training process.
- **Content:** The objectives and importance of the training process are introduced and contextualized. There is also a brief presentation of each of the facilitators and participants in the workshop.

Materials: Pen or pencil, notebook or notepad.

Duration: 20 minutes.

Activity 2: Brainstorming

- **Description:** The coordinator asks a question. Each participant then states an idea about what they think about the topic. A list is made to classify the ideas, which are then analyzed collectively.
- **Content:** Content may vary according to the training group; brainstorming occurs spontaneously and collectively and is based on the participants' existing knowledge about Tsunami Risk Management.

Materials: Blackboard or flip chart, marker.

Duration: 30 minutes.

Activity 3: Talk: Tsunami Risk Management

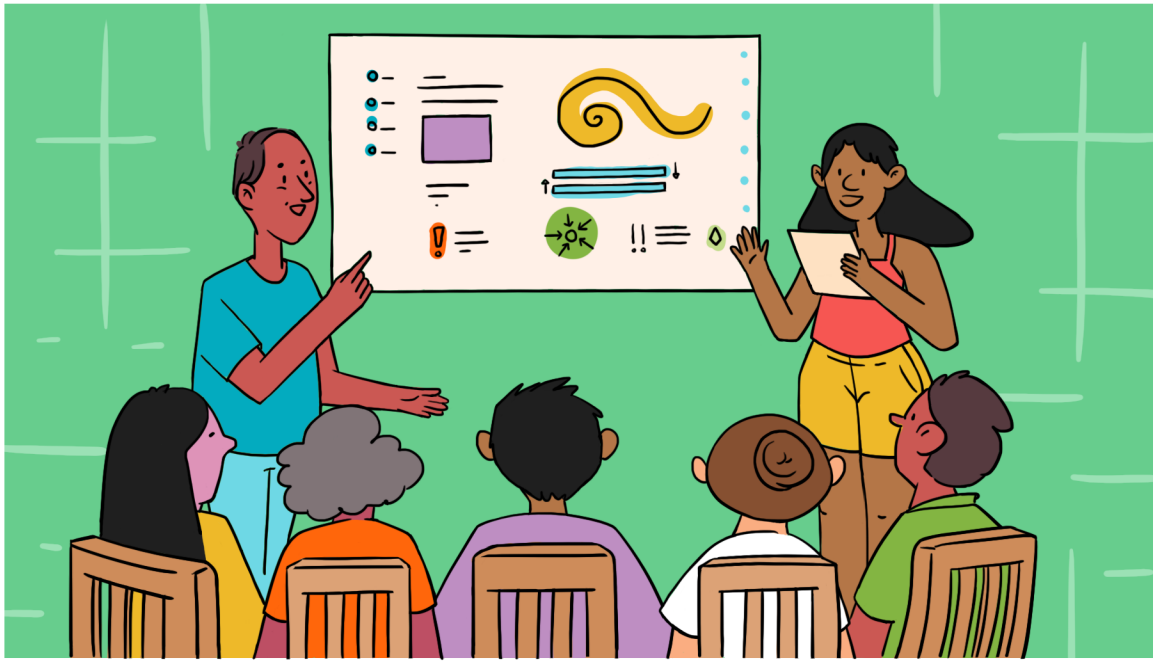
Description: A lecture on the main concepts on Tsunami Risk Management is presented.

Content:

- Introduction to the concept of risk (hazard, threat, and vulnerability).
- What is emergency and risk management? National contextualization of organizations that are responsible for emergency and risk management.
- What are regional, municipal, and community emergency commissions, and what role do each play?
- What is a National Risk Management System?
- What is a Tsunami?
- How does the Tsunami Risk Management process work in the country? (Institutions responsible for monitoring and activating an alert).

Materials: Pen or pencil, notebook or notepad.

Duration: 70 minutes



Activity 4: "The World"

- **Description:** A circle is formed, and the coordinator explains that a ball will be thrown and one of the elements – air, earth or ocean – will be called out; the person who catches the ball then has to say the name of an animal belonging to that element in less than 5 seconds. If the person cannot answer within that time, then that person must answer a question from the coordinator. When someone tosses the ball and calls out "WORLD" then everyone switches places.

- **Content:** Tsunami, risk, risk management, vulnerability, threat, disaster, community resilience.

Materials: Ball or balled-up paper.

Duration: 30 minutes.

Source: Prepared by the authors.

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8.2.2 Module 2. Development of a Tsunami Emergency Preparedness and Response Plan

Module 2 Objective: Promote the planned articulation of social stakeholders in coastal communities in the development of a Tsunami Emergency Preparedness and Response Plan.

TABLE 3. ORGANIZATIONAL CHART FOR WORKSHOP 1:

Tsunami Emergency Preparedness and Response Plan

Workshop objective: Provide participants with theoretical-methodological tools for local Tsunami preparedness and response plans.

Activity 1: Talk: "What is the Tsunami Emergency Preparedness and Response Plan?"

Description: Share theoretical-methodological knowledge on developing a Tsunami Emergency Preparedness and Response Plan. National efforts should be contextualized by providing examples of "lessons learned" from communities that have completed the process of being recognized by UNESCO as "Tsunami Ready". It is explained how this recognition is achieved, discussing all the sections of a Tsunami Emergency Preparedness and Response Plan that must be developed.

Content:

- UNESCO's "Tsunami Ready" recognition: Examples of communities.
- Introduce the official Sinamot page, which provide access to evacuation maps and templates for the Tsunami Emergency Preparedness and Response Plan. Link: http://www.sinamot.una.ac.cr
- Explain the sections of a Tsunami Emergency Preparedness and Response Plan and what types of information the community needs to obtain.
- Carry out a sectorization, which consists of delimitation of neighborhoods or locations within the community based on the tsunami flood map (for local and outlying areas) and depending on population concentration and physical-natural divisions (see the example in Annex 6, Module 2).

Materials: Pencil or pen, notebook or notepad.

Duration: 60 minutes

Activity 2: On the land or in the ocean

Description: All participants stand up in a circle or in a row, depending on the space available and the number of participants. A line is drawn representing the seashore. Participants stand behind the line (on the land). When the coordinator calls "Ocean," everyone jumps forward over the line. When "Land" is called out, everyone jumps back over the line onto the land. This must be done quickly, and those who make mistakes are out of the game.

Content: This activity has no content on its own; it is an icebreaking activity that raises the energy level of the group and leads to a stronger focus in the next activity.

Materials: Any material that can be used to create a straight or circular line on the floor.

Duration: 30 minutes

Activity 3: Assignment of tasks

- **Description:** Gather necessary information to create the Tsunami Emergency Preparedness and Response Plan together with the person in charge of the workshop. The creation of the community plan will take place in the training classroom.

  Working groups should be created to collect the information required for each sector/neighborhood. Each working group should include a representative of each sector/neighborhood and, if a group does not have a representative of a given community, the task can be assigned to another group.

- **Content:** The following baseline information about the community should be collected:

  1. Population data (Annex 6, Module 2).
  2. Identify, for each previously defined sector, the vulnerable population that will require some type of support within the flooded area (including exact location, type of support required).
  3. Identify essential infrastructure within the flood area (including hospitals, health centers, fire stations, Red Cross and police, government buildings).

Materials: (Annex 6, Module 2).	**Duration:** 30 minutes

Source: Prepared by the authors.

TABLE 4. ORGANIZATIONAL CHART FOR WORKSHOP 2:

Participatory development of a Tsunami Emergency Preparedness and Response Plan

Workshop objective: To jointly develop the Tsunami Emergency Preparedness and Response Plan

Activity 1: Presentation of tasks

Description: Group presentation of the tasks assigned in the first workshop of Module 2.

Content:

1. Population data (Annex X, Module 2)
2. Vulnerable population that will require some type of support within the flood area (exact location, type of support required)
3. Essential infrastructure within the flood area (including hospitals, health centers, fire stations, Red Cross, police, and government buildings)

Materials: Physical or digital support material chosen by the group to present their findings.

Duration: 30 minutes

Activity 2: Begin development of the plan

Description: The development of the Community Tsunami Emergency Preparedness and Response Plan should begin, using the data obtained in the tasks assigned in Workshop 1 of Module 2.

In this activity, the community should discuss the different community and institutional representatives that will participate in the Emergency response, and the number of optimal signs and locations to be used should be determined.

Content:

- Identification of first responders within and outside the community, including the Red Cross, law enforcement, firefighters, and traffic and tourist police.
- Make a list of the people and organizations that will participate in the preparation of the Tsunami Emergency Preparedness and Response Plan
- Planning for signage must be carried out, determining the number and type of signs to be placed on the streets and their locations (to do this it is necessary to have an evacuation plan).

Materials: Sheets of paper and pencils

Duration: 2 hours

Activity 2: Assignment of new tasks

Description: Create a list of community leaders and organizations, preferably by sectors/neighborhoods.

Content:

- Identification of community leaders who can be of support in the evacuation (they can be the same people who participate in the workshops or propose other people who justifiably could not participate in the workshop).
- Identify the community organizations present in the community.

If there is data associated with the task assigned in Workshop 1 of Module 2 that still needs to be gathered, it should be presented in Workshop 3.

Materials: Physical or digital material for presenting the information collected to the rest of the group.

Duration: 30 minutes

TABLE 5. ORGANIZATIONAL CHART FOR WORKSHOP 3:

Completion of the Tsunami Emergency Preparedness and Response Plan

Workshop objective: Complete the final details of the Tsunami Emergency Preparedness and Response Plan for subsequent implementation in Module 3

Activity 1: Presentation of the tasks

- **Description:** Pending data obtained by the groups should be presented.
- **Content:** List of community leaders and organizations.

Materials: Physical or digital material for presentation of the information collected to the rest of the group.

Duration: 30 minutes

Activity 2: Complete the Tsunami Emergency Preparedness and Response Plan

Description: This activity is intended to complete the Tsunami Emergency Preparedness and Response Plan.

Pending data from the previous tasks should be included. Also, different mechanisms for receiving and disseminating alerts should be proposed based on the identification of community leaders and organizations. Finally, a plan for carrying out the simulation, drill, or both should be defined.

Note: If one of the means of spreading an alert is through Call Trees, it is important to consider that some institutions which are included in a Tree, such as educational centers and Ebais, may not be open 24 hours a day and 7 days a week. In these cases, it is recommended to have two Call Trees.

- Call Tree during business hours
  Operates from 7 a.m. until 5 pm. Monday to Friday.
- Call Tree on nights and weekends
  Operates Saturdays, Sundays, holidays and Monday through Friday from 5 p.m. to 7 a. m.

Content:

- The template should include the pending data obtained in the assigned task.
- Identify the mechanisms for receiving the alert (at least three), including the means of reception, the person or institution responsible, the schedule and the people who must be notified.
- Identify at least three of the mechanisms for spreading the alert: means of dissemination, sectors covered, schedules, person responsible for initiating the alert.
- Define the scale at which the drill will be carried out (partial, such as a school, or total, including the entire community).
- Define the date the drills are to be carried out.
- Identify the people or institutions which are going to be responsible for receiving and spreading the alert, by sectors. These people or institutions can include, for example, the director of school X, an Ebais, the security guard of hotel X and the chief of Police.

Materials: Maps, pencil, colors, colored sheets, notepad.

Duration: 90 minutes

Activity 3: Talk: What are simulations and drills?

Description: The facilitator of this activity presents information to the other participants that will be useful in the development and practical application of a simulation and a drill.

Content: This talk should fully explain what a simulation is, its importance and how it will be implemented in practice. It must be exemplified didactically; for example, a video showing a simulation or drill.

Materials: Pencil, pen, notebook, or notepad

Duration: 30 minutes

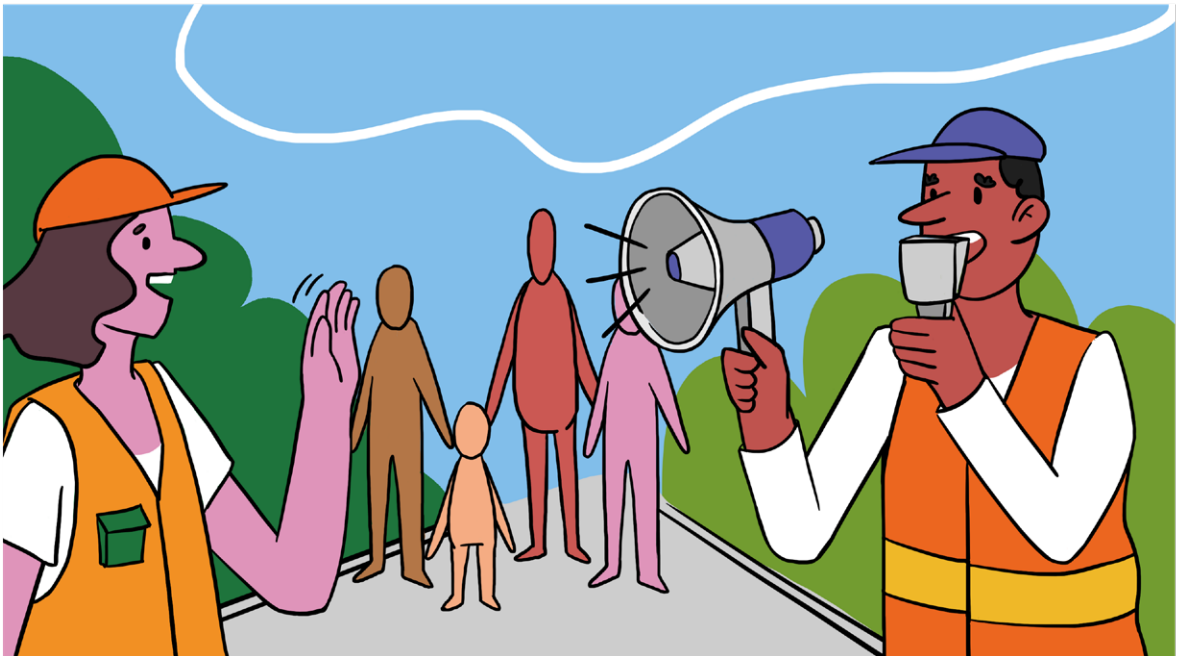
Activity 4: Assignment of new tasks

Description: The entire community should be notified when the drill will be carried out.

Materials: Flyers, or informational brochures and digital devices.

Duration: 30 minutes

Source: Prepared by the authors.



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8.2.3 Module 3. Plan assessment and updating through simulations and drills

Module 3 objective: Promote in coastal communities a daily culture of practicing exercises on preparedness for a possible tsunami.

TABLE 6. ORGANIZATIONAL CHART FOR WORKSHOP 4

Plan assessment and updating through simulations and drills

Workshop objective: Carry out practical exercises through simulations and drills, in which the community and responsible institutions can put into practice what was developed in the Tsunami Emergency Preparedness and Response Plan.

Activity 1: Simulation exercise

- **Description:** Two types of simulations will be carried out during this activity: one in real time and another with no time limit.
- **Content:** Physical space, evaluator, scale: partial (define who participates) or total, exercise schedule (day/night, morning/afternoon, duration or other aspects such as time of year), stakeholders involved (private, public and others), time (real, without a time limit, simulated), timetable, previously prepared or sudden, without unforeseen events.
- **Communication:** to whom, where and when (press, community, before or after the exercise), presence of the press in the exercise (real or simulated)

Materials: Laminated cards with images of different situations in daily tasks (pregnant woman, someone cooking, someone in the supermarket)

Duration: 40 minutes

Activity 2:"Lifeboats"

- **Description:** The facilitator tells the following story: "We are sailing on a huge ship, but there is a storm, and the ship is sinking. To save yourself, you must get on a lifeboat. But each lifeboat can only hold ... (specify a number)people. The group forms circles which contain the exact number of people that each lifeboat can hold. If there are more or less persons than that number, the lifeboat is declared to have sunk and those participants have to sit down; however, first they will have to answer a group question about the information provided in the previous talk. The number of people who can get in each lifeboat is then changed, and the new "drowned" persons are eliminated. This continues until there is a small group of persons who will be the survivors of the shipwreck.

- **Content:** Simulation in Tsunami Risk Management.

Materials: A space for the group to move more easily during the game.

Duration: 15 minutes

Activity 3: Emotional and behavioral reactions in crisis situations.

Description: A. The facilitator opens a group space for brainstorming around the question, how have I felt in crisis or emergency situations? Write answers on a flip chart or whiteboard to visualize the different emotional and behavioral responses that were described.

Content: The aim is to reflect upon the possible reactions of people in situations of crisis, through challenging questions, such as: how have we reacted during an earthquake, fire or any other emergency? Did I freeze, did I run, did I become desperate, was I calm and steady? etc.

Materials: Flip chart / whiteboard, markers.

Content: 10 minutes

Description: B. Afterwards, the facilitator discusses different psychological reactions that can occur when faced with a natural disaster.

Content: Reflections from the previous activity are validated, to then be complemented with a theoretical description of the issue.

Materials: Video beam, cardstock or any other material, depending on availability in each community.

Duration: 10 minutes

- **Description:** C. The facilitator will ask the group to split into subgroups and role play an emergency. This will start with someone going into a crisis (person freezes, attacks, or runs away), another who reacts calmly, and another who tells the group to take cover. At the end, a group discussion is held to reflect upon what they experienced, and these reactions are written down on the flipcharts of each subgroup.

- **Content:** The importance of experimenting with possible reactions is explained, to better understand how to handle a situation of this type.

Materials: Optional: costumes (wigs, clothes, fabrics, hats, etc.), flipcharts, markers.

Duration: 30 minutes

- **Description:** D. A dialogue is carried out to reflect on the psychological profile of people who can assume leadership or guiding positions during a disaster and after it. This is a brief presentation.

- **Content:** Using leading questions; for example, what skills and capacities should leaders have to properly guide activities during an emergency?

  Why is it important to identify these individuals?

Materials: Flip charts, markers

Duration: 30 minutes

- **Description:** E. Relevant points about psychosocial care standards in Costa Rica.

- **Content:** Discussion of psychosocial care standards in Costa Rica, emphasizing the entities that must coordinate at a municipal level, and the importance of following up on efforts to implement a disaster psychosocial protocol. An opportunity is provided for questions and comments at the end of the session.

Materials: Video beam, cardstock or flipcharts (markers)

Duration: 20 minutes

Activity 4: Simulation Exercise Planning

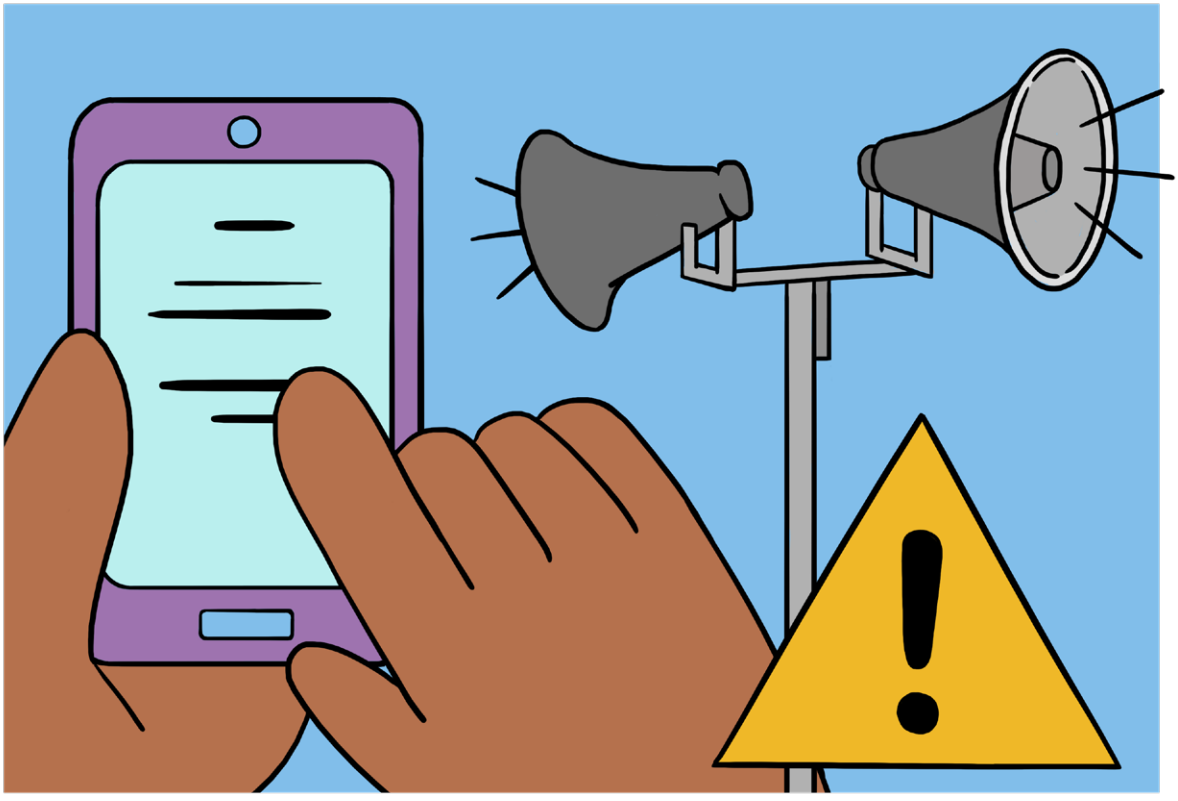
Description: In this activity a decision must be made whether to carry out a partial drill (for example, in a school), or a more general drill that involves the entire community.

Content: Physical space; evaluator; scale – partial (define who participates) or total, exercise schedule (day/night, morning/afternoon, duration or other aspects such as time of year); stakeholders involved (private, public and others); time (real, without a time limit, simulated); timetable; previously prepared or sudden, without unforeseen events (complementing the exercise with events that can complicate the exercise: for example, a woman giving birth, a cyclist that suffered a car accident, a heart attack, etc.); meteorological conditions (real or imagined); communications – to whom, where and when (press, community, before or after the exercise); presence of the press in the exercise (real or simulated).

Materials: Paper, pencil, notebook, or notepad

Duration: 40 minutes

Source: Prepared by the authors.



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ANNEXES

ANNEX 1.

Background information for the creation of this plan

There are different methodologies that seek to train the population in action plans before, during and after disasters, to provide better responses to an event. The application of participatory workshops with communities (children, adults, and the elderly), local stakeholders and public/private institutions are one of the most efficient strategies in the processes associated with disaster risk management, especially in the stage of preparation for a tsunami.

The creation of this manual was supported by similar initiatives that provide methodological proposals developed through plans, manuals and/or modules for preparing communities for emergencies which have been previously applied in different countries. In this Annex, we will briefly discuss the contents and main objectives of each of them.

Firstly, The Community/Neighborhood Plan for Comprehensive Disaster Risk Management(whose Spanish acronym is GIRD) is a proposal developed by the Nicaraguan National System for Prevention, Mitigation and Attention of Disasters (Sinapred) and the United Nations Development Program (UNDP),whose objective is to train communities about the importance of organization in reducing disaster risks.

It is also intended to provide methodologies and resources for the development of community/neighborhood plans for comprehensive disaster risk management. The methodology is based on a series of steps and activities that promote actions and measures by institutions and organizations. The steps consist of organizing the community/neighborhood for the GIRD, identifying risks, preparing a map (sketch) of these risks in the community/neighborhood, and finally, strengthening preparations for responses to these risks (Sinapred and UNDP, 2016).

On the other hand, the Peruvian National Center for Estimation, Prevention and Reduction of Disaster Risk (Cenepred and Unesco, 2014) carried out a Training Program for Community Leaders in Prospective and Corrective Management of Disaster Risks, which includes4training modules which provide theoretical and practical knowledge to participants through face-to-face learning activities and application activities to acquire the required competences. The program is implemented in four training workshops:

a. A regulatory framework for disaster risk management.
b. Identification and participatory analysis of the dangers and vulnerabilities in the participants' localities which impact people's lives.
c. Identification of planning instruments for risk prevention and reduction.
d. Identification of financing mechanisms for disaster risk prevention and reduction.

For the case of modules specifically designed for managing tsunami risks, the Disaster Awareness in Primary School Tsunami Module proposed by SEQUIP and

GITEWS (2008) was evaluated, which proposes the development of training modules for preparing to deal with the risks that tsunamis can pose for elementary school children. The Tsunami Module consists of five chapters and proposes that participants be allowed to apply the practical activities by themselves, through what the authors refer to as "learning by doing." The first chapter provides a general conceptualization of different types of disasters. Chapter two focuses on "tsunami risk and early warning," which provides general information about tsunami dangers in Indonesia, and information about the tsunami Early Warning System in that country.

Chapter three covers tsunami evacuation planning and provides a step-by-step procedure that assists stakeholders in developing a school evacuation plan. The fourth chapter deals with preparing for a tsunami and focuses on activities to carry out before a tsunami occurs, how to behave during a tsunami, and actions to take after a tsunami hits the coast. The last chapter was taken from the earthquake module and provides basic information on first aid (Sequip and Gitews, 2008).

Another of the documents evaluated was that of Unesco (2011), entitled How to Plan, Conduct and Evaluate Tsunami Exercises. This guide was designed in four stages, with exercises focused on the conditions of each country, and includes case studies that provide examples of various tsunami exercises. The module is divided into four sections:

- **Section 1:** Focuses on analyzing different exercises and how to choose the type of exercise that should be adopted.
- **Section 2:** Focuses on the steps and requirements for planning the exercise.
- **Section 3:** Summarizes the main activities carried out during the implementation of the exercise.
- **Section 4:** A post-exercise evaluation is carried out in which stakeholders evaluate the execution and results of the exercise.

The IOC / Unesco "Tsunami Ready" Community Recognition Program (2019) formally recognizes municipalities or coastal communities that meet certain standard guidelines for tsunami mitigation, preparedness, and response.

Four coastal community have been recognized by the IOC/Unesco as Tsunami Ready in Costa Rica: Ostional (2017), El Coco (2020), Tamarindo (2021) and Sámara (2021). However, work has also been done with projects such as BOSAI in communities of the North Pacific coast such as Santa Teresa and Malpaís (JICA, 2019), beginning in May 2008 and lasting for five years, with an objective of increasing capacities for risk management in Central America. This was a JICA technical cooperation project, which was focused on increasing disaster response capacities at different levels (national, regional, community) to reduce vulnerability.

ANNEX 2.
Work guide

MODULE 1.
Risk Management Capacity Building
Work Guide as a first approach to the community

Table 7. Work scheme and time distribution in Workshop 1

Activity	Duration
Opening Remarks	20 min
Participatory activity: "Brainstorming"	30 min
Talk: Tsunami Risk Management	70 min
Participatory activity: "The World"	30 min
Total	**2 hours 30 min**

MODULE 2.
Preparation of a Tsunami Emergency Preparedness and Response Plan
Workshop Work Guide 1: First Approach to the Tsunami Emergency Preparedness and Response Plan

Table 8. Work scheme and time distribution in Workshop 1

Activity	Duration
Talk: "What is the Tsunami Emergency Preparedness and Response Plan?"	60 min
"Land, Ocean"	30 min
Assignment of tasks	30 min
Total	**2 hours**

Workshop 2 Work Guide: Participatory Development of a Tsunami Emergency Preparedness and Response Plan

Table 9. Work scheme and time distribution in Workshop 2

Activity	Duration
Presentation of tasks	30 min
Begin development of the plan	120 min
Assignment of new tasks	30 min
Total	**3 hours**

Workshop 3 Work Guide: Completion of the Tsunami Emergency Preparedness and Response Plan

Table 10. Work scheme and time distribution in Workshop 3

Activity	Duration
Presentation of the tasks	30 min
Complete the Tsunami Emergency Preparedness and Response Plan	90 min
Talk: What are simulations and drills?	30 min
Assignment of new tasks	30 min
Total	**3 hours**

MODULE 3.

Plan assessment and updating through simulations and drills

Workshop 4 Work Guide: Evaluation and update of the plan through simulations and drills

Table 11. Work scheme and time distribution in Workshop 4

Activity	Duration
Simulation exercise	40 min
Participatory activity: “Lifeboats “	15 min
Emotional and behavioral reactions in crisis situations	90 min
Simulation exercise planning	40 min
Total	**3 hours 5 min**

ANNEX 3.

Attendance sheets

Description

The attendance sheets are necessary for the preparation of reports and delivering results, as well as to estimate the real degree of participation. For example, when an activity report is needed, it is usual to include an introductory paragraph with a description of the people who participated, together with names and genders (both men and women should be invited in equal proportions) as well as organizational links or positions, the types of groups the participants represent (religious, political, cultural, or environmental, commercial, institutional).

The use of a format for the attendance list such as that presented below is recommended when collecting this information, which will facilitate systematization of reporting of participation and accountability.

Attendance sheets are an important element in the creation of a plan, and should be saved by the person in charge of the workshop once the activity is finished, together with a digital backup and photographs of each activity.

TSUNAMI RISK MANAGEMENT
Attendance list

Table 12. Template for attendance sheets for each workshop

Workshop:

Date:

Start time:

Place:

End Time:

Name and surname	Age	Gender	Organization / position	Direction	Telephone number

Comments:

Source: Prepared by the authors.

ANNEX 4.

Evaluation of lessons learned

Most of the modules have tasks assigned to participants, which are intended to facilitate understanding of the information presented, and whose results permit an evaluation of the commitment of participants and what they have learned so far during the training process.

Certain activities proposed during the training process include elements of synthesis, analysis and animation using group games and construction. These activities are used as a mechanism for learning assessment; one of the principal purposes of using such tools is to observe group progress and make decisions about training based on this progress.

A brief survey of a representative number of participants, applied in person or digitally, allows the team of facilitators – during and after the process – to evaluate what is being learned by members of different sectors about the importance of community emergency response plans for tsunamis. A tool that can be used to assess the perception of the activities carried out by participants is presented below.

TSUNAMI RISK MANAGEMENT

Assessment instrument

Date: .....

Place: .....

Activity: .....

The purpose of this document is to collect information to help improve communication and execution of activities related to Tsunami Risk Management. Please provide the information requested about the activity in which you participated and return it to the facilitator. The data is private and will be used exclusively for planning future activities.

Thank you.

1. Position: .....

2. For your work, this meeting seemed to be:

   a. Very useful **b.** Moderately useful **c.** Not very useful

3. In your opinion, the ideas presented by the facilitating team were:

   a. Very clear **b.** Unclear **c.** Confused

4. On a scale from 1 to 5, with 1 being the lowest score and 5 the highest score, please rate the following aspects of the meeting from 1 to 5:

Table 13. Rating of the workshops by each participant

Aspects	Rating
4.1 Methodology used	
4.2 Presentations and documents used	
4.3 Analysis performed	

5. List the three topics covered that seemed most relevant to you, in the order of their importance.

   a. .....

   b. .....

   c. .....

6. Please indicate your current level of education:

   1. Primary **2.** Secondary **3.** Technical **4.** University

7. Please indicate your age: I am ..... years old

8. Comment: .....

   .....

   .....

   .....

ANNEX 5.
Internal rules for carrying out workshops

When starting the training process, preferably in the first workshop, the internal rules for carrying out other workshops should be specified. They should be created based on the recommendations made by participants in the workshop. Every time a new workshop begins, these rules should be reviewed with the participants or posted in a visible place.

Internal rules

Community:
Date:
Rule # 1.
Rule # 2.
Rule # 3.
Rule # 4.

Source: Prepared by the authors

Illustration 2. Packing a bag for use in an emergency

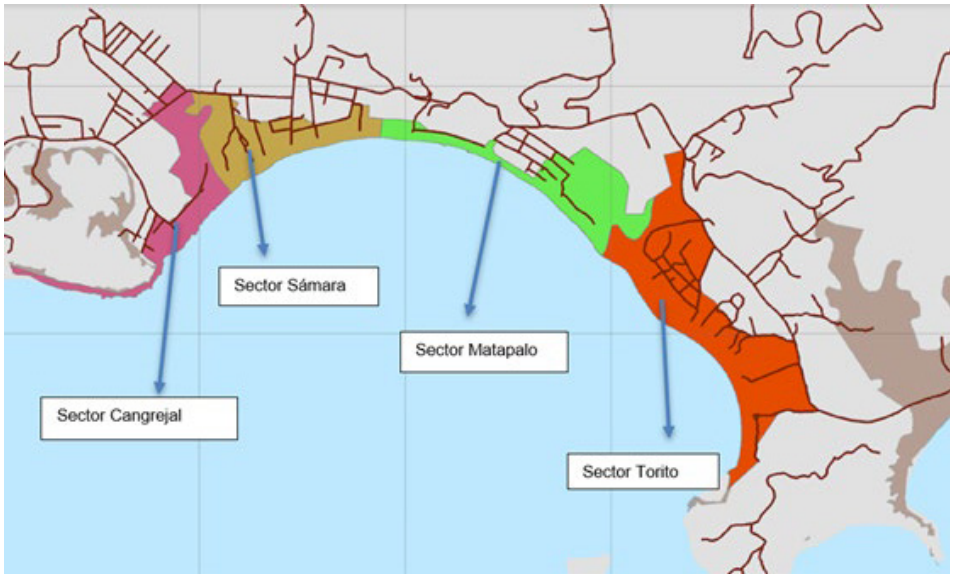
Source: Material compiled from the CNE, 2019.

Illustration 3. Things to pack in case of an emergency

Source: Material compiled from the CNE, 2019.

For more information, see https://www.youtube.com/user/CEDOCNECR/videos

Illustration 4.
An example of sectorization



Source: Sinamot, 2019.

Table 14. Population data in the event of a local or remote tsunami

Population data		
Variables	**Local Tsunami**	**Remote Tsunami**
1. Total community population		
2. Total number of dwellings in the community		
3. Total number of dwellings in the community within the flood zone		
4. Total population within the flood zone		
5. Population 5 years old or less within the flood zone		
6. Population 65 years old or more within the flood zone		
7. Population with disabilities within the flood zone		
8. Female heads of households within the flood zone		

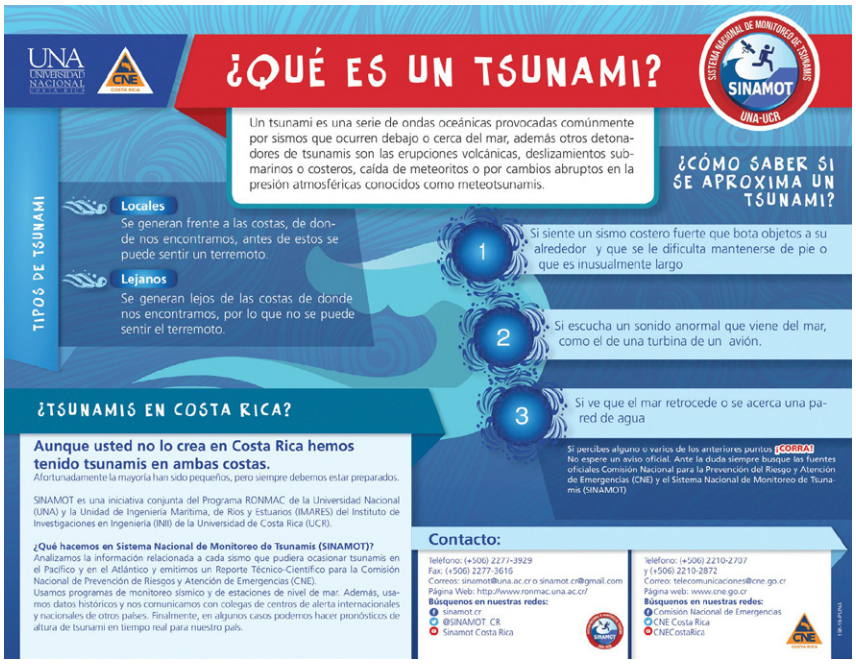
Variables	Local Tsunami	Remote Tsunami
9. Average number of tourists during high season		
10. Average number of tourists during low season		
11. Estimated number of tourists within the flood zone during the day in low season		
12. Estimated number of tourists within the flood zone at night in low season		
13. Estimated number of tourists within the flood zone during the day in high season		
14. Estimated number of tourists within the flood zone at night in high season		

Source: Sinamot, 2019

Illustration 5.
How do you identify a tsunami?

Source: Sinamot, 2019

Illustration 6.
What is a tsunami?

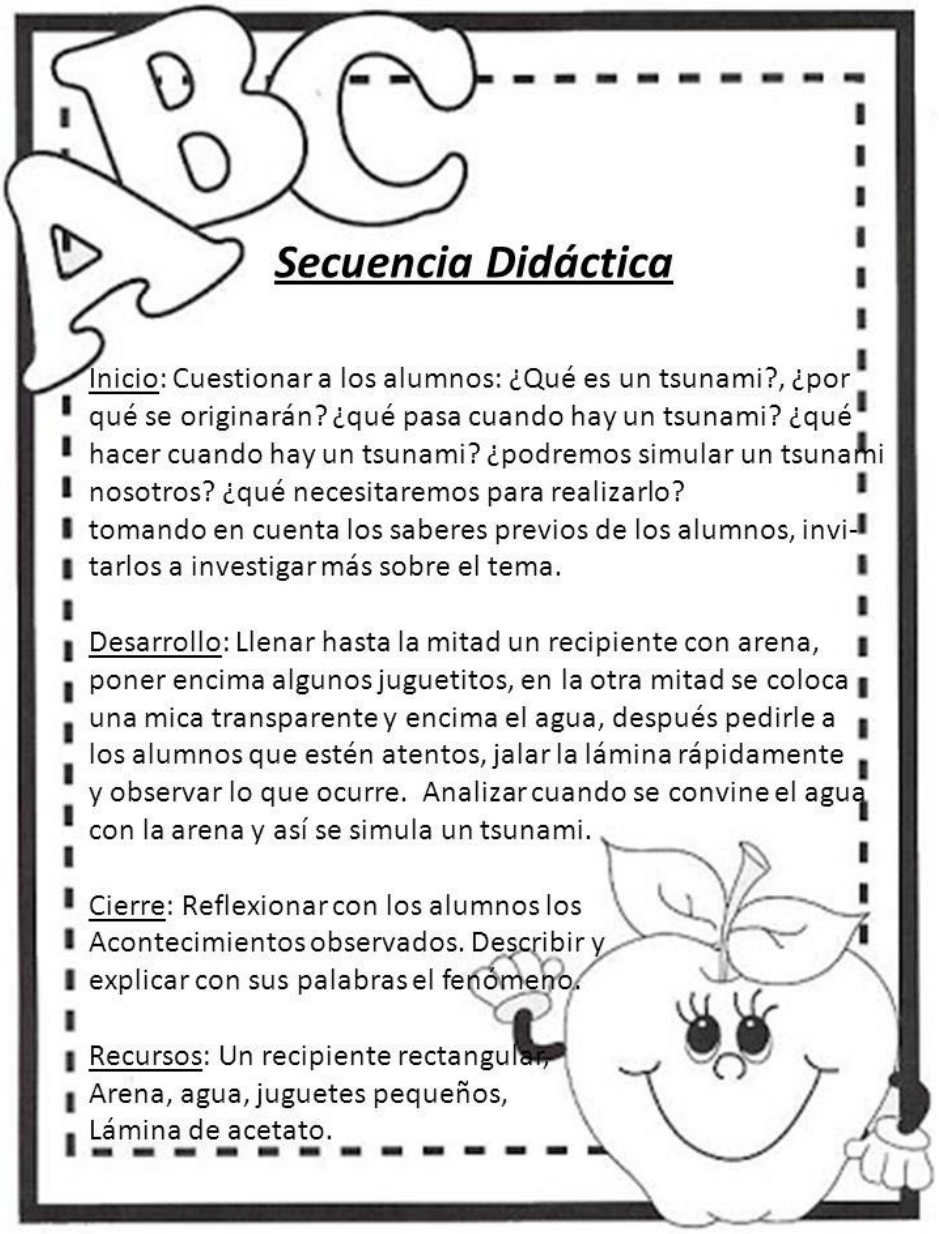


Source: Sinamot, 2019.

Illustration 7.
Safety rules in case of a tsunami

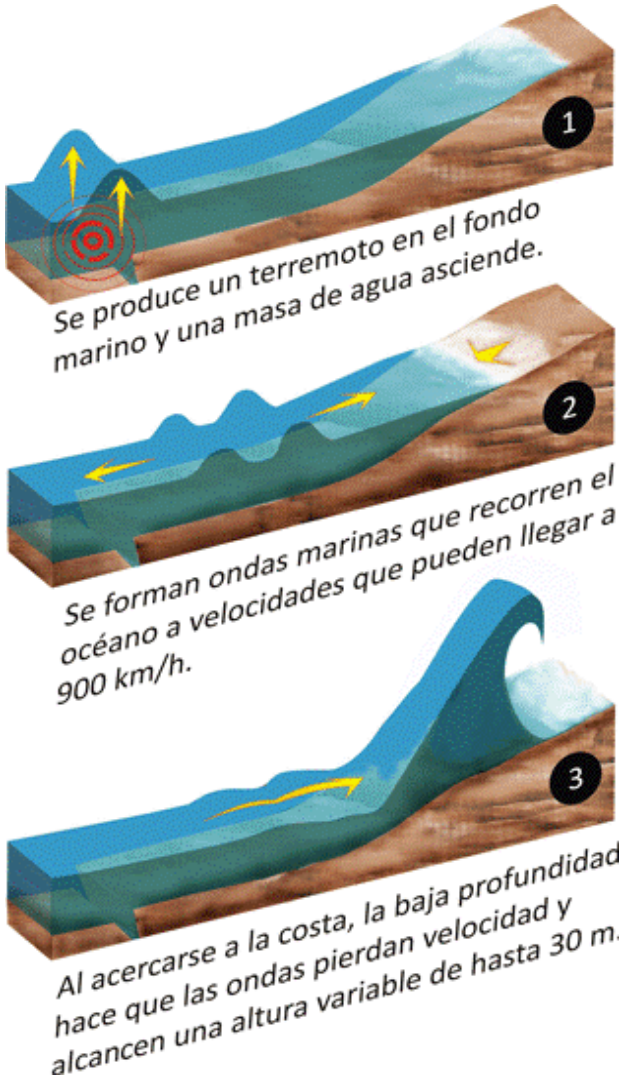
Source: Sinamot, 2019

Illustration 8.
Activity based on observed events



Source: https://slideplayer.es/slide/2593897/

Illustration 9.
Stages from earthquake to tsunami



Source: https://surfingshow.wordpress.com/tag/tsunami/

If you need more information, please go to:
- http://www.sinamot.una.ac.cr
- http://www.cne.go.cr
- https://www.youtube.com/channel/UCtuTFhqaanzDLQfiPDzX7iA

Illustration 10. Preparation for drills

Additional information:
https://www.youtube.com/watch?v=rU0jmN1oPZUyt=1s

Source: Material compiled from the National Institute of Civil Defense (Indeci), 2019

ANNEX 7.
Reports

When preparing reports, it is usual to write an introductory paragraph with a description of participants, including the number of men and women and their age ranges in percentages. If possible, any important contributions made during the workshop should be emphasized.

Further information about participants can include their relationships with or positions in organizations, types of groups they represent (religious, political, cultural or environmentalist, commercial, institutional), gender (both men and women must be invited in the same proportions) and geographical distribution (neighborhoods, towns, residential buildings). The attendance list template included in this manual can be used to collect this information in a systematic way, making it easier to submit accountability and other types of reports.

The attendance list should be posted at the entrance of the facilities used for participatory activities, and participants should be reminded several times to complete and sign it. An attendance list is an important reference in the process of preparing the plan and should be saved by the person in charge of the workshop once the activity is finished.

In addition, the information obtained during the different module sessions must be collected and systematized in such a way that it is accessible and understandable when it is being consulted. Each report should be ordered by work module, so that three different reports are prepared. The information in each of these reports must be arranged following the activity guide presented in Chapter 8 of this Manual, so that the results of each activity are readily available and easy to understand.

You can also use the information obtained from the assessments (see Annex 4) obtained from a sample of the participants in each event and present it in the report in a separate section with a heading that refers to the evaluation of the event, with the most significant findings clearly stated and visible.

ANNEX 8.
Simulations and drills

NATIONAL COMMISSION FOR RISK PREVENTION AND DISASTER CONTROL

TECHNICAL STANDARDS INSTITUTE OF COSTA RICA

STANDARD FOR EMERGENCY PREPAREDNESS AND RESPONSE PLANS FOR WORK CENTERS OR PUBLIC FACILITIES. REQUIREMENTS

ANNEX A (INFORMATIVE):
SIMULATION AND DRILL

A.1 SIMULATION

A simulation is a highly interactive tabletop exercise that allows participants to work together in a defined setting, practice decision-making and specific actions that are required and established in a plan in a safe environment and establish training and assessment mechanisms.

A.1.1 Objectives of the simulation

a Evaluate the decision-making capacity of the emergency personnel and disaster preparedness and response entities with reference to the provisions of their plans and procedures.

b Validate the emergency plan in a workplace or public facility.

c Test inter-institutional or inter-sector coordination mechanisms for dealing with emergencies.

d Train people who are responsible for decision-making and execution of emergency responses for the management of crisis situations and information management.

A.1.2 Methodological Characteristics

a A simulation is an exercise in information management and role-playing

b It is based on an individual or collective decision-making process.

c. It is a theoretical or "desktop" exercise that can be carried out in a single closed location or in several interconnected locations.

d. It is based on a scenario and a script that defines the activities, flow of information, and roles to be undertaken by the participants.

e. Each of the participants or players is assigned a role that may be their normal work or other assigned role and provided with the characteristics of their character and the minimum basic information provided to interpret it properly.

f. Events are carried out in simulated time scales specified in the script, which is controlled by the team that coordinates the exercise. CNE-NA-INTEDN- 01: 2014 25

g. Each frame of a scenario is evaluated in relatively short periods of time, so some time periods may be skipped.

h. The proposed scenario, which includes situations, problems, and resources, is presented sequentially as the exercise progresses.

The distribution of time allowed for the simulation include spaces for preparation, reviewing of roles and knowledge of these roles, analysis of prior information, reasonable times for solving cases, and an evaluation period.

A.1.3 Operational Characteristics

a. Information is provided through occasional messages that can be sent verbally, in print, digitally and using other media.

b. In environments in which work is normally carried out, conditions similar to those that might be experienced in a disaster situation can be recreated, including factors such as noise, lighting, temperature, service failures (water, electricity, communications), uncertainty, and contradictory or incomplete information.

c. The coordinator of the exercise has up-to-date information on the scenario, as he or she may eventually need to take on the roles of characters that are not present in the scenario as originally described.

A.2 DRILL

A drill is a practical exercise in managing operational actions that is carried out by staging situations with damages and injuries in a hypothetical emergency. The participants face recreated situations using the same skills and techniques which they would use in real emergencies; this involves the mobilization and actual use of personnel and material resources, and permits the evaluation of procedures, tools, abilities, skills, and capacities of the organizations involved.

A.2.1 Objectives of the drill

a. Test the relevance and effectiveness of plans, protocols, procedures, guides, or other operational mechanisms for responses to emergencies.

b. Evaluate capacities, use of techniques, tools, and other resources that involve practical actions involved in the organization of responses to emergency situations.

c. Measure response times, arrivals on scene, and execution of tasks related to risk control and loss reduction in case of emergencies.

d. Improve coordination and application of specific techniques for risk reduction and aftermath control by multiple stakeholders and organizations.

e. Evaluate general responses from community and occupational groups, service personnel, response teams, and others who have been trained in particular skills for dealing with specific emergencies.

A.2.2 Methodological Characteristics CNE-NA-INTE-DN-01: 2014 26

a. The drill is carried out in real time.

b. It is an exercise in the execution of primarily practical actions, with the participation of shareholders involved in the management of emergencies, including residents who may play specific roles.

c. When carrying out the exercise, an environment similar to the one that would occur in a real emergency is recreated as closely as possible.

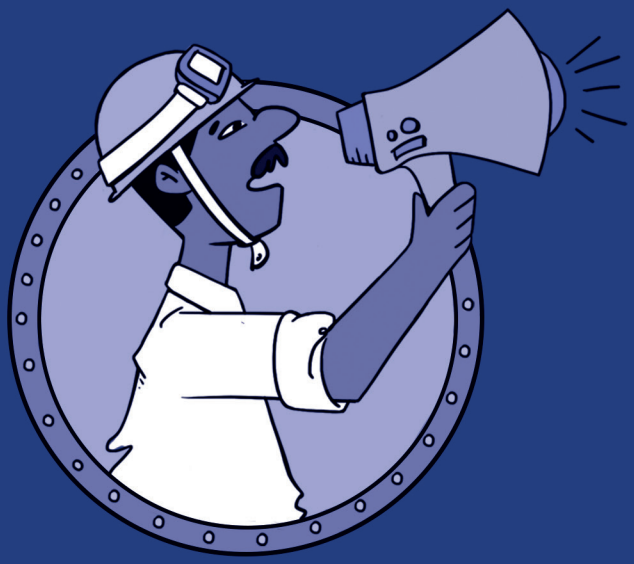
d. The times allowed for the drill are measured from the activation of alarms or other notifications of the start of operations; skipping timeframes in the execution of actions in the same scenario is not allowed.

A.2.3 Operational Characteristics

a. The characters and resources used are real, except for those who act as victims or their relatives, passersby, journalists, or other roles that are regarded as necessary given the characteristics of the exercise.

b. The execution of the drill may imply some risks for the participants and observers, so a contingency plan for the exercise should always be in place.

c. The exercise will be interrupted immediately when a situation may result in real danger for the participants.



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International Organization for Migration
National Commission for Risk Prevention and Disaster Control
Training Manual on Community Tsunami Risk Management