PrEseRvIng and sustainably governing Cultural heritage and Landscapes in European coastal and maritime regionS

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1   Executive Summary

This report provides an overview of stakeholders perceptions of risks to coastal and maritime cultural heritage (CMCH) in four case-regions of the PERICLES project, and analysis the differences in perceptions of risk between expert (i.e. managers, technicians, consultant, scientists) and non-expert stakeholders (i.e. local politicians, public, civic movements, local community representatives, private local businesses).

The perceptions of expert and non-expert stakeholders was collected in the context of DEMOS: (1) the four demos in the Ria de Aveiro (P1 "*Integrating cultural heritage into integrated coastal zone management (ICZM) and into maritime spatial planning (MSP): preserving Aveiro lagoon traditions*"; P2 "*Integrating CH into coastal tourism: the lagoon traditional boats ("moliceiros") from transport to tourism"; P3 "Salt CH – from mono to multifunctional anthropogenic landscape"; P4 "Culinary route in the Aveiro lagoon region: understanding, preserving and exploring fish food CH through gastro-tourism")* *(2*) Britany B1 "*Climate change, coastal risks and cultural heritage*"); (3) the four demos in the Coastal Denmark and Danish islands (D1 "*Integration of CH into development and Blue Growth plans/strategies in transboundary decision-making*"; D2 "*Using CH for resilience and adaptation in port and landscape transitions*"; D3 "*Knowledge transfer of boat building skills for local development*"; D4 "*Maritime heritage and tourism interactions*"); and (4) Pärnu Bay and Gulf of Livonia islands E2 *"Blue growth and coastal culture: development-heritage interactions".*

The identification of risks was undertaken employing different approaches (i.e. semi-structured interviews and participatory workshops) in the different case region. The Portuguese, Danish and Estonian case regions adopted a deductive approach, with stakeholders assessing the level of risk of a list of 29 threats identified in the literature. Whilst the French case region adopted an inductive approach beginning with a participatory workshop where stakeholders identified the risk to local CMCH, and then these risks were evaluated in detail in the semi-structured interview.

In general, our findings show that both expert and non-expert stakeholders from all case regions perceived environmental threats to be a higher risk to CMCH in their local areas than human induced threats. Stakeholders from all regions considered threats related to climate change – such as coastal erosion, sea-level rise, flooding and climate change in general – as high risks to CMCH in their local areas. A few human induced threats were also identified as risks by both expert and non-expert stakeholders in the several case regions, more specifically poor governance, lack of/weak protection and on-site visitor pressures.

The differences in the perception of risks between expert and non-expert stakeholders is minimal, with little divergence in opinions about threats to CMCH between these two groups in each of the several case study regions. This is a positive outcome, as it suggests that moving towards sustainable exploitation of CMCH will not be hampered by disputes about risks. Despite the different methodological approaches, the gap analysis performed in all the four case study regions presented good lessons to take forward in the development of the (draft) risk assessment framework (D4.3/4.4).

2   Introduction

This report (D4.2) provides an overview of risks to local coastal and maritime cultural heritage (CMCH) in four case-regions of the PERICLES project, and assesses the different perception expert (i.e. managers, technicians, consultant or scientists) and non-expert stakeholders (i.e. local politicians, public, local businesses and other stakeholders) hold on the level of risk several threats pose to local CMCH.

The report is based on the work carried out in context of Task 4.2. Combined, the WP4 tasks contribute to one of the main objectives of PERICLES, which is to provide a comprehensive, participatory framework for sustainable management, conservation and exploitation of European coastal and maritime cultural landscapes, which integrates knowledge across local, spatial, environmental, social and economic aspects of CMCH. This report speaks directly to this objective by providing insights in the extent to which perceptions of experts and non-experts converge and diverge, and by showing applications of gap analysis methods.

In this report, experts are defined as professionals directly involved in heritage management, such as managers, technicians, consultants and scientists. Non-expert stakeholders are people who have an interest in, affect/or are affected by heritage management, but for whom it is not their main or only concern, i.e. local politicians, the wider public (individual citizens), civic movements, local community representatives, private local businesses, etc.

The report presents information from four case study regions: The Ria de Aveiro (Portugal), Britany (France), Inshore coastal Denmark and Danish islands (Denmark), and Pärnu Bay and Gulf of Livonia islands (Estonia). This allows to understand and compare different applications, e.g. the gap analysis for France and Estonia was specifically linked to one demo, while in Portugal and Denmark the focus was on the region. The gap analysis for Portugal, Denmark and Estonia was conducted deductively, whilst France followed an inductive approach; and the gap analysis in Portugal and France was quite extensive, based on interviews and workshops, whereas in Denmark and Estonia, it was of a scoping nature. The insights about the different applications will feed into the development of the draft framework (D4.3). The final framework will be tested and refined in all case study region (resulting in D4.4).

The report starts by summarizing the threats to CMCH identified in D4.1, and describing the gap analysis methodology and its most common uses. Section 3 presents the methodologies used to carry out this task in the several case regions. The methodology section describes the case regions and details the data collection methods. Section 4 presents the main risks to CMCH identified by expert and non-expert stakeholders from the several regions. Section 5 presents the results of the gap analysis, showing

differences in perceptions of risk to CMCH between experts and non-expert in the several case regions. Section 6 concludes by summarizing the main findings. Finally, in annex the detailed information for each case region, Portugal (Annex 1), France (Annex 2), Denmark (Annex 3) and Estonia (Annex 4).

2.1 Threats to Coastal and Maritime Cultural Heritage

A literature review to identify major threats to coastal and maritime cultural heritage (CMCH) was conducted in the scope of task 4.1. Two main categories of threats to CMCH were identified, environmental threats and human-induced threats. Environmental threats to CMCH include several threats related to climate change, natural disasters and several environmental related threats (e.g., pests, temperature, humidity). The human-induced threats to CMCH include several threats related to cultural economy, mismanagement, development and regulation. Table 1 lists these threats. The analysis carried out in the scope of this report evaluates the severity of these threat in four different case regions, as reported by expert and non-expert stakeholders from each of the different locations, and analyses gaps perceived risks between these two groups of stakeholders.

Table 1. Threats to coastal and maritime cultural heritage (CMCH). Table adapted from D4.1.

Threats to CMCH		
Environmental threats	Climate change	Climate change (in general)
		Sea-level rise
		Coastal erosion
		Sea warming
		Flooding
	Natural disaster	Storm damage
		Natural disasters (e.g., earthquakes)
	Environment	UV and light
		Weathering and erosion
		Pests
		Incorrect temperature (too high)
		Relative humidity
Human caused threats	Cultural economy	Looting and theft
		Illicit trade
	Mismanagement	Accidental damage
		Vandalism
		Fire
		Pollutants
		Management measures
		Dissociation
		Ignorance
		On-site visitor pressures
	Development	Tourism
		Traffic
		Industrial decline
		Infrastructure

		'McDonaldisation' of heritage
	Regulation	Weak protection
		Governance (in general)

2.2   Gap analysis methodology

The gap analysis methodology is widely used in a variety of disciplines (e.g. marketing, biology, biodiversity, transportation, tourism) resulting in many different uses and definitions (Brown and Swartz, 1989; Currie, 2004; Davis, Misra, and Van Auken, 2002; Scott *et al.*, 1993).

Generally speaking, a gap analysis is an outcomes assessment tool, used to evaluate mismatches between issues in consideration. It can be summarized as a process utilized to identify discrepancies between A and B, and is subsequently followed by an attempt to develop appropriate actions to bridge the gap. The typical steps in a gap analysis include:

(1) Identify the current state (empirical approach),

(2) Identify where we want to go (desired state),

(3) Analyze the gaps between the current and desired states,

(4) Take action to bridge the gaps.

The gap analysis methodology is most commonly used in business to identify discrepancies, often between supply and demand components, and develop an action plan to improve and bridge the performance gaps. However, the versatility and utility of this methodology has meant that gap analysis have been carried out in many contexts and for various purposes. It is frequently used in education, for instance to compared student perceptions of the adequacy of skills and characteristics required by the work environment (Nordstrom and Sherwood, 1997), or to measure perceptual differences between practitioners and academics on curriculum content (Lundstrom and White, 1997). It is also frequently used in tourism, for instance to evaluate discrepancies between tourists' expectations and the quality of existing tourism services (Augustyn and Ho, 1998; Reichel, Lowengart and Milman, 2000; Ryan and Cliff, 1997). It has also been used to highlight public transportation needs (Currie, 2004), and even to identify needs for biodiversity protection (Angelstam *et al.*, 2003; Jennings, 1995; Scott *et al.*, 1993).

The versatility of this methodology has meant that gap analyses have been carried out in many contexts and for various purposes. As such, there is a need to make the gap analysis fit for the specific case at hand. It is therefore important to clearly define the objective of the gap analysis, which in the case of PERICLES is to identify and understand perceptual differences in knowledge, between expert and non-expert stakeholders, in relation to the level of risk faced by CMCH in coastal communities around Europe. As such, the current gap analysis included the following steps:

(1) Identify the level of risk several threats pose to local CMCH (interviews and participatory workshops),

(2) Analyze the level of risk separately by stakeholder group (experts and non-experts),

(3) Identify gaps in perception of the level of risk posed by several threats between the two groups,

(4) Identify potential actions to breach the gap and manage risks.

3 Methodology

Given the context-specificity of the gap analysis, it is relevant to understand the area of application and the specific data collection methods used. Four of the PERICLES case study regions were involved in this report. Important to note are the differences in approach, such as a deductive focus versus an inductive approach. The Portuguese, Danish and Estonian approaches were in line with a deductive approach, although there was room for stakeholders to add to the lists of threats, while the French took an inductive approach. Also, Portuguese and the French approaches have been more in-depth, employing both semi-structured interviews and participatory workshops; whilst the Danish and Estonian served a scoping purpose. Another difference is that the Portuguese and Danish gap analysis have been conducted at a regional level, covering all demos, whereas in France and Estonia the gap analysis focused on specific demos.

3.1 Case studies

3.1.1 Ria de Aveiro case region

The Ria de Aveiro region is relevant in terms of sociocultural heritage, related to the lagoon and sea activities, as well as building heritage. The lagoon has suffered major changes in use and activities in the last decades. The natural and cultural heritage connected to the lagoon is now threatened by the growing urban sprawl of cities, by the existing disconnection between the needs of the tourism sector and the training offered to them, the pollution caused by the extensive amount of boat traffic in the canals and by degradation, high maintenance costs and property requirements of traditional saltpans. In this context the critical assessment of threat to CMCH in the Aveiro lagoon region, as well as the potential of this CMCH for the development of the region was carried out focused on the case region, i.e. the four DEMOS - P1 "*Integrating cultural heritage into integrated coastal zone management (ICZM) and into maritime spatial planning (MSP): preserving Aveiro lagoon traditions* ; P2 "*Integrating CH into coastal tourism: the lagoon traditional boats ("moliceiros") from transport to tourism*"; P3 "*Salt CH –*

from mono to multifunctional anthropogenic landscape"; P4 "Culinary route in the Aveiro lagoon region: understanding, preserving and exploring fish food CH through gastro-tourism".

3.1.2   Britany case region

Breton landscapes and seascapes are also full of signs of past activities, and evidence of the pre-historic human settlements in Brittany include standing stones, megaliths, cairns, etc. Within the Breton culture and its Celtic tradition, tangible and intangible maritime heritage is vast and subject to many risks mainly related to climate change (sea level rise, storms, erosion, etc.) and to anthropic pressures (tourism activities, population renewal, economic development, diversification of activities, etc.). In this context the gap analysis was carried out within DEMO B1 "*Climate change, coastal risks and cultural heritage*".

3.1.3   Coastal Denmark and Danish islands case region

The maritime history of Denmark is rich and the links between coastal populations and the sea are still strong. Witness of many structural changes in recent decades, many coastal and fishing communities have worked to preserve their way of life and the industries on which they depend, such as by continuing to build their traditional boats (still a practice in the regions of Thorup Strand and Slettestrand). However, Denmark, like many other places, struggles to maintain a balance between promoting and preserving CMCH and taking into account the needs of society. In this context the gap analysis was carried out for the case region, i.e. the four DEMOS - D1 "*Integration of CH into development and Blue Growth plans/strategies in transboundary decision-making*"; D2 "*Using CH for resilience and adaptation in port and landscape transitions*" ; D3 "*Knowledge transfer of boat building skills for local development*"; D4 "*Maritime heritage and tourism interactions*".

3.1.4   Pärnu Bay and Gulf of Livonia islands case region

The Pärnu Bay region and islands in the Gulf of Livonia suffer from the same problems as most rural areas around Europe, i.e., a diminishing of natural resources and population decline. A once marine-based local fishing economy is no longer as vigorous as it was and the local populations have to adapt to new ways of earning a living, such as heritage and yachting tourism. Kihnu Cultural Space is included in the UNESCO's list of Masterpieces of Oral and Intangible Heritage of Humanity. Local cultural spaces (Kihnu and Ruhnu islands) are threatened by economic hardship and the tourists insensitive, impacting on the islands' traditions and natural environment. In this context the gap analysis was carried out within DEMO E2 "*Blue growth and coastal culture: development-heritage interactions".*

3.2   *Data collection*

Data collection in the four case studies was based on socio-ethnographic and participatory approaches. Different case regions have used different approaches to collect data from experts and non-expert stakeholders. In Portugal and France data was collected through semi-structure interviews and workshops, while in Denmark and Estonia data was collected solely through semi-structured interviews. The interviews were structured around two themes: the perception stakeholders held about the level of risks of several threats to CMCH; and, the identification and analysis of gaps in perceptions of risk between experts and non-experts.

The list of expert stakeholders included academics, managers and technicians, and non-expert stakeholders, which included representatives from civic movements, citizens and/or local community representatives, public bodies (e.g., municipalities, regional authorities), natural and cultural heritage associations/ museums, private local businesses.

Different approaches were undertaken in the different case region. The Portuguese, Danish and Estonian case regions adopted a deductive approach, with stakeholders assessing the level of risk of each of the 29 environmental and human-induced threats identified in the literature (D4.1). In the three case studies, expert and non-expert stakeholders were asked to classify, according to their own perception, the level of risk associated with each threat. The evaluation scale varied between 0-3, where 0 corresponded to no-risk, 1 to low risk, 2 to moderate risk, and 3 to high risk. Whilst the French case region adopted an inductive approach beginning with a participatory workshop where stakeholders identified the risks to local CMCH, and then these risks were evaluated in detail the semi-structured interview.

Participatory workshop, where carried (i.e., Portugal and France), also took different approaches. In Portugal both experts and non-experts participated in the workshops, while in France only non-experts participated. Table 2 summarizes the data collection method undertaken in each location, as well as the number of stakeholders from which information was collected.

Table 2. Methodology and sample characterization

Case studies	Data collection	Sample size		Gender (%)	
		Experts	Non-experts	Male	Female
Portugal	Interviews	11	10	62%	38%
	Workshop	5	13	56%	44%
France	Workshop 1	0	24	50%	50%
	Interviews	5	21	65%	35%
	Workshop 2	0	28	46%	54%
Denmark	Interviews	4	3	57%	43%
Estonia	Interviews	1	5	17%	83%

In the Aveiro region (Portugal) 21 face-to-face in-depth interviews were conducted with expert and non-expert stakeholders to identify the level of risk each of the 29 threats to CMCH identified in D4.1 pose to local CMCH. This was followed by a participatory workshop with the participation of 18 stakeholders, to discuss the main risks to local CMCH as identified in the interviews, the gap in the level of risk identified between experts and non-experts, ways to bridge the gap and potential of CMCH for the sustainable development of the Aveiro lagoon region (e.g., for sustainable tourism development).

In Britany (France), first a participatory workshop with 24 non-expert stakeholders (i.e., local citizens) was organized to identify threats to CMCH, and the respective level of risk of each threat. During the workshop the vulnerability map for the region was presented to stakeholders, and they identified risks to local CMCH. This was followed by 26 face-to-face semi-structured interviews conducted with non-expert stakeholders (i.e. citizens and public authorities with competences in risks and maritime heritage) and scientific experts, to discuss the threats in detail. Finally, a second workshop was carried out with 28 non-expert stakeholders to present the data collected during the first workshop and interviews and discuss results.

In coastal Denmark and the Danish islands region (Denmark), 7 interviews were carried out with expert and non-expert stakeholders, with the objective of identifying stakeholders' perceptions of the level of risk each of the 29 threats identified in D4.1 pose to local CMCH.

In Pärnu Bay and Gulf of Livonia islands case region (Estonia) 6 semi-structured interviews were carried out with expert and non-expert stakeholders. The objective of the interviews was to collect information about the use of CMCH in Estonian coastal areas, and to identify the level of risk each of the 29 threats pose to local CMCH.

4   Main risks to CMCH identified by stakeholders

In general, both expert and non-expert stakeholders from all case regions perceived environmental threats to be a higher risk to CMCH in their local areas than human induced threats. However, some differences can be observed between case study regions. Table 3 provides a detailed evaluation of the level of risk to CMCH of 29 threats identified in the literature, plus some more threats identified by stakeholders in France and Denmark. A special note of attention to the French case region. In this case study an inductive approach was adopted, where stakeholders identified the risk to local CMCH without resorting to the table.

Stakeholders from all regions considered threats caused by climate change, such as coastal erosion, sea-level rise, flooding and climate change in general as the highest risks to CMCH in their local areas. This was specially the case in the Aveiro case region (Portugal), where stakeholders considered all these threats as a high risk to CMCH in the region. Another environmental threat considered as a high risk to CMCH is storm damage, considered to be a high risk in the Aveiro and Estonia case regions, and moderate risk in the French case region.

Both expert and non-expert stakeholders from the Aveiro region (Portugal) and from Pärnu Bay and Gulf of Livonia islands case region (Estonia) perceived environmental threats to be a risk to CMCH in their regions, mostly classifying these threats either as being a moderate or high risk. On the other hand, stakeholders from Britany (France) and from coastal Denmark and the Danish islands (Denmark) perceived environmental threats mostly as a low risk to CMCH in their regions, considering a few threats caused by climate change as a moderate risk to CMCH.

Stakeholders mostly perceived human induced threats to be a low to moderate risk to CMCH in their regions. The exception being threats related to mismanagement and regulation. With Portuguese stakeholders perceiving poor governance, dissociation and ignorance as the highest threats to the region's CMCH; but also considering most human induced threats as moderate risks to CMCH in the region. The fact that the Ria de Aveiro lagoon does not yet have a management entity at the lagoon level, having instead several entities taking decisions regarding the uses and activities in the lagoon, was mentioned by most stakeholders as one of the main problems in the lagoon. Estonian stakeholders were of the opinion that fire is a moderate-high risk to CMCH in their region; and considering most other human induced threats as low to medium risk. Stakeholders from Britany (France) considered on-site pressures to be a moderate to high risk to CMCH in the region, and the remaining human induced threat as low risks to CMCH. Both expert and non-expert stakeholders in Britany referred that anthropogenic pressures constitute a risk to CMCH, in particular overcrowding. Stakeholders from Denmark were of the opinion that most human induced threats constitute a low risk to the CMCH in the area.

Stakeholders from the French and Danish case regions pointed out other risks besides the 29 threats identified in the literature, such as urbanization, abandonment, local tourism and economic development, depopulation and lack generational transfer of knowledge. Interestingly, most of these threats were assessed to be of no- or low risk level.

Table 3. Experts and non-experts self-reported perceptions of the level of risk several threats pose to coastal and maritime cultural heritage. Green = No/low risk, Yellow = Moderate risk, Red = High risk.

			Portugal		France*		Denmark		Estonia	
			Expert	Non-expert	Expert	Non-expert	Expert	Non-expert	Expert	Non-expert
Environmental threats	Climate change	Climate change	3	3	1	1	1	1	1	2
		Sea-level rise	3	3	2	2	2	2	3	2
		Coastal erosion	3	3	2	2	3	2	1	2
		Sea warming	2	2	0	0	1	1	1	1
		Flooding	3	3	2	2	2	2	3	2
	Natural disaster	Storm damage	3	2	2	2	1	1	3	3
		Natural disasters (e.g., earthquakes)	2	2	1	1	0	0	1	1
	Environment	UV and light	2	2	0	0	0	0	2	1
		Weathering and erosion	3	2	0	0	1	1	0	2
		Pests	1	2	0	0	0	0	2	2
		Incorrect temperature (Too high)	2	2	0	0	0	0	1	2
		Relative humidity	2	2	0	0	1	1	2	2
Human caused threats	Cultural economy	Looting and theft	2	2	0	0	0	0	1	1
		Illicit trade	2	1	0	0	0	0	1	1
	Mismanagement	Accidental damage	2	2	0	0	0	1	2	2
		Vandalism	2	2	0	1	0	1	2	1
		Fire	1	1	0	0	1	1	3	2
		Pollutants	2	2	1	1	0	0	2	1
		Management measures	1	2	0	2	0	0	2	1
		Dissociation	2	3	0	0	0	1	1	2
		Ignorance	2	3	0	1	1	2	1	2
		On-site visitor pressures	2	2	3	2	0	1	1	2
	Development	Tourism	2	2	0	0	1	2	1	2
		Traffic	2	2	0	0	0	0	1	2
		Industrial decline	2	2	0	0	1	2	0	1
		Infrastructure	2	2	0	1	0	0	1	1
		'McDonaldisation' of heritage	2	2	0	1	1	2	2	2
	Regulation	Lack of / weak protection	2	2	0	1	2	1	0	2
		Governance	3	3	2	2	2	2	1	2
Other		Abandonment			0	2				
		Urbanization			2	2				
		Invasive species			0	2				
		Commercial, tourist or leisure exploitation			1	0				
		Combination of risks			3	0				
		Increased knowledge			1	0	1	1		
		Development								

Economy	2	2
Demography (depopulation)	1	1
Low generational transfer of knowledge	1	1

* In the French case region an inductive approach was adopted, where stakeholders identified the risk to local CMCH without resorting to the table.

5 Differences in perception of risks between expert and non-expert stakeholders

There were no major differences in perception of risks between expert and non-expert stakeholders from the several regions. There were, however, some minor discrepancies between the two groups in the several case regions, as described below (see Table 3 and Table 4).

In the Aveiro case region, experts perceived threats such as traffic, excessive tourism, storm damage, weathering and erosion as higher risks to local CMCH than did non-expert stakeholders. While non-expert stakeholders perceived the lack of, or incorrect, management measures, and to a lesser extent UV and light effects, and ignorance dissociation as higher risks to local CMCH than did expert stakeholders. Despite these differences, and apparent gaps in perceptions of risk, stakeholders (in discussions during the workshop) did not perceive these differences in views as gaps but instead were of the opinion that the knowledge of experts and non-experts complemented each other. Stakeholders also pointed out, in the discussion during the workshop, that different entities have different priorities (related to what they identify as the major risks to the local area) and CMCH is often left out when policies are implemented. They pointed out to the need for a management entity at the lagoon level and identified the lack of such entity as a problem, with serious consequences for the sustainability of the lagoon, including its cultural heritage.

In the Britany case region some minor discrepancies in perceptions of risks exist between expert and non-expert stakeholders. Experts considered the combination of several risks over a short period of time, excessive commercialization, tourism and leisure exploitation, and on-site visitor pressures as much higher risks to local CMCH than non-expert stakeholders. Whilst non-expert stakeholders perceived vandalism, ignorance, "McDonaldisation" of heritage, abandonment, poor management measures and weak protection as higher risks to local CMCH than expert stakeholders There are also some diverging opinions on the effects of climate change. The majority of non-experts think that coastal risks are exacerbated by climate change (e.g., in the case of sea-level rise) and that damage to coastal areas will increase in frequency and intensity (storms, cyclones, hurricanes, etc.). This is not the opinion of experts who remain more cautious about the phenomena of increasing and intensifying natural events.

In the Danish case region there were some limited discrepancy between experts and non-experts views about risks to CHCM. Coastal erosion and lack of/ weak protection are seen as higher risks to CMCH by experts than by non-expert stakeholders. On the contrary, non-expert stakeholders perceived ignorance, on-site visitor pressures, tourism, industrial decline, "McDonalisation" of heritage as moderate threats, while expert stakeholders see these risks as low. Despite the minor differences in perceptions of threats to local CMCH between expert and non-expert stakeholders, the threats to CMCH result in cultural heritage being left out of blue growth strategies and the Marine Spatial Plan.

In the Estonian case regions there were also minor differences in the perceptions of expert and non-expert stakeholders with regards to risks to the local CMCH. Experts have considered sea-level rise, flooding, fire, pollution and poor management as higher threats to CMCH than non-experts. On the contrary, non-experts considered climate change, coastal erosion, weathering and erosion, dissociation, ignorance, on-site visitor pressures, tourism, traffic and lack/ weak protection and poor governance as higher risks to local CMCH than experts.

Table 4. Summary of the major risks to coastal and maritime cultural heritage (CMCH) identified by experts and non-experts, gaps in perceptions and impact of identified risks on local CMCH

	Major risks	Gap (experts vs non-experts)	Impact of risks on CMCH
Portugal	Climate change in general, erosion, flooding, sea-level rise, poor management and governance	Minor divergence	Different entities with different priorities and CMCH left out of implementation of policy.
France	Erosion, overcrowding, marine flooding, dune migration, storm damage, visitor pressure, abandonment, poor management and governance	Minor divergence	Lack of overall CMCH protection, Low consideration of CMCH in planning documents (e.g. MSP), Lack of convergence of priorities between different authorities (at all scales).
Denmark	Coastal erosion and flooding, weak protections, economy, tourism, industrial decline, demographic change, Governance challenges at inter-municipal regional levels and between sectors.	Minor divergence	CMCH is left out of blue growth strategies and MSP; industrial decline and demographic changes could lead to the loss of CMCH. Weak attention to intangible CMCH.
Estonia	Sea level rise and flooding, damage caused by storms, coastal erosion, McDonaldisation of heritage and loss of information, poor management, lack of financing of CH	Minor divergence	Traditional economy declining (intangible heritage), preserving CMCH.

6   Conclusions and Outlook

D4.2 presents the extent to which threats to CMCH are perceived by both expert and non-expert stakeholders in four PERICLES case regions. These threats are mainly environmental, specially related to climate change (e.g., sea-level rise, flooding and coastal erosion) and storm damage. Some human induced threats were also identified as risks by both expert and non-expert stakeholders in the four case regions, more specifically poor governance, lack of/weak protection and on-site visitor pressures.

The identified risks are related to the main problems in the regions. In the Aveiro lagoon case region the lack of management entity at the lagoon level results in weak management and governance. In Britany anthropogenic threats are considered the major problem in the area, such as on-site visitor pressures, inadequate management measures, and weak governance (despite the available regulatory system for CMCH). In the Danish case region coastal erosion and flooding were viewed as concerns and governance challenges at inter-municipal regional levels and between sectors have also been pointed out as one of the major problems in the area. In the Estonian case region, besides the environmental risks, financing for cultural heritage is considered insufficient and this results in the loss of important CMCH information.

Overall, we can conclude that the gap analysis shows that the differences in the perception of risks between expert and non-expert stakeholders are minimal, with little divergence in opinions about threats to CMCH between these two groups in each of the several case study regions. Although we recognize the difference in the depth of the studies, it can generally be seen as a positive notion for the PERICLES project, because it is commonly assumed that diverging opinions between experts and non-expert stakeholders will hamper sustainable management and exploitation of CMCH.

Methodologically, this gap analysis allowed for application of different approaches. Three case study regions, focused on a deductive approach (focused on 29 threats identified in the literature), yet in Brittany a more inductive approach had been carried out, of which the advantage has been that stakeholders where not found by any predefined list of threats. Moreover, the in-depth approach used in Portugal and France clearly provided many insights, the interviews carried out in Denmark and Estonia also proved to be useful. Both the Danish and Portuguese case study regions show that a gap analysis on a regional level might provide a view on how threats are perceived and prioritized. As such, the gap analysis performed in the four case study regions all presented good lessons to take forward in the development of the (draft) risk assessment framework (D4.3/D4.4).

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7 Annexes

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ANNEX 1

Social representation of maritime cultural and natural heritage and risks in the Aveiro lagoon region (Aveiro, Portugal)

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Editor/Supervisor:	C. Pita
Contributing partners:	Partner 6 - UAVR

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1. Objectives

In the context of the threats to coastal and maritime cultural heritage (CMCH) in the Ria de Aveiro case region three objectives were defined to achieve the main objective of task/deliverable 4.2. "*Identify and analyse gaps between expert knowledge and social representations of cultural heritage at risk*", and these where:

1) to identify the perceived level of risk CMCH is exposed to, and analyze these risks;
2) to identify mitigation measures for CMCH;
3) to identify the potential of CMCH for sustainable local development.

This report presents the results from semi-structured interviews carried out with expert and non-expert stakeholder, and a participatory workshop, aimed at deliberating stakeholders' perceptions of CMCH at risk and assessing if there are discrepancies among the two groups.

2. Context

The Ria de Aveiro lagoon is an important wetland integrated in the Nature 2000 Network, classified as Special Protected Area (SPA) under the Birds Directive (79/409/CEE) in 1999, and as a Site of Community Importance (SCI) under the Habitat Directive (42/92/CEE) in 2014. The natural and cultural heritage in the lagoon (e.g. traditional fisheries, saltpans and traditional boats *"moliceiros"*) is interlinked and it is impossible to evaluate risk separately.

Many traditional activities in the Ria de Aveiro lagoon have declined in importance over the past decades, leading to the decline of natural (the case of saltpans) but also social and cultural values associated to these activities and the lagoon itself, such as intangible heritage connected to the fishing activity and the lagoon traditional boats (*moliceiros*).

In the Aveiro region lagoon, the critical assessment of threat to CMCH, as well as the potential of this CMCH for the development of the region was carried out focused on the region, i.e. in all demos: DEMO P1 "*Integrating cultural heritage into integrated coastal zone management (ICZM) and into maritime spatial planning (MSP): preserving Aveiro lagoon traditions* ; "P2 *Integrating CH into coastal tourism: the lagoon traditional boats ("moliceiros") from transport to tourism"; P3 "Salt CH − from mono to multifunctional anthropogenic landscape"; P4 "Culinary route in the Aveiro lagoon region: understanding, preserving and exploring fish food CH through gastro-tourism".*

Semi-structure interviews and a participatory workshop were carried out with experts (academics, technicians, managers, etc.) and other non-expert stakeholders (representatives from civic movements

and public bodies, such as municipalities, inter-municipal body, regional tourism body, natural and cultural heritage associations/museums, private local businesses) in order to gather information on the perceptions and opinion of different stakeholders towards CMCH threats and potentialities.

3. Methodology

3.1. Data collection

The data in the Aveiro region was collected through semi-structured interviews and participatory workshops (Bernard, 2017[1]). First, 21 face-to-face semi-structured in-depth interviews (in Portuguese). This was followed by a participatory workshop with 18 stakeholders (Table A1.1).

The interviews collected the opinions and views from both experts (n=11) and non-experts (n=10), were conducted between May and July 2019, and took approximately an hour each. The group of experts was composed of academics (from the Universities of Aveiro and Porto), one museum technician, and one manager from a public entity. The non-expert stakeholders included representatives from local businesses exploiting CMCH, local and regional authorities, non-governmental organisations (NGO's) and civic movements. The interviews with non-expert stakeholders were conducted in the coastal municipalities of Ria de Aveiro region, namely six in Aveiro, three in Ílhavo, and one in Murtosa (Figure A1.1). The expert interviews were conducted with scientific experts on risks, Maritime Spatial Planning (MSP), Integrated Coastal Zone Management (ICZM) and Cultural Heritage (CH).

During the interviews, experts and non-experts were presented with a list of 29 environmental and human cause threats (which resulted from the literature review carried out in D4.1) and asked to classify, according to their own perception, the level of risk associated with each threat on a scale from 0-3, in which 0 corresponded to no-risk, 1- low risk, 2 – moderate, and 3 – high risk.

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[1] Bernard, H. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.
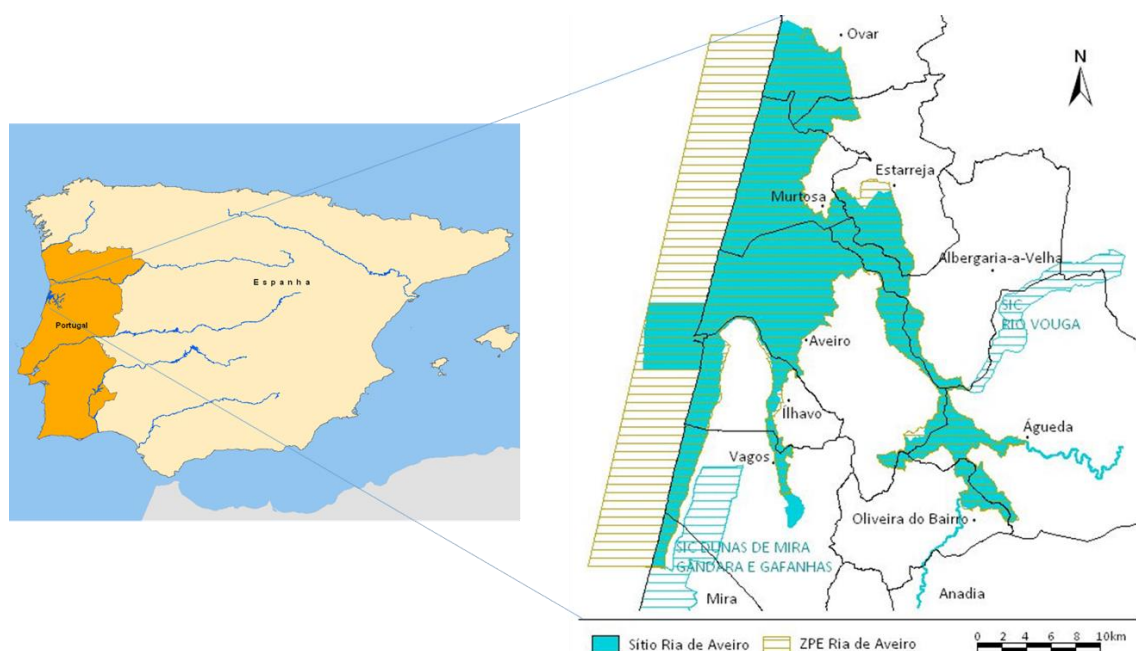
Figure A1.1. Location of the Ria de Aveiro region case study (source: ICNF)

The second step consisted of a participatory workshop, organized by UAVR (partner 6) on 24th September, in which experts (n=5) and non-experts (n=13) participated. The participants included representatives of civic movements, public bodies (e.g. municipalities, inter-municipal body, regional development body and regional tourism body), natural and cultural heritage associations/museums, private business associations, academics and technicians. Stakeholders were organized in working tables (with 4 or 5 per table) with stakeholders of different typologies and from different municipalities in each table in order to have diversity in each group. Each table had a moderator to instigate the discussion.

A summary of the results from the interviews was presented. Stakeholders discussed in detail (1) the risks identified and the required measures to overcome the identified risks, and (2) the potential of CMCH for local development. The topics to discuss included the following questions:

- CMCH is exposed to various threats with a high-risk level. Do you agree with these threats (add/remove if needed)?
- In the gap analysis, differences in perceptions of the level of risk to the CMCH between researchers and other stakeholders were identified. Why? What is the advantage of reducing this discrepancy? And how to reduce this discrepancy?
- What would be the ideal situation in the near future (e.g. 10 years)? What actions will be needed, and what obstacles will have to be overcome to address the identified threats and achieve the ideal situation?
- What is the potential of CMCH for the Ria de Aveiro region?
- What actions are needed to realize this potential?

3.2. Category of stakeholders

Five categories of stakeholders took part in the interviews and workshop, and these included: civic movements, public bodies (e.g. municipalities; inter-municipal body; regional tourism body), natural and cultural heritage associations/museums, scientific experts, private local businesses (Table A1.1). Twenty-five stakeholders were contacted and 21 agreed to be interviewed. For the workshop, 28 individuals were invited to participate, 18 responded positively.

The interviews were composed of 62% men and 38% women, while the workshop was composed of 56% men and 44% women (Figure A1.2).

Table A1.1. Stakeholders in the interviews and workshops.

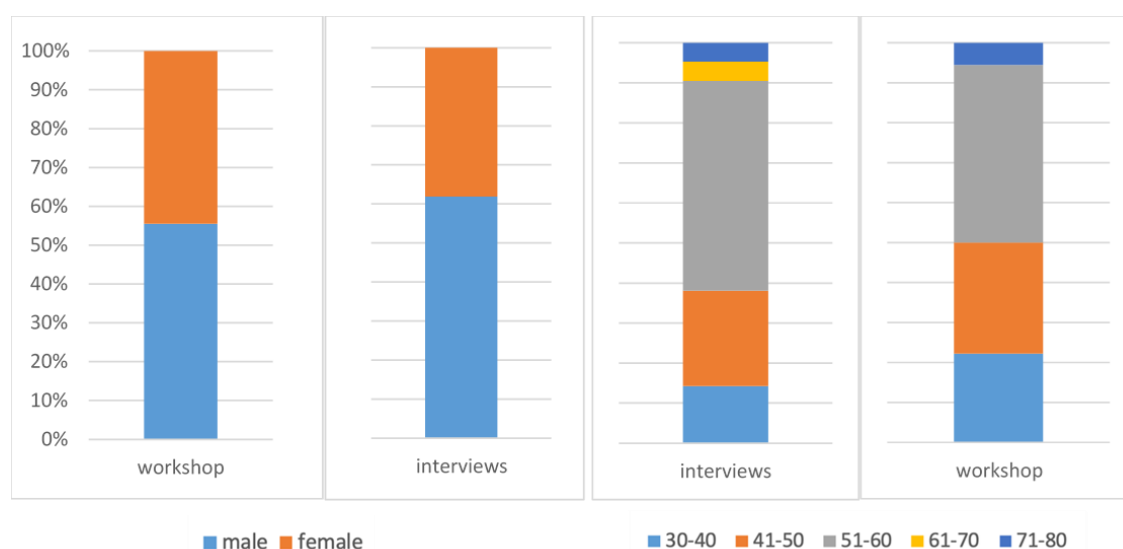|	Category of stakeholders	
	Interviews	**Workshop**
Experts	Academics (9) Manager (1) Technician (1)	Academics (4) Technician (1)
Non-experts	Civic movements (2) Public bodies (3) Natural and cultural heritage associations/ museums (1) Private local business (4)	Civic movements (1) Public bodies (5) Natural and cultural heritage associations/museums (6) Private local business (1)

Figure A1.2. Detail of the sample composed by 18 persons from the workshop and 21 persons from the interviews

4. Results and Discussion

4.1. Main risks

Experts and non-experts were asked to identify the level of risks of a list of 29 threats during the interviews. Table A1.2 shows the level of risk for each threat.

Both expert and non-expert stakeholders perceived environmental threats to be a high risk to CMCH in the Aveiro lagoon region, especially those related to climate change – i.e., climate change in general, sea-level rise, coastal erosion and flooding – storm damage and weathering and erosion. While human induced threats, with the exception of governance, where mostly considered a moderate risk.

Risks resulting from climate change are a serious problem in the area. The lagoon area is an important wetland area, very exposed to flooding, with salinization of agricultural areas as a side effect. Both groups of stakeholders considered the potential connection of the Mira canal with the ocean as a potential major risk caused by climate change. Mentioning:

"From my point of view and from what I know, there's no doubt that climate change and the rising sea levels are high risks". Interview no. 18 (expert/ scientist)

"The issue here is the flooding in Baixo Vouga Lagunar, which has to do with the salinization of agricultural land here at the Ria. Dikes have to be made, there is no other solution" Interview no. 21 (civic movement)

The connection of the Mira canal with the ocean, would possibly cause the collapse of the sand spit, threatening the lagoon's integrity, and causing damage to saltpans and related activities. Resulting in the destruction of saltpans and flooding of agricultural land in the lagoon area. Several municipalities have already developed a municipal climate change adaptation plan.

The existent weak governance is perceived as a high threat in the region, namely the lack of a lagoon wide management entity, with several entities taking decisions, some of them being national, and thus not having the in-depth local knowledge. As pointed out during one of the interviews:

"Governance is the main risk, with the diversity of entities that act on the territory. For instance, in the Murtosa Municipality 82% of the territory is a Special Protection Area. So, it is an Ecological Reserve, an Agricultural Reserve and maritime public domain, and it is so hard to articulate entities. A major difficulty is, above all, the fact that the entities are, for the most part, national entities. Which have a very significant distance to the territory and do not have a perception of local specificities. Making it very difficult to take into account the uniqueness of the lagoon whenever decisions are taken for the territory". Interview no. 12 (decision-maker)

Other related risks include the excessive bureaucracy, old and inadequate legislation, the overlap in the tutelage of the lagoon and the diverse ownership of the space. The need for a management authority for the lagoon area is being discussed for years, but with to no effective result at the national level.

Stakeholders pointed out that that different entities with tutelage over the lagoon have different priorities (related to what they identify as the major risks to the local area) and CMCH is often left out when policies are implemented. Mentioning the lack of a management entity at the lagoon level as a major problem, with major consequences for the sustainability of the lagoon, including its cultural heritage. As put by one expert:

"This is an area (the Aveiro lagoon) where there should be concern with the governance, legislation and monitoring of these maritime heritage activities. All of them are important, but I think increased awareness of stakeholders, society, politicians and culture people for the fact that there is a natural, cultural and social heritage to be preserved all together (not separately) must be the basis of it all".
Interview no. 11 (expert/ scientist)

"The various tutelages do not allow for measures to preserve this heritage! For the most varied reasons" Interview no. 8 (expert/ technician from a museum)

"The problem is politics itself. I think the University would be eager to do much more, the intermunicipal entity (CIRA) and municipalities as well, but then there is no management, i.e. policy, because it does not hand the management over to the field operatives, in this case to the municipalities congregated in CIRA" Interview no. 5 (business association)

Other risks to CMCH, such as dissociation and ignorance, were also mentioned. This concern was more prevalent amongst non-expert stakeholders, especially those concerned with the boat building traditional industry and other immaterial heritage.

"I would say the loss of heritage or information is a high risk. The loss of information, if it is not collected, especially when the information holder is someone, so it is a person, and I mean, the time does not stop, and it is always a race against time to get information" Interview no. 12 (decision-maker)

Table A1.2. Experts and non-experts self-reported perceptions of risk. Green = No/low risk (<1.5), Yellow = Moderate risk (>= 1.5 to <2.5), Red = High risk (>= 2.5).

			Expert	Non-expert
Environmental Threats	Climate change	Climate change	2,7	2,6
		Sea-level rise	2,7	2,6
		Coastal erosion	3,0	2,8
		Sea warming	2,4	2,1
		Flooding	2,7	2,6
	Natural disasters	Storm damage	2,7	2,2
		Natural Disaters (e.g., earthquakes)	1,7	1,7
	Environment	UV and light	1,7	2,2
		Weathering and erosion	2,8	2,4
		Pests	1,2	1,5
		Incorrect temperature (too high)	1,6	1,8
		Relative humidity	1,8	1,9
Human caused threats	Cultural economy	Looting and theft	1,6	1,7
		Illicit trade	1,6	1,4
	Mismanagement	Accidental damage	1,7	1,6
		Vandalism	1,8	1,7
		Fire	1,2	1,3
		Pollutants	1,9	1,8
		Management measures	1,2	1,8
		Dissociation	2,4	2,6
		Ignorance	2,1	2,5
		On-site visitor pressures	2,1	1,9
	Development	Tourism	2,1	1,7
		Traffic	2,4	1,6
		Industrial decline	1,9	2,3
		Infrastructure	1,9	1,6
		'McDonaldisation' of heritage	2,2	2,2
	Regulation	Weak protection	2,1	2,3
		Governance	2,5	2,7

4.2. Gap analysis for the Aveiro Case Study Region

There were no major differences in perception of risks between expert and non-expert stakeholders. There were, however, some minor discrepancies (Figure A1.3).

Experts perceived threats such as traffic, excessive tourism, storm damage, weathering and erosion as higher risks to local CMCH than did non-expert stakeholders. While non-expert stakeholders perceived the lack of, or incorrect, management measures, and to a lesser extent UV and light effects, and ignorance dissociation as higher risks to local CMCH than did expert stakeholders. Despite these differences, and apparent gaps in perceptions of risk, stakeholders (in discussions during the workshop) did not perceive these differences in views as gaps but instead were of the opinion that the knowledge of experts and non-experts complemented each other.

The similar perception of risks between expert and non-expert stakeholders may be due to the selected non-expert stakeholders being well-informed and knowledgeable about the threats faced by CMCH in the region. Thus, also holding some expertise on these matters, and so their opinion is not far from that of the group of experts.

Differences between experts and non-experts may be due to the technical expertise held by academics and technicians on these subjects. In case of traffic, for instance, non-expert stakeholders may lack awareness on the consequences of pollution generated by car and boat traffic in the lagoon ecosystem and the saltpans, as well as its negative effects on the landscape.

The non-expert group seems to be more critical about the side effects of some management interventions. Additionally, these results can also be influenced by a higher empirical knowledge within this group, namely in what concerns the traditional ships and ship-building industry (with a higher awareness of the risks related with UV and light in boat paintings, and more concern about the current state of the industry – Industry decline).
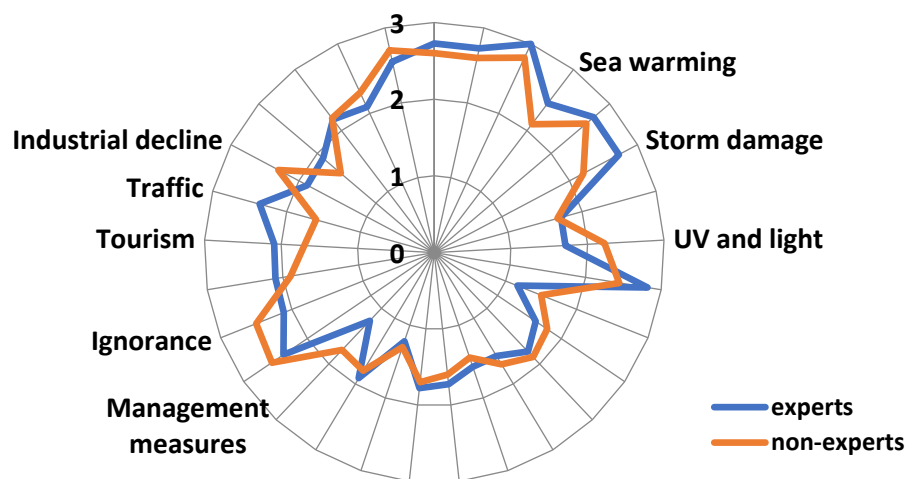

Figure A1.3. Differences in the perceived level of risk of several threats to coastal and maritime cultural heritage (CMCH) by expert and non-expert stakeholders. 0 = No risk, 1 = low risk, 2 = moderate risk, 3 = high risk.

4.3. Potential of CMCH to the sustainable development of the Ria de Aveiro region

During the workshop stakeholders discussed the potential of CMCH to sustainable development of the Ria de Aveiro region and the actions needed to be implemented.

Expert and non-expert stakeholders were unanimous in identifying the development of inter-municipal itineraries to connect CMCH, combining different uses of the lagoon, and the creation of interpretative

centres and platforms (e.g. online) as essential to preserve CMCH and for the sustainable development of the lagoon. Stakeholder also identified the need to map CMCH, the need to define and plan new uses in the lagoon, and the creation of the brand "Ria de Aveiro" CMCH. However, stakeholders also identified financial resources as a constraint for the implementation of activities related to CMCH, whereas others considered governance the main problem.

5. Future developments / perspectives

The data gathered during the interviews and the workshop will be useful for several exploitation activities to be carried out as part of WP6 and WP7, such as: awareness and education events (with local schools and the Senior University); and, participatory workshop with regional and local stakeholders (e.g., international workshop scheduled for April 2020).

These activities aim at promoting the discussion about risks and the risk assessment framework for sustainable exploitation of maritime culture heritage (D4.4.) and the application of the "Compass" framework (D2.4.) and contribute to the main objectives of these tasks/deliverables: (a) empirical testing of the guidelines for risk assessment framework (i.e. defined in the context of D4.3.); (b) having the perceptions of diverse stakeholders understanding of key processes related to how they manage CMCH by the application of "Compass" framework, defining the states of cultural heritage and the processes of interacting with states.

ANNEX 2

Social representation of maritime cultural and natural heritage and risks in the municipality of Locmariaquer (Bretagne, France)

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Contributing partners:	Partner 3 - UBO

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1. Objectives

A great discrepancy exists between expert knowledge (managers, technicians, consultants or scientists) and the representation of politicians, stakeholders and the public in regard to risks assessment and risks management. This difference in vision and a short-term approach can influence the implementation of cultural heritage management and preservation measures. Carried out in the context of work package 4 "*Co-production of a risk assessment and sustainable exploitation framework*", task 4.2 "*Identify and analyze gaps between expert knowledge and social representations of CH at risk*" should highlight these differences. Task 4.2 will select a set of examples from the case studies and apply different socio-anthropological methods that can be applied to compare the local knowledge of experts with the social representation of risks and threats to the maritime heritage.

This report presents the gaps between scientific knowledge and social representation of risks to cultural heritage carried out in the context of DEMO B1 "*Climate change, coastal risks and cultural heritage*" of the Brittany (France) case study, namely Locmariaquer.

2. Context

The main objective of DEMO B1 is to identify and characterise the natural risks and threats occurring maritime and coastal heritage (erosion, submersion, sea level rise, etc.). The collection of data is based on a socio-ethnographic and participatory approach. Interviews were conducted with experts (managers, scientists, administrations, etc.), stakeholders and citizens, having as target, the vision of different stakeholders towards risks and threats. Several participatory workshops with stakeholders, politicians and managers were organized to identify and characterize the risks. Anthropogenic pressures were not directly targeted here. However, they are taken into account because they were often mentioned during interviews and workshops.

These workshops have as final objective the selection of two sites considered by stakeholders as threatened on the basis of their heritage, emotional and environmental importance. As soon selected, various management scenarios of the two sites will be developed in collaboration with Locmariaquer stakeholders and the PNRGM. The two sites selected should present different characteristics of risks: directly exposed to coastal risks (site located on the Atlantic coast); indirectly exposed to coastal risks and potentially more subject to anthropogenic pressures (site located in the Gulf of Morbihan).

Following the first workshops hold the 19th of March 2019, semi-structured interviews were conducted with Locmariaquer stakeholders, politicians and public authorities to gather the perception of risks and

threats and evaluate and measure gaps between knowledge. The analysis of the gaps between scientists and stakeholder's knowledge, fulfil the needs of the task 4.2. It also supports the discussions between stakeholders in order to suggest appropriate management measures for the preservation and management of the maritime heritage at Locmariaquer.

3. Meeting with stakeholders and interviews

3.1. Methods

The interviews were semi-structured and follows a general framework articulated around main themes (*De Ketele et Roegiers* (2015)[2]. Semi-structured interviews ensure a certain freedom of discourse and obtain a common framework and comparable data.

The different topics developed during the interviews were elaborated following the discussions of the first workshop. During this workshop, stakeholders identified various and very different order of threats: legal, administrative, natural, cultural, civic, etc. Several natural sites or cultural heritage elements were mentioned important such as the "dolmen of the Pierres plates", "the Kerouarc'h tidal mill", or the spikes of Ker Penhir and Er Hourèl. The discourses of participants were completed by a lexicometric analysis, whose occurrence of the lexical field associated with oyster farming ("oysters' sites", "oysters", etc.) and small heritage ("fountain", "dry stones", etc.) is high.

The interviews were structured around 3 themes: the perception of maritime heritage; risks and vulnerability; and management potential. Each topic is discussed through a general question that can be further explored through a set of complementary questions that help to structure the interview (annex 1). A consent form was submitted to the interviewees before the interview and signed. This document is essential for authorised us to record the interviews and use of the quotes collected (annex 2). Once recorded, the interviews are transcribed and allow to produce an elaborate working document that does not distort either the participants' comments or their opinions.

The analysis of the social perception of maritime heritage and risks is realised according to a set of themes ("perception", "temporality", "location", "identity", "use", "human activities", "sea and coast",

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[2] De Ketele., & Roegiers. (2015). Fondements des méthodes d'observation, de questionnaire, d'interview et d'étude de documents in *Méthodologie du recueil d'informations. Méthodes en sciences humaines*, (5) Ed. De Boeck supérieur, pp.7-30

"prevention and education", "obstacles", "regulation", "tools", "stories"). These themes were defined after the interview and were modified during the analysis. They allow a transversal and cross-referenced analysis of the 26 interviews conducted.

The gap analysis required for the task 4.2 was realised according to the method elaborated by the University of Aveiro (partner 6). The different types of risks mentioned during the interviews were identified and a level of intensity was assigned according to the occurrence (times number where the risk is cited in the interview) and nuanced/adjusted according to the adjectives and superlatives used by the interviewee to describe the risks (*"erosion is huge"; "extremely visit with enormous pressure"*).

3.2. Location and field-work calendar

The interviews were realised between mid-May to mid-July 2019. Of the 26 interviews conducted, 21 were conducted in the Gulf of Morbihan, including 15 in the municipality of Locmariaquer (Figure A2.1). The 5 others interviews were conducted with regional authorities or scientists' experts on risks.
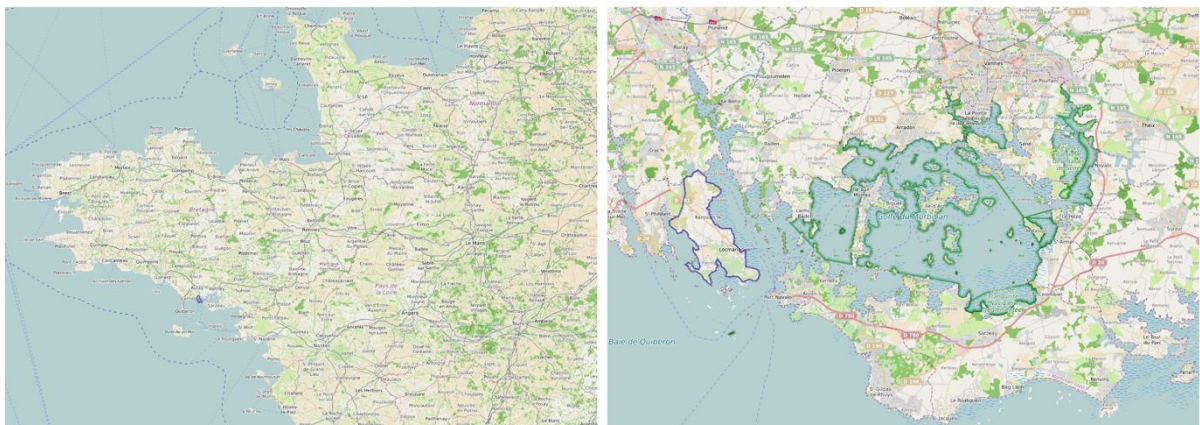

Figure A2.1: Location map of Brittany case study and demo B1 "Climate change, coastal risks and cultural heritage". On the left, Locmariaquer in Brittany. On the right, Locmariaquer and the Gulf of Morbihan *(Source: https://umap.openstreetmap.fr/fr)*

3.3. Sample

Three categories of stakeholders were invited to be interviewed by the PERICLES team: citizens of Locmariaquer; public authorities with competences in risks and maritime heritage in the Gulf of Morbihan; and scientific experts. 45 peoples were contacted for this field-work and 26 agreed to be interviewed.

The first sample of citizens is composed of 13 peoples (8 men and 5 women). The average age is high, and more than half (70%) of the respondents being 60 years of age or older (Figure A2.2).
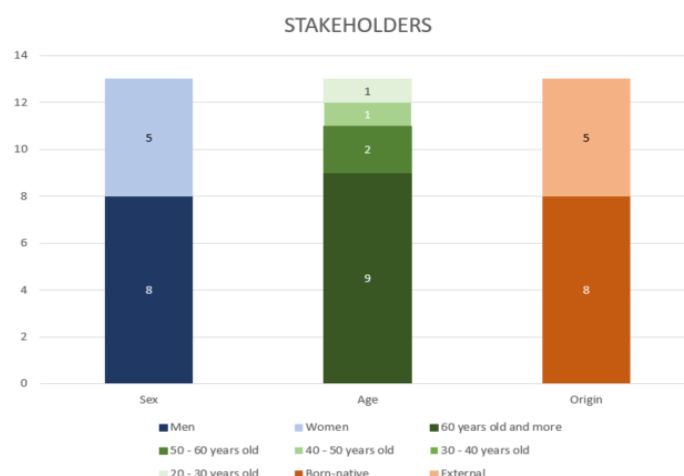

Figure A2.2: Detail of the sample composed of 13 persons from the "stakeholders" group. In blue, the gender distribution. In green, the distribution by age. In orange, the distribution of origins.

The proportion of "né-natif" in French (literally "born-native", a term used by the citizen sample) includes persons born and grown up in Locmariaquer, is also higher (61%). The others 5 interviewees are originated from others regions of France (Pays-de-la-Loire, Hauts-de-France, etc.) and have moved to Locmariaquer for family reasons (marriage, conjugal approach, etc.) or attachment (love at first sight for the municipality during a visit to the Gulf of Morbihan, retirement, etc.). In this sample of 13 persons, 4 are members of association (volunteer organisation) linked to cultural and/or natural heritage, 2 are elected at the municipality board, 4 are members of organisation link to the municipality and involve in activities to popularizing and promoting the local maritime heritage, representing nearly 77% of the sample. The sample does not represent all Locmariaquer residents but rather reflects the opinion of a limited number of persons already informed and active in the municipality.

In connection with work packages 4 and 5 (respectively named "co-production of a risk assessment and sustainable exploitation framework", and "policy integration"), additional interviews were conducted with local, district and regional authorities. The objective of these interviews was to better understand the integration of maritime heritage in public planning and risk management policies. 8 authorities' bodies were asked, at different scales including 2 regionals, 3 districts and 3 locals (Figure A2.3). As for the stakeholders' sample, gender distribution is unequal with 3 women and 5 men interviewed. The interviewees were chosen according to their availabilities, competencies and their knowledge concerning Locmariaquer municipality or the area of Gulf of Morbihan.
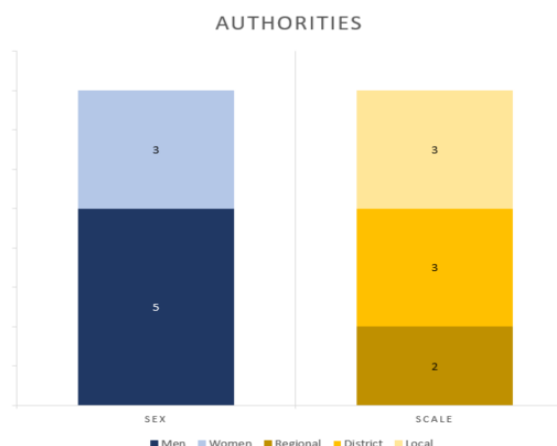
Figure A2.3: Detail of the sample composed of 8 people from the "authorities" group. In blue, the gender distribution. In yellow, the distribution by scale.

Finally, 5 additional interviews were conducted with scientists and public managers. This sample includes two academic scientists working on risk and vulnerability of coastal areas, and one expert on the concepts of maritime heritage and vulnerability. The two others interviews were conducted with local public managers (1 man and 1 woman).

4. Results

4.1. The stakeholders' visions

a. Social perception of risks and maritime heritage

When interviewees mentioned the risks faced to cultural heritage usually did not attribute any particular difference between natural and anthropogenic risks. Then, risks were mentioned one by one. The time spent to describe a particular type of risk depends of their interests. For example, a regular user of the coastal path will mainly consider the risks of erosion and overcrowding. An oyster farmer will talk about storms and regulatory constraints on his activity in the public maritime domain. A member of an environmental association will focus on the risks of flooding and the spread of invasive species, etc.

The comments differ between people who live year-round since a long time in the municipality, and those who have recently settled (young retirees for examples). Recent arrivals will talk more about the lack of maintenance and abandonment of some infrastructures; unlike "locals people" who will talk more about the risks associated to the lack of governance and increased anthropogenic pressures. The attachment to some emblematic heritage elements within the municipality is common behave between

interviewees born and grow-up in Locmariaquer (Kerouarc'h mill, pink house, etc.) and different from those mentioned by people settled later in the municipality (coastal path, oyster basins, etc.).

All consider that few places in the Gulf of Morbihan are not anthropized. Anthropisation also concerns natural landscapes that are now considered "natural" whereas the latter are the result of past human activity.

b. Main risks identified

Stakeholders' mentioned mainly two risks: erosion and overcrowding. According to them, these two types of risks are mainly visible on coastal paths and natural areas. Erosion is the main natural risk identified by stakeholders in relation to sea level rise resulting from climate change.

« The problem is erosion; we have sites that may be affected » - Interview E09

« Today, 20 years later, we not see the engraving. So, we can see the erosion » - Interview E14

According to stakeholders, this risk of erosion is exacerbated by anthropogenic pressures and in particular overcrowding.

« And sometimes, often Sundays, there are a spike at over 2000 [people] on the coastal path » - Interview E02

« The trampling, thank you. It's, the [walking sticks] pass and the nature die » - Interview E06

« Too many people on the coastal paths » - Interview E08

Other risks to cultural heritage were also mentioned, such as storms and lack of maintenance. The damage generated by storms are resulting from the combination of several hazards (rising water levels, atmospheric pressure, etc.). For this type of natural hazards there are available prevention plans having as objective to protect human lives. The lack of maintenance and the abandonment of certain heritage elements are generally due to high cost of maintenance or restoration. Furthermore, it should be taken into account the important number of cultural heritage elements in the area and the difficulty to prioritize the heritage elements to preserve.

« There are a lot of places that are not maintained » - Interview E01

Climate change was also mentioned but without be directly accused except in a case of combination with sea level rise. Sea level rise is considered as continuous phenomenon over the last few centuries.

So do, climate change only aggravates an already existing phenomenon. The willingness to fight this risk is low, because stakeholders consider it as "a natural phenomenon" in the same way as for the storms.

« The climate? It's true that it has an influence… And it will probably become more important in the coming years » - Interview E04

« Climate change it won't be an event; it will be something that will settle in time » - Interview E09

The lack of knowledge and recognition of maritime heritage were also highlighted by stakeholders. According to them, users of coastal paths, dunes or beaches ignore the regulations and link to the preservation of these heritage and natural elements.

« People absolutely don't know regulation » - Interview E02

Incivilities and total lack of control and monitoring across of elements belonging of the "small heritage" (fountains, laundry, etc.) are added. "Small heritage" do not have yet its own identity and recognition as it is the case of large-scale heritage elements, such as lighthouses, churches, Neolithic remains, etc.

The increase pressure on the coastal municipalities is perceived like a significant risk. This risk concerns natural and cultural heritage. Natural heritage (wetland) decreased due to the transformation of agriculture land to urban areas. Built cultural heritage can also destruct or abandoned. In the case of heritage element (for example, a fountain) located in private property for sale, the new purchaser is not obliging to preserve and maintain it. Even if this particular element is indexed to the local urban planning plan.

All interviewees, agree that it is not possible to conserve, protect and restore all cultural heritage found within the municipality. For them, it is necessary to prioritize heritage elements in a way to ensure their transmission to the future generation. However, when it comes to the means of action, they did not suggest any criteria to make this selection. Interviewees recognize that the value of cultural heritage varies from one person to another according to their attachment and feelings.

a. Fears and constraints

According to the stakeholders, the management and preservation of maritime heritage became difficult due to administrative and regulatory constraints. A part of the maritime heritage is located in the French " maritime public domain" (oyster basins, holds, boats cemetery, etc.). The maritime public domain (in French "Domaine public maritime", DPM) is a particular area of the French coastline and its management is under the authority of the State. The DPM can be natural (shoreline, territorial sea, salt marshes, etc.) or artificial (ports, artificial beaches, etc.). The DPM is inalienable. It concentrates most of the fishing

and port activities and brings together a certain number of tourist activities and according to the law it cannot be privatized. Its management is delegated to the district direction of the territories and the sea. These district administrations deliver the authorisations for the temporary occupation of the area to activities carried out in this particular area, such as oyster farming, fishing or tourism. The law can authorize constructions necessary for the development of economic activities (housing to sort out oysters, etc.) which must be destroyed at the end of the concession.

« They asked me to destroy my [oyster aquaculture] basin » - Interview E02

« In theory, at the end of a concession, the oyster farmer must to destroy all installations » - Interview E05

According to some interviewees, these regulations should be more flexible. Thus restoration decisions can be adapted on to "case-by-case basis". Stakeholders claim for regulations that can be adapted to the different type of cultural heritage elements built on the DPM at least for long-standing concessions. Today, oyster farming housing sites and its associated infrastructures (basins, holds, tables, etc.) are considered as maritime heritage and are, in spite of everything, subject to destruction obligations. However, there are exceptions as it is the case of the oyster farming housing in the municipality of Bono in the Gulf of Morbihan, which have been rehabilitated as an educational path on the traditional oyster farming activity in the Gulf.

« There was upstream work to solve the problem between the architects in charge of "Historical monuments"[3] who wanted to preserve the worksites [oysters], the elected member who wanted to enhances theses [worksites] and the district direction of territories and the sea who wanted to destroy » - Interview N03

According to the stakeholders, tourism is an important economic activity for coastal municipalities and a source of constraints for stakeholders and maritime heritage. Indeed, the occasional but massive increase of the population in the coastal municipalities of Morbihan, during the summer, causes tensions between local inhabitants and tourists. These tension can lead to the limitation or even ban of access to certain cultural heritage elements located within private properties (access to coastal paths, fountains on the property edge, etc.). The densification of urban and coastal areas is also perceived as source of conflicts particularly for some traditional maritime activities such oysters farming for example. The

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[3] A historic monument is a building or a cultural element who receive a particular legal status intended to protect it, because of its historical, artistic, architectural, technical or scientific interest.

growth of urbanized areas and increase of population during summer months can impact the water quality or the access to infrastructure farming areas.

« Today, there is this feeling of dispossession of our territory » - Interview E09

Some interviewees expressed concerns about the loss of local identity in a case that nothing is done to conserve cultural heritage. The development of municipality could lead to the loss of a traditional aspect (for example the port developments, public road development, etc.). The loss of the Breton language and the abuses of language contributed to the disappearance of some tales and legends and create the feelings of dispossession of their identity. For example, nowadays, many of the coastal houses of the municipality of Locmariaquer are called "fishermen's houses", whereas historically, fishing has not been practised in the municipality. The houses described as "fishermen's houses" are coastal houses which have been inhabited by various types of merchants (shoemakers, butchers, etc.) and oyster farmers. This is probably resulting by the fact that in Séné, a neighbouring municipality, coastal houses having the same architectural and were used by fishers. French language uses the same designation for Locmariaquer housing. In addition, the francization of certain rocks or hamlet ended the use of Breton names.

« What we need to do it is to keep things real […]. They renamed the island [here] to call her "Jument" island » - Interview E14

4.2. The expert' point of view

a. Definition of risks and vulnerability

The definition of coastal risks requires preliminary the definition of two other concepts to which the risks are closely linked: the hazard and the stake.

Hazards represent all events of natural or anthropogenic origin, characterized by an intensity and probability of occurrence. In the case of coastal hazards, these hazards can be natural (flooding due to sea level rise or overland flooding; storms due to large scale cyclonic winds; ground movements; earthquakes; etc.) and anthropogenic (overcrowding, etc.).

The stakes are characterized by everything that can be affected by one or a combination of hazards: people, property, socio-economic activities, infrastructure, natural environments or heritage elements.

"*The stakes are what we risk losing because of exposure to hazards*" - Interview E16a

In a simple definition, the risk is characterized by the conjunction of a stake and a hazard. A territory's vulnerability to risk is characterised by the way in which society is able to cope with a hazard and its consequences on the consequences on stakes. In other words, vulnerability defines how society is more or less prepared to cope with risk. This vulnerability may be more or less significant depending on the management and perception of risks by stakeholders.

"*Two elements can reduce or increase vulnerability: how risks are managed and how they are perceived*" - Interview E16a

The level of preparedness of the society to coastal risks is reflected in the notion of resilience. More the society is able to cope with risks, the more resilient it will be and the more to overcome the hazard and its consequences on the issues.

b. Scientific perception of risks and maritime heritage

Compared to other French regions, Brittany seems to be less exposed to coastal risks. However, risks do exist and the major risks monitored by the scientific community are erosion, marine flooding and dune migration. Experts interviewed are working only on natural risks and do not take into account the human risks. Because for them, natural risks are often exacerbated by human risks.

In view of the coastal risks and the diversity of existing problems, the consideration of maritime heritage issues is difficult and that for several reasons:

1/ The hierarchy of issues. Faced with these risks, the responses provided by the society will varies according to the stakes. First, human issues (human life, security of persons, etc.) and structural issues (access roads and water and communication networks). This is followed by economic issues such as business and residential areas. Finally, cultural and natural heritage issues are the last to be taken into account. It can be said that cultural and natural heritage is the last priority in the case of a major event.

2/ The characterization of heritage issues. Heritage issues are defined in two categories: natural and cultural heritage issues. In the case of natural heritage issues, characterization is difficult because when a natural hazard impacts a natural element, it can be considered not as degradation but as a natural evolution. "Nature impact nature".

« A natural habitat or specie that is affected by a natural event is nature. So, there is no particular issues » - Interview E16a

« If the sea level rises, it will rise and that is all. We let the nature do » - Interview N09

However, within the framework of certain European Union policies for the protection and management of the environment (in the case of the birds' directives, flora and fauna habitats, etc.), an intrinsic value has been given to certain environments, habitats or species. They also require Member States to manage and implement measures to protect these environments, whatever the type of risks they are facing. The "let it is go" attitude of the authorities can be negatively perceived by society, particularly with regard to all the measures and regulations implemented at other levels to ensure the good state of these environments (MSFD, etc.).

« The problem is that the natural areas of the "coastal conservatory"[4] have an intrinsic value that can be assessed by European policies » - Interview E16a

For the characterization of cultural heritage issues, the difficulty lies in the great diversity of stakes and their consideration. The diversity of heritage elements found on the French coast is important: the historical heritage (churches or castles); the Neolithic heritage (menhirs or dolmens); the small heritage (fountains, laundries or calvaries); the maritime heritage (traditional boats or lighthouses); to which is added the intangible heritage in all its components: traditional activities and know-how (fisheries, shellfish farming, etc.), Breton language, folklore and local dance, stories and legends, etc.

3/ The evolution of issues in time and space. Despite the possible increase in risks due to the effects of climate change, it is the stakes that have evolved more rapidly than the risks. The pressure of construction/urbanization in coastal areas, the gradual growth in the number of inhabitants in coastal areas or the increase in the number of reception structures (residential, tourist, leisure, etc.) combined with a lack of distance and knowledge of the risks, mean that the issues are changing faster than the risks on a limited time scale.

4/ The definition of heritage.

« The problem with maritime heritage is that definitions change over the time » - Interview E16a

The quotation shows that definition and its evolvement overtime is a problem. The maritime heritage and its attributed value are strongly linked to the society evolvement. According to the interviewees, in Brittany, heritage was mainly linked to Catholicism and religion. The preservation and restoration measures mainly concerned churches, calvaries or fountains. Since, this image related to cultural heritage evolve and transformation are noticed as for example the shift to maritime heritage, for example, lighthouses, wharves, boats and later oyster basins or housing. The notion of intangible

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[4] The conservatory is a public body created in 1975, acting for the protection of French seashores

heritage and the wellness to preserve everything related to folklore, traditional activities and legends are recent. The heritage value attributed to an element or activity depends on individuals' sensitivity and their personal histories.

« In Locmariaquer, they have a species of small dolmen impacted by erosion. When you go there, you don't see too much of dolmen, it is not spectacular but at local level, they are extremely attached to it »
- Interview E16a

Regulatory and institutional obstacles are added to difficulties to consider heritage issues in the face of coastal risks. In 2014, the law on the modernisation of territorial public action and the affirmation of metropolitan areas[5] transferred to the municipalities the management of coastal risks. Since, municipalities have the competency on "aquatic environment management and flood prevention" on which some other task are added as the defence against floods and the sea[6]. The decentralization of action and decision to municipalities level are seen positive to the experts. They considered risks management by municipalities as the best scale but at the same time they noticed that municipalities have little financial resources to achieve such objectives.

One the main obstacle is the lack of coordination of public policies, both in terms of coastal risk management and maritime heritage management.

« The main obstacle is the relative lack of coordination of the different policies that should be implemented » - Interview E16a

The law of 22 July 1987 on the prevention of major risks[7] requires the integration of "risk prevention plans" to the local urban planning documents. At the local level, these plans are one of the main tools of the action of risk prevention action and planning. The plan is defining the areas directly and indirectly exposed to risks in order to limit or prohibit construction according to the risks nature and intensity. They also give the opportunity to define preventive, protective and safeguarding measures for the concerned[8] areas.

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[5] Law n°2014-58 of 27 January 2014 on the modernisation of territorial public action and the affirmation of metropolitan areas

[6] There are 4 tasks related to this competence and also include: the management of basins or fractions of hydraulic basins; the maintenance of rivers, channels, lakes or water bodies including their access; the protection and restoration of sites, aquatic ecosystems, wetlands and forest

[7] Law n°87-565 of 22 July 1987 on the organisation of civil security, the protection of the forest against fire and the prevention of major risks as amended by law n°95-101 of 2 February on strengthening environmental protection

[8] A. Feretti (2015) Les territoires face aux catastrophes naturelles : quels outils pour prévenir les risques ? – Rapport au nom de la Délégation à la prospective et à l'évaluation des politiques publiques. Conseil économique, social et environnemental, p133

However, according to the experts interviewed, these plans are taken little into account in the urban planning documents. The general trend observed in coastal municipalities is that the conservation of natural and cultural heritage gets lower attention that the construction of houses.

« When we are on the coast, there's not really a defined strategy » - Interview N09

The notion of "responsibility" creates an additional constraint for public managers and owners. Certain heritage elements are deliberately abandoned or prohibited to the public by fear of accident.

The definition and prioritisation of heritage elements is complex due to the lack of higher competent authority. The lack of such organisations is slowing the implementation of measures and rules link to culture and natural heritage.

c. Scientifics' knowledge facing stakeholders' knowledge

According to experts, the reaction of stakeholders to coastal risks is strongly linked to an event. The last do not seem to have conscience of the long term risks. It seems that the risks are associated with punctual events (storms, floods, etc.) and then quickly forgotten. Houses regularly flooded on the coast remain inhabited and available for sale on the real estate market. Despite the fact that areas identified as risky in the vulnerability maps of the planning of risk prevention, coastal municipalities continue to authorise the construction.

« The construction of housing, it continues at high speed » - Interview E16a

According to experts, the recurrence of erosion in the identification of coastal risks by stakeholders is not surprising. Erosion is producing long term visual damages and easily identifiable compare to other risks.

« Erosion is an exceptional [phenomenon] in relation with time » - Interview E16a

Marine flooding is generally visible only for a very short period of time. Submersion is an isolated event having ephemeral effects on the coastline. Here it should be said that according to the French regulations, erosion is not considered a coastal risk unlike to sea flooding. It is for this reason that the major risk fund do not include erosion and do not offer an amicable acquisition of property like is doing for natural disaster threatens human lives[9]. Erosion is not directly considered as potential natural disaster due to its visible long-term action.

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[9] Article L561-3 of the environmental code

A difference between experts and stakeholders vision on climate change is found. For experts, climate change will impact the sea level rise. Because climate change does will not amplify storm regimes and, contrary to the thoughts expressed from stakeholders. For experts, lack of knowledge of storm regimes and natural cycles over the long term does not allow to affirm that their progression (in number) and intensity of meteorological phenomena (storms, hurricanes, etc.) are results of climate change effects. Scientific communications on this topic and the lack of knowledge make difficult to convince stakeholders and local elected representatives event if they collaborate with local scientific community.

d. Main risks identified by experts

According to the experts the main risks for maritime heritage is the combination of risks. Erosion phenomena have a long-term impact and are accentuated by major events as for example flooding and storms. Them anthropogenic pressures (overcrowding, pollution, degradation, etc.) are added.

« It is a question of scales and risks combination » - Interview E16b

For heritage experts, the main risk to maritime heritage is anthropogenic and related to overcrowding of sites.

« The risk, it is mainly on overcrowding » - Interview N09

Many heritage sites are subject to significant tourism pressure, whether they are cultural heritage (lighthouses, etc.) or natural heritage (beaches, mountains, etc.). Precautionary and protective measures are implemented by the State in a way to channel and limit anthropogenic pressures on these sites. These are translated by development of parking, regulation of the number of entrances, limited opening periods, etc., and the use of labels like the "France big site" label or renown procedures as historic monuments.

The same type of risks is also facing by intangible heritage mainly traditional activities (know-how) as oyster farming. For example, overcrowding with the increase in pollution (overflow of water treatment plants in summer, pollution with chemicals - sun cream residues, etc.) can impact this activity. In the long term, the loss of certain natural habitats, as marshes, essential for the good functioning of the biological cycles of species of commercial (oysters, clams,) can also impact the economic life of traditional activities.

The experts agree that these risks associated with the lack of financial or human resources are resulting to the lack of maintenance of heritage elements which are then abandoned or subjected to more rapid

degradation. According to the interviewees, the absence of maintenance can also be at the origin of the implementation of a "cycle" of degradation: Absence of maintenance > Generates a feeling of abandonment > Generates a lack of respect for the site > Incivility and degradation > Degraded heritage > Absence of maintenance.

4.3. Diverging positions between groups

The group of experts and the stakeholders agree on the difficulty to find a single definition of maritime heritage which covers a great plurality of elements. The same is applying to the prioritization of maritime heritage in order to preserve it. Again, in this case, the different groups of stakeholders do not find an agreement as the value of heritage elements varies from one individual to another. This difference in vision makes almost impossible a sustainable cultural heritage management which is requiring the acceptance that heritage is not immutable. Also, that everything cannot be preserved and transmitted "physically" to future generations.

In front coastal risks, opinions diverge. Most experts will consider the action towards a set of risks over a short period of time (risk combination) while other groups will focus only on coastal erosion. In both cases, all consider that coastal risks (whatever they may be) are exacerbated by anthropogenic pressures and in particular overcrowding. The perception of heritage in front coastal risks is also different. All believe that not necessary to fight against nature. The will to leave nature do its work, even if it means that some maritime heritage disappears dominate their thinking. On the other hand, stakeholders will encourage the preservation of certain heritage elements that are currently threatened by sea-level rise, if they are "movable" (menhirs, calvary, etc.). Experts tend to consider that heritage issues do not exist in the front coastal risks and priorities are given to human lives, the employment area and the economy.

There are also diverging opinions on the effects of climate change. The majority of stakeholders think that coastal risks are exacerbated by climate change (in the case of sea-level rise) and will be accentuated in their frequency and intensity (storms, cyclones, hurricanes, etc.). This is not the opinion of experts who remain more cautious about the phenomena of increasing and intensifying natural events. The lack of knowledge and hindsight on past events does not allow us to affirm that the trend towards an increase in the number of storms that seems to be observed is not the consequence of a global cycle which still remain unknown.

5. Gaps analysis

The cross-analysis of the data gathered during interviewed allows the identification of different perceptions towards risks (Figure A2.4).
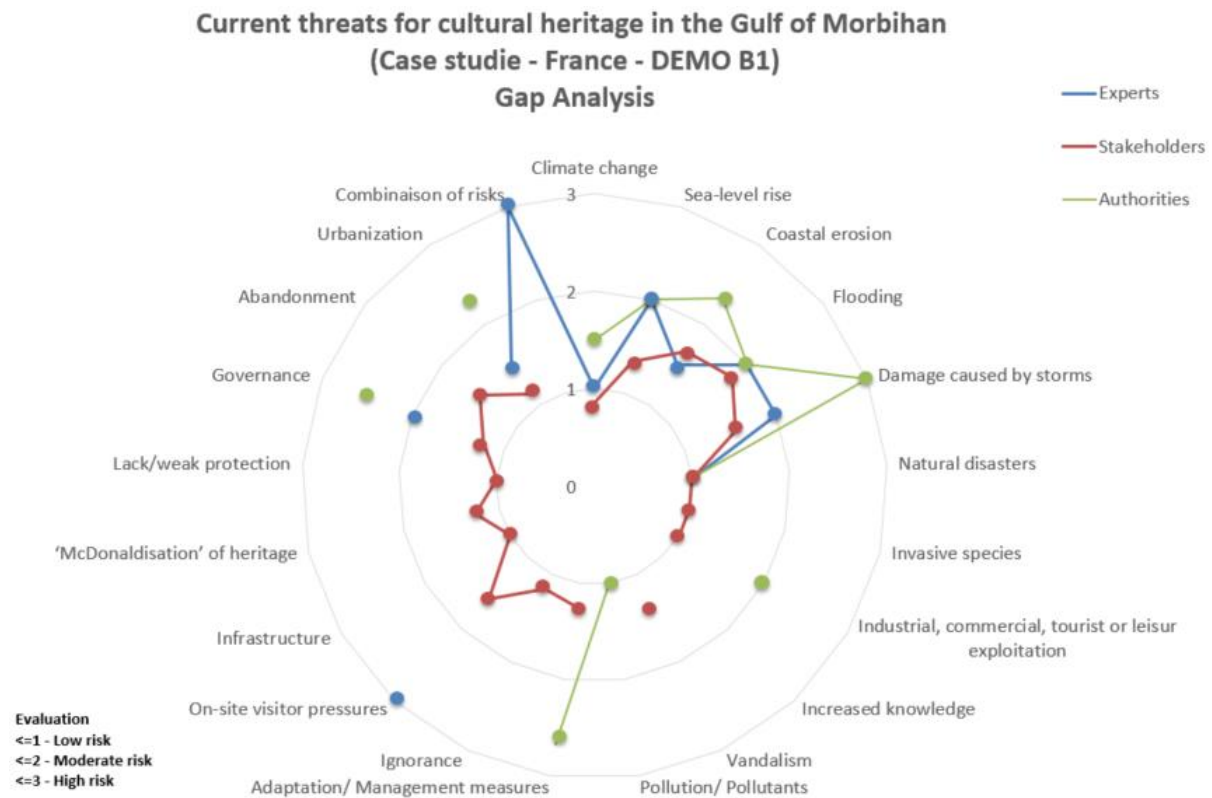

Figure A2.4: Radar chart of the current threats identified for cultural heritage by experts, stakeholders and authorities in the Gulf of Morbihan

The diversity of risks mentioned is higher within the stakeholder group. The risk evaluation is quite low for this group (>2) and is explained by the interests of each of them. For example, an interviewee may consider erosion as a significant risk and focus his discourse on this topic without considering other potential risks. For another, it wills may be storms or visitor pressure, etc. The cross-analysis of risks results in a moderate average which varies little from one risk to another. The high perception of erosion (level 3) by the interviewee 8 (E08) will be compensated by the moderate perception (level 2) of the same risk by the interviewee 11 (E11) and inversely. The high perception (level 3) of flood risk by the interviewee 11 will be compensated by the low perception (level 1) of the same risk by the interviewee 8. The "extreme" perception (level 3) of some risks is compensated by the low perception (level 0 or 1) of these same risks by a larger number of participants. This potential bias in analysis can be compensated by an increasing number of people in the sample to increase representativeness. The prioritisation of risks also varies from one group to another, even if all groups, consider natural disasters and more

specifically storms, to be one of the major risks to maritime heritage. Other risks such as flooding, governance, erosion, sea-level rise, urbanization and climate change are also mentioned, but in different levels of evaluation in the three groups.

For stakeholders, the main risks are (in decreasing order): erosion (1.67), visitor pressure (1.58), storm damage (1.56), and abandonment (1.5). The risks mentioned by the stakeholders are natural and anthropogenic whose effects are quickly visible on the maritime heritage, whether natural or cultural. Erosion is a known and easily identifiable phenomenon in coastal areas. As well as the damage caused by storms, which are recurrent in the Gulf of Morbihan region, particularly in winter. The two anthropogenic risks mentioned are resulting from the daily use of the coastal path classify by all as cultural heritage. There is a strong opposition between stakeholders and experts regarding the risk of erosion. Indeed, most stakeholders talk about erosion in relatively strong terms.

"We suffer from erosion in full force"- Interview E03

"The spike Er Hourèl which is eroding just here" - Interview E08

"Erosion is huge on this place" - Interview E08

Experts have a more nuanced perception of coastal risks by considering the natural mobility of the coastline. Erosion is defined as a natural phenomenon that is accentuated by so-called "main" events such as storms. This difference in perception also influences the evaluation of stakes. The coastal path as maritime heritage constitutes the main challenge regarding coastal (erosion) and anthropogenic (visitor pressure) risks. But experts do not have the same position.

The natural risks "storms" (3) and "erosion" (2,3) are also widely mentioned by the administration representatives. But institutional risks were more mentioned as main risks: the absence or bad implementation of management and adaptation measures (2.67) and governance (2.5). The "administration" group's approach seems to be more pragmatic in term of the evaluation of the level of risk. They mainly refer to institutional and regulatory risks that may make barriers in the implementation of management measures. Regulatory risks are seen as the main cause of voluntary and regulatory destruction of some maritime heritage elements located in maritime and coastal areas.

"There is a real problem with the management of [maritime heritage] elements subject to a temporary occupation authorization in the public maritime domain" - Interview N03

"There is a real administrative rigidity that blocks initiatives" - Interview N08

"The main obstacle is the relative lack of coordination of the different policies that are implemented" - Interview E16a

Natural risks such as storms or coastline retreat are also widely discussed. Because they are related to the fact that certain cultural heritage elements are placed under the management of the State and therefore of the administration. Like the stakeholders, they perceive, within the context of their responsibilities, the risks that a storm or an erosion phenomenon may represent for certain heritage elements.

Finally, the expert group think that the main risk results from the combination of long-term risk factors (3). Visitor pressure (3) and storm damage (2) were also mentioned. However, expert opinions on risk assessment differ according to their domain of expertise. Thus, heritage experts will first highlight the anthropogenic risks and especially visitor pressure. Coastal risk experts, on the other hand, will focus on natural risks and consider main events such as storms, etc. Climate change is also not perceived by experts as a risk, but rather as a factor that exacerbates certain phenomena that can generate risks such as sea level rise, floods, etc. According to them, the lack of perspective about natural cycles of natural phenomena such as storms prevent us to affirm that the risks generated on the coast for the maritime heritage result directly from the effects of climate change. The main risk for them is the combination of natural risks (overcast and storm that will generate sea level rise), anthropogenic risks (lack of management and visitor pressure that will generate erosion) or both (voluntary destruction and sea level rise that will generate flooding).

While the assessment of climate change risks (0.86) is low, it is regularly mentioned in stakeholder discourse.

"With the climate change, it is going to get worse" - Interview E08

"The climate, it is true that it has an influence and will probably be a little more important in the coming years" - Interview E04

"The climate change will not be an event; it will settle in time" – Interview E09

According to the stakeholder group, climate change will accentuate all available current risks. This is not available for other groups (experts and authorities), which seem more cautious about the notion of climate change. In their vision, the lack of perspective and historical knowledge about storm cycles does not suggest that the increase which seems to be occurring today, is not the result of a larger-scale cycle. The only risk associated to climate change recognized by all the groups interviewed is sea-level rise. Finally, anthropogenic pressures are strongly highlighted by stakeholders but not mentioned or very

little by the two other groups. This is probably due to the fact that the interviewed experts are working about consequences of coastal risks than the prevention.

6. Perspectives

The data gather during the interviews will be presented to all the citizens of Locmariaquer during a workshop dedicated to "local knowledge of coastal maritime heritage and risks" co-organised by UBO (partner 3), PNRGM (partner 9) and the municipality of Locmariaquer on 21th October 2019 (M18). This workshop in relation to work-packages 3 and 4 will offer the opportunity to use the participatory tool for adaptation to climate change and coastal risks: CACTUS (Climate, Adaptation, Change, Territories, Uses) developed by the PNRGM. CACTUS is a tool to support the definition of climate change questions and measures to be implemented to reduce the vulnerability of a territory.

Based on local knowledge and risk perceptions, the objective of this workshop is to exchange with the citizens on the vulnerability of the maritime heritage in the city and to suggest future actions for its preservation. A second workshop, in relation with work-packages 4 and 5, will be organised by the PNRGM with the support of UBO, the 19th November of 2019. For this workshop, we will present the elements coming out from the analysis of qualitative data in relation to the social representations of cultural heritage and risks. This workshop has an objective to bring together regional, district and territorial authorities together to exchange about integrate policies towards cultural heritage.

Annex – Semi-directive interview guide

Generals information:
- Name/First name – Sex - Age
- Profession – Date/Address

TOPIC 1: PERCEPTION OF THE CULTURAL HERITAGE BY STAKEHOLDERS	
What do you think about maritime cultural heritage? **What is your perception of maritime cultural heritage on the scale of Brittany/Gulf of Morbihan/Locmariaquer?**	
ADDITIONAL QUESTIONS	In your daily-life, which elements have a heritage interest (landscape, places, know-how) and why?
	Are there any heritage elements contribute to the preservation of the Breton identity?
	Are there any heritage elements in Locmariaquer that you like more than others? Which ones and why?
	How is cultural heritage is used within the Gulf or in Locmariaquer?
	What uses of cultural heritage do you have and what is your link with it?

TOPIC 2: THE VULNERABILITY OF MARITIME CULTURAL HERITAGE FACE TO RISKS AND/OR THREATS	
What does vulnerability mean to you? **Are there any risk(s) to the cultural heritage and what is/are they?**	
ADDITIONAL QUESTIONS	Since your arrival in Locmariaquer, have you noticed any changes in the threats to the cultural heritage?
	Have you been able to observe the degradation/disappearance of some heritage elements? What was the cause of this?
	Today, are there any heritage elements that you feel are under threat? By what threats?
	What heritage elements would you accept to see disappear or destroyed and why?
	In the current context of climate change, what changes do you foresee for maritime cultural heritage?

TOPIC 3: TOWARD SUSTAINABLE MANAGEMENT OF MARITIME CULTURAL HERITAGE	
What actions are implemented in Locmariaquer for the maritime cultural heritage?	
ADDITIONAL QUESTIONS	Did you participate directly or not in the implementation of these actions?
	Are there examples that could be applied to the heritage elements of Locmariaquer?
	Are there any heritage elements that you think should be given priority for management action? What type?

Annex – Consent form *(in French only)*

> Le projet européen PERICLES (*Preserving and sustainably governing cultural heritage and landscapes in European coastal and maritime regions*) vise à soutenir le développement d'un cadre complet pour comprendre, préserver et utiliser le patrimoine culturel maritime au service de la société. Financé par l'Union Européenne et inscrit dans le cadre des programmes de recherche et d'innovation « Horizon 2020 », PERICLES encourage une gouvernance participative et durable du patrimoine maritime matériel et immatériel en régions côtière et maritime pour une durée de 3 ans (de 2018 à 2021).

FORMULAIRE DE CONSENTEMENT

Réalisé dans le cadre du programme européen PERICLES, cet entretien a pour objectif d'approfondir les discussions menées lors de l'atelier du 19 mars 2019 organisé par le parc naturel régional du Golfe du Morbihan (PNRGM). Cet entretien doit permettre d'obtenir votre point de vue sur le patrimoine maritime au sein de la commune de Locmariaquer ainsi que des potentiels menaces et risques auxquels ce dernier peut être confronté. Par ailleurs, les éventuelles mesures de gestion qui pourront être mises en œuvre pour assurer la préservation, la gestion durable et la promotion du patrimoine culturel maritime de la commune feront également l'objet de discussions.

La durée de l'entretien peut varier entre 30 et 90 minutes (une heure et demi). Selon le règlement européen, les enquêtés doivent donner explicitement leur accord avant l'entretien après que l'utilisation potentielle des données leur ait été explicitée.

Le présent formulaire de consentement permet aux équipes du projet PERCILES de s'assurer que les enquêtés ont pris connaissance des objectifs des entretiens et qu'ils sont d'accord sur les termes et les conditions de leur participation. L'ensemble ou tout une partie du contenu de l'entretien sera employé de manière anonyme pour la rédaction d'articles scientifiques, de rapports liés aux projets ou lors de présentations orales (conférences, réunions de restitution, etc.).

Afin de faciliter l'analyse textuelle des propos recueillis, l'entretien est enregistré. Une transcription écrite de l'enregistrement audio sera réalisée post-entretien par les membres de l'Université de Bretagne Occidentale dans le cadre du projet PERICLES. Tout contenus récapitulatifs ou citations directes produites à l'issu de l'entretien (publications scientifiques, documents de communication, rapports, etc.) seront anonymisés et un soin particulier sera apporté pour que les informations contenues dans l'entretien ne permettent pas l'identification des enquêtés. Après retranscription, les enregistrements audio sont détruits et seules les retranscriptions textuelles sont conservées.

L'enregistrement sonore sera conservé jusqu'à sa retranscription écrite par les membres de l'Université de Bretagne Occidentale, dans un délai maximum de 4 mois après l'entretien. La retranscription écrite de l'entretien sera anonyme et pourra être utilisée à des fins de recherche uniquement dans le cadre du projet PERICLES jusqu'en 2021.

CERTIFICAT DE CONSENTEMENT

Par la présente, j'atteste avoir lu et pris connaissance de l'ensemble des informations ci-dessus et que je consens volontairement à participer à cet entretien. Il m'est possible de mettre fin à cet entretien à tout moment et de refuser de répondre à certaines questions. L'entretien ou des extraits retranscrits de celui-ci peuvent être utilisés aux fins décrites ci-dessus et je n'attends aucun avantage ou compensation financière en échange de ma participation. Je peux retirer mon consentement avant la retranscription de l'enregistrement et demander la destruction immédiate du document sonore en contactant Sybill Henry (sybill.henry@univ-brest.fr).

SIGNATURE

ANNEX 3

Risks to Coastal and Maritime Cultural Heritage and Landscapes in the Danish Case Region

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Contributing partners:	Partner 1 - AAU

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1. Objectives

Some, limited discrepancy exists between expert knowledge (managers, technicians, consultants or scientists) and the representation of politicians, stakeholders and the public in regard to risks assessment and risks management. This can primarily be seen in the lack of recognition of cultural heritage in the policy, planning and development processes in Denmark.

The research carried out in the context of work package 4 "*Co-production of a risk assessment and sustainable exploitation framework*", task 4.2 "*Identify and analyze gaps between expert knowledge and social representations of CH at risk*" highlights these differences. Work conducted for task 4.2 included review of all four of the Danish case region demos, compare the local knowledge of experts with the social representation of risks and threats to the maritime heritage.

This report presents the gaps between scientific knowledge and social representation of risks to cultural heritage carried out in the context of Demos D1- D4: (D1)- *Integration of CH into development and Blue Growth plans/strategies in transboundary decision-making*; (D2*) - Using CH for resilience and adaptation in port and landscape transitions;* (D3) *- Knowledge transfer of boat building skills for local development;* and (D4) - *Maritime heritage and tourism interactions.*

2. Context

The main objectives of the four demos vary, though the focus is on CMCH and landscapes in each case. The objective for the task documented in this Annex is to identify and characterise the natural and human-made risks and threats occurring maritime and coastal heritage (e.g., erosion, submersion, sea level rise). Data collection took place through purposive sampling with qualitative interviews conducted with experts, stakeholders and citizens, focusing on their views on risks and threats to CMCH. The risks focused on both natural and anthropogenic pressures. 7 semi-structured interviews were conducted with local community representatives, a museum leader, and public authorities to gather the perception of risks and threats and evaluate and measure gaps between knowledge. The analysis of the gaps between scientists and stakeholder's knowledge, fulfil the needs of the task 4.2.

3. Stakeholder interviews

3.1. Methods

Research methods used followed standard social science qualitative research methods (e.g., Bernard 2017[10]). The primary method used was qualitative interviewing, in this case semi-structured, using purposive sampling. Semi-structured interviewing ensured a certain freedom of discourse while using a common framework to enable comparisons.

The different topics on risk developed during Task 4.1 were the elaborated upon and for these second-round interviews for D4.1. The risks highlighted surround both natural and human-made.

The interviews were structured around three themes: the perception of maritime heritage; risks and vulnerability; and management potential. From these themes, the natural, and human-made, threats to CH and the impact of these threats upon heritage were uncovered.

The gap analysis was inspired by the method elaborated by the University of Aveiro (partner 6). The different types of risks mentioned during the interviews were identified and a level of intensity was assigned according to the emphasis of this risk by the interviewees, i.e., through the adjectives and superlatives used by the interviewee to describe the risks.

3.2. Location and data collection schedule

The interviews were conducted between mid-May to mid-July 2019. The two groups interviewed included Planners (both local and national level) and Local Community stakeholders (local community leaders and local museum leaders) (Figure A3.1).

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[10] Bernard, H. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.
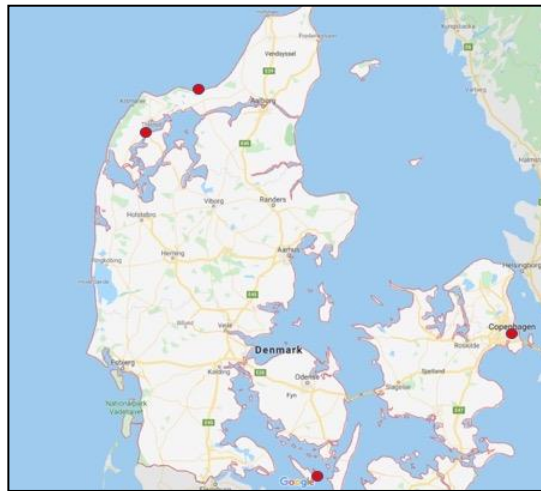
Figure A3.1. Map of the Danish Case Region Demos with additional interview locations

In connection with WPs 4 and 5 (respectively named "co-production of a risk assessment and sustainable exploitation framework", and "policy integration"), additional secondary sources were analysed and interviews were conducted with local and national planners and local leaders. The objective of these interviews and secondary source material analyses were to form a better understanding of the integration of maritime heritage in public planning and risk management policies. Purposive sampling was used for the interviewees, according to their availabilities, competencies and their knowledge concerning Danish CMCH and policy planning.

4. Results

4.1. Environmental Threats

Denmark is a land with relatively few natural disasters. Consequently, the environmental threats imagined and perceived as risks to coastal and maritime cultural heritage centred on threats associated with climate change rather than particular natural events such as storms or earthquakes.

a. Coastal erosion

Danish coasts are in general 'soft' and often threatened by erosion, especially the west coast facing the North Sea. In some places, this endangers various types of tangible CH (buildings, monuments, landscapes, archaeological sites, etc.). For example, in 2008, the 13th Century Mårup Church was dismantled by the National Museum of Denmark and moved to an open-air museum. Though there were great debates about whether to let "nature take its course" the public was against such lack of action and the church was dismantled in stages. At the time of its removal, it was only 9 meters from the cliff edge—when it had been at least one kilometre from the coast when it was erected in (ca.) 1250.

Also, measures to counter erosion are in themselves sometimes considered a threat to landscape values. In October 2019 Hjørring Komune decided to move Rubjerg Knud lighthouse-- moving it 80m inland due to the threat from erosion. The lighthouse is only 1.5km south of the Mårup Church, though in this case, the interest in saving it had as much to do with (economic) touristic value as the Mårup Church had social and cultural (religious; savings human culture) value.

b. Sea level rise

There are some concerns about sea level rise impacting immovable, tangible coastal heritage due to submersion. Old harbour structures, piers, and buildings are thought to be particularly vulnerable. These include structures in the Ærø and Vilsund case demos. In Slettestrand and Thørupstrand, there are some concerns as to the implications of sea-level rise for the boat building workshop and the fish processing facilities, which though located inland from the beach, are nevertheless in, relative, close proximity and at a low elevation.

c. Flooding

Flooding events (flooding events from the sea during storms or from extreme rainfall) endanger various types of tangible CH (buildings, monuments, landscapes, archaeological sites, etc.). For instance, the renowned Viking Museum in Roskilde has suffered damage from flooding. In Ærø (Marstal town) and Vilsund, port areas and buildings (including historic beach houses outside Marstal) are threatened by flooding. In Marstal, another notable structure at risk includes a CH- protected museum storage building.

Additionally, in the area around Vilsund, beach meadows of some interest to recreation and CH are sometimes flooded.

d. Sea warming

The impact of warming seas is less feared than other environmental threats, however, warming can also affect some of the fisheries related CH. In particular, the chemical changes in the sea could affect the distribution of species in Skagerrak, which are very important for the small- scale coastal fisheries in, among other places, Thorupstrand (whose fishers use the wooden boats now being made in Sletterstrand).

4.2. Human-induced threats

Human induced threats also pose significant risks to CMCH in the Danish case region. These risks stem from mismanagement, development, and regulations.

a. Mismanagement

Lack of appropriate management is viewed as one of the greatest risks to CMCH in Denmark. Mismanagement can include overt actions, as well as results of lack of consideration or neglect. There are seven types of mismanagement identified:

Accidental damage:

In Slettestrand, significant "wear and tear" happens to boats which are active, working fishing vessels since beach landings are especially tough on the boats

Vandalism:

Also in Slettestrand, there was an incidence of arson in 2017

Fire:

Outside Marstal a protected farm from the 1830s was almost entirely lost to a fire. Also, an old mill has been lost in the aeas. In Slettestrand in 2016, a fire completely destroyed the historic Svinkløv Badehotel (old beach resort of high CH value). 2018 was also a particularly dry year with fires burning throughout the countryside through the summer months; these events can threaten cultural landscapes.

Adaptation/management measures- inadequate conservation practices:

In Thorupstrand, with fewer experienced boat builders/restoration specialists, some fishers have moved away from wooden boats and thus demand decreases, creating a downward spiral for boatbuilding in Slettestrand.

Disassociation, loss of CH information:

Danish seafaring cultural heritage has strong recognition among stakeholders. As a consequence, non-sailing/non-masted CH is often overlooked and not preserved or valued, in particular in the Ærø demo.

Ignorance:

Failure to recognise or validate heritage is one of the greatest threats to CMCH in Denmark. The value of contemporary and near-past intangible CH is often overlooked. More specifically, the value of contemporary and near-past intangible CH is often overlooked in all three demo localities. In Ærø (Marstal), this is an issue due to the dominance of older CH aspects that have become a significant part of local identity. Ærø has a deeper history that has potential for further developing place-narratives and tourism: there are archaeological sites dating back over 10,000 years, including burial mounds and serving as a Ting place (site for settling disputes).

In the Vilsund area there are geological (moler) and natural values (hills). Former exploitation of moler (underground natural material used for building construction, but also of natural historic value) contains CH aspects that could be validated and explored further. Also, the Vilsund area has a history of fishing and 'Fjord living' and 'Fjord heritage' that is overlooked.

All three localities have significant coastal and landscape qualities that could be validated further, both with reference to natural history and to former use of those areas.

All of the above are missed opportunities for building a more resilient place identity that integrates more CH aspects. In general, most attention is given to tangible and material CH aspects, mostly due to a strong architectural tradition in Denmark, while intangible CH aspects are more randomly dealt with.

On-site visitor pressures:

In Thorupstrand, there can be some safety concerns/conflicts where beachgoers and bathers need to stay clear of the winch wires.

b. Development

Development also poses a threat to CMCH, especially through tourism, increase in traffic and people, "McDonaldisation" of heritage, and industrial decline.

Tourism:

In general, an influx of tourists to coastal areas during the summer months can cause pressure on some, specific assets. However, the problem is not considered significant in scale. It may cause crowds as well as local traffic and parking problems that erode the somewhat laidback and 'quiet' original atmosphere of many coastal communities and landscapes, despite their orientation towards tourism in some cases. For example, in Marstal on Ærø, heritage as historical heritage is emphasised over other types. On Ærø, the idea of an amusement park for children, and with maritime references, has not been received well among some local groups as it conflicts with the otherwise quiet atmosphere (which is valued) and other tourist target groups. Also, it is not considered a good match to the CH qualities and profile of the area.

Traffic:

In some locales, parking takes place on wide beaches. Opinions vary on this behaviour/activity: some tourists and locals "wish away" the cars in order to enjoy the otherwise untouched (and well-protected) coastal landscapes; others hold that moving the cars into the hinterland might well create greater problems to valuable landscape and CH aspects by destroying land for parking lots. Inaddition, cars parking on the beach are even argued by some few to be an aspect of CH aspect itself, as this has taken place to a limited degree for 70 to 80 years.

"McDonaldisation" of heritage:

In general, there is concern that increases in tourism and expansion of tourism facilities may endanger particular intangible CH aspects, as the main attention is often given to tangible CH oriented place qualities. The danger stems from marketing and overexposing single CH assets, rather than more holistic approaches with more potential for various synergy effects and closer links to a broader place identity. In Ærø there is a danger of marketing and overexposing single CH assets such as Marstal seafaring, rather than more holistic approaches with more potential for various synergy effects and closer links to a broader place identity.

Also, there is some concern that tourism facilities oriented towards CH aspects fail to have proper value-for-money or quality. In Slettestrand, *Gutterne på Kutterne*, a documentary TV series raised visibility of the issues facing the Thorupstrand fleet and likely helped promote the sale of their fish; however there have been downsides of national exposure, such as the area being "overrun" with tourists in 2018.

Industrial decline:

Industrial decline in Denmark brings with it the loss of facilities and buildings of CH interest as well as local narratives and identity, such as related to old shipyards, docks and old harbour facilities, sites for boat building and fishing communities, including beach-based fishery where boats are landed on the beach itself. On Ærø, there has been a loss of tangible CH (e.g. ships). In the Vilsund area, the loss of old tileworks, and port facilities. There is also the loss of companies landing mussels for further sale. This reflects both tangible and intangible CH that is remembered but not visible; Vilsund had a small ship yard for boat building. It is currently a challenge to combine this with CH values and assets. In Slettestrand, Large-scale fishing pressure and trawling in the area may be the cause of low catches, especially of cod in Skagerrak

Access to fishing quota was a problem at one point, but now the central challenge is low catches.

c. Regulation

The Regulatory system places CMCH at risk through weak protection and poor governance.

Weak Regulations:

There are concerns that the changes in marine and coastal regulations, as well as enforcements practices in the new development zones in the coastal zones, will endanger CMCH. For example, when the requirement for a 'coastal relevance' is cancelled in such areas. Others are concerned that too tight regulations, which hinder coastal protection measures (against erosion), might threaten CH assets.

Weak protection is also a concern. On Ærø, there are concerns that too tight regulation, which hinders coastal protection measures (against erosion), might threaten CH assets of relevance to tourism, such as the historic beach houses which serves as symbols of the island.

In the Limfjord and Vilsund area, there are concerns about maintaining and developing a good water environment, which will be of relevance to various types of tourist developments that also includes CH elements, such as fisheries from local boats and diving.

Poor governance:

Different kinds of protectives measures, which are based on different kinds of legislation, can sometimes conflict. Hence, there is a coordination challenge, and CH could be taken more into account in other discussions concerning coastal protection. Legislation and regulation are often focused on nature and landscapes, and less on CH and how CH connects to the former. Across the three demo localities: There is a general concern that there is insufficient coordination at regional and local levels, both between formal authorities and a range of informal or non-statutory interests and actors. This may hinder establishment of coherent CH oriented tourism strategies and the achievement of sustainable synergies. There is also concern that there is often a lack of local and transboundary organisation in securing, not just planning, protection of CH assets.

There is also concern that there is often a lack of local and transboundary organisation in securing, not just planning, the protection of CH assets. There is concern that attention to economic development will weaken the focus on CH. For example, the new national Blue Growth strategy makes no mention of CH at all.

The overall challenges in balancing development, nature protection and CH aspects reflect a need for improved horizontal coordination at the national level. Also, it affects vertical coordination, e.g. between the national level and municipalities. Better integration of CH in wider sets of legislation seems to be the challenge. There is a general concern that there is insufficient coordination at regional and local levels, both between formal authorities and a range of informal or non-statutory interests and actors. This might hinder the establishment of more coherent CH strategies and the achievement of sustainable synergies.

5. Gap analysis

Analysis of secondary and empirical data identifies some slight differences in perceptions towards risks to CMCH among planners (national and local levels) and local stakeholders (local museums and local

community leaders). However, in general, there is limited differentiation amongst the Danish stakeholders (Figure A3.1).
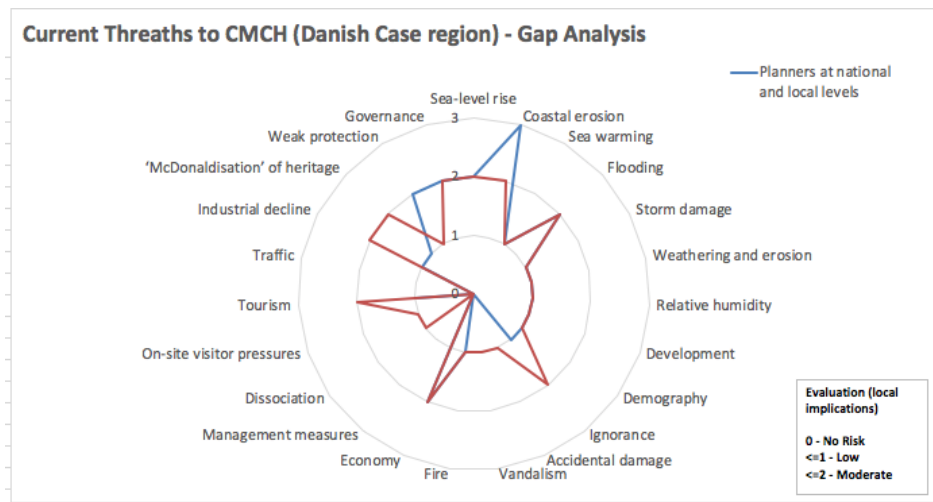

Figure A3.1. Radar chart of the current threats identified for cultural heritage by planners at the local and national levels, as well as museum leaders at the local level and local community representatives'

In terms of environmental threats, both groups agree that coastal erosion, sea level rise, and storm damage represents risks. The difference lies in the degree. Of all topics, the only risks which rates a "high risk" was the threat of coastal erosion. Given the examples provided from the west coast, this threat is grounded on experience and reason. The planners viewed this as a higher risk than local stakeholders, perhaps due to their experience and broader view.

In regards to human-induced threats, though none viewed anything as "high risk" there was agreement on governance and weak protections in both being moderate risks. Both groups also agreed the economy was a moderate risk.

Where local museums and community leaders differ, is the fact that they recognized more "local level" threats than the planners. For example, the viewed tourism, industrial decline, and disassociation as moderate risks, which the planner did not acknowledge at all.

6. Conclusion

This Annex provides data for the gap analysis between Planners (Local and national level) and Community Stakeholders (local level community and museum leaders) gathered from secondary and empirical data collection in the Danish case region.

Though one would expect difference among the four case demos in terms of perceived threats given their difference in CMCH being focused upon, the perceived threats and risks are remarkably similar. Where the difference lie seems to be between Planners and "Local" stakeholder groups, with the Planners having a greater concern towards coastal erosion (high risk) and lack of regulatory protections (moderate risk).

Both groups view governance, the economy, flooding, and sea level rise as moderate risks, while the local leaders (museum and community) viewed threats which tend to be seen more locally and place-based, as greater threats than the planners; these included tourism, ignorance, industrial decline, and demographic decline.

ANNEX 4

Social representation of maritime cultural and natural heritage and risks in Pärnu Bay and Gulf of Livonia islands case region (Estonia)

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1. Context

Seven stakeholders were invited to be interviewed, and 6 answered to the call. These included 5 non-expert stakeholders from local authorities (Kihnu municipality and Ruhnu municipality), local culture-connected NGOs (NGO Kihnu Mere Selts, Kihnu Maritime Association; and NGO Kihnu Kultuuriruum, Kihnu Cultural Space), local entrepreneurs (NGO Lääne-Eesti Turism, Western Estonian Tourism), tourism experts (University of Tartu/College of Pärnu), and 1 expert stakeholder (University of Tartu). Five of these stakeholders were women and one man.

The Estonian case study area is the small islands of the Livonian Bay (Western Estonia) (Figures A4.1 and A4.2). All interviewees were chosen from the study area to enlighten the situation in the area. The questions prepared by the project partner were asked in written form, including the table of threats. The gap between the evaluation of threats has been exposed in 2 graphs.

The objective of the interviews is to gather information to complete demo E2 – how balanced is the utilisation of cultural heritage in Estonian coastal areas in the context of other activities and how cultural heritage is thus threatened.

As we only received answers from 6 interviewees, the evaluation of threats has been shown in a graph by all of them, not just different types of stakeholders.

The method was translation of the questions used in the project into Estonian (including the threats table) and negotiating with stakeholders who would be eligible to answer those questions. The questionnaires were then sent to the stakeholders in written form and answers were also gathered in written form. The questions were answered in 25.09-13.10.2019.
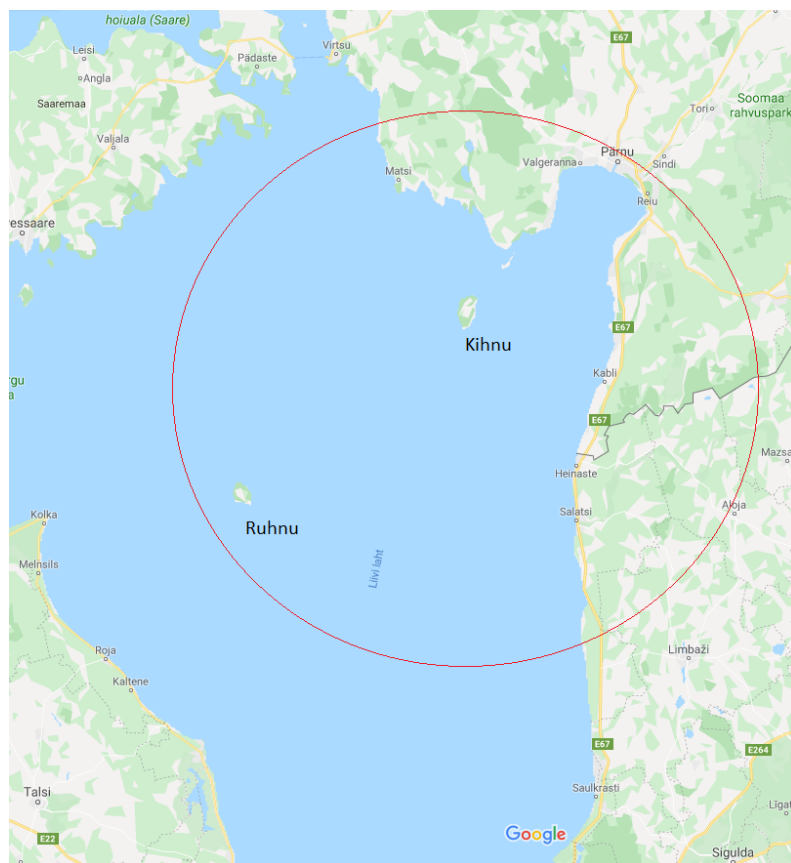
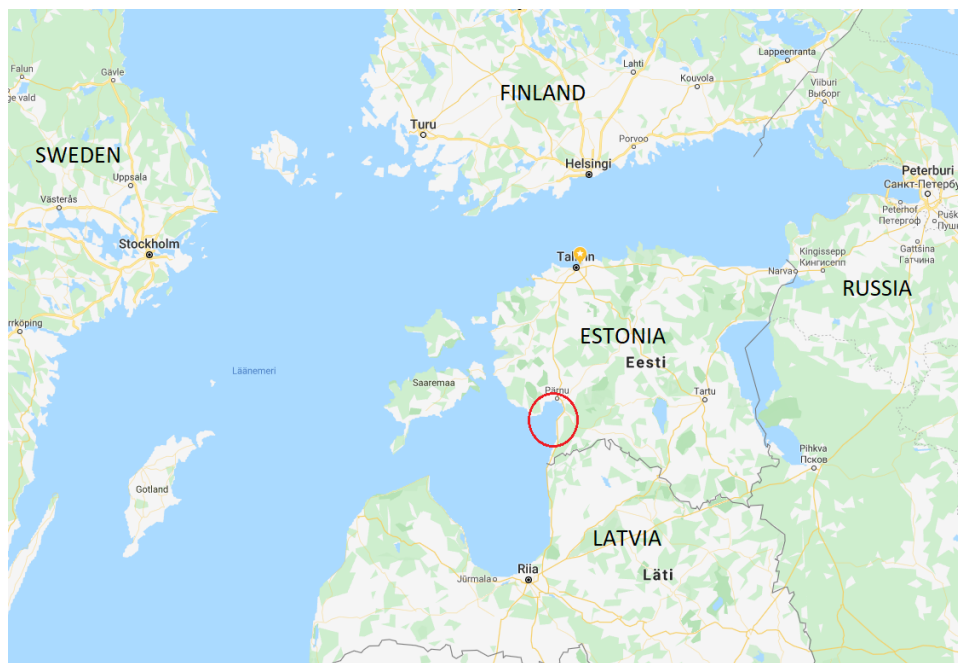**Figure A4.1. Location of Estonian case area has been surrounded by a red circle.**

Figure A4.2. Estonian case area in a wider surrounding.

2. **Gaps**

There was a vast gap between the attitude of the NGOs of local communities and municipalities, for the answers were much better thought through by the representatives of the local NGOs, while many questions were answered very shortly or not at all by the representatives of local municipalities. It seems that the local communities ponder upon the problems of their heritage much more than the people who should be responsible for governing the heritage. Vague answers by representatives of local municipalities make it difficult to compare evaluations of different types of stakeholders.

One of the most interesting answers was by the municipality of Ruhnu island for the question 'what is there more to do in the field of governing the cultural heritage' – they thought that everything is good and going well, while the representatives of the local NGOs emphasised many problems in retaining and using the local cultural heritage.

All in all, environmental threats were evaluated higher by all stakeholders than human impact to cultural heritage. Although, in the question part of the interview it was emphasised by at least two of the interviewees that a very large threat to cultural heritage is canonisation/McDonaldisation of heritage and loss of information. Environmental threats were never mentioned in the question part of the interview by most of the interviewees.

Loss of information/cultural roots was emphasised by several interviewees (local NGOs), and a very interesting comparison with BREXIT was brought out: BREXIT was very popular among the local communities who wanted to retain their diverse culture and traditional economy, and the same kind of process is also going on in the island of Kihnu (local communities want to protect their ways of life against newcomers and popularised culture). However, in the island of Kihnu it resulted in a high popularity of a right-side political party during last general elections in 2019.

In the question part the financing problem of cultural heritage management was also emphasised. EU funds are a very important source for the local NGOs to conduct their cultural activities in the small Livonian Bay islands.

The development and survival of the island communities depends on the cultural heritage-based tourism, but that raises new threats: mass tourism and increase of traffic, canonisation of cultural heritage, etc. However, without tourism the island communities would extinct, because without any jobs the people move away from the islands. The native islanders also have a problem with newcomers and their economic activity in the islands, which has led one of our interviewees to propose a solution: economic preference for native islanders. This approach has other problems (rules or market economy, etc).

However, considering the threats evaluation table, evaluation of the threats to cultural heritage did not have many gaps between the different types of stakeholders. The reason for that could be that the same people are active in different levels of society. A suitable example for that is the municipality of Ruhnu – the representative of the municipality who was interviewed for the project used to be the director of the museum of Ruhnu. The communities of small islands have quite few people and there are even fewer people who are active in the field of cultural heritage.

7.1   *Measures to diminish gaps*

It seems that among local communities cultural heritage is valued and also practiced in traditional economy. However, in the level of local authority's cultural heritage could be dealt more in Estonia than it is. While representatives of local authorities themselves thought that everything is fine, then local communities thought that local authorities could take more action in preserving local tangible and intangible heritage. The NGO Kihnu Kultuuriruum offered several actions that should be taken to preserve local Kihnu heritage, one of which was the preferred economic status of local Kihnu inhabitants compared to newcomers. In their opinion this would prevent native Kihnu inhabitants from moving away from the island, so that they would presume practicing local language and traditions in the island. This idea would also be worth discussing in the stakeholder event in Aveiro in spring: would such economical preference keep traditions from fading?

3. **Conclusions**

There are no big gaps between the evaluations of threats by different stakeholders in Estonian case study area. Local communities take the protection of their cultural heritage very seriously and different NGOs have been created to deal with that aspect. Those NGOs have ideas of actions that should be taken to improve the protection of their diverse cultural heritage.