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IOC/UNESCO EU DG ECHO CoastWAVE Project Phase - II

Scaling-Up and Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic and Mediterranean Regions to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards

Project information

UNESCO Contacts	*Denis CHANG SENG* *Programme Specialist* *Tsunami Resilient Section* *Intergovernmental Oceanographic Commission* *d.chang-seng@unesco.org* *Julien PELLAUX* *Director* *Division of Partnerships* *Bureau of Strategic Planning* *j.pellaux@unesco.org*
Geographical scope/benefitting countries	**North-Eastern Atlantic and Mediterranean Sea**: Greece, Egypt, France, Morocco, Portugal, Spain, and Türkiye
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1. Background and Rationale

Tsunamis are rapid-onset, fast moving hazards that can leave little time to respond in comparison to other sea-level-related hazards. In the case of near-field local tsunamis, the first wave can arrive within minutes to one hour after the generating event, leaving little time for warning and evacuation. For example, the first wave of the 2004 Indian Ocean Tsunami reached the coast of Sumatra in 20 minutes, and the first wave of the 2011 Great East Japan Earthquake and Tsunami arrived at the coast within 10-30 minutes. During the Bodrum (Türkiye)-Kos (Greece) tsunami in July 2017, the first waves arrived within 12-13 minutes. Coastal populations must, therefore, be aware of the actions they must take in response to a warning (whether natural warning signs or from the relevant authority) and be prepared to evacuate to designated safe zones via recognised evacuation routes within minutes. For regional or far-field events in which tsunami waves arrive between one to three hours or longer, communities must be prepared to respond to evacuation orders from designated authorities according to standardised procedures.

Europe's last major tsunami was generated by the Messina earthquake in 1908 in Italy, which resulted in an estimated 2,000 fatalities caused by the tsunami alone. Since 2000, there have been 11 earthquake-generated tsunamis in the Mediterranean, mostly in the Eastern Mediterranean, of which the Bodrum-Kos tsunami on 20 July 2017 and the Samos (Greece)-Izmir region (Türkiye) tsunami on 30 October 2020 are the most recent. One person was reported to have drowned during the Samos-Izmir tsunami. In addition, damage[1] was reported to cars and small vessels which were swept away by the waves. In south Chios Island (Greece), a few boats were crushed on the breakwater. The Samos-Izmir tsunami shed light, once again, on the complexity of warning for locally generated rapid onset tsunamis that challenge the ability of local authorities and communities at risk to take early action. This event is a renewed wake-up call following the Bodrum–Kos tsunami in July 2017 to increase tsunami preparedness and readiness at the community level.

More recently, on 30 October 2020, a significant tsunami triggered by an earthquake of magnitude 7.0 Mw hit the island of Samos (Greece) and the Aegean coast of the Izmir region (Türkiye). Once more, the event highlighted the intricate challenge of alerting communities about swiftly occurring locally generated tsunamis, posing a test to the preparedness of local authorities and at-risk communities to respond promptly. According to Türkiye's Disaster and Emergency Management Authority (AFAD), one of the confirmed victims in Türkiye drowned because of the tsunami. This event is a bitter reminder after the wake-up call on 20 July 2017, following the Bodrum (Türkiye)-Kos (Greece) tsunami, to increase tsunami preparedness through enhanced sea-level detection networks, awareness initiatives, as well as international cooperation.

These events are a reminder that the Mediterranean region is prone to tsunamis. While not as frequent as in the Pacific and Indian oceans, about 10% of all tsunamis worldwide happen in the Mediterranean, with, on average, one large tsunami happening in the region once a century[2]. In 2012, the probability of tsunamis exceeding 1m in the Mediterranean in the next

[1] https://edcm.edu.gr/images/docs/2020/Samos2020-TSUNAMI-REPORT.pdf

[2] European Geosciences Union (EGU). "What would a tsunami in the Mediterranean look like?." ScienceDaily. ScienceDaily, 27 August 20

30 years was assessed as close to 100%[3]. In most cases, there may not be sufficient time for tsunami warnings to reach all persons at risk, so preparedness and education on recognizing the harbinger tsunami signs and self-evacuation are important to save lives.

Coastal zones are exposed to a range of coastal hazards, including tsunami, storm surge, flooding and longer-term sea-level rise with its related effects. At the same time, they are more densely populated than the hinterland and exhibit higher rates of population growth and urbanisation. In the Mediterranean Sea region, coastal population is estimated to have grown from 100 million in 1980 to 150 million in 2015 and is projected to grow to 200 million by 2030[4] (according to Plan Bleu, based on the UN World Population Prospect and on national population censuses). As the trend is expected to continue into the future, it can be envisaged that the extent of populations vulnerable to coastal hazards will also continue to grow.

Recently, IOC/UNESCO commissioned the preparation of a NEAM coastal population map[5]. It is estimated that the NEAMTWS Low Elevation Coastal Zone (LECZ) (<10 m height) is home to about 116 million inhabitants with the numbers increasing substantially during the peak tourist season. In the global context, the Mediterranean has become the world's primary tourist destination. Out of a total 1,403 million international arrivals worldwide in 2018, the Mediterranean countries of southern Europe contribute 286.2 million arrivals, to which should be added the 23.9 million from North African countries and 63.6 million in the Middle East (UNWTO, 2019). Many tourists spend a considerable amount of time on or close to the tourist beaches and are particularly vulnerable as they may not be familiar with the tsunami risk level or the evacuation routes to safe zones.

High impact coastal hazards, such as tsunamis, can devastate whole regions and result in high casualties, as happened during the 2004 Indian Ocean Tsunami and the Great East Japan Earthquake and Tsunami in 2011. Following the Indian Ocean Tsunami of 2004, the Intergovernmental Oceanographic Commission (IOC) of UNESCO was given the mandate to establish three new regional tsunami warning systems for the Indian Ocean (IOTWMS), North Eastern Atlantic, Mediterranean and connected seas (NEAMTWS) and the Caribbean and adjacent regions (CARIBE-EWS) and established Intergovernmental Coordination Groups (ICGs) to oversee their development and implementation. These new regional systems joined the Pacific Tsunami Warning System (PTWS) established in 1965 to create a global network of tsunami warning systems under the governance of IOC/UNESCO. All the regional systems are built on three pillars: i. risk assessment and reduction; ii. detection, warning and dissemination; and iii. education awareness and response. It is in the context of the third pillar that this project aims to strengthen the resilience of vulnerable coastal communities to the threat of tsunamis and other sea-level-related hazards in the NEAM region. Below the recent developments related to the UN Decade of Ocean Science for Sustainable Development are described.

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[3] Papadopoulos, G. A., E. Gràcia, R. Urgeles, V. Sallares, P.M. De Martini, D. Pantosti, M. González, A. C. Yalciner, J. Mascle, D. Sakellariou, A. Salamon, S. Tinti, V. Karastathis, A. Fokaefs, A. Camerlenghi, T. Novikova and A. Papageorgiou, 2014. Historical and pre-historical tsunamis in the Mediterranean and its connected seas: Geological signatures, generation mechanisms and coastal impacts (Invited Review Article). Marine Geology, 2014, DOI: 10.1016/j.margeo.2014.04.014

[4] https://www.medqsr.org/population-and-development

[5] https://unesdoc.unesco.org/ark:/48223/pf0000373791

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The Ocean Decade Tsunami Programme

In June 2021, IOC/UNESCO approved the Ocean Decade Tsunami Programme (ODTP) in response to the call of action by the United Nations Decade of Ocean Science for Sustainable Development (2021-2030). The ODTP aims to significantly enhance the existing global tsunami warning system by reducing timeliness and the uncertainty of the tsunami warning, and increasing the readiness of coastal communities, with the ultimate goal of minimising the loss of lives. This transformative action seeks to notably enhance the existing global tsunami warning system and support the implementation of the Sendai Framework for Disaster Risk Reduction (2015-2030). The ODTP will explore opportunities and connections with the Ocean Decade programmes and projects; and align the Programme with the Paris Agreement on climate change, and the "UN Global Early Warnings for All" initiative (2023-2027).

The first higher-level objective of the ODTP is to develop the warning systems' capacity to endeavour sending out actionable warnings within 10 minutes for tsunamis from all sources with the least amount of uncertainty, to evacuate the largest possible amount of endangered people before impact. The second objective is to ensure 100 percent of communities at risk are prepared and resilient to tsunamis by 2030 through programmes like the IOC/UNESCO Tsunami Ready Recognition Programme (TRRP), approved by the IOC/UNESCO Executive Council in 2022. For this purpose, an International Tsunami Ready Coalition has been established in June 2021 with the aim to "contribute to increasing the number of Tsunami Ready communities as part of the Ocean Decade" by raising funding resources for the implementation of TR and elevating the profile of UNESCO Tsunami Ready Programme in collaboration with critical stakeholders across the UN System.

In addition, an ODTP Scientific Committee was also established to develop a Research Development Implementation Plan and oversee the implementation of the ODTP. The ODTP and the Research Development Implementation Plan aim to enhance all four pillars of the Early Warning System: i. Tsunami Disaster Risk Knowledge, ii. Detection, Monitoring, Analysis and Forecasting of the tsunami hazard and possible consequences, iii. Warning Dissemination and Communication, and iv. Preparedness and Response. To endeavour issuing actionable warnings within 10 minutes for tsunamis from all sources with the least amount of uncertainty, technological deployments and improvements are critical to the ODTP. These require three key actions. First, maximizing and expanding current capabilities such as seismic networks, tsunameters, sea-level tide gauge networks, the Global Navigation Satellite System (GNSS), and deep-ocean pressure systems such as Deep-ocean Assessment and Reporting of Tsunamis (DART) buoys. It also includes supporting capabilities such as high-resolution coastal bathymetry and topography or Digital Elevation Model (DEM), understanding potential tsunami sources, including non-seismic, and training on tsunami warning operations. Second, the implementation of existing capabilities not being applied to tsunami operations, such as coastal RADARs and Infrasound. Third, the identification and application of new candidate capabilities, for example, Fiber Optic Applications – Distributed acoustic sensing, and trans-basin undersea cables such as Science Monitoring and Reliable Telecommunications (SMART) cables.

To support redundancy, consistency, and accessibility, the focus must be on multi-hazard early warning system approach, especially necessary in Least Developed Countries (LDCs) and Small Island Developing States (SIDS), where significant gaps remain in the application of advances in scientific knowledge and limited reach to local endangered populations. This applies to resources, capacity, information, Standard Operating Procedures (SOPs), etc. The ODTP will apply an inclusive approach to governance, providing a balanced platform for gender and generational participation. To be inclusive, it is required that the needs, perspectives, priorities, and meaningful participation of the diverse people in society are considered. Marginalised people are often overlooked by early warning systems and require special consideration and focused attention[6].

Alongside the development of technical solutions, the development of individual and institutional capacity is required. To advance the goals of the ODTP, it is essential to further our scientific understanding of tsunamis and social behaviour. This necessitates increased research capabilities and the sharing of technological expertise. The development of expertise, particularly in Small Island Developing States (SIDS) and Least Developed Countries (LDCs), holds significant importance for the ODTP.

Considering the nature of tsunami hazard, the optimal solutions should have a global design, address regional imperatives, and be implemented through contributions and actions of Member States and other stakeholders. The ODTP provides a framework for identifying gaps, suggesting solutions, prioritising resources, and implementing actions within the timeframe of the Ocean Decade. In this context, the CoastWAVE Project Phase-II will contribute to achieving the ODTP and its Research Development Implementation Plan.

In the section below, key achievements and challenges drawn on CoastWAVE Project-phase I experience are highlighted across the three EWS pillars:

TSUNAMI HAZARD AND RISK KNOWLEDGE

Risk Perception/Understanding

Within the CoastWAVE Project Phase-I, a key outcome was better understanding and communication of tsunami and other sea-level-related risks in selected communities in Cyprus, Egypt, Malta and Morocco. For that, the project conducted a tsunami and other sea-level-related risk perception studies in these communities. Türkiye and Greece also participated in this activity at their own cost. The project countries have prepared seven national reports. A comprehensive summary report with key recommendations has also been completed.

Key achievements of the multi-hazard sea-level risk perception surveys include:

- Conducted comprehensive surveys on multi-hazard disaster risks.
- Promoted incorporation of multi-hazard risk knowledge, covering disaster prevention, mitigation, preparedness, response, and recovery, in non-formal education, and enhanced collaboration among stakeholders at the local level to disseminate disaster risk information.

[6] World Tsunami Awareness Day 2023: Fighting inequality for a resilient future [link]

CoastWAVE Project Phase-I envisaged a second survey at the end of the project to assess any change in perception, the level of awareness and understanding immediately following project and programme interventions. However, project countries recommended conducting the survey sometime following project completion and it is proposed to be carried out in the CoastWAVE Project Phase-II.

CoastWAVE Project Phase-II should continue to pay high attention to understanding social behaviours. The emphasis should remain on refining communication strategies and packaging sea-level risk information, with a specific focus on non-seismic tsunami risks. The target audience for these efforts should encompass diverse groups, such as schools and Civil Protection Agencies in NEAM (Northeast Atlantic and Mediterranean) countries. Perceptions survey may also be conducted during and after real tsunami events and exercises.

TSUNAMI HAZARD/RISK ASSESSMENT

A key challenge and lesson learned based on CoastWAVE Project Phase-I is that different countries used different approaches and methods to develop their local hazard assessments and inundation maps. There was a lack of standardized approach across the project countries. Although this is in line with IOC/UNESCO Tsunami Ready Guideline (MG 74[7]), there is a need for Member States to develop and use the highest level of scientific tools for specific tsunami hazard assessments for vulnerable communities. It is important to either use specific deterministic studies or Probability Tsunami Hazard Assessments (PTHA) models, for improved and risk assessments at national level. This approach and methodology would be in line with NEAMTWS 2030 Strategy on Tsunami Hazard and Risk Assessment for long term planning.

DETECTION, WARNING AND DISSEMINATION

The "Tsunami Last Mile" (TLM) project has been implemented by the Joint Research Centre (JRC) of the European Commission (EC) since 2018 within the Union Civil Protection Mechanism (UCPM) framework. The objectives of the TLM project were to install technological tools to provide early warning to the populations in pilot cities; to build links between the relevant stakeholders involved in the tsunami warning system at regional, national and local levels; to build capacity in local communities and raise their awareness of tsunamis; and to conduct exercises that integrated the technological tools, as well as involve the main stakeholders, including the local population. Phase 1 of the project was implemented in Kos, Greece, and Bodrum, Türkiye, which were impacted by the Bodrum/Kos earthquake and tsunami of 20 July 2017. Phase 2 of the project is being implemented in Malta and Indonesia and is ongoing.

Access to near real-time sea level data is crucial to provide early warning of rapid onset sea level hazards. This data can be obtained through the IOC/UNESCO Sea Level Station Monitoring Facility, which currently provides access to a network of 933 sea level stations globally. JRC contributes to this network through its own network of over 40 "Inexpensive Devices for Sea Level Measurements" (IDSL) stations in the NEAM region. Additionally, JRC

[7] Standard guidelines for the Tsunami Ready Recognition Programme [link]

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has designed and installed "TLM" systems comprising an IDSL, strong motion seismometers and Tsunami Alerting Device (TAD) panels at locations in countries participating in Phase 1 of the TLM project, namely Greece, Türkiye, and Malta. To build on the TLM project, the CoastWAVE Project Phase-I has installed and upgraded tsunami detection and alerting systems in Cyprus, Egypt, Morocco and Spain.

JRC initiated the installation of its IDSL stations in 2015, and to date, there are over 40 stations installed in 13 NEAM countries. While JRC has provided initial support to maintain the IDSL network, the host countries are now expected to take ownership of the stations and assume responsibility for their maintenance.

The CoastWAVE Project Phase-I has successfully carried out essential corrective maintenance in project countries and provided essential spare parts, installation guides, a maintenance programme, as well as training to in-country operators identified. The First Phase of the Project is currently evaluating the overall effectiveness of the IDSL network and assessing its compatibility with global sea level monitoring networks. It should be underscored that, at the recent ICG/NEAMTWS Steering Committee meetings, some active Member States have strongly recommended implementing robust sea-level devices to replace current IDSL to provide early warning of rapid onset sea level-related hazards in NEAMTWS.

AWARENESS AND RESPONSE

Community awareness and preparedness to respond to tsunami alerts are essential components of an end-to-end tsunami warning system. It is widely recognised that, regardless of the efficiency and timeliness of warnings and evacuation orders, they will be irrelevant unless the people at risk receive timely alerts and know how to respond. This is a fundamental pillar of all regional tsunami warning systems and initiatives to strengthen the resilience of coastal communities at risk to tsunamis.

IOC/UNESCO Tsunami Ready Programme

One such initiative is the IOC/UNESCO Tsunami Ready Programme, which seeks to build resilient communities through awareness and preparedness strategies that will protect lives and property from tsunamis. The Tsunami Ready® recognition programme was originally an initiative of the United States National Weather Service (NWS) of the National Ocean and Atmospheric Administration (NOAA) for implementation in US territory and was a derivative of the US StormReady recognition programme. In 2011, the NWS collaborated with IOC/UNESCO on a joint pilot initiative in the Caribbean region. This effort led to Anguilla achieving TsunamiReady® recognition in 2011, followed by the British Virgin Islands in 2014. In 2015 the IOC Assembly approved the Tsunami Ready Guidelines recommended by the ICG/CARIBE-EWS and the US NWS confirmed that the use of the term "Tsunami Ready" was not an infringement of its TsunamiReady® trademark. Subsequently, IOC/UNESCO has promoted Tsunami Ready as an international performance-based community recognition programme with implementation at pilot sites in other countries in the Caribbean (with support from DIPECHO) and the Pacific Ocean regions. Additionally, a major capacity-building programme has been undertaken in the Indian Ocean region and two communities in Odisha province, India, were recognised as Tsunami Ready in August 2020. To date, there are more than 43 Tsunami Ready Recognised communities in 21 countries and many more countries

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have expressed interest in the programme. There is currently 14 communities piloting Tsunami Ready in 9 countries in the NEAM region.

The IOC/DG ECHO CoastWAVE Project is supporting the establishment and recognition of seven Tsunami Ready communities in the NEAM region in Cyprus (Larnaka), Egypt (Alexandria), Malta (Marsaxlokk), Morocco (El Jadida), Greece (Samos), Spain (Chipiona), and Türkiye (Büyükçekmece). It is expected that by the end of the project in June 2024, there will be seven recognised UNESCO -IOC Tsunami Ready communities, which was a direct result of the IOC EU DG ECHO project intervention. The project initiative has also positively impacted other countries to implement Tsunami Ready and strengthen their tsunami early warning system.

The municipalities of Minturno, Palmi, and Marzamemi in Italy and Cannes, France are also piloting Tsunami Ready based on their own national funding. Cannes is likely to become the first city/community to become recognized as Tsunami Ready in NEAM region. The National Tsunami Ready Board of France expects to be able to finalize the IOC/UNESCO Tsunami Ready file by the end of the year, for recognition the week of December 21, 2023. Portugal has started to explore the implementation of Tsunami Ready, especially in the context of the ResilientCity initiative (MCR2030).

Based on the ongoing success of the first phase of the Coast WAVE Project in seven communities as proof of concept, this second-phase is proposing to scale-up and expand the implementation of Tsunami Ready in existing project countries and other new NEAMTWS countries (e.g., France, Portugal) that are vulnerable to tsunamis. Scaling up Tsunami Ready in existing countries will greatly benefit from the CoastWAVE Project Phase- I experience. It is also an opportunity to develop new partnerships and implement Tsunami Ready with existing resilience initiatives (MCR2030), and work with other UNESCO natural sciences programmes, in particular the Man and Biosphere programme. Here is a roster of nations that have recently shown interest (as of November 2023) after receiving a renewed email request to express their intent to adopt Tsunami Ready certification. The number in brackets indicate potential number of communities to target within this project. The total number of communities are the following 7:

1. Egypt (1)
2. France (1)
3. Italy/Greece (1)
4. Portugal (1)
5. Spain (1)
6. Türkiye (1)
7. Morocco (1)

The CoastWAVE Project Phase-II aims to also build stronger engagement and participation through a series of multi-stakeholder dialogues. The goal is to better integrate low probability but high impact tsunami events into multi-hazard approaches, as well as real-time decision making and long-term planning. There will be active involvement and close coordination with all project elements.

Through this Phase-II project proposal, new support is requested from DG ECHO to build collective capacities in tsunami hazard and risk assessment. This will be based on the application of the state-of-the-art probabilistic tsunami hazard approach already developed by TSUMAPS-NEAM DG ECHO funded project and others at the local level. It will track changes in the level of tsunami awareness, risk perceptions following CoastWAVE Project Phase-I intervention. The Project will install additional tsunami detection and monitoring systems in selected NEAM countries, piloting new affordable robust sea-level devices based on the IDSL technology design and experience. It will scale-up and expand the Tsunami Ready communities in existing and new countries, and integrate Tsunami Ready in other initiatives, including Making Cities Resilient (MCR2030) and UNESCO Biosphere Reserves in selected countries. A key outcome is to engage and create dialogues with multi-stakeholders and users involved in coastal resilience. This pertains to rare, but highly impactful tsunami events, incorporating strategies and protocols to consider and incorporate tsunamis into comprehensive approaches addressing multiple hazards. This integration will occur in real-time decision-making processes and long-term planning efforts.

2. Needs Assessment

The need for a coordinated global approach to strengthening the resilience of vulnerable coastal communities to the impact of tsunamis was recognised by IOC/UNESCO in 2017. At its 10th meeting in 2017, the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-X) encouraged all regional Tsunami Warning Systems (TWSs) to pilot Tsunami Ready Guidelines and report back to the TOWS-WG and the IOC Governing Bodies. At its 12th meeting in 2019 (TOWS-WG-XII), the TOWS-WG recommended the IOC Assembly to encourage Member States to "continue to strengthen tsunami awareness and preparedness in communities and among authorities through communication, evacuation planning, tsunami exercises, training, information, and piloting recognition programmes such as Tsunami Ready" and instructed the ICGs to "continue the Tsunami Ready pilot activities with IOC/UNESCO recognition, including conducting surveys on Member State status, interest and feedback in the implementation of Tsunami Ready".

At the regional level, Tsunami Ready was discussed at the 14th session of the ICG/NEAMTWS in Lisbon, Portugal, in 2017. Working Group 4 was recommended to examine the Tsunami Ready initiative in other ICG regions and also in the context of the Stromboli Island initiative on tsunami preparedness. At its 16th session in December 2019 (ICG/NEAMTWS-XVI), the ICG/NEAMTWS recommended "to increase the participation of Member States in the ICG activities, with particular focus on tsunami education, awareness and preparedness, and to continue to explore the adaptation of community preparedness and recognition programmes such as Tsunami Ready for the NEAM region, including Tsunami Hazard and Tsunami Evacuation Maps, Plans, and Procedures (TEMPP)".

At its ICG/NEAMTWS Working Groups and Task Teams meetings on 24-26 November 2020, it was agreed to form a group on Tsunami Ready under Working Group 4 on Public Awareness, Preparedness and Mitigation. IOC/UNESCO secretariat has invited ICG/NEAMTWS Tsunami National Contacts (TNCs) to nominate experts to the new Group on Tsunami Ready to

coordinate, develop and recommend strategies, actions and an implementation plan for Tsunami Ready under the ICG/NEAMTWS framework. Member States has been also invited to communicate their interest in piloting Tsunami Ready in their country.

The evaluation report of the KOSWAVE-19 TLM exercise held in Kos, Greece, on 19 November 2019 concluded that one of the main successes of the exercise was the engagement of the local emergency management system. This provided the opportunity to reflect on the strengths and weaknesses of their current system and to consider tsunamis as a hazard to include in their emergency management plan. The report also assessed the level of compliance of Kos against the international Tsunami Ready indicators and concluded that "many of the essential elements needed for Kos to become "Tsunami ready" have been provided as outcomes of the TLM project" and that "it is essential not to lose the opportunity to step up, at local level, and work on tsunami risk reduction measures building upon the projects outcomes, developing a local ownership of them, adapting and adopting them formally in the local emergency management plan".

Most recently, an impact assessment report[8] on the Samos-Izmir tsunami of 30 October 2020 identified the need to re-evaluate the tsunami hazard level and the preparedness for risk mitigation in the areas studied.

The requested needs are primarily driven on the needs specified in the: Ocean Decade Tsunami Programme (ODTP); the Research and Development Plan; the CoastWAVE project experience; as well as the recent NEAMTWS 2030 Strategy[9].

The ODTP aims to transform the existing global tsunami warning system by reducing timeliness and the uncertainty of the tsunami warning, and increasing the readiness of coastal communities, with the goal of minimising the loss of lives. This transformative action aims to significantly enhance the existing global tsunami warning system and support the implementation of the Sendai Framework for Disaster Risk Reduction (2015-2030). The CoastWAVE Project Phase-II will support and contribute to achieving both first higher-level objective of the ODTP to develop the warning systems' capacity by maximizing and expanding current capabilities (e.g. seismic networks, sea level tide gauge networks etc.) to endeavour sending out actionable warnings within 10 minutes for tsunamis from all sources with the least amount of uncertainty, to evacuate the largest possible amount of endangered people before impact and the second objective to ensure more communities in NEAM countries at risk be prepared and resilient to tsunamis by 2030 through programmes like the IOC/UNESCO Tsunami Ready Recognition Programme (TRRP).

The **CoastWAVE** Project Phase-I experience, and recommendations have pointed to the need to carry out social risk perceptions surveys to assess changes in hazard/risk perception, their level of understanding and awareness following project and programme interventions. There is a need to track and monitor hazard/ risk awareness and understanding at national and local

[8] Triantafyllou. I, Gogou. M, Mavroulis. S, Katsetsiadou. K-N, Lekkas. E and Papadopoulos. G. 2020. The tsunami caused by the 30 October 2020 Samos (Greece), East Aegean Sea, Mw6.9 earthquake: impact assessment from post-event field survey and video records. National and Kapodistrian University of Athens

[9] North-eastern Atlantic, the Mediterranean and Connected seas Tsunami Early Warning and Mitigation System (NEAMTWS): 2030 Strategy [link]

level. Surveys can also be carried out, for example, considering regional and local exercises or soon after an event.

Due to lack of specialised training in tsunami hazard assessment, experts have recommended the need to conduct training in tsunami hazard/risk analysis, assessment, and mapping for the collective benefit of NEAM countries. This can be achieved by drawing on the knowledge and experience created of the key partners of TSUMAP-NEAM (DG ECHO funded project).

Maintenance and repairs of IDSL was completed only for CoastWAVE Project countries. Other non-project countries, including Italy and Portugal, have communicated to the Steering Committee and the Secretariat that they will not continue with IDSL. IDSL in those countries have already been replaced or will be replaced soon. This suggests that Phase-II may not include maintenance of IDSL, pending the ongoing IDSL survey assessment. There is a strong interest and recommendation, especially among Tsunami Service Providers' (TSP) countries, to implement more robust sea-level devices to replace current IDSL. A common recurring position in ICG/NEAMTWS is densifying detection system at the local level to support early warning system.

Following the efforts towards recognition of Tsunami Ready in seven project countries, other countries, including Portugal, have raised interest to implement Tsunami Ready. The CoastWAVE Project clearly revealed the need to receive support to advance and test tsunami Standard Operating Procedures.

A NEAMTWS 2030 Strategy was recently launched in Paris as a side event at the ICG/NEAMTWS Steering Committee meeting on the 12 April 2023, in the presence of the IOC Executive Secretary and UNESCO Permanent Delegation representatives of TSP countries. The new project will target several NEAMTWS 2030 strategic objectives across the three early warning and mitigation pillars.

Finally, the project is aligned with DG ECHO's new approach to Disaster Preparedness as well as with 3 out of 5 identified Disaster Resilience Goals. The new approach to Disaster Preparedness recognises that: *"Early action and predictability of response can only be achieved if local preparedness and response capacities are in place and reinforced. The core objective of the interventions must be to sustainably strengthen in-country response capacity and preparedness systems to act as locally and early as possible. To this end, DG ECHO will prefer a system approach, by strengthening national and local government capacities for preparedness whenever possible, in addition to its community-based actions.[10]"* The 3 relevant to this project Disaster Resilience goals are: 1. Anticipate - to improve risk assessment, anticipation and disaster risk management, 2. Prepare - to increase risk awareness and preparedness of the population, 3 Alert - to enhance early warning.

[10] EC DG ECHO note: A new approach to DG ECHO's Disaster Preparedness. 2020

3. Results Framework

The main **objective** of the Project will be to scale-up and further strengthen the resilience of vulnerable coastal communities in North Eastern Atlantic and Mediterranean regions to tsunamis and other sea-level-related hazards. The overall **impact** that the project will seek to achieve is to reduce risk, increase safety and enhance the resilience of vulnerable coastal communities to sea level-related natural disasters in NEAMTWS countries. The project will be implemented through four components:

Component 1: Build and strengthen tsunami hazard assessments, risk knowledge, risk communication, and decision-making capacities.

Component 2: Scale-up and expand Tsunami Ready in selected NEAM countries.

Component 3: Enhance and densify early warning, detection, monitoring, and alerting systems.

Component 4: Enhance dialogues with Emergency Responders, Decision Makers on High Impact Low Probability (HILP) tsunami events within a multi-hazard context to improve strategies and effective decision-making capabilities.

The project outcomes are as follows:

Outcome 1: Standard and improved tsunami hazard assessments based on Probability Tsunami Hazard Assessments (PTHA) for better planning and improved understanding, effective communication and better decision-making from regional, national to local level of tsunami.

Outcome 2: Enhanced understanding and communication of tsunami and other sea-level-related risk in selected communities in the selected NEAM countries.

Outcome 3: More coastal communities and countries in the NEAM region joining the Tsunami Ready Programme to be better prepared to respond to sea-level-related hazards.

Outcome 4: Increased/improved access to near real-time seismic and/or sea level detection and alert technology to provide early warning of rapid onset sea level-related hazards in more coastal communities in selected NEAM countries.

Outcome 5: New affordable sea level device to provide early warning of rapid onset sea level-related hazards in NEAMTWS countries enhanced.

Outcome 6: Improved understanding and knowledge of how to address HILP tsunami events, highlighting strategies and procedures to factor and integrate tsunamis in multi-hazard approaches, and enhance real time decision making and long-term planning.

The outputs and activities to achieve the project outcomes and objectives are listed in the Table 1 - Results Framework Matrix in ANNEX.

i. Table 1. Results Framework Matrix

Objective	Indicator	Baseline	Targets	Source of Verification	Risks and Assumptions
To strengthen the resilience of vulnerable coastal communities in the Northeast Atlantic, Mediterranean (NEAM) region to the impact of tsunamis and other sea-level-related hazards.	Selected vulnerable coastal communities in NEAMTWS countries (Egypt, France, Italy/Greece, Morocco, Portugal, Spain and Türkiye) are aware of their exposure to tsunami and other sea-level-related hazards and are better prepared to take action to save lives and protect property. Number of countries that intend to expand the Tsunami Ready programme to other pilot communities without or with minimal external support.	The awareness of coastal communities to their exposure to tsunami and other sea-level-related hazards varies across the NEAM region, as does their preparedness to respond.	By the end of the project, each of the target countries (Egypt, France, Italy/Greece, Morocco, Portugal, Spain and Türkiye) participating in the project demonstrate greater awareness and preparedness by achieving Tsunami Ready recognition for their pilot communities. Each of the participating target countries continues to expand the Tsunami Ready programme to other communities.	Reports of the Tsunami and other sea-level-related risk perception studies in selected NEAM countries. Tsunami Ready national and international recognition certificates for pilot communities under CoastWAVE phase I. National reports to the sessions of the ICG/NEAMTWS.	Country level acceptance of Tsunami Ready may not be forthcoming or may be delayed. Fundamental legal and procedural steps may need to be taken in some countries.

COMPONENT 1 – Build and strengthen tsunami hazard assessments, risk knowledge, risk communication, and decision-making capacities.					
Outcome 1					
Standard and improved tsunami hazard assessments based on PTHA for better planning and improved understanding, effective communication and better decision-making from regional, national to local level of tsunami.	Tsunami hazard level quantifies the potential impact of a tsunami based on factors such as wave height, inundation depth, and velocity.	Historical records of tsunamis in the NEAM region, including their magnitudes, impact areas, and casualties, serve as the baseline for understanding past events. Understanding the geological and seismological characteristics of the NEAM region, including fault lines, subduction zones, and tectonic activity, provides a baseline for evaluating the potential sources of tsunamis.	By the end of the project, PTHA will provide better understanding and communication tools from national to local levels. The significant benefit offered through PTHA is that it provides decision-makers the option to make their own informed decisions on the safety and uncertainty factors considered when producing tsunami hazard and evacuation maps	Reports submitted to ICG/NEAMTWS Steering Committee. Hazard maps prepared for the selected project countries. Expert peer-review.	Countries may propose to use their own method of modelling to assess the tsunami risk.
Output 1.1					

High-resolution maps illustrating tsunami hazard zones, including areas prone to inundation and potential impact scenarios, in interactive and accessible formats for the CoastWAVE phase II selected communities.	The production of high-resolution maps for the selected communities of project phase -II.	Numerically modelled tsunamis with the deterministic approaches.	By the end of the project, all PTHA analysis will be completed for the selected communities.	Peer review and expert consultation. Easily accessible hazard maps shared with the stakeholders.	Countries may propose to use their own method of modelling to prepare inundation maps.
Output 1.2					
Enhanced Capacity Building and Training to the selected community of CoastWAVE-II.	Community Participation and Training Engagement Number of participants. Feedback. Community Disaster Preparedness Index.	Existing level of knowledge, skills, and resources available within communities, local authorities, and relevant organizations related to tsunami risk awareness, response protocols, and disaster management techniques.	By the end of the project, the emergency responders, local authorities, and community leaders will enhance their capacity to handle tsunami emergencies for effective response and coordination.	Training/Workshop Evaluation Reports. Survey results.	
Proposed Activities: 1. Organise a workshop on PTHA for the relevant stakeholders for an effective response and coordination.					

2. Implement PTHA to assess coastal hazard risks in NEAM region. 3. Prepare maps in interactive and accessible formats (such as a website). 4. Disseminate results based on PTHA modelling to relevant stakeholders in the NEAM region. 5. Prepare a report to be submitted to the ICG Steering Committee by the end of the project. 6. Report has been reviewed by an independent expert to ensure the credibility and accuracy of the methodologies and the results presented. 7. Share recommendations with ICG/NEAMTWS.					
Outcome 2					
Enhanced understanding and communication of tsunami and other sea-level related risk in Coast WAVE phase I and II selected communities of the NEAM region.	Number of enhanced tsunami risk communication products produced. Re-assessment of tsunami risk perception in selected communities involved in CoastWAVE Project Phase-II.	Risk perception studies have been conducted in France, Italy, Cyprus, Egypt, Malta, Morocco and Türkiye during CoastWAVE Project Phase-I and other research initiatives.	Enhanced tsunami risk communication products developed and available by the end of the project. Understanding of sea level and tsunami risk in Tsunami Ready communities involved in CoastWAVE Project Phase-II re-assessed. Assessment can also be carried out in the	Tsunami risk communication products are available in various formats, including booklets, pamphlets, videos, or online materials. Report on assessment of tsunami risk perception in Tsunami Ready pilot communities.	Target countries and communities agree to participate in tsunami risk perception studies. Resources to produce tsunami risk communication products are available in each target country.

			context of an actual event or exercise.		
Output 2.1					
Tsunami and other sea-level-related risk perception surveys in CoastWAVE Project Phase I and new communities re-assessed with recommendations made for enhanced risk communication strategies and products to support effective decision making at national and local levels.	Number of tsunami and other sea level-related risk perception studies completed with recommendations for enhanced risk communication strategies and products.	Risk perception studies have been conducted in France, Italy, and in Cyprus, Egypt, Malta, Morocco and Türkiye during CoastWAVE Phase 1.	The risk perception studies completed and recommendations made for enhanced risk communication strategies and products completed and published in English, French and Arabic by the end of the project.	Published reports circulated to partner agencies, target communities and ICG/NEAMTWS Working Group 4.	Target countries and communities agree to participate in tsunami and sea level-related risk perception studies.
Output 2.2					
Tsunami (from all sources) and sea-level risk information packaged and shared with different target groups, including schools and civil protection agencies	Number/name of schools and civil protection agencies shared.	Risk perception studies have been conducted in France, Italy, Cyprus, Egypt, Malta, Morocco and Türkiye during CoastWAVE Project Phase-I.	Educational materials/brochures were produced by the end of first year of the project.	Educational materials/brochures shared with schools and civil protection agencies.	Target schools/CPA agree to share this information.

(CPAs) in NEAM countries.					

Proposed Activities:

1. Revise the CoastWAVE Project Phase-I concept note concerning the objectives, target groups, methodology, and partner agencies for risk perception re-assessment in each target country in consultation with ICG/NEAMTWS Working Group 4 and Task Team Tsunami Ready members. Assessments can also be carried out in the context of an actual event or exercise.

2. Identify the target groups in each project community in consultation with local partner agencies.

3. Disseminate the survey in the target groups within the selected project communities. This will be done in parallel with the Tsunami Ready dissemination campaign.

4. Conduct a statistically valid survey and analyse the results.

5. Conduct a re-assessment of tsunami and other sea-level risk perception in the Tsunami Ready pilot communities within the same groups in Cyprus, Egypt, Morocco and Spain of CoastWAVE Project Phase-I after implementation is completed.

6. Compare CoastWAVE I and II survey results and integrate the findings in risk communication strategies.

7. Prepare national and all country summary report, translate into Arabic, Spanish and French, and circulate it to partner agencies, target communities and ICG/NEAMTWS Working Group 4.

8. Integrate findings, package and share tsunami and sea-level hazard risk communication and dissemination strategies, tools and products with stakeholders and the public to improve decision-making, preparedness and response in the case of Low Probability High impact tsunami hazards from different sources.

COMPONENT 2 - Scale-up and expand Tsunami Ready in selected NEAM countries

Outcome 3

Selected CoastWAVE phase I and II coastal communities are better prepared to respond to tsunamis and evacuate to pre-determined safe areas by identified evacuation routes	Target coastal communities demonstrate their preparedness by conducting annual tsunami community exercises	Greece, Malta, Türkiye, Morocco, Egypt, Spain and Cyprus have conducted tsunami community exercises under CoastWAVE Phase I and Last-Mile Projects	Seven new communities will hold tsunami community exercises by the end of the project	Tsunami community exercise reports and reports by two independent evaluators	Target countries and pilot communities commit to conducting community exercises and have the resources to plan and conduct the exercises
Output 3.1					
Selected communities in Cyprus, Greece, Türkiye, Portugal, Morocco and Spain recognised as Tsunami Ready by National Tsunami Ready Board (or national equivalent) and IOC/UNESCO.	Pilot communities in Cyprus, Greece, Türkiye, Portugal, Morocco and Spain achieve Tsunami Ready recognition.	The six communities of CoastWAVE project from Cyprus, Greece, Türkiye, Morocco and Spain have been recognized as TR with CoastWAVE Project Phase-I.	At least one extra community from, Egypt, France, Greece/Italy, Türkiye, Portugal, Morocco and Spain achieves Tsunami Ready recognition by the end of the project.	Approval by National Tsunami Ready Board and IOC/UNESCO recognition certification.	Country level approval for Tsunami Ready programme may not be forthcoming or may be delayed by internal political decision-making. There may be community resistance to piloting Tsunami Ready due to perceived adverse consequences such as deterring tourism.

					Insufficient time available to achieve Tsunami Ready recognition within the project timeframe. Insufficient capacity at national and community levels to implement Tsunami Ready programme.

Proposed Activities (to be tailored to each country's and community's needs and requirements):

1. Organize IOC/UNESCO Tsunami Ready workshop for the selected communities.
2. Organize national to local level IOC/UNESCO Tsunami Awareness and Standard Operating Procedures workshops for the selected countries.
3. Organize community level tsunami awareness and Standard Operating Procedures workshops (by selected countries).
4. Draft community level SOPs in local languages in collaboration with the local stakeholders.
5. Establish National Tsunami Ready Boards in the selected project countries.
6. Organize IOC/UNESCO Inundation and Evacuation mapping workshop.
7. Prepare coastal inundation and evacuation maps.
8. Support validation of tsunami hazard zones and evacuation maps by local agencies.
9. Assess the Tsunami public display signage and communications equipment needs.
10. Produce and install tsunami public information displays and signage (as authorised in each country).

11. Adapt existing local monitoring networks for the purposes of tsunami risk monitoring if needed.
12. Develop and distribute outreach and public educational materials in local languages.
13. Organise three outreach or educational activities in the selected communities, focusing on tsunami information, tsunami risks at the local level and what to do before, during and after tsunamis.
14. Organize IOC/UNESCO local tsunami community exercise workshop.
15. Conduct a tsunami community exercise following the guidelines of ICG/NEAMTWS.
16. Organise Tsunami Ready recognition event ceremony.

COMPONENT 3 - Enhance and densify early warning, detection, monitoring, and alerting systems.					
Outcome 4					
Increased/improved access to near real time seismic and/or sea-level detection and alert technology to provide early warning of rapid onset sea-level-related hazards in more coastal communities in the NEAM region.	Tsunami detection and alerting systems are socialised to local communities that demonstrate their understanding of information provided by the system. Tsunami detection and alerting system integrated into national warning	Tsunami detection and alerting or equivalent systems are not available at community level in the target countries.	Local communities demonstrate awareness of the tsunami detection and alerting systems and understand the information it provides by the end of the second year of the project. Data from the tsunami detection and alerting systems is integrated into	Outreach materials, media reports, random street surveys in local communities.	Local communities accept and endorse the installation of tsunami detection and alerting systems and understand the information it provides.

	system and Tsunami Ready programme.		national warning system by the end of the second year of the project.		
Output 4.1					
Tsunami detection and alerting systems installed or upgraded in selected sites in Cyprus, Greece, Türkiye, Portugal, Morocco and Spain.	Number of tsunami detection and alerting systems installed and commissioned.	IDSL stations were installed in Cyprus, Egypt, Morocco, and Spain. Alerting systems were installed at communities in Cyprus, Greece, Türkiye, Morocco and Spain within CoastWAVE Phase-I.	Tsunami detection and alerting systems designed, installed and commissioned in at least one community in Greece, Türkiye, Morocco and Spain by end of year 2 of the project. Italy, Portugal and France to be considered if interested.	Commissioning reports and/or Site Acceptance Tests. Operators are trained and maintenance manual and record of operators were provided	Operating agencies in host countries to operate and maintain the tsunami detection and alerting systems are identified and agree to bear the costs of maintaining the systems.
Output 4.2					
Operators trained in the installation, operation and maintenance of tsunami detection and alerting systems in Cyprus, Greece,	Number of operators trained in the operation and maintenance of tsunami detection and alerting systems	Operators have been already trained in the operation of alerting systems in Cyprus, Morocco, Spain and Egypt.	At least 2 operators each from partner institutions in Greece, Türkiye, Morocco and Spain are trained in the operation and maintenance of the	Partner institutions identified. Operators are trained and demonstrate proficiency, and they	As Output 4.1.

Türkiye, Portugal, Morocco and Spain.		Installation and training manuals have already been produced during Phase I.	installed tsunami detection and alerting systems by the end of the second year of the project. Italy, Portugal and France to be considered if interested.	are provided with a training certificate.	
Output 4.3					
Affordable sea level devices for Tsunami detection and alerting systems installed at selected sites.	Number of installation visits to the new stations.	IOC/UNESCO has already installed affordable devices to Egypt, Morocco, and Cyprus during Phase I of the project.	Installations to be completed by end year 2 of the project.	Installation reports.	Operating agencies in host countries to operate and maintain affordable devices and agree to bear the costs of maintaining the systems.
Output 4.4					
Operators trained in the installation, operation and maintenance of affordable devices.	Number of operators trained in the operation and maintenance of affordable devices.	Operators have been trained in the operation of affordable devices in Cyprus, Egypt and Morocco.	At least two operators from each partner institution are to be trained in the operation and maintenance of the devices by the end of the second year of	Partner institutions identified. Training manual produced. Operators are trained, demonstrate proficiency, and are	As output 5.1.

			the project. Italy, Portugal and France to be considered if interested.	provided with a training certificate.	

Proposed Activities:

1. Identify local partners to operate and maintain the alerting systems and affordable sea level devices.
2. Conduct site surveys to identify optimum locations for the tsunami detection and alerting systems including affordable sea level devices.
3. Design, installation and commissioning of tsunami detection and alerting systems and affordable sea level devices.
4. Conduct training course for local operators on the operation and maintenance of the tsunami detection and alerting system and sea level devices.
5. Integrate tsunami detection and alerting systems and affordable sea level devices into national sea level hazard warning system.

COMPONENT 4 - Enhance dialogues with emergency responders, decision-makers on low probability high impact tsunami events within a multi-hazard context to improve strategies and effective decision-making capabilities.					
Outcome 5					
Stakeholders understand and have the knowledge and capacity to integrate rare, but high impact tsunami events in multi-hazard	Number of stakeholders attending training sessions, workshops, or seminars on rare,	Currently, stakeholders do not hold enough knowledge and understanding how to deal with and integrate these	Workshops and trainings to be organised to develop best practices and knowledge with identification of specific	Survey Evaluations	CPDs agreed to collaborate to organise the workshops and trainings

approaches, decision-making and planning	high-impact tsunami events	events in a multi-hazard context. They also lack tools and methods to support timely decision making.	challenges of knowledge transfer regarding HILP events.		
Output 5.1					
Civil Protection Agencies (CPAs), schools and others were trained on rare but high impact tsunami events applying multi-hazard approaches.	Number of trainings organized.	Currently, there is a lack of communication and understanding between local communities and CPAs.	Local communities in the selected communities are trained and informed on how to plan and deal with hazards of different frequency of occurrence within a multi-hard approach.	Training documents, feedback from the local community, evaluation surveys etc. Outreach and public education material highlighting different scientific knowledge, tools, as well as management and planning strategies.	CPDs agreed to host training sessions for the local communities.
Output 5.2					
Best practices developed with identification of specific challenges of knowledge transfer regarding		Currently, there is a lack of guidelines for the local communities and CPDs.	Best practices developed with identification of specific challenges of knowledge transfer regarding	Guideline/report on best practices and specific challenges shared with ICG/NEAMTWS.	CPDs agreed to host training sessions for the local communities.

HILP events.			HILP events.		
Proposed Activities: 1. Organize a series of dialogues and awareness workshops with various stakeholders on high impact low probability tsunami events in a multi-hazard context. 2. Develop and distribute outreach and public education material highlighting different scientific knowledge, tools, as well as management and planning strategies in dealing with threats of various probabilities of occurrence, including tsunamis. 3. Prepare a guideline/report on best practices and specific challenges of knowledge transfer regarding HILP events.					

4. Implementation Strategy

Note: The implementation strategy proposed below assumes that health and human conflicts (especially in the Middle East) related safety restrictions will not apply, and it will be possible to travel, hold workshops, and conduct face-to-face meetings. If restrictions are introduced, then implementation will either be postponed, or alternative strategies will be proposed.

i. Component 1 – Build and Strengthen Tsunami Hazard Assessment, Risk Knowledge, Risk Communication and Decision Making Capabilities

Outcome 1 **Standard and improved tsunami hazard assessments based on PTHA for better planning and improved understanding, effective communication and better decision-making from regional, national to local level of tsunami.**

Output 1.1 High-resolution maps illustrating tsunami hazard zones, including areas prone to inundation and potential impact scenarios based on PTHA.

Output 1.2 Enhanced Capacity Building and Training

Hazard / Risk Analysis / Assessments

A key challenge and lesson learned from CoastWAVE Project Phase-I is that countries and experts employed different approaches and methods to develop their local tsunami hazard assessments and inundation maps. The use of deterministic approaches limited the flexibility for Civil Protection Agencies (CPAs) to make adaptive decisions. Thus, there was a lack of standard approach and method employed across the project countries for tsunami modelling and inundation mapping. To address this, there is a need for member states to develop specific tsunami hazard assessments for vulnerable communities.

The key ideas proposed here will capitalize on the work that has been already done on tsunami hazard assessment in the NEAM region, both through the DG-ECHO funded TSUMAPS-NEAM project resulting in the regional NEAMTHM18 model, but also in local S-PTHA studies, such as the ongoing Tsunami Ready implementation in Larnaka, to improve decision-making guidance for managers, as well as the development and design of community-based evacuation models, in a way that is scalable, as it must be accessible to everybody. CoastWAVE Project Phase-II will employ PTHA drawn on the pilot example developed in Larnaka, Cyprus. Through collaboration, and partnership, the Cyprus's Geological Survey Department and three project partners - Spain's Instituto de Hidráulica Ambiental de la Universidad de Cantabria (*IHCantabria*), Italy's Instituto Nazionale di Geofisica e Vulcanologia (*INGV*), and Greece's National Observatory of Athens (*NOA*) - employed probabilistic tsunami hazard assessment (PTHA) methodology, making Larnaka the first location in the North-Eastern Atlantic, the Mediterranean and connected seas (NEAM) region to use high-resolution simulations at the local scale for evacuation planning. CoastWAVE Project Phase-II will facilitate such arrangement and collaboration, organize regional and national PTHA training to ensure such capacities are developed among other selected project countries.

The significant benefit offered through PTHA is that it provides decision-makers the option to make their own informed decisions on the safety and uncertainty factors considered when producing tsunami hazard and evacuation maps. Tools and methodologies have already been developed for the first time to apply PTHA at the national and local scales.

As the TRRP is expanding to meet the Ocean Decade goals, it is a unique opportunity to further refine and package these ideas and tools for easy accessibility and application by communities in the NEAM region. This presents a chance to catalyse significant progress within the NEAM community by providing easier access to the latest tools available for tsunami hazard assessment, and let communities make their own decisions on the level of safety to be considered in the development of inundation/evacuation maps. The objective is to embed this capability within coastal planning for tsunami risk reduction in a practical and sustainable manner, thereby transforming the TRRP from a localized effort to a comprehensive solution encompassing all coastal areas.

The **activities** envisaged for the PTHA and PTHA-based evacuation mapping and planning to be more widely used by more member states/communities are as follows:

1. **Repackage available tools, identify resources, and improve methodologies.**

    A) Enhance the available tools for PTHA at national and local scales to make them more user-friendly for non-experts. This will provide the flexibility to conduct highly detailed studies at the local level, while also enabling larger-scale assessments that, nonetheless, contribute to achieving first-order planning at the national scale.
    B) Identify computational resources and opportunities.
    C) Improve methodologies to reduce the number of simulations needed to describe the hazard to lower the computational cost, making it generally accessible.

2. **Organize training workshops for national and local stakeholders, scientists, emergency managers, and decision-makers to enable them to develop their own evacuation maps.**

Proposed Activities:

1. Organize a workshop on PTHA for the relevant stakeholders for an effective response and coordination.
2. Implement PTHA to assess tsunami coastal hazard.
3. Prepare maps in interactive and accessible formats.
4. Disseminate results based on PTHA modelling to relevant stakeholders.
5. Prepare a report to be submitted to the ICG Steering Committee by the end of the project.

6. Get reports reviewed by experts to ensure the credibility and accuracy of the methodologies and the results presented.
7. Share recommendations with ICG/NEAMTWS.

Outcome 2 Enhanced understanding and communication of tsunami and other sea-level related risk in selected communities of the NEAM region

Output 2.1 Tsunami and other sea level-related risk perception surveys in CoastWAVE Project Phase-I and new communities re-assessed with recommendations made for enhanced risk communication strategies and products to support effective decision making at national and local level.

Output 2.2 Tsunami and sea-level risk information packaged and shared to different target groups, including schools and Civil Protection Agencies in NEAM countries.

Risk Perceptions

People's perception of risk is fundamental to understanding how they will behave and respond to the threat of tsunamis and other sea-level-related hazards. An assessment of a community's risk perception was conducted in CoastWAVE Project Phase-I to help design better strategies and risk communication practices and products. It will also serve as a benchmark to monitor and understand people's perception and changes in behaviour over time, especially following a disaster experience. On this premise, project countries have recommended carrying out an assessment in Phase-II. This is particularly important, as there are often misunderstandings between tsunami hazard occurrence and tsunami risk.

Previous studies have indicated that tsunami risk is perceived to be low, and as a result, people's awareness and preparedness to respond may also be low or non-existent. Although the occurrence of tsunami hazards may be infrequent, the associated risk can be high due to exposed elements, such as the increasing coastal population and a rise in coastal tourism in the NEAM region. This elevated risk may also be attributed to the lack of coping capacities, such as an effective early warning system, etc.

Risk perception assessments were conducted at the Tsunami Ready pilot communities in all project countries. These findings form the basis for some key activities proposed in the current proposal:

Risk Knowledge

i. Public awareness campaigns should be launched or enhanced to provide accurate information about tsunamis, their nature, and how they differ from regular ocean waves. Various channels, such as social media, TV, radio, and posters can be used to reach a wide audience.
ii. Educational and awareness campaigns, such as conducting workshops and educational sessions in schools and local communities to teach people about tsunamis, their causes, warning signs, and appropriate response actions, will help them better prepare for the impact of the disaster.

Warning

i. Warning authorities clearly communicate about the existing alerting systems.

Preparedness and Response

i. Coastal population should be educated on self-preparedness. Need to understand natural signs, and other self-preparedness measures can help individuals take an active role in their own safety during emergencies.
ii. Local stakeholders should consider organizing evacuation exercises specifically tailored for dependent individuals.
iii. Municipalities should allocate more resources to invest in sirens or similar alerting technologies to warn their communities. This will also build trust within the younger generation on the municipality/city institutional capacity in addressing sea level related hazards and risks.

CoastWAVE Project Phase-I envisaged a re-assessment following project implementation to evaluate any change in perception immediately following project and programme interventions. However, project countries recommended the re-assessment within CoastWAVE Project Phase-II.

CoastWAVE Project Phase -II should continue to pay close attention to understanding social behaviours and focus on developing new communication strategies for disseminating packaged sea-level risk and tsunami information to various target groups, including schools and Civil Protection Agencies in NEAM countries.

The IOC/UNESCO NEAMTWS Secretariat will develop a concept note to define the objectives, methodology, target groups, and partner agencies for the second assessment in each selected country. These studies will be conducted at an early stage of the project, providing a reference point for socializing the concept of Tsunami Ready and tailoring the implementation plan to the specific circumstances of each community. The methodology will include survey questionnaires, focus group discussions, and other data collection methods. Based on the results of the surveys and other data collection activities, recommendations will be made for enhanced communication strategies, practices, and products. The studies in this phase of the project are considered pilots and will be targeted at specific stakeholder groups such as tourism establishments, teachers, and students.

The following activities are planned to deliver the expected outputs and contribute to the expected outcome:

1. Revise the CoastWAVE Project Phase-I concept note concerning the objectives, target groups, methodology, and partner agencies for risk perception re-assessment in each target country in consultation with ICG/NEAMTWS Working Group 4 and Task Team Tsunami Ready members.

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2. Identify the target groups in each project community in consultation with local partner agencies.
3. Disseminate the survey in the target groups within the selected project communities. This will be done in parallel with the Tsunami Ready dissemination campaign.
4. Compare and analyse Phase-II and re-assessed CoastWAVE Project Phase-I survey results and integrate the findings to the risk communication strategies.
5. Write the study report, translate it into Arabic, Spanish and French and circulate it to partner agencies, target communities and ICG/NEAMTWS Working Group 4.
6. Integrate and package findings and share tsunami and sea level hazard risk communication and dissemination strategies, tools and products with stakeholders and the public to improve decision making, preparedness and response in the case of Low Probability High impact tsunami hazards from different sources.

ii. Component 2 – Scaling-Up and Expanding Tsunami Ready in NEAM Countries

This component remains the core project intervention, and its main goal is to have more communities in NEAM countries join and implement the Tsunami Ready Programme to contribute to the second objective of the ODTP, ensuring that 100 percent of communities at risk are prepared and resilient to tsunamis by 2030. The project outcomes and outputs that will contribute to this component are as follows:

Outcome 3 **More coastal communities in NEAM countries joining Tsunami Ready Programme to be better prepared to respond to sea- level-related hazards.**

Output 3.1 Needs, resources, capacities, stakeholders, partners, and requirements, support for the Tsunami Ready programme assessed.

Output 3.2 NEAMTWS Member States implement Tsunami Ready pilot programmes based on UNESCO Manual and Guide 74, including the Governance structure, National Tsunami Ready Board based on standards and guidelines adopted by the ICG/NEAMTWS strengthened.

Output 3.3 Selected communities recognised as Tsunami Ready by National Tsunami Ready Boards (or national equivalent) and IOC/UNESCO.

The CoastWAVE Project Phase-I has supported the implementation of global standards and guidelines for use in the NEAMTWS region. The newly formed Task Team on Tsunami Ready, is mandated to report to the ICG/NEAMTWS Working Group 4 on Public Awareness, Preparedness, and Mitigation. It was established in early 2021/2023 to oversee the

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coordination of Tsunami Ready implementation in the NEAMTWS region. The process for conferring international recognition is established by the ICG/NEAMTWS.

CoastWAVE Project Phase-II will strongly emphasize the important and critical role that national Civil Protection Authorities (CPA) have to play in this activity. Stronger CPA community consultation and direct participation are expected in CoastWAVE Project Phase-II. As mentioned, several countries have already expressed interest in implementing Tsunami Ready.

The first stage of the CoastWAVE Project Phase-II process will be to organize regional workshop(s) to assess the needs, available resources, and requirements, as well as in-country support for the Tsunami Ready programme. This stage aims to identify national stakeholders and partners to participate in the programme. The workshop will also share information with new countries and communities interested in joining Tsunami Ready.

The workshop will either be held at UNESCO HQ in Paris, a host country, or online. Based on the results of the workshops, a report will be prepared to guide implementation. The entire process will be coordinated by the IOC/UNESCO Secretariat in full consultation with ICG/NEAMTWS WG4 and Tsunami Ready Task Team.

IOC/UNESCO has the expertise and capability to organize regional workshops focused on Tsunami Ready Guidelines, Best Practices, and Governance of Tsunami Ready Recognition, bringing together all relevant actors and partners. Additionally, IOC/UNESCO has the capacity to assemble experts from various regions to facilitate knowledge exchange and address challenges. While activities related to the Tsunami Ready Indicators will primarily be implemented by project countries, following the approach undertaken in Phase-I, IOC will prioritize procuring services from external experts or consultants to advance specific tasks, rather than relying solely on in-house resources.

Egypt, Greece, Morocco, Turkey, and Spain have been selected again due to their experience in implementing Tsunami Ready during Phase-I. Key strengths and advantages includes existing National Tsunami Ready Boards (NTRB), networks created, and the acquired experience in implementing the twelve UNESCO IOC Tsunami Ready indicators. This collective experience enables these countries to play a crucial role in scaling up Tsunami Ready in other communities. Notably, France and Italy independently implemented Tsunami Ready communities based on their own resources.

Spain was included in phase -I as the municipality of Chipiona formally expressed its interest in piloting Tsunami Ready in a letter from its mayor to IOC/UNESCO. In this case, active support was provided by the Instituto de Hidraulica Ambiental de la Universidad de Cantabria (IHC) and the University of Malaga (UMA). IHC, in particular, demonstrated reliability and proved to be a valuable partner in implementing CoastWAVE Project Phase-I, providing technical support to other countries such as Cyprus.

Egypt and Morocco have been selected again because the preparedness of the southern Mediterranean/north African countries is considered to be relatively low in general and it is likely that they will require additional support to scale up Tsunami Ready recognition in new communities who are at risk to tsunami. In the case of Egypt, the Tsunami Ready community

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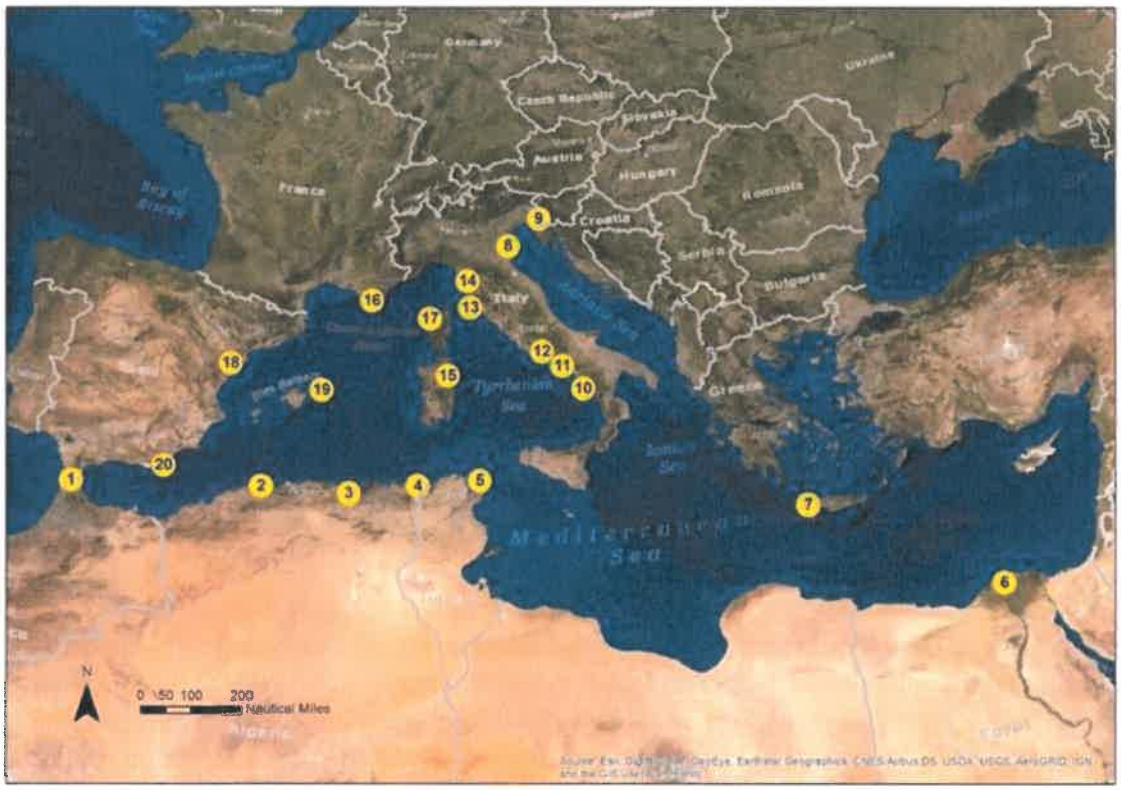
could be implemented at El Omayed within an existing UNESCO coastal biosphere reserve, thus creating synergies, co-benefits and added value, contributing to various sustainable development goals.



1. Intercontinental Biosphere Reserve of the Mediterranean
2. Gouraya
3. Taza
4. El Kala
5. Zembra and Zembretta
6. El Omayed
7. Gorge of Samaria
8. Delta del Po
9. Miramare
10. Cilento and Vallo di Diano
11. Somma Vesuvio and Miglio d'Oro
12. Circeo
13. Tuscan Islands
14. Selve Costiere di Toscana
15. Tepilora, Rio Posada and Montalbo
16. Camargue Delta du Rhone
17. Fangu Valley
18. Terres de l'Ebre
19. Menorca
20. Cabo de Gata-Nijar

Fig 1: Coastal/Marine Biosphere Reserves in the coastal Mediterranean area (source Loredana Alfare et al 2020)

The presence of UNESCO field offices in Cairo and Rabat adds an advantage in facilitating project implementation. Moreover, Egypt's active role in the IOC Executive Board and its partnership in the UN Ocean Decade for Sustainable Development make it a strategic and influential Member State. Working in Egypt and Morocco will also enhance north-south cooperation within the Mediterranean region.

Two new countries are proposed (France, Portugal) to pilot Tsunami Ready in this project. France is already close to completing Tsunami Ready in Cannes city. There is a lot of experience gained, and it is important to support France expand Tsunami Ready along France Mediterranean coast. In the case of Portugal, there are several ongoing interesting initiatives. Several municipalities in Portugal are currently engaged in tsunami-related activities. To name

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just a few, some examples include Cascais, Lisboa, Setúbal, Sesimbra, Portimão, Lagos and Loulé. Interestingly, all of them are part of the Network of Resilient Cities (MCR2030), and most of them, if they wish to do so, could be interested to be part of the Tsunami Ready Network in the future. The IOC Secretariat has formed a new informal Portugal team with the aim to enhance communication, coordination, and synergy among key stakeholders. The project is also considering supporting a local community in Italy and strengthen collaboration with INGV and the Civil Protection Agency. During the project inception phase, IOC will determine which countries and communities to actually financially support based on national to local commitment, and in-kind support contributions under the Implementation Partnership Agreement (IPA).

In all target countries, particularly Egypt, the proposal suggests engaging local consultants on a part-time basis to assist with project implementation. This approach, was successfully employed in the Caribbean and Cyprus, leverages the advantage of local consultants' deep understanding of their communities and the ability to engage with them in their national language.

The project Phase-II will implement the full cycle of Tsunami Ready preparation, including mapping, signage, national/local SOPs, response plan and evacuation exercise. Technical tsunami hazard assessment and mapping will be implemented under component 1 rather than component 3 on Tsunami Ready.

The activities envisaged to strengthen the national-to-community-level warning chain and work towards Tsunami Ready recognition are as follows, and are in line with IOC/UNESCO Tsunami Ready indicators:

Proposed activities (to be tailored to each country's and community's needs and requirements):

1. Organize IOC/UNESCO Tsunami Ready workshop for the selected communities.
2. Organize national to local level Tsunami Awareness and Standard Operating Procedures (SOP) workshops to selected countries.
3. Organize community level tsunami awareness and Standard Operating Procedures (SOP) workshops (by selected countries).
4. Draft community level SOPs in local languages in collaboration with the local stakeholders.
5. Establish National Tsunami Ready Boards in project countries.
6. Organize IOC/UNESCO Inundation and Evacuation mapping workshop.
7. Prepare community-level coastal inundation and evacuation maps.
8. Support validation of tsunami hazard zone and evacuation maps by the local agencies.
9. Assess the Tsunami public display signage and communications equipment needs.

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10. Produce and install tsunami public information displays and signage (as authorised in each country).
11. Adapt existing local monitoring networks for the purposes of tsunami risk monitoring if needed.
12. Develop and distribute outreach and public education materials in local languages.
13. Organise three outreach or educational activities in the selected communities, focusing on tsunami information, tsunami risks at the local level and what to do before, during and after tsunamis.
14. Organise IOC/UNESCO local tsunami community exercise workshop.
15. Conduct a tsunami community exercise following the guidelines of ICG/NEAMTWS.
16. Organise Tsunami Ready recognition event ceremony.

Not all these activities will be required at each location and the programme in each country will be tailored according to each country's needs and requirements, which will be detailed in the inception report.

iii. Component 3 – Enhancing and Improving Detection, Monitoring and Alerting System in a Multi-Hazard Context

JRC has designed and installed Tsunami Last Mile (TLM) detection and alerting systems, including an IDSL, strong motion seismometers, and Tsunami Alerting Device (TAD) panels at locations in countries participating in the TLM project. In CoastWAVE Project Phase-I, IOC/UNESCO, in collaboration with JRC, designed site-specific tsunami detection and alert systems. These systems were installed at the pilot locations for Tsunami Ready in Cyprus, Egypt, Morocco, and Spain. The operating agencies in each country were identified and trained to ensure they can independently install, operate, and maintain the systems, contributing to the sustainability of the systems.

The project outcomes and outputs for this component are:

Outcome 4 Increased access to near real time seismic detection and alert technology to provide early warning of rapid onset sea level-related hazards in selected new coastal communities.

Output 4.1 Tsunami detection and alerting systems installed or upgraded at selected sites.

Output 4.2 Operators trained in the installation, operation and maintenance of tsunami detection and alerting systems.

An assessment of each location will be conducted during the inception phase of the project. Since many sites are unlikely to experience nearby events, there might not be a need to deploy robust seismometers in all these locations. Instead, it could suffice to install long-range

sirens at this and similar sites. In all cases, it will be essential to integrate the tsunami detection and alerting systems into the national sea level hazards warning systems to ensure that data is available to the National Tsunami Warning Centre (NTWC).

Local partner agencies will be identified in each country to take responsibility for operating and maintaining the tsunami detection and monitoring systems, for which they would receive training. These partners would be tasked with pinpointing the best locations for system installation and actively participating in the installation process. Following installation and commissioning, efforts will be made to integrate the systems into the communities where they are deployed, ensuring that the local residents are informed about the systems' purpose and the information they will provide.

JRC commenced the installation of its IDSL stations in 2015, and to date, there are over 30 stations installed in 13 NEAMTWS countries. A number of the stations were not operational, and all stations required regular servicing to maintain their operational status and ensure their long-term sustainability. Furthermore, JRC expected the host countries to take ownership of the stations and assume responsibility for their maintenance.

CoastWAVE Project Phase-I addressed the immediate corrective maintenance needs of a number of IDSL stations identified by JRC and IOC. It supplied a set of essential spare parts and maintenance tools to operators in a limited number of NEAMTWS countries and conducted an evaluation of the overall effectiveness and utility of the IDSL network in the context of the Global Sea Level Observing System (GLOSS) and the IOC/UNESCO Sea Level Station Monitoring Facility. As indicated, unless strongly recommended, this project proposal does not endeavour to address the maintenance or establishment of JRC IDSL in proposed project countries, but rather endeavours to pilot new affordable and robust sea level devices with an effort to also replace existing IDSL.

In this context, the following outputs focus on piloting new affordable, more robust sea level devices for effective early warning in selected NEAM countries. This proposal has emerged based on the experiences gained and lessons learned, and opportunities offered from implementing and maintaining IDSL. New affordable devices can be assembled with parts procured from an open market. There are five associated outputs listed below.

The activities to deliver the expected outputs of this component are as follows:

Output 4.3: New Affordable Sea level devices for Tsunami detection and alerting systems installed at selected sites.

Output 4.4: Operators trained in the installation, operation and maintenance of affordable devices.

Output 4.5: The effectiveness, compatibility, performance and benefits of the new affordable sea-level devices in NEAMTWS countries evaluated and submitted to the ICG/NEAMTWS.

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Output 4.6: Maintenance programme and budget for the new affordable sea level devices prepared for follow up activities.

Output 4.7: Affordable sea-level devices network fully integrated into the IOC/UNESCO Sea Level Station Monitoring Facility.

The activities to deliver the expected outcome are as follows:

1. Identify local partners to operate and maintain the alerting systems and affordable sea-level devices.
2. Conduct site surveys to identify optimum locations for the tsunami detection and alerting systems, including affordable sea-level devices.
3. Supply, install and commission tsunami detection and alerting systems and affordable sea-level devices.
4. Conduct training course for local operators on the operation and maintenance of the tsunami detection and alerting system, and sea-level devices.
5. Integrate tsunami detection and alerting systems and affordable sea-level devices into a national sea level hazard warning system in selected communities.

iv. Component 4 – Enhancing Dialogues with Emergency Responders, Decision-Makers on Low Probability High Impact Tsunami Events within a Multi-Hazard context to Improve Strategies and Decision-Making Capabilities

The CoastWAVE Project Phase-II aims to build stronger engagement and participation through a series of multi-stakeholder dialogues, emphasizing the integration of low probability but high impact tsunami events into multi-hazard approaches. This integration is crucial for real-time decision-making and long-term planning.

Outcome 5 **Stakeholders understand and have the knowledge and capacity to integrate rare, but high impact tsunami events in multi-hazard approaches, decision-making and planning.**

Output 5.1 Enhanced dialogues and training with Civil Protection Agencies, schools and others on tsunami risk and socialised tsunami alerting systems in local communities.

Output 5.2 Developed best practices with the identification of specific challenges of knowledge transfer regarding HILP events.

The activities envisaged include:

1. Organize a series of dialogues and awareness workshops with various stakeholders on high impact low probability tsunami events in a multi-hazard context.

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2. Develop and distribute outreach and public educational materials highlighting different scientific knowledge, tools, as well as management and planning strategies in dealing with threats of various probabilities of occurrence, including tsunamis.
3. Prepare a guideline/report on best practices and specific challenges of knowledge transfer regarding HILP events.

5. Gender and Women's Empowerment

Under UNESCO's Global Priority Gender Equality, projects are required to consider gender and women's empowerment issues in their design, and to monitor and report on the extent to which activities expect to contribute to the promotion of gender equality and the implementation of UNESCO Gender Equality Action Plan for 2019-2025 (GEAP II). As such, project designs are expected to collect sex-disaggregated data and information; have gender-sensitive performance indicators and targets; and where feasible ensure equal and meaningful participation of men and women with the aim of ensuring equal decision-making.

The project will address gender equality by encouraging participating countries to include participants in the trainings and workshops with due consideration for equal representation, as much as possible, of males and females.

Considering the high impact of tsunamis on elderly adults, children, and gender-dependent roles, the project will also emphasize, particularly at the local community level, the importance of appropriate age and gender representation for the preparation of evacuation maps, response plans, and evacuation routes.

A leadership and management training workshop for young women will be organized. This initiative aims to foster diversity and inclusion, tackle gender disparities, enhance confidence, provide networking opportunities, and yield long-term impacts.

6. Stakeholders: Partners and Beneficiaries and End Users

The stakeholders to be involved in this project, either as contributing partners, beneficiaries of the project outcomes, and/or end users of the project outputs, are outlined in Table 2 below:

i. Table 2. Stakeholders: partners, beneficiaries and end users

Stakeholder (partners, beneficiaries, end users)	**Role**
UNESCO	As the leading partner, IOC/UNESCO will be responsible for the planning and implementation of project activities and efficient utilisation of project funds. It will be a member of the Project Steering Committee and will be responsible for organising its biannual meetings. It will be responsible for preparing biannual and annual progress reports to the Project Steering Committee. UNESCO field offices will assist with logistics and liaison with national stakeholders in Egypt and Morocco.
DG ECHO	As project donor, DG ECHO will be a partner and member of the Project Steering Committee and will provide advice and guidance throughout project implementation.
DG JRC	DG JRC will continue to be a project partner on the Project Steering Committee and will have an advisory role in reviewing Terms of Reference for tsunami detection and monitoring installation contractors and vetting tenders.
CPAs and disaster risk reduction organisations at national and EU Union Civil Protection Mechanism (UCPM) levels	In this project Phase-II, there will be more emphasis on National Civil Protection Authorities. The CPAs and the Union Civil Protection Mechanism are expected to be both contributing partners and beneficiaries. The CPAs will be directly involved in implementing Tsunami Ready for the NEAMTWS region and will benefit from implementation at national level and local levels.
ICG/NEAMTWS	The project will be implemented by IOC/UNESCO in full coordination with ICG/NEAMTWS Working Group 4 on Public Awareness, Preparedness and Mitigation and Task Team Tsunami Ready. It will be a significant contribution to WG4's workplan and the newly published NEAMTWS 2030 Strategy. The co-chairs of WG4 will be members of the Project Steering Committee and will report on progress to the annual sessions of the ICG/NEAMTWS ensuring continuity and integration with the ICG's forward planning.
Scientific/research organisations/institutions in participating countries	The project will solicit the support of scientific/research organisations in participating countries particularly in the field of coastal inundation modelling and evacuation mapping.
Tsunami detection and sea level monitoring	The project will liaise and coordinate with the National Tsunami Warning Centres through ICG/NEAMTWS Working

organisations/institutions in participating countries	Group 2+3 to ensure that national to local level Standard Operating Procedures are developed and tested and that tsunami detection and monitoring data is fully integrated into the national system. Agencies responsible for sea-level measurements will be identified as partners to operate and maintain IDSL stations and as beneficiaries/end users of the sea level data.
Local government/authorities at Tsunami Ready pilot locations	Local government/authorities will benefit from capacity-building through the Tsunami Ready pilots and closer integration with both national authorities and community leaders.
Community leaders, community members and tourists/visitors at Tsunami Ready pilot locations	The ultimate beneficiaries and end users of the project outcomes and outputs. Community awareness, preparedness and resilience are expected to be significantly enhanced.

7. Budget Breakdown and Work Plan

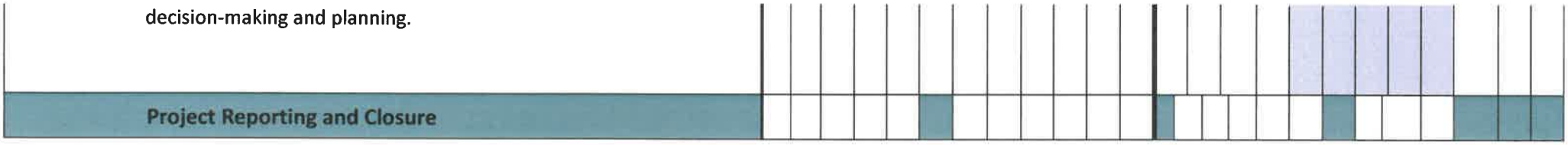
The proposed project budget for an implementation period of 2 years (24 months) is provided as a separate Excel file.

The provisional work plan for the project is shown on Table 3.

i. Table 3. Provisional Work Plan

COMPONENT/ACTIVITY	Year 1												Year 2											
	Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
INCEPTION PHASE Project setup, recruitment of project coordinator and assistant, inception workshop and report																								
COMPONENT 1 – Building and Strengthening Tsunami Hazard Assessment, Risk Knowledge, Risk Communication and Decision-Making Capabilities																								
Outcome 1. Enhanced understanding and communication of tsunami and other sea-level related risk in selected communities in the selected NEAM countries.																								
Outcome 2. Standard and improved tsunami hazard assessments based on PTHA for better planning and improved understanding, effective communication and better decision-making from regional, national to local level of tsunami.																								
COMPONENT 2 – Scaling-Up and Expanding Tsunami Ready in NEAM Countries																								
Outcome 3. More coastal communities in NEAM countries joining Tsunami Ready Programme to better prepare to respond to sea level-related hazards.																								
COMPONENT 3 – Enhancing and Improving Detection , Monitoring and Alerting System in a Multi-Hazard Context																								
Outcome 4. Increased access to near real time seismic detection and alert technology to provide early warning of rapid onset sea level-related hazards in selected new coastal communities.																								
COMPONENT 4 – Enhancing Dialogues with Emergency Responders, Decision Makers on Low Probability High Impact Tsunami Events within a MH context to Improve Strategies and Decision-Making Capabilities																								
Outcome 5. Stakeholders understand and have the knowledge and capacity to integrate rare, but high impact tsunami events in multi-hazard approaches,																								

decision-making and planning.



8. Risk Assessment and Preventive Mitigation Measures

At the time of preparing this project proposal, the risks were identified in the Table 4 below with a rating (High, Medium, or Low) and proposed mitigation measures.

i. Table 4. Risk assessment and preventive mitigation measures

Risk Description	**Overall Risk Rating** Low Low Medium Medium Medium High High	**Preventive Mitigation Measures**
Human conflicts.	High-medium	Currently, the risk level is high to medium. However, unless there is a strong escalation in conflicts in the Middle East, we expect the situation to calm down in the first half of 2024. Online meetings and organization will be required, especially for certain countries like Egypt.
Project start up delays may be experienced in setting up the project management unit and internal financial and administrative control structures at UNESCO.	Low	The Financial and Administrative Framework Agreement (FAFA), concluded between the UN and the EU provides the overarching framework governing the contribution-specific agreements signed between the EU and UNESCO. This should facilitate the smooth set up of financial and administrative procedures. The inception period will also allow time to establish the project management unit and allocation of funds.
Project implementation will rely on hiring a project coordinator, technical support consultants and in-country support consultants and there is a risk that these personnel may not be available for the employment market conditions.	Low	UNESCO will continue to work with the Phase 1 project coordinator and the project assistant as soon as the project is awarded and she/he will be in place by the beginning of the inception phase. UNESCO is able to advertise widely for consultants through its centralised recruitment website and also through its country offices.
Country level approval for the Tsunami Ready programme may not be	Medium	Most countries in the ICG/NEAMTWS are aware of the concept of Tsunami Ready and the target countries for this project

forthcoming or may be delayed by internal political decision making and administrative procedures at different levels.		have confirmed their interest in participating in the project. However, Tsunami Ready will involve many national and local stakeholders. UNESCO will work with its country contacts to ensure that information is shared with all relevant government departments and agencies.
There may be community resistance to piloting Tsunami Ready due to perceived adverse consequences such as deterring tourism.	Medium	The Tsunami Ready concept is based on a community-led bottom-up approach and it will be impossible to implement if there is strong resistance. UNESCO will work closely with its national counterparts to ensure sufficient socialisation of the purpose and benefits of Tsunami Ready and will only work with communities that understand what is entailed and agree to pilot Tsunami Ready and commit to complete the programme
Failure to approve standards and guidelines by ICG/NEAMTWS. If they are not approved and adopted then it will be difficult to establish uniform standards for NEAMTWS countries.	Low	The draft standards and guidelines will undergo a thorough review process by ICG/NEAMTWS WG4 before submitting to the ICG for approval and adoption. The review process will allow sufficient time to receive and consider comments from the Member States. The ICG does not have the authority to enforce adoption in individual Member States but its recommendation to adopt will send a clear message to Member States
Insufficient time to achieve Tsunami Ready recognition in some or all the target countries. In some countries, the TLM project has done much groundwork for Tsunami Ready and these should be able to achieve recognition within the first 1-2 years. Other countries are starting from a low base and may take longer than the project timescale to achieve recognition.	Medium	The project workplan will take into consideration the activities that need to be completed in each country and will allocate as much time as considered necessary to those countries starting from a low base of tsunami awareness and preparedness. If throughout the project, it appears that any of the pilot communities will not be able to complete the programme by the end of the project contingency plans will be put in place to support them to progress to Tsunami Ready recognition beyond the end of the project.
Insufficient capacity at country and/or community	Low	UNESCO has good contacts with national stakeholders in each of the target

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level. The project will work with national agencies and community leaders to implement the Tsunami Ready programme and install tsunami detection and alerting systems and progress may be delayed if there is insufficient capacity at national or community level.		countries and lack of capacity at national level is not considered to be an issue. Lack of capacity at community level will be mitigated by carefully selecting piloting communities against a set of criteria for participation.
The circumstances related to the pandemic can change, and public health measures may evolve over time	Low	In the event of a resurgence of the Covid-19 pandemic in 2024, the project will initiate activities that can be carried out remotely, such as the development of Tsunami Ready standards and guidelines. In-country activities will have to be delayed until conditions permit and in this case a project extension may be required

9. Sustainability and Exit Strategy

The project design and implementation strategy have taken sustainability of outcomes into consideration throughout. The very essence of Tsunami Ready piloting is that it should become self-sustaining at the end of the project intervention, and the capacity should be developed to replicate the programme elsewhere in the country. IOC/UNESCO has a strong track record of conducting and supporting such pilots in the Caribbean, as well as Indian and Pacific Ocean regions. The goal is that at completion, capacity has been built to sustain project outcomes. For example, IOC/UNESCO, through its Indian Ocean Tsunami Information Centre, supported the piloting of Tsunami Ready in two communities in Odisha State. Following this, the state announced plans to gain Tsunami Ready recognition for over 300 other villages and urban local bodies in the rest of the state. Obtaining Tsunami Ready recognition in pilot locations, therefore, serves as a catalyst for wider implementation in other communities and countries.

A further factor that encourages sustainability is that Tsunami Ready recognition is valid for four years, after which the community must apply for re-certification and demonstrate that the Tsunami Ready indicators are still valid. A motivated community is therefore encouraged to sustain its status and not let its recognition lapse.

It is important that the Tsunami Ready Standards and Guidelines go through the process of review, acceptance, and adoption by the ICG/NEAMTWS. Although the ICG/NEAMTWS does not have the authority to enforce adoption of the standards and guidelines at the country level, the Member States will understand that they have gone through the intergovernmental process, providing confidence that they are fit for purpose and can be adapted for use in-country.

Regarding the sustainability of the tsunami detection and alerting systems to be supplied and installed under component 2 of the project, IOC/UNESCO will only install these where it can be demonstrated that they will be of value to the local community. Local operating agencies will be identified whose responsibility it will be to operate and maintain the systems. IOC/UNESCO is aware that such systems require a maintenance commitment to ensure long-term sustainability and as part of the exit strategy will ensure that the local operating agency has been fully trained in the maintenance of the system.

Similarly, the transition to more robust but affordable sea level devices is a step towards sustained observation in the NEAMTWS region. It can only be secured if it is shown to be of benefit to the host countries and the wider region, and if operating agencies in the host countries commit to maintaining the devices. IOC/UNESCO cannot commit to maintaining the network itself; therefore, the exit strategy will be to identify operators who are prepared to maintain the affordable sea level devices and propose a maintenance programme for consideration under a possible future project.

10. Management Arrangements

Project management and coordination will be conducted through a Project Management Unit (PMU) based at UNESCO Headquarters in Paris, France. The project will be overseen by an IOC/UNESCO Programme Specialist from the Tsunami Resilience Section (part-time), and day-to-day management will be provided by a Project Coordinator (full-time) supported by a Project Assistant (full-time). Technical consultants will be hired to assist with specific project activities, and national consultants will be engaged in each of the participating countries to assist with in-country implementation of project activities.

The PMU will be responsible for the following activities to achieve the project objective, outcomes and outputs:

1. Project planning, coordination, management, monitoring and reporting.
2. Procurement of goods and services, including human resources and external contracts.
3. Administrative and financial management, including overseeing financial expenditures against agreed project budgets as entered in the UNESCO's "System of Information on Strategies, Tasks and the Evaluation of Results (SISTER)" platform or as revised by the PMU and approved by the Project Steering Committee and in accordance with UNESCO's administrative rules.

The Project Steering Committee (PSC) will include representatives from DG ECHO, UNESCO as well as the Chair of the ICG/NEAMTWS and the co-chairs of ICG/NEAMTWS Working Groups and Task Teams relevant to the project goals, and other partners or experts that the PSC considers beneficial to the project. The PSC will provide strategic guidance on project activities, undertake review of project outputs and regularly oversee project progress to ensure project quality and milestone delivery according to the work plan. The PSC will also provide advice on project adjustments and provide strategic direction for further project development. The PSC will hold virtual meetings at six-monthly intervals coinciding with the production of biannual and annual progress reports and will communicate at other times via email or other electronic means.

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11. Monitoring and Evaluation

As a requirement of UNESCO's results-based management approach, the Project Coordinator will provide annual reports on progress and update targets on UNESCO's "System of Information on Strategies, Tasks, and the Evaluation of Results (SISTER)" platform. In addition, the project will be monitored through the following Monitoring and Evaluation activities:

Project Start

The project will start with an inception phase of 4-5 months in case there is any departure of existing project staff and need for new project recruitment. During this phase, a virtual inception meeting will be held involving the main stakeholders, namely UNESCO, DG ECHO, JRC, ICG/NEAMTWS chair and co-chairs of WG1, WG2+3, WG4, and other invited project partners as appropriate. The meeting will address the key issues at the start of the project as follows:

1. Introduce the participants to the project. Detail the roles, support services and responsibilities of all stakeholders. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines. The Terms of Reference for project staff may be discussed as needed.
2. Based on the project Results Framework, finalise the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
3. Provide a detailed overview of reporting, monitoring and evaluation requirements. The Monitoring and Evaluation work plan will be agreed and scheduled.
4. Discuss financial reporting procedures and obligations.
5. Establish the Project Steering Committee (PSC) and plan and schedule its meetings. Roles and responsibilities of all project organisation structures should be clarified, and meetings planned. The first PSC meeting will be held within the first six months following the inception workshop.

Following the meeting, an inception report will be prepared as a key reference document to formalise the agreements and plans decided at the meeting.

Biannually

Biannual progress reports will be prepared summarising progress made against targets and project expenditure against budget. A log of lessons learned will be maintained and reported in the biannual reports and any updates to the initial risk analysis will be provided.

Annually

Annual project progress reports will be prepared. This key report will monitor progress against targets since the project's inception, specifically focusing on the reporting year. The report will encompass:

1. Progress made towards the project objective and outcomes – each with indicators and progress towards end of project targets (cumulative)
2. Project outputs delivered per outcome (annual and cumulative).
3. Analysis of sex-disaggregated data and gender representation in project activities.

4. Lesson learned/good practices.
5. Risk analysis updates.
6. Project expenditure reports.

End of Project

In line with UNESCO's evaluation policy, an independent final evaluation will take place three months prior to the final PSC meeting and will be undertaken in accordance with UNESCO's Internal Oversight Service (IOS) guidance. The evaluation will focus on the achievement of the project's objective and outcomes as initially planned. The evaluation will also look at the impact and sustainability of results and make recommendations for follow-up activities in a potential second phase of the project. The Terms of Reference for the evaluation will be prepared by UNESCO with additional guidance from DG ECHO.

During the last three months of the project, the Project Coordinator will prepare a final project report. This will be a comprehensive report that will summarise the results achieved (objectives, outcomes and outputs), lessons learned, problems encountered and areas where results may not have been achieved. It will also provide recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

12. Alignment with the UN 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015-2030, UNESCO's 41 C/5 and other major international initiatives

The project will align with and contribute to the following Sustainable Development Goals and targets:

SDG 1: End poverty in all its forms everywhere

Target 1.5: Build resilience of the poor and reduce exposure to economic, social and environmental disasters.

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Target 2.4: Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

SDG 3: Ensure healthy lives and promote wellbeing for all at all ages.

Target 3.d: Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

SDG 11: Make cities and human settlements inclusive, safe resilient and sustainable.

Target 11.5: Reduce number of deaths and people affected by disasters.

Target 11.b: Increase number of cities and human settlements adopting and implements integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change and resilience to disasters.

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SDG 13: Take urgent action to combat climate change and its impacts.

Target 13.1: Strengthen resilience and capacity to climate-related hazards and natural disasters in all countries.

SDG 14: Life below water. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

In particular, the project will further contribute to the UN Ocean Decade; Safe Ocean outcome and action on increasing community resilience to ocean hazards similar to CoastWAVE Project Phase -I.

The project will align with **Sendai Framework for Disaster Risk Reduction (2015-2030)** Target 7, which calls to "substantially increase the availability of and access to multi-hazard warning systems and disaster risk information and assessments to the people by 2030".

Furthermore, the project seeks to make strong connections with SDG 11 by exploring the possibility of implementing Tsunami Ready within existing or new Resilient Cities programme in the region.

The project will contribute to the **IOC's Expected Result** under UNESCO's Draft Programme and Budget (41 C/5) for 2020-2021:

Main Line of Action 1: Promoting knowledge and capacity for protecting and sustainably managing the ocean and coasts
Expected Result 1: Science-informed policies for reduced vulnerability to ocean hazards, for the global conservation and sustainable use of oceans, seas and marine resources, and increased resilience and adaptation to climate change, developed and implemented by Member States, towards the realization of Agenda 2030.

The project will also make a significant contribution to the **UN Ocean Decade 2021-2030** under Priority 5 on integrated multi-hazard warning systems and, in particular, by responding to the needs of society for a "safe ocean" where people are protected from ocean hazards.

13. Communication and Visibility

UNESCO is committed to sharing aims and objectives, key messages around their work and best practices and lessons learned, with all concerned stakeholders and to give credit to their donors in all such communications. This commitment will be honoured in the following ways:

1. Engage and encourage media contacts to document and write stories about the project including press releases, sharing project publications with media and promoting media visits to project sites.
2. Media stories or press releases related to the project will ensure that DG ECHO is mentioned as the funding partner.

The DG ECHO logo will be included in all public documents and information made available by the project.

At public events, the DG ECHO logo will be visible on banners and displays with project information. At all training workshops and public events, the contribution of DG ECHO as the main donor will be clearly acknowledged at the opening sessions.

The project staff and consultants will receive a briefing on DG ECHO and its role as donor at the beginning of their contracts.

Representatives from DG ECHO will be invited to all major events and meetings and provided with an adequate time slot to make a presentation, if so wished.

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Annex A – Letters of Support from Participating Countries

Annex A.1 – Letter of Interest from Egypt

(National Institute of Oceanography & Fisheries)
(NIOF)

المعهد القومي لعلوم البحار والمصايد

Dear Dr. Denis CHANG SENG,
Programme Specialist
Tsunami Unit, Technical Secretary (ICG-NEAMTWS)
Intergovernmental Oceanographic Commission
UNESCO

In the regard of the Proposed CoastWAVE project phase – II that is preparing by IOC/ UNESCO, We, as National Institute of Oceanography & fisheries (NIOF) that affiliates Ministry of Higher Education and Scientific Research – Egypt, are with much pleasure accept your request to be part of and participate in this new second phase that will be submitted to the Directorate General European Civil Protection and Humanitarian Aid Operations in the first week of December, 2023.

Sincerely,

"Prof. Amr Zakaria Hamouda"

President of NIOF

Headquarters: 101, Kasr El-Ainy St. Cairo Tel./Fax: [illegible] E-mail: [illegible]

Annex A.2 – Letter of Interest from Greece

MINISTRY OF DEVELOPMENT
GENERAL SECRETARIAT FOR RESEARCH AND INNOVATION

NATIONAL OBSERVATORY OF ATHENS
INSTITUTE OF GEODYNAMICS
Hellenic National Tsunami Warning Centre
Lofos Nymphon, 11851 Athens, Greece
Dr. MARINOS CHARALAMPAKIS, Research Scientist
e-mail: cmarinos@noa.gr, Tel: + 30 210 3490 175

Athens, 29 November 2023
Ref. No.: 468

To: Dr. Denis Chang Seng,
Programme Specialist and
ICG/NEAMTWS Technical Secretary,
7 Place de Fontenoy,
75352 Paris Cedex 07 SP, France
Email: d.chang-seng@unesco.org

Subject: Expression of interest to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards.

Dear Dr. Denis Chang Seng,

Following the receipt of the IOC/ TSR/23.11/DCS/ad letter from IOC-UNESCO, I hereby express our interest to participate in the IOC-UNESCO-DG-ECHO project.

However, our final decision will depend on the extent of our involvement in the four Components mentioned in the IOC-UNESCO letter. I would also like to point out that at the time of writing this letter, the IOC-UNESCO-DG-ECHO CoastWAVE Project is still ongoing. Therefore, we cannot use the outcomes of this first phase to safely guide our decision-making process.

Please do not hesitate to contact me if you need further clarifications.

Yours Sincerely,

Dr. **Marinos Charalampakis**
Research Scientist
Institute of Geodynamics, NOA
Tsunami National Contact of Greece

Cc: Greece IOC Focal Point
Prof Maria Ana Baptista, Chair ICG/NEAMTWS
Prof Costas Synolakis, Vice Chair ICG/NEAMTWS
Prof Akis Tselentis, Director Institute of Geodynamics and Hellenic National Tsunami Wanting Centre

Annex A.3 – Letter of Interest from Portugal

IPMA

Dr. Denis Chang Seng,

Programme Specialist

Tsunami Unit, Technical Secretary (ICG-NEAMTWS)

Intergovernamental Oceanographic Commission

UNESCO

Regarding the Proposed CoastWAVE Project phase – II, that is being prepared by IOC/UNESCO, the Portuguese Institute of the Sea and Atmosphere (IPMA) is pleased to accept the invitation to join and participate in the second phase that will be submitted to the Directorate General European Civil Protection and Humanitarian Aid Operations in the first week of December 2023.

With my best regards,

Telmo Carvalho

Board Member

Portuguese Institute for the Sea and Atmosphere (IPMA)

Instituto Português do Mar e da Atmosfera, I.P.
Rua C - Aeroporto de Lisboa
1749-077 Lisboa, Portugal
Tel: (+351) 21 844 70 00
Fax: (+351) 21 840 25 70
www.ipma.pt
info@ipma.pt

Annex A.4 – Letter of Interest from Spain

GOBIERNO DE ESPAÑA | MINISTERIO DE CIENCIA E INNOVACIÓN

CSIC INSTITUTO ESPAÑOL DE OCEANOGRAFÍA

December 4, 2023

To: Denis Chang Seng, IOC/UNESCO

(d.chang-seng@unesco.org)

In relation to IOC/TSR/23.15/DCS/ad on 24/11/2023, regarding the Expression of interest to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards.

Spain has already taken initial steps towards tsunami preparedness and implementation of the IOC/UNESCO Tsunami Ready Programme as a follow-up to CoastWAVE Project Phase-I in Chipiona municipality (SW Spain).

I would appreciate if you could consider Spain's interest in participating in joining the proposed project **CoastWAVE Project Phase-II**, expanding the current UNESCO-IOC TRRP for the period 2024-2025. This interest in participating will be confirmed in due course once the project details will be available.

Sincerely Yours,

Elena Tel

Elena Tel, PhD
Ins.Esp.Oceanografía (IEO-CSIC)
Spanish TNC

Corazón de María, 8
28002 Madrid
Tel.:+34 91 342 11 00
Fax: +34 91 597 47 70

Annex A.5 – Letter of Interest from Cyprus

REPUBLIC OF CYPRUS
MINISTRY OF AGRICULTURE,
RURAL DEVELOPMENT AND ENVIRONMENT

GEOLOGICAL SURVEY DEPARTMENT
1415 NICOSIA

Ref. No.: 02.13.001.001.025
05.21.012
Tel.: 00357 22409213
Fax: 00357 22316873
E-mail: director@gsd.moa.gov.cy

04 December 2023

URGENT – BY EMAIL (d.chang-seng@unesco.org)

Dr. Denis Chang Seng
ICG/NEAMTWS Technical Secretary
7, Place de Fontenoy, F-75352 Paris 07 SP, France

Expression of interest to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards

On behalf of NEAMTWS Cyprus National Committee, I would like to thank you for your kind proposal for participating in the CoastWAVE Project Phase-II "*Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards*".

As Cyprus National Tsunami Contact, I would like to highlight the importance and the benefits of the implementation of CoastWAVE project in the Municipality of Larnaka. In particular, within the framework of this project, we developed inundation maps, evacuation plans, national and local standard operating procedures, as well as through public workshops we manage to increase public awareness in order to ensure the tsunami risk preparedness of the local community.

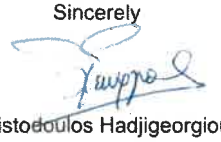
Hence, we would like to **express our interest to participate in the CoastWAVE Project Phase-II** in order to implement the IOC/UNESCO Tsunami Ready Recognition Programme (TRRP) in other vulnerable coastal communities to tsunamis and other sea-level-related hazards.

Considering that there will be an inception phase to discuss the project details such as participating institutions, key partners, funding, time-schedule for the implementation of the project, the NEAMTWS Cyprus National Committee will express its opinion accordingly in later stage.

Geological Survey Department, P.O.Box 24543, 1301 Nicosia,
Website: http://www.moa.gov.cy/gsd

I remain at your disposal for any further information you may require.

Sincerely



Christodoulos Hadjigeorgiou
Director
Geological Survey Department
(Cyprus Tsunami National Contact)

cc:

1) Permanent Secretary of the Directorate-General for the Environment of the Ministry of Agriculture, Rural Development and Environment (permsec.envi@moa.gov.cy; chadjipanayiotou@moa.gov.cy)
2) Permanent Secretary of Ministry of Interior (perm.sec@moi.gov.cy)
3) Secretary General of Cyprus National Commission for UNESCO (unesco@culture.moec.gov.cy)
4) Commander of Civil Defense (Cyprus Tsunami Warning Focal Point) (mpapa@cd.moi.gov.cy; SSpyrou@cd.moi.gov.cy)
5) Director of the Department of Lands and Surveys (director@dls.moi.gov.cy; gkokosis@dls.moi.gov.cy)
6) Director of the Oceanography Centre, University of Cyprus (georgios@ucy.ac.cy)
7) Director of the Cyprus Marine and Maritime Institute (zacharias.siokouros@cmmi.blue; nikolas.flourentzou@cmmi.blue)

.../ID
02.13.001.001.025_20231204_01_idim_Participation_CoastWAVE-II_Project

Annex A.6 – Letter of Interest from Türkiye

BOĞAZİÇİ UNVERSITY
KANDİLLİ OBSERVATORY and
EARTHQUAKE RESEARCH INSTITUTE

KANDİLLİ OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE

Istanbul, 04 December 2023

Re: Expression of interest to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards

Dear Denis Chang Seng,

We are pleased to receive your letter with Ref: IOC/TSR/23.16/DCS/ad dated 24 November 2023 informing about the preparations to submit to DG-ECHO for a two year project which plans to scale up and strengthen the resilience of vulnerable coastal communities in selected NEAM countries to tsunamis and other sea level related hazards.

As you may be aware, that KOERI gained valuable insights and experiences during the "Last Mile-Turkey" project in 2019 funded by EC, and the ongoing CoastWAVE project funded by DG-ECHO and established strong relationships with stakeholders in Türkiye. We are now excited about the possibility of applying the knowledge acquired in Büyükçekmece to a new community in Kadıköy, which has the highest female population in Istanbul. We believe that the project will significantly contribute to enhancing the resilience of not only Kadıköy but also the entire Istanbul, which is known as the most densely populated city in Türkiye.

Based on these previous experiences as stated above, it's our pleasure to confirm the interest of the Kandilli Observatory and Earthquake Research Institute (KOERI) in participating in the upcoming CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards.

Kind Regards,

Prof. Dr. Haluk Özener
UNESCO/IOC/ICG/NEAMTWS
CoastWAVE Project Phase-I Türkiye
KOERI Director

Dr. Musavver Didem Cambaz
UNESCO/IOC/ICG/NEAMTWS
Tsunami National Contact Türkiye

Boğaziçi University
Kandilli Observatory and Earthquake Research Institute
34684 Cengelköy-Istanbul, Türkiye

Fax: (+90 216) 332 67 11
Telephone: (+90 216 516 34 00)
Direct Line: (+90 216) 332 95 54

Annex A.7 – Letter of Interest from Türkiye

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY
İNŞAAT MÜHENDİSLİĞİ BÖLÜMÜ
DEPARTMENT OF CIVIL ENGINEERING

Denis CHANG SENG, PhD
Programme Specialist
Global Ocean Observing System GOOS &
Tsunami Resilience Section,Technical Secretary IOCG-NEAMTWS)
Intergovernmental Oceanographic Commission UNESCO
7 place de Fontenoy, 75007 Paris - France
Phone: +33 1 45 68 0951, d.chang-seng@unesco.org
http://ioc.unesco.org

04 December 2023

Re: Expression of Interest of METU to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-I ,Turkiye

Thanks for your letter dated on 24 November 2023 with the reference IOC/TSR/23.16/DCS/ad and invitation for the submission of a proposal to the Directorate General European Civil Protection and Humanitarian Aid Operations (DG-ECHO) for a two year project, namely the Scaling-Up and Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic and Mediterranean Regions to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards (CoastWAVE) Project Phase-II

I would like to express interest of Middle East Technical University, METU in participating the proposed CoastWAVE Project Phase-II which will further contribute to ensuring that 100% of communities at risk are prepared and resilient to tsunamis by 2030 through programmes like the IOC/UNESCO Tsunami Ready Recognition Programme (TRRP).

In the long term experience on tsunami studies at research and operational level and valuable experience in CoastWAVE Phase-I, METU has collaborated with different stakeholders and responsible organizations to successfully execute/establish TRRP in (Buyukcekmece, Istanbul) and develop TRRP in other coastal communities in Istanbul and Turkiye. METU has performed a complete tsunami Hazard and Risk Assessment and developed evacuation maps for the Marmara coast of Istanbul in collaboration with Istanbul Metropolitan Municipality and those were used to satisfy the PREP and RESP indicators of TR Program. Similar database is in preparation by METU for 620 km coast of Izmir Metropolitan Municipality. The long term experience in this field enables METU to contribute to CoastWAVE Phase II significantly in collaboration with KOERI, coastal municipalities and other stakeholders as done in CoastWAVE Project Phase I

As mentioned, the past experience and close collaborations with partners and stakeholders enable METU to participate in CoastWAVE Phase-II in the same status as a partner in CoastWAVE Phase I. We kindly express METU's enthusiasm and interest to be a partner in CoastWAVE Phase II and collaborate with UNESCO and all the partners and stakeholders in the execution of Phase II

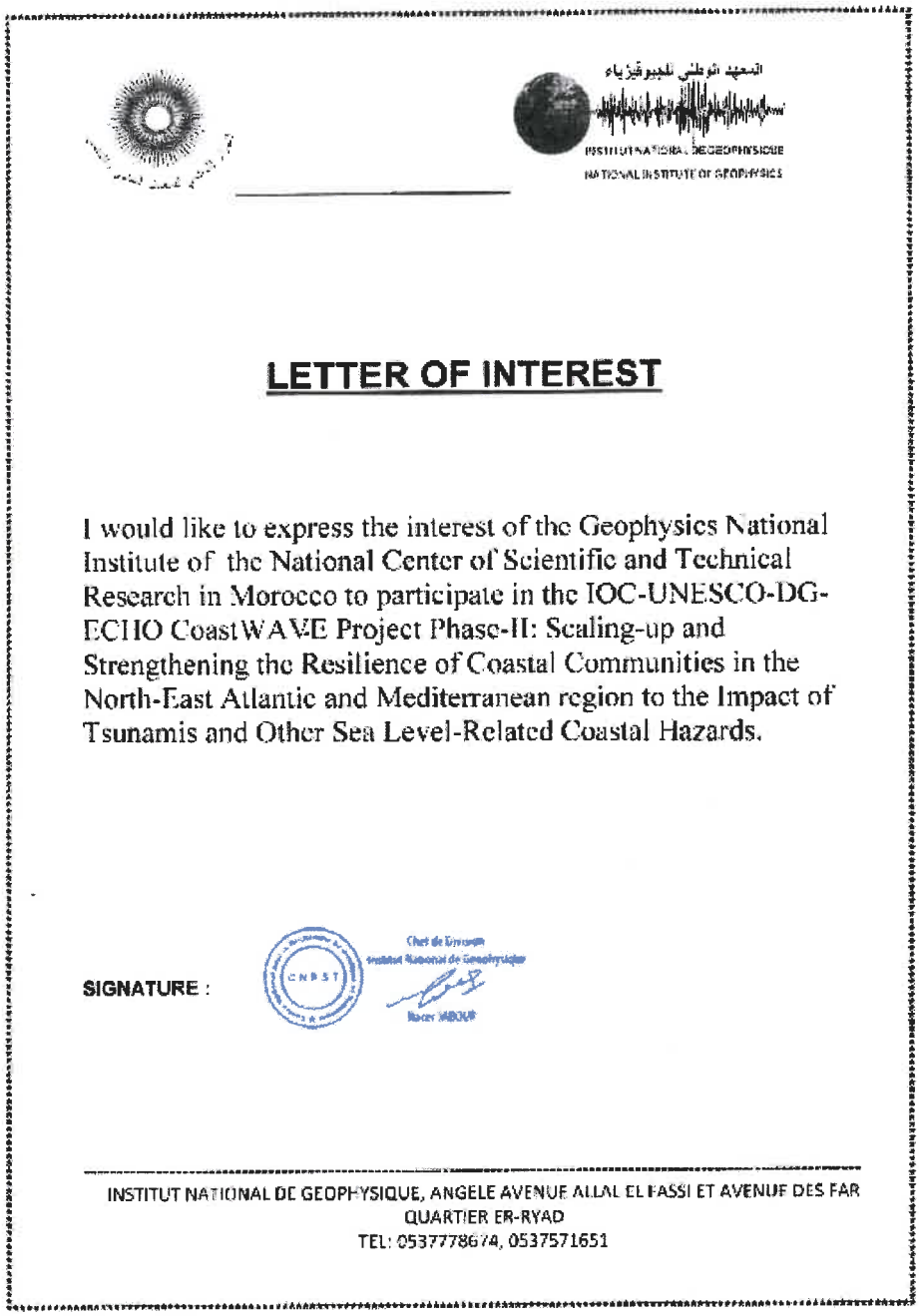
Best wishes and kind regards,

G.Czyurt TARAKCIOGLU
Y. Doç. Dr.

Assist. Prof. Dr. Gulizar Czyurt Tarakcioglu
CoastWAVE Project, METU Director

METU
Civil Engineering Department
Ocean Engineering Research Center
06800 - ANKARA-TURKEY

Annex A.8 – Letter of Interest from Morocco



المعهد الوطني للجيوفيزياء
INSTITUT NATIONAL DE GEOPHYSIQUE
NATIONAL INSTITUTE OF GEOPHYSICS

LETTER OF INTEREST

I would like to express the interest of the Geophysics National Institute of the National Center of Scientific and Technical Research in Morocco to participate in the IOC-UNESCO-DG-ECHO CoastWAVE Project Phase-II: Scaling-up and Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards.

SIGNATURE :

CNRST

INSTITUT NATIONAL DE GEOPHYSIQUE, ANGELE AVENUE ALLAL EL FASSI ET AVENUE DES FAR
QUARTIER ER-RYAD
TEL: 0537778674, 0537571651