PROJECT BAYWATCH

WORKSHOP ON TSUNAMI PREPAREDNESS FOR HOTELS AND BEACH CONCESSIONS

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CÂMARA MUNICIPAL DE LAGOS
3rd & 4th APRIL, 2017

Conclusions

- The workshop gathered representatives from all the public entities that have some responsibility on the mitigation of the tsunami risk at the beach: Municipal Civil Protection Services, Municipal political authorities, the National and Harbour Maritime Authority (AMN), the Algarve Touristic Council (RTA), the National Civil Protection (ANPC), the Portuguese Institute for the Sea and Atmosphere (IPMA), the regional Red Cross (CVP). The workshop also gathered concerned citizens, lifeguards and one NGO dedicated to prevent drowning at the beach and to promote swimming skills among the school population.
- But the workshop failed to gather a significant group of hotel and beach concession staff and managers. However, the four attendants representing the private sector working for one marina, beach concession, hotel and one nautical club, were very interested, attended most of the sessions and were participative, giving significant contributions and suggestions.
- As a result, the promoters of the workshop came out of the 2-day workshop better prepared to accomplish the ultimate goal of promoting tsunami awareness and preparedness for the hotel managers and beach concessionaires.
- The Batata beach in Lagos was the first one to have tsunami signals in Portugal. The signs were installed before the 2016 summer and its impact was evaluated by a dedicated questionnaire conducted in September 2016. The main results of this evaluation were presented by Paula Teves-Costa. Nearly only half of the people at the beach noticed the signs but the great majority considered them relevant. Also a great majority of the people mentioned that they knew what to do in case of a tsunami alert.
- The Stromboli Island, a highly-sought place by tourists, is an example of integration of a local tsunami warning system and the community. After the December 2002 tsunami, a long process began, slow at first, boosted when the Mayor of the municipality welcomed the tsunami mitigation measures. Today security in the island and awareness of the risks posed by an active volcano are natural to the community. Tsunami signs and sirens are found at the beaches and evacuation route signs are everywhere in the low areas of the island. The tourists receive an instruction leaflet on their arrival, much like the security leaflets found in the airplanes. Touristic operators are now active partners and willing to learn (and teach to others) on how to be prepared and react in case of an event.

- In Italy the Community is addressed by the "Io non Rischio" campaigns, a good example to be followed. Another Italian experience that may be useful in other areas of the world is the organization of volunteer groups dedicated to hazard awareness, preparedness and mitigation. These volunteers are trained by INGV. In Stromboli two of these groups already exist promoting stands on local fairs.
- The examples presented by Italy and the Caribbean showed that the success of mitigation measures at the Community level must have a clear political support by the Municipality administration, otherwise they will fail. The Caribbean experience also shows the importance of a "local champion" for tsunami awareness, usually a member of the civil society, that helps to push forward the tsunami awareness campaigns.
- Lifeguard training and responsibilities are very diverse from country to country. In Portugal the lifeguards are formed by private schools but the exams and courses are validated by the National Maritime Authority through the Institute for Drowning Safety (ISN). The training is regulated by law and it has no particular provision for the prevention of hazards other than the ones related to the normal sea weather, beach profiles or water bodies. However, the general purpose of the lifeguard is to help the swimmers in case of any emergency, accident or danger. It looks like the responsibility of lifeguard is limited to the sea, not the surrounding area like the beach. The authority at the beach is the Maritime Authority. The beach concessionaires hire the lifeguards but they do not feel responsible for them or their training. The situation in Malta is very similar, but the lifeguards training is provided by the Red Cross, which is also the Malta Tsunami Focal Point. Risk assessment at the beach is included in the responsibilities of lifeguards and this could be the opening door to include tsunami preparedness training. In UK the training of lifeguards and their responsibilities include explicitly an evaluation and dealing with natural hazards, oceanic and coastal. In Australia the lifeguard is considered as a true civil protection agent with many responsibilities in dealing with hazards and managing evacuation plans. The lifeguard action at the beach begin only after an official alert is issued by the authorities. In Puerto Rico lifeguards are trained with a 4-hour session on tsunami hazard and preparedness, but lifeguards are not mandatory in all beaches, only on those that are run by the government.
- Since the tsunami and earthquake risk evaluation study for Algarve coordinated by the National Civil Protection, published December 2010, that this region has a tool for hazard evaluation and emergency planning. This study included detailed inundation maps for 9 locations in Algarve. One of the products is a simulator of earthquake and tsunami effects based on the epicentral location and magnitude of an earthquake. The emergency plan for Algarve (approved in 2014) is triggered by an earthquake with magnitude ≥ 6.1 or by an Intensity felt greater than VIII (MMI scale) or by tsunami wave height greater than 3 m in the whole Algarve Coast. A number of exercises have been conducted both at the National and Regional levels to assess the preparedness for earthquake and tsunami hazards. The National Civil Protection Authority is monitoring all hazards in a 24/7 service, helped by a similar 24/7 service from GNR (National Guard).

- The Caribbean comprise 48 countries and territories of all sizes that rely heavily on tourism for their economy, over 90% in some cases. This situation has not hindered their actions towards better preparedness and awareness of the tsunami hazard. In Puerto Rico all municipalities are today “Tsunami Ready”.
- Given the huge increase in coastal occupation, the death toll and destruction to be expected today by a tsunami will be exceedingly larger than what was experienced in the past. This conclusion applies to the Caribbean but also to Portugal and other regions that have suffered tsunamis in historical times.
- The official messages issued by authorities on the occasion of any earthquake that is felt, or may be felt at the coast, must include information on the tsunami alert level. The ordinary people or security staff and resort managers, who have the responsibility to order evacuation actions for their facilities, cannot be transformed into seismologists. The Portuguese agency IPMA is ready to issue this kind of messages to the civil protection and general public, but it is not doing so. IPMA will soon announce the starting of the National Tsunami Warning Centre and only then tsunami messages will be routinely broadcast. As today, Portugal is receiving the tsunami alert messages from the French System (operated by CENALT).
- In the Caribbean tsunami information is now currently provided in tourism offices and information desks, in hotels and resorts, on boards at the beach, by social media and TV.
- In the Caribbean in these last years saw a paradigm shift among tourist operators. From the fear of losing business they are now aware that loosing lives from an unprepared community in case of an event will destroy tourism for a very long time. Furthermore, most tourists appreciate organization, and like to feel protected and safe. That is the reason why some communities choose one of their tsunami signs to be “you are entering a Tsunami Ready Beach” instead of the traditional “you are entering a tsunami hazard zone”.
- The “Tsunami Ready” program has been a huge success in involving local communities in tsunami awareness and preparedness. There are 13 guidelines that, when fulfilled, will bring National and International (by IOC) recognition to the community.
- For hotels in the Caribbean there are 4-hours workshops for tsunami preparedness focusing on the most practical aspects, like the Standard Operation Procedures in case of an event and a table top exercise at the end.
- For hotels and beach related businesses a new program is emerging, not as demanding as the “Tsunami Ready” which is called “Tsunami Ready Supporter”.
- Morocco designed a tsunami questionnaire for hotels with 3 main chapters: i) knowledge of the hazard and memory of past events; ii) the warning system; iii) Preparedness and Response. The questionnaire was distributed in the region of Tangiers and 3 replies were already received. This action also triggered a series of inquiries by the touristic resort managers and staff.
- Hotel guests, tourists and visitors at the beach or coastline are a “tsunami vulnerable group” because most of the times they are not aware of the nature and threat posed

by the hazards in the waterfront facilities area; thus, they will not know what to do, and where to go if there is a disaster emergency. This implies that hotel and waterfront facility managers and staff have a responsibility towards tsunami preparedness and response.

- The coasts of Portugal, Morocco and Spain, like in the Caribbean, could be hit by a tsunami generated by an earthquake in less than half an hour, sometimes only a few minutes after the earthquake. This has a very important consequence on the preparedness and response to a tsunami. Everybody should be prepared to move to high ground whenever a strong earthquake is felt at or close to the coast, without waiting for any confirmation message by authorities. This means also that the Community must be able to react to two lines of alert messages: the natural ones, like also disturbances of the sea level, and the official one. In case the shaking is caused by a small to moderate earthquake the national system must issue a "no-tsunami alert" message as fast as possible (typically 3 to 5 minutes).
- One challenge for these countries is to translate the Tsunami Science into a Risk Culture, with awareness and preparedness as major concerns. This is a long-term activity and routine exercises may have an essential role on this.
- Despite the fact that 5 municipalities in Portugal are undergoing actions for alerting the beaches using signs and or sirens, it was not clear from the workshop what are the operational procedures in case of official or natural alerts.
- Commercial harbours have a very important economic role in most countries, Portugal, Spain and Morocco being no exception. Together with small harbours and marinas, they are much more vulnerable to tsunamis than beaches. The explanation is resonance and energy plumbing. Tsunami energy entering a closed harbour will not dissipate easily and can cause large amplitude waves and currents for many hours, even for small scale tsunamis.

Recommendations To future BAYWATCH activities

- The current actions of CERU and its partners under the project BAYWATCH, and on future projects, should be inline, and explicitly refer to the priorities mentioned in the Sendai Framework.
- Future actions dedicated to touristic operators, staff and managers, beach concessionaires, should be shorter, half a day or one day maximum.
- It is recommended that additional approaches to the private sector must be tried. Instead of inviting them to a 2-day workshop, we must go to their own meetings and ask for time to give a brief presentation on tsunami awareness and preparedness.
- By the Portuguese law, all staff from the private sector must receive a total of 50 hours of formation/training every year. The formation and training on tsunamis could be considered as formation time if a system of inscriptions is formalized and a diploma or certificate is given at the end. The private sector will welcome this type of formation. It is recommended that future actions should be organized in that way.

- The tsunami signs in Batata beach were evaluated by the workshop attendants and some recommendations resulted from that observation: i) some signs are not properly oriented, given an ambiguous information; ii) the size of the escape route may be increased; iii) the large location map at the beach must be modified to include clear indications on the danger areas and evacuation areas, in light of what has been done in other areas of the Caribbean or United States; iv) it is recommended that the concentration point sign includes, on the back, information on the procedures and contacts.
- At the Meia Praia beach there is no easy access to high ground places in case of a tsunami. For this beach, it is recommended the use of existing buildings as vertical shelters. One building to classify as a vertical shelter must include safe areas but also ensure that access to those areas is free. It is recommended that future building plans in that area should take into consideration the possible use as vertical shelter.
- It was remarked that most beach concessionaires working close to the Batata beach were not aware of the reason for the tsunami signs, nor were aware of the tsunami risk. This observation calls for an improved awareness campaign on future installations of this kind of signs.
- Tsunami awareness and preparedness are never ending activities that must be pursued for the benefit of the Community and future generations, particularly in regions like Portugal, Spain and Morocco that suffer rare but destructive events.

General Recommendations

First Priority for Action of the Sendai framework: "Understanding disaster risk"

Using scientific and technological knowledge to better assess evolving risks and adapt accordingly the resilience strategies

- We need science to define the evacuation areas on land and the safe depths for ships at sea. An example is provided by the US Maritime Guidance that defines the safe depths as a function of the distance to the tsunami source, which is a function of the current speeds to be expected in each case.
- It is essential to use scientific knowledge to prepare and provide information to the population, namely the tourist operators and hotels professionals.

Second Priority for Action of the Sendai Framework: "Strengthening disaster risk governance"

Developing cooperation among all decision-makers to better define authorities' adequate role in Disaster Risk Reduction

- The Algarve region, as well as other coastal regions in Portugal, has seen a considerable increase in the number of tourists and visitors during recent years. In particular, the Algarve Touristic Region Council marketing campaigns have insisted on the concept that "Algarve is a safe touristic destiny". This concept should also extend to the preparedness and to natural events, such as tsunamis.

- One hotel staff member was inquired on the tsunami and earthquake risk in Lagos and she demonstrated a great lack of knowledge. The staff is not trained to reply to a series of tsunami related questions, which can make the visitor feel unsafe. This calls for another recommendation addressed to the tourist guide training and also to the Algarve University that has an Hotel School.
- It is recommended that the training of touristic guides include a module dedicated to natural hazards in the Algarve region, including earthquake and tsunami formation. Here a cooperation with the Algarve Touristic Council is sought.
- This recommendation is also extended to the formation at the University level. Here a cooperation with the Algarve University must be sought. Tourism professionals should be trained to give full information to tourists and visitors on the natural hazards that may occur in Algarve and other regions.
- It is recommended to include a modulus on tsunami hazard and mitigation measures, on the lifeguard's formation. Since the lifeguard formation is established by law and its compliance is evaluated by the Portuguese Maritime Authority, it is recommended that a coordinated action with the main stakeholders is pursued.
- The local Community should be at the centre of any Tsunami Warning System and not at its end, as commonly pictured. Only prepared communities will be able to save a significant number of lives in case of a tsunami. This is the leitmotiv of the "Tsunami Ready" initiative that began in the United States and now is extending to the Caribbean, South America and Indonesia.
- The "Blue Flag" initiative could be extended to include preparedness for natural events like tsunami, in their guidelines. This is a subject that may deserve exploration by all agencies concerned, national and international.
- Given the high economic value of harbours it is recommended that particular attention must be dedicated to Port authorities and managers in relation to the tsunami hazard. High-resolution modelling can provide Harbour managers with knowledge that could result in appropriate recommendations in case of an event. The process of detailed hazard evaluation in harbours is currently undergoing in the United States.
- The level of preparedness at the Community level must be maintained in a systematic way by conducting regular tsunami exercises. In the Caribbean these exercises are conducted once per year simultaneously for all countries, involving the last one nearly half a million of people, including some volunteer tourist in hotel resorts. The exercise date is already in the regular calendar of authorities and general people.
- Tsunami information from official channels must reach the areas at risk on the coastline, beaches, marinas, harbours, as fast as possible and using as much communication channels as possible, like the TV, cell broadcast, social media.

Third Priority for Action of the Sendai Framework: "Investing in disaster risk reduction for resilience"

Fostering active participation of the population in Disaster Risk Reduction

- It was suggested that a "Guide to Tourists at the Beach" could include the most important recommendations in case of natural hazards, much like the "Guide for Pedestrians" that contains recommendations to the walkers on trails. This guide could be prepared by the National Civil Protection Authority.
- The "Tsunami Ready" program and the companion "Tsunami Ready Supporter" have been very successful in promoting preparedness and awareness at the community level in other tsunami prone areas. It is recommended that such initiatives should be also stimulated in Portugal and Morocco.
- To engage stakeholders at the community level, like hotels and beach concessionaires, leaflets distribution is ineffective. These stakeholders must be included in the whole civil protection system and must be part of it. They must be aware, understand and participate in the evacuation planning in case of a tsunami. The community must be empowered to use the science that helped to define the safe areas and evacuation routes. Questionnaires addressed to hotels and coastal businesses is just one step on that process of empowerment. Standard Operational Procedures for official alert messages must be clear and end with the "all clear" or "cancellation" information. Given that the official communication system can take up to 20 minutes (or more) the community must learn to respond when natural signs are perceived.
- For an effective response of the community to a tsunami event it is recommended that all operational procedures in case of official or natural alerts are clearly defined and known by stakeholders.
- The work that has begun in recent years by a few municipalities in Portugal regarding tsunami signs on the coastline and sirens, in order to save lives in the event of a tsunami, must pursue and expand to other coastal municipalities at risk.

Fourth Priority for Action of the Sendai Framework: "Enhancing disaster preparedness"

Promoting risk culture among population

- At the community level, past experience has proved to be of the utmost importance in the preparation for future events. This historical memory must be one of the subjects in any awareness campaign.
- National or International recognition for tsunami preparedness may be appealing for the tourism business and could help to promote tsunami awareness among them.
- Children and schools are one of the key groups to be addressed by the tsunami and natural hazards awareness campaigns and it was rewarding to know that activities at schools are routinely done by the municipality civil protection services. It would be more difficult to include these subjects in the school syllabus, but it should be also an objective to consider by official and government authorities.

- The prevention for drowning in beaches and other swimming places is pursued by several NGO that may be contacted to include tsunami preparedness in their activities.
- To facilitate the tsunami awareness campaigns among the young generations it is recommended the use and promotion of educational apps and games, social media, in additional to the more traditional materials, like websites, leaflets, posters.