United Nations Educational, Scientific and Cultural Organization

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IH cantabria
INSTITUTO DE HIDRÁULICA AMBIENTAL
UNIVERSIDAD DE CANTABRIA

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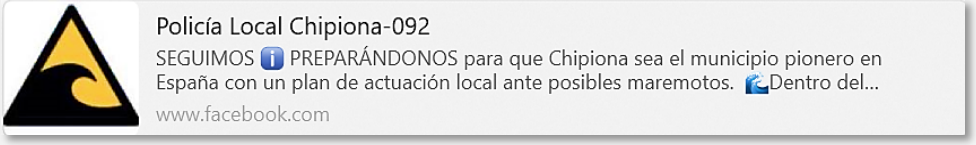
REPORT ON RISK PERCEPTION SURVEY IN SPAIN

Project

Support to the activities to be developed in Spain in the framework of the UNESCO IOC DG ECHO project **COASTWAVE**: "Strengthening the resilience of coastal communities in the North East Atlantic, Mediterranean region to the impact of tsunamis and other sea level-related coastal hazards"



Prepared by **IHCantabria**

March, 2023

The work proposed in this document is intended to improve tsunami preparedness but does not guarantee the safety of people. The authors assume no responsibility for damage to persons or property caused by a tsunami.

The risk perception survey has been implemented in Spain by IHCantabria with the support of the Municipality of Chipiona.

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Cover photos (Source: IHCantabria):
Top and middle: On-site sessions to support the completion of the questionnaire on risk perception on tsunami and other sea level related risks in the high schools of Chipiona. Bottom: Publication in the Facebook account of the local police disseminating the questionnaire on risk perception on tsunami and other sea level related risks, among general population of Chipiona.

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Acronyms

IDSL: Inexpensive Device for Sea Level devices

IHCantabria. Environmental Hydraulics Institute of the University of Cantabria

INE: Instituto Nacional de Estadística (Spanish National Statistics Institute)

NEAM: North-eastern Atlantic, Mediterranean and the connected seas

NEAMTWS: NEAM Tsunami Early Warning and Mitigation System

NTRB: National Tsunami Ready Board

SOP: Standard Operation Procedures

TRLC: Tsunami Ready Local Committee

TRRP: Tsunami Ready Recognition Programme

UNESCO-IOC: Intergovernmental Oceanographic Commission of UNESCO

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1 Project background and rationale

Tsunami preparedness is essential to minimise the negative consequences of tsunami impacts on coastal communities. Achieving the strongest and most effective preparedness for these events is one of the main concerns of the Tsunami Team and the Coastal Management and Engineering Group of **IHCantabria**. For this reason, and in line with the **UNESCO-IOC** vision on tsunami preparedness, prevention, response and recovery, IHCantabria is partner in this project, globally coordinated by IOC-UNESCO, funded by DG ECHO: Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean Region to the Impact of Tsunamis and other Coastal Hazards Related to Sea Levels, short named **CoastWave** project. The role of IHCantabria is to coordinate and develop the activities to be developed in Spain, as well as to support the coordination and development of the global activities of the project in the NEAM region, which includes six other countries of the region that constitute the study area.

Based on a strong understanding that community awareness and preparedness to respond to tsunami warnings are essential components of an end-to-end tsunami warning system, CoastWave project aims to adapt existing UNESCO IOC Standard Guidelines for the **Tsunami Ready Recognition Programme (TRRP)** for use in the North Eastern Atlantic and Mediterranean Sea Tsunami Warning System (NEAMTWS) region and to implement Tsunami Ready (TR) at pilot communities in identified countries in the NEAM region. In addition, the project aims to install, undertake essential maintenance and evaluate the overall effectiveness of tsunami detection and monitoring systems in selected NEAMTWS countries.

Preceding activities

IHCantabria, in collaboration with the University of Malaga (UMA) and supported by the municipality of **Chipiona** and the UNESCO IOC Tsunami Resilience Section has already developed several activities in the months prior to this project with the aim of increasing tsunami preparedness in the coastal municipality of Chipiona (Cadiz, Spain), as a pilot site to guide procedures for other municipalities and communities throughout Spain and the NEAMTWS region.

In this context, at the national level there are two relevant legal instruments that need to be considered. On the one side, the requirements set out in the Spanish legislation, especially the Spanish Civil Protection Planning Directive for Tsunami Risk (in Spanish: *Directriz básica de planificación de protección civil ante el riesgo de maremotos*[1]) and the requirements of the Spanish Civil Protection Plan for Tsunamis (in Spanish: *Plan Estatal de Protección Civil Maremotos*[2]). The project intends to capitalise efforts and benefit from the implementation of the TRRP to also accomplish the national legislation requirements.

Several activities have been developed in Chipiona since the beginning of the process, among others the development and mapping of tsunami hazard zones and tsunami evacuation maps, easily understandable and approved by local community members and authorities. Also, several municipal outreach and awareness activities have been developed, including the implementation of a dedicated Tsunami Ready office with a permanent exhibition open to the public to raise awareness and contribute to community preparedness for this type of event. This facility will also serve for capacity- building workshops and meetings.

[1] RD 1053/2015: https://www.boe.es/buscar/doc.php?id=BOE-A-2015-12570

[2] BOE-A-2021-8361: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-8361

In addition, it has been established the Tsunami Ready Local Committee (TRLC) and some coordination meetings with national CPA to set the National Tsunami Ready Board (NTRB), as well as to address national, provincial, and municipal tsunami SOPs. In addition, already within the framework of the present CoastWAVE project, support has been provided to improve the Spanish National Tsunami Warning System, by delivering spare parts for the existing Inexpensive Device for Sea Level devices (IDSL). Other activities related to the TRRP indicators have also been developed and others are ongoing.

As part of these activities, this document, constitutes the second deliverable of the project (D2), which addresses the development and implementation of a **risk perception survey on tsunamis, storm surges and sea level rise**.

The following sections present the description of the work carried out and the results obtained for Chipiona (Spain).

2 Introduction

Individual perceptions of disaster risk faced by a community are key to the design of risk reduction strategies, including warning mechanisms, educational and communication materials.

According to UNESCO-IOC (2021)[3], currently available literature on the perception of tsunami and other sea level related hazards (SLR and storm surges) for the NEAM region is scarce. Among the most significant precedents are the studies carried out in the European Union funded project ASTARTE (Assessment, Strategy and Risk Reduction for Tsunamis in Europe), where the perception of tsunami risk was analysed in Morocco, France, Greece, Italy, Norway, Portugal, Spain, and Turkey. Also, the work described in Cerase et al. (2019)[4], developed in two pilot regions in Italy, both studies with a focus on tsunami risk perception. Based on UNESCO-IOC (2021), none of these studies conducted in the NEAM region considered the risk perception of multi-hazard risks related to sea level.

Within the framework of the CoastWAVE project, it has been developed a survey addressing the perception of coastal risks and preparedness for tsunamis and other sea level related risks, such as storm surges and sea level rise. The results of the survey will provide a better understanding on how coastal populations perceive these natural hazards and risks.

Based on this understanding, the ultimate objective of this assessment is to improve preparedness of the communities exposed to these natural processes, through enhanced warning and communication mechanisms and risk reduction strategies, which will lead to minimizing the consequences in terms of lives, losses, and material damage.

[3] UNESCO IOC, 2021. Report on the development of a Coastal Multi-Risk Perception, Resilience Study and Survey Questionnaires.

[4] Cerase, A., Crescimbene, M., La Longa, F., and Amato, A.: Tsunami risk perception in southern Italy: first evidence from a sample survey, Nat. Hazards Earth Syst. Sci., 19, 2887–2904, https://doi.org/10.5194/nhess-19-2887-2019, 2019.

3 Survey methodology and implementation

As an initial step, the development of the survey included a preliminary literature review and a consultation process with international experts. The whole process was led by UNESCO-IOC Tsunami Resilience Section, with collaboration from CoastWAVE project partners and both the ICG NEAMTWS Task Team on Tsunami Ready and Working Group 4 on Public Awareness, Preparedness and Mitigation.

As described in UNESCO-IOC (2021), based on this literature review and identified research gaps, six key objectives were proposed for conducting a multi-hazard sea level related risk perception study in the selected South Mediterranean countries. The objectives include the identification of gaps and misconceptions as a result of the individual perception analysis, the analysis of response patterns (e.g., related to evacuation from tsunamis or other sea level related hazards), the analysis of the risk perception patterns of the selected countries, the identification of factors that could change unsuitable behaviours in case of such events, and a better understanding of people's trust in risk and emergency management authorities. The defined objectives also included improving awareness and education measures and communication strategies, supporting the establishment of the TRRP and contributing to a better understanding of the state of resilience among the pilot communities.

Accordingly, a survey has been developed considering different sectors, which includes the adaptation of some sections to the different target groups. Target groups for the survey include:

- Educational sector, both for students over 14 years of age and for teachers and other personnel associated to educational centres.
- Tourism sector (hotels, restaurants, stores, tourist guides, sector employees, etc.)
- Emergency management and services sector (civil protection agencies, police, firefighters, military emergency body, coast guard, etc.)
- General public.

The survey consists of a questionnaire with 39 multiple-choice questions for the emergency sector target group and 35 for the other groups. It is divided into five main sections, as follows:

1. Personal data
2. Awareness Knowledge
3. Exposure and sense of exposure
4. Assessment, Preparedness, and Response
5. Governance

The questionnaire was published on the Alchemer web platform to facilitate its dissemination, completion, and organization of the results and translated to Spanish, English, French, Arabic, Greek, and Turkish.

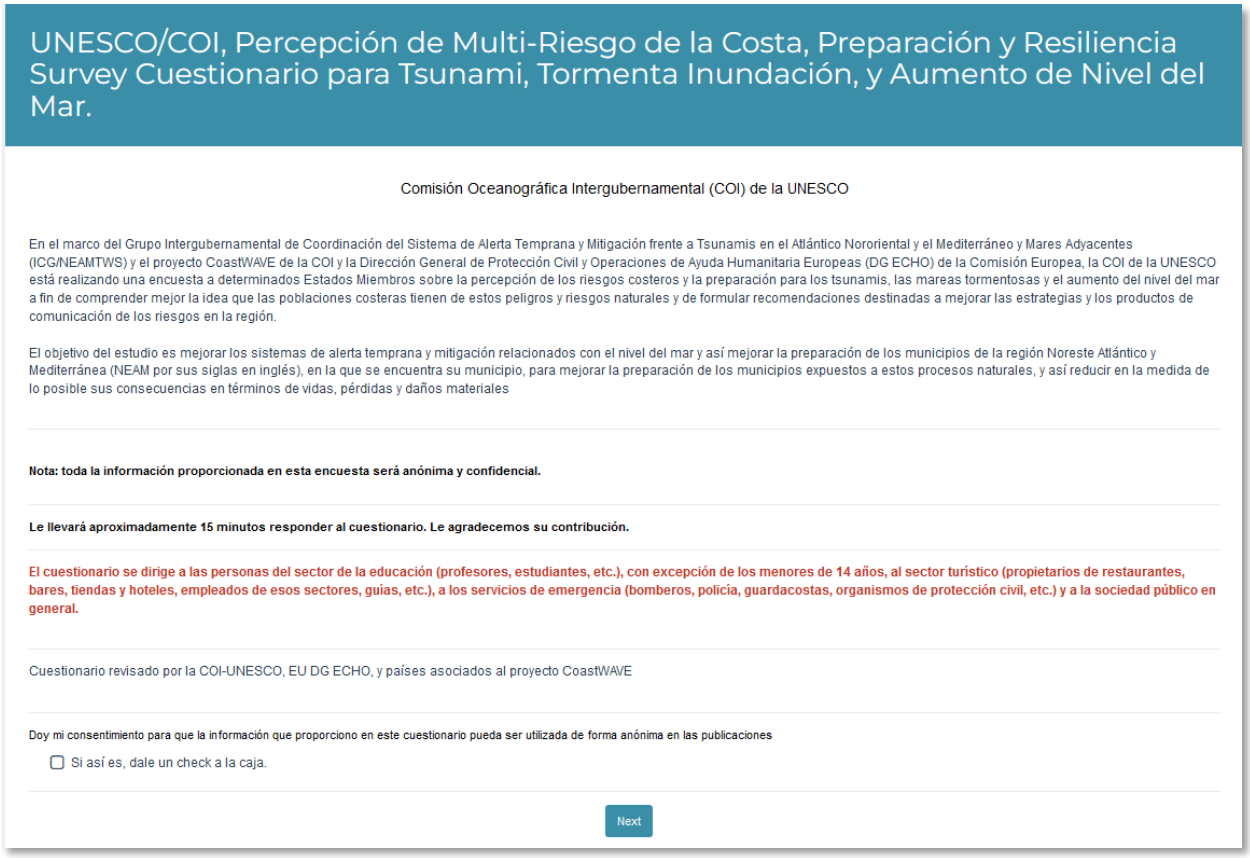


Figure 1. Appearance on the Alchemer platform of the first screen of the Spanish questionnaire on the perception of tsunami risk and other sea level related hazards.

The questionnaire is attached both in English and Spanish as an annex to this document. For more information on the description of the different sections, please refer to the complete UNESCO-IOC Tsunami Resilience Section project report.

Survey implementation in Chipiona

The main groups initially targeted for the implementation of the questionnaire in Chipiona were the population of the educational sector, especially those between 14 and 17 years of age, with the vision of raising awareness among the generations that in the future will become the agents of change, and the emergency management and services sectors.

The tourism sector is also a group of great interest, but it was not possible to focus especially on it for different reasons, including the fact that the questionnaire was conducted in the low tourist season (winter), which made it difficult to locate both managers and staff related to tourist facilities and privately managed accommodations. Although small, finally there is also sample representing the sector.

Finally, the opportunity was taken to try to reach the largest possible population not belonging to any of these groups or ages, which was classified as "general population".

Among the different possible methods to conduct the questionnaire, three approaches were applied in Chipiona:

- On-site assisted online surveys. This method was considered the best option for surveying students over the age of 14 and under 17 years old, to ensure correct understanding of the questions and to ensure that the questionnaire was filled out completely.

  In Chipiona there are a total of 4 educational centres with students over 14 years old and all of them were visited during a week of on-site fieldwork dedicated to the study on the perception of tsunami risk and other sea level related hazards in the municipality. These were: Divina Pastora School, Virgen de Regla School, Caepionis Highschool and Salmedina Highschool.
- Focus groups. This method was applied for the emergency management and services sector, which included a dedicated meeting and round table with both technical staff and decision-making officers from Civil Protection, Local Police, Mayor's Department, Municipal Planning Department and Municipal Services Department. In addition to explaining the background, objective and structure of the questionnaire, the occasion was used to discuss the current state of tsunami risk perception in the municipality and the effects that the implementation of the program is having on it. It was also relevant to motivate the participants to promote the dissemination of the questionnaire among their networks.
- Online surveys. This approach was mainly used to reach the population of Chipiona not belonging to the previous groups. A significant dissemination effort was made, mainly through social media accounts of the Municipality of Chipiona, the Local Police and local radio and television. In addition, letters of invitation to participate in the survey were sent to different mailing lists and key stakeholders identified in the municipality throughout the TRRP implementation process. Moreover, follow-up was carried out, mainly through these already established networks, to maximize the number of responses.

4 Results

A total of 495 responses were obtained in Chipiona, 472 from people living in Chipiona and 23 who indicated living in another city. Most of these cities are neighbouring or very close to Chipiona.

The necessary sample size considering the population of Chipiona of 19,592 inhabitants in year 2022 (according to INE[5]) and considering a confidence level of 95% and a margin of error of 5%, is 377 respondents. This sample size, in general terms, has been reached, although, as will be seen below, there is a bias on one of the target groups, which, indeed, had been anticipated from the beginning.

The following sections show the results obtained from the questionnaire, divided into its five main categories.

4.1 Personal information

In terms of general information, the questionnaire asked for five questions:

- Gender
- Age
- Educational level
- Target group

[5] Instituto Nacional de Estadística (INE). Cifras oficiales de población de los municipios españoles en aplicación de la Ley de Bases del Régimen Local https://www.ine.es/jaxiT3/Datos.htm?t=2864 (accessed on March 2023)

In terms of gender and age (Figure 2), the responses were slightly biased toward the female side. As for age of the respondents, we find an anticipated bias on the age group of 14-17 years old, since as previously explained, a special focus was indeed put on students in the 14-17 year-old age group.

As for the information concerning the target groups/sector to which the respondent belongs and educational level (Figure 3), here is a clear, although expected, bias within the education sector. Almost half of the respondents belong to the educational sector, followed by the general population who do not belong to any of the other sectors. In the sector of emergency professionals, the number and percentage are somewhat low, and although the municipality is not very large and therefore neither is the total number of professionals dedicated to the emergency sector, the number of responses from the sector barely reaches 50% of the personnel. As for the tourism sector, the number of responses is also rather low. However, it should be noted that the efforts were not specifically focused on this sector and that it was also difficult to reach the population dedicated to the sector for various reasons, including the fact that the questionnaire was conducted during the low tourist season (winter), which made it harder to locate both managers and personnel related to tourist facilities and privately managed accommodations. Nevertheless, it would be advisable to expand the sample to increase the number of responses from these two sectors.

Most respondents, once again around half of the sample (46.2%) have a secondary level of education (Figure 3, right), a result that is closely related to the sector (education) and age (14-17) bias of the sample population.

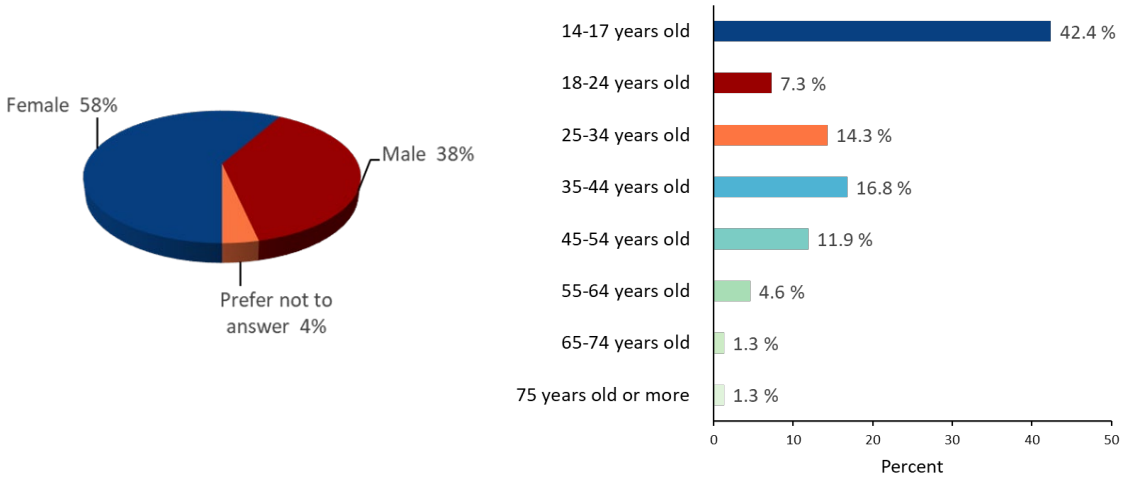


Figure 2. Gender and age characteristics of respondents.

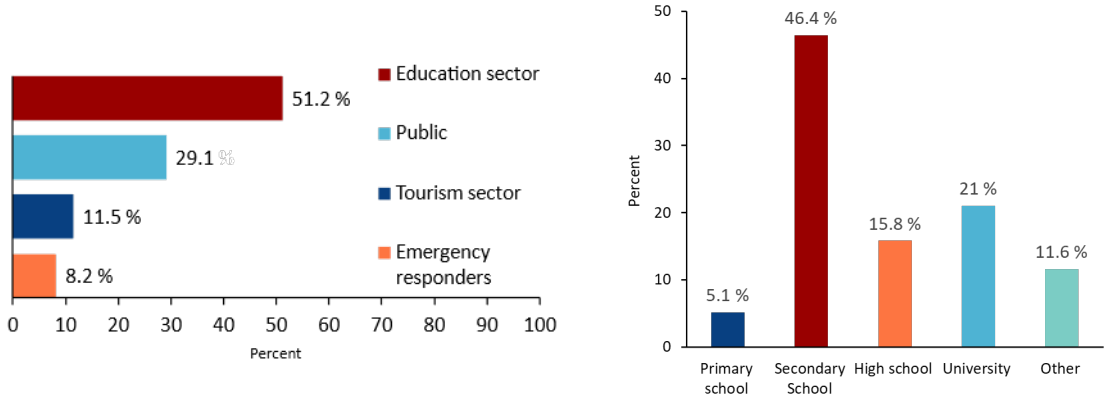


Figure 3. Target group and education level of respondents.

4.2 Awareness/knowledge

The *awareness/knowledge* section aims to explore the level of knowledge of the respondents about sea level related risks in the municipality, so that adequate countermeasures can be targeted. Overall, it is analysed whether the population has ever heard of the existing hazards, whether they have had any experience, what may be the natural signs that may warn about the risk, the causes and probabilities behind them, as well as the damages they may cause and the measures that can be taken or whether they are aware of the measures taken so far by the municipality.

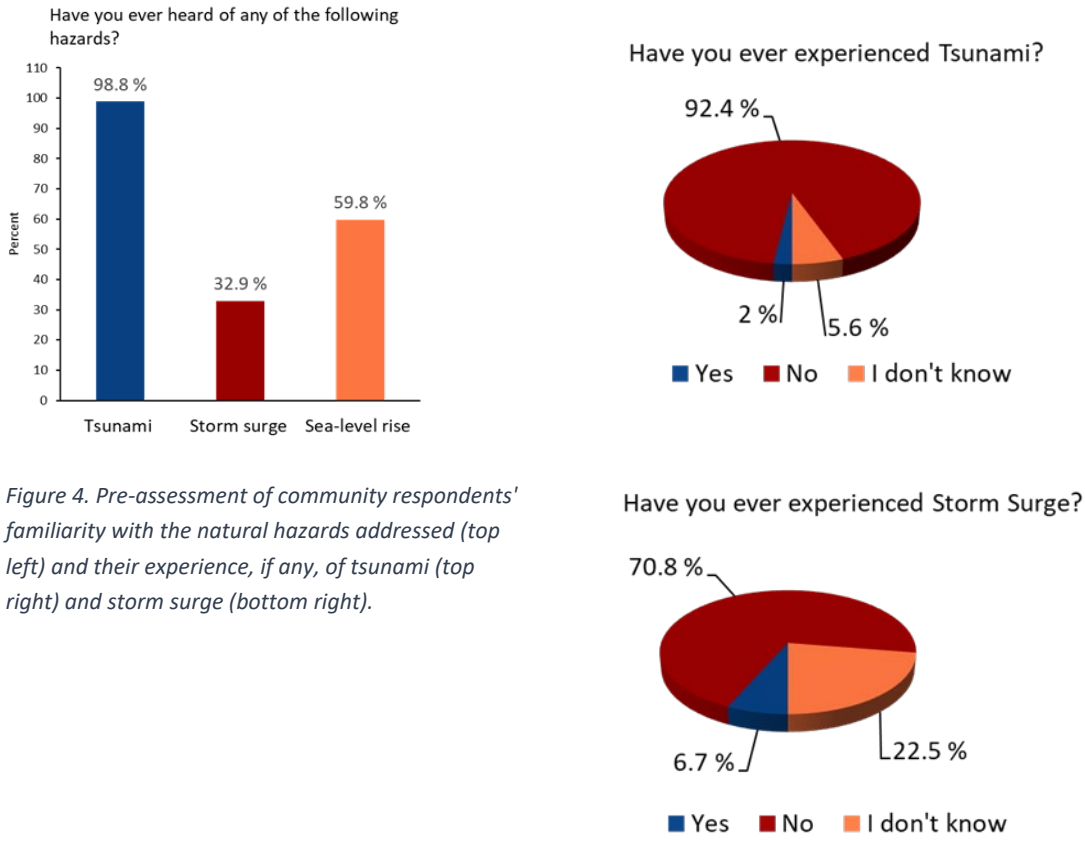


Figure 4. Pre-assessment of community respondents' familiarity with the natural hazards addressed (top left) and their experience, if any, of tsunami (top right) and storm surge (bottom right).

First, as a **preliminary knowledge assessment** of the respondents' awareness of the natural hazards considered in the study (Figure 5), it is evident that most of the population interviewed in Chipiona is familiar with the term tsunami, however, the same is not true for sea level rise and much less so in the case of storm surges. Consistent with official records, no one has experienced tsunamis in Chipiona (the 2% shown in the graph corresponds to just 5 responses that later, in the comments, do not actually say they have experienced, but talk about probability of occurrence, the Lisbon earthquake and tsunami event of 1755, or other issues unrelated to the question). In the case of storm surges the percentage increases slightly, but so does the number of respondents who do not know whether they have experienced this type of event. The latter could be interpreted as a lack of understanding of what is meant by the term storm surge, which was also perceived during the on-site assisted online surveys campaign.

The **likelihood of occurrence** of any of the hazards under study in the upcoming 10 years is then asked, both for the entire Mediterranean region (Figure 5) and for the municipality of Chipiona (Figure 6). Results are rather similar for both areas. The likelihood of occurrence is perceived as moderate to low in the case of tsunami and storm surges (the sum of moderate and low options, constitutes close to 75% and 70% of the responses in the case of tsunamis in the Mediterranean region and in Chipiona respectively, and close to 80% in the case of storm surges both for Mediterranean region and Chipiona). These responses seem to reflect the experiences of the population living in a municipality with a low frequency of tsunamis, storm surge or coastal flooding. Nevertheless, it is worth mentioning that there is a relatively high percentage, 23% of interviewees, that answered there is high probability of experiencing a tsunami in the coming 10 years in Mediterranean regions, and even a 40% which believe there is a moderate probability, which slightly increases to 27% (high probability) and 34% (moderate probability) in the case of Chipiona. As for sea level rise, there is a slight increase in the pattern, moving towards moderate to high probability of occurrence (both for Mediterranean region and Chipiona areas make around 75% of answers). In this case it is worth to mention that there is a 19% who answered that there is a low probability of sea level rise in the Mediterranean region and municipality of Chipiona, and only 33% of respondents who believe there is high probability of sea level rise for both areas.

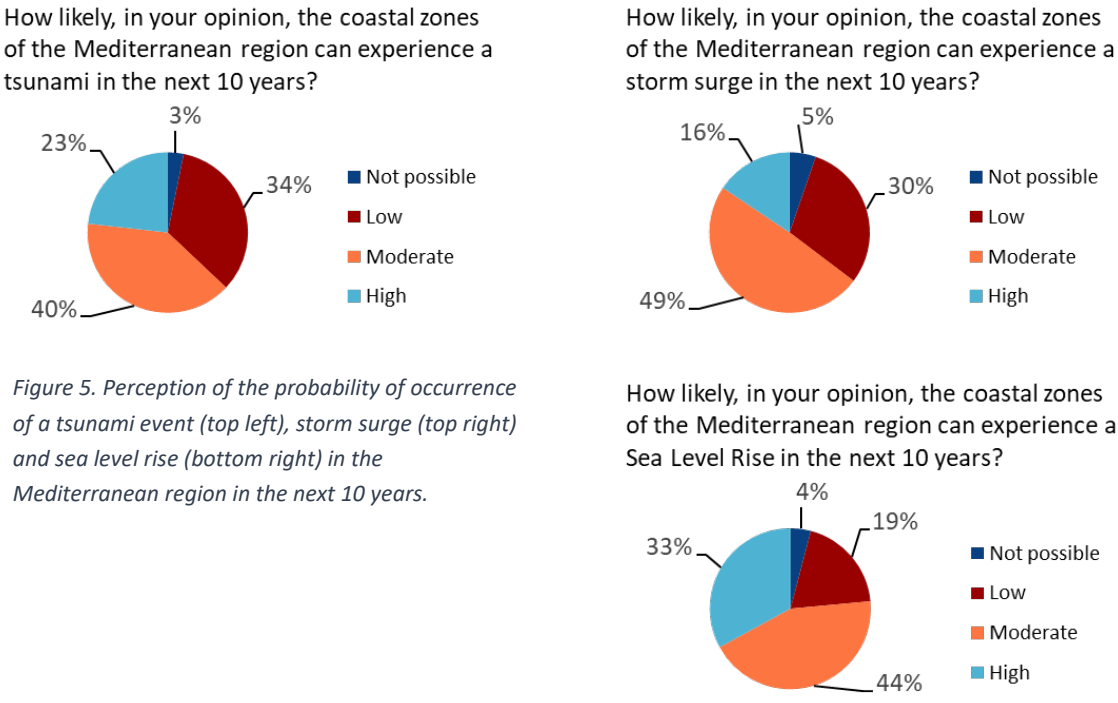


Figure 5. Perception of the probability of occurrence of a tsunami event (top left), storm surge (top right) and sea level rise (bottom right) in the Mediterranean region in the next 10 years.

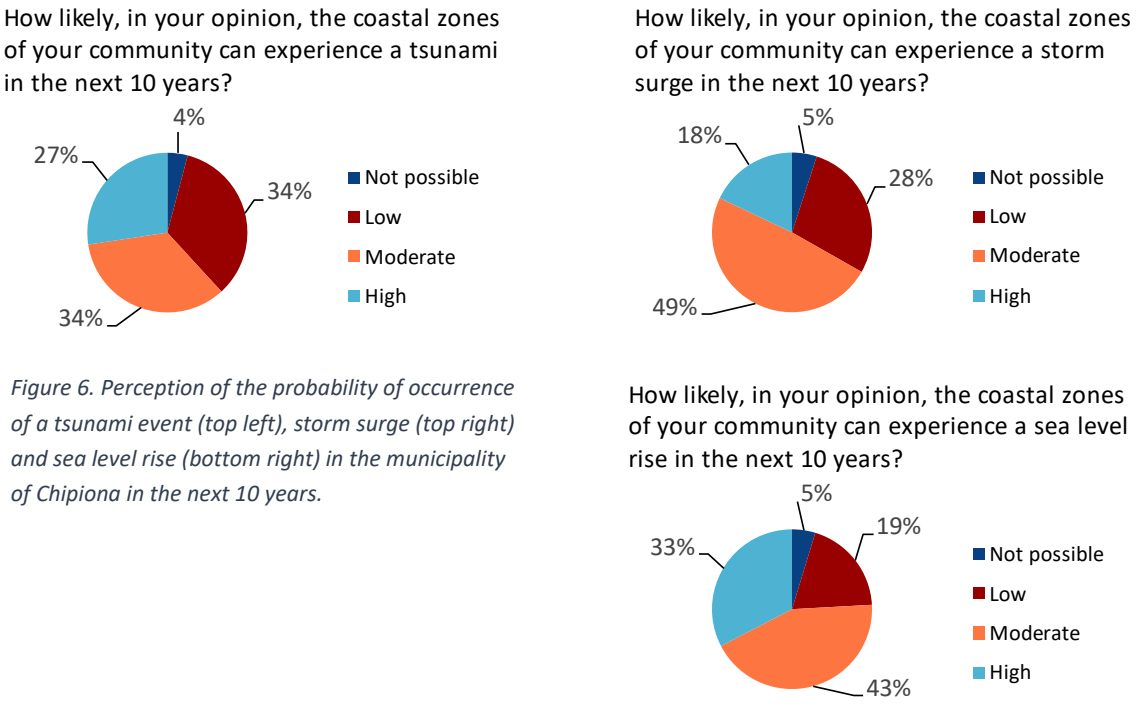
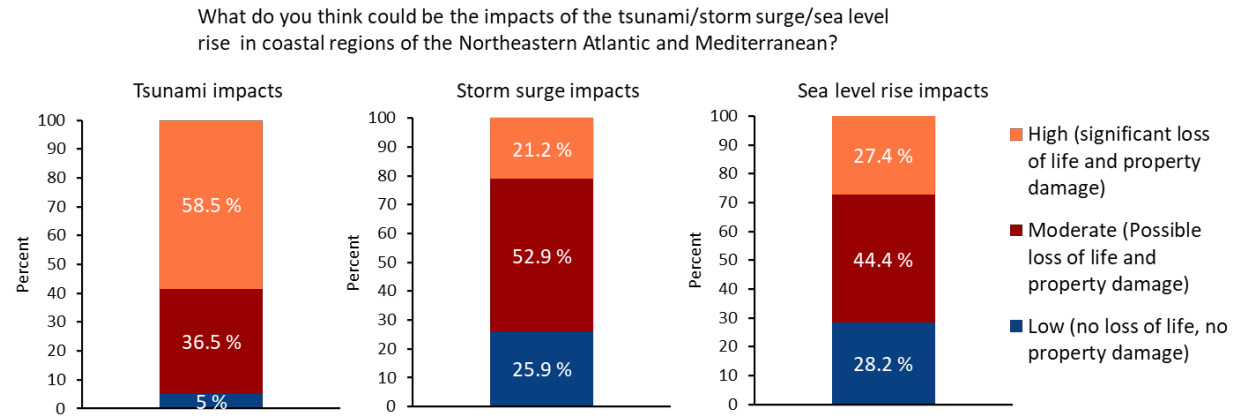


Figure 6. Perception of the probability of occurrence of a tsunami event (top left), storm surge (top right) and sea level rise (bottom right) in the municipality of Chipiona in the next 10 years.

As for the **perceived impacts** associated with these sea level related events (Figure 7), there is also a quite similar pattern for the Mediterranean region and the municipality Chipiona. While the impact of tsunamis is considered high in three out of five responses, it is remarkable that while the tendency is to think of a tsunami as having a greater impact than storm surges and sea level rise, between 30% and 35% of respondents say that a tsunami would have a moderate impact, a description that considers loss of life and possible property damage only as "possible". In terms of storm surge, the perceived impact move towards moderate (around 50% of answers) to low (around 25% of answers) for both regions, possibly associated with the low frequency of storm surges in Chipiona. Quite similar pattern is seen in the case of sea level rise.



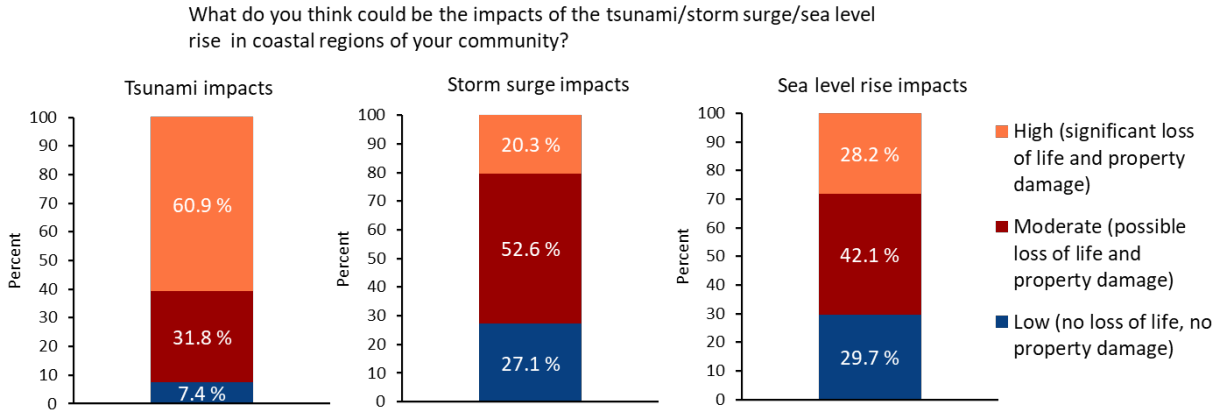


Figure 7. Perceived impacts associated with tsunami, storm surge and sea level rise in the Mediterranean region (top) and the municipality of Chipiona (bottom).

In addition, the knowledge that the interviewees have about the **natural signs preceding a tsunami** is also addressed. Here, there are some diverse responses, but it is worth noting that about 23% mention a sea retreat and 17% mention an earthquake. The remaining 23% left this question blank.

As for the **characteristics of the tsunami**, it is asked the height and arrival time of the tsunami to Chipiona (Figure 8). Almost 1 out of 2 believe the waves would be higher than 5 meters while around 35% thinks this would be between 2 to 5 m. In terms of arrival time, responses are more distributed between different options, from less than 10 minutes to more than 30.

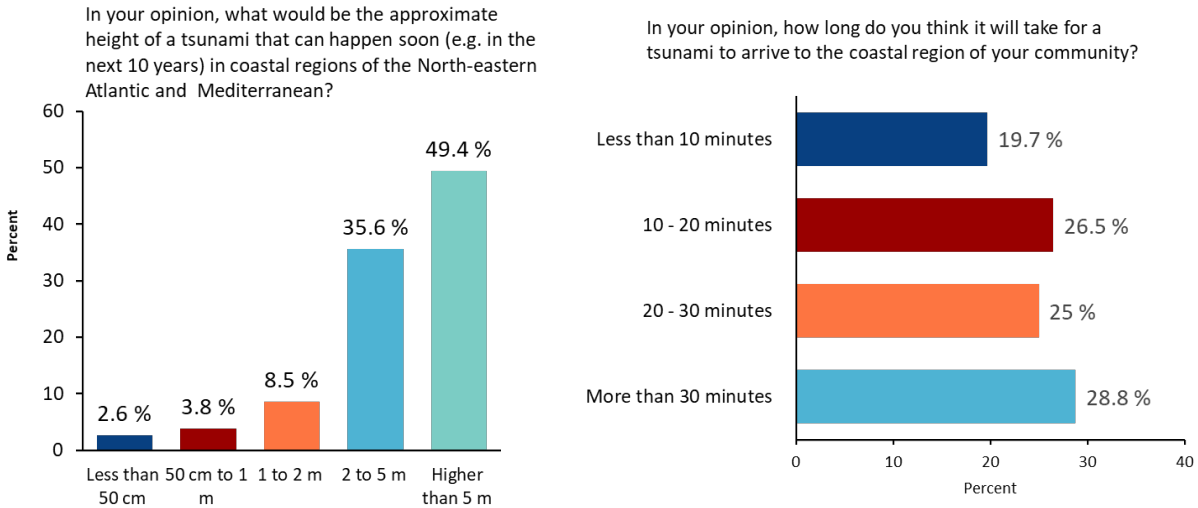


Figure 8. Tsunami height perceived by respondents in the NEAM region (left) and time of arrival in the municipality of Chipiona (right).

In terms of the perception of the **capacities of the municipality to alert and inform the local population** in the event of an earthquake, tsunami, storm surge or sea level rise (Figure 9), answers are diverse. One out of two respondents answered that the municipality does have the capacities in the case of tsunamis. This is probably due to the current work being developed in the municipality, which most likely strengthened this positive perception. However, it is worth paying attention to the fact that about 40% of the respondents are not aware of any warning or information channel for the other natural hazards considered, which probably reflects a lack of communication within the municipality regarding this type

of emergencies. Even for tsunami, the sum of *not being aware* and *no* answer, reach also the 40% of respondents.

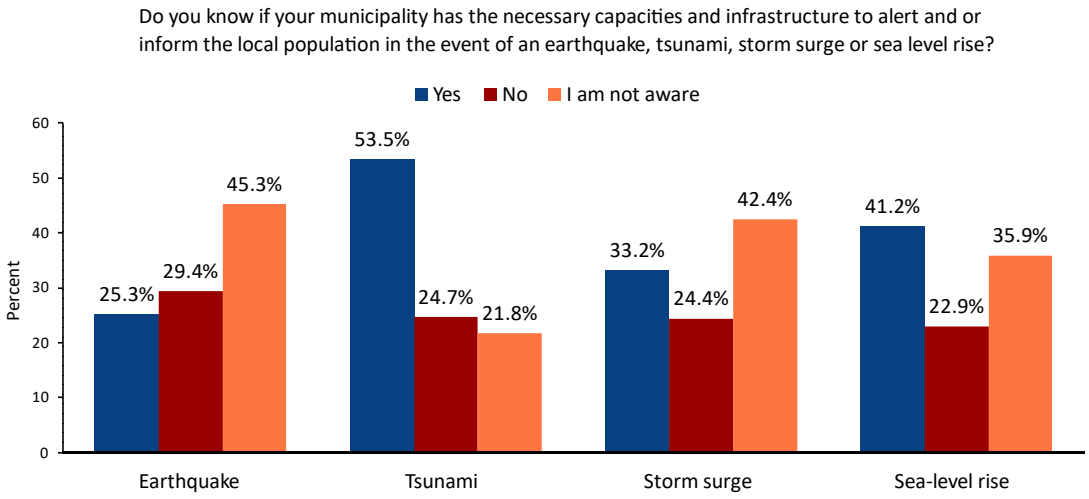


Figure 9. Perception of interviewees on the capacities of the municipality to alert and inform the local population in the event of an earthquake, tsunami, storm surge or sea level rise.

Finally, the last question of the section addresses the **awareness** of the population regarding the existence of **evacuation route signs** for both tsunamis and storm surges (Figure 10). More than 80% of the respondents claim to be aware of the existing signs indicating tsunami evacuation routes in the municipality. This clearly reflects the work related to tsunami preparedness that has been developed in the municipality. As part of this, some signs have even been installed as a result of a municipal initiative and, although they do not follow any official national or international standard and will most likely be replaced in the coming months by officially approved signage, the population is aware of them and, in fact, they have probably increased awareness of the municipality's tsunami preparedness. Regarding storm surges, however, most people believe that there are no signs (about 43% of respondents) or do not know if there are (about 45%). These results are probably the result of the low frequency of these events in the municipality.

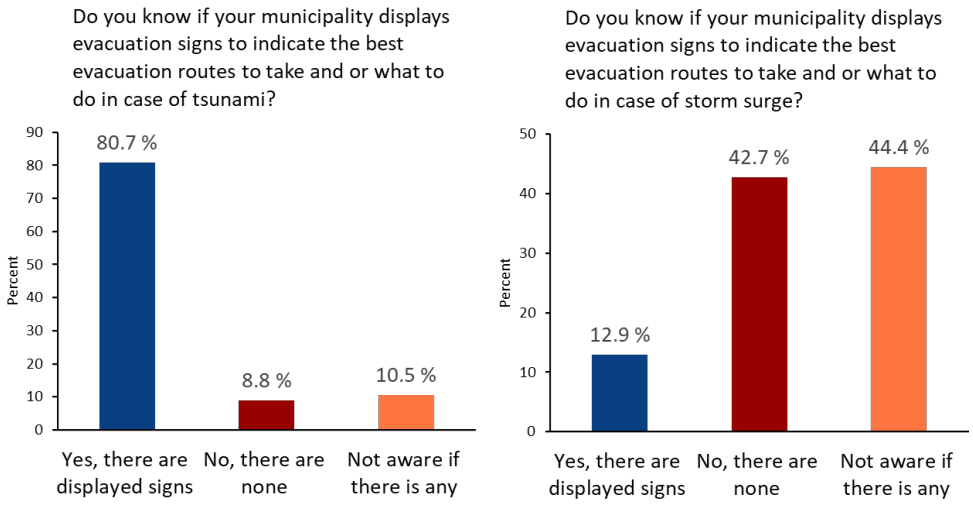


Figure 10. Awareness of interviewees about the existence of evacuation route signs for tsunami (left) and storm surge (right).

4.3 Exposure and sense of exposure

The *exposure and sense of exposure* section aims to better understand the existing exposure patterns in the municipality of Chipiona, considering both the place of residence and the place of work and studies. It mainly analyses the proximity to the coast where the inhabitants live, work and study, and the patterns of dependency, to explore potential site-specific measures and capacities needed to reduce the vulnerability of the municipality.

As Figure 11 shows, **exposure** is high to sea level related hazard and risks in Chipiona, based on the fact that nearly 60% of the surveyed population lives, works or studies less than 10 minutes from the coast. This is especially applied to the tourism sector, which is very focused on beach and sea tourism. It should also be noted that more than 60% of the population lives with dependents (disabled, children, etc.) or are dependent on others (mostly students).

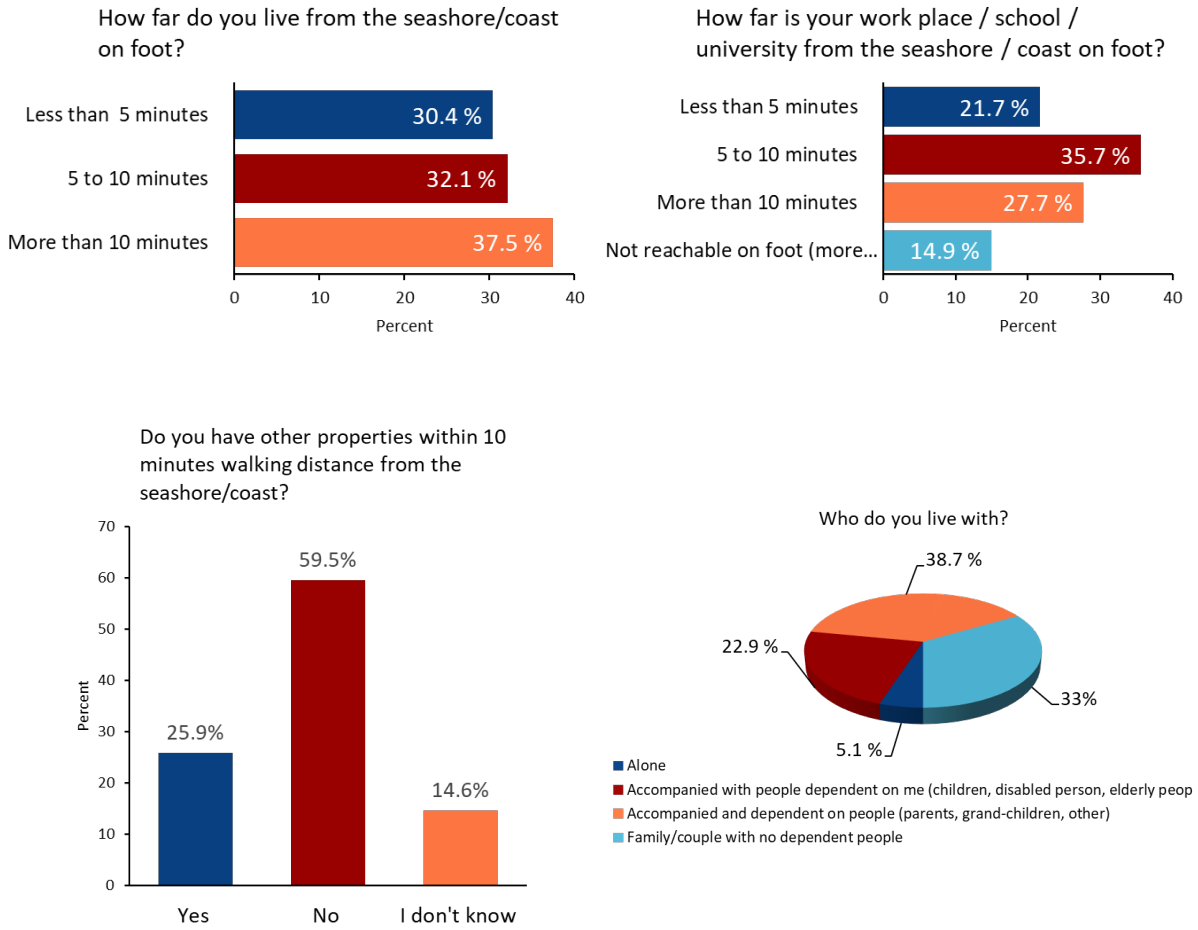


Figure 11. Distance to the coast from homes, work, and study places (top), ownership of any other property (bottom left) and data related to dependency of the population of Chipiona.

4.4 Assessment, Preparedness, and Response

The *Assessment, Preparedness and Response* section aims to know the level of preparedness of Chipiona and how the community and population may respond in case of tsunami, storm surge and sea level rise. It assesses the level of knowledge of some preparedness measures in place, along with their participation in these, including the behavioural and reaction component in the event of such events. It also seeks to better understand whether people feel that they belong to a group/community. This information will be another important component in assessing the needs of the community in terms of sea level related disaster risk management in Chipiona, especially regarding preparedness and response.

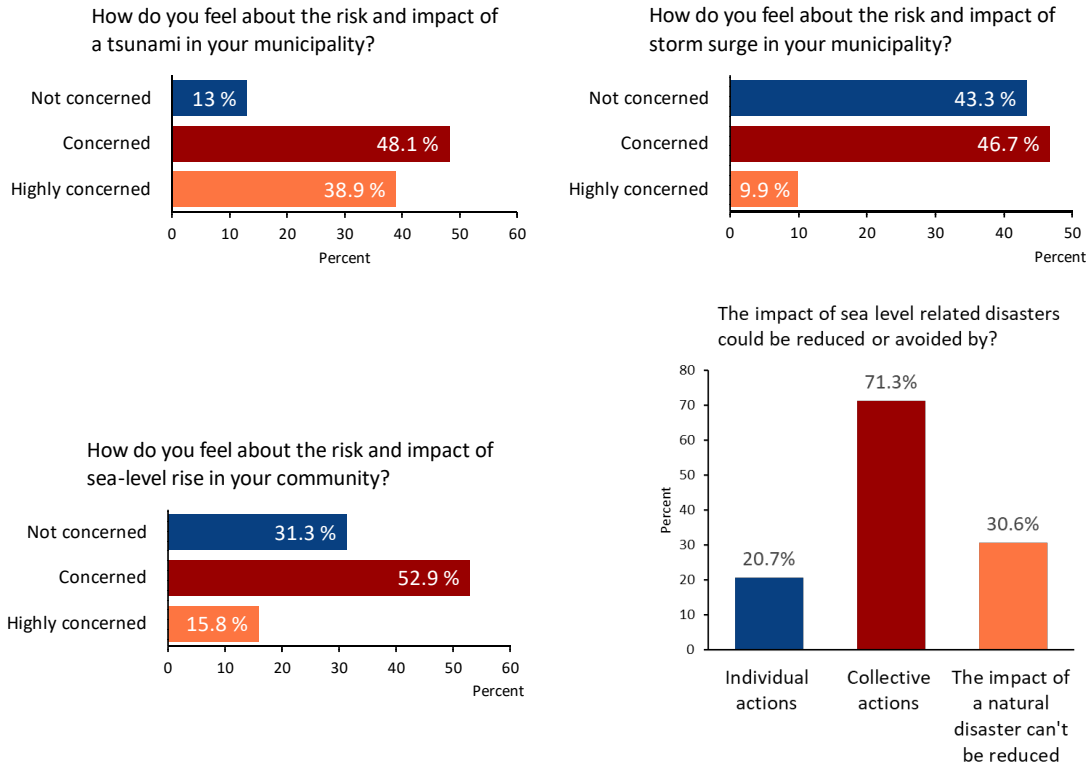


Figure 12. Level of concern about tsunami risk (top left), storm surge (top right), sea level rise (bottom left) and collective feeling about sea level related risk management (bottom right) in the municipality of Chipiona.

In terms of the **degree of concern about the risk and impact of the sea level related hazards** addressed in the survey (Figure 12), it is observed that almost 1 out of 2 respondents is concerned about tsunamis, storm surges and sea level rise, which apparently reflects a good degree of awareness. Moreover, in the case of tsunamis, this is even more remarkable, with almost 40% answering that they are not only concerned, but very concerned. In contrast, only about 10% of the respondents answered to be very concerned about storm surges, which is consistent with the low frequency of these phenomena, and only 15.8% answered to be highly concerned about sea level rise, which could be considered as a low value.

In addition, most of the responses from all the groups surveyed agree that the impact of these sea level-related catastrophes could be reduced or avoided by acting collectively.

Next three questions address the knowledge of evacuation plans, if some measures have been taken and if any insurance has been arranged for tsunamis, storm surge or sea level rise.

As for **knowledge of evacuation plans** (Figure 13), more than 70% responded that they were aware of the existence of a tsunami plan, while for the other types of events most respondents stated that they did not know or did not answer. On the one hand, this reflects a high level of knowledge of the work done to date, but it is also significant because in a way it is an overestimate, since at the time of the survey no tsunami evacuation plan had been developed.

Regarding **actions or measures taken against** tsunamis, storm surges and sea level rise by respondents, as reflected in Figure 14, a resounding and large majority respond that they have not taken any.

With regard to the **insurance** taken out for these events (Figure 15), practically one out of every two respondents say they do not have insurance for any of them. It is worth noting in this question that there is a relatively high percentage who do not know whether they have insurance, a ratio closely related to the bias of the groups surveyed towards students.

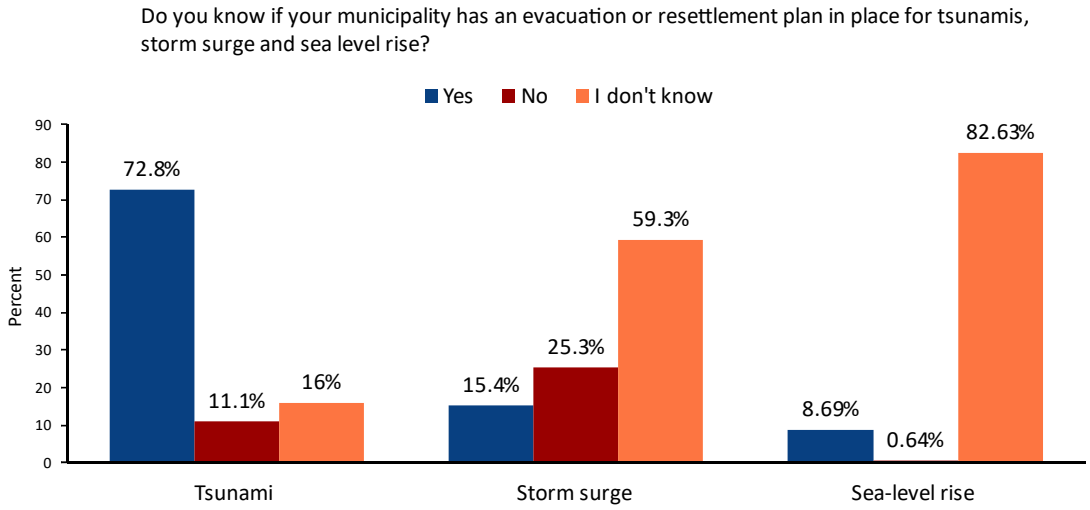


Figure 13. Awareness of the existence of an evacuation plan for tsunamis, storm surges and sea level rise.

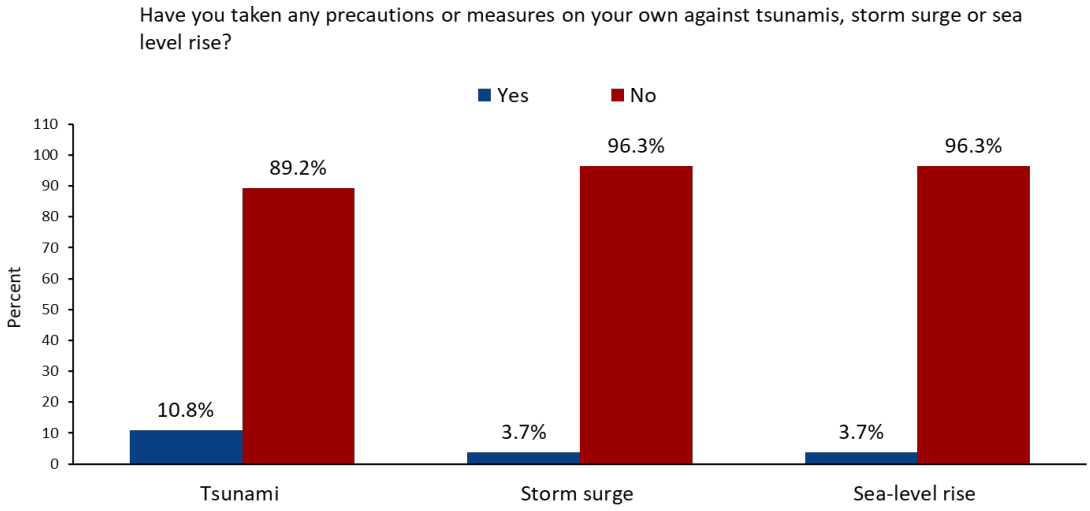


Figure 14. Analysis of measures taken by respondents in the event of tsunamis, storm surge and sea level rise.

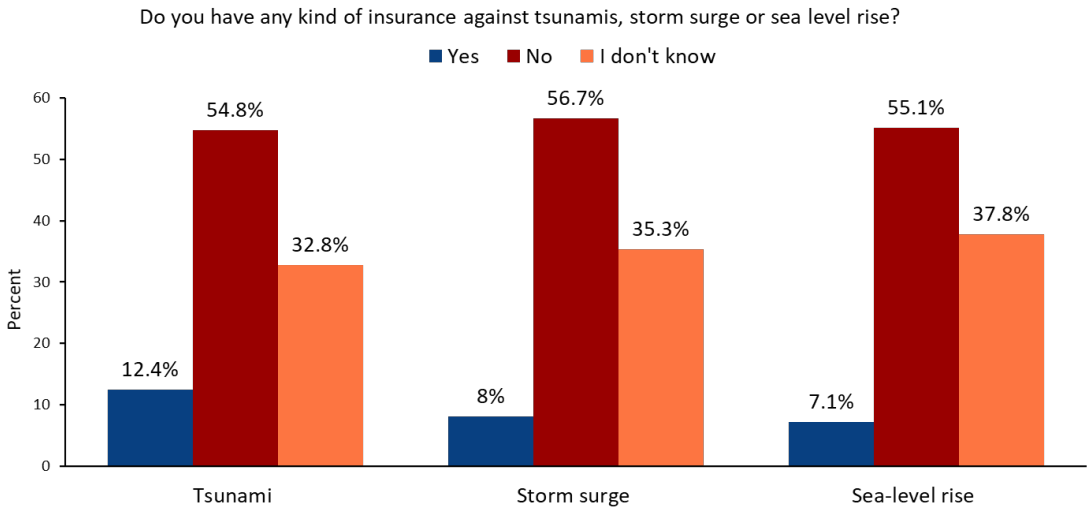


Figure 15. Availability of tsunami, storm surge and sea level rise insurance from survey respondents.

Not unexpectedly, more than 50% of the surveyed population has ever heard of or participated in an **evacuation exercise**, drill or other actions related to tsunamis, storm surges and sea level rise (Figure 16). This number is clearly related to the work done so far in Chipiona, although it should be higher. On the other hand, it should be noted that this figure corresponds mainly to respondents from emergency groups and the general public, although it is not so high in the case of the education sector, which mainly addressed students aged 14 to 17 years, a group in which the percentage of affirmative answers dropped to 44%.

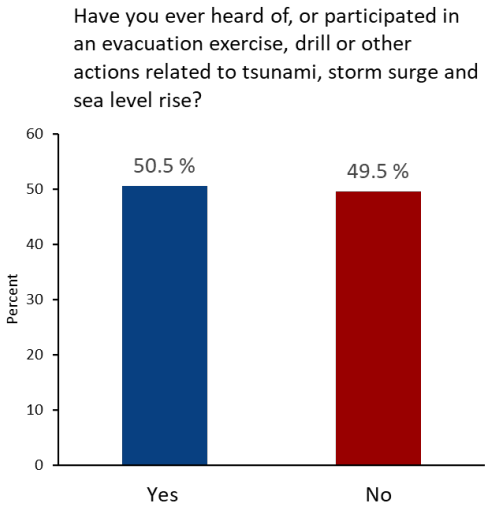


Figure 16. Experience of survey respondents in evacuation exercises related to sea level hazards.

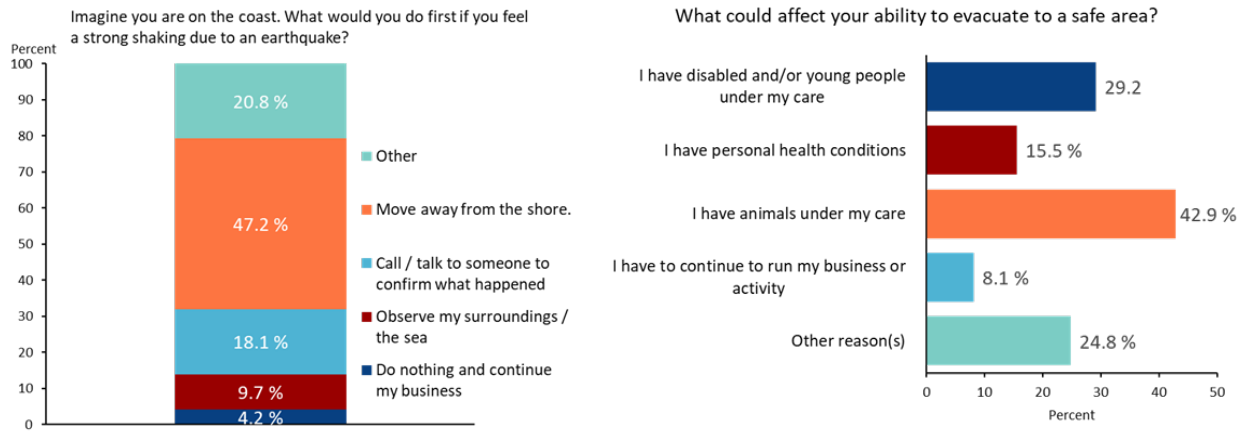


Figure 17. Expected behavior of respondents in the event of an earthquake event (left) and possible constraints to evacuation.

In terms of **behaviour of respondents in the event of an earthquake** (Figure 17, left), almost 50% of the respondents would move away from the coast. However, this is true for the emergency (67%) and education (78%) groups of respondents, while this type of reaction decreases to 46% in the case of the general population, and 25% in the case of respondents belonging to the tourism sector group. There is a relatively high percentage of responses on behaviours that should be educated, for example, almost 15% say they would do nothing or would just stand around and watch.

Regarding potential **barriers to evacuate** to a safe area (Figure 17, right), more than 40% of the respondents answered that they have animals under their care. It is also important to note the percentage of responses related to having people with disabilities or young people to care for. In addition, many other barriers (24.8% of "other") are pointed out, which are quite diverse and could be addressed especially with appropriate education.

4.5 Governance

The *Governance* section is the last section of the questionnaire. Focused on risk management and its integration into decision making, it includes questions for both emergency managers and decision makers, as well as for the general population. Among them, these questions seek to identify the communication channels preferred by the population to receive warnings, their knowledge and trust in the authorities responsible for the emergency, as well as their involvement, and willingness to be involved in the management of sea level related risks. In addition, some specific aspects and challenges for emergency professionals and managers are addressed.

Which communication channel would you prefer for receiving alert messages? Please order from most important to least important (1 is the most important, 6 is the least important?

	Television	Radio	Internet (social media)	Audible alerts (sirens, loudspeakers)	SMS	E-mail
	Row %	Row %	Row %	Row %	Row %	Row %
1	17.6%	1.4%	15.5%	52.8%	11.6%	1.1%
2	23.9%	13.4%	19.0%	13.1%	24.6%	6.0%
3	19.5%	20.3%	29.5%	10.3%	10.0%	10.3%
4	15.8%	20.5%	20.1%	15.4%	13.9%	14.3%
5	16.2%	19.7%	8.5%	3.9%	29.3%	22.4%
6	8.5%	24.4%	8.5%	3.5%	10.9%	44.2%
Totals						

Figure 18. Preferred communication channel for receiving alert messages by interviewees in Chipiona.

It seems clear from Figure 18, that the **preferred channel for receiving alert messages** is audible sirens or loudspeakers, which has been ranked as first option with 52.8% of respondents. This channel is followed by television, social media, SMS channels and radio. On the other hand, it seems from the answers of the interviewees that e-mail is the last preferred means of communicating alerts.

In terms of perception of interviewees on the **municipality's capabilities** to manage emergency response operations in case of sea level related hazards (Figure 19), it seems there is a general trend on a positive answer, although it is also quite important to note that about 40% of respondents believe that it is not.

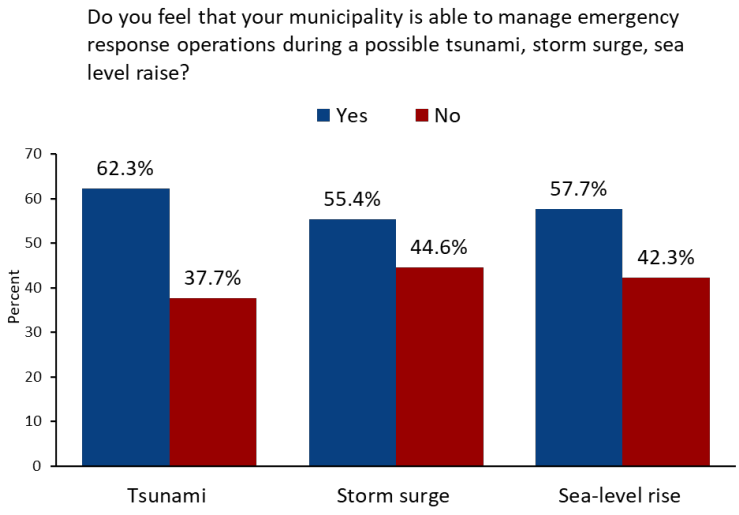


Figure 19. Perception of interviewees on the municipality's capabilities to manage emergency response operations in case of sea level related hazards.

On the other hand, it can be seen in Figure 20 that the majority of respondents believe that the **responsibility for managing** sea level related disasters in Chipiona falls on (in this order) the town council, the police, civil protection and the fire department, which is in fact a fairly approximate idea of the real situation.

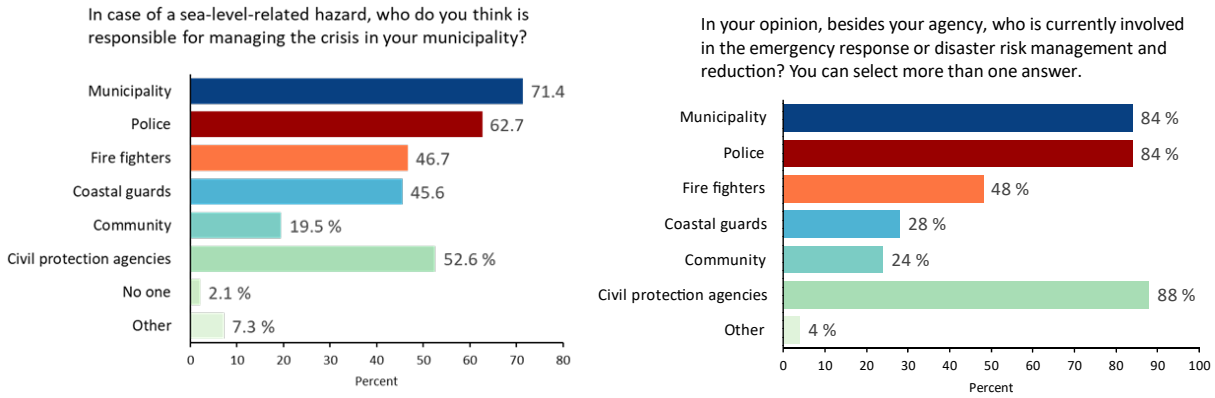


Figure 20. Awareness of respondents about the authorities responsible for the emergency in Chipiona (figure on the right answers from emergency responders).

Finally, regarding **confidence in disaster risk reduction and management** (Figure 21), it can be seen that most respondents think that more can be done (around 39%), or do not know if more can be done (39.5%), the latter implying that they do not know how it is managed. It is also interesting to see that 52% of the respondents (only for the emergency target group) think that the impact of hazards is not taken into account in the decision-making process, with which only 16% strongly agree.

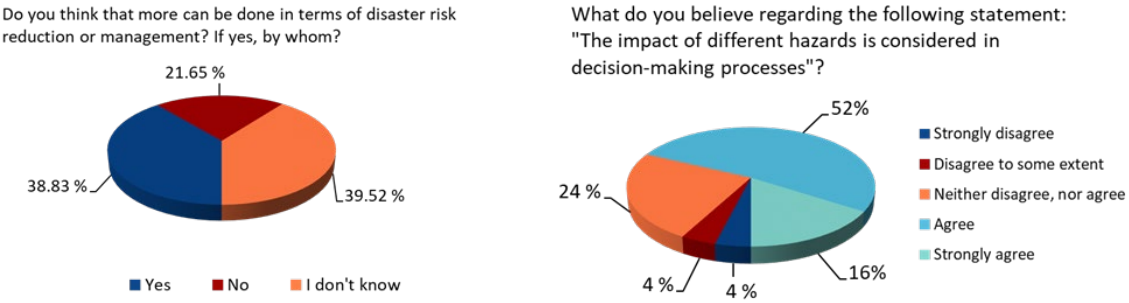


Figure 21. Analysis of trust of respondents about disaster risk reduction or management.

5 Key findings

The risk perception survey on tsunamis, storm surges and sea level rise developed in the municipality of Chipiona has yielded several key findings. This section highlights some of them, but it is highly recommended to carefully review each of the previous specific chapters to have a better contextualization, graphics and corresponding data and thus a better understanding of them.

First, it is necessary to explore the sample and the target groups, as well as the results obtained regarding the **characteristics of survey respondents**.

The survey has been developed considering different sectors (see section 3). Main target groups pursued under this study in Chipiona were the educational sector, especially focused on students from 14 to 17 years old, the emergency management and services sector and general public. Tourism sector was also addressed, but it was not possible to have a special focus on it for different reasons, including the fact that the questionnaire was conducted during the low tourist season (winter), which made it harder to locate both managers and personnel related to tourist facilities and privately managed accommodations.

Derived from this, it must be noted that there is an expected, bias within the education sector (52%) and the respondents age (around 43% between 14-17 years old).

It would be advisable to expand the sample to increase the number of responses from the emergency management and services sector, as well as from the tourism sector.

From the **awareness/knowledge** section, it can be concluded that although in general terms there is some awareness that has already been worked on for tsunamis, and most of the population is becoming familiar with the concept and understands that it is something real to which the municipality is exposed, there are some aspects in which additional efforts should be considered. This is more evident in the case of the other hazards considered in the questionnaire (storm surge and sea level rise). Although the frequency of occurrence of storm surges is very low in the municipality, and therefore knowledge and concern about these events is low, there is also a certain lack of awareness of the threat of sea level rise and its effect on the municipality.

Among the aspects in which a special focus should be paid regarding tsunamis are the following (for more details, please refer to specific section). The awareness of the impact that a tsunami could have, according to the responses, seems relatively low. There is also a relatively high number of respondents who do not know the natural signs preceding a tsunami, or a lack of knowledge about estimated arrival times of a potential tsunami in Chipiona. In addition, it is worth paying attention to the fact there is no clear understanding of warning or information channels for tsunamis, storm surge and sea level rise in the municipality, which probably reflects a lack of communication within the municipality regarding this type of emergencies. On the other hand, based on answers, it may be concluded that there is awareness about tsunami signs (although as explained earlier, these will need to be replaced).

Regarding the **exposure** section, the main conclusion is that, according to the response to the questionnaire, exposure in the municipality is high, with a significant percentage of the population living, working or studying less than 10 minutes from the coast.

The **assessment, preparedness, and response** section also yielded valuable results. In terms of the degree of concern about the risk and impact of the sea level related hazards, it can be concluded that there is a good degree of awareness for tsunamis and storm surge, although not so high in the case of sea level rise. As for knowledge of evacuation plans, it is interesting to note that a large number of respondents

responded that they were aware of the existence of an evacuation plan in the event of a tsunami. This is positive on one side, as it reflects a high level of knowledge of the work done to date, but it is also significant because in a way it is an overestimate, since at the time of the survey no tsunami evacuation plan had been developed.

Regarding actions taken by respondents against tsunamis, storm surges and sea level rise, a large majority respond that they have not taken any. Thus, although awareness is increasing for tsunamis, the low frequency of occurrence means that there is a degree of underestimation with respect to self-preparedness. The same applies in the case of insurance, although here it should also be noted that a high percentage do not know whether they have insurance. It is likely that this lack of knowledge is directly related to the slight imbalance of the questionnaire sample over the group of respondents between 14 and 17 years of age.

Even if more than half of the interviewees have ever heard of or participated in an evacuation exercise, there is a relatively high percentage of responses on behaviours that should be educated, for example, a not so high, but nevertheless important to consider percentage of responses indicated that in the event of an earthquake they would do nothing or would just stand around and watch.

In terms of the **governance** section of the questionnaire, there are also some important outcomes.

On one side, it has been observed that the preferred channel for receiving alert messages are audible sirens or loudspeakers followed by television, social media, SMS channels and radio.

As for the municipality's capabilities to manage emergency response operations in case of sea level related hazards, it may be concluded from the survey responses that there is a general trend on a positive answer, although it is also quite important to note that this is quite balanced with respondents that believe that it is not such a capability. Finally, regarding confidence in disaster risk reduction and management, most respondents believe that more can be done, or do not know if more can be done, the latter implying a lack of knowledge on how it is actually managed. It is also interesting to see that more than half of the respondents in the emergency target group, think that the impact of hazards is not considered in the decision-making process.

6 Appendix 1. Sea Level Related Hazard s Risk Perception Survey Questionnaire

6.1 English version

unesco
Intergovernmental Oceanographic Commission

Funded by European Union Humanitarian Aid

CoastWAVE NEAMTWS

Intergovernmental Oceanographic Commission (IOC) of UNESCO

Tsunami Early Warning and Mitigation System in North-Eastern Atlantic, Mediterranean and Connected Seas (ICG/NEAMTWS)

Sea Level Related Hazards Risk Perception Survey Questionnaire

Within the framework of the Intergovernmental Coordination Group for the North-Eastern Atlantic, the Mediterranean and Connected Seas Tsunami Early Warning and Mitigation System (ICG/NEAMTWS) and IOC EU DG ECHO CoastWAVE Project, IOC-UNESCO is carrying out a survey with selected Member States on the perception of coastal risks and preparedness to tsunami, storm surge and sea level rise to better understand how coastal populations perceive these natural hazards and risks and develop recommendations for enhanced risk communication strategies and products in the region.

The goal of the survey is to improve sea-level-related early warning and mitigation systems and preparedness in the Mediterranean region in order to save lives, reduce losses and damages in the event of a natural disaster of that kind.

Note: All information given in this survey will be anonymous and confidential. The questionnaire will take about 15 minutes. We thank you for your contribution.

Questionnaire is for people in the education sector (teachers, students etc.) except people under the age of 14, the tourism sector (restaurant-bar, store, and hotel owners, employees of these sectors, guides, etc.), the emergency responders (fire fighters, police, coast guard, civil protection agencies etc.) and the public

I consent to the information I provide in this questionnaire can be used anonymously in publications.

N°	Question	Choise
1- Personal Information		
1	Where do you live?	□ Spain - Chipiona □ Turkey - Buyukcekmece □ Malta - Marsaxlokk □ Cyprus - Larnaca □ Egypt - Alexandria □ Greece - Samos □ Morocco - El Jadida □ Other, please mention the city:
2	What is your gender?	□ Female □ Male □ Prefer not to answer
3	How old are you?	□ 14-17 years old □ 18-24 years old □ 25-34 years old □ 35-44 years old □ 45-54 years old □ 55-64 years old □ 65-74 years old □ 75 years old or more

4	What is your highest level of school completed?	□ Primary school □ Secondary school □ High School □ University □ Other, please specify:
5	Are you part of one of the following sectors?	□ Tourism sector (hotel/restaurant/bar owners/employees, tourist guide, shop owner etc.) □ Education sector (teacher, student, etc.) □ Emergency responders (fire fighters, police, coast guard, civil protection agency etc.) □ Public
5 for ER	Which organization do you work for?	Please specify:
	2- Awareness / Knowledge	
6	Have you ever heard of any of the following hazards? Please select all that apply.	□ Tsunami □ Sea-level rise □ Storm surge
6 for ER	What kind of measures and actions do you take for each of the listed hazards?	□ Tsunami, please specify: □ Storm surge, please specify: □ Sea-level rise, please specify:
7	Have you ever experienced one or more of these hazards?	a) Tsunami: □ Yes, please indicate briefly when and what happened: □ No □ I don't know b) Storm surge: □ Yes, please indicate briefly when and what happened: □ No □ I don't know
8 To be removed for ER	Describe each hazard with 3 words (use adjectives, nouns, etc.)	a) Tsunami: _____ _____ _____ b) Storm surge: _____ _____ ____ c) Sea-level rise: _____ _____ _____
9 To be removed for ER	In your opinion, what are the causes of these hazards?	Please specify for each with keywords (leave it blank if you do not know): a) Tsunami: b) Storm surge: c) Sea-level rise:

10	How likely, in your opinion, the coastal zones of **the Mediterranean region** can experience a tsunami, storm surge or sea-level rise in the next 10 years?	a) Tsunami □ not possible □ low □ moderate □ high b) Storm surge □ not possible □ low □ moderate □ high c) Sea-level Rise □ not possible □ low □ moderate □ high
11	How likely, in your opinion, the coastal zones of **your community** can experience a tsunami, storm surge or sea-level rise in the next 10 years?	a) Tsunami □ not possible □ low □ moderate □ high b) Storm surge □ not possible □ low □ moderate □ high c) Sea-level Rise □ not possible □ low □ moderate □ high
12	What do you think could be the impacts (loss of lives and property damages) of the listed hazards in coastal regions **of the Mediterranean**?	a) Tsunami □ low (no loss of life, no property damage) □ moderate (possible loss of life and property damage) □ high (significant loss of life and property damage) b) Storm surge □ low □ moderate □ high c) Sea-level Rise □ low □ moderate □ high

13	What do you think could be the impacts (loss of lives and property damages) of the listed hazards in coastal regions **of your community**?	a) Tsunami □ low □ moderate □ high b) Storm surge □ low □ moderate □ high c) Sea-level Rise □ low □ moderate □ high
14	According to you, what are the natural signs of a tsunami?	Please specify at least one:
15	In your opinion, what is the expected height of a tsunami that can happen soon (e.g., in the next 10 years) in coastal regions of the **Mediterranean**?	□ Less than 50cm □ 50cm to 1m □ 1 to 2m □ 2 to 5m □ Higher than 5m
16	In your opinion, how long do you think it will take for a tsunami to arrive to coastal region **of your community**?	□ Less than 10 minutes □ 10-20 minutes □ 20-30 minutes □ More than 30 minutes
17	Do you know if your municipality has the necessary capacities and infrastructure to alert and or inform the local population for earthquake, tsunami, storm surge and where sea level rise is happening or likely to happen?	a) Earthquake □ Yes □ No □ I am not aware b) Tsunami □ Yes □ No □ I am not aware c) Storm surge □ Yes □ No □ I am not aware d) Sea Level Rise □ Yes □ No □ I am not aware
18	Do you know if your municipality displays evacuation signs to indicate the best evacuation routes to take and or what to do in case of sea level rise?	a) Tsunami □ Yes, there are displayed signs □ No, there are none □ Not aware if there is any b) Storm surge □ Yes, there are displayed signs □ No, there is none □ Not aware if there is any b) Sea Level Rise □ Yes, there are information □ No, there is none □ Not aware if there is any

3- Exposure and sense of exposure		
19	How far do you live from the seashore/coast on foot?	□ Less than 5 minutes □ 5 to 10 minutes □ More than 10 minutes
20	Who do you live with?	□ Alone □ Accompanied with people dependent on me (children, disabled person, elderly people, other) □ Accompanied and dependent on people (parents, grand-children, other). □ Family/couple with no dependent people
21	How far is your workplace / school / university from the seashore/ coast on foot?	□ Less than 5 minutes □ 5 to 10 minutes □ More than 10 minutes □ Not reachable on foot (more than 2km)
22	Do you have other properties within 10 minutes walking distance from the seashore/coast?	□ Yes, please specify □ No □ I don't know
4- Assessment, Preparedness, and Response		
23	The impact of sea-level-related disasters could be reduced or avoided by:	Select one or more: □ Individual actions □ Collective Actions □ The impact of a natural disaster can't be reduced.
24	How do you feel about the risk and impact of a tsunami in your municipality?	□ Not concerned, because: □ Concerned, because: □ Highly concerned, because:
25	How do you feel about the risk and impact of storm surge in your community?	□ Not concerned, because: □ Concerned, because: □ Highly concerned, because:
26	How do you feel about the risk and impact of sea-level rise in your community?	□ Not concerned, because: □ Concerned, because: □ Highly concerned, because:
27	Do you know if your municipality has an evacuation or resettlement plan in place for tsunamis, storm surge and sea level rise?	a) Tsunami □ Yes □ No □ I don't know b) Storm surge □ Yes □ No □ I don't know b) Sea Level Rise □ Yes □ No □ I don't know

28	Have you taken any precautions or measures of your own against any of these hazards?	a) Tsunami □ Yes, please specify: □ No b) Storm surge □ Yes, please specify: □ No c) Sea-level Rise □ Yes, please specify: □ No
29	Do you have any kind of insurance against any of these hazards?	a) Tsunami □ Yes □ No □ I don't know b) Storm surge □ Yes □ No □ I don't know c) Sea-level Rise □ Yes □ No □ I don't know
30	Have you ever heard of, or participated in an evacuation exercise, drill or other actions related to tsunami, storm surge and sea level rise?	□ Yes, please specify: □ No
31	Imagine you are on the coast. What would you do first if you feel a strong shaking due to an earthquake?	□ Do nothing and continue my business □ Observe my surroundings / the sea □ Move away from the shore, please specify where: □ Call / talk to someone to confirm what happened □ Other, please specify:
32	What could affect your ability to evacuate to a safe area? Please, select all that apply.	□ I have disabled and/or young people under my care □ Because of my personal health conditions □ I have animals under my care □ I have to continue to run my business or activity □ Other reason(s), please specify:
5- Governance		
33 To be removed for ER	Which communication channel would you prefer for receiving alert messages? Please order from most important to least important (1 is the most important, 6 is the least important)	□ TV □Radio □Internet (social media) □Audible alerts (sirens, loudspeakers) □SMS □E-mail
34	Do you feel that your municipality is able to manage emergency response operations during listed hazards and	a) Tsunami □ Yes □ No b) Storm surge

	doing anything to reduce sea level rise impacts (adaption)?	□ Yes □ No b) Sea Level Rise □ Yes □ No
35	In case of a sea-level-related hazard, who do you think is responsible for managing the crisis in your municipality? You can select more than one answer.	□ Municipality □ Police □ Fire fighters □ Coast guard □ Community □ Civil protection agencies □ No one, □ Other, please specify:
35 for ER	In your opinion, besides your agency, who is currently involved in the emergency response or disaster risk management and reduction? You can select more than one answer.	□ Municipality □ Police □ Fire fighters □ Coast guard □ Community □ Civil protection agencies □ No one □ Other, please specify:
36 Change it for ER	Do you think that more can be done in terms of disaster risk reduction or management? If yes, by whom?	□ Yes, please specify: □ No, please specify:
37 To be added for ER	Which key preparation measures are currently undertaken?	Please specify:
38 To be added for ER	What do you think is the biggest challenge to effectively managing coastal hazards/ risk?	Please specify:
39 To be added for ER	What do you believe regarding the following statement: The impact of different hazards is considered in decision-making processes?	□ Strongly disagree □ Disagree to some extent □ Neither disagree, nor agree □ Agree □ Strongly agree
40 To be added for ER	Do you agree that Early Warning Systems and Emergency Responders are streamlined and integrated into decision making, national development plans and actions?	□ Yes, please specify: □ No, please specify:

6 Appendix 1. Sea Level Related Hazard s Risk Perception Survey Questionnaire

6.2 Spanish version

6.2 Versión en español

Comisión Oceanográfica Intergubernamental (COI) de la UNESCO

IHCantabria y Ayuntamiento de Chipiona

Sistema de Alerta Temprana y Mitigación ante Tsunamis en el Atlántico Nororiental, Mediterráneo y Mares Adyacentes (NEAMTWS)

Encuesta para evaluar la percepción del riesgo costero relacionado con variaciones del nivel del mar

Preparado y revisado por:
IOC UNESCO, EU DG ECHO y socios del proyecto CoastWAVE.

En el marco del Grupo Intergubernamental de Coordinación del Sistema de Alerta Temprana y Mitigación frente a Tsunamis en el Atlántico Nororiental y el Mediterráneo y Mares Adyacentes (ICG/NEAMTWS) y el proyecto CoastWAVE de la COI y la Dirección General de Protección Civil y Operaciones de Ayuda Humanitaria Europeas (DG ECHO) de la Comisión Europea, la COI de la UNESCO está realizando una encuesta a determinados Estados Miembros sobre la percepción de los riesgos costeros y la preparación para los tsunamis, las mareas tormentosas y el aumento del nivel del mar a fin de comprender mejor la idea que las poblaciones costeras tienen de estos peligros y riesgos naturales y de formular recomendaciones destinadas a mejorar las estrategias y los productos de comunicación de los riesgos en la región.

El cuestionario se dirige a las personas del **sector de la educación** (profesores, estudiantes, etc.), con excepción de los menores de 14 años, al **sector turístico** (propietarios de restaurantes, bares, tiendas y hoteles, empleados de esos sectores, guías, etc.), a los **servicios de emergencia** (bomberos, policía, organismos de protección civil, etc.) y a la sociedad **en general**.

El objetivo del estudio es mejorar los sistemas de alerta temprana y mitigación relacionados con el nivel del mar y así mejorar la preparación de los municipios de la región Noreste Atlántico y Mediterránea (NEAM por sus siglas en inglés), en la que se encuentra su municipio, para mejorar la preparación de los municipios expuestos a estos procesos naturales, y así reducir en la medida de lo posible sus consecuencias en términos de vidas, pérdidas y daños materiales

Nota: toda la información proporcionada en esta encuesta será anónima y confidencial. Le llevará aproximadamente 15 minutos responder al cuestionario. Le agradecemos su contribución.

☐ Doy mi consentimiento para que la información que proporciono en este cuestionario pueda ser utilizada de forma anónima en publicaciones.

N°	Pregunta	Opción
	1- Información personal	
1	¿Dónde vive?	□ España - Chipiona □ Turquía - Buyukcekmece □ Malta - Marsaxlokk □ Chipre - Larnaca □ Egipto - Alejandría □ Grecia - Samos □ Marruecos - El Jadida □ Otros, sírvase indicar la ciudad:
2	¿Cuál es su género?	□ Mujer □ Hombre □ Prefiere no contestar
3	¿Qué edad tiene?	□ 14-17 años □ 18-24 años □ 25-34 años □ 35-44 años □ 45-54 años □ 55-64 años □ 65-74 años □ 75 años o más
4	¿Cuál es su nivel de estudios?	□ Escuela primaria □ Escuela secundaria de primer ciclo □ Escuela secundaria de segundo ciclo (Bachillerato). □ Universidad □ Otros, sírvase especificar:
5	¿Forma parte de uno de los siguientes sectores?	□ Sector turístico (propietarios/empleados de hoteles/restaurantes/bares, guías turísticos, propietarios de tiendas, etc.) □ Sector de la educación (profesores, estudiantes, etc.) □ Servicios de emergencia (bomberos, policía, guardacostas, organismos de protección civil, etc.) □ Población general

2- Conciencia/Conocimiento		
6	¿Ha oído hablar de alguno de los siguientes peligros? Sírvase seleccionar todas las respuestas pertinentes.	□ Tsunami □ Aumento del nivel del mar □ Marea tormentosa
7	¿Ha experimentado alguna vez uno o varios de estos peligros?	a) Tsunami: □ Sí, sírvase indicar brevemente cuándo y qué ocurrió: □ No □ No sabe b) Marea tormentosa: □ Sí, sírvase indicar brevemente cuándo y qué ocurrió: □ No □ No sabe
8	Describa cada peligro con tres palabras (utilice adjetivos, sustantivos, etc.)	a) Tsunami: - - - b) Marea tormentosa: - - - c) Aumento del nivel del mar: - - -
9	En su opinión, ¿cuáles son las causas de esos peligros?	Sírvase especificar para cada uno de ellos utilizando palab clave (déjelo en blanco si no sabe): a) Tsunami: b) Marea tormentosa: c) Aumento del nivel del mar:

10	En su opinión, ¿qué probabilidad hay de que en las zonas costeras de **la región del** Nordeste Atlántico y Mediterráneo (NEAM) en la que se encuentra su municipio se produzca un tsunami, una marea tormentosa o un aumento del nivel del mar en los próximos diez años?	a) Tsunami □ ninguna □ baja □ moderada □ alta b) Marea tormentosa □ ninguna □ baja □ moderada □ alta c) Aumento del nivel del mar □ ninguna □ baja □ moderada □ alta
11	En su opinión, ¿qué probabilidad hay de que en las zonas costeras de **su municipio** se produzca un tsunami, una marea tormentosa o un aumento del nivel del mar en los próximos diez años?	a) Tsunami □ ninguna □ baja □ moderada □ alta b) Marea tormentosa □ ninguna □ baja □ moderada □ alta c) Aumento del nivel del mar □ ninguna □ baja □ moderada □ alta
12	En su opinión, ¿qué efectos (pérdida de vidas y daños materiales) podrían tener los peligros enumerados en las regiones costeras del **Nordeste Atlántico y Mediterráneo** (NEAM), en la que se encuentra su municipio?	a) Tsunami □ reducidos (sin pérdida de vidas ni daños materiales) □ moderados (posible pérdida de vidas y daños materiales □ importantes (pérdida de vidas y daños materiales considerables) b) Marea tormentosa □ reducidos □ moderados □ importantes c) Aumento del nivel del mar □ reducidos □ moderados □ importantes

13	En su opinión, ¿qué efectos (pérdida de vidas y daños materiales) podrían tener los peligros enumerados en las regiones costeras de **su municipio**?	a) Tsunami □ reducidos □ moderados □ importantes b) Marea tormentosa □ reducidos □ moderados □ importantes c) Aumento del nivel del mar □ reducidos □ moderados □ importantes
14	En su opinión, ¿cuáles son las señales naturales de un tsunami?	Sírvase especificar al menos una:
15	En su opinión, ¿cuál es la altura prevista de un tsunami que se puede producir en breve (por ejemplo, en los próximos diez años) en las regiones costeras del **Nordeste Atlántico y Mediterráneo** (NEAM), en la que se encuentra su municipio?	□ Menos de 50 centímetros □ De 50 centímetros a 1 metro □ De 1 a 2 metros □ De 2 a 5 metros □ Más de 5 metros
16	En su opinión, ¿cuánto tiempo tardará un tsunami en llegar a la región costera de **su municipio**?	□ Menos de 10 minutos □ 10-20 minutos □ 20-30 minutos □ Más de 30 minutos
17	¿Sabe si su municipio dispone de las capacidades e infraestructuras necesarias para alertar e informar a la población local sobre los seísmos, los tsunamis, las mareas tormentosas y el aumento del nivel del mar que se estén produciendo o podrían producirse?	a) Seísmo □ Sí □ No □ No sabe b) Tsunami □ Sí □ No □ No sabe c) Marea tormentosa □ Sí □ No □ No sabe d) Aumento del nivel del mar □ Sí □ No □ No sabe

18	¿Sabe si en su municipio se han colocado señales de evacuación que indiquen las mejores rutas de evacuación o la manera de actuar en caso de aumento del nivel del mar?	a) Tsunami □ Sí, se han colocado señales □ No, no hay ninguna □ No sabe si hay alguna b) Marea tormentosa □ Sí, se han colocado señales □ No, no hay ninguna □ No sabe si hay alguna c) Aumento del nivel del mar □ Sí, se han colocado señales □ No, no hay ninguna □ No sabe si hay alguna
3- Exposición y sentido de la exposición		
19	¿A qué distancia vive de la orilla del mar/la costa a pie?	□ Menos de 5 minutos □ De 5 a 10 minutos □ Más de 10 minutos
20	¿Con quién vive?	□ Solo/a □ Acompañado/a de personas que están a mi cargo (niños personas con discapacidad, personas de edad, otros) □ Acompañado/a y a cargo de personas (padres, nietos, otros). □ Familia/pareja sin personas a cargo
21	¿A qué distancia se encuentra su lugar de trabajo/escuela/universidad de la orilla del mar/la costa a pie?	□ Menos de 5 minutos □ De 5 a 10 minutos □ Más de 10 minutos □ No se puede llegar a pie (más de 2 km)
22	¿Tiene otros bienes a menos de 10 minutos a pie de la orilla del mar/la costa?	□ Sí, sírvase especificar □ No □ No sabe
4- Evaluación, preparación y respuesta		
23	Los efectos de los desastres relacionados con el nivel del mar podrían reducirse o evitarse mediante:	Elija una o varias respuestas: □ Acciones individuales □ Acciones colectivas □ No se pueden reducir los efectos de un desastre natural
24	¿Qué opina sobre el riesgo y los efectos de un tsunami en su municipio?	□ No me preocupa porque: □ Me preocupa porque: □ Me preocupa mucho porque:

25	¿Qué opina sobre el riesgo y los efectos de las mareas tormentosas en su municipio?	□ No me preocupa porque: □ Me preocupa porque: □ Me preocupa mucho porque:
26	¿Qué opina sobre el riesgo y los efectos del aumento del nivel del mar en su municipio?	□ No me preocupa porque: □ Me preocupa porque: □ Me preocupa mucho porque:
27	¿Sabe si su municipio dispone de un plan de evacuación o reasentamiento en caso de tsunami, marea tormentosa o aumento del nivel del mar?	a) Tsunami □ Sí □ No □ No sabe b) Marea tormentosa □ Sí □ No □ No sabe c) Aumento del nivel del mar □ Sí □ No □ No sabe

28	¿Ha tomado por su cuenta alguna precaución o medida contra alguno de estos peligros?	a) Tsunami □ Sí, sírvase especificar: □ No b) Marea tormentosa □ Sí, sírvase especificar: □ No c) Aumento del nivel del mar □ Sí, sírvase especificar: □ No
29	¿Tiene algún tipo de seguro contra alguno de estos peligros?	a) Tsunami □ Sí □ No □ No sabe b) Marea tormentosa □ Sí □ No □ No sabe c) Aumento del nivel del mar □ Sí □ No □ No sabe
30	¿Ha oído hablar alguna vez de un ejercicio de evacuación, un simulacro u otras medidas relacionadas con los tsunamis, las mareas tormentosas y el aumento del nivel del mar, o ha participado en ellos?	□ Sí, sírvase especificar: □ No
31	Imagine que está en la costa. ¿Qué es lo primero que haría si sintiera un fuerte temblor debido a un seísmo?	□ No haría nada y continuaría mi actividad □ Observaría mi entorno/el mar □ Me alejaría de la orilla, sírvase especificar dónde iría: □ Llamaría/hablaría con alguien para confirmar lo sucedido □ Otros, sírvase especificar:

32	¿Qué podría afectar a su capacidad de trasladarse a una zona segura? Sírvase elegir todas las respuestas pertinentes.	□ Tengo personas con discapacidad y/o jóvenes a mi carg □ Mi estado de salud □ Tengo animales a mi cargo □ Tengo que seguir ocupándome de mi negocio o actividad □ Otro(s) motivo(s), sírvase especificar:
	5- Gobernanza	
33	¿Qué canal de comunicación prefiere para recibir los mensajes de alerta? Sírvase ordenarlos del más importante al menos importante (1 es el más importante, 6 es el menos importante)	□ TV □ Radio □ Internet (medios sociales) □ Alertas sonoras (sirenas, altavoces) □ SMS □ Correo electrónico
34	¿Considera que su municipio es capaz de gestionar las operaciones de respuesta de emergencia si se producen los peligros enumerados y de hacer algo para reducir los efectos del aumento del nivel del mar (adaptación)?	a) Tsunami □ Sí □ No b) Marea tormentosa □ Sí □ No c) Aumento del nivel del mar □ Sí □ No
35	En caso de peligro relacionado con el nivel del mar, ¿quién cree que es el encargado de gestionar la crisis en su municipio? Puede elegir más de una respuesta.	□ Ayuntamiento municipio □ Policía □ Bomberos □ Guardacostas □ La comunidad afectada □ Organismos de protección civil □ Nadie □ Otros, sírvase especificar:
36	¿Cree que se podría hacer más en lo que respecta a la reducción o gestión del riesgo de desastres? En caso afirmativo, ¿quién debería actuar?	□ Sí, sírvase especificar: □ No, sírvase especificar:

TU COLABORACIÓN ES FUNDAMENTAL EN ESTE PROYECTO,
¡MUCHAS GRACIAS POR TU DEDICACIÓN!

Te recuerdo que las respuestas se tratarán de forma anónima.